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PERMITTEE

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Authorized Representative:
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Air Permit No. 1110138-001-AC
Expires: June 30, 2014
St. Lucie Plasma Gasification Project
Waste-to-Energy (WTE) Facility
Facility ID No. 1110138
St. Lucie County

PROJECT AND LOCATION

This permit authorizes the construction of a gross 24 megawatt (MW) plasma arc gasification waste-to-energy (WTE) power plant. The proposed Geoplasma-St. Lucie, LLC Plasma Gasification WTE facility will be located in St. Lucie County on a parcel of land approximately 9 acres in size within the site currently occupied by St. Lucie County's Sanitary Landfill. The landfill is located off of Glades Cut-Off Road south of the crossing of Interstate 95 and the Florida Turnpike and approximately 8 miles southwest of the City of Fort Pierce. The UTM coordinates for this site are Zone 17; 335.20 kilometers (km) East and 3,084.10 km North.

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 and as described in the application, approved drawings, plans, and other documents on file with the Department. 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 Florida Statutes 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

Joseph Kahn, Director
Division of Air Resource Management

6/16/10
(Date)

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 6/17/15 to the persons listed below.

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Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

(Clerk) 6/17/15 (Date)

FACILITY AND PROJECT DESCRIPTION

The proposed facility is a gross 24 MW municipal solid waste (MSW) fed plasma arc gasification power plant called the St. Lucie Plasma Gasification facility. The fuel sources for the plasma arc gasifier will be principally MSW but will also include tires with steel belts and other permitted feedstocks. Metallurgical coke (coke) will also be used to provide a porous bed at the bottom of the gasifier. Limestone will also be added to the gasifier as a flux material to promote the fusion of metals and minerals.

The MSW, tire and other feedstocks will be received, processed for material recovery and size reduction, mixed with limestone and coke, and then fed into the plasma heated gasifier vessel where the organic components of the feedstock materials will be converted into a synthetic fuel gas (syngas). The syngas will then be combusted in a multi-stage thermal oxidizer followed by a heat recovery steam generator (HRSG) to generate high-pressure, high-temperature steam to drive a steam turbine electrical generator (STG) providing electrical power to the grid. The exhaust gas from the HRSG will pass through an emission control system prior to discharge to the atmosphere.

An emergency flaring system will also be available to combust the syngas during times of excess syngas production or the malfunction or shutdown of the thermal oxidizer, HRSG, emission control system or induction draft (ID) fans.

This project creates the following new emissions units (EU).

Facility ID 1110138

EU ID No.	Emission Unit Description
001	Material handling consisting of: fuel feedstock (MSW, tires and coke); limestone; powdered activated carbon (PAC); and, process byproducts (vitrified residue, spent carbon and gypsum)
002	Plasma arc gasifier to generate syngas
003	Emergency syngas flaring system
004	Multi-staged thermal oxidizer fueled by syngas, a HRSG and a STG
005	Emergency generator fueled by biodiesel or ultra low sulfur distillate (ULSD) fuel oil
006	Emergency fire water pump engine fueled by biodiesel or ULSD fuel oil
007	Auxiliary boiler fueled by natural gas

FACILITY REGULATORY CLASSIFICATION

- The facility is a major source of hazardous air pollutants (HAP).
- The facility does not operate 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 not a major stationary source in accordance with Rule 62-212.400 (PSD), F.A.C.
- The facility is not 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 Sections 111 and 129 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 Bureau of Air Regulation, Division of Air Resource Management, Florida Department of Environmental Protection (Department). The Bureau of Air Regulation's mailing address is 2600 Blair Stone Road (MS #5505), Tallahassee, Florida 32399-2400. All documents related to applications for permits to operate an emissions unit shall be submitted to the Southeast District (SED) Office of the Department. The SED Office mailing address is 400 North Congress Avenue, Suite 200, West Palm Beach, Florida 33401.

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 SED Office at 400 North Congress Avenue, Suite 200, West Palm Beach, Florida 33401. The telephone number of the district office is 561/681-6600. Copies of these documents shall also be submitted to the SED Branch Office at 1801 Southeast Hillmoor Drive, Suite C-204, Port St. Lucie, Florida 34652. The telephone number of the branch office is 772/398-2806.

3. Appendices: The following Appendices are attached as part of this permit and must be complied with by the permittee:

a.	Appendix A	Identification of General Provisions - NSPS 40 CFR 60, Subpart A;
b.	Appendix A1	General Provisions - NSPS 40 CFR 63, Subpart A;
c.	Appendix ASTM	ASTM Standard D6751-09 for Biodiesel;
d.	Appendix CC	Common Conditions;
e.	Appendix CEMS	Continuous Emissions Monitoring System (CEMS) Requirements;
f.	Appendix CF	Citation Formats and Glossary of Common Terms;
g.	Appendix CTR	Common Testing Requirements;
h.	Appendix Db	NSPS, 40 CFR 60, Subpart Db – Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units;
i.	Appendix Eb	NSPS, 40 CFR 60, Subpart Eb – Standards of Performance for Large Municipal Waste Combustors;
j.	Appendix GC	General Conditions;
k.	Appendix IIII	NSPS, Subpart IIII - Stationary Compression Ignition Internal Combustion Engines; and,
l.	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: The permittee shall notify the Compliance Authority upon commencement of construction. No new emissions unit shall be constructed and no existing emissions unit shall be modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]

7. Source Obligation:

   (a) 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. Application for Title V Permit: This permit authorizes construction of the permitted emissions units and initial operation to determine compliance with Department rules. A Title V air operation permit is required for regular operation of the permitted emissions unit. The permittee shall apply for a Title V air operation permit at least 90 days prior to expiration of this permit, but no later than 180 days after 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.]

   {Permitting Note: An objectionable odor is defined in Rule 62-210.200(Definitions), F.A.C., as any odor present in the outdoor atmosphere which by itself or in combination with other odors, is or may be harmful or injurious to human health or welfare, which unreasonably interferes with the comfortable use and enjoyment of life or property, or which creates a nuisance.}

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

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 matter shall specify the reasonable precautions to be taken by that facility to control the emissions of unconfined particulate matter. Reasonable precautions include the following: a) Paving and maintenance of roads, parking areas and yards; b) Application of water or chemicals to control emissions from such activities as demolition of buildings, grading roads, construction, and land clearing; c) Application of asphalt, water, oil, chemicals or other dust suppressants to unpaved roads, yards, open stock piles and similar activities; d) Removal of particulate matter from roads and other paved areas under the control of the owner or operator of the facility to prevent re-entrainment, and from buildings or work areas to prevent particulate from becoming airborne; e) Landscaping or planting of vegetation; f) Use of hoods, fans, filters, and similar equipment to contain, capture and/or vent particulate matter; g) Confining abrasive blasting where possible; and, h) Enclosure or covering of conveyor systems. In determining what constitutes reasonable precautions for a particular facility, the Department shall consider the cost of the control technique or work practice, the

environmental impacts of the technique or practice, and the degree of reduction of emissions expected from a particular technique or practice. [Rule 62-296.320(4)(c), F.A.C.]

