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PERMITTEE

Gainesville Renewable Energy Center (GREC), LLC
75 Arlington Street, 5th Floor
Boston, Massachusetts 02116

Authorized Representative: Mr. James S. Gordon,
Chief Executive Officer

Air Permit No. 0010131-001-AC
(PSD-FL-411)
Expires: December 31, 2014
Woody Biomass Power Plant
Facility ID No. 0010131
100 Megawatt Biomass Power Plant

PROJECT

This is the final air construction permit, which authorizes construction of a 100 megawatt (MW, net) electric power plant utilizing a bubbling fluidized bed (BFB) boiler, fueled by clean woody biomass. The facility is an electrical services plant categorized under Standard Industrial Classification No. 4911. The new plant will be located within the city of Gainesville and approximately 7 miles southeast of the city of Alachua in Alachua County, Florida. Specifically the GREC facility is located on approximately 131 acres at the Gainesville Regional Utility (GRU) Deerhaven Generation Station (DGS). The UTM coordinates are Zone 17; 365.0 kilometers (km) East and 3,293.8 km North.

This 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 final 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 of the 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 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

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_____ _____

Joseph Kahn, Director (Date)
Division of Air Resource Management

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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 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)

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PROPOSED PROJECT

The project involves the construction of a net 100 MW electric power plant utilizing a BFB boiler, fueled by clean woody biomass. The BFB boiler will provide steam to a steam turbine generator (STG) that in turn will generate a net of 100 MW of electrical power that will be provided to the electrical grid. The new plant will be located within the city of Gainesville and approximately 7 miles southeast of the city of Alachua in Alachua County, Florida. Specifically, the GREC facility is located on approximately 131 acres at the GRU DGS.

In addition to clean woody biomass, the BFB biomass boiler will use natural gas as a startup fuel. Ultralow sulfur distillate (ULSD) fuel oil with a maximum sulfur concentration of 0.0015 percent (%) by weight will be used to power the emergency generator and emergency fire pump engine associated with this project.

The project will incorporate the following pollution control equipment and measures:

- Efficient combustion of clean woody biomass in the BFB boiler to minimize formation of particulate matter ($PM/PM_{10}/PM_{2.5}$) henceforth called PM, nitrogen oxides (NO_X), carbon monoxide (CO) and volatile organic compounds (VOC);
- Limitation of biomass to woody untreated biomass to minimize sulfur dioxide (SO_2) and hazardous air pollutant (HAP) formation, including acid gas HAP including hydrogen chloride (HCl) and hydrogen fluoride (HF);
- Use of an inherently clean natural gas as the startup fuel for the BFB boiler;
- Use of an inherently clean ULSD fuel oil and good combustion practices in the emergency generator and emergency fire pump engine to control emissions of CO, SO_2, NO_X, PM, VOC and HAP;
- Ammonia (NH_3) injection into a selective catalytic reduction (SCR) reactor to destroy NO_X;
- The alkaline properties of the fly ash and an in-duct sorbent injection system (IDSIS) to control SO_2, HCl and HF;
- A fabric filter baghouse to further control PM and to remove injected sorbents;
- Reasonable precautions and best management practices to minimize fugitive PM emissions from biomass handling, storage and processing, ash (bottom and fly) handling, storage, shipment and alkaline sorbent handling, and storage and processing; and
- A well designed mechanical draft cooling tower to minimize drift (PM).

The project will incorporate the following emission measurement systems:

- Continuous emission monitoring systems (CEMS) for CO, SO_2, NO_X, HCl and HF; and
- A continuous opacity monitoring system (COMS) for visible emissions (VE).

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

Facility ID No. 0010131	
EU ID No.	**Emission Unit Description**
001	Biomass fuel delivery, preparation, storage and handling
002	Woody biomass-fueled BFB boiler with a maximum heat input capacity of 1,358 mmBtu per hour (mmBtu/hr)
003	Ash handling, storage and shipment
004	Mechanical draft cooling tower
005	564 kilowatt (kW) emergency generator
006	275 horsepower (hp) emergency fire pump

Facility Regulatory Classification

- The GRU DGS facility is a major source of hazardous air pollutants (HAP).
- The GREC project itself is not a major source of HAP.
- The facility operates units subject to the acid rain provisions of the Clean Air Act (CAA).
- The facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.
- The facility is a major stationary source in accordance with Rule 62-212.400(PSD), F.A.C.
- The facility is subject to the provisions of the Clean Air Interstate Rule (CAIR), including applicable portions of Chapters 62-204, 62-210 and 62-296, F.A.C.
- The facility is subject to Chapter 62-204.800, F.A.C for New Source Performance Standards (NSPS) under Section 111 of the CAA and National Emissions Standards for Hazardous Air Pollutants (NESHAP) under Section 112 of the CAA.

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1. Permitting Authority: The Permitting Authority for this project is the Bureau of Air Regulation in the Division of Air Resource Management of the Department. The mailing address for the Bureau of Air Regulation is 2600 Blair Stone Road, MS #5505, Tallahassee, Florida 32399-2400. All documents related to applications for permits shall be submitted to the Bureau of Air Regulation 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 Air Resource Section of the Department's Northeast District Office at: 7825 Baymeadows Way, Suite 200 B, Jacksonville, Florida 32256-7590.

3. Appendices: The following Appendices are attached as a part of this permit and the permittee must comply with the requirement of the appendices:

Appendix BMP	Best Management Practices Plan;
Appendix CC	Common Conditions;
Appendix CEMS	Continuous Emissions Monitoring System (CEMS) Requirements;
Appendix CF	Citation Formats and Glossary of Common Terms;
Appendix CTR	Common Testing Requirements;
Appendix Da	NSPS, 40 CFR 60, Subpart Da – Standards of Performance for Electric Utility Steam Generating Units for Which Construction Is Commenced After September 18, 1978;
Appendix F	40 CFR 75, Appendix F, Section 5 – Measurement of Boiler Heat Input Rate;
Appendix GC	General Conditions;
Appendix GP	Identification of General Provisions – NSPS 40 CFR 60, Subpart A from and NESHAP 40 CFR 63, Subpart A;
Appendix IIII	NSPS, Subpart IIII – Stationary Compression Ignition Internal Combustion Engines; and
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.]

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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 subsections 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 subsections 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. Objectionable Odors Prohibited: No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor. [Rule 62-296.320(2), F.A.C.]

   {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.}

10. Title IV Permit: At least 24 months before the date on which the new unit begins serving an electrical generator greater than 25 MW, the permittee shall submit an application for a Title IV Acid Rain Permit to the Department's Bureau of Air Regulation in Tallahassee and a copy to the Region 4 Office of the U.S. Environmental Protection Agency (EPA) in Atlanta, Georgia. This permit does not specify the Acid Rain program requirements. These will be included in the Title V air operation permit. [40 CFR 72].

11. 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

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matter shall specify the reasonable precautions to be taken by that facility to control the emissions of unconfined particulate matter. Appendix BMP of this permit provides a Best Management Plan (BMP) of reasonable precautions specific to the GREC facility to control fugitive PM emissions. General 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 particulates 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. [Rule 62-296.320(4)(c), F.A.C.]

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A. Biomass Fuel Delivery, Preparation, Storage and Handling (EU-001)

This section of the permit addresses the following emissions unit.

