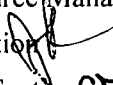



Florida Department of Environmental Protection

Memorandum

To: Trina Vielhauer, Division of Air Resource Management
Through: Jeff Koerner, New Source Review Section 
From: Christy DeVore, New Source Review Section 
Date: April 19, 2011
Subject: Draft Air Permit No. 0250623-007-AC
PSD-FL-408
Miami-Dade Solid Waste Management
Industrial Power Generating Company, LLC (INGENCO)
South Dade Landfill Modification
Installation of Landfill Gas Engines

Attached for your review is a draft PSD air construction permit package for the Miami-Dade County Solid Waste Management South Dade Landfill located in Miami-Dade County at 24000 SW 97th Avenue, Miami. On June 2, 2009, Industrial Power Generating Company, LLC (INGENCO) submitted an application for an air construction permit subject to the preconstruction review requirements for the Prevention of Significant Deterioration of Air Quality. The Department rescinds the draft permit package issued on March 3, 2010 and issues this revised draft air construction permit package in its place. Briefly, the draft permit authorizes the construction of 24 dual-fuel fired compression ignition reciprocating internal combustion engine/generator sets (Detroit Diesel Series 60) for INGENCO. The attached Technical Evaluation and Preliminary Determination provides a detailed description of the project and the rationale for permit issuance. The project is not considered a new source review reform project. I recommend your approval of the attached draft permit package.

Attachments

TLV/jfk/scd

P.E. CERTIFICATION STATEMENT

PERMITTEE

Industrial Power Generating Company, LLC (INGENCO)
2250 Dabney Road
Richmond, VA 23230

Draft Permit No. 0250623-007-AC
PSD-FL-408
Miami-Dade Solid Waste
Management
South Dade Landfill Modification
Miami-Dade County, Florida

PROJECT DESCRIPTION

The Department rescinds the draft permit package issued on March 3, 2010 and issues this revised draft air construction permit package in its place to construct twenty-four (24) dual-fuel fired compression ignition reciprocating internal combustion engine/generator sets (Detroit Diesel Series 60) for INGENCO. The engines/generator sets will be interconnected to the Florida Power and Light distribution network through a nearby power line for the generation of up to a total of 8 MW of electricity. The engines will start up by firing only diesel or biodiesel, but will operate in the dual-fuel mode firing LFG fractions of up to approximately 98% with diesel or biodiesel (approximately 2%). The engines are capable of operating 24 hours per day, 365 days per year; however, the operating hours and output will be dependent on the ability of the distribution grid to accept electricity, as well as the supply of LFG. This specific type of compression ignition engine requires the firing of a small amount of diesel or biodiesel to maintain combustion stability. The engines will operate at a LFG fraction of 90% or more.

On February 9, 2010, EPA issued a new 1-hour NAAQS for NO₂. The new NAAQS is 100 ppb (equivalent to 188 ug/m³) and became effective on April 12, 2010. Then EPA proposed to approve the Avenal Power Center, LLC project without requiring a demonstration that the project will not cause or contribute to a violation of the hourly NO₂ ambient standard. EPA will not require the Avenal project to establish BACT emissions limits for greenhouse gases or demonstrate that the project will not cause or contribute to a violation of the new hourly ambient SO₂ standard which became effective on August 23, 2010. The Department considered the following criteria that are similar to the Avenal project before issuing this permit: the application was prepared and submitted when the old annual NO₂ ambient standard was in place; the application was deemed complete before EPA issued the new hourly NO₂ ambient standard; a draft permit was issued before the new hourly NO₂ ambient standard became effective. Since the Department considers this a grandfathered project, modeling was required. The air quality analysis demonstrated that the proposed INGENCO project by itself does not violate the new hourly NO₂ standard.

I HEREBY CERTIFY that the air pollution control engineering features described in the above referenced application and subject to the proposed permit conditions provide reasonable assurance of compliance with applicable provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 62-4 and 62-204 through 62-297. However, I have not evaluated and I do not certify any other aspects of the proposal (including, but not limited to, the electrical, civil, mechanical, structural, hydrological, geological, and meteorological features).



Christy DeVore, P.E.
Registration Number 63119





Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

April 20, 2011

Mr. Robert L. Greene
Environmental Compliance Manager
Industrial Power Generating Company, LLC
2250 Dabney Road
Richmond, Virginia 23230

Re: Air Permit No. PSD-FL-408
Project No. 0250623-007-AC
South Dade Landfill
Landfill Gas Engines

Dear Mr. Greene:

On March 3, 2010, the Department issued a draft air construction permit subject to the preconstruction review requirements for the Prevention of Significant Deterioration of Air Quality. The Department rescinds that draft permit package and issues this revised draft air construction permit package in its place to construct twenty-four dual-fuel fired compression ignition reciprocating internal combustion engine/generator sets (Detroit Diesel Series 60) for INGENCO. This work will be conducted at Miami-Dade Solid Waste Management South Dade Landfill, which is located in Miami-Dade County at 24000 SW 97th Avenue, Miami, Florida. Enclosed are the following revised documents:

- Written Notice of Intent to Issue Air Permit;
- Public Notice of Intent to Issue Air Permit;
- Technical Evaluation and Preliminary Determination; and
- Draft Permit and Appendices.

The Public Notice of Intent to Issue Air Permit is the actual notice that you must have published in the legal advertisement section of a newspaper of general circulation in the area affected by this project. If you have any questions, please contact the Project Engineer, Christy DeVore, at 850/717-9085.

Sincerely,

Trina Vielhauer, Deputy Director
Division of Air Resource Management

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Enclosures

TLV/jfk/scd

WRITTEN NOTICE OF INTENT TO ISSUE AIR PERMIT

*In the Matter of an
Application for Air Permit by:*

Industrial Power Generating Company, LLC
2250 Dabney Road
Richmond, Virginia 23230

Authorized Representative:
Mr. Robert L. Greene, Environmental Compliance Manager

Air Permit No. PSD-FL-408
Air Permit No. 0250623-007-AC
South Dade Landfill
Landfill Gas Engines
Miami-Dade County, Florida

Facility Location: Miami-Dade Solid Waste Management operates an existing municipal solid waste landfill facility. The South Dade Landfill is located in Miami-Dade County at 24000 SW 97th Avenue in Miami, Florida.

Project: INGENCO proposes to install twenty-four dual-fuel (landfill gas and No. 2 fuel oil and/or biodiesel) fired compression ignition reciprocating internal combustion engines (Detroit Diesel Series 60). Each lean-burn engine will be connected to an individual 350 kilowatt (kW) electrical generator. The plant will have the potential to generate 8 megawatts of electricity under base load operating conditions and will be interconnected to the Florida Power & Light distribution network through a nearby power line. Details of the project are provided in the application and the enclosed Technical Evaluation and Preliminary Determination. The Department rescinds the draft permit package issued on March 3, 2010 and issues this revised draft air construction permit package in its place.

Permitting Authority: Applications for air construction permits are subject to review in accordance with the provisions of Chapter 403, 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 proposed project is not exempt from air permitting requirements and an air permit is required to perform the proposed work. The Florida Department of Environmental Protection's Bureau of Air Regulation is the Permitting Authority responsible for making a permit determination for this project. The Bureau of Air Regulation's physical address is 111 South Magnolia Drive, Suite 4, Tallahassee, Florida and the mailing address is 2600 Blair Stone Road, MS #5505, Tallahassee, Florida 32399-2400. The Bureau of Air Regulation's phone number is 850/717-9000.

Project File: A complete project file is available for public inspection during the normal business hours of 8:00 a.m. to 5:00 p.m., Monday through Friday (except legal holidays), at address indicated above for the Permitting Authority. The complete project file includes the Draft Permit, the Technical Evaluation and Preliminary Determination, the application, and the information submitted by the applicant, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Permitting Authority's project review engineer for additional information at the address and phone number listed above.

Notice of Intent to Issue Air Permit: The Permitting Authority gives notice of its intent to issue an air permit to the applicant for the project described above. The applicant has provided reasonable assurance that operation of the proposed equipment will not adversely impact air quality and that the project will comply with all applicable provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296 and 62-297, F.A.C. The Permitting Authority will issue a Final Permit in accordance with the conditions of the proposed Draft Permit unless a timely petition for an administrative hearing is filed under Sections 120.569 and 120.57, F.S. or unless public comment received in accordance with this notice results in a different decision or a significant change of terms or conditions.

Public Notice: Pursuant to Section 403.815, F.S. and Rules 62-110.106 and 62-210.350, F.A.C., you (the applicant) are required to publish at your own expense the enclosed Public Notice of Intent to Issue Air Permit (Public Notice). The Public Notice shall be published one time only as soon as possible in the legal advertisement section of a newspaper of general circulation in the area affected by this project. The newspaper used must meet the requirements of Sections 50.011 and 50.031, F.S. in the county where the activity is to take place. If you are uncertain that a newspaper meets these requirements, please contact the Permitting Authority at

WRITTEN NOTICE OF INTENT TO ISSUE AIR PERMIT

the address or phone number listed above. Pursuant to Rule 62-110.106(5) and (9), F.A.C., the applicant shall provide proof of publication to the Permitting Authority at the above address within 7 days of publication. Failure to publish the notice and provide proof of publication may result in the denial of the permit pursuant to Rule 62-110.106(11), F.A.C.

Comments: The Permitting Authority will accept written comments concerning the proposed Draft Permit and requests for a public meeting for a period of 30 days from the date of publication of the Public Notice. Written comments must be received by the Permitting Authority by close of business (5:00 p.m.) on or before the end of this 30-day period. In addition, if a public meeting is requested within the 30-day comment period and conducted by the Permitting Authority, any oral and written comments received during the public meeting will also be considered by the Permitting Authority. If timely received comments result in a significant change to the Draft Permit, the Permitting Authority shall revise the Draft Permit and require, if applicable, another Public Notice. All comments filed will be made available for public inspection.

Petitions: A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed with (received by) the Department's Agency Clerk in the Office of General Counsel of the Department of Environmental Protection, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. Petitions filed by the applicant or any of the parties listed below must be filed within 14 days of receipt of this Written Notice of Intent to Issue Air Permit. Petitions filed by any persons other than those entitled to written notice under Section 120.60(3), F.S., must be filed within 14 days of publication of the attached Public Notice or within fourteen 14 days of receipt of this Written Notice of Intent to Issue Air Permit, whichever occurs first. Under Section 120.60(3), F.S., however, any person who asked the Permitting Authority for notice of agency action may file a petition within 14 days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above, at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C.

A petition that disputes the material facts on which the Permitting Authority's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner; the name, address and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of when and how each petitioner received notice of the agency action or proposed decision; (d) A statement of all disputed issues of material fact; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action including an explanation of how the alleged facts relate to the specific rules or statutes; and, (g) A statement of the relief sought by the petitioner, stating precisely the action the petitioner wishes the agency to take with respect to the agency's proposed action. A petition that does not dispute the material facts upon which the Permitting Authority's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

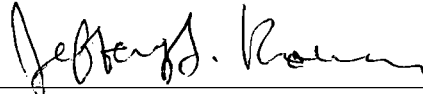
Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Permitting Authority's final action may be different from the position taken by it in this Written Notice of Intent to Issue Air Permit. Persons whose substantial interests will be affected by any such final

WRITTEN NOTICE OF INTENT TO ISSUE AIR PERMIT

decision of the Permitting Authority on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Mediation: Mediation is not available in this proceeding.

Executed in Tallahassee, Florida.



Trina Vielhauer, Deputy Director
Division of Air Resource Management

EC

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Notice of Intent to Issue Air Permit package (including the Written Notice of Intent to Issue Air Permit, the Public Notice of Intent to Issue Air Permit, the Technical Evaluation and Preliminary Determination, and the Draft Permit) 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 4/20/11 to the persons listed below.

- Robert L. Greene, INGENCO (rgreene@ingenco.com)
- German Hernandez, Miami-Dade Solid Waste Management (germanh@miamidade.gov)
- James A. Susan, P.E., Fishbeck, Thompson, Carr & Huber, Inc. (jasusan@ftch.com)
- Lennon Anderson, DEP-SED (lennon.anderson@dep.state.fl.us)
- Mallika Muthiah, DERM (muthiahm@miamidade.gov)
- Kathleen Forney, EPA Region 4 (forney.kathleen@epa.gov)
- Dee Morse, NPS (dee_morse@nps.gov)
- Vickie Gibson, DEP-BAR Reading File (victoria.gibson@dep.state.fl.us)

Clerk Stamp

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



(Clerk)

4/20/11
(Date)

PUBLIC NOTICE OF INTENT TO ISSUE AIR PERMIT

Florida Department of Environmental Protection
Division of Air Resource Management, Bureau of Air Regulation
Air Permit Number PSD-FL-408 / Project Number 0250623-007-AC
Industrial Power Generating Company, LLC
Miami-Dade Solid Waste Management South Dade Landfill
Miami-Dade County, Florida

Applicant: The applicant for this project is Industrial Power Generating Company, LLC (INGENCO). The applicant's authorized representative and mailing address is: Mr. Robert L. Greene, Environmental Compliance Manager, INGENCO, 2250 Dabney Road, Richmond, Virginia 23230.

Facility Location: Miami-Dade Solid Waste Management operates an existing municipal solid waste landfill facility. The South Dade Landfill is located in Miami-Dade County at 24000 SW 97th Avenue in Miami, Florida.

Project: INGENCO proposes to install twenty-four dual-fuel (landfill gas and No. 2 fuel oil and/or biodiesel) fired compression ignition reciprocating internal combustion engines (Detroit Diesel Series 60). Each lean-burn engine will be connected to an individual 350 kilowatt (kW) electrical generator. The plant will have the potential to generate 8 megawatts of electricity under base load operating conditions and will be interconnected to the Florida Power & Light distribution network through a nearby power line.

Based on the air permit application, the project will result in potential emissions of: 254 tons per year (TPY) of nitrogen oxides (NO_x); 331 TPY of carbon monoxide (CO); 29 TPY of particulate matter/particulate matter with a mean diameter of 10 microns or less (PM/PM₁₀); 39.9 tons per year of sulfur dioxide (SO₂); 38.6 TPY year of volatile organic compounds (VOC); and 8.1 TPY of hydrogen chloride (HCl). As defined in Rule 62-210.200 of the Florida Administrative Code (F.A.C.), the project results in significant net emissions increases for NO_x, CO, PM and PM₁₀. Therefore, the project is subject to preconstruction review for the Prevention of Significant Deterioration (PSD) of Air Quality for these pollutants in accordance with Rule 62-212.400, F.A.C.

For each PSD-significant pollutant, the Department is required to determine the Best Available Control Technology (BACT) and approve the applicant's Air Quality Analysis regarding ambient impacts due to the project. CO and NO_x emissions will be controlled by the combustor design (lean-burn engine) and good combustion practices (air-to-fuel ratio control). PM/PM₁₀ emissions will be minimized by the pretreatment of the landfill gas prior to combustion, filtration and proper maintenance of the engines.

The applicant submitted an air quality analysis in accordance with the ambient air quality standards in place at the time the application was deemed complete. The following table shows the maximum predicted Class II PSD increments in micrograms per cubic meter (µg/m³) and the percent (%) of the allowable increment consumed by sources in the area for nitrogen dioxide (NO₂) and PM₁₀.

Summary of PSD Class II Increment Analysis

<u>Pollutant</u>	<u>Averaging Time</u>	<u>Allowable Increment</u> <u>(µg/m³)</u>	<u>Increment Consumed</u> <u>(µg/m³)</u>	<u>Percent</u>
NO ₂	Annual	25	18	72
PM ₁₀	24-hour	30	23	77
	Annual	17	3	18

The Class II increments represent the increment consumed in the vicinity of the project. Based on the modeled results, emissions from the project will not significantly contribute to, or cause a violation of, any state or federal ambient air quality standards.

The applicant also provided a Class I increment analysis for the Everglades National Park (ENP). The maximum predicted Class I increment consumption due to the project alone are less than significant.

Permitting Authority: Applications for air construction permits are subject to review in accordance with the provisions of Chapter 403, Florida Statutes (F.S.) and Chapters 62-4, 62-204, 62-210, 62-212, 62-296 and 62-

(Public Notice to be Published in the Newspaper)

PUBLIC NOTICE OF INTENT TO ISSUE AIR PERMIT

297 of the Florida Administrative Code (F.A.C). The proposed project is not exempt from air permitting requirements and an air permit is required to perform the proposed work. The Florida Department of Environmental Protection's Bureau of Air Regulation is the Permitting Authority responsible for making a permit determination for this project. The Bureau of Air Regulation's physical address is 111 South Magnolia Drive, Suite 4, Tallahassee, Florida and the mailing address is 2600 Blair Stone Road, MS #5505, Tallahassee, Florida 32399-2400. The Bureau of Air Regulation's phone number is 850/717-9000.

Project File: A complete project file is available for public inspection during the normal business hours of 8:00 a.m. to 5:00 p.m., Monday through Friday (except legal holidays), at address indicated above for the Permitting Authority. The complete project file includes the Draft Permit, the Technical Evaluation and Preliminary Determination, the application, and the information submitted by the applicant, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Permitting Authority's project review engineer for additional information at the address and phone number listed above. In addition, electronic copies of these documents are available on the following web site: <http://www.dep.state.fl.us/air/emission/apds/default.asp>

Notice of Intent to Issue Air Permit: The Permitting Authority gives notice of its intent to issue an air permit to the applicant for the project described above. The applicant has provided reasonable assurance that operation of the proposed equipment will not adversely impact air quality and that the project will comply with all applicable provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296 and 62-297, F.A.C. The Permitting Authority will issue a Final Permit in accordance with the conditions of the proposed Draft Permit unless a timely petition for an administrative hearing is filed under Sections 120.569 and 120.57, F.S. or unless public comment received in accordance with this notice results in a different decision or a significant change of terms or conditions.

Comments: The Permitting Authority will accept written comments concerning the proposed Draft Permit and requests for a public meeting for a period of 30 days from the date of publication of the Public Notice. Written comments must be received by the Permitting Authority by close of business (5:00 p.m.) on or before the end of this 30-day period. In addition, if a public meeting is requested within the 30-day comment period and conducted by the Permitting Authority, any oral and written comments received during the public meeting will also be considered by the Permitting Authority. If timely received comments result in a significant change to the Draft Permit, the Permitting Authority shall revise the Draft Permit and require, if applicable, another Public Notice. All comments filed will be made available for public inspection.

Petitions: A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed with (received by) the Department's Agency Clerk in the Office of General Counsel of the Department of Environmental Protection, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. Petitions filed by any persons other than those entitled to written notice under Section 120.60(3), F.S., must be filed within 14 days of publication of this Public Notice or receipt of a written notice, whichever occurs first. Under Section 120.60(3), F.S., however, any person who asked the Permitting Authority for notice of agency action may file a petition within 14 days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above, at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C.

A petition that disputes the material facts on which the Permitting Authority's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner; the name, address and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of when and how each petitioner received notice of the agency action or proposed decision; (d) A statement of all disputed issues of material fact; (e) A concise

(Public Notice to be Published in the Newspaper)

PUBLIC NOTICE OF INTENT TO ISSUE AIR PERMIT

statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action including an explanation of how the alleged facts relate to the specific rules or statutes; and, (g) A statement of the relief sought by the petitioner, stating precisely the action the petitioner wishes the agency to take with respect to the agency's proposed action. A petition that does not dispute the material facts upon which the Permitting Authority's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Permitting Authority's final action may be different from the position taken by it in this Public Notice of Intent to Issue Air Permit. Persons whose substantial interests will be affected by any such final decision of the Permitting Authority on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Mediation: Mediation is not available in this proceeding.



