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DEP Files No. 0530380-001-AC
PSD-FL-90E

Expires: December 31, 2014
Brooksville Power Plant
Woody Biomass Conversion Project
Hernando County

PROJECT

Florida Power Development, LLC, an affiliate of Arroyo Energy and J.P. Morgan Chase, proposes to convert the existing Brooksville Power Plant, aka Central Power and Lime (CP&L), from an approximate 150 megawatts, gross (MWg) coal-fueled steam-electric generating power plant to a 70 to 80 MWg woody biomass-fueled power plant. The Brooksville Power Plant is co-located with a CEMEX Portland cement plant. The Brooksville Power Plant is categorized as an electrical services facility with a Standard Industrial Classification (SIC) No. of 4911. The Brooksville Power Plant is located in unincorporated Hernando County at 10311 Cement Plant Road approximately 2.5 mile northwest of Brooksville, Florida. The Brooksville Power Plant and the CEMEX Portland cement plant have a common Facility identification number of 0530021. After this permitting action, the Brooksville Power Plant will have a new Facility ID No. of 0530380. The UTM coordinates of the Brooksville Power Plant are Zone 17; 380.03 kilometers (km) East and 3,162.56 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 no changes 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.

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 (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
Electronic Signature

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 the date indicated below to the following persons.

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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.

Electronic Signature

PROPOSED PROJECT

The project involves the conversion of the existing 150 MWg Brooksville Power Plant that currently utilizes a pulverized coal-fired boiler to a 70 to 80 MWg power plant utilizing clean woody biomass as fuel in a grate-suspension boiler. Consequently, the project will require internal structural modifications to the pulverized coal boiler to convert it to a biomass-fired grate-suspension boiler. The electrical generating unit building will also be modified. The existing steam turbine electric generator will be retained to generate electrical power. The project will include new fuel storage and handling systems and the construction of a new multi-pollutant control system. Emission from the multi-pollutant control system will be emitted to the atmosphere through a new exhaust stack separate from the one currently shared with the CEMEX cement plant. The existing emergency generator and emergency ditch pump engine will be retained. The fuel feedstock for the project will consist of clean woody biomass and will be delivered by truck to the project site. Ultralow sulfur distillate fuel oil and natural gas will be used for grate-suspension boiler startup, shutdown and bed stabilization. Ultralow sulfur distillate fuel oil fuel oil will also be used in the emergency equipment. Following conversion, the power plant will no longer be permitted to fire coal.

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

- Efficient combustion in the grate-suspension boiler and emergency equipment to minimize formation of particulate matter (PM), PM with a mean diameter of 10 microns or less (PM₁₀), PM with a mean diameter of 2.5 microns or less (PM_{2.5}), nitrogen oxides (NO_x), carbon monoxide (CO) and volatile organic compounds (VOC);
- Limitation of fuel to clean woody biomass to minimize sulfur dioxide (SO₂) and hazardous air pollutant (HAP) formation, including hydrogen chloride (HCl) and hydrogen fluoride (HF);
- Use of inherently clean fossil fuels for startup, shutdown and bed stabilization of the grate-suspension boiler and the operation of emergency equipment;
- An oxidation catalyst to reduce CO, VOC and organic HAP;
- Ammonia (NH₃) injection into a selective catalytic reduction (SCR) reactor to destroy NO_x and help in the reduction of organic HAP and dioxin/furan (D/F);
- An in-duct sorbent injection system (IDSIS) utilizing milled trona, lime or sodium bicarbonate to control SO₂, HCl, HF and other acid gas HAP;
- An electrostatic precipitator (ESP) to further control PM/PM₁₀/PM_{2.5}, including metal HAP, and to remove injected sorbents; and,
- Reasonable precautions and best management practices to minimize emissions from biomass handling, storage and processing, ash (bottom and fly) handling, storage and shipment and sorbent handling and storage.

The project will incorporate the following emission measurement systems:

- Continuous emission monitoring systems (CEMS) for CO, SO₂ and NO_x; and,
- A continuous opacity monitoring system (COMS) for opacity (visible emissions, VE).

The existing facility consists of the CEMEX cement plant with two kilns and the coal-fired power plant. The power plant is addressed by this permitting action. Cement kiln No. 1 and the power plant currently share a common baghouse to control PM emissions along with a stack. The baghouse and stack are identified as Emission Unit (EU) 020 at the existing facility. As shown in the table below, this project involves the following EU at the existing facility (Facility ID 0530021). As a result of this project the new EU numbers identified in the table will be used at the power plant with a new facility ID of 0530380.

SECTION 1. GENERAL INFORMATION

One totally new EU results from this project, EU 001 which involves the receiving, handling and storage of the biomass fuel for the converted grate-suspension boiler. As seen from the table, new EUs were defined for the ash (fly and bottom) handling storage and shipment systems, IDSIS sorbent handling and storage systems and the emergency equipment.

| Facility 05300380 EU ID No. | Emissions Unit Description | Facility 05300021 EU ID No. |
|--------------------------------|---|--------------------------------|
| 001 | Biomass Handling, Storage and Processing (New EU) | --- |
| 002 | Woody Biomass-Fueled Grate-Suspension Boiler (Formerly Coal-Fired Boiler) | 018 |
| 003 | Ash and Handling, Storage and Shipment | --- |
| Consists of old EUs: | Contaminated Fly Ash & Filter Dust Bin | 036 |
| | Filter Dust Bin | 001 |
| 004 | IDSIS Sorbent Handling and Storage | --- |
| | Limestone Fines Storage | 038 |
| | Lime Dust Storage Bin | 039 |
| 005 | Emergency Equipment | |
| | 500 kilowatt (kW) Emergency Generator | No EU # |
| | 250 kW Emergency Ditch Pump | No EU # |

Facility Regulatory Classification

- The existing facility is a major source of hazardous HAP. The new converted facility will also be a major source of HAP.
- The existing facility operates units that are not subject to the acid rain provisions of the Clean Air Act (CAA). The new converted facility will also not operate units that are subject to the acid rain provisions of the CAA.
- The existing facility is a Title V major source of air pollution in accordance with Chapter 62-213, F.A.C. The new converted facility will also be a Title V major source of air pollution in accordance with Chapter 62-213, F.A.C.
- The existing facility is a major stationary source in accordance with Rule 62-212.400 for the Prevention of Significant Deterioration (PSD) of air quality, F.A.C. The new converted facility will also be a major stationary source in accordance with Rule 62-212.400(PSD), F.A.C.
- The existing 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 new facility is subject to the provisions of the Cross State Air Pollution Rule (CSAPR) as specified in 40 Code of Federal Regulations (CFR) Parts 51, 52, 72, 78, and 97.
- The existing facility along with the converted facility are subject to Chapter 62-204-800, F.A.C for New Source Performance Standards (NSPS) under Section 111 of the Clean Air Act (CAA) and National Emissions Standards for Hazardous Air Pollutants (NESHAP) under Section 112 of the CAA.

