Memorandum

Florida Department of
Environmental Protection

10/26/06

TO: Trina Vielhauer

THRU: Jeff Koerner

FROM Syed Arif

DATE: October 17, 2006

SUBJECT: Trail Ridge Energy, LLC – Trail Ridge Landfill Facility
DEP File No. 0310358-004-AC, PSD-FL-374

Attached is the Public Notice package for Trail Ridge Energy, LLC to install six (6) lean burn Caterpillar Model G3520C landfill gas fueled internal combustion engines at Trail Ridge Landfill facility located in Baldwin. A Best Available Control Technology (BACT) determination was required for nitrogen oxide (NOx), carbon monoxide (CO) and particulate matter less than or equal to 10 microns (PM_{10}) pursuant to Rule 62-212.400, F.A.C.

Trail Ridge Energy, LLC applied on February 24, 2006 (complete on August 15, 2006) to install the six engines for generating electricity by combusting landfill gas that is currently being flared at the Trail Ridge Landfill facility. Due to this modification potential emission of CO will be greater than 250 tons per year (TPY) making the facility a Major Stationary Source for PSD review. The increases in emissions of NOx and PM_{10} will exceed the significant emission rates. The total annual increases due to the proposed project are approximately 356 TPY of CO, 78 TPY of NOx and 31 TPY of PM_{10}. CO and NOx emissions will be controlled through combustor design (lean burn engine) and good combustion practices (air to fuel ratio control). PM_{10} emissions will be minimized through the pretreatment of the landfill gas prior to combustion and proper equipment maintenance of the engines.

We recommend your approval and signature.

JFK/sa

Attachments

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Colleen M. Castille
Secretary

P.E. Certification Statement

Permittee:
Trail Ridge Energy, LLC
Trail Ridge Landfill, Inc.

DEP File No. 0310358-004-AC
Permit No. PSD-FL-374

Project type: Trail Ridge Energy, LLC will install six (6) lean burn Caterpillar Model G3520C landfill gas fueled internal combustion engines at Trail Ridge Landfill facility located in Baldwin. The facility is located at 5110 US Highway 301 South, Baldwin, Duval County, Florida. A Best Available Control Technology (BACT) determination was required for nitrogen oxide (NOx), carbon monoxide (CO) and particulate matter less than or equal to 10 microns (PM_{10}) pursuant to Rule 62-212.400, F.A.C. The applicant's name and address are Trail Ridge Energy, LLC, 29261 Wall Street, Wixom, Michigan 48393.

Trail Ridge Energy, LLC applied on February 24, 2006 (complete on August 15, 2006) to install the six engines for generating electricity by combusting landfill gas that is currently being flared at the Trail Ridge Landfill facility. Due to this modification potential emission of CO will be greater than 250 tons per year (TPY) making the facility a Major Stationary Source for PSD review. The increases in emissions of NOx and PM_{10} will exceed the significant emission rates. The total annual increases due to the proposed project are approximately 356 TPY of CO, 78 TPY of NOx and 31 TPY of PM_{10}. CO and NOx emissions will be controlled through combustor design (lean burn engine) and good combustion practices (air to fuel ratio control). PM_{10} emissions will be minimized through the pretreatment of the landfill gas prior to combustion and proper equipment maintenance of the engines.

I HEREBY CERTIFY *that the 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 aspects of the proposal outside of my area of expertise (including but not limited to the electrical, mechanical, structural, hydrological, meteorological and geological features).*

Syed Arif 10/17/06

Syed Arif, P.E. Date
Registration Number: 51861

Department of Environmental Protection
Bureau of Air Regulation
111 South Magnolia Drive, Suite 4
Tallahassee, Florida 32301
Phone (850) 488-0114
Fax (850) 922-6979

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Colleen M. Castille
Secretary

October 24, 2006

ELECTRONIC MAIL - RECEIVED RECEIPT REQUESTED

Mr. Scott Salisbury, Managing Member
Trail Ridge Energy, LLC
29261 Wall Street
Wixom, Michigan 48393

Re: DRAFT Permit No. 0310358-004-AC (PSD-FL-374)
Trail Ridge Landfill, Inc.

Dear Mr. Salisbury:

Enclosed is one copy of the Draft Air Construction Permit for modification of the Trail Ridge Landfill Facility, located at 5110 US Highway 301 South, Baldwin, Duval County, Florida. The Technical Evaluation and Preliminary Determination, Best Available Control Technology, the Department's Intent to Issue Air Construction Permit and the "PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT" are also included.

The "PUBLIC NOTICE" must be published one time only, as soon as possible, in the legal advertisement section of a newspaper of general circulation in the area affected, pursuant to the requirements of Chapter 50, Florida Statutes. Proof of publication, i.e., newspaper affidavit, must be provided to the Department's Bureau of Air Regulation office within seven days of publication. Failure to publish the notice and provide proof of publication may result in the denial of the permit.

Please submit any written comments you wish to have considered concerning the Department's proposed action to Jeff Koerner, P.E., Permitting Administrator, North Section, at the above letterhead address. If you have any other questions, please contact Syed Arif at 850/921-9528.

Sincerely,

Trina L. Vielhauer, Chief
Bureau of Air Regulation

TLV/sa

Enclosures

Executed in Tallahassee, Florida.

Trina L. Vielhauer, Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this INTENT TO ISSUE PSD PERMIT (including the PUBLIC NOTICE, Technical Evaluation and Preliminary Determination, Draft BACT Determination, and the DRAFT permit) and all copies were sent electronically (with Received Receipt) before the close of business on 10/26/06 to the person(s) listed:

Scott Salisbury, Trail Ridge Energy, LLC* (Scott.Salisbury@landfillenergy.com)
Chris Pearson, Acting Division Chief, ERM/SWD (ChrisP.SW1.CH4@coj.net)
Gregg Worley, EPA (worley.gregg@epa.gov)
John Bunyak, NPS (john_bunyak@nps.gov)
Chris Kirts, DEP-NED (Christopher.Kirts@dep.state.fl.us)
Richard Robinson, ERM/AQB (ROBINSON@coj.net)
Jeff Pope, P.E., Clayton Group Services, Inc. (jeff.pope@us.bureauveritas.com)
David Derenzo, Derenzo & Associates, Inc. (dderenzo@derenzo.com)
Ms. Heather Abrams, Georgia Department of Natural Resources (heather_abrams@dnr.state.ga.us)

Clerk Stamp

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

(Clerk) 10/26/06 (Date)

In the Matter of an
Application for Permit by:

Mr. Scott Salisbury, Managing Member
Trail Ridge Energy, LLC
29261 Wall Street
Wixom, Michigan 48393

DEP File No. 0310358-004-AC
Draft Permit No. PSD-FL-374
Trail Ridge Landfill, Inc.
Duval County

INTENT TO ISSUE PSD AIR CONSTRUCTION PERMIT

The Department of Environmental Protection (Department) gives notice of its intent to issue a Prevention of Significant Deterioration (PSD) air construction permit (copy of DRAFT Permit attached) for the proposed project, detailed in the application specified above and in the attached Technical Evaluation and Preliminary Determination, for the reasons stated below.

The applicant, Trail Ridge Energy, LLC submitted an application on February 24, 2006 (complete on August 15, 2006) to the Department for a PSD permit to install six (6) lean burn Caterpillar Model G3520C landfill gas fueled internal combustion engines at Trail Ridge Landfill facility located in Baldwin. The facility is located at 5110 US Highway 301 South, Baldwin, Duval County, Florida.

Trail Ridge Energy will install the engines to generate electricity from the landfill gas that is currently being flared at the Trail Ridge Landfill facility. The Trail Ridge Landfill facility is a Title V source. Additionally, based on this modification potential emission of carbon monoxide (CO) will be greater than 250 tons per year making the facility a Major Stationary Source for PSD review. The increases in emissions of nitrogen oxide (NOx) and particulate matter less than or equal to 10 microns (PM_{10}) will exceed the significant emission rates. CO and NOx emissions will be controlled through combustor design (lean burn engine) and good combustion practices (air to fuel ratio control). PM_{10} emissions will be minimized through the pretreatment of the landfill gas prior to combustion and proper equipment maintenance of the engines.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-212. The above actions are not exempt from permitting procedures. As described in the attached Technical Evaluation and Preliminary Determination, the Department has determined that a review for Prevention of Significant Deterioration (PSD), a determination of Best Available Control Technology (BACT) and a PSD permit are required for the proposed work.

The Department intends to issue this Air Construction Permit based on the belief that reasonable assurances have been provided to indicate that operation of these emission units will not adversely impact air quality, and the emission units will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C.

