Florida Department of Environmental Protection

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PERMITTEE

Highlands EnviroFuels (HEF), LLC
10027 Water Works Lane
Riverview, Florida 33578

Authorized Representative:
Mr. Bradley Krohn
President and Managing Member

Air Permit No. 0550063-001-AC
PSD-FL-416
Expires: June 30, 2016
Facility ID No. 0550063
Sugarcane/Sweet Sorghum-to-Ethanol Advanced
Biorefinery and Cogeneration Plant
Highlands County

PROJECT

This is the final air construction permit authorizing the construction of a 36 million gallon per year (MGPY) ethanol production facility using sugarcane and sweet sorghum as the feedstock and a cogeneration power plant that will generate up to 30 megawatts (MW, gross) of electricity utilizing the leftover sugarcane and sweet sorghum stalk fiber (bagasse) from the ethanol production process as its primary fuel source. The new HEF facility will use natural fermentation processes to produce ethanol from biomass. The plant is categorized under Standard Industrial Classification (SIC) No. 2869, and will be located approximately 0.5 miles south-southwest of the intersection of U.S. Highway 27 and State Road 70, south of Lake Placid, in Highlands County, Florida. The UTM coordinates of the facility are Zone 17, 466.407 kilometers (km) East and 3,009.015 km North.

This final permit is organized into the following sections: Section 1 (General Information); Section 2 (Administrative Requirements); Section 3 (Emissions Unit Specific Conditions); and Section 4 (Appendices). Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations which are defined in Appendix CF of Section 4 of this permit. As noted in the Final Determination provided with this final permit, only minor changes and clarifications were made to the draft permit.

STATEMENT OF BASIS

This air pollution construction permit is issued under the provisions of: Chapter 403 of the Florida Statutes (F.S.) and Chapters 62-4, 62-204, 62-210, 62-212, 62-296 and 62-297 of the Florida Administrative Code (F.A.C.). The permittee is authorized to conduct the proposed work in accordance with the conditions of this permit. This project is subject to the general preconstruction review requirements in Rule 62-212.300, F.A.C. and the preconstruction review requirements for major stationary sources in Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of air quality, including a determination of Best Available Control Technology (BACT).

Upon issuance of this final permit, any party to this order has the right to seek judicial review of it under Section 120.68 F.S., by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection (Department) in the Office of General Counsel (Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000) and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within 30 days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida
For the Division of Air Resource Management

_____ _____

Jeffery F. Koerner, Administrator (Date)
Office of Permitting and Compliance
Division of Air Resource Management

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Final Air Permit package (including the Final Determination and Final Permit with Appendices) was sent by electronic mail, or a link to these documents was made available electronically on a publicly accessible server, with received receipt requested before the close of business on _____ to the persons listed below.

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Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated agency clerk, receipt of which is hereby acknowledged.

_____ _____
(Clerk) (Date)

PROPOSED PROJECT

The project involves the construction of the HEF ethanol production facility that will utilize sugarcane and sweet sorghum as its feedstock to produce up to 36 MGPY of ethanol. In addition, the project involves the construction of a cogeneration plant utilizing the leftover cane and sorghum stalk fiber (bagasse) from the ethanol production process as its primary fuel source. The cogeneration plant will generate up to 30 MW (gross) of electricity of which up to 20 MW will be available for sale to the grid. The sugarcane and sweet sorghum feedstock for the HEF facility will be grown on adjacent and surrounding farmland. Juice will be extracted from the sugarcane and sweet sorghum and processed to increase its sucrose (sugar) concentration. The concentrated juice will then be fermented to convert the sugars to ethanol. The distilled ethanol will be blended with gasoline to yield a denatured ethanol product.

The sugarcane and sweet sorghum bagasse will be burned in a biomass boiler with a maximum heat input rate of 504.3 million British thermal units per hour (mmBtu/hr) on a 4-hour average basis and 458.5 mmBtu/hr on a 24-hour average basis. In addition to cane and sorghum bagasse, the HEF biomass boiler will also burn biomass consisting of energy crops, wood chips and vegetative debris and natural gas. The biomass boiler will generate steam that will be utilized in the ethanol production process and in a steam turbine electrical generator (STG) to produce electrical power. The energy crops, wood chips and vegetative debris will be used as a supplemental fuel in the boiler. The natural gas will be used as the boiler startup, shutdown and flame stabilization fuel, and also in the event of a disruption in the biomass supply. Ultra low sulfur distillate (ULSD) fuel oil or natural gas will be used in emergency equipment (one generator and one fire water pump engine).

This project will consist of the following emissions units (EU).

Facility ID No. 0550063	
EU ID No.	**Emissions Unit Description**
001	Feedstock and Biomass Material Handling and Preparation
002	Cogeneration Biomass Boiler
003	Cooling Towers
004	Ethanol Production Process
005	Storage Tanks
006	Truck Rack Product Loadout and Flare
007	Miscellaneous Dry Material Storage Silos
008	Emergency Equipment
009	Facility-Wide Fugitive VOC Equipment Leaks

FACILITY REGULATORY CLASSIFICATION

- The facility is <u>not</u> a major source of hazardous air pollutants (HAP).
- Because HEF is a cogeneration facility, it does <u>not</u> operate units subject to the Title IV Acid Rain Program of the Clean Air Act (CAA).
- The facility <u>is</u> a Title V major source of air pollution in accordance with Chapter 62-213, F.A.C.
- The facility <u>is</u> a major stationary source in accordance with Rule 62-212.400 (PSD), F.A.C.
- The facility <u>is</u> subject to Rule 62-296.100(3), F.A.C. for New Source Performance Standards (NSPS) under Section 111 of the CAA and the National Emissions Standards for Hazardous Air Pollutants (NESHAP) under Section 112 of the CAA.

- The HEF facility is not subject to Clean Air Interstate rule (CAIR) nor its replacement, the Cross-State Air Pollution Rule (CSAPR), because its biomass boiler is a cogeneration unit that will sell less than 219,000 megawatt hours (MWh) per year of electricity to the grid.

SECTION 2. ADMINISTRATIVE REQUIREMENTS

1. Permitting Authority: The Permitting Authority for this project is the Office of Permitting and Compliance in the Division of Air Resource Management of the Department. The mailing address for the Office of Permitting and Compliance is 2600 Blair Stone Road, MS #5505, Tallahassee, Florida 32399-2400. All documents related to applications for permits shall be submitted to the Office of Permitting and Compliance in the Division of Air Resource Management of the Department.

2. Compliance Authority: All documents related to compliance activities such as reports, tests and notifications shall be submitted to the Compliance Authority, which is the Air Resource Section of the Department's South District Office at: 2295 Victoria Avenue, Suite 364, Fort Myers, Florida 33901-3881.

3. Appendices: The following Appendices are attached as a part of this permit and must be complied with by the permittee:
   a. Appendix ASME: American Society of Mechanical Engineers (ASME) Form for Abbreviated Efficiency Test;
   b. Appendix BMP: Best Management Practices;
   c. Appendix CC: Common Conditions;
   d. Appendix CEMS: Continuous Emissions Monitoring System (CEMS) Requirements;
   e. Appendix CF: Citation Formats and Glossary of Common Terms;
   f. Appendix CTR: Common Testing Requirements;
   g. Appendix Db: NSPS, Subpart Db – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units;
   h. Appendix F: 40 Code of Federal Regulations (CFR) Part 75, Appendix F, Section 5 – Measurement of Boiler Heat Input Rate;
   i. Appendix GC: General Conditions;
   j. Appendix GP: Identification of General Provisions, Subpart A from NSPS 40 CFR 60 and Subpart A from NESHAP 40 CFR 63;
   k. Appendix IIII: NSPS, Subpart IIII – Stationary Compression Ignition Internal Combustion Engines;
   l. Appendix JJJJJJ: NESHAP, Subpart JJJJJJ – Industrial/Commercial/Institutional Steam Generating Units for Area Sources of HAP;
   m. Appendix Kb: NSPS, Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels;
   n. Appendix LDAR: Preliminary Leak Detection and Repair (LDAR) Program;
   o. Appendix VVa: NSPS, Subpart VVa – Standards of Performance for Equipment Leaks of Volatile Organic Compounds (VOC) in the Synthetic Organic Chemical Manufacturing Industry (SOCMI); and
   p. Appendix ZZZZ: NESHAP, Subpart ZZZZ – Stationary Reciprocating Internal Combustion Engines (RICE).

4. Applicable Regulations, Forms and Application Procedures: Unless otherwise specified in this permit, the construction and operation of the subject emissions units shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403, F.S.; and Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296 and 62-297, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations.

5. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The

Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]

6. Modifications: No emissions unit shall be constructed or modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]

7. Source Obligation:

   a. Authorization to construct shall expire if construction is not commenced within 18 months after receipt of the permit, if construction is discontinued for a period of 18 months or more or if construction is not completed within a reasonable time. This provision does not apply to the time period between construction of the approved phases of a phased construction project except that each phase must commence construction within 18 months of the commencement date established by the Department in the permit.

   b. At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by virtue of a relaxation in any enforceable limitation which was established after August 7, 1980, on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then the requirements of 62-212.400(4) through (12), F.A.C., shall apply to the source or modification as though construction had not yet commenced on the source or modification.

   c. At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by exceeding its projected actual emissions, then the requirements of 62-212.400(4) through (12), F.A.C., shall apply to the source or modification as though construction had not yet commenced on the source or modification.

   [Rule 62-212.400(12), F.A.C.]

8. Title V Permit: This permit authorizes specific modifications and/or new construction on the affected emissions units as well as initial operation to determine compliance with conditions of this permit. A Title V operation permit is required for regular operation of the permitted emissions unit. The permittee shall apply for a Title V operation permit at least 90 days prior to expiration of this permit, but no later than 180 days after completing the required work and commencing operation. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the appropriate Permitting Authority with copies to the Compliance Authority. [Rules 62-4.030, 62-4.050, 62-4.220, and Chapter 62-213, F.A.C.]

9. Unconfined Emissions of Particulate Matter: No person shall cause, let, permit, suffer or allow the emissions of unconfined particulate matter from any activity: including vehicular movement; transportation of materials; construction, alteration, demolition or wrecking; or industrially related activities such as loading, unloading, storing or handling without taking reasonable precautions to prevent such emissions. Any permit issued to a facility with emissions of unconfined particulate matter shall specify the reasonable precautions to be taken by that facility to control the emissions of unconfined particulate matter. Reasonable precautions include the following:

   a. Paving and maintenance of roads, parking areas and yards;

   b. Application of water or chemicals to control emissions from such activities as demolition of buildings, grading roads, construction and land clearing;

   c. Application of asphalt, water, oil, chemicals or other dust suppressants to unpaved roads, yards, open stock piles and similar activities;

d. Removal of particulate matter from roads and other paved areas under the control of the owner or operator of the facility to prevent re-entrainment, and from buildings or work areas to prevent particulate from becoming airborne;

e. Landscaping or planting of vegetation;

f. Use of hoods, fans, filters and similar equipment to contain, capture and/or vent particulate matter;

g. Confining abrasive blasting where possible; and,

h. Enclosure or covering of conveyor systems. In determining what constitutes reasonable precautions for a particular facility, the Department shall consider the cost of the control technique or work practice, the environmental impacts of the technique or practice and the degree of reduction of emissions expected from a particular technique or practice.

[See also Appendix BMP; Rule 62-296.320(4)(c), F.A.C.]

10. Excess Emissions: Except as required by specific conditions of this permit dealing with excess emissions with regard to individual emission units, the following conditions apply to excess emissions at HEF.

    a. Allowed: Excess emissions resulting from startup, shutdown or malfunction of any emissions unit shall be permitted providing best operational practices to minimize emissions are adhered to and the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration.

    b. Malfunction: Excess emissions which are caused entirely or in part by poor maintenance, poor operation or any other equipment or process failure which may reasonably be prevented during startup, shutdown or malfunction shall be prohibited.

    c. Department Discretion: Considering operational variations in types of industrial equipment operations affected by this rule, the Department may adjust maximum and minimum factors to provide reasonable and practical regulatory controls consistent with the public interest.

    d. Department Notification: In case of excess emissions resulting from malfunctions, each owner or operator shall notify the Department in accordance with Rule 62-4.130, F.A.C. A full written report on the malfunctions shall be submitted in a quarterly report, if requested by the Department.

    [Rule 62-210.700, F.A.C.]

11. NSPS, Subpart VVa: Emission units associated with the HEF project that can leak VOC are subject to NSPS Subpart VVa – Standards of Performance for Equipment Leaks of VOC in the SOCMI. Equipment such as pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves, line valves and flanges or other connectors in VOC service and any devices or systems subject to NSPS, Subpart VVa, and the associated emissions unit must be identified. The permittee must submit a list indentifying the devices or systems to the Compliance Authority no later than 90 days before the HEF facility becomes operational. A requirement of Subpart VVa is the development of a LDAR program. A preliminary LDAR program plan is included as Appendix LDAR in Section 4 of this permit. The permittee is required to submit a final LDAR program plan to the Compliance Authority for approval no later than 90 days before the HEF facility becomes operational. The HEF facility must demonstrate compliance with NSPS, Subpart VVa no later than 180 days after the initial startup of the HEF facility. [NSPS, Subpart VVa and Rule 62-4.070(3), F.A.C. Reasonable Assurance]

12. Objectionable Odors Prohibited: No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor. The permittee shall submit an odor control plan (OCP) to the Compliance Authority no later than 90 days before the HEF facility becomes operational that addresses the procedures and practices that will be used to control facility wide odors. [Rule 62-296.320(2), F.A.C. and Rule 62-4.070, F.A.C. Reasonable Assurance]

    {Permitting Note: An objectionable odor is defined in Rule 62-210.200(Definitions), F.A.C., as any odor present in the outdoor atmosphere which by itself or in combination with other odors, is or may be

harmful or injurious to human health or welfare;, which unreasonably interferes with the comfortable use and enjoyment of life or property; or which creates a nuisance.}

13. Open Burning Prohibited: No person shall ignite, cause to be ignited or permit to be ignited any material which will result in any prohibited open burning as regulated by Chapter 62-256, F.A.C.; nor shall any person suffer, allow, conduct or maintain any prohibited open burning.
[Rule 62-256.300, F.A.C.]