SECTION 2. ADMINISTRATIVE REQUIREMENTS

1. Permitting Authority: The Permitting Authority for this project is the Office of Permitting and Compliance (OPC) in the Division of Air Resource Management of the Department of Environmental Protection (Department). The mailing address for the OPC is 2600 Blair Stone Road, MS #5505, Tallahassee, Florida 32399-2400. All documents related to applications for permits shall be submitted to the OPC and the Air Resource Section of the Department's Southwest District Office at: 13051 North Telecom Parkway, Temple Terrace, Florida 33637-0926 (Ph: 813-632-7600).
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 Southwest District Office at: 13051 North Telecom Parkway, Temple Terrace, Florida 33637-0926 (Ph: 813-632-7600).
3. Appendices: The following Appendices are attached as a part of this permit and the permittee must comply with the requirement of the appendices:
 - a. Appendix ASME: American Society of Mechanical Engineers (ASME) Form for Abbreviated Efficiency Test;
 - b. Appendix BMP: Best Management Practices Plan;
 - 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 CSAPR: Federal Implementation Plans: Interstate Transport of Fine Particulate Matter and Ozone and Correction of SIP Approvals;
 - g. Appendix CTR: Common Testing Requirements;
 - h. Appendix Db: NSPS, 40 CFR 60, Subpart Db – Standards of Performance Small Industrial-Commercial-Institutional Steam Generating Units;
 - i. Appendix DDDDD: NESHAP, Subpart DDDDD - National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters and Commercial and Industrial Solid Waste Incineration;
 - j. Appendix F: 40 CFR 75, Appendix F, Section 5 - Measurement of Boiler Heat Input Rate;
 - k. Appendix GC: General Conditions; and
 - l. Appendix GP: Identification of General Provisions - NSPS 40 CFR 60, Subpart A and NESHAP 40 CFR 63, Subpart A.
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.]

SECTION 2. ADMINISTRATIVE REQUIREMENTS

7. Source Obligation:

- (a) 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.
- (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 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. 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.}

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. Appendix BMP of this permit provides a Best Management Plan (BMP) of reasonable precautions specific to the Brooksville Power Plant 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 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.

SECTION 2. ADMINISTRATIVE REQUIREMENTS

[Rule 62-296.320(4)(c), F.A.C.]

10. Previous Construction Permits PSD-FL-090, PSD-FL-091 and Title V Permit No. 0530021-029-AV:

This project will convert the existing 150 MW coal-fired electric utility steam generating unit utilizing a pulverized coal boiler at the Brooksville Power Plant to a 70 to 80 MW biomass-fired steam-electrical generating unit utilizing a grate-suspension boiler. The enforceable requirements within this permit establish two separate facilities not under common control. Further:

- a. Upon initiation of actual construction of the grate within the existing furnace, this permit prohibits the Brooksville Power Plant from firing coal and from sharing a fabric filter baghouse and an exhaust stack with Cement Line 1 of the CEMEX Brooksville South Cement Plant.
- b. Upon initiation of actual construction of the grate within the existing furnace, the conditions contained in the original air construction permits PSD-FL-090 (power plant) and PSD-FL-091 (cement plant) issued by the EPA on March 24, 1984, related to the operation of a coal-fired power plant alone, or in combination with Cement Line 1, are obsolete. This includes any modified versions of those permits through the date of issuance of this permit for the biomass conversion project.
- c. Upon initiation of actual construction of the grate within the existing furnace, the conditions contained in the current Title V permit No. 0530021-029-AV, related to the operation of a coal-fired power plant alone, or in combination with Cement Line 1, are obsolete.

{Permitting Note: As a separate action, once construction on the biomass conversion project has commenced, the Department intends to issue a separate construction permit for the Brooksville South Cement Plant to remove all references to the coal-fired power plant operating individually or in combination with the cement plant. Thereafter, the current Title V permit No. 0530021-029-AV will be revised accordingly.}

[Rules 62-4.070(3); 62-210.200(PTE); and 62-212.400 (PSD).) F.A.C.]

11. Title V Permit for New Facility I.D. No. 0530380: 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.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

A. Biomass Handling, Storage and Processing (EU-001)

This section of the permit addresses the following new EU.

| EU ID No. 001 | EU Description |
|---------------|---|
| | <p><u>Biomass Handling, Storage and Processing:</u> This EU will consist of three primary components:</p> <ul style="list-style-type: none">• <u>Biomass Receiving and Conveyance System:</u> The biomass fuel (i.e., feedstock) will be delivered by truck to the project site generally on a 5-7 days per week, 12-hours per day schedule. At the project site, the fuel will be unloaded by trucks with a self-unloading, walking floor design, to three receiving hoppers and conveyed to a magnetic separator, sizing screen, and mill, for reduction of oversize biomass. Fuel trucks will have an average load of 25 tons of biomass. The fuel will then be conveyed, via an enclosed conveying system, to the biomass (fuel) storage pile.• <u>Biomass Storage Pile:</u> The fuel storage pile will be designed to accommodate approximately 40,000 tons of biomass fuel at a nominal 60 foot height. The fuel pile will be managed using a combination of automated stackers and mobile equipment, such as front-end loaders.• <u>Biomass Boiler Feed System:</u> From the fuel storage pile, the fuel will be unloaded by up to three reclaim hoppers. All conveyors will be covered to reduce particulate emissions. The fuel will then be transferred, via enclosed conveyors, to a secondary screen and a secondary magnet and then to the day-bins within the boiler structure. All conveyors will be covered to reduce PM emissions. |