**TECHNICAL EVALUATION
AND
PRELIMINARY DETERMINATION**

APPLICANT
INDUSTRIAL POWER GENERATING COMPANY, LLC
2250 Dabney Road
Richmond, Virginia 23230

FACILITY
South Dade Landfill
ARMS Facility ID No. 0250623

PROJECT
Facility Modification – Electrical Generating Station
Project No. 0250623-007-AC
Air Permit No. PSD-FL-408

COUNTY
Miami-Dade County, Florida

PERMITTING AUTHORITY
Florida Department of Environmental Protection
Division of Air Resource Management
Bureau of Air Regulation
New Source Review Section
2600 Blair Stone Road, MS #5505
Tallahassee, Florida 32399-2400
Telephone: 850-717-9000 Fax: 850-717-9097

April 20, 2011

1. GENERAL PROJECT INFORMATION

Facility Description and Location

Miami-Dade Solid Waste Management (MDSWM) operates a municipal solid waste landfill located at Black Point in southern Miami-Dade County. The 167 acre site is delineated by SW 97th Avenue on the west, 248th Street on the south, Coconut Palm Drive and Black Creek Canal on the northeast. This facility is located at 24000 SW 97th Avenue, Miami, Miami-Dade County, Florida.

Primary Responsible Official: Mr. German Hernandez, Manager, Environmental Affairs.

Latitude and Longitude are 25° 32' 39.22" North and 80° 20' 30.21" East respectively. UTM coordinates of the site are: Zone 17, 565.51 km East and 2825.11 km North.

Standard Industrial Classification Codes (SIC)

Major Group Number	49 Electric, Gas, and Sanitary Services
Industry Group Number	495 Sanitary Services
Industry Number	4953 Refuse Systems

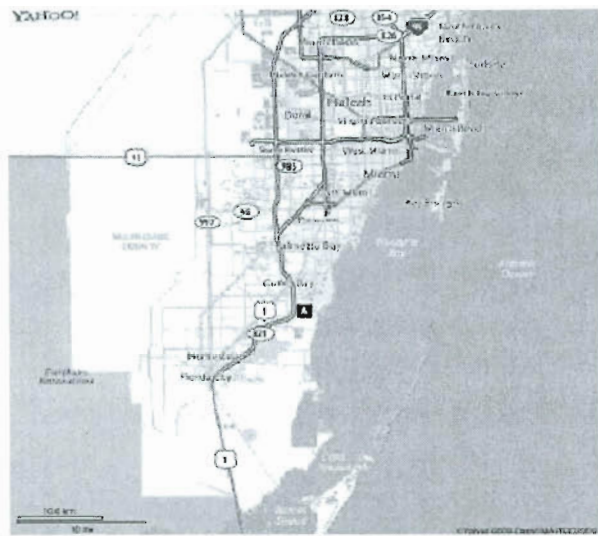


Figure 1 – Regional Location



Figure 2 – Facility Location

The South Dade Landfill facility consists of five cells designated as Cells 1 to 5. Cells 1 and 2, located on the eastern half of the landfill are 60 acres and are currently closed; Cell 3, located on the center of the landfill is approximately 46 acres and is currently inactive and due for closure; and Cell 4 is approximately 48 acres and is currently active. The MDSWM plans to construct Cell 5, approximately 50 acres, as a landfill expansion in the near future.

The gas collection and control system was installed according to the requirements of 40 CFR Part 60, Subpart WWW, to control non-methane organic compound (NMOC). Methane-rich landfill gas (LFG) produced from the decomposition of the disposed waste materials at both active and capped cells is being collected by a gas recovery system. A gas collection and control system (GCCS) was installed as part of the formal closure of Cells 1 and 2. The GCCS comprise gas extraction wells, gas piping, and a thermal gas destruction unit. Since the solid waste at South Dade Landfill facility was placed above the natural ground surface, the system is intended to capture landfill gas which would escape through the cover soil and be transported into the air. The LFG collection system induces a slight negative pressure at the extraction wells, thus reducing the gas pressure gradient, which in turn will reduce the LFG escaping through the landfill surface and migrating off-site.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

A blower station connected to the gas recovery system moves the collected LFG to a central location. LFG is directed to an enclosed flare where methane, NMOC and hazardous air pollutants (HAP) contained in the gas are destroyed at high temperatures. The following figures below show the set-up of the enclosed flare at the landfill.

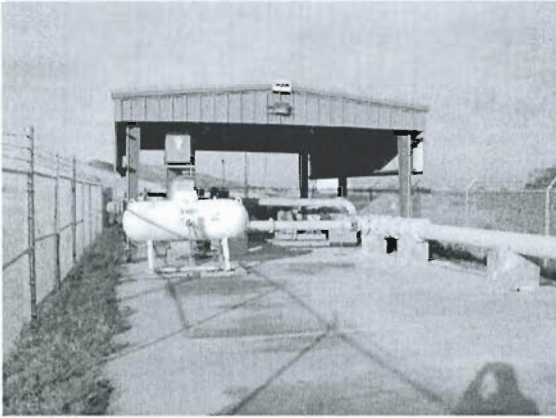


Figure 3 - Flare Propane Tank

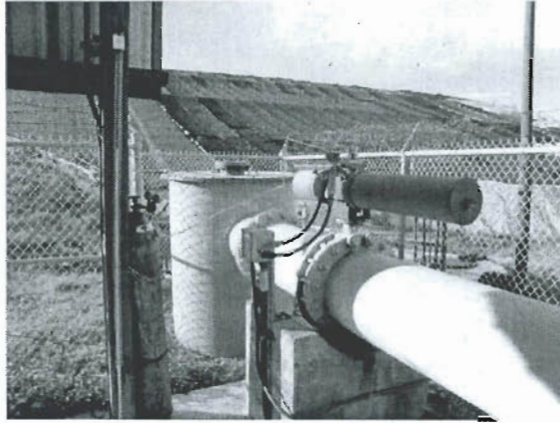


Figure 4 - Flare Knock-Out Drum Main Inlet Valve

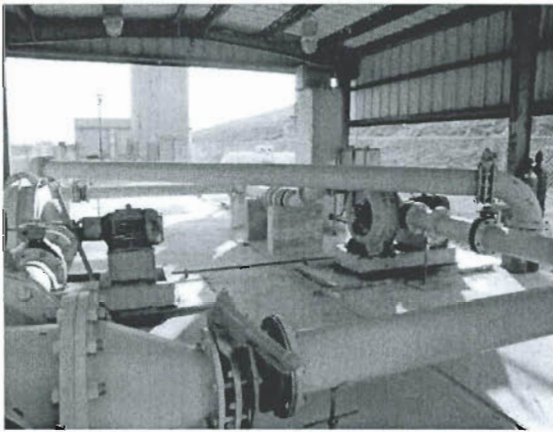


Figure 5 - Flare Dual Blower

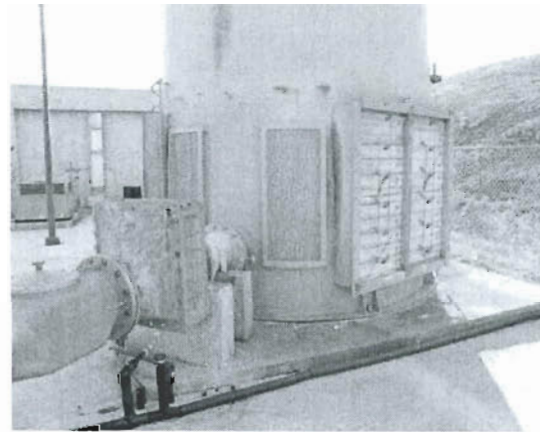


Figure 6 - Flare Flame Arrestor & Louvers

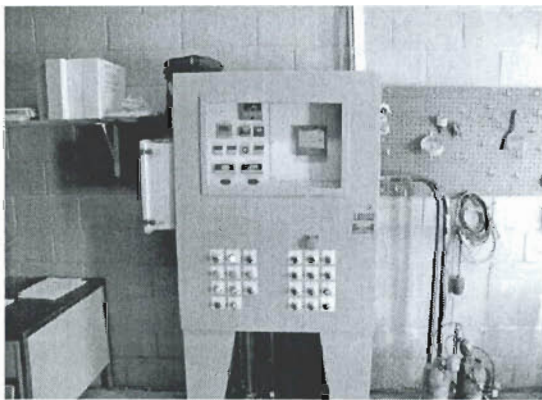


Figure 7 - Flare Control Panel

Landfill gas consists primarily of a blend of carbon dioxide and methane, roughly 50% of each. Methane contains useful energy, which can be recovered when fired in a combustion process. In order to reduce the amount of LFG wasted by flaring, all or part of the available LFG from the landfill will be supplied to the new electrical

generation plant proposed by Industrial Power Generating Company, LLC (INGENCO). The proposed 24 engines will be fueled with the methane-rich LFG generated by the South Dade Landfill. Although the proposed engines can fire 100% diesel or biodiesel fuel, it is not economically feasible to generate electricity with internal combustion engines due to the high cost of these fuels and the low efficiencies of the engines. The application indicates that LFG is the primary fuel and that diesel/biodiesel will only be fired for startup and combustion stability. Therefore, the project is reliant on LFG as the primary fuel.

Because the proposed project will be located at an existing major stationary source, there is an issue as to whether the two operations constitute a single facility for purposes of PSD preconstruction review. Florida's definition of *facility* is, "All of the emissions units which are located on one or more contiguous or adjacent properties, and which are under the control of the same person (or persons under common control)." Florida's definition of *major stationary source* (PSD) includes the following, "For purposes of this definition, a stationary source is all of the pollutant-emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person or persons under common control, except the activities of any vessel; which emit or may emit a PSD pollutant. Pollutant-emitting activities shall be considered as part of the same industrial grouping if they belong to the same Major Group, or have the same first two-digit code, as described in the Standard Industrial Classification (SIC) Manual, 1972, as amended by the 1977 Supplement." These issues are summarized as follows:

- *Same Industrial Grouping:* The two-digit SIC code for the existing landfill is "49", which identifies the Major Group for Electric, Gas, and Sanitary Services. The two-digit SIC code for the proposed electric power plant is also "49".
- *Contiguous or Adjacent Properties:* The LFG-to-energy plant is contiguous to the landfill because it will be located on the same property and leased from the Miami-Dade Solid Waste Management.
- *Common Control:* Landfill gas will fuel the proposed engines to make the project economically viable. The LFG collection system acts as a support facility to the proposed electrical generation plant. But for the landfill operating a LFG collection system, the proposed electrical generation plant would be located elsewhere. Also, according to the contract, ownership of the engines will be transferred to the Miami-Dade Solid Waste Management after 20 years. Although the proposed engines can also fire diesel, it is the LFG which makes the project feasible. The applicant maintains that diesel is only necessary for startups and to maintain combustion stability for this specific type of engine. In addition, the permit will limit the number of engines that can startup simultaneously and fire 100% diesel because of the potential for adverse ambient air impacts. Therefore, the proposed electrical generation plant is ultimately controlled by the Miami-Dade Solid Waste Management.

The Department concludes that the proposed INGENCO electrical generation plant is a part of the existing South Dade Landfill facility. Therefore, upon completion of construction, the INGENCO air construction permit must be incorporated into the Title V air operation permit for the South Dade Landfill. The Title V air operation permit will have two different sections: one for the South Dade Landfill operations and one for the INGENCO electrical generation plant. The primary responsible official will be the Manager of Environmental Affairs of the Miami-Dade Solid Waste Management. A secondary responsible official will be identified from INGENCO for the electrical generation plant. The primary responsible official will be responsible for all applicable reporting and compliance certifications at the facility.

Facility Regulatory Categories

The facility is regulated according to the following categories.

- Title III: The existing facility is not a major source of hazardous air pollutants (HAP).
- Title V: The existing facility is a Title V major source of air pollution in accordance with Chapter 213, Florida Administrative Code (F.A.C.).

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- **PSD:** The existing facility is a major stationary source in accordance with Rule 62-212.400, F.A.C for the Prevention of Significant Deterioration (PSD) of Air Quality and Rule 62-210.200(Definitions), F.A.C. This facility has the potential to emit 250 tons per year or more of a PSD pollutant.

Processing Schedule

- June 2, 2009: Department received the application for an air pollution construction permit.
- July 1, 2009: Department requested additional information.
- July 2, 2009: Department issued another request for additional information.
- October 1, 2009: Applicant submitted a response to the Department's request for additional information on July 1 and July 2, 2009.
- October 21, 2009: Department requested additional information.
- November 23, 2009: Applicant submitted a response to the Department's request for additional information on October 21, 2009.
- December 8, 2009: Department requested additional information.
- December 9, 2009: Applicant submitted a response to the Department's request for additional information on December 8, 2009. Application is complete.
- March 3, 2010: Department's Intent to Issue and Public Notice Package sent to the applicant.

The applicant did not publish the public notice of intent to issue the permit and did not obtain a final permit before the effective date (April 12, 2010) of EPA's final rule establishing a new 1-hour National Ambient Air Quality Standard (NAAQS) for nitrogen dioxide (NO₂). According to EPA, projects without final PSD air construction permits before this date must provide reasonable assurance of compliance with the new NO₂ NAAQS. This is demonstrated by conducting a comprehensive air quality modeling analysis. The applicant worked with the Department to show compliance with the new through multi-source modeling, but issues arose related to ambient impacts from other sources in the vicinity of the project. This is discussed in more detail in Section 5 of this Technical Evaluation and Preliminary Determination.

Project Description

The proposed project will consist of 24 Detroit Diesel Series 60 dual-fuel engines or equivalent coupled to electrical generators. The electrical generation plant will consist of:

- LFG treatment equipment (landfill gas dewatering, filtration and compression equipment and processes).
- 24 internal combustion engine / electrical generator sets, which will produce a total of 8 megawatts (MW, nominal) of electricity under base load operating conditions and will be interconnected to the Florida Power and Light distribution network through a nearby power line.
- Ancillary equipment to support the electric generation plant (e.g., fuel tanks, lube oil tanks, a small boiler and small cooling towers).

Landfill Gas Treatment System

Landfill gas consists primarily of methane (CH₄), carbon dioxide (CO₂) and nitrogen (N₂), with varying smaller amounts of oxygen (O₂), HAPs, NMOC and sulfur compounds. The size of the energy plant and the number of engines operating at any given time will depend on the available heat input (methane fraction) provided by the landfill or the amount of diesel fuel fired. The engines will start up by firing only diesel or biodiesel, but will operate in the dual-fuel mode firing LFG (up to approximately 98%) with diesel or biodiesel (approximately 2%).

The LFG will be treated by compression, dewatering and filtration through a 1-micron filter. The gas will be compressed from 5 to 15 pounds per square inch gauge (psig), filtered through a 1-micron coalescing filter and

dewatered in a gas cooler. The gas cooler will be a fin-fan cooler designed to decrease the gas temperature from 265° F to 150° F at ambient temperature of 95°F. The compressed, filtered and dewatered LFG is directed to the engines for combustion. Components of the specified LFG treatment system will not be equipped with atmospheric vents. Therefore, all of the LFG received by INGENCO will be directed to the engines for use as a fuel. The facility will be equipped so that the LFG is automatically diverted to the existing flare system when the LFG is not being combusted by the engines.

Specifications for Engine/Generator Sets

The applicant proposes to install 24 identical Detroit Diesel Series 60 (or equivalent) dual-fuel fired compression ignition reciprocating internal combustion engines. The engines will be located near the existing GCCS and connected from the existing line to a blower/compressor that will be used to draw methane-rich LFG from the GCCS to the proposed electric generation plant. The LFG will be processed by the LFG treatment system prior to combustion in the engines. Each engine:

- Will be 6-cylinder engine with a total displacement of 12.7 liters.
- Will have a maximum rating of 550 brake horsepower (bhp).
- Will produce a maximum of 469 bhp when coupled to a 350 kilowatts (kW) generator (nominal rating).
- Will have a heat rate of 9,500 Btu /kW in a single-fuel mode and 10,500 Btu/kW in a dual-fuel mode.

The engines will be arranged in four groups of six engines: group A, B, C and D. Each group of engines will share a common stack.

The engines/generator sets will be interconnected to the Florida Power and Light distribution network through a nearby power line for the generation of up to a total of 8 MW of electricity. The engines will start up by firing only diesel or biodiesel, but will operate in the dual-fuel mode firing LFG fraction up to approximately 98% with diesel or biodiesel (approximately 2%). The engines are capable of operating 24 hours per day, 365 days per year; however, the operating hours and output will be dependent on the ability of the distribution grid to accept electricity, as well as the supply of LFG. This specific type of compression ignition engine requires the firing of a small amount of diesel or biodiesel to maintain combustion stability. The engines will operate at a LFG fraction of 90% or more.

Ancillary Equipment

The following ancillary equipment will be installed to support the electrical generation plant:

- A 30,000 gallon diesel tank to supply the engines.
- A 1,000 gallon lube oil tank.
- A 1,000 gallon used lube oil tank.
- An unregulated 0.156 MMBtu/hour boiler and 275 gallon diesel tank (if necessary) for heating in a building.
- Three small, unregulated cooling towers to provide non-contact cooling for other engine requirements such as fuel cooling and charge-air cooling in the engine turbo after-coolers. The evaporative cooling towers will not use any treatment chemicals. The maximum particulate matter (PM) emissions from the cooling towers are estimated to be 0.8 tons per year (TPY) making these towers de minimis emissions sources.

2. APPLICABLE REGULATIONS

State Regulations

This project is subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The Florida Statutes authorize the Department of Environmental Protection to establish rules and regulations regarding air quality as part of the Florida Administrative Code (F.A.C.). This project is subject to the applicable

rules and regulations defined in the following Chapters of the F.A.C.: 62-4 (Permitting Requirements); 62-204 (Ambient Air Quality Requirements, PSD Increments, and Federal Regulations Adopted by Reference); 62-210 (Permits Required, Public Notice, Reports, Stack Height Policy, Circumvention, Excess Emissions, and Forms); 62-212 (Preconstruction Review, PSD Review and BACT, and Non-attainment Area Review and LAER); 62-213 (Title V Air Operation Permits for Major Sources of Air Pollution); 62-296 (Emission Limiting Standards); and 62-297 (Test Methods and Procedures, Continuous Monitoring Specifications, and Alternate Sampling Procedures). PSD applicability and the preconstruction review requirements of Rule 62-212.400, F.A.C. are discussed in Section 2 of this report. Additional details of the other state regulations are provided in Section 3 of this report.

Federal Regulations

The Environmental Protection Agency (EPA) establishes air quality regulations in Title 40 of the Code of Federal Regulations (CFR). Part 60 identifies New Source Performance Standards (NSPS) for a variety of industrial activities. Part 61 specifies National Emissions Standards for Hazardous Air Pollutant (NESHAP) based on specific pollutants. Part 63 specifies NESHAP provisions based on the Maximum Achievable Control Technology (MACT) for given source categories. Federal regulations are adopted in Rule 62-204.800, F.A.C. Additional details of the applicable federal regulations are provided in Section 3 of this report.

In accordance with Title V air operation Permit No. 0250623-006-AV, the existing South Dade Landfill is currently subject to the following federal provisions: 40 CFR Part 63, NESHAP Subparts A (General Provisions) and Subpart AAAA (Municipal Solid Waste Landfills); and Part 60, NSPS Subparts A (General Provisions) and WWW (Municipal Solid Waste Landfills). The following federal standards are discussed in terms of the proposed engines.