12. Excess Emissions: Except as required by specific conditions of this permit dealing with excess emissions with regard to individual emission units, the following conditions apply to excess emissions at the Geoplasma facility.
    a. Allowed: Excess emissions resulting from startup, shutdown or malfunction of any emissions unit shall be permitted providing best operational practices to minimize emissions are adhered to and the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration. A malfunction means any unavoidable failure of air pollution control equipment or process equipment to operate in a normal or usual manner.

       {Permitting Note: Per Rules 62-4.070(3) and 62-296(4)(b)1, F.A.C., visible emissions from the emergency flare system shall not exceed 20 percent opacity under any circumstances.}
    b. Malfunction: Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during startup, shutdown, or malfunction shall be prohibited.
    c. Department Discretion: Considering operational variations in types of industrial equipment operations affected by this rule, the Department may adjust maximum and minimum factors to provide reasonable and practical regulatory controls consistent with the public interest.
    d. Department Notification: The permittee shall notify the Compliance Authority within one working day of discovering any emissions in excess of a CEMS standard subject to the specified averaging period. All such reasonably preventable emissions shall be included in any CEMS compliance determinations. All valid emissions data (including data collected during startup, shutdown and malfunction) shall be used to report emissions for the Annual Operating Report.

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

    {Permitting Note: The Excess Emissions Rule at Rule 62-210.700, F.A.C., cannot vary or supersede any requirement of an NSPS or NESHAP provision.}

13. Facility-Wide Emissions Report: The owner or operator shall submit an Annual Operating Report (AOR) for Air Pollutant Emitting Facility (DEP Form No. 62-210.900(5)) to the Department annually pursuant to Rule 62-210.370(3), F.A.C. Using the computation methods described in Rule 62-210.370(2), F.A.C., the required AOR shall also include a demonstration that facility emissions of NO_X, CO, SO_2, VOC and PM/PM_{10} are each less than 250 tons per year (TPY). [Rule 62-210.370, F.A.C.]
14. Waste Operating Plan: Thirty days prior to operation of the Geoplasma facility, the permittee must submit an updated solid waste operating plan to the SED waste program. [Rule 62-4.070(3) F.A.C.]
15. Permanent Facility Shut Down: If the Geoplasma facility shuts down permanently, all MSW, tires other permitted feedstock, materials and process by-products must be deposed of in the St. Lucie landfill or removed from the site within 7 calendar days. [Rules 62-4.070(3) and 62-296.320(2) F.A.C.]
16. Temporary Facility Shut Down: If the Geoplasma facility is temporarily shut down for more than consecutive 3 days due to malfunction, maintenance or other operational issues, the permittee must remove MSW and other permitted feedstocks to St. Lucie landfill or remove it from the site.
    [Rules 62-4.070(3) and 62-296.320(2) F.A.C.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

A. Material (MSW, Tires, Coke, Limestone, PAC and Process Byproducts) Handling (EU-001)

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
001	Material (MSW, Tires, Coke, Limestone, PAC and Process Byproducts) Handling: The following materials will be handled by this emission unit. • *MSW and Tires*: MSW, tires and other permitted feedstocks will be used as fuel for the gasification process. The existing receiving and baling recycling building will be used for initial processing of the fuel with additional storage provided by a building of similar construction. A conveyor system will be utilized to transport fuel from the tipping floor and initial processing areas to the size reduction and storage facilities and from these facilities to the gasifier vessel. Air for the gasifier and thermal oxidizer will be drawn through the waste processing area and conveyor system to minimize the potential for odors and fugitive emissions from these sources. • *Coke:* Coke will be mixed with the MSW/tire fuel to provide a porous bed in the bottom of the gasifier. The coke will be delivered to the project site via trucks and stored in a silo. Coke is projected to be consumed at a rate of approximately 2,000 pounds per hour (lb/hr) and 8,758 tons per year (TPY), which equates to approximately 350 truck deliveries per year. • *Limestone:* Limestone will be used as an additive (flux) in the gasification process and also in flue gas desulfurization (FGD) system for sulfur dioxide (SO_2) control. Limestone will be delivered to the project site via trucks and stored in a silo. Limestone is projected to be consumed at a rate of approximately 3,480 lb/hr in the gasifier (15,234 TPY) and 764 lb/hr (3,346 TPY) in the FGD system. The combined total of approximately 18,580 TPY of limestone will require approximately 743 truck deliveries per year. • *PAC:* PAC will be in the injection system used to control mercury (Hg), trace metals and complex organic compounds. PAC will be delivered to the project site via trucks and stored in a silo. PAC is projected to be consumed at a rate of approximately 38 lb/hr and 167 TPY, which equates to approximately 7 truck deliveries per year. • *Process Byproducts:* The following are the byproducts from the operation of the Geoplasma facility: (1) vitrified (glass like) inorganic residue and residue metals that will be discharged from the bottom of the gasifier into water to produce a coarse sand like aggregate and metal nodules that will be separated, stored as necessary and loaded to trucks for shipment as off-site sales at a rate of 13,200 lb/hr and 57,900 TPY; (2) Spent activated carbon collected in the system bag house that will be transferred via an enclosed conveyor to the spent carbon storage silo (equipped with bin vent fabric filters to minimize any PM emissions) at a rate of approximately 38 lb/hr and 167 TPY; and (3) gypsum produced by the FGD system at a rate of approximately 900 lb/hr and 4,000 TPY.

EQUIPMENT

1. Equipment: The permittee is authorized to construct a material handling system consisting of the following major equipment:
   a. Fuel Conveyor System: A conveyor system to transport the MSW/tires from the existing receiving and baling-recycling building at the St. Lucie County Landfill to the plasma arc gasifier at the collocated Geoplasma facility;
   b. Enclosed Spent Carbon Conveyor System: An enclosed conveyor system to transport the spent activated carbon from the PAC injection system baghouse to the spent carbon storage silo; and,

c. Storage Silos: Four storage silos to store the coke, limestone, PAC and spent carbon that will be utilized or generated at the Geoplasma facility. Each silo shall be pneumatically loaded and equipped with a bin vent fabric filter to minimize PM emissions during the material loading process.

[Application No. 1110138-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

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

PERFORMANCE RESTRICTIONS

3. Approximate Capacities: The material handling emission unit will process up to 686 tons per day (TPD) of MSW and tires for use as fuel in the plasma arc gasifier. Tires as fuel for the gasifier are limited to a maximum rate of 9 percent (%) on a mass basis.
[Application No. 1110138-001-AC and Rule 62-210.200(PTE), F.A.C.]