Pursuant to Section 403.815, F.S., and Rule 62-110.106(7)(a)1., F.A.C., you (the applicant) are required to publish at your own expense the enclosed "PUBLIC NOTICE OF INTENT TO ISSUE PSD PERMIT." The notice shall be published one time only in the legal advertisement section of a newspaper of general circulation in the area affected. Rule 62-110.106(7)(b), F.A.C., requires that the applicant cause the notice to be published as soon as possible after notification by the Department of its intended action. For the purpose of these rules, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting 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 Department at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400 (Telephone: 850/488-0114; Fax 850/ 922-6979). You must provide proof of publication within seven days of publication, pursuant to Rule 62-110.106(5), F.A.C. No permitting action for which published notice is required shall be granted until proof of publication of notice is made by furnishing a uniform affidavit in substantially the form prescribed in section 50.051, F.S. to the office of the Department issuing the permit. Failure to publish the notice and provide proof of publication may result in the denial of the permit pursuant to Rules 62-110.106(9) & (11), F.A.C.

The Department will issue the Final PSD Permit in accordance with the conditions of the attached Draft PSD permit unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments and requests for a public meeting concerning the proposed permit issuance action for a period of 30 (thirty) days from the date of publication of PUBLIC NOTICE OF INTENT TO ISSUE PSD PERMIT. Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the Draft PSD Permit, the permitting authority shall issue a Revised Draft PSD Permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen 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 will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department'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 how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (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; and (g) A statement of the relief sought by the petitioner, stating precisely the action 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 Department'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.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above. Mediation is not available in this proceeding.

PUBLIC NOTICE OF INTENT TO ISSUE PSD AIR CONSTRUCTION PERMIT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DEP File No. 0310358-004-AC (PSD-FL-374)
Trail Ridge Landfill, Inc.
Trail Ridge Energy, LLC
Duval County

The Department of Environmental Protection (Department) gives notice of its intent to issue a Prevention of Significant Deterioration (PSD) air construction permit to Trail Ridge Energy, LLC for installation of six (6) lean-burn Caterpillar Model G3520C landfill gas fueled internal combustion engines at Trail Ridge Landfill facility located in Baldwin. The facility is located at 5110 US Highway 301 South, Baldwin, Duval County, Florida. A Best Available Control Technology (BACT) determination was required for nitrogen oxide (NOx), carbon monoxide (CO) and particulate matter less than or equal to 10 microns (PM_{10}) pursuant to Rule 62-212.400, F.A.C. The applicant's name and address are Trail Ridge Energy, LLC, 29261 Wall Street, Wixom, Michigan 48393.

Trail Ridge Energy, LLC applied on February 24, 2006 (complete on August 15, 2006) to install the six engines for generating electricity by combusting landfill gas that is currently being flared at the Trail Ridge Landfill facility. The six lean-burn IC engines will be connected to individual electricity generators. Each gas IC engine will be connected to a 1,600 kilowatt electricity generator. The plant will have the potential to generate 9.6 megawatts of electricity under base load operating conditions and will be interconnected to the Jacksonville Electric Authority distribution network through a nearby power line.

Due to this modification potential emission of CO will be greater than 250 tons per year (TPY) making the facility a Major Stationary Source for PSD review. The increases in emissions of NOx and PM_{10} will exceed the significant emission rates. The total annual increases due to the proposed project are approximately 356 TPY of CO, 78 TPY of NOx and 31 TPY of PM_{10}. CO and NOx emissions will be controlled through combustor design (lean burn engine) and good combustion practices (air to fuel ratio control). PM_{10} emissions will be minimized through the pretreatment of the landfill gas prior to combustion and proper equipment maintenance of the engines.

An air quality impact analysis was conducted. Emissions from the facility are not predicted to have a significant impact in either the PSD Class II area in the vicinity of the facility or in the PSD Class I Okefenokee National Wilderness Area.

The permitting authority has determined that a PSD Air Construction Permit is required. The Department will issue the Final PSD Air Construction Permit in accordance with the conditions of the Draft PSD Air Construction Permit unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments and requests for a public meeting concerning the proposed permit issuance action for a period of 30 (thirty) days from the date of publication of "PUBLIC NOTICE OF INTENT TO ISSUE PSD AIR CONSTRUCTION PERMIT." Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

NOTICE TO BE PUBLISHED IN THE NEWSPAPER

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below. Mediation is not available in this proceeding.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen 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 will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department'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 how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (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; and (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

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

A complete project file is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

NOTICE TO BE PUBLISHED IN THE NEWSPAPER

Dept. of Environmental Protection
Bureau of Air Regulation
111 S. Magnolia Drive, Suite 4
Tallahassee, Florida, 32301
Telephone: 850/488-0114
Fax: 850/922-6979

Dept. of Environmental Protection
Northeast District
7825 Baymeadows Way, Suite 200B
Jacksonville, Florida 32256-7590
Telephone: 904/807-3300
Fax: 904/448-4362

Environmental Resource
Management
117 West Duval Street, Suite 225
Jacksonville, Florida 32202
Telephone: 904/630-4900
Fax: 904/630-3638

The complete project file includes the application, technical evaluations, Draft Permit, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Administrator North Permitting Section at 850/488-0114 for additional information.

NOTICE TO BE PUBLISHED IN THE NEWSPAPER

TECHNICAL EVALUATION

AND

PRELIMINARY DETERMINATION

TRAIL RIDGE ENERGY, LLC

TRAIL RIDGE LANDFILL, Inc.
Duval County, Florida

Facility Modification

DEP File No. 0310358-004-AC
PSD-FL-374

Florida Department of Environmental Protection
Division of Air Resources Management
Bureau of Air Regulation

October 16, 2006

I. APPLICATION INFORMATION

A. Applicant

Trail Ridge Energy, LLC
29261 Wall Street
Wixom, Michigan 48393

Secondary Responsible Official: Mr. Scott Salisbury, Managing Member

B. Facility

Trail Ridge Landfill, Inc.
5110 US Highway 301 South
Baldwin, Florida 32234

Primary Responsible Official: Mr. L. Chris Pearson, Acting Division Chief, Environmental Resource Management Department – Solid Waste Division, City of Jacksonville

C. Reviewing and Process Schedule

02-24-2006:	Date of receipt of Application
03-15-2006:	DEP's Completeness Request
04-12-2006:	Applicant's response to DEP's Completeness Request
04-27-2006:	DEP's 2nd Completeness Request
05-10-2006:	Applicant's response to DEP's 2nd Completeness Request
06-05-2006:	Date of receipt of modeling information
07-05-2006:	DEP's 3rd Completeness Request concerning modeling
07-25-2006:	Applicant's response to DEP's 3rd Completeness Request
07-31-2006:	DEP's 4th Completeness Request regarding PM_{10} emission limit for Brevard Energy project
08-15-2006:	Applicant's response to DEP's 4th Completeness Request. Application Complete

D. Facility Location

This facility is located at 5110 US Highway 301 South, Baldwin, Duval County, Florida. Latitude and Longitude are 30/14/00 and 82/02/30 respectively. UTM coordinates of the site are: Zone 17, 399.765 km E and 3344.919 km N. This location is approximately 45 km from the nearest Class I area, the Okefenokee Wilderness Area.

Facility Identification Code (SIC):

Major Group No. 49, Industry Group No. 4953.

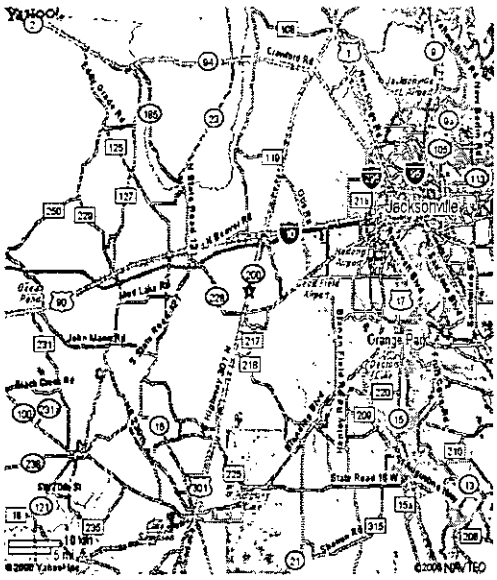


Figure 1- Location of Facility

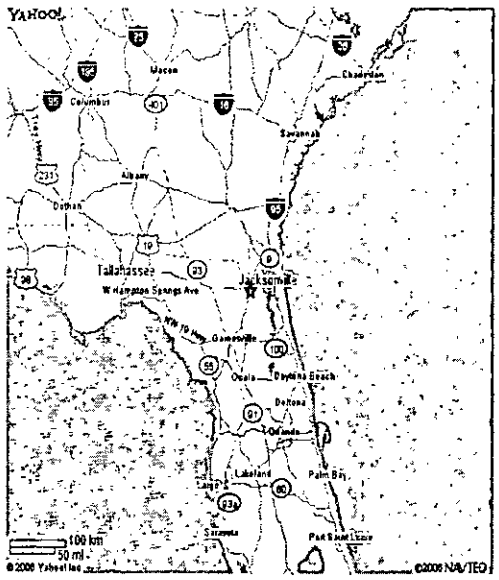


Figure 2- Regional Location

E. Facility Description

Trail Ridge Landfill is a Municipal Solid Waste (MSW) Landfill consisting of 176 acres which are allocated for Class I MSW. The Non-Methane Organic Compound (NMOC) control device (gas collection and control system) is installed in accordance with the requirements of 40 CFR 60, Subpart WWW. Methane-rich landfill gas (LFG) produced from the decomposition of disposed waste materials at both active and capped cells is being collected by a gas recovery system. 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 HAPs contained in the gas are destroyed at high temperatures. Approximately 3,100 scfm of LFG is currently being directed to the flaring system for control.