EU ID No. 001	Emission Unit Description

Biomass fuel delivery, preparation, storage and handling: The biomass fuel delivery, preparation, storage and handling system will consist of: three truck dumpers; two sets of screens and hogs (i.e., machines used to size wood chips); and automatic and manual stacker/reclaimers to maintain on average a 15 to 20 days supply of biomass fuel for the BFB boiler based on full load operation and average biomass fuel moisture content. The GREC biomass fuels will be initially chipped/ground and processed at offsite locations and then transported to the site by truck. Between 130 and 150 fuel truck deliveries per day are expected based on the maximum BFB boiler biomass fuel consumption rate/average moisture content and a 6-day-per-week delivery schedule. During peak delivery periods, the delivery facilities will be capable of unloading 24 truckloads of biomass fuel per hour. The GREC biomass fuel handling system will include scales to weigh each truck entering and departing the facility to determine the delivered fuel weight. The maximum designed hourly biomass processing rate is 600 tons per hour (TPH) with a maximum designed yearly rate of 1,395,030 tons per year (TPY).

There will be four biomass storage piles as described below:

- Storage Pile No.1: Storage Pile No. 1 will be a kidney shaped pile that is formed with an automatic stacker/reclaimer. The pile will be up to 85 feet (ft) high and will have a storage capacity of approximately 125,000 cubic yards (yd^3) of fuel.
- Stock Pile No. 1: Stock Pile No. 1 will consist of a conical shaped pile that is fed with a fixed stacker, which includes a telescoping chute to minimize the distance the fuel will drop when the pile is empty. The pile will be up to 60 ft high and will have a storage capacity of approximately 8,500 yd^3 of fuel.
- Storage Pile No. 2: Storage Pile No. 2 will be approximately 35 ft high with a storage capacity of approximately 79,000 yd^3. Rolling stock (i.e., a bulldozer or front-end loader) will be used to remove fuel from Stock Pile No.1 and deliver it to Storage Pile No. 2.
- Saw Dust Pile: In addition to the chipped/ground biomass fuel, moist sawdust will be received at the site. Sawdust will be delivered with self-unloading trucks and deposited in an open area adjacent to Storage Pile No.2 in a fourth, small pile. Front-end loaders will be used to reclaim sawdust.

EQUIPMENT

1. Biomass Fuel Delivery, Unloading and Processing System Equipment: The permittee is authorized to construct the biomass fuel delivery, unloading and processing system containing the following equipment classified as potential sources of PM emissions:
   a. *Scales*: Truck scales to weigh each biomass fuel delivery truck arriving and departing the facility to determine the weight of delivered biomass.
   b. *Screen/Hog Building*: A fully enclosed building containing surge bins, size disk screens and hogging equipment.
   c. *Truck Dumpers*: Three drive through truck dumpers with receiving hoppers.
   d. *Conveyors*: Six conveyors to transport the biomass fuel from the truck dumpers to the biomass fuel handling and storage system. The conveyor entering the Screen/Hog building will also have a metal detector and self-cleaning magnetic separator.
   e. *Surge Bins*: Two surge bins and two reclaimers within the Screen/Hog building to accept the biomass fuel from the conveyors from the truck dumpers.
   f. *Sizing Discs*: Two sizing discs within the Screen/Hog building to screen any oversized biomass fuel and then send the oversize fuel to the hogs to be reduced in size.

DRAFT

g. *Hogs*: Two hogs within the Screen/Hog building reduce the size of any over sized biomass fuel.

2. Biomass Fuel Handling and Storage System Equipment: The permittee is authorized to construct the biomass fuel handling and storage system containing the following equipment classified as potential sources of PM emissions:

   a. *Stacker/Reclaimer*: A stacker/reclaimer system to place and reclaim biomass fuel from Storage Pile No.1.

   b. *Telescoping Chute*: A telescoping chute to place biomass fuel in Stock Pile No.1.

   c. *Conveyors*: Two conveyors to transport the biomass fuel to the stacker/reclaimer used for Storage Pile No.1 and the telescoping chute used for Stock Pile No.1. Five conveyors used to transport the biomass fuel from the Storage Pile No.1 and Storage Pile No.2 to the BFB boiler metering bins. Scales and magnetic separators will be included in some of the conveyors.

   d. *Metering Bins*: The two BFB boiler biomass fuel metering bins to provide storage of biomass fuel sufficient for approximately 45 minutes of boiler operation with the bins equipped with bin vent filters to control of PM emissions.

[Application No. 0010131-001-AC; and Rules 62-4.070(3), 62-210.200(PTE) and 62-212.400 (BACT), F.A.C.]

3. Air Pollution Control Equipment: To minimize fugitive PM, woody biomass conveyors shall be enclosed where practical and where practical dust collectors shall be installed on the conveyor transfer drop points.

   a. *Screen/Hog Building Baghouse*: A baghouse shall be installed to control PM emissions from the Screen/Hog building. A screw conveyor shall be installed to take the PM collected in the baghouse to the conveyor taking the biomass fuel to the biomass fuel handling and storage system.

   b. *Metering Bin Vent Filters*: Bin vent filters shall be installed to control PM emissions from the metering bins for the BFB boiler.

   {Permitting Note: One small section of the conveyance belt of the conveyors near the truck dumpers shall provide for visible inspection from above so that woody biomass that does not meet ***Specific Condition 6*** *of this subsection can be removed.}*

   [Application No. 0010131-001-AC; and Rules 62-4.070(3), 62-210.200(PTE) and 62-212.400 (BACT), F.A.C.]

4. BMP Plan: A BMP plan shall be utilized to minimize fugitive PM emissions from receiving, handling, storage and processing of woody biomass. Best management practices shall be utilized to reduce the potential for spontaneous combustion of stored woody biomass and odors. A preliminary BMP plan is contained in Appendix BMP of this permit. This plan also includes quality control and assurance (Q&A) procedures to ensure woody biomass delivered by vendors and suppliers to the GREC facility meets the requirements given in **Specific Condition 6** of this subsection. No later than 180 days before the GREC facility becomes operational, a final BMP plan shall be filed with the Compliance Authority to reflect the final engineering designs of the biomass receiving, handling, storage and processing systems. The final BMP plan will also be incorporated into the Title V operating permit.

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*{Permitting Note: As part of the final BMP, technical information may be provided by GREC, LLC to the Compliance Authority based on the final engineering of the fuel conveyance system that describes methods or equipment designed to control fugitive PM emissions from the conveyor transfer drop points. These methodologies and equipment designs may obviate the requirement to install dust collectors on the conveyor transfer drop points stipulated in **Specific Condition 3** of this subsection. Acceptance of the final BMP by the Compliance Authority with the reference to the specific design of the conveyor transfer drop points may satisfy the requirement to install dust collectors.}*

[Application No. 0010131-001-AC; and Rules 62-4.070(3), 62-210.200(PTE) and 62-212.400 (BACT), F.A.C.]

PERFORMANCE RESTRICTIONS

5. Hours of Operation: The hours of operation of this emissions unit are not limited (i.e., unrestricted at 8,760 hours per year). [Application No. 0010131-001-AC; and Rules 62-4.070(3), 62-210.200(PTE) and 62-212.400 (BACT), F.A.C.]