14. General Visible Emissions Standard: No person shall cause, let, permit, suffer or allow to be discharged into the atmosphere the emissions of air pollutants from any activity, the density of which is equal to or greater than that designated as Number 1 on the Ringelmann Chart (20 percent opacity).
[Rule 62-296.320(4)(b) F.A.C., General Visible Emission Standard]

A. Feedstock and Biomass Material Handling and Preparation (EU-001)

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
001	Feedstock and biomass material handling and preparation consists of the following major functions: • Feedstock Harvesting: Both sugarcane and sweet sorghum stalks will be harvested as 6-inch to 12-inch billets from adjacent and nearby agricultural lands and transported to the HEF facility by truck or rail. The harvesting methods employed will ensure that "trash", i.e., cane and sorghum leaves and tops, will be minimized in the delivered feedstock. It is expected that "trash" will constitute less than 8 percent (%) by weight of the delivered feedstock to the facility. • Processing the Feedstock: The loaded trucks/railcars will be weighed on a weighing bridge as they enter the unloading area. The cane or sorghum in the trucks will then be transferred to the feed table via a tipping trailer. Railcars will be bottom dumped into a feed hopper, which feeds the feed table. The feed table is equipped with chains that convey the sugar cane and sweet sorghum billets toward the main conveyor that feeds the juice extraction system. • Juice Extraction: The feedstock will be passed through high efficiency knives and a heavy-duty shredder to increase the surface area of the material. Then the feedstock passes to a belt conveyor and then to the diffuser. The diffuser is designed to carry a uniform layer of feedstock through the diffuser and across the entire width of the diffuser to obtain maximum sucrose removal. Imbibition water is fed into the juice trough and falls onto the processed feedstock mat, percolates through the fibers, passes across the screen and is collected in the last juice receiver. From the juice receiver, this solution with low sucrose concentration is recirculated upstream back to the juice trough and falls again onto the feedstock mat. This recirculation continues to create a countercurrent pattern and a constant sucrose concentration gradient between the feedstock mat moving downstream and the recirculating juice moving upstream. The feedstock exiting the diffuser is termed "bagasse." The moisture content of the bagasse when it leaves the diffuser is approximately 80%. To reduce the moisture content further, the bagasse is sent through a dewatering mill system. The mill presses the bagasse until the moisture content is reduced to approximately 50%. • Boiler Fuel Feedstock (Biomass): Sugarcane and sweet sorghum bagasse from the juice extraction process will be used as the primary fuel in the HEF biomass boiler. The bagasse will be sent directly to the boiler or stored in a storage pile in the biomass yard. Biomass consisting of energy crops, wood chips and vegetative debris will be used as a supplemental boiler fuel. Natural gas will be used for boiler startup, shut down and flame stabilization and also in the event of a disruption in the biomass supply. • Biomass Fuel Feed System: A single biomass fuel feed system for the boiler will be used. The system will consist of a dewatering system for the cane and sorghum bagasse, covered conveyors, boiler metering bins and biomass storage piles (bagasse and supplemental biomass). The biomass fuel will be fed from the storage piles to the conveyor system using front-end loaders. Only one feed system is required, since bagasse and supplemental biomass may be fired in combination in the boiler. • Biomass Design Throughput: Under normal operation (no supplemental biomass burning), the amount of bagasse burned in the boiler is estimated to be 236,300 tons per year (TPY) each of cane and sorghum bagasse. A maximum 43,368 TPY of supplemental biomass may be burned in combination with 212,670 TPY each of cane and sorghum bagasse.

A. Feedstock and Biomass Material Handling and Preparation (EU-001)

EQUIPMENT

1. Biomass Delivery, Handling and Preparation: The permittee is authorized to install the following major pieces of equipment for the delivery, handling and processing of the sugarcane and sweet sorghum used in the ethanol production process and the bagasse and supplemental biomass used as boiler fuel:
   - Weighing bridge truck scale(s);
   - Tipping trailer/railcar unloader(s);
   - Sugar cane and sweet sorghum bagasse press drying system;
   - Feed table with transfer chains;
   - Enclosed transfer conveyors consisting of reclaim, return, transfer, distribution and surplus conveyors; and
   - Biomass yard containing biomass fuel storage piles (bagasse and biomass).

   [Application No. 0550063-001-AC and Rule 62-4.070(3), F.A.C.]

2. Air Pollution Control Equipment: To minimize fugitive particulate matter (PM), PM with a mean diameter of 10 micrometers (µm) or less (PM_{10}) and PM with a mean diameter of 2.5 µm or less ($PM_{2.5}$); henceforth called PM, biomass conveyors shall be enclosed. If required to meet the opacity requirement given in **Specific Condition 10** of this subsection, the permittee shall install dust collectors on the conveyor transfer and drop points. The dust collectors shall be designed to obtain an outlet PM loading of 0.005 grains per dry standard cubic foot (gr/dscf).

   {Permitting Note: Enclosed conveyors means that the conveyance belt for the biomass is totally enclosed from above thus preventing wind from causing fugitive dust emissions. However, the bottom of the conveyance belt shall be accessible for maintenance and repairs.}

   [Rules 62-212.400 (BACT) and 62-4.070(3), F.A.C.]

3. Fugitive Dust Control: HEF shall utilize reasonable precautions for controlling fugitive PM emissions from this emission unit. These include but are not limited to:
   - Enclosing material drop points, transfer points, shredders and screens wherever practical;
   - Contouring storage piles to minimize wind erosion;
   - Utilizing water sprays on storage piles as needed to prevent fugitive dust caused by biomass from leaving the property;
   - Paving all main plant roads;
   - Watering of gravel surfaces as needed to control dust; and
   - Sweeping and watering of paved surfaces as needed to remove dust.

   The permittee shall also comply with additional precautions listed in Appendix BMP- Best Management Practices and **Specific Condition 9** of Section 2 of this permit.

   [Rules 62-212.400 (BACT) and 62-4.070(3), F.A.C.]

PERFORMANCE RESTRICTIONS

4. Roadways: The plant roadways shall be paved and during dry conditions wetted sufficiently to maintain surface moisture to minimize fugitive dust emissions. Roadways shall be swept as necessary with a vacuum sweeper in good working order to prevent the buildup of dirt and silt on the roadway surfaces. A record of the sweeping shall be kept and made available to the Compliance Authority upon request.
   [Rules 62-212.400 (BACT) and 62-4.070(3), F.A.C.]

5. Gravel Areas: The gravel surfaces at the HEF facility shall be wetted sufficiently during dry conditions to maintain surface moisture to minimize fugitive dust emissions. A record of the wetting shall be kept and made available to the Compliance Authority upon request.

[Rules 62-212.400 (BACT) and 62-4.070(3), F.A.C.]

6. Bagasse and Supplemental Biomass Storage Piles: The boiler fuel (bagasse and biomass) storage piles will be located in the fuel yard in the southwestern quadrant of the HEF site. To control odors and minimize the chance of spontaneous combustion, bagasse and biomass in the storage piles shall be used in a first-in first-out (FIFO) basis. To prevent fugitive dust caused by biomass from leaving the property, the plant shall apply water if necessary; otherwise, the material shall be kept dry to facilitate burning. Contouring storage piles shall be done to minimize wind erosion. Overall, fuel storage pile management shall follow the procedures described in Appendix BMP of this permit.
[Application No. 0550063-001-AC; Rules 62-212.400 (BACT) and 62-4.070(3), F.A.C.]

7. Authorized Ethanol Production Feedstock: Feedstock used in the ethanol production process at the HEF facility shall be sugarcane and sweet sorghum. In addition, sweet sorghum syrup/molasses and/or sugarcane molasses may be used as the feedstock when sugarcane and sweet sorghum feedstocks are in low supply or not available. [Application No. 0550063-001-AC and Rule 62-4.070(3), F.A.C.]

8. Authorized Boiler Fuel Biomass: Biomass fuel authorized to be used in the biomass boiler at the HEF facility consists of sugarcane and sweet sorghum bagasse and supplemental biomass consisting of energy crops, wood chips and vegetative debris. Appendix BMP further defines the types of biomass that shall and shall not be used at the HEF facility in the ethanol production process and as boiler fuel and includes quality assurance (QA) procedures to ensure the biomass used meets the requirements specified in this permit.
[Application No. 0550063-001-AC and Rule 62-4.070(3), F.A.C.]

9. Hours of Operation: The hours of operation of this emission unit are not limited (8,760 hours per year).
[Application No. 0550063-001-AC; Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

EMISSIONS STANDARDS

10. Opacity Standard: As determined by EPA Method 9, there shall be no visible emissions (VE) greater than 5% opacity at drop points, transfer points and dust collector outlets that are required to meet this VE standard. [Rule 62-212.400(5)(c), F.A.C.]

11. Best Management Practices (BMP): A plan to control PM emissions from biomass (sweet sorghum bagasse, sweet sorghum bagasse and supplemental biomass) delivery, handling and preparation is given in Appendix BMP and shall be followed at all times by the permittee. This plan also addresses measures to minimize the chance of the spontaneous combustion of biomass storage piles and QA measures for biomass delivered to the HEF facility. As the engineering details of the Feedstock Delivery, Handling and Preparation emissions unit become finalized, the permittee shall submit an updated BMP plan to the Compliance Authority no later than 90 days before the HEF facility becomes operational.
[Rules 62-212.400 (BACT) and 62-4.070(3), F.A.C.]

{Permitting Note: PM emissions from biomass deliveries, bagasse handling and supplemental biomass handling during operation of the HEF facility are estimated to be 7.9 tons in any consecutive twelve month period.} [Application No. 0550063-001-AC]

TESTING AND MONITORING REQUIREMENTS

12. Initial Compliance Tests: The drop points, transfer points and dust collector outlets (if installed) of this emissions unit shall be tested to demonstrate initial compliance with the emissions standards for opacity given in **Specific Condition 10** of this subsection. The initial tests shall be conducted within 60 days after achieving permitted capacity, but not later than 180 days after initial operation of the unit.
[Rules 62-4.070(3) and 62-297.310(7)(a)1, F.A.C.]

13. Annual Compliance Tests: During each federal fiscal year (October 1st to September 30th), the drop points, transfer points and dust collector outlets (if installed) of the emissions unit shall be tested to demonstrate compliance with the emissions standards for opacity given in **Specific Condition 10** of this subsection.
[Rules 62-4.070(3) and 62-297.310(7)(a)4, F.A.C.]

14. Test Requirements: The permittee shall notify the Compliance Authority in writing at least 15 days prior to any required tests. Tests shall be conducted in accordance with the applicable requirements specified in Appendix CTR (Common Testing Requirements) of this permit. [Rule 62-297.310(7)(a)9, F.A.C.]

15. Test Methods: Required tests shall be performed in accordance with the following reference methods.

Method	Description of Method and Comments
9	Visual Determination of the Opacity of Emissions from Stationary Sources.

The above method is described in Appendix A of 40 CFR 60 and is adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Department. [Rules 62-204.800 and 62-297.100, F.A.C.; and Appendix A of 40 CFR 60]

RECORDS AND REPORTS

16. Test Reports: The permittee shall prepare and submit reports for all required tests in accordance with the requirements specified in Appendix CTR (Common Testing Requirements) of this permit. For each test run, the report shall also indicate the operating rate. [Rule 62-297.310(8), F.A.C.]

17. Notification, Recordkeeping and Reporting Requirements: The permittee shall maintain records of the amount of biomass consisting of sugarcane, sweet sorghum, sweet sorghum syrup/molasses, sugarcane syrup/molasses, energy crops, wood chips and vegetative debris delivered, handled and processed on a daily, monthly, quarterly and 12 month rolling average basis. These records shall be submitted to the Compliance Authority on a semi-annual basis or upon request. [Rule 62-4.070(3), F.A.C.]