In order to reduce the amount of LFG wasted by flaring, all available LFG from the landfill will be supplied to Trail Ridge Energy for use as fuel to power the proposed internal combustion (IC) engine electricity generation plant. While the Trail Ridge Energy electricity generation plant will be located on leased land at the Trail Ridge Landfill facility, the electricity generation equipment and processes will be owned and operated by Trail Ridge Energy and not directly under the control of the Trail Ridge Landfill.

Nevertheless, the Department presumes one facility located within another facility establishes a "control" relationship. Since Trail Ridge Energy will be fueled exclusively with methane-rich gas generated by the landfill and under contract with Trail Ridge Landfill, the Department concludes that the landfill has control over the electricity generation operations of the proposed plant. Therefore, Trail Ridge Energy is part of the Trail Ridge Landfill facility, and its approved Air Construction Permit will be incorporated into the Trail Ridge Landfill Title V Operating Permit. The Title V Operating Permit will have two different sections (one for the landfill operations and one for the electricity generation operations) with a secondary responsible official for each section. A primary responsible official will be designated for the entire facility that will be responsible for all appropriate reporting and compliance certifications of both sections of the facility. The primary responsible official will be the Solid Waste Division Chief of the Environmental Resource Management Department for the City of Jacksonville.

The facility is classified as a Major or Title V Source of air pollution because emissions of at least one regulated air pollutant, such as particulate matter (PM/PM_{10}), sulfur dioxide (SO_2), nitrogen oxides (NOx), carbon monoxide (CO), or volatile organic compounds (VOC) exceed 100 tons per year (TPY). The provisions of 40 CFR 60, Subpart A, General Provisions, Subpart WWW, Standards of Performance for Municipal Solid Waste Landfills, 40 CFR 63, Subpart A, General Provisions, and 40 CFR 63, Subpart AAAA, [National Emission Standards for Hazardous Air Pollutants] Municipal Solid Waste Landfills, applies to the designated facility.

The proposed LFG fueled IC engine electricity generation plant will be subject to Prevention of Significant Deterioration (PSD) review with respect to Rule 62-210.200(185)(a)3, F.A.C. due to its potential CO emissions being greater than 250 TPY. Best Available Control Technology (BACT) determinations are required for each pollutant emitted in excess of the Significant Emission Rates listed in Rule 62-210.200(264), F.A.C. These values are 40 TPY for NOx, 100 TPY for CO and 15 TPY for PM_{10}.

II. PROJECT DESCRIPTION

The proposed project will consist of Caterpillar (CAT) Model G3520C gas IC engines and electricity generators. The electricity generation plant will consist of:

1. LFG treatment equipment (gas dewatering, filtration and compression equipment and processes).

2. Six (6) lean-burn IC engines that will be connected to individual electricity generators. Each gas IC engine will be connected to a 1,600 kilowatt electricity generator. The plant will have the potential to generate 9.6 megawatts of electricity under base load operating conditions and will be interconnected to the Jacksonville Electric Authority distribution network through a nearby power line.

3. Ancillary equipment that supports the electricity generation operations (e.g., engine oil storage tanks and LFG temperature and moisture conditioning equipment).

The LFG fueled IC engines will be housed in a single building constructed near the existing LFG collection system header and control system flare. A gas transmission line will be connected to the header of the existing LFG collection system and a dedicated gas blower/compressor will be used to draw methane-rich gas (fuel) from the existing LFG collection system to the proposed electricity generation plant.

A. Treatment of Landfill Gas

The equipment and processes used to treat (dewater, filter and compress) the LFG received from the Landfill (prior to its combustion as fuel in the proposed IC engines) will consist of:

1. Initial two-stage inlet gas dewatering/filter vessels (the bottom chambers are used for moisture knock-out, top chambers are equipped with coalescing filter media to remove gas particles having diameters of 1-micron and larger).
2. A gas compressor/blower.
3. Air-to-gas coolers (chillers), which will be used to reduce the elevated temperatures of LFG received from compressor to approximately 10°F above ambient temperatures.
4. Final two-stage gas dewatering/filter vessels (the bottom chambers are used for moisture knock-out, top chambers are equipped with coalescing filter media to remove gas particles having diameters of 1-micron or larger).

Components of the specified gas treatment system will not be equipped with atmospheric vents. Therefore, all of the LFG received by the system will be directed to the IC engines for use as a fuel.

B. Engine/Generator Specifications

Six identical lean-burn IC engines, CAT Model G3520C gas IC engines will be used to power electricity generators. This engine:

1. Is designed to fire low-pressure, lean fuel mixtures and produce low combustion by-product emissions. The engine is equipped with an air-to-fuel ratio controller that monitors engine performance parameters and automatically adjusts the air-to-fuel ratio and ignition timing to maintain efficient fuel combustion, which minimizes air pollutant emissions.
2. Will be fueled exclusively with LFG generated by and received from the Trail Ridge Landfill (natural gas will not be used to fuel the IC engine operations under any conditions).
3. Has a power generation rating of 2,233 brake horsepower (bhp).
4. Will be connected to a 1,600 kW electricity generator.

The proposed facility will have a total electricity generation capacity of 9,600 kW (9.6 MW). Emissions produced by the combustion of LFG fuel in the six gas IC engines will be released into the ambient air through individual stacks connected to the engine exhaust manifolds. A noise muffler will be installed on each engine exhaust stack. The fuel combustion system exhausts and noise mufflers will be located on the roof of the single building that houses the engines.

C. LFG Fuel Requirement/Availability

The operation of the six gas IC engines under base load conditions (100% capacity) and with fuel that has a minimum lower heating value (LHV) of 420 Btu/scf (higher heating value (HHV) of 467 Btu/scf) will result in maximum LFG fuel utilization rates of approximately 3,480 scfm and 5.01 million standard cubic feet per day (MMscf/day).

Approximately 3,100 scfm of LFG is currently being controlled by the flaring system, which has a LHV of approximately 443.5 Btu/scf that is expected to be at least 450 Btu/scf at the time full fuel demand is required by the proposed engines. This gas extraction rate is adequate to fuel and power the six IC engine generators proposed for installation at Trail Ridge Energy.

The existing LFG flaring system will be periodically operated during periods of equipment downtime and maintenance, and continually operated when future LFG collection and extraction rates (from new waste placement) exceed the fuel supply requirement of the installed and operated engines.

D. Ancillary Equipment

Each of the proposed IC engines will be equipped with a stand-alone fan-cooled radiator. Engine coolant for the radiators will be stored on-site in drum quantities.

Engine lube oil (new and used) will be stored in separate above ground holding tanks positioned on the premises of the proposed LFG fueled IC engine electricity generation plant. The new lube oil storage tank will have a capacity of approximately 2,000-gallons. The waste oil storage tank will have a capacity of approximately 1,000-gallons.

III. AIR POLLUTANT EMISSIONS

A. Criteria Air Pollutants

The CAT G3520C gas IC engines will have the following maximum NOx, CO, VOC and PM_{10} emission rates:

- 2.75 grams of CO per brake-horsepower hour (g/bhp-hr);
  13.54 lbs/hr and 59.30 TPY (one engine)
  355.8 TPY (six engines)
- 0.60 g/bhp-hr NOx;
  4.95 lb/hr and 12.94 TPY (one engine)
  77.6 TPY (six engines)
- 0.28 g/bhp-hr of total VOC;
  1.37 lb/hr and 5.99 TPY (one engine)
  36.0 TPY (six engines)
- 0.24 g/bhp-hr for PM_{10}.
  1.18 lb/hr and 5.17 TPY (one engine)
  31.0 TPY (six engines)

The 2.75 g/bhp-hr CO value is based on the results of Best Available Control Technology (BACT) analyses.

The 0.60 g/bhp-hr NOx value is based on the results of BACT analyses.

The 0.28 g/bhp-hr VOC value is based on a voluntary limitation that is 90% of the 40 TPY significant emission thresholds listed in Rule 62-210.200(264), F.A.C.