New Source Performance Standards (NSPS)

NSPS Subpart IIII: 40 CFR 60.4219 defines compression ignition as relating to a type of stationary internal combustion engine that is not a spark ignition engine. While spark ignition means relating to a gasoline, natural gas, or liquefied petroleum gas fueled engine or any other type of engine with a spark plug (or other sparking device) and with operating characteristics significantly similar to the theoretical Otto combustion cycle. Spark ignition engines usually use a throttle to regulate intake air flow to control power during normal operation. Dual-fuel engines in which a liquid fuel (typically diesel fuel) is used for compression ignition (CI) and gaseous fuel (typically natural gas) is used as the primary fuel at an annual average ratio of less than 2 parts diesel fuel to 100 parts total fuel on an energy equivalent basis are spark ignition engines. The proposed engines fire 100% diesel fuel during start-up and from 2 to 10% diesel fuel during normal operation. From this information the engines could be subject to NSPS Subpart IIII.

The application indicates that each of the proposed engines was manufactured prior to April 1, 2006, which is the applicability deadline for NSPS Subpart IIII. This will establish the engines as predating the NSPS Subpart IIII provisions in 40 CFR 60 if the engines have not been modified or reconstructed. The application indicates that the engines proposed for this project were manufactured between 1996 and 1998 and have not been modified or reconstructed with respect to the permit application. Therefore, the engines are not subject to the NSPS provisions as long as the owner operates and maintain the engines according to the manufacturer's written instructions or procedures over the entire life of the engines to maintain this status. The permittee shall provide documentation that the proposed engines have not been modified nor reconstructed and information from the vendor indicating that the engines were designed as stationary engines to fire landfill gas. The permittee shall obtain a modification of this permit to install another model/type of engine.

National Emissions Standard for Hazardous Pollutants (NESHAP)

HAP Source Status: Emissions of hazardous air pollutants may be produced during the combustion of LFG, diesel and biodiesel in the engines. Some HAP compounds are directly present in the LFG generated by the South Dade Landfill facility and will be directly emitted due to incomplete combustion. Chlorinated compounds

present in the LFG have the potential to form hydrogen chloride (HCl), a regulated HAP, when combusted. Site-specific HAP content analyses have not been performed on the LFG generated by the South Dade Landfill facility. Therefore, data developed by EPA in Section 2.4 of the AP-42 Emissions Factor document were used to estimate the total potential HAP content of the LFG to be used as engine fuel.

Table 2.4-3 of AP-42 identifies organic compound control efficiencies for engines firing LFG as 93% for halogenated HAP species and 86.1% for non-halogenated HAP species. These control efficiencies were considered in determining potential HAP emissions. The contribution of HCl to the potential HAP emissions from the engines was estimated based on a conversion of the individual chlorinated compound measurements presented in the AP-42 default list of LFG HAP constituents to HCl as a result of high temperature combustion. This methodology indicates that potential annual HAP emissions will be less than the major source threshold for any single HAP of 10 TPY and for the combination of all HAP of 25 TPY. However, potential annual HCl emissions are estimated to be 8.1 TPY under base load conditions. Therefore, the Department will require LFG sampling and analysis to demonstrate that HCl emissions from the project are not major.

Subpart ZZZZ, 40 CFR Part 63: This subpart establishes operating limitations for HAP emissions from stationary reciprocating internal combustion engines located at major and area sources of HAP. Each proposed engine will produce a maximum of 469 bhp to meet the generator capacity of 350 kW. However, each engine is rated at a maximum capacity of 550 bhp. For Subpart ZZZZ applicability, the maximum rated capacity is used to determine applicability. The Detroit Diesel Series 60 engines for the proposed project are compression ignition engines were manufactured from 1996-1998. Pursuant to Subpart ZZZZ (40 CFR 63.6590), the proposed engines are defined as “existing engines” and are subject to the applicable requirements, which primarily include:

40 CFR 66.6603, Table 2d. Owner or operator shall:

- a. Change oil and filter every 1,440 hours of operation or annually, whichever comes first;
- b. During periods of startup 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; and
- c. Maintain recordkeeping requirements found in 40 CFR 63.6655, continuous compliance in 40 CFR 63.6605 and 40 CFR 63.6640 and monitoring, installation, collection, operation and maintenance requirements in 40 CFR 63.6625(e), (h), and (j).
- d. In accordance with 40 CFR 63.6625(b), the owner or operator shall during periods of startup 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, after which time the non-startup emission limitations apply.

3. PSD APPLICABILITY

General PSD Applicability

The Department regulates major stationary sources in accordance with Florida’s PSD program pursuant to Rule 62-212.400, F.A.C. PSD preconstruction review is required in areas that are currently in attainment with the state and federal Ambient Air Quality Standards (AAQS) or areas designated as “unclassifiable” for these regulated pollutants. As defined in Rule 62-210.200, F.A.C., a facility is considered a “major stationary source” if it emits or has the potential to emit 5 tons per year of lead, 250 tons per year or more of any PSD pollutant, or 100 tons per year or more of any PSD pollutant and the facility belongs to one of the 28 listed PSD major facility categories. PSD pollutants include: carbon monoxide (CO); nitrogen oxides (NO_x); sulfur dioxide (SO₂); particulate matter (PM); particulate matter with a mean particle diameter of 10 microns or less (PM₁₀); volatile organic compounds (VOC); lead (Pb); Fluorides (F); sulfuric acid mist (SAM); hydrogen sulfide (H₂S); total reduced sulfur (TRS), including H₂S; reduced sulfur compounds, including H₂S; municipal waste combustor organics measured as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans; municipal waste combustor metals measured as particulate matter; municipal waste combustor acid gases measured as SO₂ and hydrogen chloride (HCl); municipal solid waste landfills emissions measured as nonmethane organic compounds

(NMOC); and mercury (Hg).

For major stationary sources, PSD applicability is based on emissions thresholds known as the “significant emission rates” as defined in Rule 62-210.200, F.A.C. Emissions of PSD pollutants from the project exceeding these rates are considered “significant” and the Best Available Control Technology (BACT) must be employed to minimize emissions of each PSD pollutant. Although a facility may be “major” for only one PSD pollutant, a project must include BACT controls for any PSD pollutant that exceeds the corresponding significant emission rate. Rule 62-210.200, F.A.C. defines “BACT” as:

An emission limitation, including a visible emissions standard, based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account:

- 1. Energy, environmental and economic impacts, and other costs;*
- 2. All scientific, engineering, and technical material and other information available to the Department; and*
- 3. The emission limiting standards or BACT determinations of Florida and any other state;*

determines is achievable through application of production processes and available methods, systems and techniques (including fuel cleaning or treatment or innovative fuel combustion techniques) for control of each such pollutant.

If the Department determines that technological or economic limitations on the application of measurement methodology to a particular part of an emissions unit or facility would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set forth the emissions reductions achievable by implementation of such design, equipment, work practice or operation.

Each BACT determination shall include applicable test methods or shall provide for determining compliance with the standard(s) by means which achieve equivalent results.

In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR Parts 60, 61, and 63.

The EPA currently directs that BACT should be determined using the “top-down” approach. The first step in this approach is to determine, for the emission unit in question, the most stringent control available for a similar or identical emission unit or emission unit category. If it is shown that this level of control is technically or economically unfeasible for the emission unit in question, then the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, energy, environmental or economic issues.

In addition, applicants must provide an Air Quality Analysis that evaluates the predicted air quality impacts resulting from the project for each PSD pollutant.

PSD Applicability for the Project

The project is located in Miami-Dade County, which is in an area that is currently in attainment with the state and federal AAQS or otherwise designated as unclassifiable. The existing South Dade Landfill facility is a major stationary source and the project is subject to a PSD applicability review. The following table identifies the estimated potential emissions increases from the project based on the initial application.

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Pollutant	Potential Emissions (TPY)		PSD Significant Emissions Rates (TPY)	Subject To PSD Review?
	Per Engine	All Engines		
PM	1.2	29.0	25	Yes
PM ₁₀	1.2	29.0	15	Yes
PM _{2.5}	1.2	29.0	10	Yes
SO ₂	1.7	39.9	40	No
NO _x	10.6	254	40	Yes
CO	13.8	331	100	Yes
VOC	1.6	38.6	40	No

Note: Based on the applicant's estimate of worst-case operation. As shown above, the project is subject to PSD preconstruction review for CO, NO_x and PM/PM₁₀/particulate matter with a mean particle diameter of 2.5 microns or less (PM_{2.5}).

4. BACT ANALYSIS AND PRELIMINARY DETERMINATIONS FOR CO, NO_x AND PM/PM₁₀

PSD Pollutants

For this project, emissions of CO, NO_x and PM/PM₁₀ are significant and require a BACT determination. The air pollutant emissions from this facility for which a BACT determination is required can be grouped into categories based upon the control equipment and techniques that are available to control emissions from these emission units. Using this approach, the emissions can be classified as indicated below:

- PM/PM₁₀: Controlled generally by wet scrubbing or filtration.
- CO and NO_x (Combustion Products): Generally controlled by efficient combustion of clean fuels, but catalytic technologies are available for reducing these emissions.

Grouping the pollutants in this manner facilitates the BACT analysis because it enables the pollutant control equipment and the corresponding energy, economic, and environmental impacts to be examined on a common basis.

Identifying Add-On Emission Controls for Combustion Products

For combustion sources, the following add-on control technologies are generally available and the primary options for consideration:

- *Non-Selective Catalytic Reduction (NSCR)*: NSCR uses a platinum/rhodium catalyst to reduce NO_x to nitrogen and water vapor in exhaust gas streams containing less than 3% oxygen. This technology has been applied to automobiles and stationary reciprocating engines with variable control efficiencies.
- *Oxidation Catalyst*: An oxidation catalyst consists of a noble metal catalyst section incorporated into the combustion turbine exhaust. The catalyst would promote oxidation of CO to carbon dioxide (CO₂) at much lower temperatures (650° F to 1150° F) than under normal conditions. The control efficiency is primarily a function of gas residence time and can exceed 90%.
- *Selective Catalytic Reduction (SCR)*: This is an add-on control technology in which ammonia is injected into the exhaust gas stream in the presence of a catalyst (typically vanadium) to combine with NO_x in a reduction reaction forming nitrogen and water. For this reaction to proceed satisfactorily, the exhaust gas temperature must be maintained between 450° F and 850° F. SCR is a commercially available, demonstrated control technology.

- *Selective Non-Catalytic Reduction (SNCR)*: In the SNCR process, ammonia or urea is injected at high temperatures without a catalyst to reduce NOx emissions to nitrogen and water vapor. The exhaust temperature must typically be maintained above 1600° F to allow the reaction to occur; otherwise uncontrolled NOx will be emitted as well as unreacted ammonia. Also, the exhaust temperature must not exceed 2000° F or ammonia will actually be oxidized creating additional NOx emissions. The engine exhaust temperature is 820° F, which makes this technology unfeasible.

However, LFG contains siloxanes, which are a class of compounds that exist in the form of R_2SiO , where R is a hydrogen atom or a hydrocarbon and Si is silicon. Siloxanes are present in certain landfill waste streams such as toiletries, cosmetics, and other personal grooming items. When combusted, such compounds produce silica (SiO_2), which can quickly poison a catalyst. A separate treatment system to remove siloxanes (SiO_2) would be necessary to avoid adverse effects of deposits and the rapid decrease in reactivity of the catalyst.

The California Air Resource Board (CARB) has developed and published *Guidance for the Permitting of Electrical Generation Technologies* in July 2002, to assist companies and organizations in the permitting of electrical generating equipment. In this guidance document, CARB:

- Recognizes the benefits of generating electricity from waste gases (landfill and digester gas) and the recovery of useful energy.
- Indicates that waste gases "... contain impurities that, if combusted will likely poison catalyst-based post combustion control systems."
- Determines that additional fuel treatment and post combustion controls have limited success and/or have not been proven to be cost effective in reducing air pollutant emissions from waste combustion applications.

Other state regulatory agencies (e.g., Texas, Rhode Island and New Jersey) have made similar determinations and issued permits that specify BACT for LFG-fueled engines that do not include the use of add-on emission controls because of catalyst poisoning by siloxanes. Such poisoning leads to poor reduction efficiencies and eventually destruction and early replacement of the catalyst.

To employ a catalytic technology would require a siloxane removal system. The Department contacted Applied Filter Technology (AFT), which has been active in the biogas-to-energy business since 1996 and has 167 biogas-to-energy systems in operation around the world. For ten years, the AFT siloxane removal systems have primarily been used in conjunction with combustion turbines to achieve guaranteed LFG specifications that are intended to protect the combustion turbines, which operate within close mechanical tolerances. The percentage of siloxane removal required for protecting a combustion turbine is much less than the siloxane removal efficiency required for protecting a catalyst. In addition, AFT does not have any experience in using the siloxane removal system for engines and the protection of the catalyst used in add-on control. The siloxane removal system that can protect the engines as well as the catalyst is still on the horizon.

The remaining technology for reducing emissions when firing LFG engines is the efficient combustion provided by lean-burn engines. Lean-burn engines are the preferred choice for LFG applications because these engines have the lowest NOx emissions without add-on control. Information gathered by the Department also shows that the majority of landfill applications use lean-burn engines. The engines are supplied with after-coolers and operate at 100% excess air, which also helps to minimize emissions. Emissions of NOx when firing LFG are also lower than traditional fuels such as diesel.

Identifying Add-On Emission Controls for Particulate Matter

There are many types of add-on control technologies for removing particulate matter from a gas stream including fabric filters, wet scrubbers and electrostatic precipitators. However, these technologies are impractical for controlling engines because of the relatively small scale of the engines as well as issues with back-pressure. In

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addition, these technologies would not be cost-effective given the amounts of particulate matter available for control. The remaining control technologies are fuel pretreatment and the efficient combustion of clean fuels.

Documented RACT/BACT/LAER Determinations

The EPA Office of Air Quality Planning and Standards (OAQPS) maintains the Reasonably Available Control Technology/Best Available Control Technology/Lowest Achievable Emission Rate (RACT/BACT/LAER) Clearinghouse (RBLC), which is a database that includes BACT and LAER determinations and identifies the emissions limit and the corresponding control technology. This database indicates that no add-on emission controls have been established as BACT or LAER for LFG engines. In addition, only one source is identified that uses dual-fuel engines. The RBLC indicates that most LFG engines use one or more of the following control methods for controlling CO and NO_x: lean-burn technology, good combustion practices, air-to-fuel ratio controllers and/or turbo charging. For controlling particulates, the following control methods are identified: gas pretreatment, proper operation and maintenance and good combustion practices.

The Department issued PSD permits during 2006-2007 to Trail Ridge Energy, LLC, Seminole Energy, LLC and Brevard Energy, LLC for the installation of six LFG engines at each location. No add-on emission controls were required for these projects. It is noted that only LFG is fired in these engines.

The state of Texas issued PSD permit (PSD-TX-1034) to Bio Energy Texas, LLC on July 23, 2004 for the installation of eight LFG engines. No add-on emission controls were required for this project. The same Caterpillar engines as those proposed for the Florida projects were installed at Bio Energy Texas, LLC.

In 2006, the State of New Jersey completed a non-attainment area (NAA) review for ozone (LAER for NO_x) and a PSD review for CO (BACT) for Ocean Energy Corporation, Inc., which is a Landfill Energy Systems Company. The project was for the installation of six LFG engines and no add-on emission controls were required.

Table 1. Control Technologies and Methods for Reducing CO and NO_x Emissions.

Facility (State)	Engine Size (MW)	Engine Size (MMBtu/hr)	Engine Size (bhp)	Fuel	CO Control	NO _x Control
Bio-Energy, LLC (OH)	--	15	--	LFG	NA*	Lean Burn Technology
Lorraine County Landfill (OH)	--	--	5500	LFG	NA*	Lean Burn Technology
INGENCO (VA)	12.6 (Total)	--	--	Dual-fuel (LFG & oil)	Fuel limit	Air to fuel ratio, turbo charging
Sumter Energy (MI)	--	8.6	--	Treated LFG	Good combustion practices	Good combustion
Bio Energy Texas, LLC (TX)	1.6	--	2172	LFG	Operation & Maintenance	Lean Burn Technology
New England Waste Services (VT)	1.6	--	2221	LFG	Low Emission Design	Low Emission Design
Ridgewood Power Management (RI)	--	--	2229	LFG	Good combustion practices	Lean Burn, Air/Fuel ratio, Intercoolers
MM San Bernardino Energy (CA)	--	--	1850	LFG	Turbocharged, intercooled air/fuel controller	Turbocharged, intercooled air/fuel controller
Trail Ridge Energy, LLC	1.6	--	2233	LFG	Good combustion	Good combustion

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Facility (State)	Engine Size (MW) (MMBtu/hr) (bhp)			Fuel	CO Control	NOx Control
(FL)					practices	
Burlington County (NJ)	1.5	12.5	-	LFG	NA*	Good combustion
Manchester Renewable (NJ)	-	16.4	-	LFG	NA*	Air/Fuel ratio
Seminole Energy, LLC (FL)	1.6	-	2233	LFG	Good combustion practices	Good combustion
Brevard Energy, LLC (FL)	1.6	-	2233	LFG	Good combustion practices	Good combustion
University of New Hampshire (NH)	1.6	14.3	-	LFG	Good combustion practices	Lean Burn, Air/Fuel ratio, Intercoolers

* = Not Available

Table 2. Permitted Emissions Limits for CO, NO_x and PM/PM₁₀ in EPA RBLC Database.

FACILITY	ENGINE SIZE	DATE	TYPE	CO g/bhp-hr	NOx g/bhp-hr	PM/PM ₁₀
University of New Hampshire (NH)	14.3 MMBtu/hr	7/2007	BACT	2.75	0.5	0.1 g/bhp-hr
Brevard Energy, LLC (FL)	2233 hp	3/2007	BACT	2.75	0.6	0.24 g/bhp-hr
Seminole Energy, LLC (FL)	2233 hp	1/2007	BACT	2.75	0.6	0.24 g/bhp-hr
Monmouth County (NJ)	9.81 MMBtu/hr	12/2006	BACT	2.53	0.53	0.0591 lb/MMBtu
Manchester Renewable (NJ)	16.38 MMBtu/hr	10/2006	BACT	2.75	0.5	0.05983 lb/MMBtu
Trail Ridge Energy, LLC (FL)	2233 hp	10/2006	BACT	2.75	0.6	0.24 g/bhp-hr
Burlington County (NJ)	1500 kW	08/2006	BACT	2.5	0.6	0.06 lb/MMBtu
Ocean Energy Corp. (NJ)	2233 hp	2006	BACT/LAER	2.75	0.6	NA
New England Waste Svcs. (VT)	2221 hp	12/21/2005	BACT/LAER	2.75	0.5	NA
Ridgewood Power Mgmt. (RI)	2229 hp	06/24/2005	BACT/LAER	2.75	0.5	NA
Bio Energy Texas, LLC (TX)	2172 hp	07/23/2004	BACT/LAER	2.8	0.6	0.1291 lb/MMBtu
INGENCO (VA)	12.6 MW (Total)	12/17/2003	BACT	3.2 lb/MMBtu	2.1 lb/MMBtu	NA
Northwest Regional Landfill (AZ)	1410 hp	10/27/2003	BACT	2.5	0.6	NA
Bio-Energy, LLC (OH) (Lorraine County Landfill)	1877 hp	04/22/2003	BACT	2.4	1.4	NA
Bio-Energy, LLC (OH) (Carbon Limestone LFG)	1877 hp	04/10/2003	BACT	2.3	1.2	0.0286 lb/MMBtu
MM San Bernardino Energy (CA)	1850 hp	05/16/2002	BACT	2.5	0.6	NA

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

FACILITY	ENGINE SIZE	DATE	TYPE	CO g/bhp-hr	NO _x g/bhp-hr	PM/PM ₁₀
Northern Tier Landfill (PA)	815 kW	01/29/2002	BACT	3.0	2.0	NA
Reliant Associates (TX)	2343 hp	01/24/2002	BACT	3.0	0.6	NA
Sumpter Energy Associates (MI)	1138 hp	12/20/2001	BACT	2.9	2.0	NA
Bio-Energy (Azusa) LLC (CA)	1850 hp	02/22/2000	LAER	2.0	0.6	NA
Kiefer Landfill (CA)	4230 hp	01/18/2000	LAER	2.7	0.55	NA
MM Hackensack Energy (NJ)	1340 hp	04/09/1998	LAER	2.0	1.0	NA

Notes:

hp = Horsepower; kW = kilowatt; MMBtu/hr = million British thermal units per hour; g/bhp-hr = grams per brake horsepower per hour; and NA = Not Available

Applicant's Proposal for BACT

Based on a review of previous similar projects, the applicant proposed the following BACT limits based on the combustion design of the LFG engines.