B. Cogeneration Biomass Boiler (EU-002)

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
002	*Description*: The boiler will be a hybrid suspension/stoker (grate) type boiler wherein biomass (sugarcane bagasse, sweet sorghum bagasse and supplemental biomass) and natural gas are combusted to generate high temperature and high pressure steam. The steam will then be used in the ethanol production process and also sent to a STG to generate up to 30 MW (gross) of electrical power. *Fuels*: Sugarcane and sweet sorghum bagasse, a residual from the ethanol production process, will be used as the primary fuel in the biomass boiler with biomass consisting of energy crops, wood chips and vegetative debris used as a supplemental fuel. In addition, the boiler will be capable of combusting natural gas for startup, shutdown and flame stabilization and also in the event of a disruption in the biomass supply. *Capacity*: The maximum design heat input capacity to the boiler is 504.3 mmBtu/hr on a 4-hour basis and 458.5 mmBtu/hr on a 24-hour basis. Steam production capability will be approximately 275,000 pounds per hour (lb/hr) on a 4-hour basis and 250,000 lb/hr on a 24-hour basis. The maximum heat input capacity using natural gas in the biomass boiler shall be physically constrained by burner design to be less than 250 mmBtu/hr so the boiler is not subject to 40 CFR 60 NSPS, Subpart Da. *Controls*: Good combustion practices (GCP) leading to the efficient combustion of biomass in the boiler, including an over-fired air (OFA) system, to minimize formation of PM, nitrogen oxides (NO_X), carbon monoxide (CO), VOC and HAP; Selective Non-Catalytic Reduction (SNCR) with urea or anhydrous ammonia (NH_3) injection to destroy NO_X; an oxidation catalyst (Ox-cat) system to control VOC, CO and organic HAP; use of natural gas fired in low-NO_X burners (LNB) for boiler startup, shutdown and flame (bed) stabilization to minimize formation of PM, NO_X, sulfur dioxide (SO_2) and HAP; a dry sorbent injection system (DSIS) utilizing sodium bicarbonate, hydrated lime or trona to control SO_2, sulfuric acid mist (SAM) and acid gas HAP; a wet sand separator (cyclone) and a electrostatic precipitator (ESP) to further control PM and opacity; and, if necessary, a hydrogen chloride (HCl) and hydrogen fluoride (HF) control strategy to ensure the HEF facility is minor source for HAP emissions. *Stack Parameters*: Flue gas from the biomass boiler will discharge to the atmosphere via a stack with a design height of 150 feet and a design diameter of 14 feet. The flue gas exit temperature will be approximately 340 degrees Fahrenheit (°F) with a design volumetric flow rate of 204,080 actual cubic feet per minute (acfm). *Continuous Emissions and Opacity Monitoring Systems (CEMS, COMS)*: Emissions of CO, NO_X, SO_2 and HCl will be monitored and recorded by CEMS. Opacity will be monitored and recorded by COMS. *Applicability of 40 CFR Subpart Db*: This unit is subject to NSPS Subpart Db - Industrial-Commercial-Institutional Steam Generating Units because it has a maximum heat input capacity greater than 100 mmBtu/hr from combusted fuels, and it is not subject to NSPS Subpart Da because it has a maximum heat input capacity less than 250 mmBtu/hr from combusted fossil fuels. [Application No. 0550063-001-AC]

{Permitting Note: In accordance with Rule 62-212.400, F.A.C., the Department established permit standards for the biomass-fueled boiler that represent the BACT for emissions of NO_X, PM/PM_{10}, VOC, SO_2 and CO. A SAM emission limit was set to avoid BACT for this pollutant. The biomass-fueled boiler is subject to the federal NSPS in Subpart Db (industrial boilers) of 40 CFR 60, which is adopted by reference in Rule 62-204.800, F.A.C. NSPS Subpart Db for Industrial Boilers is provided in Appendix Db of this permit.}

B. Cogeneration Biomass Boiler (EU-002)

EQUIPMENT

1. Construction of Biomass-Fueled Boiler: The permittee is authorized to construct one biomass-fueled hybrid suspension/stoker (grate) type boiler at the HEF facility with maximum steam generation rates of 275,000 pounds per hour (lb/hr) on a 4-hour average basis and 250,000 lb/hr on a 24-hour average basis for steam and power generation. The boiler shall have a multi-stage superheater, air heater and economizer. LNBs shall be utilized for natural gas firing. The boiler shall include:
   - Biomass fuel feeders;
   - High-performance OFA system consisting of air headers, air nozzles, dampers and an OFA fan;
   - Soot blowers;
   - Forced draft (FD) fan;
   - Induced draft (ID) fan;
   - Pneumatic distribution air fans; and
   - Vibrating grate for ash removal.
   - One steam turbine electrical generator (STG).

   [Application No. 0550063-001-AC]

2. Air Pollution Control Equipment: To comply with the emission standards of this subsection, the permittee shall install the following air pollution control equipment on the biomass boiler.

   a. *Wet Sand Separator (Cyclone)*: The permittee shall design, install, operate and maintain a wet sand separator to remove fine sand particles from the flue gas exhaust prior to the ESP. The wet sand separator shall be on line and functioning properly whenever the boiler is in operation. If necessary, the wet sand separator shall be modified to aid in the removal of acid gases to meet the emission limits specified in this subsection.

   b. *ESP*: The permittee shall design, install, operate and maintain an ESP to remove PM from the flue gas exhaust and achieve the PM standards specified in this subsection. During startup conditions, the ESP shall be on line and functioning properly prior to combusting any biomass. During normal operation, the ESP shall be on line and functioning properly at all times.

   c. *SNCR*: The permittee shall design, install, operate and maintain a urea or NH_3 based SNCR system to reduce NO_X emissions in the flue gas exhaust and achieve the NO_X emissions standard specified in this subsection. The SNCR system shall be on line and functioning properly whenever the boiler is in operation, other than during startup conditions. During startup conditions, the SNCR manufacturer's instructions shall be followed regarding operation of the system.

   d. *DSIS*: The permittee shall design, install, operate and maintain a DSIS to inject lime, trona or sodium bicarbonate into the flue gas to control SO_2 emissions to the limit specified in this subsection. The DSIS will also help control acid gas HAP emissions. The SO_2 CEMS output data expressed in lbs/hr averaged over a 24-hour period shall be reviewed by plant personnel on a daily and monthly basis to determine required operation of, or adjustment to the sorbent injection augmentation to ensure the HCl, HF and SO_2 emission standards will be maintained. CEMS based SO_2 emissions data shall be reported to the Department on a quarterly basis.

   e. *Ox-cat*: The permittee shall install an Ox-cat system to control, in conjunction with GCP, emissions of CO and organic HAP to the standards specified in this subsection. The installation of the Ox-cat system is initially experimental in nature to determine if the Ox-cat catalyst lifetime is adversely effected by the alkali nature of the flue gas stream. After 24 months of initial Ox-cat operation, a test report per **Specific Condition 12** of this subsection will be submitted to the Department describing Ox-cat performance versus time with regard to CO and organic HAP emissions.

f. *Circumvention*: The permittee shall not circumvent the air pollution control equipment or allow the emission of air pollutants without this equipment operating properly. [Rule 62-210.650, F.A.C.]

[Applicant's Request; Application No. 0550063-001-AC; Rules 62-212.400(10) (PSD), Control Technology Review; 62-4.070(3) and 62-210.200(PTE), F.A.C.]

PERFORMANCE REQUIREMENTS

3. Authorized Fuels: The biomass boiler is authorized to combust as its primary fuels sugarcane and sweet sorghum bagasse that is a byproduct from the ethanol production process. Biomass consisting of energy crops, wood chips and vegetative debris will be used as a supplemental boiler fuel. In addition, the boiler is authorized to combust natural gas for startup, shutdown and flame stabilization and also in the event of a disruption in the biomass supply. [Application No. 0550063-001-AC; Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

4. Boiler Heat Input Rate: The maximum heat input rate from all fuel combinations in the biomass boiler is 504.3 mmBtu/hr on a 4-hour average basis and 458.5 mmBtu/hr on a 24-hour average basis. Emission rates are based on the heat input of 458.5 mmBtu/hr. The permittee shall use the thermal efficiency method to calculate the boiler heat input rate, using the steam rate, steam pressure, and steam temperature measurements required per **Specific Condition 21** of this subsection, and feedwater temperature and pressure, to determine net enthalpy. The design boiler efficiency shall be used provided the boiler efficiency test required in **Specific Condition 20** of this subsection is at least 90% of the design boiler efficiency. The procedure given in Appendix ASME of this permit shall be used to measure the boiler efficiency. As an alternative, the procedures given in Appendix F of this permit may be used to calculate boiler heat input. [Application No. 0550063-001-AC; Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

5. Heat Input from Fossil Fuels: The maximum heat input capacity from combusting natural gas in the biomass boiler, as determined by the physical design of the boiler and design characteristics of the boiler burners shall be less than 250 mmBtu/hr. The maximum amount of natural gas that shall be fired in the boiler in any 12-month consecutive period is 1,021 million standard cubic feet (mmscf). [Application No. 0550063-001-AC; NSPS Subpart Db; Rules 62-4.070(3); and 62-210.200(PTE), F.A.C.]

6. Hours of Operation: The hours of operation for the biomass boiler are restricted to 8,040 hours in any consecutive 12-month period. [Application No. 0550063-001-AC; Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

7. GCP: The emission standards established by this permit rely on "good combustion practices" to reduce emissions. Therefore, all operators and supervisors shall be properly trained to operate and maintain the steam generating unit and pollution control systems in accordance with the guidelines and procedures established by each manufacturer. The training shall include GCP as well as methods of minimizing excess emissions. [Rules 62-4.070(3) and 62-212.400(5), F.A.C.]

NSPS APPLICABILITY

8. Subpart Db – Steam Generating Units: The HEF biomass boiler must meet all applicable requirements of NSPS 40 CFR 60, Subpart Db – Industrial-Commercial-Institutional Steam Generating Units. Subpart Db is contained in Appendix Db of this permit. For the HEF biomass boiler, NSPS Subpart Db contains limits for SO_2, NO_X, PM and opacity. [Application No. 0550063-001-AC and 40 CFR 60, Subpart Db]

NESHAP APPLICABILITY

9. Subpart JJJJJJ – Industrial/Commercial/Institutional Boilers: The HEF biomass boiler must meet all applicable requirements of NESHAP 40 CFR 63, Subpart JJJJJJ – Industrial/Commercial/Institutional Steam Generating Units for area sources of HAP. Subpart JJJJJJ is contained in Appendix JJJJJJ of this permit. In addition to a PM emission limit, Subpart JJJJJJ requires a biennial tune-up of the biomass boiler. [Application No. 0550063-001-AC and 40 CFR 63, Subpart JJJJJJ]

CROSS-STATE AIR POLLUTION RULE (CSAPR)

10. CSAPR Applicability: The HEF facility's biomass boiler meets the definition of a cogeneration unit in CSAPR. To be exempt from the rule, the cogeneration unit must supply 219, 000 MWh per year or less of electrical power for sale to the grid. The HEF facility shall not sell more than 219,000 MWh of electrical power to the grid in any consecutive 12 month period and thus is exempt from the CSAPR. [40 CFR Parts 51, 52, 72, 78, and 97, CSAPR and Rule 62-4.070(3), F.A.C.]

OX-CAT CATALYST LIFETIME TESTING

11. Ox-Cat Catalyst Testing: An Ox-cat system shall be installed on the biomass boiler prior to the HEF facility becoming operational. The Ox-cat system will help control CO and organic HAP emissions from the boiler. An initial 24-month test period will be conducted to determine if the alkali nature of the boiler flue gas stream will poison the Ox-cat catalyst. During this test period, the CO emission limit as given in **Specific Condition 13** of this subsection is 0.30 lb CO/mmBtu of boiler heat input on a 30-day rolling average basis. Also during this test period, the VOC emission limit as given in **Specific Condition 13** of this subsection is 0.017 lb VOC/mmBtu based on initial and annual stack tests. After 24 months of initial Ox-cat operation, a test report per **Specific Condition 12** of this subsection will be submitted to the Department describing Ox-cat performance versus time with regard to CO, VOC and organic HAP emissions. Based on this report, after public notice and comment, the Department shall modify the AC permit to either: 1) adjust the CO and VOC BACT emissions limits downward to reflect the actual long-term CO and VOC removal effectiveness of the Ox-cat system; or 2) authorize removal of the Ox-cat system. If removal of the Ox-cat system is authorized, the CO and VOC emission limits will remain 0.30 lb/mmBtu on a 30-day rolling average basis and 0.017 lb/mmBtu based on stack tests, respectively. [Rules 62-212.400(10); 62-210.200(PTE); and 62-4.070(3), F.A.C.]
12. Ox-Cat Catalyst Testing Report: Ninety days after completion of the Ox-cat system catalyst lifetime testing period, a test report shall be submitted to the Compliance Authority and the Department. At a minimum, for the duration of the testing, the report shall include: 24-hour (midnight to midnight) averages of boiler operating parameters to include heat input, steam generation, fuel mixtures (cane bagasse, sorghum bagasse, supplemental biomass fuel and natural gas) and corresponding weights of each biomass fuel used including each supplemental fuel (energy crops, wood chips and vegetative debris) and mmscf of natural gas burned; 24-hour NO_X and CO CEMS data in lb/mmBtu and lb/hr; 24-hour HCl CEMS data in lb/hr and lb/mmBtu; all VOC stack tests results in lb/mmBtu and lb/hr from the boiler stack; all HAP stack test results from both the boiler stack and ethanol process scrubber stacks in lb/mmBtu and lb/hr; all maintenance actions performed on the Ox-cat system and; if necessary, a recommendation for the Ox-cat system removal with supporting justification or any requested permit modification to allow the continued use of the Ox-cat system. Based on all the data (boiler parameters, pollutant and HAP emissions and maintenance actions) in the test report, the Department will either adjust the CO and VOC emission limits downward to reflect the CO and VOC BACT standards with the Ox-cat or allow removal of the Ox-cat system. If the Ox-cat system is removed, the CO and VOC emission limits will remain 0.30 lb/mmBtu on a 30-day rolling average basis and 0.017 lb/mmBtu based on stack tests, respectively. In addition, if the Ox-cat system is removed and HAP testing results (acid gas, organic and metal) from the boiler and ethanol process scrubbers are higher than anticipated, an enhanced HAP control strategy may be necessary to ensure the HEF facility remains a minor source for HAP emissions. This control strategy may consist of augmentation of any or all of the following: the wet sand cyclone and DSIS to improve their acid gas removal efficiency; fuel mix modifications to reduce overall HAP emissions; and ethanol process scrubber additives and/or modifications to improve organic HAP removal. [Rules 62-212.400(10); 62-210.200(PTE); and 62-4.070(3), F.A.C]