The 0.24 g/bhp-hr PM_{10} value is based on the results of BACT analyses.

Sulfur oxide (SOx) emissions have the potential to be produced during the combustion of LFG since it contains sulfur-bearing compounds that are oxidized at normal engine operating temperatures. Site-specific sulfur content analyses have not been performed on the LFG generated by the Landfill. Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume I, Section 2.4 data was used to estimate the total potential sulfur content of the LFG to be used as IC engine fuel. The AP-42 data specify a hydrogen sulfide (H_2S) default LFG concentration of 35.5 parts per million by volume (ppmv). However, the applicant based on their experience determined that H_2S is typically observed at concentrations greater than 35.5 ppmv but less than 150 ppmv. Therefore, the AP-42 H_2S default LFG concentration of 35.5 ppmv was replaced with 150 ppmv value. The results of this analysis indicate that the total sulfur content of the LFG to be used as IC engine fuel is estimated to be less than 164.2 ppmv as H_2S. The additional sulfur content was due to other compounds like carbon disulfide, methyl mercaptan etc. that gets converted to SO_2. The operation of the six IC engines at this specified sulfur content will result in maximum potential emissions of 25.32 TPY of SO_2. This is less than significant emission rate for SO_2 of 40 TPY and doesn't trigger PSD/BACT review.

B. Hazardous Air Pollutants

Hazardous Air Pollutants (HAP) as specified in Rule 62-210.200(133), F.A.C are produced during the combustion of LFG to be used as fuel by the IC engines since:

1. HAP compounds are present in the gas generated by the Trail Ridge Landfill and the fuel combustion process is not 100% complete (i.e., a small portion of the HAPs pass through the fuel combustion system).
2. Chlorinated compounds that are present in LFG have the potential to form hydrogen chloride (HCl, a regulated HAP) when they are combusted.

Site-specific HAP content analyses have not been performed on the LFG generated by the Landfill. Therefore, data developed by EPA in AP-42, Section 2.4 were used to estimate the total potential HAP content of the LFG to be used as IC engine fuel.

Table 2.4-3 of AP-42 provides control efficiencies for LFG constituents and specifies IC engines typically reduce (control) halogenated species by 93 percent and non-halogenated species by 86.1 percent. These LFG constituent control efficiencies were considered in the HAP potential emission determinations.

The contribution of HCL to the HAP potential emissions of the IC engines was estimated based on a conversion of the individual chlorinated compound measurements presented in the AP-42 default list of LFG constituents to HCl as a result of the high temperature combustion environment and exhaust processes. The results of this analysis indicate that the HCl exhaust rate of the proposed IC engines is equivalent to an annual potential emission of 10.9 TPY under base load conditions. The major source threshold for any single HAP is 10 TPY. The applicant will restrict the allowable HCl emissions from the proposed engine operations to less than 10 TPY through appropriate permit limits.

The operation of six gas IC engines under base load conditions will result in maximum potential total HAP emissions that are less than 12.6 TPY and is well under the 25 TPY thresholds.

The reciprocating IC engine National Emission Standards for Hazardous Air Pollutants (RICE NESHAP, 40 CFR Part 63 Subpart ZZZZ) applies to major sources of HAPs that operate RICE rated for 500 bhp or greater. Major is defined as a facility that has the potential to emit in excess of 25 TPY of any combination of HAP compounds or 10 TPY of any single HAP.

The proposed electricity generation facility individual RICE will have power ratings that exceed 500 bhp. However, the maximum HAP emissions will be limited to less than the major facility thresholds. Therefore, the proposed facility is not subject to the emission limitations and operating limitations but will be subject to the initial notification, reporting and recordkeeping requirement of the subpart.

IV. RULE APPLICABILITY

A. Prevention of Significant Deterioration

The proposed project was reviewed under Rule 62-210.200(185)(a)3, F.A.C., New Source Review (NSR) for Prevention of Significant Deterioration (PSD), because it will be a major modification to a minor stationary source resulting in a significant increase in NOx, PM/PM_{10}, and CO emissions. This review consisted of a determination of Best Available Control Technology (BACT) and an analysis of the air quality impact of the increased emissions. The review also includes an analysis of the project's impacts on soils, vegetation and visibility, along with air quality impacts resulting from associated commercial, residential and industrial growth.

The emission units affected by this PSD permit shall comply with all applicable provisions of the Florida Administrative Code; specifically, the following Chapters and Rules:

Chapter 62-4	Permits
Rule 62-204.220	Ambient Air Quality Protection
Rule 62-204.240	Ambient Air Quality Standards
Rule 62-204.260	Prevention of Significant Deterioration Increments

Rule 62-204.360	Designation of Prevention of Significant Deterioration Areas
Rule 62-204.800	Federal Regulations Adopted By Reference
Rule 62-210.200	Definitions
Rule 62-210.300	Permits Required
Rule 62-210.350	Public Notice and Comments
Rule 62-210.370	Reports
Rule 62-210.550	Stack Height Policy
Rule 62-210.650	Circumvention
Rule 62-210.700	Excess Emissions
Rule 62-210.900	Forms and Instructions
Rule 62-212.300	General Preconstruction Review Requirements
Rule 62-212.400	Prevention of Significant Deterioration
Chapter 62-213	Operation Permits for Major Sources of Air Pollution
Rule 62-296.320	General Pollutant Emission Limiting Standards
Rule 62-296.403	Phosphate Processing
Rule 62-297.310	General Compliance Test Requirements
Rule 62-297.401	Compliance Test Methods

B. Federal and State Emission Standards

The proposed project is subject to the applicable provisions of Chapter 403, Florida Statutes, Chapters 62-212, Chapters 62-210 and 62-4, Florida Administrative Code (F.A.C.), and 40 CFR 60. The facility is located in an area designated attainment or maintenance for all criteria pollutants in accordance with Rule 62-204.340, F.A.C.

The facility is classified as a Major or Title V Source of air pollution because emissions of at least one regulated air pollutant, such as PM/PM_{10}, SO_2, NOx, CO or VOC exceed 100 TPY. The provisions of 40 CFR 60, Subpart A, General Provisions, Subpart WWW, Standards of Performance for Municipal Solid Waste Landfills, 40 CFR 63, Subpart A, General Provisions, 40 CFR 63, Subpart AAAA, NESHAP for Municipal Solid Waste Landfills and 40 CFR 63, Subpart ZZZZ, NESHAP for Stationary Reciprocating Internal Combustion Engines applies to the six internal combustion engines.

V. BEST AVAILABLE CONTROL TECHNOLGY DETERMINATION

A. BACT Determination Procedure:

In accordance with Chapter 62-210.200(38), F.A.C., this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department of Environmental Protection (Department), on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques. In addition, the regulations state that, in making the BACT determination, the Department shall give consideration to:

- Any Environmental Protection Agency determination of BACT pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 - Standards of Performance for New Stationary Sources or 40 CFR Part 61 - National Emission Standards for Hazardous Air Pollutants.
- All scientific, engineering, and technical material and other information available to the Department.

- The emission limiting standards or BACT determination of any other state.
- The social and economic impact of the application of such technology.

The EPA currently stresses 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, environmental, or economic objections.

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:

- ***Particulate Matter less than or equal to 10 microns*** (PM_{10}/***Visible Emissions*** (VE)). Controlled generally by wet scrubbing or filtration.
- ***Combustion Products*** (CO and NOx). CO and NOx controlled generally by good combustion of clean fuels.

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. Although all of the pollutants addressed in the BACT analysis may be subject to a specific emission limiting standard as a result of PSD review, the control of "non-regulated" air pollutants is considered in imposing a more stringent BACT limit on a "regulated" pollutant (i.e., PM_{10}, CO, NOx, etc.), if a reduction in "non-regulated" air pollutants can be directly attributed to the control device selected as BACT for the abatement of the "regulated" pollutants.

In the case of the proposed project at Trail Ridge Landfill, annual emissions of CO, NOx and PM_{10} are above significant emission rates triggering review for these pollutants. Therefore, since the proposed project involves physical modification of the facility, the BACT analysis will address emissions of CO, NOx and PM_{10}.

B. BACT Analysis

Add-on Emission Controls (General)

EPA in the preamble to the Standards of Performance for Stationary Spark Ignition IC Engines and National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines dated June 12, 2006 states that chemicals in landfill and digester gas fuels called siloxanes (organic compounds composed of silicon, oxygen and methyl groups) poison the catalyst in add-on control technologies such as Selective Catalytic Reduction (SCR), Non-Selective Catalytic Reduction (NSCR), and oxidation catalysts, rendering them ineffective in very short periods of time.

NSCR uses a three-way catalyst to remove NOx and CO from IC engine exhausts.