6. Clean Woody Biomass: The fuel to be received, handled, stored and processed shall consist of clean, untreated woody biomass as defined below. The BMP plan referenced in **Specific Condition 4** of this subsection shall be followed.

Fuel Type	Description
In-forest residue and slash	Tops, limbs, whole tree material and other residues from soft and hardwoods that result from traditional silvicultural harvests.
Mill residue	Saw dust, bark, shavings and kerf waste from cutting/milling whole green trees; fines from planning kiln-dried lumber; wood waste material generated by primary wood products industries such as round-offs, end cuts, sticks, pole ends; and reject lumber as well as residue material from the construction of wood trusses and pallets.
Pre-commercial tree trimmings and understory clearings	Tops, limbs, whole tree material and other residues that result from the cutting or removal of certain, smaller trees from a stand to regulate the number, quality and distribution of the remaining commercial trees; and forest understory which includes smaller trees, bushes and saplings.
Storm, fire and disease debris	Tops, limbs, whole tree material and other residues that are damaged due to storms, fires or infectious diseases.
Urban wood waste	Tree parts and/or branches generated by landscaping contractors and power line/roadway clearance contractors that have been cut down for land development or right-of-way clearing purposes.
Recycled industrial wood	Wood derived from used pallets packing crates; and dunnage disposed by commercial or industrial users.
Supplementary fuel material	Herbaceous plant matter; clean agricultural residues (i.e., rice hulls, straw, etc.; no animal wastes or manure); and whole tree chips and pulpwood chips.

[Application No. 0010131-001-AC and Rule 62-4.070(3), F.A.C. Reasonable Assurance]

7. Paved Roadways and Gravel Areas: Fugitive dust emissions from the plant's paved roadways and gravel areas shall be controlled in accordance with **Specific Condition 11 of Section 2** of this permit. [Rule 62-4.070, F.A.C. Reasonable Assurance and Rule 62-296.320, F.A.C.]

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EMISSIONS STANDARDS

8. Opacity: As determined by EPA Method 9, there shall be no visible emissions (VE) greater than 10% opacity, except for one 6 minute period no greater than 20% from the outlets of the drop points, transfer points and dust collectors associated with this emission unit. VE from the Screen/Hog building baghouse and bin vent filters of the metering bins shall be no greater than 5% opacity. [Application No. 0010131-001-AC; Rules 62-212.400(5)(c), 62-4.070(3), 62-210.200(PTE) and 62-212.400 (BACT), F.A.C.]

TESTING AND MONITORING REQUIREMENTS

9. Initial VE Compliance Tests: The outlets of the drop points, transfer points and dust collectors, the Screen/Hog building baghouse and the bin vent filters of the metering bins associated with this emissions unit shall be tested to demonstrate initial compliance with the emissions standards for opacity given in **Specific Condition 8** 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 emission unit. [Rules 62-4.070(3) and 62-297.310(7)(a)1, F.A.C.]

10. Annual VE Compliance Tests: During each federal fiscal year (October 1st to September 30th), the outlets of the drop points, transfer points and dust collectors, the Screen/Hog building baghouse and the bin vent filters of the metering bins associated with this emissions unit shall be tested to demonstrate initial compliance with the emissions standards for opacity given in **Specific Condition 8** of this subsection. [Rule 62-297.310(7)(a)4, F.A.C.]

11. 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.]

12. 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 which is included as Appendix GP of this permit 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

13. 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.]

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B. BFB Biomass Boiler (EU-002)

This section of the permit addresses the following emissions units.

EU ID No. 002	Emission Unit Description

Description: The boiler is a woody biomass fueled bubbling fluidized bed (BFB) boiler wherein wood is combusted within in a bed of hot sand. The heat from the exhaust will be recovered to generate superheated steam to generate 100 MW (net) of electricity in a STG.

Fuels: The primary fuel will be clean woody biomass as described in **Subsection 3-A, Specific Condition 6 and Appendix BMP** of this permit. Natural gas will be use as a startup fuel for the boiler.

Capacity: The maximum heat input capacity is 1,358 mmBtu per hour (4 hour average basis). The steam production capability will be between 650,000 to 930,000 pounds per hour (lb/hr). The maximum heat input capacity using natural gas is 341 mmBtu/hr during startup.

Controls: Efficient combustion of woody biomass in the BFB boiler to minimize formation of PM, NO_X, CO and VOC; limitation of biomass to woody untreated biomass to minimize SO_2 and HAP formation, including acid gas HAP HCl and HF; use of inherently clean natural gas for startup; NH_3 injection into the SCR reactor to destroy NO_X; a IDSIS to further control SO_2 and acid gas HAP; and a fabric filter baghouse with a design efficiency of 99.9% to further control PM and VE, (i.e. opacity).

Stack Parameters: The stack will be approximately 12 ft in diameter (maximum) and 230 ft tall (minimum). Exhaust flue gas will exit the stack at the following approximate conditions: an exit temperature of 310 °F and a volumetric flow rate of 520,600 actual cubic feet per minute (acfm).

Continuous emissions and opacity monitoring systems (CEMS, COMS): Emissions of CO, NO_X, SO_2, HCl and HF will be monitored and recorded by CEMS. Opacity (VE) will be monitored and recorded by a COMS.

Applicability of 40 CFR Subpart Da (NSPS Subpart Da): This unit is subject to NSPS Subpart Da – Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced after September 18, 1978 {72 Federal Register (FR) 32722, June 13, 2007, as amended at 74 FR 5078, Jan. 28, 2009}, because it has a maximum heat input capacity greater than 100 mmBtu/hr from the fuels combusted and it has a maximum heat input capacity greater than 250 mmBtu/hr from the fossil fuels (natural gas) combusted.

EQUIPMENT

1. Construction of BFB Boiler: The permittee is authorized to construct a BFB boiler with fluidizing bed air supply, fossil fuel startup burners, overfire air ports, steam drum, superheater, economizer, air heater, ash hoppers, ducts, STG, fuel feeding equipment, mechanical draft cooling tower, air pollution control equipment and other associated equipment.
   [Application No. 0010131-001-AC]

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

   a. Fabric Filter Baghouse: The permittee shall design, install, operate and maintain a fabric baghouse to control PM and VE.

   b. SCR System: The permittee shall design, install, operate, and maintain an NH_3-based SCR system including reagent storage tank, pumps, metering system, injection grid, reactor and catalyst to reduce NO_X emissions in the flue gas exhaust and achieve the NO_X emissions standards specified in this subsection. The SCR shall be brought on line in accordance with the

SCR manufacturer's procedures and guidelines and will be utilized whenever the boiler is in operation.

c. IDSIS: An IDSIS including a baghouse, sorbent storage silo, pumps, metering and injection equipment shall be installed to control SO_2 emissions and HAP acid gases such as HCl and HF to the emission standards specified in this subsection. As part of this IDSIS, the alkaline sorbent silo will be equipped with a vent filter to control PM emissions. The IDSIS will rely on the presence of alkaline fly ash and be augmented as necessary by the use of injected hydrated lime or trona. The HCl, HF and SO_2 CEMS output data expressed in lbs/hr averaged over a 24 hour period shall be reviewed by trained plant personnel on a daily and monthly basis to determine required operation of, or adjustment to the alkaline sorbent injection augmentation to ensure the HCl, HF and SO_2 emission standards will be maintained. HCl, HF and SO_2 emissions data shall be reported to the Department on a quarterly basis.