EQUIPMENT

1. Equipment: The permittee is authorized to construct EU 001, which consists of a biomass receiving and conveyance, storage pile and boiler feed systems containing the following components classified as potential sources of PM/PM₁₀/PM_{2.5} emissions hence forth called PM:
 - a. *A Biomass Receiving and Conveyance System Consisting of:*
 - A truck unloading area consisting of three open hoppers each designed to receive 150 tons per hour (TPH) of biomass fuel.
 - An unloading conveyor to convey the woody biomass fuel from the unloading area to a covered conveyor system. The unloading conveyor system shall be open to allow inspection of the woody biomass fuel to ensure the fuel meets the specifications stipulated in this permit. The unloading conveyor system shall have a designed capacity of 450 TPH.
 - A covered conveyor to convey the biomass fuel to the storage pile. This conveyor system shall be enclosed and fugitive emissions controlled by fabric or bin vent filters where technically feasible. The design capacity of the covered conveyor system is 450 TPH.
 - b. *Biomass Storage Pile Consisting of:* An open storage pile with a design capacity of 40,000 tons of biomass fuel and be approximately 60 feet in height. The biomass storage pile will be managed by a combination of automated stackers and front-end loaders.
 - c. *Biomass Boiler Feed System Consisting of:*
 - Two reclaim hoppers each designed to process 100 TPH of biomass fuel.
 - A conveyor system to convey the woody biomass fuel to the sizing screen. This conveyor system shall be enclosed and fugitive emissions controlled by fabric or bin vent filters where technically feasible. The conveyor system has a design capacity of 200 TPH.
 - A sizing screen, magnetic separator and hog mill designed to process 200 TPH of biomass fuel. The sizing screen, magnetic separator and hog mill shall be contained in an enclosure with the associated PM emissions controlled by a baghouse
 - A conveyor system to convey the biomass fuel from the sizing screen, magnetic separator and hog mill to the grate-suspension boiler day bins. The conveyor system shall be enclosed and

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

A. Biomass Handling, Storage and Processing (EU-001)

fugitive emissions controlled by fabric or bin vent filters where technically feasible. The conveyer system has a design capacity of 200 TPH.

- Boiler day bins to provide biomass fuel to the grate-suspension boiler at a design rate of 200 TPH.

[Application No. 0530380-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

2. **Baghouse:** Based on the preliminary design, the permittee shall install a baghouse to control PM emissions from the sizing screen, magnetic separator and hog mill enclosure. The baghouse shall be designed and maintained to achieve an outlet dust loading rate of 0.020 grains per dry standard cubic feet (gr/dscf) in its exhaust. Based on the final engineering design needs, additional baghouses may be installed as necessary to control fugitive dust from biomass handling, storage and processing EU. The Compliance Authority shall be notified 180 days before Brooksville Power Plant becomes operational of any final engineering design changes. Should the preliminary design change, the permittee shall provide final design details for all baghouses in the application for a Title V air operation permit along with a concurrent modification of this air construction permit.

[Application No. 0530380-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

3. **BMP Plan:** A BMP plan shall be utilized to minimize fugitive PM emissions from biomass 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 assurance and quality control (QA/QC) procedures to ensure woody biomass delivered by vendors and suppliers to the Brooksville Power Plant facility meet the requirements given in the BMP plan. No later than 180 days before the Brooksville Power Plant 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.

{Permitting Note: As part of that final BMP, technical information may be provided by Brooksville Power Plant to the Compliance Authority based on the final engineering of the biomass fuel conveyance systems 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. 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. PM emissions from this EU during operation of the Brooksville Power Plant facility are estimated to be approximately 4.6 tons in any consecutive twelve month period; of this amount approximately 0.9 tons are PM₁₀.}

[Application No. 0530380-001-AC; Rule 62-4.070, F.A.C. Reasonable Assurance, and Rule 62-296.320, F.A.C.]

PERFORMANCE RESTRICTIONS

4. **Hours of Operation:** The hours of operation of this unit are not limited (i.e., unrestricted at 8,760 hours per year).

[Application No. 0530380-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

5. **Clean Woody Biomass:** The fuel to be received, handled, stored and processed shall consist of woody biomass as defined in the Appendix BMP of this permit. Municipal Solid Waste (MSW), other than pre-processed yard waste, is prohibited from use at this facility. Inspection and testing procedures described in Appendix BMP shall be followed to ensure that appropriate woody biomass is used as fuel and that prohibited MSW is not used as fuel.

[Application No. 0530380-001-AC and Rules 62-4.070(3) F.A.C., and 40 CFR 60.51b.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

A. Biomass Handling, Storage and Processing (EU-001)

6. Woody Biomass Storage Area: The woody biomass storage area shall be designed for approximately 40,000 tons of woody biomass at a height of approximately 60 feet. Biomass placed in the pile will be largely managed by mechanical means. The storage pile shall be on level, impervious ground and contoured to minimize wind erosion. The biomass in the pile shall be managed on a first-in-first-out (FIFO) basis. The biomass will then be taken by covered conveyors to the boiler day bins and from there to the grate-suspension boiler. Wet suppression shall only be used as necessary to control fugitive dust emissions otherwise it shall be maintained dry for use as a fuel.
[Application No. 0530380-001-AC]
7. Paved Roadways and Gravel Areas: Fugitive dust emissions from the plant's paved roadways and gravel areas shall be controlled in accordance with **Condition 10 of Section 2** of this permit and the BMP plan. [Rule 62-4.070, F.A.C. Reasonable Assurance, and Rule 62-296.320, F.A.C.]

EMISSIONS STANDARDS

8. General Opacity: 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 outlets of the drop points, transfer points, vent screens and dust collectors associated with this EU.
[Application No. 0530380-001-AC and Rule 62-4.070, F.A.C. Reasonable Assurance].
9. Opacity from Baghouses: Opacity from the baghouses of this EU shall not exceed 5% opacity based on EPA Method 9. [Rule 62-4.070(3) F.A.C., Reasonable Assurance]

TESTING AND MONITORING REQUIREMENTS

10. Initial VE Compliance Tests: The outlets of the drop points, transfer points, the silo vent screens associated with the fuel bins and the baghouses of this emissions unit shall be tested to demonstrate initial compliance with the emissions standards for opacity. The initial tests shall be conducted within 60 days after achieving permitted capacity, but not later than 180 days after initial operation of the EU. [Rules 62-4.070(3) and 62-297.310(7)(a)1, F.A.C.]
11. Annual VE Compliance Tests: During each federal fiscal year (October 1st to September 30th), the outlets of the drop points, transfer points, the silo vent screens associated with the fuel bins and the baghouses of this emissions unit shall be tested to demonstrate compliance with the emissions standards for opacity. [Rule 62-297.310(7)(a)4, F.A.C.]
12. 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.]
13. Test Methods: Required tests shall be performed in accordance with the following reference method.

| 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 as 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

14. 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 overall biomass feed rate to the boiler during the period of testing. [Rule 62-297.310(8), F.A.C.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

B. Grate-Suspension Boiler (EU-002)

This section of the permit addresses the following emission unit.