Pollutant	Proposed Emission Limits Per Engine	Control Technology
CO	0.86 lb/MMBtu and 3.15 lb/hour (3.00 grams/bhp-hour)	Lean-burn engine with air-to-fuel ratio control
NO _x	0.65 lb/MMBtu and 2.42 lb/hour (2.34 grams/bhp-hour)	Lean-burn engine with air-to-fuel ratio control
PM/PM ₁₀	0.075 lb/MMBtu and 0.28 lb/hour (0.26 grams/bhp-hour)	Treatment of LFG fuel with 10-micron filter

Department's BACT Analysis

Engine Type

The engines proposed for the project are Detroit Diesel Series 60 dual-fuel engines, which each produce a maximum of 469 bhp when coupled to a 350 kW generator (nominal rating). This type of engine appears fairly unique for application to LFG-to-energy projects. With a rating of 469 bhp, this engine model is much smaller than the engines identified in the above RBLC summary tables. In addition, this engine model is a compression ignition reciprocating internal combustion engine designed to fire LFG along with diesel/biodiesel.

Diesel/biodiesel is relied upon for startup of the engines (typically less than 30 minutes) and LFG is gradually blended in. After startup, the engines will operate at a LFG fraction of 90% or more. At this point, a small amount of diesel/biodiesel is fired to stabilize combustion. The above graph shows how CO and NO_x emissions vary with the LFG fraction.

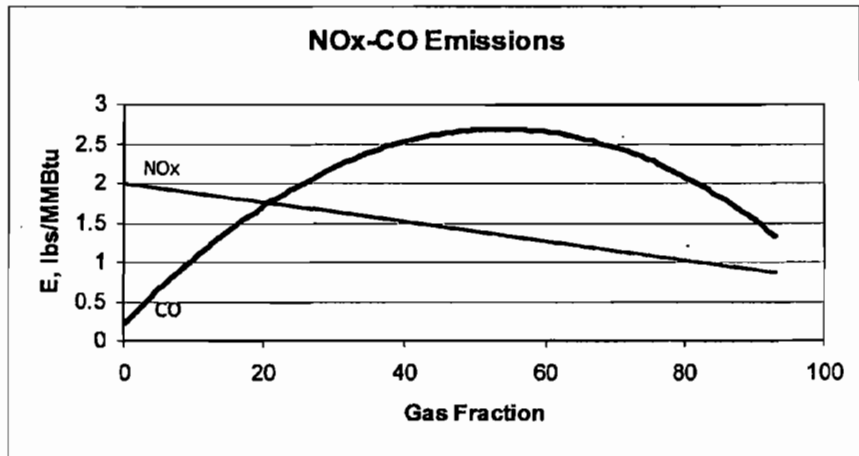


Figure 8 – NO_x-CO Emissions

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

In addition, the Department considered the new NSPS standards for compression ignition engines in NSPS Subpart IIII of 40 CFR 60. However, LFG is not a regulated fuel for compression ignition engines in this Subpart.

The applicant states that the LFG engines proposed for the project have a manufacture date that predates each of the applicability dates for lean-burn engines firing LFG. Therefore, the NSPS standards are not applicable to these engines. The permittee shall provide the following documentation to the Division of Air Resource Management and the Compliance Authority: verification that each of the engines was manufactured prior to April 1, 2006 (applicability deadline for NSPS Subpart IIII); a statement that the proposed engines have not been modified nor reconstructed; and information from the vendor indicating that the engines were designed as stationary engines to fire landfill gas. This will establish the engines as existing engines that predate the NSPS Subpart IIII provisions. The permittee shall obtain a modification of this permit to install another model/type of engine.

BACT for CO and NOx

The Department agrees that there is no practicably feasible or cost effective post combustion treatment technology for reducing CO and NOx emissions from the dual-fueled engines for this project. The LFG contains impurities (particularly siloxanes) that, when combusted, will readily poison a catalyst. Data in EPA’s RBLC identified one BACT determination for engines operating on LFG and diesel: a similar INGENCO project in Virginia, with BACT limits of 3.2 lb CO/MMBtu (11.4 g CO/bhp-hour) and 2.1 lb NOx/MMBtu (7.5 g NOx/bhp-hour). In general, the RBLC data shows BACT limits ranging from 2.3 to 3.2 g CO/bhp-hour and 0.5 to 2.0 g NOx/bhp-hour, which are based on lean-burn engines with air-to-fuel ratio controllers or simply identified “clean-burn engine”.

The applicant proposed a CO BACT of 0.86 lb/MMBtu (3.0 g/bhp-hour) and a NOx BACT limit of 0.65 lb/MMBtu (2.34 g/bhp-hour). These were based on requested annual emission limits of 331 tons of CO per year and 254 tons of NOx per year for all 24 engines. The application also contained the following emissions data as a function of LFG fraction taken from actual operation of the engines at the INGENCO facility in Virginia.

Gas Fraction	Engine Output (k)	NOx lb/MMBtu	CO lb/MMBtu	No Engines Single Fuel	NO Engines Dual Fuel	MMBtu/hr Single Fuel	MMBtu/hr Dual Fuel	Fuel Oil gal/hr	LFG CFM	NOx lb/hr	CO lb/hr
90%	300	0.78	0.9978	0	24	0.0	75.6	56	126933	50.08	75.44
91%	306	0.73	0.9373	0	24	0.0	75.6	58	128343	55.10	70.86
92%	300	0.68	1.0000	0	24	0.0	75.6	44	129754	51.12	75.60
93%	320	0.62	0.9162	0	24	0.0	80.6	41	139508	50.26	65.62
94%	330	0.57	0.7557	0	24	0.0	83.2	36	145832	47.48	62.84
95%	340	0.52	0.6952	0	24	0.0	85.7	31	151849	44.40	59.56
96%	350	0.47	0.6347	0	24	0.0	88.2	26	157961	41.07	55.98

This data shows that at a LFG fraction of 90%, predicted CO emissions are approximately 1.0 lb/MMBtu and begin to steadily decrease above a LFG fraction of 92%. Similarly, at a LFG fraction of 90%, predicted NOx emissions are approximately 0.8 lb/MMBtu and begin to steadily decrease with increasing LFG fraction. Therefore, based on lean-burn design of the engine with an air-to-fuel ratio controller and the available data, the preliminary BACT determinations for each engine are:

CO BACT: 1.0 lb/MMBtu and 3.7 lb/hour/engine (equivalent to 3.6 grams/bhp-hour)

NOx BACT: 0.8 lb/MMBtu and 2.9 lb/hr/engine (equivalent to 2.8 g/bhp-hour)

Although this is at the higher end of recent BACT determinations, this is appropriate considering the specific dual-fuel engine type, much smaller size and short-term emissions rates. These limits are much less than the similar INGENCO project in Virginia. The draft permit also includes a requirement to operate the engines at a LFG fraction of at least 90%.

BACT for PM/PM₁₀

Data presented in EPA’s RBLC for LFG engines show PM/PM₁₀ BACT limits ranging from approximately 0.03 lb/MMBtu to 0.13 lb/MMBtu. Pretreatment of the LFG to remove condensate and particulate matter without the use of add-on control equipment is consistently specified as the BACT method of control.

As required in NSPS Subpart WWW in 40 CFR 60, the applicant proposed a LFG pretreatment filter of only 10 microns. However, as for other projects, the Department will require the use of 1 micron primary and polishing filters to remove particulate matter from the LFG as part of the Treatment System prior to combustion in the engines. Combined with the efficient lean-burn combustion design, this additional requirement will enable the engines to achieve an equivalent PM/PM₁₀ emission rate of approximately 0.075 lb/MMBtu or less. To further minimize particulate matter emissions, the Department will require the following fuel sulfur specification, “Diesel and biodiesel shall have a maximum sulfur content of 0.0015% by weight.

Due to the difficulties in isokinetically testing the small diameter engine stacks for PM₁₀ emissions, the Department establishes the following work practice standards as BACT for PM/PM₁₀ emissions:

- The permittee shall design, install and maintain the LFG Treatment System with 1 micron primary and polishing filters to remove particulate matter from the LFG prior to combustion in the engines.
- Diesel and biodiesel shall have a maximum sulfur content of 0.0015% by weight.
- As determined by EPA Method 9, opacity from the engine stacks shall not exceed 10% based on a 6-minute average.
- The work practice standards are equivalent to PM/PM₁₀ emissions of *0.075 lb/MMBtu and 0.27 g/bhp-hr*.

Compliance Procedures

Compliance with the BACT limits shall be in accordance with the following methods.

Emission Unit	Pollutant	Compliance Method
24 Dual-Fueled Internal Combustion Engines LFG with Diesel/Biodiesel	CO	EPA Method 10, stack test, three 1-hour runs
	NO _x	EPA Method 7 or 7E, stack test, three 1-hour runs
	PM/PM ₁₀	1 Micron Filter: Design, installation and maintenance Diesel/Biodiesel Sulfur Content: Vendor certification or fuel analysis Opacity: EPA Method 9

For stack testing, these refer to the EPA Reference Methods as contained in 40 CFR 60, Appendix A or as otherwise approved by the Department.

The draft permit also includes the following emissions limits:

- Sulfur dioxide emissions from all engines shall not exceed 39.0 tons during any consecutive 12 months (to avoid PSD review). Emissions shall be calculated based on the representative sulfur content of each fuel and the actual monthly fuel consumption rate of the engines.
- Hydrochloric acid emissions from the facility shall not exceed 8.1 tons during any consecutive 12 months (maintains facility as minor with respect to HAP emissions). Emissions shall be calculated based on the representative chlorine content of LFG and the monthly LFG consumption rate by the engines as well as the amount of LFG flared.

For each calendar semiannual period (January – June and July – December), the permittee shall obtain a sample of LFG and have an analysis for sulfur and chlorine. Semiannual samples shall be taken at least five months apart. Each gas sample shall be collected under normal operating conditions (i.e., with valves open for all operating cells) by appropriate canisters (e.g. SUMMA® Bottle-Vac Sampler or equivalent). Based on Rule 62-

297.310(7)(b)(Special Compliance Tests), F.A.C., the Compliance Authority may request additional gas sampling and analyses. Results shall also be reported as SO₂ and HCl emission factors in terms of lb/million standard cubic feet (lb/MMscf) of landfill gas.

Startups, Shutdowns and Malfunctions

When firing 100% diesel/biodiesel during startup, data indicates NO_x emissions from all engines are more than 160 lb/hour, which could result in ambient air quality impacts greater than the new 1-hour NO₂ ambient standard. When firing under normal conditions with a LFG fraction of 90% or more, data indicates NO_x emissions from all engines are less than 60 lb/hour, which poses no adverse ambient impacts. However, the engines typically start up in less than 30 minutes. The following NO_x emissions are estimated for the first hour of operation assuming all engines startup at the same time.

Operating Condition	Duration minutes	NO _x Rate lb/hour (all engines)	
		Maximum Rate	Contribution to First Hour of Operation
Startup	30	187.38	93.69
Normal	30	59.08	29.54
Total	60	N/A	123.23

Since the cumulative hourly NO_x emission rate is less than 160 lb/hour, it is unnecessary to restrict startup of the engines. The applicant indicates that engine startups are typically staggered. The draft permit will authorize excess emissions from startup and shutdown as long as the applicant minimizes the duration of startup to the extent practicable. In general, the operator should strive for startups of approximately 30 minutes or less. Once started, the draft permit requires operation with a LFG fraction of 90% or greater. If insufficient LFG is not available to operate all engines, the operator must take some of the engines off line to achieve a LFG fraction of at least 90%.

5. AIR QUALITY ANALYSIS

This section provides a general overview of the modeling analyses required for PSD preconstruction review followed by the specific analyses required for this project.

Overview of the Required Modeling Analyses

Pursuant to Rule 62-212.400, F.A.C., the applicant is required to conduct the following analyses for each PSD significant pollutant:

- A preconstruction ambient air quality analysis,
- A source impact analysis based on EPA-approved models, and
- An additional impact analysis.
- For the purposes of any required analysis, NO_x emissions will be modeled as NO₂ and only PM₁₀ emissions will be considered when modeling particulate matter.

Preconstruction Ambient Monitoring Analysis

Generally, the first step is to determine whether the Department will require preconstruction ambient air quality monitoring. Using an EPA-approved air quality model, the applicant must determine the predicted maximum ambient concentrations and compare the results with regulatory thresholds for preconstruction ambient monitoring, known as de minimis air quality levels. The regulations establish de minimis air quality levels for

several PSD pollutants as shown in Table 3 below. For ozone, there is no de minimis air quality level because it is not emitted directly. However, since NO₂ and VOC are considered precursors for ozone formation, the applicant may be required to perform an ozone ambient impact analysis (including the gathering of ambient air quality data) for any net increase of 100 tons per year or more of NO₂ or VOC emissions.

If the predicted maximum ambient concentration is less than the corresponding de minimis air quality level, Rule 62-212.400(3)(e), F.A.C. exempts that pollutant from the preconstruction ambient monitoring analysis. If the

Table 3. Regulatory Thresholds for Preconstruction Ambient Monitoring

PSD Pollutant	De Minimis Air Quality Levels
Carbon monoxide (CO)	575 µg/m ³ , 8-hour average
Nitrogen dioxide (NO ₂)	14 µg/m ³ , annual average
Particulate Matter (PM ₁₀)	10 µg/m ³ , 24-hour average
Sulfur dioxide (SO ₂)	13 µg/m ³ , 24-hour average
Lead (Pb)	0.1 µg/m ³ , 3-month average
Fluorides (F)	0.25 µg/m ³ , 24-hour average
Total reduced sulfur (TRS)	10 µg/m ³ , 1-hour average
Hydrogen sulfide (H ₂ S)	0.2 µg/m ³ , 1-hour average
Reduced sulfur compounds (RSC)	10 µg/m ³ , 1-hour average
Mercury (Hg)	0.25 µg/m ³ , 24-hour average

predicted maximum ambient concentration is more than the corresponding de minimis air quality level (except for non-methane hydrocarbons), the applicant must provide an analysis of representative ambient air concentrations (preconstruction monitoring data) in the area of the project based on continuous air quality monitoring data for each such pollutant with an Ambient Air Quality Standard (AAQS). If no such standard exists, the analysis shall contain such air quality monitoring data as the Department determines is necessary to assess ambient air quality for that pollutant.

If preconstruction monitoring data is necessary, the Department may require the applicant to collect representative ambient monitoring data in specified locations prior to commencing

construction on the project. Alternatively, the Department may allow the requirement for preconstruction monitoring data to be satisfied with data collected from the Department’s extensive ambient monitoring network. Preconstruction monitoring data must meet the requirements of Appendix B of 40 CFR 58 during the operation of the monitoring stations. The preconstruction monitoring data will be used to determine the appropriate ambient background concentrations to support any required AAQS analysis.

Finally, after completing the project, the Department may require the applicant to conduct post-construction ambient monitoring to evaluate actual impacts from the project on air quality.

Source Impact Analysis

For each PSD-significant pollutant identified above, the applicant is required to conduct a source impact analysis for affected PSD Class I and Class II areas. This analysis is to determine if emissions from this project will significantly impact levels established for Class I and II areas. Class I areas include protected federal parks and national wilderness areas (NWA) that are under the protection of federal land managers. Table 4 identifies the Class I areas located in Florida or that are within 200 kilometers (km) in nearby states. Class II areas represent all other areas in the vicinity of the facility open to public access that are not Class I areas.

Table 4. Class I Areas

Class I Area	State	Federal Land Manger
Bradwell Bay NWA	Florida	U.S. Forest Service
Chassahowitzka NWA	Florida	U.S. Fish and Wildlife Service
Everglades National Park	Florida	National Park Service
Okefenokee NWA	Georgia	U.S. Fish and Wildlife Service
St. Marks NWA	Florida	U.S. Fish and Wildlife Service
Wolf Island NWA	Georgia	U.S. Fish and Wildlife Service

An initial significant impact analysis is conducted using the worst-case emissions scenario for each pollutant and corresponding averaging time. The regulations define separate significant impact levels for Class I and Class II areas for CO, NO₂, Pb, PM₁₀ and SO₂. Based on the initial significant impact analysis, no additional modeling is required for any pollutant with a predicted ambient concentration less than the corresponding significant impact

level. However, for any pollutant with a predicted ambient concentration exceeding the corresponding significant impact level, the applicant must conduct a full impact analysis. In addition to evaluating impacts caused by the project, a full impact modeling analysis also includes impacts from other nearby major sources (and any potentially-impacting minor sources within the radius of significant impact) as well to determine compliance with:

- The PSD increments and the federal air quality related values (AQRV) for Class I areas.
- The PSD increments and the AAQS for Class II areas.

As previously mentioned, for any net increase of 100 tons per year or more of VOC or NO₂ subject to PSD, the applicant may be required to perform an ambient impact analysis for ozone including the gathering of ambient ozone data.

PSD Class I and II Model

The EPA-approved American Meteorological Society and EPA Regulatory Model (AERMOD) dispersion model was used to evaluate short range impacts from the proposed project in the surrounding Class II Area and also in the Class I area. In November of 2005, the EPA promulgated AERMOD as the preferred regulatory model for predicting pollutant concentrations within 50 kilometers of a source. The AERMOD model is a replacement for the Industrial Source Complex Short-Term model (ISCST3). The AERMOD model calculates hourly concentrations based on hourly meteorological data. The model can predict pollutant concentrations for annual, 24-hour, 8-hour, 3-hour and 1-hour averaging periods. In addition to the PSD Class II modeling, it is also used to model the predicted impacts for comparison with the de minimis ambient air quality levels when determining preconstruction monitoring requirements.

For evaluating plume behavior within the building wake of structures, the AERMOD model incorporates the Plume Rise Enhancement (PRIME) downwash algorithm developed by the Electric Power Research Institute (EPRI). A series of specific model features recommended by the EPA are referred to as the regulatory options. The applicant used the EPA-recommended regulatory options in each modeling scenario and building downwash effects were evaluated for stacks below the good engineering practice (GEP) stack heights.

Meteorological data used in the AERMOD model consisted of a concurrent five-year period of hourly surface weather observations from the National Weather Service office located at Miami International Airport and twice-daily upper air soundings from Florida International University (FIU) in Miami. The five-year period of meteorological data was from 2001 through 2005. This station was selected for use in the evaluation because it is the closest primary weather station to the project area and is most representative of the project site.

Stack Height Considerations

GEP stack height means the greater of 65 meters (213 feet) or the maximum nearby building height plus 1.5 times the building height or width, whichever is less. Where the affected stacks did not meet the requirements for GEP stack height, building downwash was considered in the modeling analyses. Based on a review of this application, the Department determines that the project complies with the applicable provisions of the stack height regulations as revised by EPA on July 8, 1985 (50 FR 27892). Portions of the regulations have been remanded by a panel of the U.S. Court of Appeals for the D.C. Circuit in NRDC v. Thomas, 838 F. 2d 1224 (D.C. Cir. 1988). Consequently, this permit may be subject to modification if and when EPA revises the regulation in response to the court decision. This may result in revised emission limitations or may affect other actions taken by the source owners or operators.