EMISSIONS STANDARDS

13. Emission Limits: Emissions from the biomass boiler at HEF facility shall not exceed the following standards.

Parameter	Limit	Basis	Compliance
NO_X [a]	0.10 lb/mmBtu	BACT	30-day rolling average by CEMS
SO_2 [b]	0.060 lb/mmBtu	BACT	30-day rolling average by CEMS
CO [c]	0.30 lb/mmBtu	BACT	30-day rolling average by CEMS [d]
SAM [e]	0.0037 lb/mmBtu	Rule 62-212.400(12), F.A.C.	Initial and Annual Stack Test
HCl [f]	9.00 TPY	Rule 62-4.070(3),F.A.C.	12-month rolled monthly by CEMS
HF [f]	0.30 lb/hr	Rule 62-4.070(3), F.A.C.	Initial and Annual Stack Tests
Σ HCl, HF, Cl_2, Organic HAP, Metal HAP [g]	19.61 TPY	Rule 62-4.070(3), F.A.C.	CEMS Data, Initial, Quarterly and Annual Stack Tests [h]
PM/PM_{10} (filterable) [i]	0.015 lb/mmBtu	BACT	Initial and Annual Stack Tests
VE [j]	10% Opacity (20% once/hr)	BACT	6-minute blocks by COMS Initial Stack Test
VOC [k]	0.017 lb/mmBtu	BACT	Initial and Annual Stack Tests
NH_3 Slip [l]	30 ppmvd @ 7% O_2	Rule 62-4.070(3), F.A.C.	Initial and Annual Stack Tests
Heat Input Rate [m]	458.5 mmBtu/hr	Rule 62-210.200(PTE), F.A.C.	24-hour, by Appendix ASME [n]
	504.3 mmBtu/hr	Rule 62-4.070(3), F.A.C.	4-hour, by Appendix ASME [n]

a. NO_X BACT limit in lb/mmBtu will ensure compliance with NSPS Subpart Db NO_X limit of 0.20 lb NO_X/mmBtu.
b. SO_2 BACT limit in lb/mmBtu will ensure compliance with NSPS Subpart Db SO_2 limit of 0.20 lb SO_2/mmBtu.
c. Initial emission rate during 24 month Ox-cat catalyst lifetime testing. After 24-month period, the CO limit may be lowered depending on catalyst lifetime testing results and CEMS emission data.
d. The limit is subject to CEMS data exclusion for startup, shutdown and malfunction.
e. SAM emission limit equals 6.82 TPY and thereby avoids the 7 TPY emission threshold that would require a BACT determination.
f. Individual HCl and HF mass emission limits to provide reasonable assurance that the annual emissions of all HAP from the HEF facility will be less than 25 TPY.
g. Sum (Σ) of the following HAP: HCl, HF, organic HAP [C_2H_4O (acetaldenhyde), C_3H_4O (acrolein), C_6H_6 (benzene), $C_{24}H_{38}O_4$ (Bis(2-ethylhexyl)phthalate), Cl_2 (chlorine), CH_2O (formaldehyde), C_8H_8 (styrene), C_7H_8 (toluene), PAH/POM (polycyclic aromatic hydrocarbon/polycyclic organic matter)] and metal HAP [Cr (chromium), Pb (lead), Mn (manganese), Ni (nickel)].
h. During each Federal fiscal year (October 1 to September 30), the emission limit is the HCl, HF, organic and metal HAP emission rates in TPY from a stack tests during the same fiscal year. While the Ox-cat catalyst system is installed, organic HAP stack testing shall be conducted annually. If the Ox-cat system is removed as a result of catalyst poisoning, quarterly organic HAP testing is required. If required, quarterly organic HAP tests shall be averaged for each fiscal year.
i. Filterable fraction as measured by EPA Method 5. By meeting this BACT emission limit, the 0.2 lb/mmBtu limit of Rule 62-296.410, F.A.C., Carbonaceous Fuel Burning Equipment, the limit of 0.03 lb/mmBtu of 40 CFR 63, Subpart JJJJJJ and the limit of 0.03 lb/mmBtu of NSPS Subpart Db will also be met.
j. During startups, shutdowns and malfunction the following limits apply: 20% opacity (6-minute blocks) except for one 6-minute block per hour of 27%. By meeting the VE BACT standard the 30% opacity except that 40% opacity for no more than 2 minutes in any hour of Rule 62-296.410, F.A.C., Carbonaceous Fuel Burning Equipment and the VE standard the 20% opacity except that 27% opacity for no more than 6 minutes in any hour of NSPS Subpart Db will also be met.
k. Initial emission rate during 24 month Ox-cat catalyst lifetime testing. After 24-month period, the VOC limit may be lowered depending on catalyst lifetime testing results and stack test emission results.
l. NH_3 slip in parts per million by dry volume at 7% oxygen (ppmvd @ 7% O_2).
m. Except for initial and annual HCl and HF stack test emission rates, 24-hour average heat input rate of 458.5 mmBtu/hr in conjunction with lb/mmBtu limits obviates the need for lb/hr emission limits. The 4-hour average of 504.3 mmBtu/hr input is included as a limit to ensure the validity of air modeling results.
n. With the approval of the Compliance Authority, the Permittee may use the method given in 40 CFR 75, Appendix. F to calculate the boiler heat input rate.

[Application No. 0550063-001-AC; Rule 62-212.400(10) (PSD), Control Technology Review; and 40 CFR 60, Subpart Db]

14. Continuous Monitoring Requirements: The permittee shall install, calibrate, maintain and operate CEMS, a COMS and a diluent monitor to measure and record the emissions of SO_2, NO_X, CO and opacity from the biomass boiler stack in a manner sufficient to demonstrate continuous compliance with the CEMS-based and COMS-based emission standards in **Condition 13** above. Each CEMS and COMS shall be installed, calibrated and properly functioning within 60 calendar days of achieving permitted capacity as defined in Rule 62-297.310(2), F.A.C., but no later than 180 calendar days after initial startup and prior to the initial performance tests. Within one working day of discovering emissions in excess of a SO_2, NO_X, CO or opacity emission limit (and subject to the specified averaging period), the permittee shall notify the Compliance Authority.

    a. *SO_2 CEMS*: The SO_2 CEMS shall be certified, operated and maintained in accordance with the requirements of 40 CFR 75. Record keeping and reporting shall be conducted pursuant to Appendix B and F in 40 CFR 60.

    b. *NO_X CEMS*: The NO_X CEMS shall be certified, operated and maintained in accordance with the requirements of 40 CFR Part 75. Recordkeeping and reporting shall be conducted pursuant to Subpart Db in 40 CFR 60 and Appendix B and F in 40 CFR 60.

    {Permitting Note: While the NO_X and SO_2 CEMS shall be operated and maintained in accordance with the requirements of 40 CFR Part 75, this emission unit is not subject to the requirements of the Acid Rain Program.}

    c. *CO CEMS*: The CO CEMS shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 4 or 4A. Quality assurance procedures shall conform to the requirements of 40 CFR 60, Appendix F. The Data Assessment Report of Section 7 shall be made each calendar quarter and reported semiannually to the Compliance Authority. The RATA tests required for the CO monitor shall be performed using EPA Method 10 in Appendix A of 40 CFR 60 and shall be based on a continuous sampling train. The CO monitor span values shall be set appropriately, considering the allowable methods of operation and corresponding emission standards.

    d. *HCl CEMS*: The HCl CEMS shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 15, EPA Method Other Test Method (OTM) 22 or alternative specifications approved by the Department. Quality assurance procedures shall conform to the requirements of 40 CFR 60, Appendix F, EPA Method OTM 22 or alternative procedures approved by the Department. A Data Assessment Report shall be made each calendar quarter and reported semiannually to the Compliance Authority. The RATA tests required for the HCl monitor shall be performed using EPA Method 26 as detailed in Appendix A of 40 CFR 63. The HCl monitor span values shall be set appropriately, considering the allowable methods of operation and corresponding emission standards. Approval of specific initial performance specifications and quality QA procedures must be provided to the Department prior to installation and operation of the CEMS.

    e. *COMS*: In accordance with 40 CFR 60.48b(a) the permittee shall install, calibrate, operate and maintain a COMS to continuously monitor and record opacity from the steam generating unit. The COMS shall be certified pursuant to 40 CFR 60 Appendix B, Performance Specification 1.

    f. *Diluent Monitor*: The oxygen (O_2) or carbon dioxide (CO_2) content of the flue gas shall be monitored at the location where CO and NO_X are monitored. Each monitor shall comply with the performance and quality assurance requirements of Appendix B and F of 40 CFR 60.

    [Rule 62-212.400(10), F.A.C.; Rule 62-210.200(PTE), F.A.C.; Rule 62-4.070(3), F.A.C.; and 40 CFR 60, Subpart Db and Appendices]

STARTUP, SHUTDOWN, AND MALFUNCTION REQUIREMENTS

15. Malfunction Notifications: In case of excess emissions resulting from malfunctions, each owner or operator shall notify the Compliance Authority in accordance with the following. If the permittee is temporarily unable to comply with any of the conditions of the permit due to breakdown of equipment or destruction by

hazard of fire, wind or by other cause, the permittee shall immediately (within one working day) notify the Compliance Authority. Notification shall include pertinent information as to the cause of the problem; and what steps are being taken to correct the problem and to prevent its recurrence; and, where applicable, the owner's intent toward reconstruction of destroyed facilities. Such notification does not release the permittee from any liability for failure to comply with Department rules. If requested by the Compliance Authority, the owner or operator shall submit a quarterly written report describing the malfunction. [Rules 62-210.700(6) and 62-4.130, F.A.C.]

16. Excess Emissions Prohibited: Excess emissions caused entirely or in part by poor maintenance, poor operation or any other equipment or process failure that may reasonably be prevented during startup, shutdown or malfunction shall be prohibited. All such preventable emissions shall be included in any compliance determinations based on CEMS data. [Rule 62-210.700(4), F.A.C.]

17. Emission Limit Compliance and Excess Emissions: Because of the long-term nature of the NO_X and SO_2 mass emission rate limits and as part of PSD and the associated BACT determination, all emissions data for these pollutants, including periods of startup, shutdown and malfunction, shall be included in any compliance determinations based on CEMS data. [Rule 62-210.700(4), 62-210.200(PTE); Rule 62-212.400(10) (PSD), Control Technology Review; and Rule 62-4.070(3), F.A.C.]

18. Excess Emissions Allowed for CO: As specified in this condition, excess emissions resulting from startup, shutdown and documented malfunctions are allowed provided that operators employ the best operational practices to minimize the amount and duration of emissions during such incidents. CO emission data exclusions resulting from startup, shutdown, or documented malfunctions shall not exceed two hours in any 24-hour period except for the specific cases listed below. A "documented malfunction" means a malfunction that is documented within one working day of detection by contacting the Compliance Authority by telephone, facsimile transmittal or electronic mail.

    a. *Cold Startup*: For a cold startup of the boiler-steam turbine system, CO emission data exclusions shall not exceed six hours in any 24-hour period. A cold "startup of the steam turbine system" is defined as startup of the boiler following a shutdown lasting at least 24 hours.

    b. *Warm Startup*: For a warm startup of the boiler-steam turbine system, CO emission data exclusions shall not exceed three hours in any 24-hour period. A warm "startup of the steam turbine system" is defined as startup of the boiler following a shutdown lasting less than least 24 hours.

    c. *Shutdown*: For shutdown of the boiler, CO emission data exclusions shall not exceed two hours in any 24-hour period. Shutdown is defined as the cessation of the operation of the boiler for any purpose after steam generation drops below 100,000 lb/hr.

19. Excess Emissions Allowed – Opacity Requirements: As provided by the authority in Rule 62-210.700(5), F.A.C., the following condition supersedes the provisions in Rule 62-210.700(1), F.A.C. During startup, shutdown and malfunctions, the stack opacity shall not exceed 20% based on a 6-minute block average, except for one 6-minute block per hour that shall not exceed 27% opacity. [Rule 62-210.700(5), 62-210.200(PTE); Rule 62-212.400(10) (PSD), Control Technology Review; and Rule 62-4.070(3), F.A.C.]