SCR uses the injection of a solution (urea or ammonia) into the engine exhaust to react with its NOx content. The combustion exhaust gases produced by the engines are subsequently passed through a catalyst in order to achieve NOx reductions.

Oxidation catalysts use energy in the presence of an appropriately selected metal catalyst to transform CO into carbon dioxide (i.e., the combustion exhaust gases produced by the engine are passed through a catalyst in order to complete the oxidation of CO to carbon dioxide).

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. This CARB guidance document:

- Recognizes the benefits of generating electricity from waste gases (landfill and digester gas) and provides BACT determinations from reciprocating IC engines fueled with these materials.
- 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 (TX, RI, and NJ) have made similar determinations with the issuance of permits that specify BACT for LFG fueled IC engines that do not include the use of add-on emission controls.

Emission standards requiring aftertreatment controls from such engines have typically not been required due to poisoning of the catalyst leading to poor reduction efficiencies and eventually destroying the add-on control device. For this reason, EPA did not consider add-on control for landfill and digester gas applications. The technology that is the basis for the proposed standards for landfill and digester gas engines is the level achieved by new lean burn engines. EPA has been told that lean burn engines are the preferred choice for landfill and digester gas applications because these engines have the lowest NOx emissions without add-on control. Information EPA gathered during the proposal also shows that the majority of landfill applications use lean burn engines.

Documented BACT/LAER Determinations

The USEPA Office of Air Quality Planning and Standards RACT/BACT/LEAR Clearinghouse (RBLC) emission and control technology data indicate that no add-on emission controls have been established as BACT or LAER for LFG fueled IC 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 (8) LFG fueled IC engines. No add-on emission controls were required for this project. The same Caterpillar engines as those proposed for Trail Ridge Energy were installed at Bio Energy Texas.

The State of New Jersey has completed its review of an ozone (NOx) non-attainment area new source review and PSD permit (CO) which will be issued to Ocean Energy Corporation, Inc. (a Landfill Energy Systems Company) in 2006 for the installation of six (6) LFG fueled IC engines as the ones proposed for Trail Ridge Landfill. No add-on emission controls were required for this project.

CAT G3520C gas IC engines (the same engines as those proposed for use by Trail Ridge Energy):

1. Have been installed and are operating at Ridgewood Power Management (final permit issued in approximately early 2005);
2. Have been installed and are operating at New England Waste Services (final permit issued in approximately late 2004);
3. Have been installed and are operating at Bio Energy Texas (final air permit issued in July 2004); and
4. Are planned for installation at Ocean Energy Corp. with final permit issuance in 2006.

All the above projects did not require any add-on emission controls. The maximum allowable emissions that were permitted for these sources are as follows:

FACILITY (STATE)	ENGINE SIZE (kW)	(hp)	CO (g/bhp-hr)	NOx (g/bhp-hr)	PM_{10} (g/bhp-hr)
Ridgewood Power Management (RI)		2229	2.75	0.50	0.1
New England Waste Services (VT)	1600	2221	2.75	0.50	_
Bio Energy Texas, LLC (TX)		2172	2.8	0.60	0.148
Ocean Energy Corp. (NJ)	1600	2233	2.75	0.60	0.24

BACT Emission Limits Proposed By Applicant

POLLUTANT	EMISSION LIMIT	CONTROL TECHNOLOGY
CO	2.75 g/bhp-hr and 13.54 lb/hr	Lean burn engine with air to fuel ratio control
NOx	0.60 g/bhp-hr and 2.95 lb/hr	Lean burn engine with air to fuel ratio control
PM_{10}	0.24 g/bhp-hr and 1.18 lb/hr	Treatment of LFG fuel

C. Pollutant Analysis

Carbon Monoxide (CO)

It is the Department's position that there is no practicably feasible and cost effective post combustion treatment technology for reducing CO emissions from LFG fueled IC engines. LFG fuel contains impurities (such as siloxanes and other chemicals) that, when combusted, have been shown to poison catalyst based post combustion treatment technologies such as an oxidation catalyst and NSCR.

Technical data issued by Caterpillar, Inc. for the CAT 3520C IC engine specifies that CO emissions for the first 100 hours of operations will be equal to or less than 2.5 g/bhp-hr and maximum CO emissions will not exceed 4.2 g/bhp-hr. Operational experience obtained by users of the equipment indicates that CO emissions for LFG fueled IC engines tend to increase with time. Increasing CO emissions occur as a result of the combustion of siloxanes that exist in the LFG used to fuel the engines. The combustion of LFG siloxanes produces particulate silica that acts as an abrasive material and increases normal wear on the moving components of the engine. With increasing engine operating hours, increasing amount of silica deposits are typically found on the fixed and moving parts in the engine combustion cylinder and in the lubricating oil reservoir. The specified increased engine wear affects the combustion process resulting in a gradual increase in CO emissions over the number of operating hours.

Data in the USEPA RBLC were reviewed to identify control technology determinations for the operation of IC engines on LFG fuel. The results indicate that BACT for CO emissions from IC engines with power ratings greater 2,000 and less than 4,000 bhp range from 2.75 to 3.0 g/bhp-hr (CAT G3520C gas IC engine has a power

rating of 2,233 bhp). The corresponding NOx LAER values range from approximately 0.5 to 0.6 g/bhp-hr. The database presents CO BACT values as low as 2.3 g/bhp-hr. However, these CO BACT determinations generally correspond to NOx emission rates that exceed 1.0 g/bhp-hr. The specified NOx LAER and CO BACT determinations are applicable to the operation of lean burn engines with air to fuel ratio control or simply specified as 'clean burn engine'. The following table summarizes the Departments findings:

TABLE 1

FACILITY	ENGINE SIZE	DATE	TYPE	CO g/bhp-hr	NOx g/bhp-hr
Ocean Energy Corp. (NJ)	2233 HP	2006	BACT/LAER	2.75	0.6
New England Waste Svcs. (VT)	2221 HP	12/21/2005	BACT/LAER	2.75	0.5
Ridgewood Power Mgmt. (RI)	2229 HP	06/24/2005	BACT/LAER	2.75	0.5
Bio Energy Texas, LLC (TX)	2172 HP	07/23/2004	BACT/LAER	2.8	0.6
Northwest Regional Landfill (AZ)	1410 HP	10/27/2003	BACT	2.5	0.6
Bio-Energy, LLC (OH) (Loraine County Landfill)	1877 HP	04/22/2003	BACT	2.4	1.4
Bio-Energy, LLC (OH) (Carbon Limestone LFG)	1877 HP	04/10/2003	BACT	2.3	1.2
MM San Bernardino Energy (CA)	1850 HP	05/16/2002	BACT	2.5	0.6
Northern Tier Landfill (PA)	815 kW	01/29/2002	BACT	3.0	2.0
Reliant Associates (TX)	2343 HP	01/24/2002	BACT	3.0	0.6
Sumpter Energy Associates (MI)	1138 HP	12/20/2001	BACT	2.9	2.0
Bio-Energy (Azusa) LLC (CA)	1850 HP	02/22/2000	LAER	2.0	0.6
Kiefer Landfill (CA)	4230 HP	01/18/2000	LAER	2.7	0.55
MM Hackensack Energy (NJ)	1340 HP	04/09/1998	LAER	2.0	1.0

Based on vendor guarantees the applicant has proposed that the emission limitation that represents BACT for CO is 2.75 g/bhp-hr. The proposed CO emission limitation appears consistent with the reported data as the first four entries in Table 1 represents the same manufacturer, model and size of the engines to be used at Trail Ridge Energy.

BACT for CO is therefore represented by combustor design (lean burn engine) and good combustion practices (air to fuel ratio control) to minimize CO emissions. The emission limit chosen to represent BACT for CO is:

2.75 g/bhp-hr

Nitrogen Oxides (NO_x)

Data in the USEPA RBLC (and that specified for Bio Energy Texas and Ocean Energy Corp.) were reviewed to identify control technology determinations issued for the operation of IC engines on LFG fuel. The results of this review indicate that LAER for NOx emissions from IC engines with power ratings greater than 2,000 and less than 4,000 bhp range from 0.5 to 0.6 g/bhp-hr (the CAT G3520C gas IC engine has a power rating of 2,233 hp). The specified USEPA RBLC NOx LAER determinations are applicable to the operation of lean burn engines with air to fuel ratio control or simply specified as 'clean burn engine'.

Table 1 provides USEPA RBLC NOx LAER/BACT determination data and supporting information for LFG fueled IC engine operations.

Due to the presence of siloxanes (and other chemicals) in the LFG fuel, the utilization of NSCR and SCR equipment to control NOx in the exhausts of LFG fueled IC engines is not feasible.

NOx emissions from the LFG fueled CAT 3520C engines are expected to be relatively constant with respect to the number of operating hours and can be maintained at the proposed levels throughout the operating life of the equipment.