Additional Impact Analysis

In addition to the above analyses, the applicant must provide an evaluation of impacts to: soils, vegetation, and wildlife; air quality related to general commercial, residential and industrial growth in the area that may result from the project; and regional haze in the affected Class I areas.

PSD Significant Pollutants for the Project

As discussed previously, the proposed project will increase emissions of the following pollutants in excess of the PSD significant emissions rates: NO_x, CO and PM/PM₁₀. For the purposes of any required analysis, NO_x emissions will be modeled as NO₂ and only PM₁₀ emissions will be considered when modeling particulate matter.

Preconstruction Ambient Monitoring Analysis

Using the AERMOD model, the applicant predicted the following maximum ambient impacts from the project.

Table 5. De Minimis Air Quality Levels

Pollutant	Averaging Time	Maximum Predicted Impact (µg/m ³)	De Minimis Concentration (µg/m ³)	Greater than De Minimis?
NO ₂	Annual	9.7	14	NO
PM ₁₀	24-hr	19.7	10	YES
CO	8-hr	814	575	YES

As shown above, NO₂ is exempt from preconstruction monitoring because the predicted impacts are less than the de minimis levels. CO and PM₁₀ are not exempt because their predicted impacts are greater than the de minimis levels. In addition, the project results in PSD net emissions increases of 254 tons/year of NO₂, which is above the threshold of 100 tons/year, which requires an ozone ambient impact analysis including the gathering of ambient air quality data. The Department maintains an extensive quality-assured ambient monitoring network throughout the state and data gathered from these monitors can be used to address the ozone, CO and PM₁₀ impacts. Unless otherwise noted, Table 6 summarizes ambient data from 2008-2010 available from existing nearby monitoring locations in Miami-Dade.

Table 6. Ambient Air Quality Measurements Nearest to the Project Site (2008 - 2010)

Pollutant	Location	Averaging Period	Ambient Concentration			
			Compliance Period	Value	Standard	Units
Ozone	Perdue Medical Center	8-hour	2008-10	67 ^a	75 ^a	ppb
PM ₁₀	Miami Fire Station	24-hour	2008-10	65	150 ^b	µg/m ³
		Annual	2008-10	26 ^c	50 ^c	µg/m ³
PM _{2.5}	Homestead Fire Station	24-hour	2008-10	15 ^d	35 ^d	µg/m ³
		Annual	2008-10	7 ^c	15 ^c	µg/m ³
NO ₂	Metro Annex	Annual	2008-10	18	100 ^c	µg/m ³
CO	Metro Annex	1-hour	2008-10	4,300	40,000 ^f	µg/m ³
		8-hour	2008-10	2,700	10,000 ^f	µg/m ³

- a. Three year average of the 4th highest daily maximum.
- b. Not to be exceeded on more than an average of one day per year over a three-year period.
- c. Arithmetic mean.
- d. Three year average of the 98th percentile of 24-hour concentrations.
- e. Three year average of the weighted annual mean.
- f. Not to be exceeded more than once per year.

The existing monitoring data show no violations of any ambient air quality standards. The Department determines that the data collected from these monitors is representative of the air quality in the vicinity of the project and may be used to satisfy the preconstruction monitoring requirements for PM₁₀, CO, NO₂ and ozone. As necessary, the above ambient concentrations will be used as the ambient background concentrations for any required AAQS analysis.

Ozone is a key indicator of the overall state of regional air quality. It is not emitted directly from combustion processes. Rather it is formed from VOC and NO_x emitted primarily from regional industrial and transportation sources. VOC is also emitted from fires and vegetation (e.g. isoprene). These two precursors participate in photochemical reactions that occur on an area-wide basis and are highly dependent on meteorological factors.

There are two ozone monitors in Miami-Dade. Ozone limits and measurements are summarized on three year blocks, rolled annually. The reported value was calculated by taking the maximum 8-hour readings recorded each day during the three years. The fourth highest of the recorded maxima are identified for each year and then the average of those three values is identified as the compliance value. The average of the annual fourth highest measurements (design value) over the period 2008-2010 at the monitor (designated as University of Miami-Rosenstiel) recording the highest readings in Miami-Dade is 68 parts per billion (ppb).

The largest NO_x sources in the area are the Florida Power and Light Turkey Point Station approximately 10 km south, the Miami-Dade Resource Recovery facility approximately 30 km north, and Titan Industries Pennsoco Cement about 35 km north of the proposed project. These facilities had annual emissions of 2100, 1300 and 1200 tons, respectively, of NO_x in 2008. These values are significantly less than annual emissions from these sources in 2002, which were 6300, 5000, and 2500 tons, respectively. In addition, for reference, NO_x emissions have greatly decreased from the power plants in the south Florida area since 1998 when annual emissions from NO_x were approximately 46,000 tons. For power plant sources in 2008 these emissions were 12,000 tons, and for 2009 they were even less at 9200 tons. These values represent reductions of 74 percent and 80 percent, respectively.

The Department considered available options for potentially predicting ambient ozone impacts caused by the NO₂ emissions increases (ozone precursor pollutant) from the project. No stationary point source models are available or approved for use in predicting ozone impacts. Although regional models exist for predicting ambient ozone levels, it is unlikely that impact caused by this project could be adequately evaluated because it is so small compared to regional effects. In addition due to the trend of decreasing NO_x emissions, the Department determines that the use of a regional model incorporating the complex chemical mechanisms for predicting ozone formation is not appropriate for this project, and no further modeling is required for ozone impacts.

PM_{2.5} (also known as PM_{fine}) is another key indicator of the overall state of regional air quality. Some is directly emitted as a product of combustion from transportation and industrial sources as well as fires. Much of it consists of particulate nitrates and sulfates formed through chemical reactions between gaseous precursors such as SO₂ and NO_x from combustion sources and ammonia (NH₃) naturally present in the air or added by other industrial sources. In addition to NO_x emissions, SO₂ emissions from power plant sources in the south Florida area have also decreased significantly since 1998 when annual emissions were approximately 110,000 tons. In 2008 these emission were approximately 13,000 tons, and for 2009 they were even less at approximately 10,000 tons. Other large sources of SO₂ in Miami-Dade have had significant decreases, too.

These NO_x and SO₂ emissions trends provide insight regarding the likely direction of regional ambient air quality drivers (excluding meteorology) for pollutants like ozone and PM_{2.5} that are formed from precursors such as SO₂ and NO_x.

There are three PM_{2.5} monitors in Miami-Dade. PM_{2.5} limits and measurements are summarized on three year blocks, rolled annually. The reported value for PM_{2.5} given in Table 6 was calculated by taking the average 24-hour readings recorded each day during the three years (2008-2010). The value for each year that exceeds 98% of all daily measurements within that year is identified for each year and then the average of those three numbers is identified as the value compared with the standard. The value calculated in the described manner for PM_{2.5}

measured at the Homestead Fire Station is given in Table 6 as 15 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) compared with a standard of $35 \mu\text{g}/\text{m}^3$.

The simple average of all measurements within each three years (2008-2010) was also calculated and then the mean of the three annual averages ($7 \mu\text{g}/\text{m}^3$) was reported and compared with the standard of $15 \mu\text{g}/\text{m}^3$. Although the $\text{PM}_{2.5}$ stations are not used for official attainment determinations, they accurately reflect regional $\text{PM}_{2.5}$ concentrations.

Source Impact Analysis for PSD Class I Areas

Affected PSD Class I Areas

For PSD Class I areas within 200 kilometers of the facility, Table 7 below identifies each affected Class I area as well as the distance to the facility and the number of receptors used in the modeling analysis.

For the preliminary significant impact analysis, the highest short-term predicted concentrations will be compared to the respective significant impact levels. Since five years of data are available, the highest-second-high (HSH) short-term predicted concentrations will be used for any required AAQS and PSD Class II increment analysis with regard to short-term averages. However, for annual averages, the highest predicted annual average will be compared with the corresponding annual level.

Table 7. Affected PSD Class I Modeling Identities

PSD Class I Area	Distance	Receptors
Everglades National Park	20	265

Results of PSD Class I Significant Impact Analysis

Using the AERMOD model, the applicant predicted the following maximum ambient impacts from the project.

Table 8. Significant Impact Analysis for PSD Class I Area

Pollutant	Averaging Time	Maximum Predicted Impact ($\mu\text{g}/\text{m}^3$)	Significant Impact Level ($\mu\text{g}/\text{m}^3$)	Significant Impact?	Affected Class I Area
NO_2	Annual	0.097	0.1	NO	Everglades National Park
PM_{10}	24-hour	0.28	0.30	NO	Everglades National Park
	Annual	0.01	0.20	NO	Everglades National Park

As shown above, the maximum predicted impacts are less than the corresponding significant impact levels for each pollutant. Therefore, a full impact analysis for the PSD Class I areas is not required.

Source Impact Analysis for PSD Class II Areas

For the preliminary significant impact analysis, the highest short-term predicted concentrations will be compared to the respective significant impact levels. Since five years of data are available, the highest-second-high (HSH) short-term predicted concentrations will be used for any required AAQS and PSD Class II increment analysis with regard to short-term averages. However, for annual averages, the highest predicted annual average will be compared with the corresponding annual level.

Results of the Significant Impact Analysis

Table 9 below shows the results of the preliminary PSD Class II significant impact analysis.

Table 9. Significant Impact Analysis for PSD Class II Areas (Vicinity of Facility)

Pollutant	Averaging Time	Maximum Predicted Impact ($\mu\text{g}/\text{m}^3$)	Significant Impact Level ($\mu\text{g}/\text{m}^3$)	Significant Impact?	Radius of Significant Impact (km)
NO ₂	Annual	9.7	1	YES	3.5
PM ₁₀	24-hour	19.7	5	YES	0.7
	Annual	1.5	1	YES	
CO	1-hour	1,076	2,000	NO	0.7
	8-hour	814	500	YES	

The predicted impacts of NO₂, PM₁₀ and CO for the 8 hour averaging time are greater than the corresponding PSD Class II significant impact levels; therefore, a full impact analysis for each of these pollutants is required within the applicable significant impact area as defined by the predicted radius of significant impact identified above. For NO₂ and PM₁₀ emissions, a PSD Class II increment analysis and an AAQS analysis was conducted. An AAQS analysis only is required for CO.

Receptor Grids for Performing PSD Increments and AAQS Analyses

For the PSD Class II increment and AAQS analyses, receptor grids are normally based on the size of the significant impact area for each pollutant. As shown in the previous section, the predicted radius of significant impact for NO₂, CO and PM₁₀ were 3.5, 0.7 and 0.7 kilometers, respectively.

PSD Class II Increment Analysis

The PSD increment represents the amount that new sources in an area may increase ambient ground level concentrations of a pollutant from a regulatory baseline concentration. For PM₁₀, the baseline concentrations were established in 1977 with a baseline year of 1975 for existing major sources. For NO₂, the baseline concentration was established in 1988 with a baseline year of 1988 for existing major sources. The emission values input into the model for predicting increment consumption are based on the maximum emissions rates from increment-consuming sources at the facility as well as all other increment-consuming sources in the vicinity of the facility. The preliminary analysis indicated NO₂ and PM₁₀ to be significant for this project. The following table summarizes the results of the PSD Class II increment analysis.

Table 10. PSD Class II Increment Analysis

Pollutant	Averaging Time	Maximum Predicted Impacts ($\mu\text{g}/\text{m}^3$)	Allowable Increment ($\mu\text{g}/\text{m}^3$)	Greater than PSD Class II Allowable Increment?
NO ₂	Annual	18	25	NO
PM ₁₀	24-hour	23	30	NO
	Annual	3	17	NO

As shown above, the maximum predicted impacts are less than the allowable PSD Class II increments.

AAQS Analysis

For each pollutant subject to an AAQS analysis, the total impact on ambient air quality is obtained by adding an ambient background concentration to the maximum predicted concentration from modeled sources. The ambient background concentration accounts for all sources that are not explicitly modeled. The following table summarizes the results of the AAQS analysis for the affected pollutants.

Table 11. AAQS Analysis

Pollutant	Averaging Time	Modeled Sources ($\mu\text{g}/\text{m}^3$)	Ambient Background Concentration ($\mu\text{g}/\text{m}^3$)	Total Impact ($\mu\text{g}/\text{m}^3$)	AAQS ($\mu\text{g}/\text{m}^3$)	Greater than AAQS?
PM ₁₀	24-hour	23	53	76	150	NO
	Annual	3	26	29	50	NO
NO ₂	Annual	18	26	44	100	NO
CO	1-hour	6,900	4,300	11,200	40,000	NO
	8-hour	4,500	2,300	6,800	10,000	NO

As shown in this table, impacts from the proposed project are not expected to cause or significantly contribute to a violation of any AAQS.

Additional Impacts Analysis

Impacts on Soils, Vegetation and Wildlife

The maximum predicted ground-level concentrations of NO₂, CO and PM₁₀ from the proposed project and all other nearby sources are below the corresponding AAQS. The AAQS are designed to protect both the public health and welfare. As such, this project is not expected to have a harmful impact on soils, vegetation or wildlife in the vicinity of the project.

Air Quality Impacts Related to Growth

The proposed modification will not significantly change employment, population, housing, commercial development, or industrial development in the area to the extent that a significant air quality impact will result.

Visibility Analysis

At the request of the federal land manager, the applicant conducted a visibility AQRV analysis for the Class I area and the Biscayne National Park (BNP) Class II area located within 1.1 kilometers of the facility at its closest point. The analysis to determine the potential adverse plume visibility effects in the portions of the Everglades located within 50 kilometers of the facility and the BNP were based on Visual Impact Screening and Analysis (VISCREEN) computer model. Both a Level 1 and Level 2 analysis were performed. The federal land manager concluded from the VISCREEN analysis that no significant impact on the Class I area were expected. However, the federal land manager is concerned about the BNP. In order to mitigate predicted visibility impacts in the BNP, INGENCO will be filtering the LFG before it is combusted in the engines with a 1 micron filter instead of a 10 micron filter. Also, INGENCO will be using biodiesel or ultra low sulfur fuel oil with a maximum sulfur content of 0.0015 percent to minimize particulate emissions.

Nitrogen and Sulfur Deposition

Total nitrogen deposition rates on the PSD Class I area was also predicted using AERMOD. The maximum predicted nitrogen deposition rates are below the threshold levels recommended by the federal land manager.

New EPA Standard for NO₂

On February 9, 2010, EPA issued a new 1-hour NAAQS for NO₂. The new NAAQS is 100 ppb (equivalent to 188 $\mu\text{g}/\text{m}^3$) and became effective on April 12, 2010. Although a draft permit was issued on March 3, 2010, INGENCO did not publish the required public notice and did not obtain a final permit before the effective date of the new NO₂ ambient standard. At that time, EPA required such projects to also demonstrate compliance with the new 1-hour NO₂ ambient standard by conducting a revised air quality modeling analysis. The consultant for INGENCO had difficulties in making this demonstration for a variety of reasons including the stringency of the new standard, the stringency of the significant impact level and the conservative assumptions EPA required when

conducting the modeling analysis. EPA also maintained that there would be no “grandfathering” of projects whereby the standard would not apply if the project did not have a final permit before the effective date of the new NO₂ ambient standard.

However, EPA received several legal challenges from projects under review as well as the technical challenges encountered with the preparation and review of information needed to predict the hourly NO₂ ambient impacts. As shown by the case of the Avenal Power Center, LLC (Avenal) project in California, EPA is reconsidering this position and preparing a policy that may be appropriate under certain narrow circumstances to grandfather pending PSD projects from the requirement to demonstrate compliance with the new 1-hour NO₂ standard. EPA now believes that it may not be appropriate to retroactively require such an additional air quality modeling analysis for an ambient standard that became effective after the application was complete. For federal PSD permit projects, EPA has a statutory obligation to grant or deny a PSD permit within one year of a complete application. EPA is in the process of extending similar relief to other similar permit applications and is taking public comments on this approach.

EPA proposes to approve the Avenal project without requiring a demonstration that the project will not cause or contribute to a violation of the hourly NO₂ ambient standard. In addition, EPA will not require the Avenal project to establish BACT emissions limits for greenhouse gases or demonstrate that the project will not cause or contribute to a violation of the new hourly ambient SO₂ standard which became effective on August 23, 2010. After the public comment period EPA will be able to address the public comments and estimates a complete final action on the Avenal project permit application by May 27, 2011.

The INGENCO project was also held up due to unfortunate timing with the new hourly NO₂ ambient standard. Based on EPA’s reconsideration of the Avenal project, the Department will also reconsider the INGENCO project. INGENCO’s application has been with the Department since June 2, 2009. As with EPA, the Department has an obligation to issue permits in a timely manner. Based on this reconsideration, the Department intends to re-issue a draft permit for the INGENCO project and may issue a final permit before the EPA’s estimated final action on the Avenal project permit. The Department considered the following criteria that are similar to the Avenal project when reaching this conclusion:

- The application was prepared and submitted when the old annual NO₂ ambient standard was in place.
- The application was deemed complete before EPA issued the new hourly NO₂ ambient standard.
- A draft permit was issued before the new hourly NO₂ ambient standard became effective.
- This INGENCO project is unique because it is the only project in Florida that was affected in this manner by the timing of the new hourly NO₂ ambient standard.

Since the NO₂ hourly regulation went into effect, INGENCO has been compiling additional information to demonstrate the project will not cause or contribute to a violation of the hourly NO₂ standard. Aside from comments by INGENCO on the draft permit, the new NO₂ hourly standard has been the real challenge for this project. INGENCO conducted an air quality modeling analysis, which showed several issues with the new standard as well as the historical modeling assumptions.

First of all, the NO₂ NAAQS was revised from 53 ppb (equivalent to 100 ug/m³) based on an annual average to 100 ppb (equivalent to 188 ug/m³) based on a 1-hour average. Secondly, on June 29, 2010, EPA issued guidance that set the interim significant impact level at 4 ppb in accordance with long-established policy for the older ambient standards. This ultra conservative significant impact level for an already stringent 1-hour standard makes many small projects significant for modeling purposes. This means that a more comprehensive multi-source air quality analysis must be conducted, which requires the air dispersion modeling of many other facilities. When this is conducted for the INGENCO project, engine-generator sets from the nearby Miami-Dade Water and Sewer Department (WASD) must be included. Although these engines serve a backup role and operate infrequently, the June 29, 2010 EPA guidance requires such units to be modeled. Emissions from these sources combined with the project’s emissions show predicted violations of the new hourly NO₂ ambient standard. The WASD facility brings the backup units on line when there is the threat of a severe storm. INGENCO indicates

that the LFG engines would likely be brought off line during severe storms. So, it is unlikely these WAST sources will operate simultaneously with INGENCO's sources. Lastly, the June 29, 2010 EPA guidance required an in-stack NO₂/NO_x ratio of 1.0 despite the actual ratio for many combustion sources being much less than 1.0.

Even though it is considering grandfathering this project, the Department still required an air quality analysis to demonstrate that the proposed INGENCO project by itself does not violate the new hourly NO₂ standard. This is because EPA also stated that air quality modeling must be used to determine areas that are not in attainment with the new hourly NO₂ ambient standard. Based on subsequent modeling analyses conducted by INGENCO and the Department, emissions from the proposed INGENCO project are not predicted to violate the new 1-hour NO₂ ambient standard. As was done for the initial air quality analysis, AERMOD was used with 2001-2005 meteorological data from the National Weather Service office located at Miami International Airport and twice-daily upper air soundings from Florida International University (FIU) in Miami. In addition background ozone data from the Cutler Road Perdue Medical Center ozone monitoring site in Miami-Dade county was deemed appropriate for use in the modeling analysis.