TESTING REQUIREMENTS

20. Boiler Performance Test: Within 180 days of first fire on the primary fuel (sugarcane or sweet sorghum bagasse) with natural gas used for flame stabilization, the HEF facility shall conduct a test to determine the boiler thermal efficiency. Within 180 days of first fire with sugarcane or sweet sorghum bagasse as the primary fuels and biomass (energy crops, wood chips and vegetative debris) as a supplemental fuel with natural gas for flame stabilization, the HEF facility shall conduct a test to determine the boiler thermal efficiency. Each test shall be conducted in general accord with ASME PTC 4, 1998. See Appendix ASME of this permit. The abbreviated test procedure shall be agreed upon by all parties. The test shall be conducted when firing only the specified fuels with as close of fuel mix and heating values to the boiler design fuel mix and heating values as practical and shall be at least three hours long. The boiler steam

conditions and production rate shall be monitored and recorded during the test. The primary fuel firing rate (in tons per hour and cubic feet per minute as appropriate) shall be calculated and recorded based on the steam parameters. Samples of the as-fired sugarcane or sweet sorghum bagasse and energy crops, wood chips and vegetative debris shall be analyzed for the heating value (Btu/lb) and moisture content (%). The actual heat input rate (mmBtu/hour) shall be determined using the method given in **Specific Condition 21** below. Results of the test shall be submitted to the Compliance Authority within 45 days of completion. The boiler thermal efficiency test shall be repeated during the 12-month period prior to renewal of any operation permit. If the tested boiler thermal efficiency is less than 90% of the design boiler thermal efficiency, then the tested thermal efficiency shall be used in any future calculations of the heat input rate until a new test is conducted. [Rule 62-4.070(3), F.A.C.]

21. Boiler Heat Input Rate Calculation: The permittee shall use the thermal efficiency method in **Specific Condition 4** of this subsection to calculate the boiler heat input rate. The procedure given in Appendix ASME of this permit shall be used to measure the boiler efficiency. As an alternative, the procedures given in Appendix F of this permit may be used to calculate boiler heat input. If used, Section 5 of Appendix F of 40 CFR 75 provides a methodology for calculation of the heat input rate to a boiler using F-Factors. The applicable portions of 40 CFR 75 for the calculation of the heat input rate to the biomass boiler at the HEF facility is contained in Appendix F of this permit. This procedure may be used to calculate the heat input rate in mmBtu/hr to the biomass boiler. [Rule 62-4.070(3), F.A.C. Reasonable Assurance]

22. Initial, Quarterly and Annual Stack Tests:

    a. *Acid Gas (HCl and HF) and Cl_2 HAP*: In accordance with test methods specified in this permit, the biomass boiler shall be tested to demonstrate initial compliance with the emission standards for HCl, HF and Cl_2 given in **Specific Condition 13** of this subsection. The tests shall be conducted within 60 days after achieving permitted capacity, but not later than 180 days after the initial startup of the boiler. Relative Accuracy Test Audit (RATA) test for the HCl CEMS can constitute the initial stack tests for this pollutant. Compliance stack tests for HF and Cl_2 shall also be conducted once during each federal fiscal year (October 1st to September 30th). Tests shall be conducted between 90% and 100% of the maximum heat input rate when firing either sugarcane or sweet sorghum bagasse as the primary fuel. CEMS data for CO, NO_X, SO_2 and HCl along with COMS data for opacity shall be reported for each run of the required HF stack test.

    b. *Organic HAP*: In accordance with test methods specified in this permit, the biomass boiler shall be tested to demonstrate initial compliance with the organic HAP emission standards given in **Specific Condition 13** of this subsection. The tests shall be conducted within 60 days after achieving permitted capacity, but not later than 180 days after the initial startup of the boiler. If the Ox-cat system is installed, compliance stack tests for organic HAP shall also be conducted once during each federal fiscal year (October 1st to September 30th). If the Ox-cat system is removed due to catalyst poisoning, organic HAP compliance stack tests shall be conducted quarterly during each federal fiscal year. Tests shall be conducted between 90% and 100% of the maximum heat input rate when firing either sugarcane or sweet sorghum bagasse as the primary fuel. CEMS data for CO, NO_X and SO_2 along with COMS data for opacity shall be reported for each run of the required organic HAP stack tests

    c. *Other Pollutants and Metal HAP*: In accordance with test methods specified in this permit, the biomass boiler shall be tested to demonstrate initial compliance with the emission standards for PM, VOC, SAM, anhydrous ammonia slip (NH_3) and metal HAP given in **Specific Condition 13** of this subsection. The tests shall be conducted within 60 days after achieving permitted capacity, but not later than 180 days after the initial startup of the boiler. Subsequent compliance stack tests for ammonia slip, SAM, PM, VOC and metal HAP shall also be conducted during each federal fiscal year (October 1st to September 30th). Tests shall be conducted between 90% and 100% of the maximum heat input rate when firing only the primary fuels. CEMS data for CO, NO_X and SO_2 along with COMS data for opacity shall be reported for each run of the required stack tests for ammonia slip, SAM, PM, VOC and metal HAP.

    [Rules 62-212.400(5)(c) and 62-297.310(7)(a) and (b), F.A.C.; and 40 CFR 60.8]

{Permitting Note: All initial tests must be conducted between 90% and 100% of permitted capacity; otherwise, this permit will be modified to reflect the true maximum capacity as constructed.}

23. Test Methods: Any required stack tests shall be performed in accordance with the following methods.

EPA Method	Description of Method and Comments
CTM-027 320	Measurement of Ammonia Slip *or* Measurement of Vapor Phase Organic and Inorganic Emissions by Extractive Fourier Transform Infrared (FTIR) Spectroscopy
1 - 4	Determination of Traverse Points, Velocity and Flow Rate, Gas Analysis and Moisture Content *{Notes: Methods shall be performed as necessary to support other methods.}*
5	Determination of Particulate Matter Emissions from Stationary Sources
6C	Measurement of SO_2 Emissions (Instrumental)
7E	Measurement of NO_X Emissions (Instrumental)
8	Determination of Sulfuric Acid and Sulfur Dioxide Emissions from Stationary Sources
9	Visual Determination of Opacity
10	Determination of Carbon Monoxide Emissions from Stationary Sources
10B	Measurement of CO Emissions (Instrumental) *{Note: The method shall be based on a continuous sampling train.}*
18	Measurement of Gaseous Organic Compound Emissions (Gas Chromatography) *{Note: EPA Method 18 may be used (optional) concurrently with EPA Method 25A to deduct emissions of methane and ethane from the total hydrocarbons (THC) emissions measured by Method 25A.}*
19	Calculation Method for NO_X, PM and SO_2 Emission Rates
OTM-22	Specifications and Test Procedures for HCl CEMS at Stationary Sources
25	Determination of Total Gaseous Nonmethane Organic Emissions as Carbon
25A	Measurement of Gaseous Organic Concentrations (Flame Ionization)
26	Determination of Hydrogen Halide and Halogen Emissions from Stationary Sources (Non-Isokinetic Method)
26A	Determination of Hydrogen Halide and Halogen Emissions from Stationary Sources (Isokinetic Method)
29	Metals Emissions from Stationary Sources

Method CTM-027 is published on EPA's Technology Transfer Network Web Site at http://www.epa.gov/ttn/emc/ctm.html . The other methods are specified in Appendix A of 40 CFR 60, adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Compliance Authority and the Office of Permitting and Compliance. [Rules 62-204.800, F.A.C. and 40 CFR 60, Appendix A]

OTHER MONITORING REQUIREMENTS

24. Steam Parameters: In accordance with the manufacturer's recommendations, the permittee shall install, calibrate, operate and maintain continuous monitoring and recording devices on the biomass boiler for the following parameters: feedwater temperature and pressure, steam temperature (°F), steam pressure (psig) and steam production rate (lb/hour). In addition, the hourly heat input rate to the biomass boiler shall be recorded and reported. Records shall be maintained on site and made available upon request. [Applicant's Request; Rules 62-4.070(3) and 62-212.400(5), F.A.C.]

25. Fuel Flow Meter: A fuel flow meter shall be installed on the biomass boiler to record the amount of natural gas used in the boiler on a monthly and 12-month rolling average basis. [Rule 62-4.070(3), Reasonable Assurance]

26. SNCR Urea or NH_3 Injection Rate: In accordance with the manufacturer's specifications, the permittee shall install, calibrate, operate and maintain a flow meter to measure and record the urea or NH_3 injection rate for the SNCR system for the biomass boiler. The permittee shall document the general range of urea or NH_3 flow rates required to meet the NO_X standard over the range of load conditions by comparing NO_X emissions with urea or NH_3 flow rates. During NO_X CEMS downtimes or malfunctions, the permittee shall operate at a urea or NH_3 flow rate that is consistent with the documented flow rate for the given load condition. Urea or NH_3 injection records shall be maintained on site and made available upon request. [Rules 62-4.070(3) and 62-212.400(5), F.A.C.]

RECORDS AND REPORTS

27. Stack Test Reports: In addition to the information required in Rule 62-297.310(8), F.A.C., each stack test report shall also include the following information: steam production rate (lb/hour), heat input rate (mmBtu/hour), calculated authorized fuels firing rate (tons/hour and cubic feet per minute as appropriate) and emission rates (lb/mmBtu, ppmvd @ 7% oxygen and lb/hr as appropriate). Results from any HAP emission rate stack tests conducted during the period addressed by the stack test report shall be included. [Rule 62-4.070(3), F.A.C.]

28. Monthly Operations Summary: By the tenth calendar day of each month, the permittee shall record the following parameters for the biomass boiler in a written or electronic log for the previous month of operation: hours of operation, tons of sugarcane and sweet sorghum bagasse, tons of supplemental biomass and cubic feet of natural gas, pounds of steam, total heat input rate and the updated 12-month rolling totals for each of these operating parameters. Cubic feet of natural gas used shall be recorded in a written or electronic log for the previous month of operation along with the updated 12-month rolling total. The Monthly Operations Summary shall be maintained on site and made available for inspection when requested by the Department. [Rules 62-4.070(3) and 62-212.400(BACT), F.A.C.]

29. Annual CO, NO_X, SO_2, HCl, HF, Organic HAP and Opacity Emissions Report: Within 30 days following the end of each federal fiscal year (October 1st to September 30th), the permittee shall submit a report to the Compliance Authority summarizing CO, NO_X, SO_2, HCl, and organic HAP (if Ox-cat system is removed) and opacity emissions including periods of startups, shutdowns, malfunctions, and CEMS and COMS systems monitor availability for the previous quarter. If opacity COMS data is excluded from a compliance determination during the quarter due to a startup, shutdown or malfunction, the permittee shall include a description of the malfunction, the actual emissions recorded and the actions taken to correct the malfunction. See Appendix CTR of this permit for the reporting format. [Rules 62-4.070(3), 62-4.130, and 62-210.400(5)(c), F.A.C.]

C. Cooling Towers (EU-003)

This section of the permit addresses the following emissions units.

ID No.	Emission Unit Description
003	*Cooling Towers*: The HEF facility will have up to three mechanical draft cooling towers. The cooling towers will be used for the cooling of miscellaneous machinery, the condensing set and the process equipment used in ethanol production at the HEF facility. [Application No. 0550063-001-AC]

EQUIPMENT

1. Cooling Towers: The permittee is authorized to construct up to three cooling towers to provide cooling to miscellaneous machinery, the condensing set and process equipment used in ethanol production at the HEF facility. Typical design parameters for the cooling towers are: one cell with a stack height of 35 feet, a circulating water flow rate of 34,000 gallons per minute (gpm), a temperature of 77 °F and a design drift rate of 0.001%. [Application No. 0550063-001-AC and Rule 62-210.200 (PTE), F.A.C.]

PERFORMANCE RESTRICTIONS

2. Hours of Operation: The hours of operation of this emission unit are not limited (8,760 hours per year). [Application No. 0550063-001-AC and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

3. Total Dissolved Solids (TDS): The makeup water used in the cooling towers shall contain no more than 500 parts per million by weight (ppmw) of TDS on an annual basis. The makeup water in the cooling towers must be tested weekly for TDS using any of the five approved methods in 40 CFR, Part 136. These methods are: US EPA 160.2; US Geological Survey Method I-3765-85; Standard Method 2540 D 18th Edition; Standard Method 2540 D 19th Edition; and Standard Method 2540 D 20th Edition. Records of each test must be kept on site and made available to the Compliance Authority upon request. [62-4.070(3), F.A.C. Reasonable Assurance]

EMISSIONS STANDARDS

4. Drift Rate: Within 60 days of commencing operation, the permittee shall certify that the cooling towers were constructed to achieve the specified drift rate of no more than 0.001% of the circulating water flow rate. [Rule 62-212.400(BACT), F.A.C.]

   {Permitting Note: The applicant estimates PM and PM_{10} emission from the cooling towers to be 0.37 and 0.19 TPY, respectively.}

5. VOC Emissions: The permittee shall control VOC emissions by promptly repairing any leaking components in accordance with the approved LDAR plan. The permittee shall collect a sample of cooling water on a weekly basis from miscellaneous machinery and process equipment cooling towers and analyze it for VOCs to enable the early detection of leaking heat exchangers and thereby minimizing VOC emissions from the cooling towers.
   [Application No. 0550063-001-AC; Rules 62-210.200 (PTE), 62-212.400(BACT) and 62-4.070, F.A.C. Reasonable Assurance; 40 CFR 60 NSPS, Subpart VVa]

   {Permitting Note: These work practice standards are established as BACT for PM/PM_{10} and VOC emissions from the cooling towers.}

TESTING AND MONITORING REQUIREMENTS

6. VOC Cooling Water Monitoring Plan: A monitoring plan in compliance with NSPS Subpart VVa detailing how the cooling tower water shall be monitored for VOC contamination from leaking heat exchangers as required by **Specific Condition 5** above shall be submitted to the Compliance Authority for approval no later than 180 days before the HEF facility becomes operational.
   [Application No. 0550063-001-AC; Rule 62-210.200 (PTE), F.A.C.; Rule 62-212.400(BACT), F.A.C.; and Rule 62-4.070, F.A.C. Reasonable Assurance]

7. VOC Water Testing Frequency: Testing of the cooling water shall be conducted weekly unless VOC contamination is found during one of the weekly tests as compared to the baseline VOC concentration of the makeup water. Then daily testing will be required until the mechanical leak is corrected and no VOC contamination is detected in the cooling tower water as compared to the makeup water baseline. [Application No. 0550063-001-AC; Rule 62-210.200 (PTE), F.A.C.; Rule 62-212.400(BACT), F.A.C.; and Rule 62-4.070, F.A.C. Reasonable Assurance]

8. Notification: The permittee shall notify the Compliance Authority in writing within one working day after VOC contamination of the cooling tower water is discovered. Additionally, the permittee shall submit a plan to correct the problem within 7 calendar days for the approval of the Compliance Authority. [Application No. 0550063-001-AC; Rule 62-210.200 (PTE), F.A.C.; Rule 62-212.400(BACT), F.A.C.; and Rule 62-4.070, F.A.C. Reasonable Assurance]

RECORDS AND REPORTS

9. Monitoring Test Reports: The permittee shall prepare and submit reports for all required monitoring tests in accordance with the requirements specified in Appendix CTR (Common Testing Requirements) of this permit, including descriptions of any VOC contamination discovered and the corrective action taken. [Rule 62-297.310(8), F.A.C.]