4. Hours of Operation: The hours of operation of this emission unit are not limited (8,760 hours per year).
[Application No. 1110138-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

5. Authorized Feedstocks: The primary fuel for the facility is MSW, including the items and materials that fit within the definition of MSW contained in either 40 CFR 60.51b or Section 403.706(5), F.S. Subject to the limitations contained in this permit. The authorized fuels for the facility also include other solid wastes that are not MSW which are described below:

   a. Confidential, proprietary or special documents (including but not limited to business records, lottery tickets, event tickets, coupons and microfilm);
   b. Contraband which is being destroyed at the request of appropriately authorized local, state or federal governmental agencies, provided that such material is not an explosive, a propellant, a hazardous waste, or otherwise prohibited at the facility. For the purposes of this section, contraband includes but is not limited to drugs, narcotics, fruits, vegetables, plants, counterfeit money, and counterfeit consumer goods;
   c. Wood pallets, clean wood, and land clearing debris;
   d. Packaging materials and containers;
   e. Clothing, natural and synthetic fibers, fabric remnants, and similar debris, including but not limited to aprons and gloves; or
   f. Rugs, carpets, and floor coverings, but not asbestos-containing materials or polyethylene or polyurethane vinyl floor coverings.

   Subject to the conditions and limitations contained in this permit, the following other solid waste materials may be used as fuel at the facility (i.e. the following are authorized fuels that are non-MSW material). The total quantity of the following non-MSW material received as segregated loads and gasified at the facility shall not exceed 5%, by weight, of the facility's total fuel. Compliance with this limitation shall be determined on a calendar month basis in accordance with **Specific Condition 14** of this subsection.

   g. Construction and demolition debris;
   h. Oil spill debris from aquatic, coastal, estuarine or river environments, with such items or materials including but are not limited to rags, wipes, and absorbents;
   i. Items suitable for human, plant or domesticated animal use, consumption or application where the item's shelf-life has expired or the generator wishes to remove the items from the market, with such items or materials to include but are not limited to off-specification or expired consumer products, pharmaceuticals, medications, health and personal care products, cosmetics, foodstuffs, nutritional supplements, returned goods, and controlled substances; or
   j. Consumer-packaged products intended for human or domesticated animal use or application but not

consumption, with such items or materials to include but are not limited to carpet cleaners, household or bathroom cleaners, polishes, waxes and detergents;

k. Waste materials that:
   (i) are generated in the manufacture of items in categories i. or j., and are functionally or commercially useless (expired, rejected or spent); or
   (ii) are not yet formed or packaged for commercial distribution. Such items or materials must be substantially similar to other items or materials routinely found in MSW.

l. Waste materials that contain oil from:
   (i) the routine cleanup of industrial or commercial establishments and machinery; or
   (ii) spills of virgin or used petroleum products. Such items or materials include but are not limited to rags, wipes, and absorbents.

m. Used oil and used oil filters. Used oil containing a polychlorinated biphenyls (PCB) concentration equal or greater than 50 ppm shall not be burned, pursuant to the limitations of 40 CFR 761.20(e); or

n. Waste materials generated by manufacturing, industrial or agricultural activities, provided that these items or materials are substantially similar to items or materials that are found routinely in MSW.

[Rules 62-4.070(1) and 62-4.070(3) F.A.C., and 40 CFR 60.51b.]

6. Prohibited Fuels: The facility shall not gasify:
   a. Those materials that are prohibited by state or federal law;
   b. Those materials that are prohibited by this permit;
   c. Lead acid batteries;
   d. Hazardous waste;
   e. Nuclear waste;
   f. Radioactive waste;
   g. Sewage sludge;
   h. Explosives; and
   i. Beryllium containing waste, as defined in 40 CFR 61, Subpart C.

   Further, the facility shall not knowingly burn:
   j. Nickel-cadmium batteries pursuant to Section 403.7192 (3);
   k. Mercury containing devices and lamps pursuant to Sections 403.7186(2), and (3);
   l. Untreated biomedical waste from biomedical waste generators regulated pursuant to Chapter 64E-16, F.A.C., and from similar generators (or sources);
   m. Segregated loads of biological waste; and
   n. CCA treated wood.

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(3), F.A.C. Reasonable Assurance, and Rule 62-296.320, F.A.C.]

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 silo bin vent fabric filters associated with this emission unit.
   [Rules 62-4.070(3) and 62-297.310(7)(c), F.A.C.]

A. Material (MSW, Tires, Coke, Limestone, PAC and Process Byproducts) Handling (EU-001)

TESTING AND MONITORING REQUIREMENTS

9. Initial VE Compliance Tests: The outlets of the silo bin vent fabric filter 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 silo bin vent fabric filter of this emissions unit shall be tested to demonstrate 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 A 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.]

14. Segregated Solid Waste and Tires Record Keeping: The following records shall be made and kept to demonstrate compliance with the segregated non-MSW percentage limitations of **Specific Conditions 3 and 5.** of this subsection**:**

    a. Each segregated load of non-MSW materials, subject to the percentage weight limitations of **Specific Condition 5** of this subsection**,** which is received for processing, shall be documented as to waste description and weight. The weight of all waste materials received for processing shall be measured using the facility truck scale and recorded.

    b. Each day the total weight of tires fed to the gasifier subject to the percentage weight limitations of **Specific Condition 3** of this subsection shall be computed, and the daily total shall be added to the sum of the daily totals from the previous days in the current calendar month. At the end of each calendar month, the resultant monthly total weight of tires shall be divided by the total weight of all waste materials fed to the gasifier in the same calendar month, and the resultant number shall be multiplied by 100 to express the ratio in percentage terms. The percentage computed shall be compared to the 9% limitation.

c. Each day the total weight of segregated non-MSW materials fed to the gasifier that are subject to the 5% restriction shall be computed, and the daily total shall be added to the sum of the daily totals from the previous days in the current calendar month. At the end of each calendar month, the resultant monthly total weight of segregated non-MSW materials subject to the 5% restriction shall be divided by the total weight of all waste materials fed to the gasifier in the same calendar month, and the resultant number shall be multiplied by 100 to express the ratio in percentage terms. The percentage computed shall be compared to the 5% limitation.

[Rules 62-4.070(1), 62-4.070(3), and 62-210.200(BACT), F.A.C.]