[Application No. 0010131-001-AC; NSPS Subpart Da; and Rule 62-4.070(3), 62-210.200(PTE) and 62-212.400 (BACT), F.A.C.]

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

3. Alkaline Sorbent Storage Silo: The permittee is authorized to construct an alkaline sorbent storage silo to store hydrated lime or trona for use by the IDSIS. A bin vent filter shall be installed on the sorbent storage silo to control PM emissions while the silo is loaded with sorbent from trucks. The bin vent filter shall be designed to achieve a PM emission rate of 0.01 gr/dscf.
[Application No. 0010131-001-AC and Rule 62-4.070(3), F.A.C.]

4. Ammonia Storage Tank: In accordance with 40 CFR 60.130, the storage of NH_3 shall comply with all applicable requirements of the Chemical Accident Prevention Provisions in 40 CFR 68. The aqueous ammonia, containing 19% ammonia by volume will be stored in one outdoor 30,000 gallon tank designed and fabricated in accordance with U.S. Department of Labor Chapter 29, Part 1910.111, Code of Federal Regulations (CFR), American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, ANSI K 61.1, and applicable requirements of Chapter 62-762, F.A.C., Above Ground Storage Tank (AST) Systems.
[Application No. 0010131-001-AC and Rule 62-4.070(3), F.A.C.]

PERFORMANCE REQUIREMENTS

5. Authorized Fuels: The BFB boiler is authorized to combust as its primary fuel clean woody biomass as defined in **Specific Condition 6 of Subsection 3-A** of this permit. In addition, the boiler is authorized to combust natural gas as a startup fuel.

[Application No. 0010131-001-AC; Rules 62-4.070(3), 62-210.200(PTE) and 62-212.400 (BACT), F.A.C., and NSPS, Subpart Da]

6. Heat Input Rate from all Fuels: The maximum heat input capacity from biomass and natural gas is 1,358 mmBtu per hour (4 hour average basis). [Application No. 0010131-001-AC; Rules 62-4.070(3), 62-210.200(PTE) and 62-212.400 (BACT), F.A.C.]

7. Heat Input from Fossil Fuels: The maximum heat input capacity to combust natural gas on a steady state basis during boiler startup is limited to 341 mmBtu/hr. [Application No. 0010131-001-AC; Rules 62-4.070(3), 62-210.200(PTE) and 62-212.400 (BACT), F.A.C.]

8. Operational Hours: The hours of operation of this emission unit are not restricted (8,760 hours/year). [Application No. 0010131-001-AC; Rules 62-4.070(3) and 62-210.200(PTE)]

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EMISSIONS STANDARDS

9. Emission Limits: Emissions from the BFB boiler shall not exceed the following standards.

Parameter	Limit	Basis	Compliance
NO_X [a]	1.0 lb/MWH	NSPS Subpart Da	30-day rolling by CEMS
	0.070 lb/mmBtu	Applicant Request	24-hour rolling by CEMS
	416.4 TPY	Emission Cap	12-month, rolled monthly by CEMS
SO_2 [b]	1.4 lb/MWH	NSPS Subpart Da	30-day rolling by CEMS
	0.029 lb/mmBtu	Applicant Request	24-hour rolling by CEMS
	170.7 TPY	Emission Cap	12-month, rolled monthly by CEMS
SAM [c]	1.4 lb/hr	Rule 62-4.070(3), F.A.C.	Initial and Annual Stack Test
CO [d]	0.12/0.08 lb/mmBtu	BACT	30-day rolling by CEMS
HCl [e]	2.22 lb/hr	Rule 62-4.070(3), F.A.C.	Initial Stack Test (can use RATA)
	9.72 TPY	Emission Cap	12-month, rolled monthly by CEMS
HF [e]	2.22 lb/hr	Rule 62-4.070(3), F.A.C.	Initial Stack Test (can use RATA)
	9.72 TPY	Emission Cap	12-month, rolled monthly by CEMS
Σ HCl, HF, Organic HAP, Metal HAP [f]	24.7 TPY	Rule 62-4.070(3), F.A.C.	12-month Blocks CEMS + Initial and Annual Stack Test [g]
PM/PM_{10} (filterable) [h]	0.015 lb/mmBtu	BACT, Subpart Da	Initial and Annual Stack Test
VE [i]	10% Opacity (20% once/hr)	BACT	6-minute blocks by COMS Initial Stack Test
VOC [j]	0.010/0.009 lb/mmBtu	BACT	Initial and Annual Stack Test
NH_3 Slip [k]	10 ppmvd @ 7% O_2	Rule 62-210.650, F.A.C. Rule 62-4.070(3), F.A.C.	Initial and Annual Stack Test
Heat Input Rate [l]	1,358 mmBtu/hr	Rule 62-210.200(PTE), F.A.C.	4-hour, by 40 CFR 75, App. F

a. lb/MWH means pounds per MW-hour (gross basis). lb/mmBtu means pounds per million Btu heat input. Emission cap for NO_X ensures that GREC will not trigger PSD for this pollutant.
b. Emission cap for SO_2 ensures that GREC will not trigger PSD for this pollutant.
c. SAM mass rate emission limit provides reasonable assurance that annual emissions will be less than 7 TPY and PSD is not triggered for this pollutant.
d. A CO limit of 0.12 lb/mmBtu on a rolling 30-day average applies from the startup of boiler operation through 360 calendar days after certification of the CO-CEMS. A CO limit of 0.08 lb/mmBtu applies thereafter.
e. Individual HCl and HF mass emission limits to provide reasonable assurance that annual emissions of each of these HAP will be less than 10 TPY. RATA testing for CEMS may be used in lieu of initial stack testing.
f. Sum (Σ) of the following hazardous air pollutants (HAP): HCl, HF, organic HAP = [C_3H_4O (acrolein), C_6H_6 (benzene), CH_2O (formaldehyde), C_8H_{10} (xylene isomers plus ethyl benzene), CH_3Cl (methyl chloride), CH_3CCl_3 (methyl chloroform), C_2H_4O (acetaldehyde), C_7H_8 (toluene), PAH/POM (polycyclic aromatic hydrocarbon/polycyclic organic matter)] and metal HAP = [Cr (chromium), Pb (lead), Mn, (manganese), P (phosphorus)].
g. During each fiscal year (October 1 to September 30), emission limit is 12 month block of HCl and HF CEMS emissions data in TPY combined with organic and metal HAP emission rates in TPY from stack test during the same fiscal year.
h. Filterable fraction as measured by EPA Method 5.
i. During startups, shutdowns and malfunction the following limits apply: 20% opacity (6-minute blocks) except for one 6-minute block per hour of 27%.
j. A VOC limit of 0.010 lb/mmBtu applies from the startup of boiler operation through 360 calendar days after certification of the CO-CEMS. A VOC limit of 0.009 lb/mmBtu applies thereafter.
k. Ammonia (NH_3) slip in parts per million by dry volume at 7% oxygen (ppmvd @ 7% O_2).
l. Except for initial HCl and HF stack test emission rates, short-term heat input rate in conjunction with lb/mmBtu limits obviates the need for lb/hr emission limits.