D. Ethanol Production Process (EU-004)

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
004	Ethanol Production Process: The maximum design ethanol production rate is 120,000 gallons per day (gpd) and 36 MGPY. This emission unit consists of the following major processes: *Juice Filtration and Juice Evaporation*: After the juice extraction step described in subsection 3A is completed, the juice is pumped to a juice screen which separates fine particles prior to evaporation. Fine particles are recycled into the diffuser where they ultimately become part of the bagasse. The screened juice is then sent to the juice storage tank. The juice pH is adjusted as necessary to control corrosion. The evaporation process concentrates the sucrose juices extracted in the diffuser. The extracted juice is pumped from the juice storage tank to a multiple effect evaporator, where the juice is concentrated from 14% to 22% total solids. *Pre-Fermentation and Fermentation*: During fermentation, sugars contained in the concentrated juice are transformed to ethyl alcohol, CO_2 and various secondary products utilizing yeast. The fermentation process is a four-step continuous fermentation preceded by an agitated pre-fermenter, which serves as a yeast propagator and to initially acclimate the yeast to the fermentation conditions. Sulfuric acid is used to adjust the pH. The cooled, concentrated juice along with the yeast and urea (added as a nutrient) are fed to the pre-fermenter. The pre-fermenter continuously recirculates the ferment through a heat exchanger to keep the temperature in the optimum range for fermentation. The ferment is continuously transferred from the pre-fermenter to the first fermenter based on level. There are a total of four agitated fermenters in the series, each having controlled temperature and controlled additions of urea and yeast to maintain optimum fermentation conditions. Flow is maintained from one fermenter to another based on level. The product of fermentation, called "beer," has a weak ethanol solution along with the residue of fermentation components. *Distillation*: In distillation, the filtered beer from fermentation, with an alcohol concentration of approximately 8% by weight, is distilled to approximately 96% hydrated alcohol. The alcohol stream is increased to 91% by weight of ethanol concentration in the rectifier column. Rectifier overhead vapor is sent to the molecular sieve units to further remove water to less than 0.7% by weight in the ethanol product. Propanol and fusel oils are removed from the lower section of the rectifier column and combined with the 91% ethanol vapor which goes to the molecular sieves. *Vinasse Evaporation*: The beer column bottom stillage, called vinasse, is cooled using the incoming beer as the heat sink and sent to storage. From the storage, the vinasse is evaporated to 40% solids using a combination of several waste heat sources and live steam in three sets of multiple effect evaporators. The concentrated vinasse is stored and then loaded onto trucks for shipment to be utilized for animal feed. *Dehydration*: The final stage in the ethanol production process is dehydration. Hydrated alcohol from the distillation process, at about 96% by volume alcohol, undergoes dehydration with a molecular sieve to produce ethanol at 99.3% by weight purity. The process is performed in a continuous operation where the hydrated alcohol is superheated by steam in a shell and tube heat exchanger to ensure that the ethanol stream is always in the vapor phase as it passes through molecular sieve zeolite beds. The final ethanol product is condensed, cooled and sent to the 200-proof storage tank

EQUIPMENT

The permittee is authorized to construct the following equipment used during the production of ethanol and to control VOC emissions from the process:

D. Ethanol Production Process (EU-004)

1. Juice Extraction: The permittee is authorized to construct the following major components of a juice extraction system: revolving cane and sorghum high efficiency knives; heavy-duty shredder; high speed belt conveyor; chainless horizontal diffuser; various juice receivers; juice heaters; lime mixing tank; dewatering drum; and raw juice tank.
2. Juice Treatment and Evaporation: The permittee is authorized to construct the following major components of a juice treatment and evaporation system: rotary screens; juice evaporator; and clean and foul condensate tanks.
3. Pre-Fermentation and Fermentation: The permittee is authorized to construct the following major components of a pre-fermentation and fermentation system: a sulfuric acid tank; a urea tank; yeast mixing tank; pre-fermenter; pre-fermenter cooler; fermenters; fermenter coolers; beer well tank; beer/sucrose heat exchanger; and CO_2 scrubbing column.
4. Distillation: The permittee is authorized to construct the following major components of a distillation system: beer distillation column; degassing column; degassing condenser; stripping column; rectification column; heat exchangers; fusel oil decanter; hydrated alcohol tank; CO2 washing column; and scrubber water degasser.
5. Dehydration: The permittee is authorized to construct the following major components of a dehydration system: hydrated alcohol heater; zeolite absorber (molecular sieve); condensers and coolers; filter; dehydrated alcohol holding tank; and tie-in to CO_2 scrubbing column.
6. Vinasse Evaporation: The permittee is authorized to construct the following major components of a vinasse evaporation system: multiple effect evaporators; raw and concentrated vinasse storage vessels; and a load out system.
7. Air Pollution Control Equipment: The permittee shall install one liquid scrubber to control VOC emissions from the pre-fermentation and fermentation system, and one liquid scrubber to control VOC emissions from the distillation/dehydration systems. The liquid scrubbers shall have a design control efficiency of 98% and use a liquid with additives, as necessary, that ensures this degree of control is achievable. Emissions from the pre-fermentation/fermentation liquid scrubber shall discharge through a stack with a design height of 25 ft (minimum), a design diameter of 4.9 ft (maximum) at a design exit temperature of 70 °F and a design flow rate of 4,223 acfm. Emissions from the distillation/dehydration liquid scrubber shall discharge through a vent with a flow rate of 120 acfm.

   [Application No. 0550063-001-AC; Rules 62-212.400 (BACT); 62-4.070, Reasonable Assurance and 62-210.200(PTE), F.A.C.]

PERFORMANCE RESTRICTIONS

8. Hours of Operation: The hours of operation of the ethanol production process are limited to 8,040 hours in any consecutive twelve month period. [Applicants Request; Rules 62-212.400 (BACT); 62-4.070, Reasonable Assurance and 62-210.200(PTE), F.A.C.]

EMISSIONS STANDARDS

9. VOC Standard: The ethanol process emission unit shall not discharge VOC through the fermentation liquid scrubber stack in excess of 19.01 lb/hr (76.41 TPY) and through the distillation/dehydration liquid scrubber vent in excess of 2.78 lb/hr (11.19 TPY). [Application No. 0550063-001-AC; Rules 62-212.400 (BACT); 62-4.070, Reasonable Assurance and 62-210.200(PTE), F.A.C.]
10. Organic HAP Standard: The ethanol process emission unit shall not discharge organic HAP through the fermentation liquid scrubber stack and through the distillation/dehydration liquid scrubber vent in a combined amount in excess of 1.05 lb/hr (4.24 TPY). Testing of organic HAP shall include at a minimum tests for methanol, acrolein, acetone, acetaldehyde and ethyl acetate. [Application No. 0550063-001-AC; Rules 62-212.400 (BACT); 62-4.070, Reasonable Assurance and 62-210.200(PTE), F.A.C.]

TESTING REQUIREMENTS

11. Initial Compliance Tests: The fermentation liquid scrubber stack and the distillation/dehydration liquid scrubber vent shall be tested to demonstrate initial compliance with the emissions standards for VOC and HAP given in **Specific Conditions 9 and 10**, of this subsection respectively. The initial tests shall be conducted within 60 days after achieving permitted capacity, but not later than 180 days after initial operation of the unit. During scrubber VOC and organic HAP testing, the water temperatures of each scrubber shall be measured and recorded

    a. *VOC Testing*: VOC testing shall be done using of EPA Methods 25 or 25A to show compliance with the VOC emissions limit. [Rules 62-212.400 (BACT); 62-4.070, Reasonable Assurance; 62-210.200(PTE); and 62-297.310(7)(a)1, F.A.C.]

    b. *Organic HAP Testing*: Initial organic HAP testing shall be done using Method 320 to show compliance with the organic HAP emissions limit and to identify the key organic HAP emitted by the ethanol process scrubbers. [Rules 62-212.400 (BACT); 62-4.070, Reasonable Assurance; 62-210.200(PTE); and 62-297.310(7)(a)1, F.A.C.]

12. Annual and Quarterly Compliance Tests: During the first 24 months of the HEF facility operation, VOC and organic HAP testing shall be conducted annually during each federal fiscal year (October 1st to September 30th) to demonstrate compliance with the emissions standard for VOC and organic HAP given in **Specific Conditions 9 and 10**, of this subsection respectively. During scrubber VOC and organic HAP testing, the water temperatures of each scrubber shall be measured and recorded.

    a. *VOC Testing*: If after 24 months, the Ox-cat system is removed as per **Specific Condition 3.b.12**, quarterly VOC testing shall be required during each subsequent federal fiscal year to demonstrate compliance with the emissions standard for VOC using EPA Methods 25 or 25A. If the Ox-cat system is not removed, VOC testing shall continue on an annual basis during each federal fiscal year. [Rules 62-212.400 (BACT); 62-4.070, Reasonable Assurance; 62-210.200(PTE); and 62-297.310(7)(a)4, F.A.C.]

    b. *Organic HAP Testing*: Annual organic HAP testing shall be done using EPA Method 320. In lieu of Method 320, Method 18 may be used once the key organic HAP emitted by the ethanol process scrubbers are identified during initial compliance testing. If after 24 months, the Ox-cat system is removed as per **Specific Condition 3.b.12**, quarterly organic HAP testing shall be required during each subsequent federal fiscal year to demonstrate compliance with the emissions standard for organic HAP. The applicant may propose alternative methods to fulfill the annual and quarterly organic HAP testing requirements. The alternative method could utilize EPA Methods TO-14A or TO-15 where the scrubber flue gas is collected in specially prepared canisters with subsequent analysis by gas chromatography mass spectrometry (GC/MS). The permittee shall submit to the Office of Permitting and Compliance an organic HAP testing protocol for approval prior to the initiation of annual and quarterly (if required) testing activities. The annual organic HAP testing shall follow the approved testing protocol. The quarterly organic HAP testing (if required) shall follow the approved testing. If the Ox-cat system is not removed, organic HAP testing shall continue on an annual basis during each federal fiscal year. [Rules 62-212.400 (BACT); 62-4.070, Reasonable Assurance; 62-210.200(PTE); and 62-297.310(7)(a)4, F.A.C.]

13. Test Requirements: The permittee shall notify the Compliance Authority in writing at least 15 days prior to any required tests. Tests shall be conducted in accordance with the applicable requirements specified in Appendix CTR (Common Testing Requirements) of this permit. [Rule 62-297.310(7)(a)9, F.A.C.]

14. Test Methods: Required tests shall be performed in accordance with the following reference methods.

Method	Description of Method and Comments
CTM-027	Measurement of Vapor Phase Organic and Inorganic Emissions by Extractive

Method	Description of Method and Comments
320	Fourier Transform Infrared (FTIR) Spectroscopy
1-4	Traverse Points, Velocity and Flow Rate, Gas Analysis and Moisture Content
18	Measurement of Gaseous Organic Compound Emissions by Gas Chromatography
25	Determination of Total Gaseous Nonmethane organic Emissions as Carbon
25A	Method for Determining Gaseous Organic Concentrations (Flame Ionization)
TO-14A	Determination Of Volatile Organic Compounds (VOCs) in Ambient Air Using Specially Prepared Canisters with Subsequent Analysis by Gas Chromatography
TO-15	Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography Mass Spectrometry (GC/MS)

The above methods are described in Appendix A of 40 CFR 60 and are adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Department. [Rules 62-204.800 and 62-297.100, F.A.C.; and Appendix A of 40 CFR 60]

MONITORING REQUIREMENTS

15. Liquid Scrubbers Monitoring Requirements:
    a. Scrubbers Operating Parameters: The permittee shall install, calibrate, operate and maintain monitoring devices that continuously measure and record the total pressure drop across each scrubber. If the total pressure drop cannot be measured for the scrubber, then the liquid flow rate and the fan amps shall be measured and recorded for the scrubber. Accuracy of the monitoring devices shall be ± 5% over the operating range. The temperature of each scrubber's water shall be measured daily and recorded. All records pertaining to the scrubbers shall be provided to the compliance authority upon request.
    b. Scrubbers Guarantee: Prior to installation of the scrubber, the permittee shall submit to the Compliance Authority the proposed design information, including water additives, along with a manufacturer's guarantee that the scrubbers are capable of meeting the emission limitations established by the VOC BACT determination. [Rule 624.070(3), F.A.C.; Rule 62-297.310 and Rule 62-212.400, F.A.C.]