| EU ID No. 002 | EU Description |
|---------------|--|
| | <p><u>Description:</u> existing boiler will be converted to a woody biomass fueled grate-suspension boiler with water-cooled movable grates. The heat from the exhaust will be recovered to generate superheated steam to generate 70 to 80 MWg of electricity in an existing steam electric generator.</p> <p><u>Fuels:</u> The primary fuel will be clean woody biomass. Ultra low Sulfur distillate fuel oil and natural gas will be used for startup, shutdown and bed stabilization of the grate-suspension boiler.</p> <p><u>Capacity:</u> The maximum heat input capacity is 900 million British thermal units per hour (MMBtu/hr) on a 4-hour average basis. The steam production capability will be approximately 490,000 pounds per hour (lb/hour) at 1,887 pounds per square inch (psi) and 950 degrees Fahrenheit (°F).</p> <p><u>Controls:</u> Efficient combustion of woody biomass in the grate-suspension boiler to minimize formation of PM, NO_x, CO and VOC; limitation of biomass to woody biomass to minimize SO₂ and HAP formation; use of an inherently clean fuels for startup, shutdown and bed stabilization; a oxidation catalyst to further control CO, VOC, and HAP; NH₃ injection into SCR reactor to destroy NO_x and help in the reduction of VOC, HAP and D/F; an IDSIS to further control SO₂ and acid gas HAP, including HCl and HF; and, an ESP with a design efficiency of 99.9% to further control PM and VE, (i.e. opacity) and remove injected sorbents.</p> <p><u>Stack Parameters:</u> The stack will be approximately 12.0 feet in diameter (maximum) and 165 feet tall (minimum). Exhaust flue gas will exit the stack at the following approximate conditions: an exit temperature of 334 °F and a volumetric flow rate of 312,668 actual cubic feet per minute (acfm).</p> <p><u>CEMS and COMS:</u> Emissions of CO, SO₂ and NO_x will be monitored and recorded by CEMS. Opacity will be monitored and recorded by a COMS.</p> <p><u>Applicability of NSPS 40 CFR Subpart Db:</u> This unit is subject to NSPS Subpart Db – for Industrial-Commercial-Institutional Steam Generating Units because it has a maximum heat input capacity greater than 100 MMBtu/hr from all combusted fuels and is not subject to NSPS Subpart Da because it has a maximum heat input capacity of less than or equal to 250 MMBtu/hr from the combustion of fossil fuels.</p> <p><u>Applicability of NESHAP 40 CFR 63 Subpart DDDDD:</u> This unit is subject to NESHAP Subpart DDDDD – National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters and Commercial and Industrial Solid Waste Incineration. Subpart DDDDD has been delayed by EPA until the proceedings for judicial review of the rules are completed or the EPA completes its reconsideration of the rule. If and when Subpart DDDDD comes into force, the biomass boiler at the Brooksville Power Plant must meet the applicable requirements for existing units.</p> |

PROJECT RESTRICTIONS

1. Biomass Conversion Project: The purpose of this project is to convert the existing 150 MW coal-fired electric utility steam generating unit utilizing a pulverized boiler to a 70 to 80 MW biomass-fired steam generating unit utilizing a grate-suspension boiler. Upon initiation of actual construction of the grate within the existing furnace, this permit prohibits the Brooksville Power Plant from firing coal and from sharing a fabric filter baghouse and an exhaust stack with Cement Line 1 of the CEMEX Brooksville South Cement Plant. [Application No. 0530380-001-AC; Design; and Rules 62-4.070(3) and 62-212.400(12), F.A.C.]

EQUIPMENT

2. Boiler Conversion: The permittee is authorized to convert the existing boiler to one grate-suspension boiler with startup burners, overfire air ports, steam drum, superheater, economizer, air heater, ash

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hoppers, ducts, fuel feeding equipment, water-cooled condensing unit, air pollution control equipment and other associated equipment. Existing equipment may be reused from the pulverized coal boiler during the conversion such as: the existing boiler furnace and convection pass, including primary and secondary superheaters, re-heater, and economizer; the existing air heaters, dust collectors, and forced and induced draft fans; the existing CEMS equipment; the balance of plant feed water heating, de-aerator pumps, and condensate collection equipment; the existing main steam-piping and reheat piping; the steam turbine electrical generator, etc. New construction may include, but is not limited to: modification of the electrical generating unit building; the removal of the lower boiler ash hopper and modification to allow installation of new water-cooled stoker grates; an ash conveyor; the removal of the existing pulverized coal burners and installation of new biomass fuel distributors; fuel metering bins; and a fuel conveyor. [Application No. 0530380-001-AC]

3. 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 comprising a multi-pollutant control system on the grate-suspension boiler.
 - a. ESP: The permittee shall design, install, operate and maintain an ESP to control PM and VE. The ESP shall be designed to achieve the PM emissions standards specified in this subsection. [Application No. 0530380-001-AC and Rule 62-4.070(3), F.A.C.]
 - b. SCR System: The permittee shall design, install, operate, and maintain an NH₃-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 and functioning properly whenever the boiler is in operation in accordance with the manufacturer's procedures and guidelines. [Application No. 0530380-001-AC and Rule 62-4.070(3), F.A.C.]
 - c. IDSIS: An IDSIS shall be installed that consists of the pumps, the metering and injection equipment required to inject the sorbent (lime, milled trona or sodium bicarbonate) into the grate-suspension boiler duct work to control SO₂ and HAP acid gas emissions. The sorbent injection rate shall be adjusted as necessary (lb/hr) to control SO₂ emissions to the standard specified in this subsection. [Application No. 0530380-001-AC and Rule 62-4.070(3), F.A.C.]
 - d. Oxidation Catalyst: The permittee shall design, install, operate and maintain an oxidation catalyst to control CO and VOC emissions to the emission standards specified in this section. The oxidation catalyst will also help control organic HAP emissions. [Application No. 0530380-001-AC and Rule 62-4.070(3), F.A.C.]
 - e. Circumvention: The permittee shall not circumvent the air pollution control equipment or allow emissions in excess of the emission standards of this subsection without this equipment operating properly. [Rule 62-210.650, F.A.C.]
4. Ultra Low Sulfur Distillate Fuel Oil Storage Tank: The permittee is authorized to utilize an existing 150,000 gallon tank to store ultra low sulfur distillate fuel oil for use as a grate-suspension boiler fuel for startup, shutdown and bed stabilization. Pipeline natural gas may also be used in the grate-suspension boiler as a startup, shutdown and bed stabilization fuel. [62-4.070(3), Reasonable Assurance]

{Permitting Note: The ultra low sulfur distillate fuel oil storage tank at the Brooksville Power Plant facility is not subject to NSPS Subpart Kb because it is larger or equal to 40,000 gallons (151 cubic meters) and store liquids (ultra low sulfur distillate fuel oil) with a maximum true vapor pressure less than 3.5 kilo Pascals (0.51 psi)). Accordingly they are unregulated emissions units.}

[40 CFR 60.110b(a) and (c); Rule 62-204.800(7)(b), F.A.C.]