Table 1 indicates that most of the NOx emissions limits that were less than 0.6 g/bhp-hr were all LAER determinations. The lowest BACT emission limit proposed for NOx has been 0.6 g/bhp-hr.

Based on vendor guarantees the applicant has proposed that the emission limitation that represents BACT for NOx is 0.6 g/bhp-hr. This will be achieved through the use of air to fuel ratio control technology which minimizes the amount of NOx emissions produced during the LFG combustion process and results in the maximum emissions of 0.6 g/bhp-hr.

BACT for NOx is therefore represented by combustor design (lean burn engine) and good combustion practices (air to fuel ratio control) to minimize NOx emissions. The emission limit chosen to represent BACT for NOx is:

0.6 g/bhp-hr

Particulate Matter less than or equal to 10 microns (PM_{10})

Operational experience obtained by Caterpillar, Inc. and users of its LFG fueled IC engines indicates that PM_{10} emissions for LFG fueled IC engines are dependent on engine operating hours. While PM_{10} emissions from the operation of new LFG fueled IC engines have been initially tested to be very low (i.e., <0.1 g/bhp-hr) subsequent measurements on the same equipment that are representative of increased engine operating hours indicate the presence of higher emission levels. The increased PM_{10} emissions (from new engine operating conditions) has been attributed to particulate contributions from crankcase lubrication oil aerosols, which is the result of normal wear on piston rings and seals (i.e., not additional particulate contributions from the source of the LFG fuel).

Data presented in the USEPA RBLC for IC engines operated on LFG fuel indicate that:

- Permits issued LFG fueled IC engines have limited their PM_{10} emissions to rates that range from 0.04 to 0.34 g/bhp-hr.
- LFG (fuel) pretreatment to remove condensate and particulate matter without the use of add-on control equipment has been specified as BACT.

The Department has required the applicant to use 1 micron primary and polishing filters to remove particulate matter from the LFG fuel pretreatment process. EPA in the New Source Performance Standards for Landfill (40 CFR 60, Subpart WWW) requires removal of particulate matter down to only 10 microns. This additional requirement by the Department to remove particulate matter down to 1 micron will enable the applicant to meet the PM_{10} BACT limit of 0.24 g/bhp-hr.

Due to the presence of siloxanes (and other chemicals) in the LFG, the utilization of post combustion control systems to minimize particulates in the exhaust of LFG fueled IC engines is not feasible.

Based on the preceding information, BACT for the control of PM_{10} emissions from the proposed IC engine operations is treatment of the LFG fuel down to 1 micron and proper equipment maintenance that minimizes the

amount of particulate emissions produced during the LFG combustion process and results in maximum PM_{10} emissions of

0.24 g/bhp-hr.

In addition, an opacity standard of 10% will be established as BACT.

D. Compliance Procedures

Compliance with the emission limits shall be in accordance with the following EPA Reference Methods as contained in 40 CFR 60, Appendix A or as otherwise approved by the Department:

EMISSION UNIT	POLLUTANT	EPA REFERENCE METHOD
Six (6) Caterpillar Model G 3520C Landfill gas fueled Internal Combustion Engines	PM_{10}	201
	NOx	7 or 7E
	CO	10
	VE	9

VI. Air Quality Impact Analysis

A. Introduction

The proposed project will increase PM_{10}, NOx and CO emissions at levels in excess of PSD significant amounts. For modeling purposes the project also includes the predicted impact of the replacement flare. PM_{10} and NOx are criteria pollutants and have national and state ambient air quality standards (AAQS), PSD increments, significant impact levels, and significant monitoring concentrations (de minimis concentrations) defined for them. CO is a criteria pollutant and has only AAQS, significant impact levels and a de minimis concentration defined for it.

The air quality impact analyses required by the Department regulations for this project include:

- An analysis of existing air quality for PM_{10}, NOx and CO;
- A significant impact analysis for PM_{10}, NOx and CO;
- A PSD increment analysis for PM_{10} and NO_x, if necessary;
- An Ambient Air Quality Standards (AAQS) analysis for PM_{10} and NO_x, if necessary;
- An analysis of impacts on soils, vegetation, and visibility and growth-related impacts to air quality.

The analysis of existing air quality generally relies on preconstruction monitoring data collected with EPA-approved methods. The significant impact, PSD increment, and AAQS analyses depend on air quality dispersion modeling carried out in accordance with EPA and department guidelines.

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

B. Analysis of Existing Air Quality

Preconstruction ambient air quality monitoring is required for all pollutants subject to PSD review unless otherwise exempted or satisfied. This monitoring requirement may be satisfied by using previously existing

representative monitoring data, if available. An exemption to the monitoring requirement shall be granted by rule if either of the following conditions is met: the maximum predicted air quality impact resulting from the projected emissions increase, as determined by air quality modeling, is less than a pollutant-specific de minimis ambient concentration; or the existing ambient concentrations are less than a pollutant-specific de minimis ambient concentration.

If preconstruction ambient monitoring is exempted, determination of background concentrations for PSD significant pollutants with established AAQS may still be necessary for use in any required AAQS analysis. These concentrations may be established from the required preconstruction ambient air quality monitoring analysis or from existing representative monitoring data. This background ambient air quality concentrations are added to pollutant impacts predicted by modeling and represent the air quality impacts of sources not included in the modeling. The table below shows maximum predicted project air quality impacts for comparison to these de minimis levels.

MAXIMUM PREDICTED PROJECT AIR QUALITY IMPACTS FOR COMPARISON TO THE DE MINIMIS CONCENTRATIONS

Pollutant	Averaging Time	Maximum Predicted Impact ($\mu g/m^3$)	Impact Greater than De Minimis? (Yes/No)	De Minimis Concentration ($\mu g/m^3$)
PM_{10}	24-hr	4.6	NO	10
CO	8-hr	96	NO	575
NO_x	Annual	0.8	NO	1

C. Models and Meteorological Data Used in Significant Impact, PSD Increment and AAQS Analyses

PSD Class II Area Model

The EPA-approved American Meteorological Society and EPA Regulatory Model (AERMOD) dispersion model was used to evaluate the pollutant emissions from the proposed project and other existing major facilities. In November, 2005, the EPA promulgated AERMOD as the preferred regulatory model for predicting pollutant concentrations within 50 km from a source. AERMOD is a replacement for the Industrial Source Complex Short-Term Model (ISCST3).

The AERMOD model calculates hourly concentrations based on hourly meteorological data. 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). AERMOD can predict pollutant concentrations for annual, 24, 8, 3 and 1-hour. 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. The stack associated with this project satisfied the good engineering practice (GEP) stack height criteria.

Meteorological data used in the AERMOD model consisted of a concurrent 5-year period of hourly surface weather observations and twice-daily upper air soundings from the Jacksonville International Airport. The 5-year period of meteorological data was from 2001 through 2005. These stations were selected for use in the evaluation because they are the closest primary weather stations to the project area and are most representative of the project site.

Because five years of data are used in AERMOD, the highest-second-high (HSH) short-term predicted concentrations were compared with the appropriate AAQS or PSD increments. For the annual averages, the highest predicted yearly average was compared with the standards. For determining the project's significant impact area in the vicinity of the facility, and for determining if there are significant impacts occur from the project on any PSD Class I area, both the highest short-term predicted concentrations and the highest predicted yearly averages were compared to their respective significant impact levels.

In reviewing this permit application, the Department has determined that the application 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.

PSD Class I Area Model

The proposed project will be located approximately 45 km from the closest portion of the nearest PSD Class I area, the Okefenokee NWA, and approximately 100 km from the furthest portion of this Class I area. Because the distance between the proposed project and the Class I area is between 45 and 100 km, AERMOD was used to evaluate impacts between 45 and 50 km from the facility and the CALPUFF long range transport model was used for areas located between 50 and 100 km from the facility.

In addition for determining impacts on visibility and regional haze in the Class I area, the VISCREEN model was used for that portion of the Class I area between 45 and 50 km from the facility while the CALPUFF model was used for the portion located 50 and 100 km from the facility. VISCREEN is a screening tool that calculates the potential impact of a plume of specified emissions for specific transport and dispersion condition and is used to assess visibility impacts within 50 km of the facility.

CALPUFF is a non-steady state, Lagrangian, long-range transport model that incorporates Gaussian puff dispersion algorithms. This model determines ground-level concentrations of inert gases or small particles emitted into the atmosphere by point, line, area, and volume sources. The CALPUFF model has the capability to treat time-varying sources. It is also suitable for modeling domains from tens of meters to hundreds of kilometers, and has mechanisms to handle rough or complex terrain situations. Finally, the CALPUFF model is applicable for inert pollutants as well as pollutants that are subject to linear removal and chemical conversion mechanisms. For this project, CALPUFF was run in the screening mode using 1990-1992 and 1994-1995 meteorological data from Jacksonville, Florida (surface) and Waycross, Georgia (upper air).