RECORDS AND REPORTS

16. Test Reports: The permittee shall prepare and submit reports for all required tests in accordance with the requirements specified in Appendix CTR (Common Testing Requirements) of this permit. In addition, the test reports shall include each scrubber's water temperature during VOC and organic HAP testing and the preceding 12 monthly averages of each scrubber's water temperature. [Rule 62-297.310(8), F.A.C.]
17. Notification, Recordkeeping and Reporting Requirements: The permittee shall maintain records of the amount of ethanol produced on a daily, monthly and 12-month rolling total basis along with the feed rate (sugarcane, sweet sorghum, sweet sorghum syrup and molasses and sugarcane syrup and molasses) into the ethanol production process emission unit on a monthly basis and 12-month rolling total basis. These records shall be submitted to the Compliance Authority on an annual basis or upon request.
    [Rule 62-4.070(3), F.A.C.]

E. Storage Tanks (EU-005)

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
005	Storage Tanks: This emissions unit consists of volatile organic liquid (VOL) storage tanks for ethanol, denaturant/gasoline, and corrosion inhibitor. Up to 1 million gallons of fuel ethanol will be stored. The tanks will be internal floating roof design, except for the small corrosion inhibitor storage tank, ethanol process tanks and miscellaneous tanks.

Tanks will be used during the ethanol production process to store ethanol, byproducts and intermediate products. In addition, the purified ethanol and gasoline (denaturant) will be stored in tanks and then blended, resulting in a denatured product. The denatured ethanol product will have dedicated storage tanks. Anhydrous ammonia or urea will be stored in a tank for use in the SNCR system for boiler NO_X control. ULSD fuel oil will be stored in a tank for use in emergency equipment.

EQUIPMENT

1. The permittee is authorized to construct the following tanks to store VOL at the HEF facility:
   a. *VOL Blending and Storage Tanks*:
      - Fuel Ethanol Tank: The permittee is authorized to construct one nominal 1,000,000 gallon ethanol product storage tank with a fixed roof and internal floating roof to minimize VOC emissions per 40 CFR 60.110b(a)(2).
      - 200 Proof Ethanol Tank: The permittee is authorized to construct one nominal 100,000 gallon, 200 proof ethanol storage tank with a fixed roof and internal floating roof to minimize VOC emissions per 40 CFR 60.110b(a)(2).
      - Off-Specification Tank: The permittee is authorized to construct one nominal 100,000 gallon tank to store off-specification ethanol product with a fixed roof and internal floating roof to minimize VOC emissions per 40 CFR 60.110b(a)(2).
      - Denaturant /Gasoline Product Storage Tank: The permittee is authorized to construct one nominal 100,000 gallon denatured/gasoline storage tank with a fixed roof and an internal floating roof to minimize VOC emissions as per 40 CFR 60.110b(a)(2).

        [Application No. 0550063-001-AC and NSPS 40 CFR 60, Subpart Kb]
      - *Ethanol Production Process Tanks*: As required, the permittee is authorized to install the following storage tanks required by the ethanol production process: Fusel Oil Storage Tank; Hydrated Alcohol Storage Tank; Final Product Metering Tank; Second Grade Alcohol Storage Tank; and Fusel Oil Alcohol Storage Tank. [Application No. 0550063-001-AC]

   b. *Other Tanks*:
      - Anhydrous Ammonia or Urea Storage Tank: The permittee is authorized to construct one nominal 5,000 gallon tank to store anhydrous ammonia or urea for the SNCR system. In accordance with 40 CFR 60.130, the storage of anhydrous ammonia or urea shall comply with all applicable requirements of the Chemical Accident Prevention Provisions in 40 CFR 68.
      - ULSD Fuel Oil Storage Tank: The permittee is authorized to construct one nominal 5,000 gallon tank to store ULSD fuel oil for use in emergency equipment.
      - Sulfuric Acid Storage Tank: The permittee is authorized to construct one tank to store sulfuric acid for use in the ethanol production process to adjust pH. In accordance with 40 CFR 60.130, the storage of sulfuric acid shall comply with all applicable requirements of the Chemical Accident Prevention Provisions in 40 CFR 68.
      - Corrosion Inhibitor Tank: The permittee is authorized to construct one nominal 2,300 gallon tank to store methanol, xylene and ethylbenzene that will be used as a corrosion inhibitor at the HEF facility.

[Application No. 0550063-001-AC]

PERFORMANCE RESTRICTIONS

2. Permitted Capacity: The maximum throughput (process) rate in gallons per year for this emissions unit is 36 million gallons of pure ethanol and 37.62 million gallons of denatured ethanol product in any consecutive twelve month period. [Application No. 0550063-001-AC and Rule 62-4.070, F.A.C. Reasonable Assurance]

3. Hours of Operation: The hours of operation of this emissions unit are not restricted (8,760 hours per year). [Application No. 0550063-001-AC and Rule 62-210.200(PTE), F.A.C.]

NSPS SUBPART Kb APPLICABILITY

4. VOL Blending and Storage Tanks: The four Blending and Storage tanks at the HEF facility are subject to NSPS Subpart Kb which applies to any storage tank for which construction, reconstruction, or modification is commenced after July 23, 1984 with a capacity greater than or equal to 151 cubic meters (m^3) or 39,990 gallons that is used to store a VOL with a maximum true vapor pressure greater than or equal to 3.5 kilopascals (kPa) or 0.51 pounds per square inch (psi). The four Blending and Storage tanks each have a capacity greater than 40,000 gallons and store liquids with maximum true vapor pressures greater than 3.5 kPa and consequently are subject to and must comply with the provisions of NSPS 40 CFR 60, Subpart Kb. [Application No. 0550063-001-AC and NSPS 40 CFR 60, Subpart Kb]

5. Ethanol Production Process, Ammonia/Urea and Sulfuric Acid Storage and Corrosion Inhibitor Tanks: The five Ethanol Production Process storage tanks, the ammonia or urea storage tank, the sulfuric acid storage tank and corrosion inhibitor tank at the HEF facility are not subject to NSPS Subpart Kb. These tanks are exempt because either they have a capacity less than 75 m^3 or 19,813 gallons or they have a capacity greater than or equal to 19,813 gallons but less than 39,990 gallons (151 m^3) and store a liquid with a maximum true vapor pressure less than 15 kPa (2.18 psi). [Application No. 0550063-001-AC]

6. ULSD Fuel Oil Storage Tank: The ULSD fuel oil storage tank at the HEF facility is not subject to NSPS Subpart Kb because it has a capacity of less than 19,813 gallons (75 m^3) and stores a liquid with a maximum true vapor pressure less than 3.5 kPa (0.51 psi). [Application No. 0550063-001-AC]

EMISSIONS STANDARDS

7. VOC Standard for Blending and Storage Tanks: Emissions of VOC from the Blending and Storage tanks will be controlled by the proper construction of the tanks per 40 CFR 60.110b(a)(2) which requires internal floating roofs in the tanks or the equivalent. In lieu of internal floating roofs in the Blending and Storage tanks, HEF may use pressure relief valves provided that these meet the equivalency requirements of NSPS, Subpart Kb. If HEF decides to use pressure relief valves in lieu of internal floating roofs, it must provide to the Compliance Authority, 90 days before construction of the Blending and Storage VOL tanks commences, proof of the valves equivalency as defined in the NSPS.
[Application No. 0550063-001-AC; Rule 62-212.400 (BACT), F.A.C. and Rule 62-4.070, F.A.C. Reasonable Assurance]

8. VOC Standard for Ethanol Production Process Storage Tanks: Emissions of VOC from the Ethanol Production Process storage tanks will be controlled by the use of pressure relief valves or vapor condensers. [Application No. 0550063-001-AC; Rule 62-212.400 (BACT), F.A.C. and Rule 62-4.070, F.A.C. Reasonable Assurance]

RECORDS AND REPORTS

9. Storage Tank Records: The permittee shall keep readily accessible records showing the dimension of the storage tanks and an analysis showing the capacity of the storage tanks. Records shall be retained for the life of the facility. The permittee shall also keep records sufficient to determine the annual throughput of the various liquids for the storage tanks for use in the Annual Operating Report. [Rule 62-4.070(3) F.A.C]

E. Storage Tanks (EU-005)

10. NSPS Subpart Kb Reporting and Recordkeeping for Blending and Storage Tanks: The owner or operator of each storage vessel as specified in §60.112b(a) shall keep records and furnish reports as required by paragraphs (a), (b), or (c) of §60.115b Reporting and Recordkeeping Requirements. The owner or operator shall keep copies of all reports and records required by§60.115b, except for the record required by (c)(1), for at least 2 years. The record required by (c)(1) will be kept for the life of the control equipment. [Rule 62-4.070(3) F.A.C and NSPS 40 CFR 60, Subpart Kb]

F. Truck Rack Product Loadout and Flare (EU-006)

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
006	Truck Rack Product Loadout and Flare: The denatured blended ethanol product from the VOL Blending and Storage tanks will be loaded out to tanker trucks or railcars with displaced vapors sent to a product loadout flare for destruction.

The denatured ethanol product will be loaded onto tank trucks or railcars at a maximum rate of 600 gpm. Also E-85 product (85% ethanol and 15% gasoline fuel blend) may be loaded out via in-line blending. The maximum throughput rate of denatured ethanol product is 37,620,000 gallons per year (gpy). Vapors displaced from the trucks/railcars will be combusted by a product loadout flare. The product loadout flare will have a nominal rated heat input capacity of 9.8 mmBtu/hr to control vapors displaced from the tanker trucks or railcars during the loading of the denatured ethanol product. The flare will have a design control efficiency of 98%.

EQUIPMENT

1. Loading Rack: The permittee is authorized to construct a loading rack that is designed to transfer 600 gpm (37,620,000 gpy) of denatured ethanol product or E-85 product to tanker trucks or railcars. [Application No. 0550063-001-AC and 62-210.200(PTE), F.A.C.]

2. Flare System: The permittee is required to construct one flare system with a continuous pilot and combustion chambers to destroy displaced vapors during truck/railcar loadout. The flare shall be operated with a pilot flame present at all times. The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame. [Application No. 0550063-001-AC and 62-210.200(PTE), F.A.C.]

PERFORMANCE RESTRICTIONS

3. Approximate Capacities: The flare system is designed to combust vapors displaced from the trucks/railcars during the loading of the denatured ethanol product or E-85 product. The trucks and railcars are assumed to not be in dedicated denatured ethanol product service (i.e., some trucks/railcars will have returned from delivering gasoline and gasoline vapors will be displaced). The product loadout flare will have a rated capacity of 9.8 mmBtu/hr. Natural gas or propane will be used as the fuel for the pilot flame. The pilot fame will have a rated capacity of 0.184 mmBtu/hr and will utilize natural gas. [Application No. 0550063-0010-AC and Rule 62-210.200(PTE), F.A.C.]

4. Hours of Operation: The flare shall be operated at all times when truck or railcar loading operations are taking place. Only denatured ethanol product or E-85 product shall be loaded into the trucks or railcars. Although the hours of operation of the pilot for the flare system are not limited (8,760 hours per year) the flare itself and product loadout is limited to 3,120 hours per year. [Application No. 0550063-001-AC; Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

EMISSIONS STANDARDS

5. VE Standard: The flare shall be designed for and operated with no VE except for periods not to exceed a total of 5 minutes during any 2 consecutive hours. [Rule 62-4.070(3), F.A.C. and NSPS 40 CFR 60, Subpart A]

NSPS SUBPART A APPLICABILITY

6. General Control Device Requirements: The product loadout flare associated with this emission unit must meet all applicable requirements of §60.18, General Control Device Requirements. [NSPS Subpart A and Rule 62-4.070(3), F.A.C.]

TESTING AND MONITORING REQUIREMENTS

7. VE Compliance Tests: The flare system exhaust shall be tested to demonstrate initial compliance with the VE standard given in **Condition 5** of this subsection no later than 180 days after initial operation and during

each federal fiscal year (October 1st to September 30th) thereafter. EPA Method 22 VE compliance test(s) shall be used to determine the compliance of the flare with the visible emission requirements. The observation period is 2 hours and shall be used according to Method 22. [Rule 62-4.070(3), F.A.C.]

8. Test Requirements: The permittee shall notify the Compliance Authority in writing at least 15 days prior to any required tests. Tests shall be conducted in accordance with the applicable requirements specified in Appendix CTR (Common Testing Requirements) of this permit. [Rule 62-297.310(7)(a)9, F.A.C.]

9. Test Methods: Any required stack tests shall be performed in accordance with the following methods:

Method	Description of Method and Comments
EPA 22	Visual Determination of Fugitive Emissions from Material Sources and Smoke Emissions from Flares (2 Hour Duration)

10. Work Practice: Good combustion practices will be utilized at all times to ensure emissions from the flare system are minimized. Therefore, all operators and supervisors shall be properly trained to operate and ensure maintenance of this system in accordance with the guidelines and procedures established by the manufacturer. The training shall include good operating practices as well as methods for minimizing excess emissions. The flare pilot shall be operated with a flame present at all times. [Rules 62-4.070(3) F.A.C.]

RECORDS AND REPORTS

11. Records: The permittee shall record in a written log the duration of each flare event and the reason for flaring. If requested by the Compliance Authority, the permittee shall provide a copy of these records or a summary of these records. [Rule 62-4.070(3), F.A.C.]