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PERFORMANCE REQUIREMENTS

5. Authorized Fuels: The grate-suspension boiler is authorized to combust as its primary fuel clean woody biomass as defined in **Appendix BMP** of this permit. In addition, the grate-suspension boiler is authorized to combust ultra low sulfur distillate fuel oil and pipeline natural gas for startup, shutdown and bed stabilization.
[Application No. 0530380-001-AC; Rules 62-4.070(3), 62-296.410, 62-210.200(PTE), F.A.C., and NSPS, Subpart Db]
6. Heat Input Rate from all Fuels: The maximum heat input capacity from all fuel combinations to the grate-suspension boiler is 900 MMBtu/hr on a 4-hour average basis. 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 19** 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. 0530380-001-AC; Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]
7. Heat Input from Fossil Fuels: The maximum heat input capacity to combust ultra low sulfur distillate fuel oil and natural gas singly or in combination in the grate-suspension boiler, as determined by the physical design and characteristics of the boiler burners, shall be less than 250 MMBtu/hr so as to be exempted from the requirements of NSPS, Subpart Da.
[Application No. 0530380-001-AC; NSPS Subpart Da; Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]
8. Fossil Fuel Quantity Limit: Flow meters shall be installed to record the amount of ultra low sulfur distillate fuel oil (FO) in gallons (gal) and natural gas (NG) in standard cubic feet (scf) that is fired in the fossil fuel burners in the grate-suspension boiler. The maximum amount of fossil fuels (ultra low sulfur distillate fuel oil and natural gas) that shall be fired in the boiler in any 12-month consecutive period is limited by the equation given below.

[Application No. 0530380-001-AC; Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.; 40 CFR 98]

9. Operational Hours: The hours of operation of this emission unit are not restricted (8,760 hours/year).
[Application No. 0530380-001-AC; Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

NSPS APPLICABILITY

10. Subpart Db: The 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 biomass boiler, NSPS Subpart Db contains limits for SO₂, NO_x, PM and opacity. [Application No. 0550063-001-AC and 40 CFR 60, NSPS Subpart Db]

NESHAP APPLICABILITY

11. Subpart DDDDD: The biomass boiler is subject NESHAP 40 CFR 63, Subpart DDDDD – Industrial, Commercial, and Institutional Boilers and Process Heaters and Commercial and Industrial Solid Waste Incineration for major sources of HAP. Subpart DDDDD is contained in Appendix DDDDD of this permit. Currently Subpart DDDDD has been delayed by EPA until the proceedings for judicial review of the rules are completed or the EPA completes its reconsideration of the rule. If and

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when Subpart comes into force, the biomass boiler must meet all applicable requirements for existing units. Currently, Subpart DDDDD contains emission limits for PM, CO, HCl, mercury (Hg) and D/F that would apply to the grate-suspension boiler at the Brooksville Power Plant. [Application No. 0530380-001-AC and NESHAP Subpart DDDDD]

CROSS-STATE AIR POLLUTION RULE (CSAPR)

12. CSAPR Applicability: The Brooksville Power Plant grate-suspension boiler falls under the requirements of CSAPR and must meet all its applicable requirements.
[40 CFR Parts 51, 52, 72, 78, and 97, CSAPR and Rule 62-4.070(3), F.A.C.]

EMISSIONS STANDARDS

13. Emission Limits: Emissions from grate-suspension boiler shall not exceed the following standards.

| Pollutant | Stack Test | CEMS/COMS Based Averages | |
|-----------------------------------|------------------------------|---|-------------------------------|
| NO _x ^a | Not applicable | 135 lb/hour 12-month, rolled monthly | 0.20 lb/MMBtu 30-day basis |
| SO ₂ ^b | Not applicable | 135 lb/hour, 12-month, rolled monthly | |
| CO ^c | Not applicable | 40.5 lb/hr, 12-month, rolled monthly | |
| Opacity ^d | Not applicable | 10 percent (%) opacity (6-minute blocks) 20% opacity (one 6-minute block per hour) | |
| PM/PM ₁₀ ^e | 11.7 lb/hr | Not applicable | |
| VOC ^f | 9.0 lb/hr | Not applicable | |
| SAM ^g | 2.2 lb/hr | Not applicable | |
| NH ₃ Slip ^h | 10 ppmvd @ 7% O ₂ | Not applicable | |

- a. NO_x limit in lb/MMBtu on a 30-day basis is pursuant to NSPS Subpart Db. Mass emission rate limit in pounds per hour is per applicant's request. Mass emission rate limit in tons per year (TPY) per applicant's request and to avoid PSD.
- b. Use of low sulfur fuels including wood, ultra low sulfur distillate fuel oil and pipeline natural gas ensure that uncontrolled SO₂ emissions are less than 0.32 lb/MMBtu. Therefore, no specific limit from NSPS Subpart Db applies. Mass emission rate limit in TPY per applicant's request and to avoid PSD. Use of natural gas and ultra low sulfur distillate fuel oil meets the SO₂ BACT requirements of Rule 62-296.406, F.A.C.
- c. Mass rate CO emission limit per applicant's request and insures annual emissions will be less than the PSD threshold in TPY.
- d. Visible Emissions. Opacity of 10% provides reasonable assurance of continuous compliance with PM/PM₁₀ and is a reasonable expectation given catalyst-based NO_x, CO, VOC controls. During startups, shutdowns and malfunction the following limits apply: 20% opacity (6-minute blocks) except for one 6-minute block per hour of 27% opacity. Use Opacity limit ensures that the requirement of Rule 62-296.406, F.A.C is met.
- e. Compliance with the filterable (f) PM/PM₁₀ mass emission limit approximately equals a concentration emission limit of 0.013 lb/MMBtu which insures compliance with the 40 CFR 60, Subpart Db limit of 0.030 lb PM/MMBtu (filterable PM only). Use of natural gas and ultra low sulfur distillate fuel oil meets the PM BACT requirements of Rule 62-296.406, F.A.C. PM mass emission rate limit in pounds per hour per applicant's request and to avoid PSD.
- f. VOC mass emission rate limit in pounds per hour per applicant's request and to avoid PSD. Only initial stack test required to verify emission rate.
- g. SAM mass emission rate limit in pounds per hour per applicant's request and to avoid PSD. Only initial stack test required to verify emission rate.
- h. Ammonia (NH₃) slip in parts per million by dry volume at 7% oxygen (ppmvd @ 7% O₂) per applicant's request.