B. Plasma Arc Gasifier (EU-002)

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
002	Plasma Arc Gasifier: The MSW, tires and other authorized feedstocks will be converted in the plasma heated gasifier vessel to a syngas whose primarily energetic components are carbon monoxide (CO) and hydrogen (H_2). Gasification of the proposed feedstocks will occur in an oxygen-limited environment so the feedstock is converted to gas. The syngas from the gasifier is then sent to the multi-staged thermal oxidizer (EU 004) to be combusted and the products of combustion are directed to a HRSG to produce steam for a STG to generate electrical power or sold for process use. In the event of excess syngas production or the unavailability of the thermal oxidizer, HRSG, emission control system or ID fans, the syngas will be flared as described in Section C.

EQUIPMENT

1. Gasifier: The permittee is authorized to construct a gasifier consisting of the following equipment: gasifier vessel, plasma arc electrodes and ancillary equipment.
   [Application No.1110138-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

2. Transfer Conveyor Gasifier Feed System: Each MSW processing line, that begins on the tipping floor, will consist of the following major components to feed the plasma arc gasifier, in this sequence:
   a. A variable-speed, flat-to-incline in-feed conveyor (located within the existing trough in the tipping floor);
   b. A Pri-Max or equal quality Primary Reducer (shredder);
   c. An inclined, heavy-duty, slider-pan Discharge Conveyor;
   d. A magnetic ferrous material separator (cross-belt or inline); and
   e. Single troughing-belt transfer conveyor with an integrated weighbridge consisting of one or more sets of troughing idlers that are supported by load cells.
   f. The output from the load cell(s) shall be constantly fed to an electronic integrator, where the conveyor's belt speed is combined with the load cell data to compute a running weight total.

   [Application No. 1110138-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

PERFORMANCE RESTRICTIONS

3. Gasifier Capacity: The maximum feed rate on a 24 hour block average basis of fuel feedstock to the gasifier is 686 TPD of which approximately 601 TPD will be MSW and other permitted feedstocks, 59 TPD will be tires with steel belts and 26 TPD will be coke. The gasifier mass fuel feed rate shall be measured and recorded by permanently installed equipment as indicated in **Specific Conditions 2.e and 2.f** of this subsection.

   {Permitting Note: On a segregated load, mass basis, tires are limited to 9% and other permitted feedstock to 5% as feedstocks to the gasifier.}

   [Application No. 1110138-001-AC and Rules 62-210.200(PTE) and 62-4.070, F.A.C.]

4. Hours of Operation: The hours of operation of the gasifier are not limited (8,760 hours per year).
   [Application No. 1110138-001-AC and Rule 62-210.200(PTE), F.A.C.]

NSPS APPLICABILITY

5. NSPS Subpart Eb and Subpart A Applicability: The gasifier is subject to all applicable requirements of 40 CFR 60, Subpart Eb which applies to Large Municipal Waste Combustors and Subpart A, General Provisions. The applicable conditions are given in Appendices A and Eb of this permit.
   [Rule 62-204.800(7)(b) and 40 CFR 60, NSPS-Subpart Eb and 40 CFR 60 Subpart A]

C. Emergency Syngas Flaring System (EU-003)

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
003	Emergency Syngas Flaring System: In the event of a sudden increase in the production of syngas in the gasifier (EU 002) that cannot be accommodated by the multi-staged thermal oxidizer (EU 004) or the sudden unavailability of the thermal oxidizer, HRSG, emission control system or ID fans, it shall be necessary to vent syngas to the emergency flare system. This will be accomplished by means of a flare stack designed to assure combustion of the syngas and safe release of the products of combustion (POC). It is not anticipated that use of the flare system will be required during either normal start up or shutdown of the gasification system or during unplanned shutdowns, as the exhaust gas would continue to be directed through the thermal oxidizer and be subjected to all of the downstream control systems.

EQUIPMENT

1. Equipment: The permittee is authorized to construct one emergency flare system with a continuous pilot and a combustion chamber to destroy unused syngas. The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame. [Application No. 1110138-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

PERFORMANCE RESTRICTIONS

2. Approximate Capacity and Authorized Fuels: The emergency flare system shall be designed to combust syngas at a design heat input rate of 350 million British thermal units per hour (mmBtu/hr) based on a higher heating value (HHV) of the syngas. Natural gas shall be used as fuel for the pilot. The natural gas shall have a maximum fuel sulfur (S) content of 20 grains (gr) per 100 standard cubic feet (scf). [Application No. 1110138-001-AC and Rule 62-210.200(PTE), F.A.C.]

3. Restricted Operation: The hours of operation of the emergency flare system is limited to 10 hours per year (rolling month basis) consisting of up to 20 flaring events of 30 minutes duration or less. The flare systems shall only be used to flare syngas during emergency situations that include excess production of syngas or the sudden unavailability of the thermal oxidizer, HRSG, emission control system or ID fans. [Application No. 1110138-001-AC; Applicant's Request and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

EMISSIONS STANDARDS

4. Visible Emissions (VE) Standard: The flare shall be designed for and operated with VE no greater than 20 percent opacity at all times of operation. [Rules 62-4.070(3) and 62-296(4)(b)1, F.A.C.]

TESTING AND MONITORING REQUIREMENTS

5. VE Compliance Tests: The flare system exhaust shall be tested to demonstrate initial compliance with the VE standard given in **Specific Condition 4** of this subsection no later than 180 days after initial operation and during each federal fiscal year (October 1st to September 30th) thereafter. EPA Method 9 compliance test shall be used to determine the compliance of the flare with the VE requirements. The observation period shall be in accordance with Method 9 requirements. [Rule 62-4.070(3) and 62-296(4)(b)1, F.A.C.]

6. 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.]

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

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

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

RECORDS AND REPORTS

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

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

D. Multi-Staged Thermal Oxidizer, HRSG and STG (EU-004)

This section of the permit addresses the following emissions units.

ID No.	Emission Unit Description
004	Multi-Staged Thermal Oxidizer, HRSG and STG: • *A Thermal Oxidizer:* To minimize the generation of nitrogen oxides (NO_X) and volatile organic compounds (VOC), the thermal oxidizer will utilize a multistage (reducing/conditioning/oxidizing) combustion process. The reducing chamber includes a hot, turbulent mixing zone to ensure thorough mixing occurs between the incoming syngas and the POC. This feature, coupled with inter-cooling flue gas recirculation, reduces NO_X emissions. To ensure that the syngas has a stable ignition source, the thermal oxidizer will also be supplied with an auxiliary natural gas burner with a heat input capacity of approximately 2 mmBtu/hr. • *HRSG:* The thermal oxidizer exhaust gas stream will be routed to a dedicated HRSG to recover energy by producing steam for generation of electricity and potentially for process uses. Prior to entering the HRSG, the design provides for a conditioning (quench) chamber where the exhaust gas will be conditioned to 1,200 °F, primarily to ensure that the particulate in the off-gas does not foul the HRSG. From the HRSG, the exhaust gas is routed to additional downstream air pollution control equipment and then to a stack (see below). • *STG:* The HRSG will provide high pressure, high temperature steam to a STG. The STG will be a multi-stage extraction, condensing type turbine with steam extraction capability. The STG will also include stop and throttle valves, lube and hydraulic control oil systems including cooling, an exhaust hood spray, a gland seal system including gland steam condenser with exhausters, and turning gear. • *HRSG Stack:* The HRSG stack through which the treated flue gas from the thermal oxidizer will be vented to the atmosphere will have a design height of 125 feet, a design diameter of 5 feet and a flue gas exit temperature of 140 °F at a velocity of 60 feet per second (ft/sec).