12. Test Reports: The permittee shall prepare and submit reports for all required tests in accordance with the requirements specified in Appendix CTR (Common Testing Requirements) of this permit. [Rule 62-297.310(8), F.A.C.]

G. Miscellaneous Storage Silos (EU-007)

This section of the permit addresses the following emissions units.

ID No.	Emission Unit Description
007	Miscellaneous Storage Silos: Silos at HEF will be used to store lime for the water treatment system, limestone, hydrated lime or trona for the DSIS systems; urea for the SNCR (if used); and fly ash from the boiler.

The HEF will include equipment and silos for the handling and storage of dry materials.

CONSTRUCTION

1. Equipment: The permittee is authorized to construct the following silos each with a baghouse (bin vent filters) to control PM emissions:

   - One limestone, hydrated lime or trona storage silo for the DSIS;
   - One lime storage silo for the water treatment system;
   - If used in SNCR system, one urea storage silo; and
   - Fly ash storage silo.

   [Application No. 0550063-001-AC]

PERFORMANCE RESTRICTION

2. Hours of Operation: The hours of operation of this emission unit are not limited (8,760 hours per year). [Application No. 0550063-001-AC; Rule 62-210.200 (PTE), F.A.C.; Rule 62-212.400(BACT), F.A.C.; and Rule 62-4.070, F.A.C. Reasonable Assurance]

EMISSIONS STANDARDS

3. PM Standard: The bin vent filter baghouses (or equivalent) for each storage silo shall be designed, installed and maintained to remove PM from the storage silos exhaust during loading operations. The baghouses shall be installed and operational before the silos become operational. The baghouses shall be designed to achieve a dust outlet loading of 0.01 gr/dscf. Depending on the final equipment selection, the permittee may demonstrate to the Permitting Authority that the final baghouse design specification is equivalent to a dust outlet loading of 0.01 gr/dscf. [Application No. 0550063-001-AC; Rule 62-210.200 (PTE), F.A.C.; Rule 62-212.400(BACT), F.A.C.; and Rule 62-4.070, F.A.C. Reasonable Assurance]

4. VE Standard: VE from the silo baghouses shall not exceed 5% opacity as demonstrated by initial and annual compliance tests. [Application No. 0550063-001-AC; Rule 62-210.200 (PTE), F.A.C.; Rule 62-212.400(BACT), F.A.C.; and Rule 62-4.070, F.A.C. Reasonable Assurance]

TESTING AND MONITORING REQUIREMENTS

5. Initial Compliance Tests: Each silo shall be tested to demonstrate initial compliance with the VE emissions standard specified in **Condition 4** of this subsection. The initial test shall be conducted within 180 days after initial operation.
   [Application No. 0550063-001-AC; Rule 62-210.200 (PTE), F.A.C.; Rule 62-212.400(BACT), F.A.C.; and Rule 62-4.070, F.A.C. Reasonable Assurance]

6. Annual Compliance Tests: During each federal fiscal year (October 1st to September 30th), each silo shall be tested to demonstrate compliance with the VE emissions standard specified in **Condition 4** of this subsection. [Application No. 0550063-001-AC; Rule 62-210.200 (PTE), F.A.C.; Rule 62-212.400(BACT), F.A.C.; and Rule 62-4.070, F.A.C. Reasonable Assurance]

7. Test Requirements: The permittee shall notify the Compliance Authority in writing at least 15 days prior to any required tests. Tests shall be conducted in accordance with the applicable requirements specified in Appendix CTR (Common Testing Requirements) of this permit. [Rule 62-297.310(7)(a)9, F.A.C.]

G. Miscellaneous Storage Silos (EU-007)

8. Test Methods: Any required stack tests shall be performed in accordance with the following methods.

Method	Description of Method and Comments
EPA 9	Method 9 - Visual Determination of the Opacity of Emissions from Stationary Sources (60 Minute Test)

RECORDS AND REPORTS

9. Test Reports: The permittee shall prepare and submit reports for all required tests in accordance with the requirements specified in Appendix CTR (Common Testing Requirements) of this permit. For each test run, the report shall also indicate the operating rate. [Rule 62-297.310(8), F.A.C.]

H. Emergency Equipment (EU-008)

This section of the permit addresses the following emissions units.

ID	Emission Unit Description
008	One emergency generator rated at 2,000 kilowatts (kW) or 2,682 horsepower (hp) and one emergency diesel fire pump engine rated at 600 hp (448 kW)

One emergency generator rated at 2,000 kW will be installed to provide backup electrical power in the event of a power outage at the HEF facility. The generator will fire ULSD fuel oil or natural gas and will be limited to 500 hours per year of operation during emergencies. The unit will be operated no more than 100 hours per year for testing and maintenance purposes per 40 CFR 60, Subpart IIII. The engine will be designed to meet US EPA's emission standards listed in 40 CFR Part 60 Subpart IIII for model year 2006 or later.

One 600 hp diesel fire pump engine will be installed to provide firewater during power outages. This unit will fire ULSD fuel oil or natural gas and will be limited to 500 hours per year of operation. This unit will be operated no more than 100 hours per year for testing and maintenance purposes per 40 CFR 60, Subpart IIII. The engine will be designed to meet US EPA's emission standards listed in 40 CFR Part 60 Subpart IIII for model year 2009 or later.

EQUIPMENT

1. Emergency Generator: The permittee is authorized to install, operate and maintain one 2,000 kW or less emergency generator. [Application No. 0550063-001-AC and Rule 62-210.200 (PTE), F.A.C.]

2. Diesel Engine Driven Fire Pump Engine: The permittee is authorized to install, operate and maintain one diesel engine driven fire pump engine of 600 hp or less.
[Application No. 0550063-001-AC and Rule 62-210.200(PTE), F.A.C.]

PERFORMANCE RESTRICTIONS

3. Hours of Operation: The emergency generator and fire pump engine may operate in response to emergency conditions for up to 500 hours per year and 100 non-emergency hours per year for generator maintenance and testing purposes.
[Application No. 0550063-001-AC; Rule 62-210.200 (PTE), F.A.C. and NSPS 40 CFR 60, Subpart IIII]

4. Authorized Fuel: These units shall fire ULSD fuel oil or natural gas. The ULSD fuel oil shall contain no more than 0.0015% sulfur by weight.
[Application No. 0550063-001-AC; Rule 62-210.200 (PTE), F.A.C. and NSPS 40 CFR 60, Subpart IIII]

EMISSION STANDARDS

5. Emergency Generator Emissions Limits: The emergency generator shall comply with the following emission limits and demonstrate compliance in accordance with the procedures given in NSPS 40 CFR 60, Subpart IIII the language of which is given in Appendix IIII. Manufacturer certification can be provided to the Department in lieu of actual stack testing. [40 CFR 60.4211 and Rule 62-4.070(3), F.A.C.]

Source (model year)	CO (g/KW-hr)	PM (g/KW-hr)	SO_2[a] (% S)	Hydrocarbons (g/KW-hr)	NO_X (g/KW-hr)
Subpart IIII (2006 and later)	3.5	0.20	0.0015	6.4 (NMHC[b]+NO_X)	

a. SO_2 emission standard will be met by using biodiesel or ULSD fuel oil in the emergency generator with vendor certification of sulfur content of 0.0015% or less.
b. NMHC means Non-Methane Hydrocarbons.

[Application No. 0550063-001-AC; NSPS 40 CFR 60, Subpart IIII and Rule 62-4.070(3), F.A.C.]

6. Emergency Fire Pump Engine Emissions Limits: The emergency fire pump engine shall comply with the following emission limits and demonstrate compliance in accordance with the procedures given in NSPS 40 CFR 60, Subpart IIII. Manufacturer certification may be provided to the Department in lieu of actual testing. [40 CFR 60.4211 and Rule 62-4.070(3), F.A.C.]

Model Year	**CO** (g/hp-hr)	**SO_2**[a] (% S)	**NMHC**[b] **+ NO_X** (g/hp-hr)	**PM** (g/hp-hr)
Subpart IIII (2009 or later)	2.6	0.0015	3.0	0.15

a. SO_2 emission standard will be met by using biodiesel or ULSD fuel oil in the emergency generator with vendor certification of sulfur content of 0.0015% or less.
b. NMHC means Non-Methane Hydrocarbons.

[Application No. 0550063-001-AC; NSPS 40 CFR 60, Subpart IIII and Rule 62-4.070(3), F.A.C.]

RECORDS AND REPORTS

7. Notification, Recordkeeping and Reporting Requirements: The permittee shall adhere to the compliance testing and certification requirements listed in 40 CFR 60.4211 and maintain records demonstrating fuel usage and quality. [Rule 62-212.400 (BACT), F.A.C. and 40 CFR 60.4211]

NSPS APPLICABILITY

8. NSPS Subpart IIII Applicability: The emergency generator and the fire diesel fire pump engine are Stationary Compression Ignition Internal Combustion Engines (Stationary ICE) and shall comply with applicable provisions of 40 CFR 60, Subpart IIII, including emission testing or certification. [40 CFR 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines]

NESHAP APPLICABILITY

9. NESHAPS Subpart ZZZZ Applicability: The emergency generator and the diesel fire pump engine are Liquid Fueled RICE and shall comply with applicable provisions of 40 CFR 63, Subpart ZZZZ. Pursuant to 40 CFR 63.6590(c) the generator and engine must meet the requirements of Subpart ZZZZ by meeting the requirements of 40 CFR 60, Subpart IIII.
[40 CFR 63, Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE)]

I. Facility-Wide Fugitive VOC Equipment Leaks (EU-009)

This section of the permit addresses the following emissions unit.

ID	Emission Unit Description
009	Facility-Wide Fugitive VOC Emission Leaks: This emission unit consists of the fugitive VOC emissions from equipment leaks involved in the ethanol production process and associated processes at the HEF facility. Total fugitive VOC emissions from equipment leaks at the HEF facility were estimated to be 6.52 TPY. Total HAP emissions from equipment leaks at the HEF facility were estimated to be 0.33 TPY. To minimize VOC fugitive emissions, HEF shall implement a monthly LDAR program. The plan to implement the LDAR program shall be approved by the Compliance Authority in accordance with NSPS 40 CFR Part 60, Subpart VVa. The following emission units are either subject to the requirements of NSPS 40 CFR Part 60, Subpart VVa and must be addressed in the LDAR program plan or addressed by the plan as part of the BACT to minimize emissions of VOC from the HEF facility: • *EU-003: Cooling Towers;* • *EU-004: Ethanol Production Process;* • *EU-005: Storage Tanks; and* • *EU-006: Truck Rack Product Loadout and Flare.*

NSPS SUBPART VVa

1. LDAR Program: HEF is subject to NSPS 40 CFR 60, Subpart VVa - VOC Equipment Leaks in the SOCMI, for projects that commence construction or modifications after November 7, 2006. NSPS Subpart VVa requires a LDAR program. HEF must demonstrate compliance with Subpart VVa, including the LDAR program, no later than 180 days after HEF becomes operational.
[40 CFR 60, Subpart VVa and Rule 62-4.070, F.A.C. Reasonable Assurance]

2. Equipment Subject to NSPS, Subpart VVa: As per **Condition 12** of Section 2 of this permit, a list of all the pumps, compressors, pressure relief devices in gas/vapor service, sampling connection systems, open-ended valves or lines and valves at HEF that are subject to NSPS Subpart VVa must be submitted to the Compliance Authority no later than 90 days prior to commencing operation.
[Rule 62-212.400 (BACT), F.A.C. and Rule 62-4.070, F.A.C. Reasonable Assurance]

TESTING AND MONITORING REQUIREMENTS

3. LDAR Program Plan Implementation: As per **Condition 11** of Section 2 of this permit, the permittee must submit for approval a final LDAR program plan no later than 90 days prior to commencing operation. Once the program plan is approved by the Compliance Authority, the permittee shall implement the program within 180 days of initial startup of the HEF. A preliminary LDAR program plan is contained in Appendix LDAR of this permit. [40 CFR 60, Subpart VVa ; Application No. 0550063-001-AC; Rule 62-210.200(PTE), F.A.C. and Rule 62-4.070(3), F.A.C. Reasonable Assurance]

4. Compliance with NSPS VVa: The permittee shall demonstrate compliance with the requirements of §§60.482–1a through 60.482–10a or §60.480a(e) for all equipment subject to NSPS Subpart VVa within 180 days of initial startup of the HEF. [Application No. 0550063-001-AC; Rule 62-210.200(PTE), F.A.C.; Rule 62-4.070(3), F.A.C. Reasonable Assurance and NSPS, Subpart VVa]

5. Test Methods and Procedures: The permittee shall demonstrate that the HEF facility is in compliance with the requirements of NSPS Subpart VVa following the test methods and procedures specified in §60.485a. [Application No. 0550063-001-AC; Rule 62-210.200(PTE), F.A.C.; Rule 62-4.070(3), F.A.C. Reasonable Assurance and NSPS, Subpart VVa]

RECORDS AND REPORTS

6. NSPS VVa Recordkeeping Requirements: The permittee shall follow the recordkeeping requirements specified in §§60.486a to show compliance with NSPS Subpart VVa and submit the records to the Compliance Authority 180 days after the initial startup of the HEF and annually thereafter. [Application No. 0550063-001-AC; Rule 62-210.200(PTE), F.A.C.; Rule 62-4.070(3), F.A.C. Reasonable Assurance and NSPS, Subpart VVa]