In addition, the case-by-case Tier 3 Plume Volume Molar Ratio Method (PVMRM) screening model technique was used. When this technique is used, a site-specific in-stack ratio for NO₂/NO_x of less than 1.0 may be used if properly justified. The applicant submitted information to support in-stack NO₂/NO_x ratios for the engines of 0.10 for firing LFG and 0.05 for firing diesel. However, the Department used a more conservative in-stack ratio of 0.15 for landfill gas and 0.20 for diesel. The form of the standard is the 3-year average of the 98th percentile of the annual distribution of daily maximum 1-hour average concentrations. However, 40 C.F.R. Part 51, Appendix W, adopted and incorporated by reference in Rule 62-204.800, F.A.C. requires 5 years of National Weather Service data be used. Therefore, the 5-year average serves as an unbiased estimate of the 3-year average for purposes of modeling demonstrations of compliance with the new standard. The Department has taken a more conservative approach and has used the highest high predicted value over 5 years. The predicted maximum NO₂ impact from the INGENCO project is 185 ug/m³ when firing 100% diesel and 99 ug/m³ when firing LFG, which are less than the new hourly ambient standard of 188 ug/m³. The maximum NO₂ emission rate input into the model was 160 lb/hour for diesel and 60 lb/hour for LFG. At the maximum modeled emissions rate, the predicted impact from firing 100% diesel is very near the new standard; therefore the permit should ensure that NO_x emissions do not exceed 160 lb/hour.

In summary, the INGENCO project will use LFG that is currently being flared as fuel to produce energy for Florida Power and Light's electric grid. This project benefits the environment by recovering useful energy in the LFG and generating electricity. The Department encourages renewable energy projects, including waste-to-energy projects. The air quality analyses show that emissions from the INGENCO project on its own will not exceed the NAAQS in place at the time of a complete application nor for the new hourly NO₂ ambient standard.

Conclusion on Air Quality Impacts

As described in this report and based on the required analyses, the Department has reasonable assurance that the proposed project will not cause, or significantly contribute to, a violation of any AAQS or PSD increment.

6. CONCLUSION

Based on the foregoing technical evaluation of the application and additional information submitted by INGENCO the Department has made a preliminary determination that the proposed project will comply with all applicable state air pollution regulations provided that the Department's Best Available Control Technology Determination is implemented and certain conditions are met. The General and Specific Conditions are listed in the attached draft conditions of approval. Syed Arif was the project engineer on the original draft permit. For the revised draft permit, Christy DeVore was the project engineer and Jeff Koerner, supervisor, jointly reviewed and prepared the revised draft permit documents. Cleve Holladay is the meteorologist responsible for reviewing and approving the ambient air quality analyses. Additional details of this analysis may be obtained by contacting the project engineer at the Department's Bureau of Air Regulation at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

DRAFT PERMIT

PERMITTEE

Industrial Power Generating Company, LLC (INGENCO)
2250 Dabney Road
Richmond, VA 23230

Secondary Responsible Official (Energy Section):

Mr. Robert L. Greene
Environmental Compliance Manager, INGENCO

Primary Responsible Official:

Mr. German Hernandez, Manager Environmental Affairs
Miami-Dade Solid Waste Management – Miami-Dade County

Permit No. 0250623-007-AC PSD-FL-408 Miami-Dade Solid Waste Management South Dade Landfill Modification Project: Installation of Landfill Gas Engines Expires: May 1, 2014

PROJECT AND LOCATION

This is the final air construction permit, which authorizes the installation and operation of 24 dual-fuel landfill gas-fired internal combustion engines with a nominal rated capacity of 8 megawatts of electricity. The project is located at the Miami-Dade County Solid Waste Management South Dade Landfill at 24000 SW 97th Avenue, Miami, Miami-Dade County, which is classified as Standard Industrial Classification No. 4953 for Refuse Systems. UTM coordinates are Zone 17; 565.51 km East and 2825.11 km North.

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

STATEMENT OF BASIS

This air pollution construction permit is issued under the provisions of: Chapter 403 of the Florida Statutes (F.S.) and Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296 and 62-297 of the Florida Administrative Code (F.A.C.). The permittee is authorized to conduct the proposed work in accordance with the conditions of this permit. This project is subject to the general preconstruction review requirements in Rule 62-212.300, F.A.C. and the preconstruction review requirements for major stationary sources in Rule 62-212.400, F.A.C., for the Prevention of Significant Deterioration (PSD) of Air Quality.

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.

(DRAFT)

Michael P. Halpin, P.E., Director
Division of Air Resource Management

Date

DRAFT PERMIT

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 _____ (DRAFT) _____ to the persons listed below.

- Robert L. Greene, INGENCO (rgreene@ingenco.com)
- German Hernandez, Miami-Dade Solid Waste Management (germanh@miamidade.gov)
- James A. Susan, P.E., Fishbeck, Thompson, Carr & Huber, Inc. (jasusan@ftch.com)
- Lee Hoefert, DEP-SED (lee.hoefert@dep.state.fl.us)
- Mallika Muthiah, DERM (muthiahm@miamidade.gov)
- Kathleen Forney, EPA Region 4 (forney.kathleen@epa.gov)
- Dee Morse, NPS (dee_morse@nps.gov)
- Vickie Gibson, DEP-BAR for reading file (victoria.gibson@dep.state.fl.us)

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.

(DRAFT)

(Clerk)

(Date)

SECTION I. GENERAL INFORMATION

FACILITY DESCRIPTION

Miami-Dade Solid Waste Management (MDSWM) operates the South Dade Landfill Facility, which is a Class I municipal solid waste (MSW) landfill located in Miami, Florida. Methane-rich landfill gas (LFG) produced from the decomposition of disposed waste materials is currently collected by a gas recovery system and combusted flares to reduce non-methane organic compounds (NMOC).

PROJECT DESCRIPTION

Under contract with MDSWM, INGENCO will construct and operate an electrical generation plant at the South Dade Landfill Facility. To recover useful energy from the LFG that is currently flared, available LFG will be diverted to INGENCO to fuel the new electrical generation plant, which will consist of:

- LFG treatment equipment for dewatering, filtration and compression.
- Twenty-four reciprocating internal combustion engines, each coupled to a 350 kilowatt (kW) electrical generator. Under base load operating conditions, the plant will generate a total of 8 megawatts (MW, nominal) of electricity and will be interconnected to the Florida Power and Light distribution network through a nearby power line.
- Unregulated ancillary equipment that supports the electric generation plant consists of:
 - Diesel fuel tanks (preliminary design of two 12,000 gallon tanks) to provide diesel oil storage for the engines.
 - One lube oil tank (approximately 1,000 gallons).
 - One used lube oil tank (approximately 1,000 gallons) and moisture conditioning equipment.
 - If necessary, a package boiler (approximately 0.2 million British thermal units per hour (MMBtu/hr)) for providing heat to the building and a fuel oil tank (approximately 275 gallons) for the boiler will be installed.
 - Evaporative cooling towers.

The engines will be arranged in four groups of six engines. The engines will be located near the existing LFG collection and control system and connect from the existing line to a blower/compressor, which will draw methane-rich LFG from the gas collection system for delivery to the new electrical generation plant. The exhaust from each group of six engines will be ducted together to a single stack. Therefore, there will be a total of four stacks in the electric generation plant.

As a result of this major modification, the project is subject to PSD preconstruction review for carbon monoxide (CO), particulate matter/particulate matter with an aerodynamic diameter of 10 microns or less (PM/PM₁₀) and nitrogen oxides (NO_x).

NEW EMISSION UNITS

This permit authorizes construction and installation of the following new regulated emission units:

ID	Emission Unit (EU) Description
003	Twenty four dual-fuel fired compression ignition reciprocating internal combustion engine/generator sets (Detroit Diesel Series 60) with a total nominal electrical generation capacity of 8 MW.

SECTION I. GENERAL INFORMATION

REGULATORY CLASSIFICATION

The existing South Dade Landfill Facility is subject to the following major regulatory classifications.

- The facility is not a major source of hazardous air pollutants (HAP).
- The facility does not operate any units subject to the acid rain provisions of the Clean Air Act (CAA).
- The facility is an existing Title V major source of air pollution in accordance with Chapter 213, F.A.C. (The facility has a capacity of greater than 2.5 million cubic meters and 2.5 million megagrams and operates under a current Title V air operation permit.)
- The facility is an existing major stationary source in accordance with Rule 62-212.400(PSD), F.A.C.

The existing South Dade Landfill Facility is subject to the following federal regulations.

- 40 Code of Federal Regulations (CFR) 60, Subpart A, New Source Performance Standards (NSPS), General Provisions;
- 40 CFR 60, Subpart WWW, NSPS for Municipal Solid Waste Landfills;
- 40 CFR 60, Subpart Cc, Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills;
- 40 CFR 63, Subpart A, National Emission Standards for Hazardous Air Pollutants (NESHAP), General Provisions; and
- 40 CFR 63, Subpart AAAA, National Emission Standards for Hazardous Air Pollutants (NESHAP) for Municipal Solid Waste Landfills.

Installation of the new electrical generation plant is subject to PSD preconstruction review in accordance with Rule 62-210.200, F.A.C. and subject to Best Available Control Technology (BACT) determinations for CO, NO_x and PM/PM₁₀ emissions.

APPENDICES

The following Appendices are attached as part of this permit.

- Appendix A. Citation Formats and Glossary of Common Terms
- Appendix B. General Conditions
- Appendix C. Common Conditions
- Appendix D. Common Testing Requirements
- Appendix E. Summary of BACT Determinations

SECTION II. ADMINISTRATIVE REQUIREMENTS (DRAFT PERMIT)

1. Regulating Agencies: All documents related to applications for permits to operate, reports, tests, minor modifications and notifications shall be submitted to the Department's Southeast District (SED) Office, 400 North Congress Avenue, Suite 200, West Palm Beach, Florida 33401. All applications for permits to construct or modify emissions units subject to the Prevention of Significant Deterioration requirements should be submitted to the Bureau of Air Regulation (BAR), Florida Department of Environmental Protection, 2600 Blair Stone Road, MS 5505, Tallahassee, Florida 32399-2400 (phone number 850/717-9000).
2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications should be submitted to the Department's Southeast District Office, 400 North Congress Avenue, Suite 200, West Palm Beach, Florida 33401 and a copy to the Department of Environmental Resources Management, Air Quality Management Division, 701 Northwest 1st Court, Suite 400, Miami, Florida 33136.
3. Appendices: The following Appendices are attached as a part of this permit: Appendix A (Citation Formats and Glossary of Common Terms); Appendix B (General Conditions); Appendix C (Common Conditions); and Appendix D (Common Testing Requirements); and Appendix E (Summary of BACT Determinations).
4. General Conditions: The owner and operator are subject to and shall operate under the attached General Permit Conditions B.1 through B.15 listed in Appendix B of this permit. General Permit Conditions are binding and enforceable pursuant to Chapter 403 of the Florida Statutes. [Rule 62-4.160, F.A.C.]
5. Terminology: The terms used in this permit have specific meanings as defined in the corresponding chapters of the Florida Administrative Code.
6. Applicable Regulations, Forms and Application Procedures: Unless otherwise indicated in this permit, the construction and operation of the subject emissions unit 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 Florida Administrative Code Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296, 62-297 and the Code of Federal Regulations Title 40, Parts 60 and 63, adopted by reference in the Florida Administrative Code (F.A.C.) regulations. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C. and follow the application procedures in Chapter 62-4, F.A.C. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]
7. Expiration: Notwithstanding the source obligation requirements in Rule 62-212.400(12)(a), F.A.C., the permittee may, for good cause, request that this construction permit be extended. Such a request shall be submitted to the Bureau of Air Regulation prior to 60 days before the expiration of the permit. [Rule 62-4.090, 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 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, 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 62-213.420, F.A.C.]
9. Source Obligation: Authorization to construct shall expire if construction is not commenced within 18 months after receipt of the permit, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time. This provision does not apply to the time period between constructions of the approved phases of a phased construction project except that each phase must commence construction within 18 months of the commencement date established by the Department in the permit. [Rule 62-212.400(12)(a), F.A.C.]

SECTION II. ADMINISTRATIVE REQUIREMENTS (DRAFT PERMIT)

10. BACT Determination: For phased construction projects, the BACT determination shall be reviewed and modified as appropriate at the latest reasonable time which occurs no later than 18 months prior to commencement of construction of each independent phase of the project. At such time, the owner or operator of the applicable stationary source may be required to demonstrate the adequacy of any previous determination of BACT for the source. [40 CFR 52.21(j)(4)]
11. 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.]

SECTION III – EMISSION UNIT SPECIFIC CONDITIONS (DRAFT PERMIT)

Subsection A. LFG Engines (EU-003)

The specific conditions listed in this subsection apply to the following emission unit.

EU No.	Emission Unit Description
003	This emissions unit consists of 24 Detroit Diesel Series 60 dual-fuel fired compression ignition reciprocating internal combustion engines. Each engine is a 6-cylinder engine with a total displacement of 12.7 liters. Each engine has a maximum rating of 550 brake horsepower (bhp) and is coupled to a 350 kW generator (nominal rating) for the generation of up to a total of 8 MW of electricity. Each engine will fire landfill gas with diesel and/or biodiesel. The LFG will be processed by a gas treatment system prior to combustion in the engines. The engines will be arranged in four groups of six engines: groups A, B, C and D. The exhaust from each group of six engines will be ducted together to a single stack, for a total of four stacks.

EQUIPMENT DESIGN AND WORK PRACTICES

1. **Engines:** The permittee is authorized to install and operate 24 Detroit Diesel Series 60 dual-fuel fired compression ignition reciprocating internal combustion engines. Each engine is a 6-cylinder engine with a total displacement of 12.7 liters. Each engine has a maximum rating of 550 bhp and is coupled to a 350 kW generator (nominal rating) for the generation of up to a total of 8 MW of electricity. The maximum rating when coupled to the electrical generator is 469 bhp. Each engine will fire LFG with diesel/biodiesel as a startup and stabilizing fuel. The LFG will pass through a gas treatment system prior to combustion in the engines. The engines will be arranged in four groups of six engines: groups A, B, C and D. Each group of engines will share a common stack.

The maximum heat input rate of each engine is 3.67 million British thermal units (MMBtu) per hour.

[Design and Rule 62-4.070(3), F.A.C.]

2. **LFG Treatment System:** The permittee shall design, install, operate and maintain a LFG Treatment System including equipment for: gas compression (blowers/compressors), de-watering (knock-out and cooling system) and particulate removal (filtration). Specifically, the permittee shall design, install, maintain and operate 1 micron primary and polishing filters to remove particulate matter from the LFG prior to combustion in the engines. The LFG treatment system shall not be equipped with atmospheric vents. LFG shall be directed to the new engines, the existing flares or some other appropriate treatment or control system. [Rule 62-212.400, F.A.C.]
3. **Ancillary Equipment.** The permittee is authorized to install the following unregulated ancillary equipment to support the electrical generation plant:
 - a. Diesel fuel tanks (preliminary design of two 12,000 gallon tanks) to provide diesel oil storage for the engines.
 - b. One lube oil tank (approximately 1,000 gallons).
 - c. One used lube oil tank (approximately 1,000 gallons) and moisture conditioning equipment.
 - d. If necessary, a package boiler (approximately 0.2 million British thermal units per hour (MMBtu/hr)) for providing heat to the building and a fuel oil tank (approximately 275 gallons) for the boiler will be installed.
 - e. Evaporative cooling towers.

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4. **Fuel Specifications:** The following fuels are authorized for each engine: LFG, diesel and biodiesel. Based on the proposed engine type and design, diesel or biodiesel shall be co-fired with LFG to stabilize combustion. The maximum sulfur content of diesel and biodiesel is 0.0015 % by weight.

SECTION III – EMISSION UNIT SPECIFIC CONDITIONS (DRAFT PERMIT)

Subsection A. LFG Engines (EU-003)

{Permitting Note: For this type of compression ignition dual-fuel engine, the LFG fraction target range is 92% to 94%, with the remainder being diesel or biodiesel. The permittee expects a minimum LFG fraction of 90% with an upper level LFG fraction of 98%. The LFG fraction can be adjusted by the number of engines in operation. The estimated LFG heating value is 536 Btu per standard cubic feet (scf) and landfill gas usage of 114 scf per minute (scfm) per engine. The approximate heating value for diesel is 137,000 Btu/gallon and for biodiesel the range is 130,000 to 145,000 Btu/gallon.} [Rule 62-212.400, F.A.C.]

5. **Fuel Monitors:** The permittee shall install, calibrate, operate and maintain monitoring devices to record the flow (with totalizer) of each authorized fuel and the hours of operation (non-resettable elapsed time meter). [Rule 62-4.070(3), F.A.C.]
6. **LFG Flaring:** The permittee shall install and maintain an automatic fail-safe block valve on each engine. The fail-safe block valve must stop the flow of LFG in the event of an engine failure. Excess LFG not used as fuel in an engine must be flared or directed to some other appropriate treatment or control system in accordance with the requirements of NSPS Subpart WWW in 40 CFR 60. [Rule 62-4.070, F.A.C.]

EMISSION LIMITING AND PERFORMANCE REQUIREMENTS

7. **Hours of Operation:** The hours of operation for the engines are not limited (8,760 hours per year). [Rule 62-210.200, F.A.C.]
8. **LFG Fraction:** Upon completing startup of each engine, the engines shall operate at a LFG fraction of at least 90%. [Rules 62-4.070(3) and Rule 62-212.400(BACT), F.A.C.]
9. **Nitrogen Oxides (NO_x):** The emission rate of NO_x from each engine shall not exceed 0.8 lb/MMBtu and 2.9 lb/hour (equivalent to 2.8 grams/bhp-hour). [Rule 62-212.400(BACT), F.A.C.]
10. **Carbon Monoxide (CO):** The emission rate of CO from each engine shall not exceed 1.0 lb /MMBtu and 3.7 lb/hour (equivalent to 3.6 grams/bhp-hour). [Rule 62-212.400, F.A.C.]
11. **Particulate Matter/Particulate Matter less than 10 microns (PM/PM₁₀):** Emissions of PM/PM₁₀ shall be minimized by the following work practice standards: installing, maintaining and operating the LFG Treatment System that meets the filtration specification; the firing of diesel/biodiesel that meets the maximum sulfur specification; and, as determined by EPA Method 9, visible emissions from each engine exhaust shall not exceed 10% opacity. *{Permitting Note: Based on these work practice standards, the expected maximum PM/PM₁₀ emissions from each engine is 0.075 lb/MMBtu, 0.28 lb/hour and 0.26 grams/bhp-hour.}* [Rule 62-212.400(BACT), F.A.C.]
12. **Sulfur Dioxide (SO₂):** Sulfur dioxide emissions from all engines shall not exceed 39.0 tons during any consecutive 12 months. Emissions shall be calculated based on the representative sulfur content of each fuel and the actual monthly fuel consumption rate of each fuel based on the following:
 - a. **LFG:** The representative sulfur content for a given month shall be the sulfur content determined from sampling and analysis within the same semiannual period.
 - b. **Diesel/Biodiesel:** The representative sulfur content for a given month shall be the permitted maximum sulfur content or the actual sulfur content if provided for the most recent fuel delivery.
 - c. **Fuel Consumption:** The monthly fuel consumption shall be determined from the fuel flow monitors.Compliance with the SO₂ emissions cap shall be determined by summing the calculated monthly SO₂ emissions from each fuel based on stoichiometry for a given 12-month period. *{Permitting Note: The project avoids PSD review based on this emissions cap.}* [Rule 62-212.400(12)(Source Obligation), F.A.C.]
13. **Hydrochloric Acid (HCl):** Hydrochloric acid emissions from the facility shall not exceed 8.1 tons during any consecutive 12 months. Emissions shall be calculated based on the representative chlorine content of LFG and the actual monthly fuel consumption rate of the engines and the amount flared based on the following:

SECTION III – EMISSION UNIT SPECIFIC CONDITIONS (DRAFT PERMIT)

Subsection A. LFG Engines (EU-003)

- a. LFG: The representative chlorine content for a given month shall be the chlorine content determined from sampling and analysis within the same semiannual period.
- b. Fuel Consumption: The monthly fuel consumption shall be determined from the fuel flow monitors on the engines as well as the flares.