EQUIPMENT

1. Construction of Multi-Staged Thermal Oxidizer System: The permittee shall install, operate and maintain a multi-staged thermal oxidizer system consisting of the following equipment: one multi-staged thermal oxidizer with a reducing chamber that includes a hot, turbulent mixing zone coupled with inter-cooling flue gas recirculation and two burners (syngas and natural gas); a HRSG and associated stack; and one gross 24 MW STG. [Application No. 1110138-001-AC and Rule 62-4.070(3), F.A.C.]
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 after the multi-staged thermal oxidizer.
   a. Hot Side Electrostatic Precipitator (ESP): The permittee shall install, operate and maintain a hot-side ESP to control particulate matter (PM) and PM with a mean diameter of 10 micrometers (μm) or less (PM_{10}) emissions. The ESP, in combination with the fabric filter baghouse (see below), shall be designed, constructed and operated to achieve the permitted levels of PM/PM_{10} emissions indicated in this subsection.
   b. Selective Catalytic Reduction (SCR) System: The permittee shall install, operate and maintain a SCR system for the Oxidizer/HRSG exhaust stream to control NO_X emissions and further assist in dioxin/furan (D/F) destruction. The SCR system will consist of an ammonia (NH_3) injection grid, catalyst, NH_3 storage, monitoring and control system, electrical, piping and other ancillary equipment. The SCR system shall be designed, constructed and operated to achieve the permitted levels of NO_X emissions indicated in this subsection. The SCR system shall achieve a maximum NH_3 slip level of 2 ppmvd @ 7% oxygen. The SCR system will be located immediately downstream of the ESP.

c. Ammonia Storage: 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.

d. PAC Injection System and Fabric Filter Baghouse: The permittee shall install, operate and maintain a PAC injection system and fabric filter baghouse to capture the spent carbon. This system will be designed and implemented for reduction of Hg and as a polishing step for additional control of trace elements not captured by the upstream ESP system. The PAC injection system and baghouse shall be designed, constructed and operated to achieve the permitted levels of Hg and other associated emission limits indicated in this subsection.

e. Flue Gas Desulfurization (FGD) System: The permittee shall install, operate and maintain a FGD system, utilizing limestone as the injection sorbent material to control emissions of acid gases, including SO_2 and hydrogen chloride (HCl). The FGD system shall be designed, constructed and operated to achieve the permitted levels of SO_2 and HCl emissions indicated in this subsection.

f. Circumvention: The permittee shall not circumvent the air pollution control equipment or allow the emission of air pollutants without this equipment operating properly. Ammonia, limestone and PAC shall be injected as necessary to ensure compliance with the permitted levels of NO_X, SO_2 and HAP emissions specified in this subsection.

[Application No. 1110138-001-AC and Rules 62-4.070(3) and 62-210.650 F.A.C.]

PERFORMANCE RESTRICTIONS

3. Authorized Fuels: The only authorized fuels for the multi-staged thermal oxidizer are syngas generated in the plasma arc gasifier supplemented by up 2.0 mmBtu/hr of natural gas used by an ignition burner. The natural gas shall have a maximum fuel S content of 20 gr/100 scf.

   [Application No. 1110138-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

4. Permitted Capacities:

   a. Oxidizer Syngas Burner: The maximum design heat input rate of syngas to the thermal oxidizer is 350 mmBtu/hour on a 4 hour average basis. Heat input rates will vary depending upon the characteristics of the MSW.

   b. Oxidizer Natural Gas Ignition Burner: The design heat input rate of the natural gas burner in the thermal oxidizer is 2.0 mmBtu/hr based on the higher heating value (HHV) of natural gas.
   [Application No. 1110138-001-AC and Rule 62-210.200(PTE), F.A.C.]

   {Permitting Note: The estimated HHV for syngas is 6,302 British thermal units per pound (Btu/lb) of MSW on an as received basis and 980 Btu per sc) for natural gas.}

5. Hours of Operation: The hours of operation of the multi-stage thermal oxidizer, HRSG and STG are not limited (8,760 hours per year).
   [Application No. 1110138-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

NSPS APPLICABILITY

6. NSPS Subpart Eb and Subpart A Applicability: The multi-staged thermal oxidizer system, including HRSG and STG, are subject to all applicable requirements of 40 CFR 60, Subparts A and Eb which applies to Large Municipal Waste Combustors and Subpart A, General Provisions. The applicable conditions are given in Appendices A and Eb of this permit.
   [Rule 62-204.800(7)(b) and 40 CFR 60, NSPS-Subpart Eb and 40 CFR 60 Subpart A]

EMISSION LIMITS

7. Emission Standards: The following standards are at least as stringent as the Subpart Eb limits described in **Specific Condition 6** of this subsection and in Appendix Eb of this permit. Emissions from the multi-staged thermal oxidizer shall not exceed the following standards.

Pollutant	Basis - Subpart Eb	Basis - PTE[b]
	Emission Limit[a]	Emission Limit
NO_X[c]	150 ppmvd – 24-hour arithmetic average	7.5 lb/hour – 12-month rolling
CO[c]	50 ppmvd – 24-hr block arithmetic average	7.5 lb/hour – 12-month rolling
SO_2[c]	30 ppmvd – 24-hour geometric average or 80% reduction[d]	3.7 lb/hour – 12-month rolling
VOC[e]	N/A[f]	7.5 lb/hour
HCl	25 ppmvd or 95% reduction[d]	3.7 lb/hour
PM/PM_{10}	20.0 mg/dscm	5.7 lb/hour
Lead (Pb)	140 µg/dscm	N/A
Hg[c]	50 µg/dscm or 85% reduction[d]	3.9 µg/dscm – 12-month rolling
Cadmium (Cd)	10 µg/dscm	N/A
D/F[g]	13.0 ng/dscm	3.63×10^{-6} lb/hour
VE[h]	10 % - 6 minute average	N/A
NH_3 Slip	N/A	2 ppmvd

a. NSPS Subpart Eb limits that must be achieved. All concentration values are corrected to 7% oxygen in values of: micrograms per dry standard cubic meter (µg/dscm); milligrams per dry standard cubic meter (mg/dscm); nanograms per dry standard cubic meter (ng/dscm); and parts per million volume dry (ppmvd).
b. Potential to emit (PTE) mass emission rates per applicant's request.
c. After initial emissions compliance stack test for NO_X, CO, SO_2 and Hg, compliance will be CEMS based.
d. Whichever standard is less stringent.
e. Initial and annual VOC stack test to show compliance with limit agreed upon with St. Lucie County.
f. Not applicable.
g. Dioxins/furans: Total tetra through octa-chlorinated dibenzo-p-dioxins and dibenzofurans.
h. Required opacity limit with compliance shown as demonstrated by COMS and EPA Method 9.