[Applicant requests; Rules 62-210.200(PTE), 62-296.406, 62-296.410, 62-4.070(3) and 62-212.400 (BACT), F.A.C.; and 40 CFR 60, Subpart Da]

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10. Alkaline Sorbent Storage Silo VE: Opacity from the bin vent filter of the alkaline sorbent storage silo shall not exceed 5% opacity based on EPA Method 9 during initial and annual tests. [Rules 62-210.200(PTE) and 62-212.400 (BACT), F.A.C.]

11. PM Emission Standard: PM emissions from bin vent filter of the alkaline sorbent storage silo shall not exceed 0.01 gr/dscf @ 7% O_2. [Rules 62-4.070(3), 62-210.200(PTE) and 62-212.400 (BACT)]

12. Alkaline Sorbent Storage Silo Bin Vent Filter PM Standard by Opacity Measurement: A VE reading of 5% opacity or less may be used to demonstrate compliance with the PM emission standard in **Specific Condition 11** above**.** A VE reading greater than 5% opacity will require the permittee to perform a PM emissions test on the alkaline sorbent storage silo bin vent filter within 30 days to show compliance with the PM standard given in **Specific Condition 11** above. [Rules 62-296.603, 62-296.712, 62-212.400 (BACT) F.A.C. and 62-4.070, F.A.C.; and 40 CFR 60.122(a)(2)]

CONTINUOUS EMISSION MONITORS

13. 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, HCl and HF, opacity and carbon dioxide (CO_2) or O_2, respectively, from the BFB boiler stack in a manner sufficient to demonstrate continuous compliance with the CEMS-based and COMS-based emission standards in **Condition 9** 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, HCl or HF standard (and subject to the specified averaging period), the permittee shall notify the Compliance Authority. The permittee shall comply with the CEMS requirements specified in Appendix CEMS of this permit.

    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 Subpart Da in 40 CFR 60 and Subparts F and G in 40 CFR 75.

    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 Da in 40 CFR 60 and Subparts F and G in 40 CFR 75.

    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, and 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. 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 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 23 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 or 26A as detailed in Appendix A of 40 CFR 60 or by Method 320 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 assurance and control (Q&A) procedures must be

DRAFT

provided by the Department prior to installation and operation of the CEM system.

e. HF CEMS: The HF CEMS shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 15, EPA 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 23 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 HF monitor shall be performed using EPA Method 26 or 26A as detailed in Appendix A of 40 CFR 60 or by Method 320 as detailed in Appendix A of 40 CFR 63. The HF monitor span values shall be set, considering the allowable methods of operation and corresponding emission standards. Approval of specific initial performance specifications and quality assurance and control (Q&A) procedures must be provided to the Department prior to installation and operation of the CEM system.

f. 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.

g. Diluent Monitor: The O_2 or CO_2 content of the flue gas shall be monitored at the locations where CO, SO_2, NO_X, HCl and HF and are monitored. Each monitor shall comply with the performance and quality assurance requirements of 40 CFR 75.

[Application No. 0010131-001-AC; Rule 62-4.070(3), and 62-212.400 (BACT), F.A.C.; 40 CFR 60, Subpart Da and Appendices]

EXCESS EMISSIONS, STARTUP, SHUTDOWN, AND MALFUNCTION REQUIREMENTS

*{Permitting Note: The following conditions apply only to the SIP-based emissions standards specified in **Condition No. 9** of this subsection. Rule 62-210.700, F.A.C. (Excess Emissions) cannot vary or supersede any federal provision of the NSPS, or Acid Rain programs.}*

14. Malfunction Notifications: In case of excess emissions resulting from malfunctions, each owner or operator shall notify the Compliance Authority. 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.]

15. Operating Procedures: The emission standards established by this permit rely on "good combustion practices" (GCP) to reduce emissions. Therefore, all operators and supervisors shall be properly trained to operate and maintain the BFB boiler 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. [Rule 62-4.070(3), F.A.C.]

16. Excess Emissions: As provided by the authority in Rule 62-210.700(5), F.A.C., the following conditions supersede the provisions in Rule 62-210.700(1), F.A.C.

    a. Startup: Excess emissions resulting from a cold startup of the BFB boiler shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed 14 hours unless specifically authorized by the Department for longer duration.

DRAFT

{Permitting note: A cold start-up is a complex procedure done infrequently and is extended because it is necessary to heat the sand bed of the BFB boiler, bring the boiler up to operational temperatures and pressures and heat and the steam turbine-electric generator.}

b. Shutdown: Excess emissions resulting from shutdown of the BFB boiler shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed 3 hours in any 24 hour period unless specifically authorized by the Department for longer duration.

c. Duration: The combined duration of excess emissions from the BFB boiler during startup and shutdown events shall not exceed 340 hours during any consecutive 12 month period.

d. 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.

e. Emission Limit Compliance and Excess Emission: The applicable CEMS-based HCl and HF emissions limits (9.72 TPY) are 12-month rolling limits that do not provide for data exclusion given their nature, which is to provide reasonable assurance that annual emissions will be less than 10 TPY of each. Data exclusions are allowed for calculation of the 24-hour SIP-based NO_X and SO_2 limits and the 30-day SIP-based CO limit.

f. NO_X and SO_2 Emission Caps: No data exclusions are permissible when calculating the 12-month rolling total emissions of NO_X and SO_2 emissions caps given in **Specific Condition 9** above.

g. Opacity: During startup, shutdown and malfunctions, the stack opacity shall not exceed 20% based on 6-minute block averages, except for one 6-minute block per hour that shall not exceed 27% opacity.

[Application No. 0010131-001-AC; Rules 62-210.700(5), 62-210.200(PTE), 62-212.400 (BACT) and 62-4.070(3), F.A.C.]

TESTING REQUIREMENTS

17. Boiler Heat Input Rate Calculation: 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, Part 75 for the calculation of the heat input rate to the biomass BFB boiler at the GREC facility is contained in Appendix F of this permit. This procedure shall be used to calculate the heat input rate in mmBtu/hr to the BFB boiler when using clean woody biomass as its primary fuel and natural gas as a startup fuel. [Rule 62-4.070(3) and 62-212.400 (BACT) F.A.C.]

18. Initial and Annual Stack Tests: In accordance with test methods specified in this permit, the BFB boiler stack shall be tested to demonstrate initial compliance with the emission standards for NH_3, PM, VOC, SAM, opacity (boiler and bin vent filter of alkaline sorbent storage silo), HCl and HF. The tests shall be conducted within 60 days after achieving the maximum heat input rate to the boiler, but not later than 180 days after the initial startup of the boiler. Subsequent compliance stack tests for NH_3 slip, PM, SAM, VOC and opacity 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, SO_2, HF and HCl along with COMS data for opacity shall be reported for each run of the required tests for NH_3, VOC, SAM and PM. The Department may require the permittee to repeat some or all of these initial stack tests after major replacement or major repair of any air pollution control or process equipment.
[Rules 62-212.400(5)(c), 62-212.400 (BACT) 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.}

19. Initial and Annual Organic and Metal HAP Stack Tests: In accordance with test methods specified in this permit, the BFB boiler stack shall be tested to demonstrate initial compliance with the emission standards given in **Specific Condition 9** above for organic HAP and metal HAP. The tests shall be conducted within 60 days after achieving the maximum heat input rate to the boiler, but not later than 180 days after the initial startup of the boiler. Subsequent compliance stack tests for organic 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, SO_2, HF and HCl along with COMS data for opacity shall be reported for each run of the required tests for organic and metal HAP. [Rules 62-212.400(5)(c), 62-212.400 (BACT) 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.}