D. Significant Impact Analysis

Preliminary modeling is conducted using only the proposed project's worst-case emission scenario for each pollutant and applicable averaging time. Nearly 500 receptors were placed along the facility's restricted property line and out to 1.6 km from the facility, which is located in a PSD Class II area. The Okefenokee NWA PSD Class I areas is located 45 km from the project at its closest point. A total of 1080 receptors were placed in the Okefenokee NWA area.

For each pollutant subject to PSD and also subject to PSD increment and/or AAQS analyses, this modeling compares maximum predicted impacts due to the project with PSD significant impact levels to determine whether significant impacts due to the project were predicted in a PSD Class II area in the vicinity of the facility or in any PSD Class I area. In the event that the maximum predicted impact of a proposed project is less than the appropriate significant impact level, a full impact analysis for that pollutant is not required.

Full impact modeling is modeling that considers not only the impact of the project but also other major sources, including background concentrations, located within the vicinity of the project to determine whether all applicable AAQS or PSD increments are predicted to be met for that pollutant. Consequently, a preliminary modeling analysis, which shows an insignificant impact, is accepted as the required air quality analysis (AAQS and PSD increments) for that pollutant and no further modeling for comparison to the AAQS and PSD increments is required for that pollutant. The tables below show the results of this modeling.

MAXIMUM PREDICTED PROJECT AIR QUALITY IMPACTS FOR COMPARISON TO THE PSD CLASS II SIGNIFICANT IMPACT LEVELS IN THE VICINITY OF THE FACILITY				
Pollutant	**Averaging Time**	**Maximum Predicted Impact ($\mu g/m^3$)**	**Significant Impact Level ($\mu g/m^3$)**	**Significant Impact?**
PM_{10}	Annual	0.4	1	NO
	24-hr	4.7	5	NO
CO	8-hr	96	500	NO
	1-hr	138	2,000	NO
NO_2	Annual	0.8	1	NO

MAXIMUM PREDICTEDPROJECT IMPACTS IN THE PSD CLASS I AREAS FOR COMPARISON TO THE PSD CLASS I SIGNIFICANT IMPACT LEVELS				
Pollutant	**Averaging Time**	**Maximum Predicted Impact ($\mu g/m^3$)**	**Significant Impact Level ($\mu g/m^3$)**	**Significant Impact? (ug/m^3)**
PM_{10}	Annual	0.08	0.2	NO
	24-hr	0.22	0.3	NO
NO_2	Annual	0.01	0.1	NO

As shown in the tables, less than significant impacts were predicted for all pollutants evaluated for significant impacts; therefore, no further dispersion modeling was required to be performed for these pollutants.

E. Additional Impacts Analysis

Impacts on Soils, Vegetation, Wildlife, and Visibility

The maximum ground-level concentrations predicted to occur due to PM_{10}, NOx and CO emissions as a result of the proposed project are less than the significant impact levels, and consequently are less than the associated 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 and vegetation in the PSD Class II area. An air quality related values (AQRV) analysis was done by the applicant for the Class I area. No significant impacts on this area are expected. Visibility and regional haze analyses using VISCREEN and the long-range transport model CALPUFF to assess impacts were done for the Okefenokee NWA PSD Class I area. These analyses showed no significant impact on visibility or regional haze in this area.

Growth-Related Air Quality Impacts

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

VII. CONCLUSION

Based on the foregoing technical evaluation of the application and additional information submitted by Trail Ridge Energy, LLC 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.

Permit Engineer: Syed Arif, P.E.
Meteorologist: Cleve Holladay

PERMITTEE:

Trail Ridge Energy, LLC
29261 Wall Street
Wixom, Michigan 48393

File No.	0310358-004-AC
Permit No.	PSD-FL-374
SIC No.	4953
Project:	Trail Ridge Landfill, Inc. Modification – Landfill Gas Engines
Expires:	October 1, 2008

Secondary Responsible Official (Energy Section):

Mr. Scott Salisbury
Managing Member

Primary Responsible Official (Trail Ridge Landfill, Inc.):

Mr. L. Chris Pearson
Acting Division Chief
City of Jacksonville, Solid Waste Division

PROJECT AND LOCATION:

This permit covers the installation and operation of six (6) Caterpillar, Model G3520C, 2,233 brake-horsepower landfill gas-fired engines for the generation of up to a total of 9.6 megawatts (nominal rating) of electricity. The project is located at the Trail Ridge Landfill, Inc. at 5110 US Highway 301 South, Baldwin, Duval County. UTM coordinates are Zone 17; 399.765 km E; 3344.919 km N.

STATEMENT OF BASIS:

This construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and the Florida Administrative Code (F.A.C.) Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297. The above named permittee is authorized to modify the facility in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department of Environmental Protection (Department).

ATTACHMENTS MADE A PART OF THIS PERMIT:

Appendix BD	BACT Determination
Appendix GC	Construction Permit General Conditions

Joseph Kahn, Director
Division of Air Resource Management

SECTION I – FACILITY INFORMATION

FACILITY DESCRIPTION

Trail Ridge Landfill, Inc. operates a municipal solid waste (MSW) landfill near Baldwin, Duval County consisting of 176 acres which are allocated for Class I MSW. Methane-rich landfill gas produced from the decomposition of disposed waste materials is being collected by a gas recovery system. The collected gas is currently being diverted to the flaring system for control. Trail Ridge Energy, LLC plans to construct and operate an electricity generation plant at the Trail Ridge Landfill facility. In order to reduce the amount of landfill gas (LFG) wasted by flaring, all available LFG from the landfill will be supplied to Trail Ridge Energy for use as fuel to power the proposed internal combustion (IC) engine electricity generation plant. As a result of these changes, significant emission increases will occur for carbon monoxide (CO), particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}) and nitrogen oxides (NOx).

REGULATORY CLASSIFICATION

The Trail Ridge Landfill Facility is classified as a Major or Title V Source of air pollution because emissions of at least one regulated air pollutant, such as particulate matter (PM/PM_{10}), sulfur dioxide (SO_2), nitrogen oxides (NOx), carbon monoxide (CO), or volatile organic compounds (VOC) exceed 100 tons per year (TPY).

The provisions of 40 CFR 60, Subpart A, General Provisions, Subpart WWW, Standards of Performance for Municipal Solid Waste Landfills, 40 CFR 63, Subpart A, General Provisions, 40 CFR 63, Subpart AAAA, National Emission Standards for Hazardous Air Pollutants (NESHAP) for Municipal Solid Waste Landfills and 40 CFR 63, Subpart ZZZZ, NESHAP for Stationary Reciprocating Internal Combustion Engines applies to the six internal combustion engines.

The proposed landfill gas fueled IC engine electricity generation plant will be subject to Prevention of Significant Deterioration (PSD) review with respect to Rule 62-210.200(164)(a)2, F.A.C. due to its potential CO emissions being greater than 250 TPY. Best Available Control Technology (BACT) determinations are required for each pollutant emitted in excess of the Significant Emission Rates listed in Rule 62-210.200(242), F.A.C. For this project, the permit specifies BACT emissions standards for CO, NOx and PM_{10} emissions.

RELEVANT DOCUMENTS:

The documents listed below are specifically related to this permitting action and form the basis of the permit. They are on file with the Department:

- Application received 02-24-2006
- Department letters dated 03-15-2006, 04-27-2006, 07-05-2006 and 07-31-2006
- Applicant's letters received 04-12-2006, 05-10-2006, 07-25-2006 and 08-15-2006
- Technical Evaluation and Preliminary Determination dated 10-16-2006
- Best Available Control Technology determination (issued concurrently with permit)

SECTION II – EMISSION UNIT(S) ADMINISTRATIVE REQUIREMENTS

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 Northeast District Office, 7825 Baymeadows Way, Suite 200 B, Jacksonville, Florida 32256-7590. All applications for permits to construct or modify emissions unit(s) subject to the Prevention of Significant Deterioration or Nonattainment (NA) review requirements should be submitted to the Bureau of Air Regulation (BAR), Florida Department of Environmental Protection (FDEP), 2600 Blair Stone Road, MS 5505, Tallahassee, Florida 32399-2400 (phone number 850/488-0114).

2. General Conditions: The owner and operator are subject to and shall operate under the attached General Permit Conditions G.1 through G.15 listed in Appendix GC 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.]

3. Terminology: The terms used in this permit have specific meanings as defined in the corresponding chapters of the Florida Administrative Code.

4. 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.]

5. Expiration: 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. However, the permittee shall promptly notify the Department's Northeast District Office of any delays in completion of the project which would affect the startup day by more than 90 days. [Rule 62-4.090, F.A.C]

6. 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.]

7. 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.].