[Application No. 110138-001-AC; Applicant's Request and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

CONTINUOUS EMISSION MONITORS

8. 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, Hg and VE from the HRSG stack in a manner sufficient to demonstrate continuous compliance with the CEMS-based and COMS-based emission standards given in **Specific Condition 7** of this subsection. A diluent monitor shall be installed to measure and record the emissions of oxygen (O_2) or carbon dioxide (CO_2) in the stack. Each CEMS, COMS and diluent monitor 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, Hg or VE standard, the permittee shall notify the Compliance Authority.
   a. SO_2 CEMS: The SO_2 CEMS shall be certified, operated, and maintained in accordance with the requirements of 40 CFR 60, Appendices A and F. Recordkeeping and reporting shall be conducted pursuant these appendices. For additional details, including Performance Specifications, see Appendix CEMS of this permit.
   b. NO_X CEMS: The NO_X CEMS shall be certified, operated, and maintained in accordance with the requirements of 40 CFR 60, Appendices A and F. Recordkeeping and reporting shall be conducted pursuant to these appendices and Subpart Db in 40 CFR 60. For additional details, including

Performance Specifications, see Appendix CEMS of this permit.

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. For additional details see Appendix CEMS of this permit.

d. Hg CEMS: The Hg CEMS shall be certified pursuant to the requirements in Performance Specification 12A (PS-12A), "Specifications and Test Procedures for Total Vapor phase Mercury Continuous Monitoring Systems in Stationary Sources," or that has passed verification tests conducted under the auspices of the U.S. Environmental Protection Agency's (EPA) Environmental Technology Verification (ETV) Program. After certification the owner or operator will begin reporting Hg concentration emissions data. The owner or operator shall adhere to the calibration drift and quarterly performance evaluation procedures and ongoing data quality assurance procedures in 40 CFR Part 60, Appendix F or 40 CFR Part 75, Appendix B. The mass emissions shall be estimated based on the actual data collected no later than 10 days following the end of the month. The mercury monitoring data results shall be submitted quarterly. The CEMS shall only be used as the method of compliance if the owner or operator, at a minimum, meets the requirements of 40 CFR 60.58b(n). Prior to use of the Hg-CEMS as the method to demonstrate compliance, the owner or operator shall submit written notice to the Department, and receive approval for missing data substitution and a data calculation approach plans. For additional details see Appendix CEMS of this permit.

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

f. Diluent Monitor: The O_2 or CO_2 content of the flue gas shall be monitored at the location where CO and NO_X are monitored. Each monitor shall comply with the performance and quality assurance requirements of 40 CFR 75. For additional details see Appendix CEMS of this permit.

[Application No. 1110138-001-AC; Applicant's Request and Rule 62-4.070(3), F.A.C.]

EXCESS EMISSIONS AND STARTUP, SHUTDOWN AND MALFUNCTION REQUIREMENTS

9. Regulations Pursuant to 40 CFR 60, Subpart Eb: The following conditions apply only to the emissions limits given in **Specific Condition 7** of this subsection that were specified pursuant to 40 CFR 60, Subpart Eb as incorporated in Rule 62-204.800(8)(b), F.A.C.

   a. *The opacity standards:* Opacity standards set forth in 40 CFR 60 shall apply at all times except during periods of startup, shutdown, malfunction, and as otherwise provided in the applicable standard. [40 CFR 60.11(c)]

   b. *Startup, Shutdown and Malfunction:* Except as provided by 40 CFR 60.56b, the standards under 40 CFR 60, Subpart Eb apply at all times except during periods of startup, shutdown or malfunction. Duration of startup or shutdown periods are limited to 3 hours per occurrence, except as provided in 40 CFR 60.58b(a)(1)(iii). During periods of startup, shutdown, or malfunction, monitoring data shall be dismissed or excluded from compliance calculations, but shall be recorded and reported in accordance with the provisions of 40 CFR 60.59b(d)(7).

      i. The startup period commences when the affected facility begins the continuous gasification of municipal solid waste and does not include any warm-up period when the affected facility is combusting fossil fuel or other non-municipal solid waste fuel, and no municipal solid waste is being fed to the combustor.

ii. Continuous gasification is the continuous, semi-continuous, or batch feeding of municipal solid waste for purposes of waste disposal, energy production, or providing heat to the combustion system in preparation for waste disposal or energy production.

[40 CFR 60.58b(a)]

10. Mass Based Emission Limits: Because of the long-term nature of all of the NO_X, SO_2, CO and Hg CEMS based mass emission rate limits and to avoid triggering PSD, 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.]

TESTING REQUIREMENTS

11. Initial and Annual Compliance Tests: The stack shall be tested to demonstrate initial compliance with the Subpart Eb emissions standards for NO_X, CO, SO_2, HCl, PM/PM_{10}, Pb, Hg, Cd, D/F and VE in addition to the emission standards for VOC and NH_3 slip. The initial tests shall be conducted within 60 days after achieving permitted capacity, but not later than 180 days after initial operation of the unit. During each federal fiscal year (October 1st to September 30th), the stack shall be tested to demonstrate compliance with the Subpart Eb emissions standards for NO_X, CO, SO_2, HCl, PM/PM_{10}, Pb, Hg, Cd, D/F and VE in addition to the emission standards for VOC and NH_3 slip. CEMS data for CO, NO_X, SO_2 and Hg along with COMS data for VE shall be reported for each run of the required tests for NO_X, CO, SO_2, VOC, HCl, PM/PM_{10}, Pb, Cd, Hg, D/F, VE and NH_3 slip. Data collected from the reference method during the required RATA tests for the CEMS for CO, NO_X, SO_2 and Hg may be used to satisfy the annual testing requirements provided the notification requirements and emission testing requirements for performance and compliance tests of this permit are satisfied. The Department may require the permittee to repeat some or all of these stack tests after major replacement or major repair of any air pollution control or process equipment. All tests shall be conducted between 90 and 100% of the maximum mass fuel feeding rate to the gasifier.
[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; otherwise, this permit will be modified to reflect the true maximum capacity as constructed.} [Rules 62-4.070(3) and 62-297.310(7)(a)1, 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 methods.