20. Test Methods: Any required stack tests shall be performed in accordance with the following methods [1].

EPA Method	Description of Method and Comments
CTM-027	Measurement of NH_3 Slip
320	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, 5B, 17	Measurement of PM
6C	Measurement of SO_2 Emissions (Instrumental)
7E	Measurement of NO_X Emissions (Instrumental)
8	Determination of Sulfuric Acid and Sulfur Dioxide Emissions
9	Visual Determination of the Opacity
10	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) *{For concurrent use with EPA Method 25A to deduct emissions of methane and ethane from the total hydrocarbon (THC) emissions measured by Method 25A.}*
19	Calculation Method for NO_X, PM, and SO_2 Emission Rates
25	Determination of Total Gaseous Nonmethane Organic Emissions as Carbon
25A	Measurement of Gaseous Organic Concentrations (Flame Ionization)
26, 26A	Determination of HCl and HF Emissions from Stationary Sources
29	Metals Emissions from Stationary Sources
201, 201A	Measurement of PM_{10}

1. 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.

[Rules 62-204.800, F.A.C. and 40 CFR 60, Appendix A]

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OTHER MONITORING REQUIREMENTS

21. Steam Parameters: In accordance with the manufacturer's recommendations, the permittee shall install, calibrate, operate and maintain continuous monitoring and recording devices for the following parameters: steam temperature (°F), steam pressure (psig) and steam production rate (lb/hour). Records shall be maintained on site and made available upon request.
[Rules 62-4.070(3), 62-212.400 (BACT) and 62-210.200(PTE), F.A.C.]

22. Pressure Drop: The permittee shall maintain and calibrate a device which continuously measures and records the pressure drop across each baghouse compartment controlling the PM emissions from the BFB boiler. Records shall be maintained on site and made available upon request.
[Rule 62-4.070(3) and 62-212.400 (BACT) F.A.C.]

23. Bag Leak Detection: The permittee shall maintain continuous operation of bag leak detection systems on the BFB boiler baghouse including keeping records of the systems measurements. Baghouse leak detection records shall be kept on site and made available upon request.
[Rule 62-4.070(3) and 62-212.400 (BACT) F.A.C.].

24. SCR Ammonia Injection: In accordance with the manufacturer's specifications, the permittee shall install, calibrate, operate and maintain a flow meter to measure and record the ammonia injection rate for the SCR system for the steam generating unit. The permittee shall document the general range of NH_3 flow rates required to meet the NO_X standard over the range of load conditions by comparing NO_X emissions with ammonia flow rates. During NO_X CEMS downtimes or malfunctions, the permittee shall operate at an NH_3 flow rate that is consistent with the documented flow rate for the given load condition. Records shall be maintained on site and made available upon request.
[Rule 62-4.070(3) and 62-212.400 (BACT) F.A.C.]

RECORDS AND REPORTS

25. 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 (ammonia (NH_3) slip in ppmvd @ 7% oxygen; and PM, VOC, SAM, opacity, HF and HCl in appropriate units).
[Rule 62-4.070(3) and 62-212.400 (BACT) F.A.C.]

26. Monthly Operations Summary: By the tenth calendar day of each month, the permittee shall record the following for each fuel used in the BFB biomass boiler in a written or electronic log for the previous month of operation: hours of operation, tons of clean woody biomass and cubic feet of natural gas; pounds of steam per month; total heat input rate; and the updated 12-month rolling totals for each of these operating parameters. In addition, the hourly heat input rate to the BFB biomass boiler shall be recorded and reported. 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.]

27. Quarterly CO, NO_X, SO_2, HCl, HF and Opacity Emissions Report: Within 30 days following the end of each quarter, the permittee shall submit a report to the Compliance Authority summarizing CO, NO_X, SO_2, HCl, HF and opacity emissions including periods of startups, shutdowns, malfunctions, and CEMS and COMS systems monitor availability for the previous quarter. If NO_X and SO_2 CEMS data or opacity COMS data is excluded from a compliance determination during the quarter due to a 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, 62-212.400 (BACT) and 62-210.400(5)(c), F.A.C.]

C. Ash Handling, Storage and Shipment (EU-003)

This section of the permit addresses the following emissions unit.

EU ID No. 003	Emission Unit Description

Ash handling, storage and shipment: Approximately two thirds of ash created by the combustion of biomass fuel will exit the BFB boiler as fly ash with the remaining third leaving as bottom ash. The design maximum process throughput rates are 27,594 TPY of fly ash and 13,140 TPY of bottom ash.

- *Fly Ash*: Fly ash from the boiler convective pass and fabric filter baghouse hoppers will be collected dry and transported pneumatically to a single fly ash storage silo by means of two vacuum blowers. The transferred fly ash will first pass through a receiver/collector that separates the fly ash from the conveying air stream. The separated fly ash will then flow through an air lock valve into the storage silo, which will be vented through a baghouse for control of PM emissions. From the silo, the fly ash will either be stabilized using water in a pug mill or loaded dry into a receiving truck. For the fly ash stabilization case, fly ash and water will be mixed in a pug mill and then transferred via a chute into covered trucks and then hauled offsite for reuse or disposal. During the dry transfer of fly ash, an enclosed process will be utilized to transfer ash from the silo through a chute into sealed trucks.
- *Bottom Ash*: Bottom ash from the bed will primarily consist of noncombustible material (i.e., rocks, glass, sand, metal) contained in the biomass fuel. The coarse bottom ash will be removed from the BFB boiler through ash hoppers and chutes. Coarse material will fall from the bed into the ash hoppers, which form a gas tight seal with the furnace bottom. The coarse material will be sieved in a rotating screen prior to being conveyed to the bottom ash container. The contents of the bottom ash container will be taken offsite for disposal in a properly licensed landfill.

EQUIPMENT

1. Equipment: The permittee is authorized to construct ash handling, storage and shipment emission unit, which consists of ash (fly and bottom) handling, storage and shipment systems containing the following equipment:

   a. Fly Ash Handling: The fly ash handling system consisting of totally enclosed hoppers and drop points associated with the collection and transfer of fly ash from the baghouse used to control PM emissions from the BFB biomass boiler to a storage silo.

   b. Fly Ash Storage: A fly ash storage system consisting of a storage silo and baghouse to control PM emissions.

   c. Pug Mill: A pug mill to stabilize the fly ash with water before loading into a covered truck for shipment off site.

   d. Fly Ash Shipment: The fly ash shipment system consisting of the drop points, conditioner and chutes associated with the transfer of the wet or dry fly ash from the storage silo to trucks for shipment.

   e. Bottom Ash Handling and Shipment: The bottom ash handling and shipment system consisting of the hoppers, drop points, collecting conveyor and transfer conveyor associated with the collection, transfer and shipment of bottom ash from the BFB biomass boiler.