[Application No. 0530380-001-AC; Rules 62-210.200(PTE), 62-296.406, 62-296.410, and 62-4.070(3)(Reasonable Assurance), F.A.C. to avoid triggering PSD Requirements under Rule 62-212.400, F.A.C.; 40 CFR 60, Subpart Db]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

B. Grate-Suspension Boiler (EU-002)

CONTINUOUS EMISSION MONITORS

14. Continuous Monitoring Requirements: The permittee shall install, calibrate, maintain and operate CEMS and a diluent monitor to measure and record the emissions of SO₂, NO_x and CO from the boiler stack in a manner sufficient to demonstrate continuous compliance with the CEMS-based emission standards in **Condition 13** above (see Appendix CEMS for further information). The permittee shall install, calibrate, maintain and operate COMS to measure and record the opacity to demonstrate compliance with the COMS-based emission standard 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. Within one working day of discovering emissions in excess of the CEMS or COMS based SO₂, NO_x, CO and opacity standard, the permittee shall notify the Compliance Authority.
- a. SO₂ CEMS: The SO₂ 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 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 Db 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 relative accuracy testing audits (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, considering the allowable methods of operation and corresponding emission standards.
 - d. COMS: In accordance with 40 CFR 60.48b(a) the permittee shall install, calibrate, operate and maintain a COM 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.
 - e. Diluent Monitor: The oxygen (O₂) or CO₂ content of the flue gas shall be monitored at the location where SO₂, CO and NO_x are monitored. Each monitor shall comply with the performance and quality assurance requirements of 40 CFR 75.

[Application No. 0530380-001-AC; Rule 62-4.070(3), F.A.C.; 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. 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.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

B. Grate-Suspension Boiler (EU-002)

16. Operating Procedures: 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 good combustion practices as well as methods of minimizing excess emissions. [Rule 62-4.070(3), F.A.C.]
17. 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. [Rule 62-210.700(4), F.A.C.]
18. Emission Limit Compliance and Excess Emission: Because of the long-term nature of all of the SO₂, NO_x, and CO CEMS-based mass emission rate limits, all emissions data for these pollutants, including periods of startup, shutdown and malfunction, shall be included in any compliance determinations based on CEMS data. [Rules 62-210.700(4), 62-210.200(PTE) and 62-4.070(3), F.A.C.]
19. Excess Emissions Allowed – Opacity Requirements: 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. 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.
[Rules 62-210.700(5), 62-210.200(PTE) and 62-4.070(3), F.A.C.]

TESTING REQUIREMENTS

20. Boiler Performance Test: Within 180 days of first fire on biomass with ultra low sulfur distillate fuel oil or natural gas used for flame stabilization, the permittee shall conduct a test to determine the boiler thermal efficiency. The 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 for at least three hours when firing only the fuels types with heating values representative of the boiler design fuel as practical. The boiler steam conditions and production rate shall be monitored and recorded during the test. The primary fuel firing rate (in tons per hour, gallons per hour or cubic feet per hour as appropriate) shall be calculated and recorded based on the steam parameters. Samples of the as-fired biomass shall be analyzed for the heating value (Btu/lb) and moisture content (%). The actual heat input rate (MMBtu/hr) 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 one of the following methods to determine the heat input rate to the biomass boiler:
 - (a) *Design Thermal Efficiency*, the boilers’ design thermal efficiency along with steam production and steam characteristics can be used if actual tested thermal efficiency is within 90% of the design value.
 - (b) *Actual Tested Thermal Efficiency*, the actual tested thermal efficiency must be used if this level is less than 90% of the design value. The procedure given in Appendix ASME of this permit shall be used to measure the boiler efficiency
 - (c) *Alternative Method*, in lieu of the procedures given in Appendix ASME, the procedures given in Appendix F of this permit may be used to calculate boiler heat input. If used, Section 5 of

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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 Florida Power Development 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 and Annual Stack Tests:** In accordance with test methods specified in this permit, the boiler stack shall be tested to demonstrate initial compliance with the emission standards for NH₃ slip, PM, SAM and VOC. 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 NH₃ slip and PM 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 SO₂, CO and NO_x along with COMS data for opacity shall be reported for each run of the required tests for VOC, SAM, NH₃ slip 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) and 62-297.310(7)(a) and (b), F.A.C.; 40 CFR 60.8]

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

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

| EPA Method | Description of Method and Comments |
|------------|--|
| CTM-027 | Measurement of NH ₃ Slip |
| 1 - 4 | Determination of Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content <i>{Notes: Methods shall be performed as necessary to support other methods.}</i> |
| 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 from Stationary Sources |
| 9 | Visual Determination of the Opacity |
| 10 | Measurement of CO Emissions (Instrumental) <i>{Note: The method shall be based on a continuous sampling train.}</i> |
| 18 | Measurement of Gaseous Organic Compound Emissions (Gas Chromatography) <i>{For concurrent use with EPA Method 25A to deduct emissions of methane and ethane from the total hydrocarbon emissions measured by Method 25A.}</i> |
| 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) |

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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B. Grate-Suspension Boiler (EU-002)

OTHER MONITORING REQUIREMENTS

24. Operating 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), steam production rate (lb/hr) and heat rate (4 hour averages). Records shall be maintained on site and made available upon request. [Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]
25. 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 NH₃ 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 NH₃ 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), F.A.C.]