EPA Method	Description of Method and Comments
1 - 4	Determination of Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content. Methods shall be performed as necessary to support other methods.
5	Determination of Particulate Emissions. The minimum sample volume shall be 30 dry standard cubic feet.
6C	Determination of SO_2 Emissions (Instrumental).
7E	Determination of NO_X Emissions (Instrumental). NO_X emissions testing shall be conducted with the air heater operating at the highest heat input possible during the test.
9	Visual Determination of Opacity
10	Measurement of Carbon Monoxide Emissions (Instrumental). The method shall be based on a continuous sampling train.
23	Measurement of Dioxin/Furan Emissions
25A	Gaseous Organic Concentration (Flame Ionization)

26 or 26A	Determination of Hydrogen Chloride Emissions
29	Determination of Metals Emissions from Stationary Sources
CTM-027	Procedure for Collection and Analysis of Ammonia in Stationary Source This is an EPA conditional test method. The minimum detection limit shall be 1 ppm.

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

OTHER MONITORING REQUIREMENTS

14. 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) and 62-210.200(PTE), F.A.C.]

15. 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 and PAC emissions downstream from the HRSG. Records shall be maintained on site and made available upon request. [Rule 62-4.070(3), F.A.C.]

16. Bag Leak Detection: The permittee shall maintain continuous operation of bag leak detection systems on the 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), F.A.C.]

17. SCR NH_3 Injection: In accordance with the manufacturer's specifications, the permittee shall install, calibrate, operate and maintain a flow meter to measure and record the NH_3 injection rate for the SCR system. 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 NH_3 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), F.A.C.]

18. PAC Injection: In accordance with the manufacturer's specifications, the permittee shall install, calibrate, operate and maintain a mass flow meter to measure and record the PAC injection rate (lb/hour). The permittee shall document the general range of PAC mass flow rates required to meet the Hg standard over the range of load conditions by comparing Hg emissions with PAC mass flow rates. During Hg CEMS downtimes or malfunctions, the permittee shall operate at the PAC mass 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

19. 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), mass fuel input rate to the gasifier (tons/hour), calculated authorized fuels (syngas and natural gas) firing rate in cubic feet per minute and emission rates for NH_3 slip, NO_X, CO, VOC, SO_2, HCl, PM/PM_{10}, Pb, Hg, Cd, D/F and VE in the appropriate units as required in **Specific Condition 7** of this subsection. [Rule 62-4.070(3), F.A.C.]

    {Permitting Note: After the initial stack test report, emissions of NO_X, CO, SO_2 and Hg shall be given in subsequent stack test reports based on CEMS data while VE shall be based on COMS data recorded during the stack test for the other pollutants.}

20. Monthly Operations Summary: By the tenth calendar day of each month, the permittee shall record the

following for the thermal oxidizer in a written or electronic log for the previous month of operation: hours of operation; cubic feet of syngas and natural gas; pounds of steam per month; total mass fuel flow into the gasifier; and the updated 12-month rolling totals for each of these operating parameters. The Monthly Operations Summary shall be maintained on site and made available for inspection when requested by the Department. [Rule 62-4.070(3) F.A.C. Reasonable Assurance]

21. Quarterly NO_X, CO, SO_2, Hg and VE 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 and Hg emissions along with VE including periods of startups, shutdowns, malfunctions, and CEMS and COMS systems monitor availability for the previous quarter. If 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, and 62-210.400(5)(c), F.A.C.]

E. Emergency Generator (EU-005)

This section of the permit addresses the following emissions units.

EU ID No.	Emission Unit Description
005	Emergency Generator: One emergency diesel generator with a maximum design rating of 500 kilowatts (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 Engines (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 Diesel Generator: The permittee is authorized to install, operate, and maintain one emergency generator with a maximum design rating of 500 kW or 671 horsepower (hp) or smaller.
[Application No. 1110138-001-AC and Rule 62-210.200 (PTE), F.A.C.]

4. Biodiesel and ULSD FO Storage Tanks: The permittee is authorized to construct up to two 1,000 gallon tanks to store biodiesel and ULSD FO for use in the emergency generator.
[Applicant request and 62-4.070(3), Reasonable Assurance]

   {Permitting Note: The biodiesel and ULSD fuel oil storage tanks for the emergency generator at the SLPG facility are not subject to NSPS Subpart Kb because they store liquids with a maximum true vapor pressure less than 3.5 kPa (0.51 pounds per square inch (psi)). Accordingly they are unregulated emissions units per 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 and as necessary when there is a loss of plant power.
[Application No. 1110138-001-AC and Rule 62-210.200 (PTE), F.A.C.]

6. Authorized Fuel: The emergency generator shall fire biodiesel or ULSD FO with a S content of less than or equal to 0.0015%. The biodiesel must meet the ASTM specification given in Appendix ASTM of this permit.
[Application No. 1110138-001-AC, Applicant's Request and Rule 62-210.200 (PTE), F.A.C.]

EMISSION STANDARDS

7. Emergency Diesel Generator Emissions Limits: The emergency diesel generator shall comply with the following emission limits and demonstrate compliance in accordance with the procedures given in 40 CFR 60, Subpart IIII the language of which is given in Appendix IIII of this permit. Manufacturer certification when using biodiesel or ULSD FO can be provided to the Department in lieu of actual stack testing.

Emergency Generator (130 ≤ kW ≤ 560 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)	2.6	0.15	0.0015	3.0

1. g/kW-hr means grams per kilowatt-hour
2. SO_2 emission standard will be met by using biodiesel or ULSD FO with fuel S content of 0.0015% by weight or less.
3. NMHC means Non-Methane Hydrocarbons.

[Application No. 1110138-001-AC and Subpart IIII and Rule 62-4.070(3), 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]

F. Emergency Fire Water Pump Engine (EU-006)

This section of the permit addresses the following emissions unit.

ID	Emission Unit Description
006	Emergency Fire Pump: One emergency diesel firewater pump engine with a maximum design rating of 335 hp

NSPS AND NESHAP APPLICABILITY

1. NSPS Subpart IIII Applicability: The firewater 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 firewater emergency pump engine 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 generator 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. Firewater Pump Engine: The permittee is authorized to install, operate, and maintain one emergency diesel fire pump engine. This unit will have a maximum rating of 335 hp or smaller.
[Application No. 1110138-001-AC and Rule 62-210.200(PTE), F.A.C.]