   [Application No. 0010131-001-AC]

DRAFT

2. Air Pollution Control Equipment: To comply with the emission standards of this permit, the permittee shall install and operate the following air pollution control equipment on the ash (fly and bottom) handling, storage and shipment emission unit.

   a. Enclosures and Dust Collectors: Where practical to minimize fugitive PM, bottom and fly ash conveyors shall be enclosed. Where practical, dust collectors shall be installed on the bottom and fly ash transfer points, drop points, hoppers and chutes.
   [Application No. 0010131-001-AC and Rules 62-4.070 and 62-212.400 (BACT) F.A.C.]

   b. Fly Ash Silo Baghouse: One shaker type or similar baghouse shall be designed, installed and maintained to remove PM from the fly ash storage silo exhaust. The baghouse shall be installed and operational before the silo becomes operational. The baghouse will be designed to achieve a PM emission rate of 0.015 gr/dscf. [Application No. 0010131-001-AC; Rules 62-4.070(3), 62-212.400 (BACT) and 62-210.200(PTE), F.A.C.]

PERFORMANCE RESTRICTION

3. Hours of Operation: The hours of operation of this emissions unit is not limited (i.e., unrestricted at 8,760 hours per year).

4. Fly Ash Handling and Storage: The fly ash handling system shall have a maximum design transfer rate of 3.2 TPH with a maximum annual design transfer rate of 27,594 TPY.

5. Bottom Ash Handling: The bottom ash handling system shall have a maximum design transfer rate of 1.5 TPH with a maximum annual design transfer rate of 13,140 TPY.

6. Ash Handling, Storage and Shipment: The overall ash handling, storage and shipment system (EU-003) shall have a maximum annual design transfer rate of 40,734 TPY.
   [Application No. 0010131-001-AC and Rules 62-210.200(PTE) and 62-212.400 (BACT), F.A.C.]

EMISSIONS STANDARDS

7. VE Standard: As determined by EPA Method 9, there shall be no visible emissions greater than 10% opacity, except for one 6 minute period no greater than 20% from the bottom and fly ash conveyors, transfer points, drop points, hoppers, chutes and dust collectors.
   [Rules 62-4.070, 62-212.400 (BACT) and Rule 62-212.400(5)(c), F.A.C.]

8. Fly Ash Silo Baghouse PM Emission Standard: PM emissions from the baghouse of the fly ash silo shall not exceed 0.015 gr/dscf. [Application No. 0010131-001-AC; Rules 62-4.070(3), 62-212.400 (BACT), 62-210.200(PTE) and 62-4.070, F.A.C.]

9. Baghouse PM Standard by Opacity Measurement: A visible emission reading of 5% opacity or less may be used to demonstrate compliance with the PM emission standard in **Specific Condition 8** above**.** A visible emission reading greater than 5% opacity will require the permittee to perform a PM emissions stack test within 60 days to show compliance with the PM standard.
   [Application No. 0010131-001-AC; Rules 62-296.603; 62-296.712, 62-4.070 and 62-212.400 (BACT) F.A.C.; and 40 CFR 60.122(a)(2)]

10. Best Management Practices to Control Unconfined Emissions of PM: To ensure the emission standards with regard to opacity and PM of this subsection are complied with, the procedures set forth in **Specific Condition 11** of **Section II** of this permit, "Unconfined Emissions of Particulate Matter," shall be adhered to where practical and cost effective. In addition, the procedures set forth in Appendix BMP of this permit with regard to fugitive emissions shall be adhered to.
    [Application No. 0010131-001-AC; Rules 62-4.070, 62-296.320 and 62-212.400 (BACT) F.A.C.]

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TESTING AND MONITORING REQUIREMENTS

11. Initial Compliance Tests: The bottom and fly ash conveyors, transfer points, drop points, hoppers, chutes and dust collectors associated with this emission unit shall be tested to demonstrate initial compliance with the VE standards specified in **Specific Condition 7** of this subsection. The fly ash silo baghouse associated with this emission unit shall be tested to demonstrate initial compliance with the VE standard specified in **Specific Condition 9** of this subsection. The initial tests shall be conducted within 180 days after initial operation.
[Rules 62-297.310(7)(a)1., F.A.C. and 62-4.070(3), F.A.C.]

12. Annual Compliance Tests: During each federal fiscal year (October 1st to September 30th), the bottom and fly ash conveyors, transfer points, drop points, hoppers, chutes and dust collectors associated with this emission unit shall be tested to demonstrate compliance with the VE emissions standards specified in **Specific Condition 7** of this subsection. During each federal fiscal year (October 1st to September 30th), the fly ash silo baghouse associated with this emission unit shall be tested to demonstrate compliance with the VE emissions standard specified in **Specific Condition 9** of this subsection. [Rules 62-297.310(7)(a)4, 62-212.400 (BACT) and 62-4.070(3), F.A.C.]

13. Fly Ash Silo PM Compliance Test: The initial and annual VE tests in **Specific Conditions 11 and 12** of this subsection with regard to the fly ash silo baghouse shall serve as a surrogate for the PM emissions tests. If the VE emissions standard in **Specific Condition 9** of this subsection is not met for the fly ash silo baghouse, a PM test utilizing EPA Method 5 must be conducted on the baghouse stack to show compliance with the PM emissions standard in **Specific Condition 8** of this subsection within 60 days. [Rule 62-297.620(4), F.A.C.]

14. Bag Leak Detection: The permittee shall maintain continuous operation of bag leak detection systems, including records, on the fly ash storage silo baghouse. Baghouse leak detection records shall be kept on site and made available upon request. [Rule 62-4.070(3), F.A.C.]

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

Method	Description of Method and Comments
EPA 5	Determination of Particulate Emissions. The minimum sample volume shall be 30 dry standard cubic feet.
EPA 9	Method 9 - Visual Determination of the Opacity of Emissions from Stationary Sources

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.]

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D. Mechanical Draft Cooling Tower EU-004

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
004	Mechanical draft cooling tower: The GREC cooling tower will be a four cell, counter-flow mechanical draft type tower. The structure will be made from fiberglass material and will have high efficiency fill and drift eliminators. Each cell will contain a fan with an electric drive motor. Cooling tower evaporation loss at maximum load is estimated to be 1.34 million gallons per day (MGD). Water obtained from the two onsite Floridian aquifer deep wells will provide makeup water to replace cooling tower evaporation, drift, and blowdown.

EQUIPMENT DESIGN

1. Cooling Tower Design: The permittee is authorized to construct a 4-cell mechanical draft cooling tower system 53 feet in height with a circulating water flow rate of 78,000 gallons per minute (gpm). The design air flow will be approximately 2,425,000 acfm. The tower will be equipped with drift eliminators to meet a proposed drift rate of 0.0005%. [Application No. 0010131-001-AC; and Rules 62-4.070(3), 62-210.200(PTE) and 62-212.400 (BACT), F.A.C.]

PERFORMANCE REQUIREMENTS

2. Hours of Operation: Operation of the cooling tower is not restricted (8,760 hours per year). [Application No. 0010131-001-AC and Rules 62-210.200 (PTE) and 62-212.400 (BACT) F.A.C.]

3. Circulating Water Flow Rate: Upon request, the applicant shall provide a means for determining the circulating water flow rate through the cooling tower system. [Rule 62-4.070, F.A.C.]

4. Drift Rate: The permittee shall provide certification along with the application for a Title V air operation permit indicating that the cooling towers were constructed and installed to the design specifications in this permit. After this certification is provided, the cooling tower will be considered an unregulated emissions unit. [Rules 62-4.070, 62-210.200 (PTE) and 62-212.400 (BACT), F.A.C.]