RECORDS AND REPORTS

26. 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/hr), calculated fuel firing rate (tons/hour, gallons per hour and millions of scf per hour as appropriate) and emission rates (NH₃ slip in ppmvd @ 7% O₂; PM, VOC, SAM and in lb/hr). SO₂, CO and NO_x CEMS data along with COMS opacity data during stacking testing shall also be included the each stack test report. [Rule 62-4.070(3), F.A.C.]
27. Monthly Operations Summary: By the tenth calendar day of each month, the permittee shall record the following for each fuel used in the biomass boiler in a written or electronic log for the previous month of operation: hours of operation; tons of clean woody biomass, gallons of ultra low sulfur distillate fuel oil; millions of scf of pipeline 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 4 hour average heat input rate to the 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) F.A.C. Reasonable Assurance]
28. Quarterly SO₂, CO, NO_x and Opacity Emissions Report: Within 30 days following the end of each quarter, the permittee shall submit a report to the Compliance Authority summarizing SO₂, CO, NO_x 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 malfunction, the permittee shall include a description of the malfunction, the actual emissions recorded, and the actions taken to correct the malfunction in the quarterly report. After the first full four quarters of operation, the permittee may request approval from the Compliance Authority to submit these reports on a semiannual basis. 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.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

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

This section of the permit addresses the following EU.

| EU ID No. 003 | EU Description |
|---------------|--|
| | <p><u>Ash Handling, Storage and Shipment:</u></p> <ul style="list-style-type: none">• The combustion of biomass in the converted boiler will result in the formation of bottom and fly ash. Bottom ash will be collected from the boiler by a submerged drag-chain conveyor, which will deliver the wet ash to a storage area. The storage area will be on a level and impervious surface surround on three sides by retaining walls. The bottom ash will be handled in the storage area using mechanical means such as front-end loaders. The bottom ash will be sent daily to the co-located cement plant for use in its kilns or shipped off site for disposal.• The fly ash is the entrained exhaust PM captured by the ESP. An enclosed conveyor will be used to transport the fly ash from the ESP to the ash storage bins. The storage bins will be equipped with a bin vent filters to minimize any PM emissions from the transfer operations. Ash from the storage bins will be loaded via trucks for shipment to the co-located cement plant for use in its kilns or for removal of the ash off-site. |

EQUIPMENT

1. Equipment: The permittee is authorized to construct EU 003, 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 enclosed hoppers, drop points and conveyors associated with the collection and transfer of fly ash to two storage bins from the ESP used to control PM emissions from the biomass boiler.
 - b. Fly Ash Storage: A fly ash storage system consisting of two storage bins with bin vent filters to control PM emissions. The permittee may use the former contaminated fly ash and filter dust bin (EU 036) and the fly ash storage bin (EU 001) of the combined facility (cement and power plants).
 - c. Fly Ash Shipment: The fly ash shipment system consisting of the drop points and chutes associated with the transfer of the fly ash from the storage bins to trucks for shipment to the cement plant or off-site for disposal.
 - d. Bottom Ash Handling and Shipment: The bottom ash handling and shipment system consisting of the hoppers, drop points, and submerged drag-chain conveyor associated with the collection and transfer of bottom ash from the biomass boiler to the walled, flat, impervious storage area. From the storage area, the bottom ash will either be sent to the cement plant or be designated for removal off-site.

[Application No. 0530380-001-AC]
2. Air Pollution Control Equipment: To comply with the emission standards of this subsection, the permittee shall install and operate the following air pollution control equipment on the ash (fly and bottom) handling, storage and shipment EU.
 - a. Enclosures and Dust Collectors: To minimize fugitive PM, bottom and fly ash conveyors shall be covered. Where practical, dust collectors shall be installed on the bottom ash and fly ash transfer points, drop points, hoppers and chutes.

[Application No. 0530380-001-AC and Rule 62-4.070, F.A.C. Reasonable Assurance].
 - b. Fly Ash Storage Bins: Bin vent filters shall be installed and maintained to remove PM from the fly ash storage bins exhaust. The filters shall be installed and operational before the bins are operated. [Application No. 0530380-001-AC; Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

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

- c. Bottom Ash Storage Area: The procedures described in the BMP plan provided in Appendix BMP of this permit regarding the bottom ash storage area shall be followed to minimize fugitive dust emissions and odors from the bottom ash storage area.
- d. Dust collectors, bin vent filters and baghouses shall be designed to achieve a PM emission rate of 0.020 gr/dscf or less.
[Application No. 0530380-001-AC; Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

PERFORMANCE RESTRICTION

3. Hours of Operation: The hours of operation of this emission unit are not limited (i.e., unrestricted at 8,760 hours per year).
[Application No. 0530380-001-AC; Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

EMISSIONS STANDARDS

4. 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. As determined by EPA Method 9, there shall be no visible emissions greater than 5% opacity from the ash storage bin vent filters.
[Rule 62-4.070, F.A.C. Reasonable Assurance and Rule 62-212.400(5)(c), F.A.C.]
5. 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 **Condition 10** of **Section 2** 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. 0530380-001-AC; Rule 62-4.070, F.A.C. Reasonable Assurance, and Rule 62-296.320 F.A.C.]

TESTING AND MONITORING REQUIREMENTS

6. Initial Compliance Tests: The bottom and fly ash conveyors, transfer points, drop points, hoppers, chutes, dust collectors and fly ash storage bins vent filters associated with this EU shall be tested to demonstrate initial compliance with the VE standards specified in **Condition 4** of this subsection. The initial tests shall be conducted within 180 days after initial operation.
[Rule 62-297.310(7)(a)1., F.A.C. and Rule 62-4.070(3), F.A.C.]
7. 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 and ash storage bins vent filters associated with this EU shall be tested to demonstrate compliance with the VE emissions standards specified in **Condition 4** of this subsection.
[Rule 62-297.310(7)(a)4, F.A.C. and Rule 62-4.070(3), F.A.C.]
8. Test Methods: Any required 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 |

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.]
10. Dust Collector Design Specification: To demonstrate compliance with the dust outlet loading specification, the permittee shall maintain records from the vendor. [Rule 62-4.070(3), F.A.C.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

D. IDSIS Sorbent Handling and Storage (EU-004)

This section of the permit addresses the following emissions unit.

| EU ID No. 004 | EU Description |
|---------------|--|
| | <p><u>IDSIS Sorbent Handling and Storage</u>: To control acid gas emissions from the boiler, consisting primarily of SO₂, HCl and HF, an IDSIS will be used. In this system, sorbent (hydrated lime, milled trona or sodium bicarbonate) will be injected in the flue gas duct work prior to the ESP. The sorbent will be stored in two storage bins prior to use. The sorbent will be withdrawn from the bins and pneumatically conveyed to the duct work upstream of the ESP. PM emissions from the bins will be controlled by bin vent filters. The spent sorbent will be collected from the ESP when the fly ash is collected as described in Subsection III-C. The sorbent will be disposed of with the fly ash.</p> |