4. Biodiesel and ULSD FO Storage Tanks: The permittee is authorized to construct up to two 1,000 gallon tanks to store biodiesel and ULSD FO for use in the fire water pump engine.
[Applicant request and 62-4.070(3), Reasonable Assurance]

   {Permitting Note: The biodiesel and ULSD FO storage tanks for the fire water pump engine at the SLPG facility are not subject to NSPS Subpart Kb because they store liquids with a maximum true vapor pressure less than 3.5 kPa (0.51psi). Accordingly they are unregulated emissions units per 40 CFR 60.110b(a) and (c) and Rule 62-204.800(7)(b), F.A.C.}

PERFORMANCE RESTRICTIONS

5. Hours of Operation: The firewater emergency pump may operate up to 500 hours per year for maintenance and testing purposes and as necessary to support the plant's fire suppression system.
[Application No. 1110138-001-AC and Rule 62-210.200 (PTE), F.A.C.]

6. Authorized Fuel: This unit shall fire biodiesel or ULSD FO with a S content of less than or equal to 0.0015%. The biodiesel must meet the ASTM specification given in Appendix ASTM of this permit.
[Application No. 1110138-001-AC, Applicant's Request and Rule 62-210.200 (PTE), F.A.C.]

EMISSION STANDARDS

7. Emergency Firewater Pump Emissions Limits: The emergency firewater 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.]

Emergency Pumps ($300 \leq HP < 600$)	**CO** (g/hp-hr)[1]	**PM** (g/hp-hr)	**SO_2**[2] **(% S)**	**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 biodiesel or ULSD FO in the fire pump engine with a fuel S content of 0.0015% by weight or less.

[Application No. 1110138-001-AC; 40 CFR 60, Subpart IIII; and Rule 62-4.070(3), 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]

G. Auxiliary Boiler (EU-007)

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
007	Auxiliary Boiler: The auxiliary boiler fires natural gas at a maximum heat input rate of 216 mmBtu/hour, based on the HHV of natural gas. The auxiliary boiler will provide steam in the event the plasma arc gasifier is not in operation or additional steam demand is required. The boiler will be operated for a maximum 1,314 hours per year. Exhaust gases exit a stack with design parameters of 2.75 feet in diameter, 50 feet in height, and at a flow rate of 29,000 acfm with an exit temperature of 296 °F.

EQUIPMENT

1. Auxiliary Boiler: The permittee is authorized to install an auxiliary boiler rated at a maximum of 216 mmBtu/hour of heat input. [Application No. 1110138-001-AC]

PERFORMANCE RESTRICTIONS

2. Authorized Fuel: The auxiliary boiler shall fire only natural gas with a maximum fuel sulfur content of 20 gr/100 scf. [Application No.1110138-001-AC; Applicant's Request and Rule 62-210.200(PTE)]

3. Permitted Capacity: The maximum heat input rate of the auxiliary boiler is 216 mmBtu/hour based on a 4-hour average. [Application No. 1110138-001-AC and Rule 62-210.200(PTE), F.A.C.]

4. Restricted Operation: The auxiliary boiler shall fire only natural gas for no more than 1,314 hours at maximum permitted capacity in any consecutive 12 month period. If the boiler is fired at less than the permitted capacity, the operational hours shall be prorated based on the firing rate, e.g., at 50% capacity every hour of "actual" operation equals 30 minutes of permitted operation.
[Application No. 1110138-001-AC; and Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]

REGULATORY APPLICABILITY

5. Small Boiler BACT: The auxiliary boiler is subject to the requirements of Rule 62-296.406, F.A.C., which includes a determination of the Best Available Control Technology (BACT) for PM and SO_2 emissions. For this project, BACT for PM and SO_2 emissions is determined to be the firing of clean natural gas as the only authorized fuel. [Rule 62-296.406, F.A.C.]

6. NSPS Subpart Db and Subpart A Applicability: The auxiliary boiler is subject to all applicable requirements of 40 CFR 60, Subpart Db which applies to Small Industrial, Commercial or Institutional Boilers and Subpart A, General Provisions. The applicable conditions are given in Appendices A and Db of this permit. [Rule 62-204.800(7)(b) and 40 CFR 60, NSPS-Subpart Db and 40 CFR 60 Subpart A]

   {Permitting Note: This emission unit may be subject to the proposed NESHAP for industrial boilers which will be proposed in the Federal Register on June 4, 2010.}

EMISSIONS STANDARDS

7. NO_X Standard: In accordance with EPA Method 7E, NO_X emissions shall not exceed 0.20 pounds per mmBtu (lb/mmBtu). In accordance with CEMS data, NO_X emissions shall not exceed 0.20 lb/mmBtu on a 30 day rolling average basis. [Application No. 1110138-001-AC; and 40 CFR 60, Subpart Db]

8. Opacity Standard: In accordance with EPA Method 9, VE shall not exceed 20% opacity except for one 6-minute period per hour that shall not exceed 27% opacity.
[Application No. 1110138-001-AC; and 40 CFR 60, Subpart Db]

TESTING AND MONITORING REQUIREMENTS

9. Initial NO_X Compliance Tests: The auxiliary boiler stack shall be tested to demonstrate initial compliance with the NO_X emissions standard given in **Specific Condition 7** of this subsection. The test shall be conducted within 60 days after achieving permitted capacity, but not later than 180 days after initial operation of the unit. The tests shall be conducted between 90 and 100% of the maximum heat input rate to the auxiliary boiler. [Rules 62-212.400(5)(c) and 62-297.310(7)(a) and (b), F.A.C.; 40 CFR 60.8]

10. Initial and Annual VE Compliance Tests: As determined by EPA Method 9, the emissions unit shall be tested to demonstrate initial compliance with the VE standard given in **Specific Condition 8** of this subsection within 60 days after achieving permitted capacity, but no later than 180 days after initial operation of the unit. Thereafter, during each federal fiscal year (October 1st to September 30th), the emissions unit shall be tested in accordance with EPA Method 9 to demonstrate compliance with the VE standard. [Rules 62-4.070(3) and 62-297.310(7)(a)1, 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.]

CONTINUOUS EMISSION MONITORS

12. Continuous Monitoring Requirements: The permittee shall install, calibrate, maintain and operate a CEMS to measure and record the emissions of NO_X, from the auxiliary boiler stack in a manner sufficient to demonstrate continuous compliance with the CEMS-based emission standards given in **Specific Condition 7** of this subsection. The CEMS 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 the NO_X standard, the permittee shall notify the Compliance Authority.

    a. NO_X CEMS: The NO_X CEMS shall be certified, operated, and maintained in accordance with the requirements of 40 CFR 60, Appendices A and F. Recordkeeping and reporting shall be conducted pursuant to these appendices and Subpart Db in 40 CFR 60. For additional details, including Performance Specifications, see Appendix CEMS of this permit.

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 heat input rate. [Rule 62-297.310(8), F.A.C.]