5. Chromium-Based Water Treatment Chemicals: To avoid being subject to NESHAP 40 CFR 63, Subpart Q - National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers, use of chromium-based water treatment chemicals in the cooling tower water is prohibited. [Rule 62-4.070, F.A.C. and NESHAP Subpart Q]

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E. Emergency Electrical Generator EU-005

This section of the permit addresses the following emissions units.

EU ID No.	Emission Unit Description
005	One emergency diesel generator with a maximum design rating of 564 kW

NSPS AND NESHAP APPLICABILITY

1. NSPS Subpart IIII Applicability: This emergency generator is a Stationary Compression Ignition Internal Combustion Engine (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]

2. NESHAPS Subpart ZZZZ Applicability: The emergency generator is a Liquid Fueled Reciprocating Internal Combustion Engine (RICE) and shall comply with applicable provisions of 40 CFR 63, Subpart ZZZZ. Pursuant to 40 CFR 63.6590(c) the generators 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)]

EQUIPMENT

3. Emergency Generators: The permittee is authorized to install, operate and maintain one emergency generator with a maximum design rating of 564 kW (757 hp) or smaller.
[Application No. 0010131-001-AC and Rules 62-210.200 (PTE) and 62-212.400 (BACT), F.A.C.]

4. ULSD Fuel Oil Storage Tank: The permittee is authorized to construct a 1,000 gallon tank to store ULSD fuel oil for use in the emergency diesel generator. [Rule 62-4.070(3), F.A.C.]

   {Permitting Note: The ULSD fuel oil storage tank for the emergency diesel generator at the GREC facility is not subject to NSPS Subpart Kb because it stores a liquid (ULSD fuel oil) with a maximum true vapor pressure less than 3.5 kPa (0.51 pounds per square inch (psi)). Accordingly it is an unregulated emissions unit.} [40 CFR 60.110b(a) and (c) and Rule 62-204.800(7)(b), F.A.C.]

PERFORMANCE RESTRICTIONS

5. Hours of Operation: The emergency generator may operate up to 500 hours per year for maintenance and testing purposes. The duration of each maintenance and testing event shall not exceed 30 minutes in any hour, and shall not be conducted concurrently with maintenance and testing of the emergency fire water pump diesel engine.
[Application No. 0010131-001-AC and Rules 62-210.200 (PTE) and 62-212.400 (BACT), F.A.C.]

6. Authorized Fuel: The emergency generator shall fire ULSD fuel oil. The ULSD fuel oil shall contain no more than 0.0015% sulfur by weight.
[Application No. 0010131-001-AC and Rules 62-210.200 (PTE) and 62-212.400 (BACT), F.A.C.]

EMISSION STANDARDS

7. Emissions Limits: The emergency generator shall comply with the following emission limits and demonstrate compliance in accordance with the procedures given in 40 CFR 60, Subpart IIII. Manufacturer certification can be provided to the Department in lieu of actual stack testing.

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Emergency Generator (> 560 kW and ≤ 2,237 kW)	**CO** (g/kW-hr)[1]	**PM** (g/kW-hr)	**SO_2**[2] **(% S)**	**NMHC**[3]**+NO_X** (g/kW-hr)
Subpart IIII (2007 and later)	3.5	0.2	0.0015	6.4

1. g/kW-hr means grams per kilowatt-hour.
2. SO_2 emission standard will be met by using ULSD fuel oil in the emergency generator with fuel sulfur (S) content of 0.0015% by weight.
3. NMHC means Non-Methane Hydrocarbons.

[Application No. 0010131-001-AC, NSPS Subpart IIII; and Rules 62-4.070(3) and 62-212.400 (BACT), F.A.C.]

RECORDS AND REPORTS

8. 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. [40 CFR 60.4211]

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F. Emergency Firewater Pump Engine (EU-006)

This section of the permit addresses the following emissions unit.

ID	Emission Unit Description
006	One emergency diesel firewater pump engine with a maximum design rating of 275 hp

NSPS AND NESHAP APPLICABILITY

1. NSPS Subpart IIII Applicability: Each pump engine is an Emergency Stationary Compression Ignition Internal Combustion Engine (Stationary ICE) and shall comply with applicable provisions of 40 CFR 60, Subpart IIII. [40 CFR 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines]

2. NESHAP Subpart ZZZZ Applicability: The emergency pump engines are Liquid Fueled Reciprocating Internal Combustion Engines (RICE) and shall comply with applicable provisions of 40 CFR 63, Subpart ZZZZ. Pursuant to 40 CFR 63.6590(c) the engines 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)]

EQUIPMENT

3. Engine Driven Pump: The permittee is authorized to install, operate, and maintain one emergency diesel fire pump engine. The pump engine will have a maximum rating of 275 hp or smaller. [Application No. 0010131-001-AC and Rules 62-210.200(PTE) and 62-212.400 (BACT), F.A.C.]

4. ULSD Fuel Oil Storage Tank: The permittee is authorized to construct a 1,000 gallon tank to store ULSD fuel oil for use in the emergency diesel firewater pump engine. [Rule 62-4.070(3), F.A.C.]

   {Permitting Note: The ULSD fuel oil storage tank for the emergency diesel firewater pump engine at the GREC facility is not subject to NSPS Subpart Kb because it stores a liquid (ULSD fuel oil) with a maximum true vapor pressure less than 3.5 kPa (0.51 pounds per square inch (psi)). Accordingly it is an unregulated emissions unit.}
   [40 CFR 60.110b(a) and (c) and Rule 62-204.800(7)(b), F.A.C.]

PERFORMANCE RESTRICTIONS

5. Hours of Operation: The pump engine may operate up to 500 hours per year for maintenance and testing purposes. The duration of each maintenance and testing event shall not exceed 30 minutes in any hour, and shall not be conducted concurrently with maintenance and testing of the emergency generator diesel engine.
[Application No. 0010131-001-AC and Rules 62-210.200 (PTE) and 62-212.400 (BACT), F.A.C.]

6. Authorized Fuel: This engine shall fire ULSD fuel oil. The ULSD fuel oil shall contain no more than 0.0015% sulfur by weight. [Application No. 0010131-001-AC and Rules 62-210.200 (PTE) and 62-212.400 (BACT), F.A.C.]

EMISSION STANDARDS

7. Emissions Limits: The emergency fire pump engine shall comply with the following emission limits and demonstrate compliance in accordance with the procedures given in 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.]

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Emergency Pumps (175 hp ≤ and < 300 hp)	**CO** (g/hp-hr)[1]	**PM** (g/hp-hr)	**SO_2** (% S)[2]	**NMHC+NO_X** (g/hp-hr)
Subpart IIII (2009 and later)	2.6	0.15	0.0015	3.0

1. g/hp-hr means grams per horsepower-hour.
2. SO_2 emission standard will be met by using ULSD fuel oil in the emergency generator with fuel sulfur (S) content of 0.0015% by weight.

[Application No. 0010131-001-AC; 40 CFR 60, NSPS Subpart IIII; and Rules 62-4.070(3) and 62-212.400 (BACT), F.A.C.]

RECORDS AND REPORTS

8. 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]

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