EQUIPMENT

1. Equipment: The permittee is authorized to construct EU 004, which consists of the IDSIS sorbent handling and storage systems containing the following equipment:
 - a. Sorbent Loading: A sorbent loading system consisting of enclosed hoppers and covered conveyors associated with the transfer of the sorbent to two storage bins.
 - b. Sorbent Storage: A sorbent storage system consisting of two storage bins with bin vent filters to control PM emissions. These storage bins were formerly the limestone fines storage (EU 038) and the lime dust storage bin (EU 039) of the combined facility (cement and power plants).
 - c. Sorbent Conveyance: A sorbent conveyance system consisting of an enclosed pneumatic conveyor to transport the sorbent from the storage bins to the flue gas duct work upstream of the ESP. The conveyance system also includes the necessary nozzles and metering equipment required to inject the sorbent into the duct work.
 - d. Dust collectors, bin vent filters and baghouses shall be designed to achieve a PM emission rate of 0.020 gr/dscf or less.
[Application No. 0530380-001-AC; Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]
[Application No. 0530380-001-AC]
2. Air Pollution Control Equipment: To comply with the emission standards of this subsection, the permittee shall install and operate the following air pollution control equipment on IDSIS sorbent handling and storage EU.
 - a. Enclosures and Dust Collectors: To minimize fugitive PM, sorbent conveyors shall be covered. Where practical, dust collectors shall be installed on the sorbent transfer points, drop points, hoppers and chutes.
[Application No. 0530380-001-AC and Rule 62-4.070, F.A.C. Reasonable Assurance].
 - b. Sorbent Storage Bins: Bin vent filters shall be installed and maintained to remove PM from the sorbent storage bins exhaust. The vent filters shall be installed and operational before the storage bins are operated.
[Application No. 0530380-001-AC; Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

PERFORMANCE RESTRICTION

3. Hours of Operation: The hours of operation of this EU are not limited (i.e., unrestricted at 8,760 hours per year). [Application No. 0530380-001-AC; Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

D. IDSIS Sorbent Handling and Storage (EU-004)

EMISSIONS STANDARDS

4. 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 sorbent conveyors, transfer points, drop points, hoppers, chutes and dust collectors. As determined by EPA Method 9, there shall be no visible emissions greater than 5% opacity from the bin vent filters. [Rule 62-4.070, F.A.C. Reasonable Assurance and Rule 62-212.400(5)(c), F.A.C.]
5. 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 **Condition 10** of **Section 2** 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. 0530380-001-AC; Rule 62-4.070, F.A.C. Reasonable Assurance, and Rule 62-296.320 F.A.C.]

TESTING AND MONITORING REQUIREMENTS

6. Initial Compliance Tests: The sorbent conveyors, transfer points, drop points, hoppers, chutes, dust collectors and sorbent bins vent filters associated with this EU shall be tested to demonstrate initial compliance with the VE standards specified in **Condition 4** of this subsection. The initial tests shall be conducted within 180 days after initial operation.
[Rule 62-297.310(7)(a)1., F.A.C. and Rule 62-4.070(3), F.A.C.]
7. Annual Compliance Tests: During each federal fiscal year (October 1st to September 30th), the sorbent ash conveyors, transfer points, drop points, hoppers, chutes and dust collectors and sorbent bins vent filters associated with this EU shall be tested to demonstrate compliance with the VE emissions standards specified in **Condition 4** of this subsection.
[Rule 62-297.310(7)(a)4, F.A.C. and Rule 62-4.070(3), F.A.C.]
8. Test Methods: Any required 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 |

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.]
10. Dust Collector Design Specification: To demonstrate compliance with the dust outlet loading specification, the permittee shall maintain records from the vendor. [Rule 62-4.070(3), F.A.C.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

E. Emergency Equipment (EU-005)

This section of the permit addresses the following EU.

| EU ID No. | EU Description |
|-----------|---|
| 005 | One emergency diesel generator with a maximum design rating of 500 kilowatt (kW) and one emergency ditch pump with a maximum design rating of 250 kW. |

NSPS AND NESHAP APPLICABILITY

1. NSPS Subpart IIII Applicability: The emergency generator was manufactured in 1963 while the emergency ditch pump was manufactured in 1961. Consequently, while both are stationary compression ignition internal combustion engine, the provisions of 40 CFR 60, Subpart IIII, including emission testing or certification do not apply. [40 CFR 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines]
2. NESHAPS Subpart ZZZZ Applicability: The emergency generator and emergency ditch pump are subject to the applicable provisions of 40 CFR 63, Subpart ZZZZ.
 - a. Change oil and filter every 500 hours of operation or annually, whichever comes first;
 - b. Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first;
 - c. Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.

Minimize the engine's time spent at idle and minimize the engine's startup time at startup to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations apply. [§§63.6600 and 63.6640]

If you own or operate an existing emergency stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions or an existing emergency stationary RICE located at an area source of HAP emissions, you must install a non-resettable hour meter if one is not already installed. [§ 63.6625(f)]

[40 CFR 63, Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines]

EQUIPMENT

3. Emergency Generator: The permittee is authorized to continue to operate, and maintain one emergency generator with a maximum design rating of 500 kW.
[Application No. 0530380-001-AC and Rule 62-210.200 (PTE), F.A.C.]
4. Emergency Ditch Pump: The permittee is authorized to continue to operate, and maintain one emergency ditch pump with a maximum design rating of 250 kW (335 hp).
[Application No. 0530380-001-AC and Rule 62-210.200 (PTE), F.A.C.]
5. Fuel Storage Tank: The permittee is authorized to continue to use one 400 gallon tank to store fuel oil for use in the emergency generator. The emergency ditch pump has an integral fuel tank which holds approximately 25 gallons of fuel oil.
[Application No. 0530380-001-AC and Rule 62-210.200 (PTE), F.A.C.]

PERFORMANCE RESTRICTIONS

6. Hours of Operation: The emergency generator and the emergency ditch pump may each operate up to 100 hours per year for maintenance and testing purposes. Operation during emergency conditions is unlimited. [Application No. 0530380-001-AC and Rule 62-210.200 (PTE), F.A.C.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

E. Emergency Equipment (EU-005)

7. Authorized Fuel: The emergency generator and emergency ditch pump shall fire ultra low sulfur distillate fuel only. The ultra low sulfur distillate fuel oil fired in the generator and ditch pump shall have a vendor certification indicating its sulfur content is 0.0015% or less. [Application No. 0530380-001-AC and Rule 62-210.200 (PTE), F.A.C.]

RECORDS AND REPORTS

8. Notification, Recordkeeping and Reporting Requirements: The permittee shall maintain records demonstrating fuel usage and quality along with the hours of operation for testing and maintenance purposes for both the emergency generate and ditch pump. [Rule 62-4.070(3), F.A.C.]