Compliance with the HCl emissions cap shall be determined by summing the calculated monthly HCl emissions from LFG based on stoichiometry for a given 12-month period. *{Permitting Note: This emissions cap ensures that the facility remains an area source of HAP emissions with regard to NESHAP Subpart ZZZZ in 40 CFR 63 (less than 10 tons per year of any single HAP and less than 25 tons per year for the combination of all HAP)}.* [Applicant Request and Rule 62-4.070(3), F.A.C.]

EXCESS EMISSIONS

14. Excess Emissions Allowed: Excess CO and NO_x emissions (as specified in this subsection) resulting from startup, shutdown or malfunction of any emissions unit shall be permitted providing best operational practices to minimize emissions are adhered to and:
 - a. To the extent practicable, the operator shall strive to complete engines startups within 30 minutes;
 - b. Upon completing startup, each engine shall operate with a LFG fraction at 90% or greater; and
 - c. The duration of excess emissions due to malfunctions shall be minimized but in no case exceed two hours in any 24-hour period.

[Rule 62-210.700(1), F.A.C.]

TEST METHODS AND PROCEDURES

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

Method	Description of Method and Comments
1-4	Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content
7E	Determination of Nitrogen Oxide Emissions from Stationary Sources
9	Visual Determination of the Opacity of Emissions from Stationary Sources
10	Determination of Carbon Monoxide Emissions from Stationary Sources {Note: The method shall be based on a continuous sampling train.}
19	Determination of Sulfur Dioxide Removal Efficiency and Particulate Matter, Sulfur Dioxide, and Nitrogen Oxides Emission Rates (Optional F-factor method may be used to determine flow rate and gas analysis to calculate mass emissions in lieu of Methods 1-4.)

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]

16. LFG Composition Analysis: The following methods shall be used to satisfy the sampling/analysis of LFG:
 - a. Methane Content: Portable analyzer.
 - b. Sulfur Content: ASTM Method D5504-01 or equivalent.
 - c. Chlorine Content: Modified EPA Method TO-15 or equivalent.
 - d. The LFG shall be collected and transported in an appropriate canister (e.g. SUMMA®, Bottle-Vac Sampler or equivalent).

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[Rule 62-4.070(3), F.A.C.]

17. **Initial Compliance Tests:** Within 60 days of achieving the permitted capacity, but no later than 180 days after initial startup (first fire), the permittee shall have emissions tests conducted on the engines to demonstrate compliance with the CO, NO_x and opacity standards of this permit. To demonstrate compliance with the standards, the permittee shall test one group of engines. All engines that are available and physically capable of operating at the required LFG fraction shall be operating for the test. During the initial compliance tests, the permittee shall take a representative sample of LFG as described below, which shall be analyzed for the methane content, sulfur content and chlorine content. The heating value shall be calculated from the methane content measured by the portable analyzer. The analytical data on the heating value, sulfur content and chlorine content shall represent the LFG fired for that semiannual period. [Rules 62-4.070 and 62-297.310(7), F.A.C.]
18. **Annual Compliance Tests:** During each federal fiscal year (October 1st to September 30th), the permittee shall have emissions tests conducted on the engines to demonstrate compliance with the CO, NO_x and opacity standards of this permit. To demonstrate compliance with the standards, the permittee shall test one engine group of six engines. Annual tests shall be rotated such that each engine group is tested before a group is repeated. All engines that are available and physically capable of operating at the required LFG fraction shall be operating for the test. The results of the most recent annual compliance conducted within the appropriate time period may be used to satisfy the requirement to test prior to renewal of the operation permit. During the annual compliance tests, the permittee shall take a representative sample of LFG as described below, which shall be analyzed for methane content, sulfur content and chlorine content. The analytical data on the heating value, sulfur content and chlorine content shall represent the LFG fired for that semiannual period. [Rules 62-4.070 and 62-297.310(7), F.A.C.]
19. **Engine Test Conditions:** The required compliance tests shall be conducted when operating at permitted capacity in dual-fuel mode with a LFG gas fraction of at least 90%. Permitted capacity is defined as 80% to 100% of the maximum electrical production rate for each engine (350 kW). [Rule 62-297.310, F.A.C.]
20. **LFG Sampling/Analysis:** For each calendar semiannual period (January – June and July – December), the permittee shall obtain a sample of LFG and have an analysis for sulfur and chlorine. Semiannual samples shall be taken at least five months apart. Each gas sample shall be collected under normal operating conditions (i.e., with valves open for all operating cells) by appropriate canisters (e.g. SUMMA® Bottle-Vac Sampler or equivalent). Based on Rule 62-297.310(7)(b)(Special Compliance Tests), F.A.C., the Compliance Authority may request additional gas sampling and analyses. Results shall also be reported as SO₂ and HCl emission factors in terms of lb/million standard cubic feet (lb/MMscf) of landfill gas. [Rules 62-210.200 and 62-212.400, F.A.C.]
21. **Diesel/Biodiesel Sampling/Analysis:** For each delivery of diesel and/or biodiesel fuel, the permittee shall obtain a fuel vendor certification (or bill of lading) identifying the actual or maximum sulfur content. The permittee shall maintain records documenting the sampling/analysis methods used by the vendor to determine the sulfur content. Optionally, the permittee can obtain a sample for a delivery and have it analyzed for the sulfur content. Fuel sulfur sampling and analysis shall be determined by appropriate methods including the following (or equivalent): ASTM D 4057-88, Standard Practice for Manual Sampling of Petroleum and Petroleum Products; ASTM D 129-91; ASTM D 2622-94; or ASTM D 4294-90; or the latest version of the methods. [Rule 62-4.070(3), F.A.C.]

RECORDKEEPING, REPORTING AND MONITORING REQUIREMENTS

22. **Stack Test Reports:** The required test report shall be filed with the Department as soon as practical, but no later than 45 days after the last sampling run of each test is completed. The test report shall provide sufficient detail on the emissions unit tested and the test procedures used to allow the Department to determine if the test was properly conducted and the test results properly computed. As a minimum, the test

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report, other than for an EPA or DEP Method 9 test, shall provide the applicable information identified in Rule 62-297.310(8)(c). The lower heating value, sulfur content, chlorine content, SO₂ emission factor (lb/MMscf) and HCl emission factor (lb/MMscf) shall be provided as part of the stack test report. [Rule 62-297.310(8), F.A.C.]

23. Fuel Analytical Reports: For each required fuel analysis, the permittee shall submit the analytical report to the Compliance Authority within 45 days of taking the sample. The permittee shall maintain records of the required analysis (or vendor certification) for each fuel. [Rule 62-4.070(3), F.A.C.]
24. Monthly Records: Within 10 days following a given month, the permittee shall calculate and record the following information in a monthly record for the given month and the consecutive 12-month rolling period:
 - a. Total LFG consumption for all engines;
 - b. Diesel and biodiesel consumption for all engines;
 - c. Hours of operation (including any startup, shutdown or malfunction);
 - d. Calculated SO₂ emissions (including supporting calculations); and
 - e. Calculated HCl emissions (including supporting calculations).

In addition the permittee shall estimate the average monthly heating value of LFG from the engine operational data. [Rule 62-4.070(3)]

NSPS AND NESHAP PROVISIONS

25. NSPS Subpart IIII: The permittee shall provide the following documentation to the Division of Air Resource Management and the Compliance Authority: verification that each of the engines was manufactured prior to April 1, 2006 (applicability deadline for NSPS Subpart IIII); a statement that the proposed engines have not been modified nor reconstructed; and information from the vendor indicating that the engines were designed as stationary engines to fire landfill gas. This will establish the engines as existing engines that predate the NSPS Subpart IIII provisions. The permittee shall obtain a modification of this permit to install another model/type of engine. [40 CFR 60]
26. NESHAP Subpart ZZZZ Provisions: The engines are subject to the applicable provisions of NESHAP Subpart ZZZZ in 40 CFR 63, including:
 - a. Change the oil and filter every 1,440 hours of operation or annually, whichever comes first;
 - b. During periods of startup 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; and
 - c. Maintain recordkeeping requirements found in 40 CFR 63.6655, continuous compliance in 40 CFR 63.6605 and 40 CFR 63.6640 and monitoring, installation, collection, operation and maintenance requirements in 40 CFR 63.6625(e), (h), and (j).

The provisions of this Subpart may be provided in full upon request. Emissions units subject to a specific NESHAP Subpart in 40 CFR 63 are also subject to the applicable General Provisions of Subpart A in 40 CFR 63. [40 CFR Part 63, Subpart ZZZZ, 40 CFR 66.6603, Table 2d, 40 CFR 63.6625(b), 40 CFR 63.6655, 40 CFR 63.6605, 40 CFR 63.6640 and 40 CFR 63.6625(e), (h), and (j)]

SECTION IV. APPENDICES

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SECTION IV. APPENDIX A
CITATION FORMATS AND GLOSSARY OF COMMON TERMS

CITATION FORMATS

The following illustrate the formats used in the permit to identify applicable requirements from permits and regulations.

Old Permit Numbers

Example: Permit No. AC50-123456 or Permit No. AO50-123456

Where: “AC” identifies the permit as an Air Construction Permit
“AO” identifies the permit as an Air Operation Permit
“123456” identifies the specific permit project number

New Permit Numbers

Example: Permit Nos. 099-2222-001-AC, 099-2222-001-AF, 099-2222-001-AO, or 099-2222-001-AV

Where: “099” represents the specific county ID number in which the project is located
“2222” represents the specific facility ID number for that county
“001” identifies the specific permit project number
“AC” identifies the permit as an air construction permit
“AF” identifies the permit as a minor source federally enforceable state operation permit
“AO” identifies the permit as a minor source air operation permit
“AV” identifies the permit as a major Title V air operation permit

PSD Permit Numbers

Example: Permit No. PSD-FL-317

Where: “PSD” means issued pursuant to the preconstruction review requirements of the Prevention of Significant Deterioration of Air Quality
“FL” means that the permit was issued by the State of Florida
“317” identifies the specific permit project number

Florida Administrative Code (F.A.C.)

Example: [Rule 62-213.205, F.A.C.]

Means: Title 62, Chapter 213, Rule 205 of the Florida Administrative Code

Code of Federal Regulations (CFR)

Example: [40 CFR 60.7]

Means: Title 40, Part 60, Section 7

GLOSSARY OF COMMON TERMS

° F: degrees Fahrenheit

acfm: actual cubic feet per minute

ARMS: Air Resource Management System (Department’s database)

BACT: best available control technology

Btu: British thermal units

CAM: compliance assurance monitoring

SECTION IV. APPENDIX A
CITATION FORMATS AND GLOSSARY OF COMMON TERMS

CEMS: continuous emissions monitoring system
cfm: cubic feet per minute
CFR: Code of Federal Regulations
CO: carbon monoxide
COMS: continuous opacity monitoring system
DEP: Department of Environmental Protection
Department: Department of Environmental Protection
dscfm: dry standard cubic feet per minute
EPA: Environmental Protection Agency
ESP: electrostatic precipitator (control system for reducing particulate matter)
EU: emissions unit
F.A.C.: Florida Administrative Code
F.D.: forced draft
F.S.: Florida Statutes
FGR: flue gas recirculation
Fl: fluoride
ft²: square feet
ft³: cubic feet
gpm: gallons per minute
gr: grains
HAP: hazardous air pollutant
Hg: mercury
I.D.: induced draft
ID: identification
kPa: kilopascals
lb: pound
MACT: maximum achievable technology
MMBtu: million British thermal units
MSDS: material safety data sheets
MW: megawatt
NESHAP: National Emissions Standards for Hazardous Air Pollutants
NO_x: nitrogen oxides
NSPS: New Source Performance Standards
O&M: operation and maintenance
O₂: oxygen
Pb: lead

SECTION IV. APPENDIX A
CITATION FORMATS AND GLOSSARY OF COMMON TERMS

PM: particulate matter

PM₁₀: particulate matter with a mean aerodynamic diameter of 10 microns or less

PSD: prevention of significant deterioration

psi: pounds per square inch

PTE: potential to emit

RACT: reasonably available control technology

RATA: relative accuracy test audit

SAM: sulfuric acid mist

scf: standard cubic feet

scfm: standard cubic feet per minute

SIC: standard industrial classification code

SNCR: selective non-catalytic reduction (control system used for reducing emissions of nitrogen oxides)

SO₂: sulfur dioxide

TPH: tons per hour

TPY: tons per year

UTM: Universal Transverse Mercator coordinate system

VE: visible emissions

VOC: volatile organic compounds

SECTION IV. APPENDIX B
GENERAL CONDITIONS

The permittee shall comply with the following general conditions from Rule 62-4.160, F.A.C.

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, F.S. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.
2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
3. As provided in Subsections 403.087(6) and 403.722(5), F.S., the issuance of this permit does not convey and vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.
4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of F.S. and Department rules, unless specifically authorized by an order from the Department.
6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.
7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:
 - a. Have access to and copy and records that must be kept under the conditions of the permit;
 - b. Inspect the facility, equipment, practices, or operations regulated or required under this permit, and,
 - c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:
 - a. A description of and cause of non-compliance; and
 - b. The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the F.S. or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, F.S.. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

SECTION IV. APPENDIX B

GENERAL CONDITIONS

10. The permittee agrees to comply with changes in Department rules and F.S. after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by F.S. or Department rules.
11. This permit is transferable only upon Department approval in accordance with Rules 624.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.
12. This permit or a copy thereof shall be kept at the work site of the permitted activity.
13. This permit also constitutes:
 - a. Determination of Best Available Control Technology (applicable);
 - b. Determination of Prevention of Significant Deterioration (applicable); and
 - c. Compliance with New Source Performance Standards (not applicable).
14. The permittee shall comply with the following:
 - a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
 - b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application or this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
 - c. Records of monitoring information shall include:
 - 1) The date, exact place, and time of sampling or measurements;
 - 2) The person responsible for performing the sampling or measurements;
 - 3) The dates analyses were performed;
 - 4) The person responsible for performing the analyses;
 - 5) The analytical techniques or methods used; and
 - 6) The results of such analyses.
15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

SECTION IV. APPENDIX C
COMMON CONDITIONS

Unless otherwise specified in the permit, the following conditions apply to all emissions units and activities at the facility.

EMISSIONS AND CONTROLS

1. Plant Operation - Problems: If temporarily unable to comply with any of the conditions of the permit due to breakdown of equipment or destruction by fire, wind or other cause, the permittee shall notify each Compliance Authority as soon as possible, but at least within one working day, excluding weekends and holidays. The notification shall include: pertinent information as to the cause of the problem; steps being taken to correct the problem and prevent future 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 the conditions of this permit or the regulations. [Rule 62-4.130, F.A.C.]
2. Circumvention: The permittee shall not circumvent the air pollution control equipment or allow the emission of air pollutants without this equipment operating properly. [Rule 62-210.650, F.A.C.]
3. 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.]
4. Excess Emissions - Notification: In case of excess emissions resulting from malfunctions, the permittee shall notify the Department or the appropriate Local Program in accordance with Rule 62-4.130, F.A.C. A full written report on the malfunctions shall be submitted in a quarterly report, if requested by the Department. [Rule 62-210.700(6), F.A.C.]
5. VOC or OS Emissions: No person shall store, pump, handle, process, load, unload or use in any process or installation, volatile organic compounds (VOC) or organic solvents (OS) without applying known and existing vapor emission control devices or systems deemed necessary and ordered by the Department. [Rule 62-296.320(1), F.A.C.]
6. Objectionable Odor Prohibited: No person shall cause, suffer, allow or permit the discharge of air pollutants, which cause or contribute to an objectionable odor. An "objectionable odor" means 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. [Rules 62-296.320(2) and 62-210.200(Definitions), F.A.C.]
7. General Visible Emissions: No person shall cause, let, permit, suffer or allow to be discharged into the atmosphere the emissions of air pollutants from any activity equal to or greater than 20% opacity. This regulation does not impose a specific testing requirement. [Rule 62-296.320(4)(b)1, F.A.C.]
8. Unconfined Particulate Emissions: During the construction period, unconfined particulate matter emissions shall be minimized by dust suppressing techniques such as covering and/or application of water or chemicals to the affected areas, as necessary. [Rule 62-296.320(4)(c), F.A.C.]

{Permitting Note: Rule 62-210.700 (Excess Emissions), F.A.C., cannot vary any NSPS or NESHAP provision.}

RECORDS AND REPORTS

9. Records Retention: All measurements, records, and other data required by this permit shall be documented in a permanent, legible format and retained for at least 5 years following the date on which such measurements, records, or data are recorded. Records shall be made available to the Department upon request. [Rule 62-213.440(1)(b)2, F.A.C.]
10. Annual Operating Report: The permittee shall submit an annual report that summarizes the actual operating rates and emissions from this facility. Annual operating reports shall be submitted to the Compliance Authority by March 1st of each year. [Rule 62-210.370(3), F.A.C.]

SECTION IV. APPENDIX D
COMMON TESTING REQUIREMENTS

Unless otherwise specified in the permit, the following testing requirements apply to all emissions units at the facility.

COMPLIANCE TESTING REQUIREMENTS

1. Required Number of Test Runs: For mass emission limitations, a compliance test shall consist of three complete and separate determinations of the total air pollutant emission rate through the test section of the stack or duct and three complete and separate determinations of any applicable process variables corresponding to the three distinct time periods during which the stack emission rate was measured; provided, however, that three complete and separate determinations shall not be required if the process variables are not subject to variation during a compliance test, or if three determinations are not necessary in order to calculate the unit's emission rate. The three required test runs shall be completed within one consecutive five-day period. In the event that a sample is lost or one of the three runs must be discontinued because of circumstances beyond the control of the owner or operator, and a valid third run cannot be obtained within the five-day period allowed for the test, the Secretary or his or her designee may accept the results of two complete runs as proof of compliance, provided that the arithmetic mean of the two complete runs is at least 20% below the allowable emission limiting standard. [Rule 62-297.310(1), F.A.C.]
2. Operating Rate During Testing: Testing of emissions shall be conducted with the emissions unit operating at permitted capacity. If it is impractical to test at permitted capacity, an emissions unit may be tested at less than the maximum permitted capacity; in this case, subsequent emissions unit operation is limited to 110 percent of the test rate until a new test is conducted. Once the unit is so limited, operation at higher capacities is allowed for no more than 15 consecutive days for the purpose of additional compliance testing to regain the authority to operate at the permitted capacity. Permitted capacity is defined as 90 to 100 percent of the maximum operation rate allowed by the permit. [Rule 62-297.310(2), F.A.C.]
3. Calculation of Emission Rate: For each emissions performance test, the indicated emission rate or concentration shall be the arithmetic average of the emission rate or concentration determined by each of the three separate test runs unless otherwise specified in a particular test method or applicable rule. [Rule 62-297.310(3), F.A.C.]
4. Applicable Test Procedures
 - a. Required Sampling Time.
 - (1) Unless otherwise specified in the applicable rule, the required sampling time for each test run shall be no less than one hour and no greater than four hours, and the sampling time at each sampling point shall be of equal intervals of at least two minutes.
 - (2) Opacity Compliance Tests. When either EPA Method 9 or DEP Method 9 is specified as the applicable opacity test method, the required minimum period of observation for a compliance test shall be sixty (60) minutes for emissions units which emit or have the potential to emit 100 tons per year or more of particulate matter, and thirty (30) minutes for emissions units which have potential emissions less than 100 tons per year of particulate matter and are not subject to a multiple-valued opacity standard. The opacity test observation period shall include the period during which the highest opacity emissions can reasonably be expected to occur. Exceptions to these requirements are as follows:
 - (a) For batch, cyclical processes, or other operations which are normally completed within less than the minimum observation period and do not recur within that time, the period of observation shall be equal to the duration of the batch cycle or operation completion time.
 - (b) The observation period for special opacity tests that are conducted to provide data to establish a surrogate standard pursuant to Rule 62-297.310(5)(k), F.A.C., Waiver of Compliance Test Requirements, shall be established as necessary to properly establish the relationship between a proposed surrogate standard and an existing mass emission limiting standard.
 - (c) The minimum observation period for opacity tests conducted by employees or agents of the Department to verify the day-to-day continuing compliance of a unit or activity with an applicable opacity standard shall be twelve minutes.
 - b. Minimum Sample Volume. Unless otherwise specified in the applicable rule or test method, the minimum sample volume per run shall be 25 dry standard cubic feet.
 - c. Calibration of Sampling Equipment. Calibration of the sampling train equipment shall be conducted in accordance

SECTION IV. APPENDIX D
COMMON TESTING REQUIREMENTS

with the schedule shown in Table 297.310-1, F.A.C.

- d. *Allowed Modification to EPA Method 5.* When EPA Method 5 is required, the following modification is allowed: the heated filter may be separated from the impingers by a flexible tube.

[Rule 62-297.310(4), F.A.C.]

5. Determination of Process Variables

- a. *Required Equipment.* The owner or operator of an emissions unit for which compliance tests are required shall install, operate, and maintain equipment or instruments necessary to determine process variables, such as process weight input or heat input, when such data are needed in conjunction with emissions data to determine the compliance of the emissions unit with applicable emission limiting standards.
- b. *Accuracy of Equipment.* Equipment or instruments used to directly or indirectly determine process variables, including devices such as belt scales, weight hoppers, flow meters, and tank scales, shall be calibrated and adjusted to indicate the true value of the parameter being measured with sufficient accuracy to allow the applicable process variable to be determined within 10% of its true value.

[Rule 62-297.310(5), F.A.C.]

6. Sampling Facilities: The permittee shall install permanent stack sampling ports and provide sampling facilities that meet the requirements of Rule 62-297.310(6), F.A.C. Sampling facilities include sampling ports, work platforms, access to work platforms, electrical power, and sampling equipment support. All stack sampling facilities must also comply with all applicable Occupational Safety and Health Administration (OSHA) Safety and Health Standards described in 29 CFR Part 1910, Subparts D and E. *{Permitting Note: The permittee may request an alternate sampling plan from the Emissions Monitoring Section of the Department's Division of Air Resource Management in accordance with Rule 62-297.620, F.A.C., Exceptions and Approval of Alternate Procedures and Requirements.}*

- a. *Permanent Test Facilities.* The owner or operator of an emissions unit for which a compliance test, other than a visible emissions test, is required on at least an annual basis, shall install and maintain permanent stack sampling facilities.
- b. *Temporary Test Facilities.* The owner or operator of an emissions unit that is not required to conduct a compliance test on at least an annual basis may use permanent or temporary stack sampling facilities. If the owner chooses to use temporary sampling facilities on an emissions unit, and the Department elects to test the unit, such temporary facilities shall be installed on the emissions unit within 5 days of a request by the Department and remain on the emissions unit until the test is completed.
- c. *Sampling Ports.*
- (1) All sampling ports shall have a minimum inside diameter of 3 inches.
 - (2) The ports shall be capable of being sealed when not in use.
 - (3) The sampling ports shall be located in the stack at least 2 stack diameters or equivalent diameters downstream and at least 0.5 stack diameter or equivalent diameter upstream from any fan, bend, constriction or other flow disturbance.
 - (4) For emissions units for which a complete application to construct has been filed prior to December 1, 1980, at least two sampling ports, 90 degrees apart, shall be installed at each sampling location on all circular stacks that have an outside diameter of 15 feet or less. For stacks with a larger diameter, four sampling ports, each 90 degrees apart, shall be installed. For emissions units for which a complete application to construct is filed on or after December 1, 1980, at least two sampling ports, 90 degrees apart, shall be installed at each sampling location on all circular stacks that have an outside diameter of 10 feet or less. For stacks with larger diameters, four sampling ports, each 90 degrees apart, shall be installed. On horizontal circular ducts, the ports shall be located so that the probe can enter the stack vertically, horizontally or at a 45 degree angle.
 - (5) On rectangular ducts, the cross sectional area shall be divided into the number of equal areas in accordance with EPA Method 1. Sampling ports shall be provided which allow access to each sampling point. The ports shall be located so that the probe can be inserted perpendicular to the gas flow.

SECTION IV. APPENDIX D
COMMON TESTING REQUIREMENTS

d. *Work Platforms.*

- (1) Minimum size of the working platform shall be 24 square feet in area. Platforms shall be at least 3 feet wide.
- (2) On circular stacks with 2 sampling ports, the platform shall extend at least 110 degrees around the stack.
- (3) On circular stacks with more than two sampling ports, the work platform shall extend 360 degrees around the stack.
- (4) All platforms shall be equipped with an adequate safety rail (ropes are not acceptable), toe board, and hinged floor-opening cover if ladder access is used to reach the platform. The safety rail directly in line with the sampling ports shall be removable so that no obstruction exists in an area 14 inches below each sample port and 6 inches on either side of the sampling port.

e. *Access to Work Platform.*

- (1) Ladders to the work platform exceeding 15 feet in length shall have safety cages or fall arresters with a minimum of 3 compatible safety belts available for use by sampling personnel.
- (2) Walkways over free-fall areas shall be equipped with safety rails and toe boards.

f. *Electrical Power.*

- (1) A minimum of two 120-volt AC, 20-amp outlets shall be provided at the sampling platform within 20 feet of each sampling port.
- (2) If extension cords are used to provide the electrical power, they shall be kept on the plant's property and be available immediately upon request by sampling personnel.

g. *Sampling Equipment Support.*

- (1) A three-quarter inch eyebolt and an angle bracket shall be attached directly above each port on vertical stacks and above each row of sampling ports on the sides of horizontal ducts.
 - (a) The bracket shall be a standard 3 inch × 3 inch × one-quarter inch equal-legs bracket which is 1 and one-half inches wide. A hole that is one-half inch in diameter shall be drilled through the exact center of the horizontal portion of the bracket. The horizontal portion of the bracket shall be located 14 inches above the centerline of the sampling port.
 - (b) A three-eighth inch bolt which protrudes 2 inches from the stack may be substituted for the required bracket. The bolt shall be located 15 and one-half inches above the centerline of the sampling port.
 - (c) The three-quarter inch eyebolt shall be capable of supporting a 500 pound working load. For stacks that are less than 12 feet in diameter, the eyebolt shall be located 48 inches above the horizontal portion of the angle bracket. For stacks that are greater than or equal to 12 feet in diameter, the eyebolt shall be located 60 inches above the horizontal portion of the angle bracket. If the eyebolt is more than 120 inches above the platform, a length of chain shall be attached to it to bring the free end of the chain to within safe reach from the platform.
- (2) A complete monorail or dual rail arrangement may be substituted for the eyebolt and bracket.
- (3) When the sample ports are located in the top of a horizontal duct, a frame shall be provided above the port to allow the sample probe to be secured during the test.

[Rule 62-297.310(6), F.A.C.]

7. Special Compliance Tests. When the Department, after investigation, has good reason (such as complaints, increased visible emissions or questionable maintenance of control equipment) to believe that any applicable emission standard contained in a Department rule or in a permit issued pursuant to those rules is being violated, it shall require the owner or operator of the emissions unit to conduct compliance tests which identify the nature and quantity of pollutant emissions from the emissions unit and to provide a report on the results of said tests to the Department. [Rule 62-297.310(7)(b), F.A.C.]

SECTION IV. APPENDIX D
COMMON TESTING REQUIREMENTS

RECORDS AND REPORTS

8. Test Reports:

- a. The owner or operator of an emissions unit for which a compliance test is required shall file a report with the Department on the results of each such test.
- b. The required test report shall be filed with the Department as soon as practical but no later than 45 days after the last sampling run of each test is completed.
- c. The test report shall provide sufficient detail on the emissions unit tested and the test procedures used to allow the Department to determine if the test was properly conducted and the test results properly computed. As a minimum, the test report, other than for an EPA or DEP Method 9 test, shall provide the following information.
 1. The type, location, and designation of the emissions unit tested.
 2. The facility at which the emissions unit is located.
 3. The owner or operator of the emissions unit.
 4. The normal type and amount of fuels used and materials processed, and the types and amounts of fuels used and material processed during each test run.
 5. The means, raw data and computations used to determine the amount of fuels used and materials processed, if necessary to determine compliance with an applicable emission limiting standard.
 6. The type of air pollution control devices installed on the emissions unit, their general condition, their normal operating parameters (pressure drops, total operating current and GPM scrubber water), and their operating parameters during each test run.
 7. A sketch of the duct within 8 stack diameters upstream and 2 stack diameters downstream of the sampling ports, including the distance to any upstream and downstream bends or other flow disturbances.
 8. The date, starting time and duration of each sampling run.
 9. The test procedures used, including any alternative procedures authorized pursuant to Rule 62-297.620, F.A.C. Where optional procedures are authorized in this chapter, indicate which option was used.
 10. The number of points sampled and configuration and location of the sampling plane.
 11. For each sampling point for each run, the dry gas meter reading, velocity head, pressure drop across the stack, temperatures, average meter temperatures and sample time per point.
 12. The type, manufacturer and configuration of the sampling equipment used.
 13. Data related to the required calibration of the test equipment.
 14. Data on the identification, processing and weights of all filters used.
 15. Data on the types and amounts of any chemical solutions used.
 16. Data on the amount of pollutant collected from each sampling probe, the filters, and the impingers, are reported separately for the compliance test.
 17. The names of individuals who furnished the process variable data, conducted the test, analyzed the samples and prepared the report.
 18. All measured and calculated data required to be determined by each applicable test procedure for each run.
 19. The detailed calculations for one run that relate the collected data to the calculated emission rate.
 20. The applicable emission standard and the resulting maximum allowable emission rate for the emissions unit plus the test result in the same form and unit of measure.
 21. A certification that, to the knowledge of the owner or his authorized agent, all data submitted are true and correct. When a compliance test is conducted for the Department or its agent, the person who conducts the test shall provide the certification with respect to the test procedures used. The owner or his authorized agent shall certify that all data required and provided to the person conducting the test are true and correct to his knowledge.

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

SECTION IV. APPENDIX E

SUMMARY OF BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATIONS

BACT Determinations for the South Dade Landfill Gas Engines

Industrial Power Generating Company, LLC (INGENCO) has applied to modify Miami-Dade Solid Waste Management South Dade Landfill Facility (Central Disposal Facility) by installing twenty-four identical lean-burn internal combustion Detroit Diesel Series 60 dual fuel engines or equivalent. The electrical generation plant will also consist of landfill gas (LFG) treatment equipment (gas dewatering, filtration and compression equipment and processes) and ancillary equipment that supports the electrical generation operations (e.g., engine oil storage tanks and LFG temperature and moisture conditioning equipment).

The lean-burn engines will be connected to individual electrical generators. Each LFG engine will be connected to a 350 kilowatt electrical generator. The plant will have the potential to generate 8 megawatts of electricity under base load operating conditions and will be interconnected to the Florida Power & Light distribution network through a nearby power line.

The South Dade Landfill Facility is an existing major stationary source as defined in Rule 62-210.200, Florida Administrative Code (F.A.C.). The project is subject to preconstruction review in accordance with Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration for carbon monoxide (CO), nitrogen oxides (NO_x) and particulate matter/particulate matter less than or equal to 10 microns (PM/PM₁₀). The increases in emissions of CO, NO_x and PM/PM₁₀ will exceed the significant emission rates listed in Rule 62-210.200, F.A.C. A Best Available Control Technology (BACT) determination is part of the review required for CO, NO_x and PM/PM₁₀.

Descriptions of the process, project, BACT determination, air quality effects, and rule applicability are given in the Technical Evaluation and Preliminary Determination, accompanying the Department's Intent to Issue.

The Department specifies the following as BACT for each engine:

Pollutant	Emission Standard	Averaging Time	Compliance Method	Basis
CO	1.0 lb/MMBtu 3.7 lb/hr (equivalent to 3.6 grams/bhp-hour)	Three, 1-hour runs	Stack Test EPA Method 10	BACT
NO _x	0.8 lb/MMBtu 2.9 lb/hr (equivalent to 2.8 grams/bhp-hour)	Three, 1-hour runs	Stack Test EPA Method 7 or 7E	BACT
PM/PM ₁₀	Work Practice Standard: Use of 1-micron filter in gas treatment system	Periodic Maintenance		BACT
	10% Opacity	6-minute block	Visible Emissions Test EPA Method 9	

Livingston, Sylvia

From: Livingston, Sylvia
Sent: Wednesday, April 20, 2011 2:16 PM
To: 'rgreene@ingenco.com'
Cc: 'germanh@miamidade.gov'; 'jasusan@ftch.com'; Anderson, Lennon; 'muthiahm@miamidade.gov'; 'forney.kathleen@epa.gov'; 'dee_morse@nps.gov'; Gibson, Victoria; Koerner, Jeff; DeVore, Christy; Walker, Elizabeth (AIR)
Subject: INGENCO - MIAMI DADE SOLID WASTE MGMT/SOUTH DADE LF; 0250623-007-AC/ PSD-FL-408 - Revised Draft
Attachments: 0250623-007-AC_Intent.pdf

Tracking:	Recipient	Delivery	Read
	'rgreene@ingenco.com'		
	'germanh@miamidade.gov'		
	'jasusan@ftch.com'		
	Anderson, Lennon	Delivered: 4/20/2011 2:16 PM	
	'muthiahm@miamidade.gov'		
	'forney.kathleen@epa.gov'		
	'dee_morse@nps.gov'		
	Gibson, Victoria	Delivered: 4/20/2011 2:16 PM	Read: 4/20/2011 2:23 PM
	Koerner, Jeff	Delivered: 4/20/2011 2:16 PM	Read: 4/20/2011 2:29 PM
	DeVore, Christy	Delivered: 4/20/2011 2:16 PM	Read: 4/20/2011 2:38 PM
	Walker, Elizabeth (AIR)	Delivered: 4/20/2011 2:16 PM	

Dear Sir/ Madam:

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Owner/Company Name: MIAMI DADE SOLID WASTE MGMT
Facility Name: MIAMI DADE SOLID WASTE MGMT/SOUT DADE LF
Project Number: 0250623-007-AC/ PSD-FL-408
Permit Status: REV DRAFT
Permit Activity: CONSTRUCTION
Facility County: MIAMI-DADE
Processor: Christy DeVore

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Livingston, Sylvia

From: Robert L. Greene [rgreene@ingenco.com]
To: Livingston, Sylvia
Sent: Wednesday, April 20, 2011 2:17 PM
Subject: Read: INGENCO - MIAMI DADE SOLID WASTE MGMT/SOUTH DADE LF; 0250623-007-AC/ PSD-FL-408 - Revised Draft

Your message was read on Wednesday, April 20, 2011 2:16:45 PM (GMT-05:00) Eastern Time (US & Canada).

Livingston, Sylvia

From: Susan, Jim [jasusan@FTCH.com]
Sent: Wednesday, April 20, 2011 2:46 PM
To: Livingston, Sylvia
Subject: RE: INGENCO - MIAMI DADE SOLID WASTE MGMT/SOUTH DADE LF; 0250623-007-AC/ PSD-FL-408 - Revised Draft

I was able to access the documents. Thank you.

From: Livingston, Sylvia [mailto:Sylvia.Livingston@dep.state.fl.us]
Sent: Wednesday, April 20, 2011 2:16 PM
To: rgreene@ingenco.com
Cc: germanh@miamidade.gov; Susan, Jim; Anderson, Lennon; muthiahm@miamidade.gov; forney.kathleen@epa.gov; dee_morse@nps.gov; Gibson, Victoria; Koerner, Jeff; DeVore, Christy; Walker, Elizabeth (AIR)
Subject: INGENCO - MIAMI DADE SOLID WASTE MGMT/SOUTH DADE LF; 0250623-007-AC/ PSD-FL-408 - Revised Draft

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Sylvia Livingston

Livingston, Sylvia

From: Harris, Sophie (DERM) [HarriSo@miamidade.gov]
Sent: Thursday, April 21, 2011 10:32 AM
To: Livingston, Sylvia
Subject: RE: INGENCO - MIAMI DADE SOLID WASTE MGMT/SOUTH DADE LF; 0250623-007-AC/PSD-FL-408 - Revised Draft

Good Morning Ms. Walker,

Please be advised that I was able to access the documents.

Thank you,

Sophie Harris, Secretary
Miami-Dade County Air Facilities Section
701 NW 1 Court, 2nd Floor, Miami, Florida 33136
305-372-6947 Phone 305-372-6954 Fax
WWW.MIAMIDADE.GOV/DERM
"Delivering Excellence Every Day"



The Miami-Dade Department of Environmental Resources Management (DERM) values your feedback as a customer. DERM is committed to its mission "to balance today's needs through responsible governance, education, and conservation, to protect our environment for tomorrow." And as part of our mission, we continuously assess and improve the quality of services provided to you. Please take a few minutes to comment on our quality of service. Simply click on this <http://derm.miamidade.gov/survey>. Thank you in advance for completing our customer survey.

Miami-Dade County is a public entity subject to Chapter 119 of the Florida Statutes concerning public records. E-mail messages are covered under such laws and thus subject to disclosure.

From: Muthiah P.E., Mallika
Sent: Thursday, April 21, 2011 10:07 AM
To: Garcia, Manuel (DERM); Radhay, Anthony (DERM); Gordon, Ray (DERM); March, Marta (DERM)
Cc: Harris, Sophie (DERM)
Subject: FW: INGENCO - MIAMI DADE SOLID WASTE MGMT/SOUTH DADE LF; 0250623-007-AC/ PSD-FL-408 - Revised Draft

Please review the documents and familiarize with the DEP requirements.

Sophie, for EDMS and respond to Sylvia.

Thanks.

Mallika

From: Livingston, Sylvia [mailto:Sylvia.Livingston@dep.state.fl.us]

Sent: Wednesday, April 20, 2011 3:10 PM

To: Muthiah P.E., Mallika

Subject: INGENCO - MIAMI DADE SOLID WASTE MGMT/SOUTH DADE LF; 0250623-007-AC/ PSD-FL-408 - Revised Draft

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Owner/Company Name: MIAMI DADE SOLID WASTE MGMT

Facility Name: MIAMI DADE SOLID WASTE MGMT/SOUT DADE LF

Project Number: 0250623-007-AC/ PSD-FL-408

Permit Status: REV DRAFT

Permit Activity: CONSTRUCTION

Facility County: MIAMI-DADE

Processor: Christy DeVore

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Sylvia Livingston
Division of Air Resource Management (DARM)
Department of Environmental Protection
850/717-9043 (New Phone)
sylvia.livingston@dep.state.fl.us

Note: The attached document is in Adobe Portable Document Format (pdf). Adobe Acrobat Reader can be downloaded for free at the following internet site: <<http://www.adobe.com/products/acrobat/readstep.html>> .

Livingston, Sylvia

From: Livingston, Sylvia
Sent: Wednesday, April 20, 2011 3:10 PM
To: 'muthim@miamidade.gov'
Subject: INGENCO - MIAMI DADE SOLID WASTE MGMT/SOUTH DADE LF; 0250623-007-AC/ PSD-FL-408 - Revised Draft
Attachments: 0250623-007-AC_Intent.pdf

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Sylvia Livingston
Division of Air Resource Management (DARM)
Department of Environmental Protection
850/717-9043 (New Phone)
sylvia.livingston@dep.state.fl.us

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