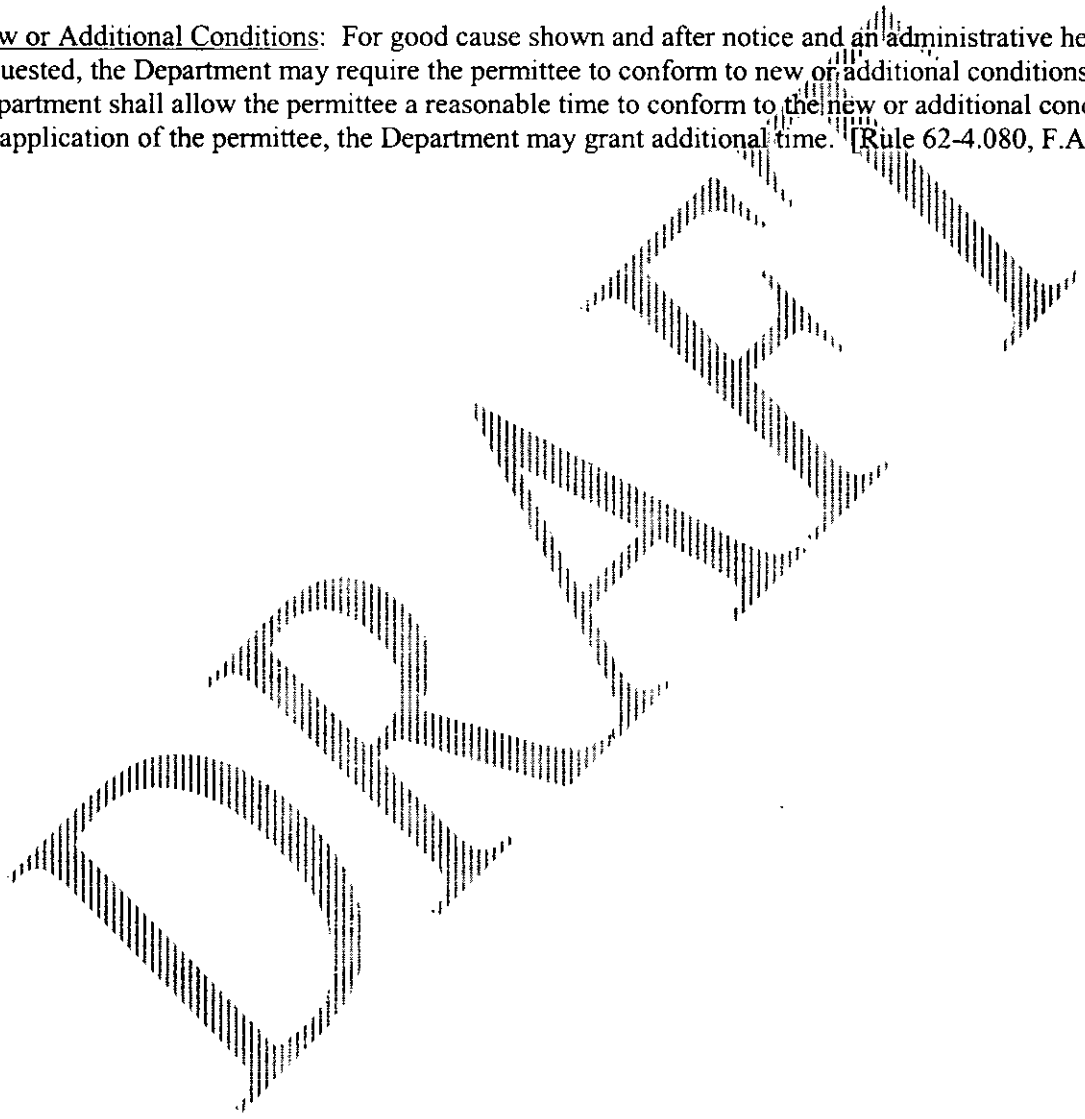
8. BACT Determination: For phased construction projects, the determination of best available control technology shall be reviewed and modified as appropriate at the latest reasonable time which occurs no later than 18 months prior to commencement of construction of each independent phase of the project.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

SECTION II – EMISSION UNIT(S) ADMINISTRATIVE REQUIREMENTS

9. Annual Reports: Pursuant to Rule 62-210.370(2), F.A.C., Annual Operation Reports, the permittee is required to submit annual reports on the actual operating rates and emissions from this facility. Annual operating reports using DEP Form 62-210.900(4) shall be sent to the DEP's Northeast District office by March 1st of each year.

10. Stack Testing Facilities: Stack sampling facilities shall be installed in accordance with Rule 62-297.310(6), F.A.C.

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(S) SPECIFIC CONDITIONS

SUBSECTION A. SPECIFIC CONDITIONS

The Specific Conditions listed in this section apply to the following emission units:

EMISSION UNIT NO.	EMISSION UNIT DESCRIPTION
004 - 009	Six Caterpillar Model G3520C landfill gas fueled internal combustion engines and electricity generators. Each engine has a power generation rating of 2,233 brake horsepower at 100 percent load. The generator has a power output rating of 1,600 kilowatt. The engines will be fueled exclusively with landfill gas generated by and received from the Trail Ridge landfill facility. The landfill gas will go through a gas treatment system prior to combustion in the engines.

A. FUEL SPECIFICATIONS AND WORK PRACTICES

1. This permit authorizes the installation and operation of six (6) Caterpillar, Model G3520C, 2,233 brake-horsepower landfill gas-fired engines for the generation of up to a total of 9.6 megawatts (nominal rating) of electricity. The power generation rating of each engine shall be 2,233 brake horsepower (bhp). **[Rule 62-212.400, F.A.C.]**

   {Permitting Note: The power generation rating of 2,233 bhp is based on a minimum fuel heating value requirement of 467 BTU/scf and landfill gas usage of 580 scfm per engine.}

2. This permit authorizes the installation of a LFG Treatment System including gas compression (via blowers), liquids removal (via knock-out and chilling), and particulate removal (via 1 micron primary and polishing filters). The gas treatment system shall not be equipped with atmospheric vents. **[Rule 62-212.400, F.A.C., 40 CFR 60.752 and Appendix J of the application]**

3. Emissions Units Nos. 004-009 are subject to 40 CFR 60 Subpart WWW and certain sections of 40 CFR 63 Subparts AAAA and ZZZZ adopted by the Department at Rule 62-204.800(8)(b) and 62-204.800(11)(b), F.A.C. **[Rules 62-204.800 and 62-210.300, F.A.C.]**

4. Unless otherwise indicated, the modification/construction and operation of the six Caterpillar internal combustion engines shall be in accordance with the capacities and specifications stated in the application. **[Rule 62-210.300, F.A.C.]**

5. No person shall cause, suffer, allow, or permit the discharge of air pollutants which cause or contribute to an objectionable odor. **[Rule 62-296.320, F.A.C.]**

6. No person shall circumvent any air pollution control device, or allow the emission of air pollutants without the applicable air pollution control device operating properly. **[Rule 62-210.650, F.A.C.]**

7. Fuel fired in the engines is limited to LFG. The use of any other fuel will require an amendment to this permit. **[Rule 62-212.400, F.A.C.]**

8. The permittee shall operate each engine at the air-to-fuel ratio that the tested engine operated at during the performance test required by Specific Condition C.2 or the most recent performance test if a subsequent performance test is conducted. **[Rule 62-212.400, F.A.C.]**

9. The permittee shall operate each engine within 0.5% of the O_2 content in the exhaust gas at the air-to-fuel ratio that the tested engine operated at during the performance test required by Specific Condition C.2 or the

most recent performance test if a subsequent performance test is conducted. **[Rule 62-212.400, F.A.C. and Appendix F of the application]**

10. 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. **[Rule 62-4.070, F.A.C.]**
11. Excess LFG not used as fuel in an engine must be flared in accordance with the requirements of 40 CFR 60 Subpart WWW. **[Rule 62-4.070, F.A.C.]**
12. Each engine/generator set may operate up to 8,760 hours per year. **[Rule 62-210.200(232), F.A.C.]**
13. The subject emissions units shall be subject to the following:
    a. Excess emissions resulting from startup, shutdown or malfunction of any source shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration. **[Rule 62-210.700, F.A.C.]**
    b. Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during startup, shutdown, or malfunction shall be prohibited. **[Rule 62-210.700, F.A.C.]**
    c. In case of excess emissions resulting from malfunctions, each source 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, F.A.C.]**

B. EMISSION AND PERFORMANCE REQUIREMENTS

1. ***Nitrogen oxides (NOx)***: The emission rate of NOx from each engine/generator set exhaust shall not exceed 0.6 gram per brake horsepower hour (g/bhp-hr) and a maximum of 2.95 pounds per hour (lb/hr) and 12.94 tons per year (TPY). **[Rule 62-212.400(12), F.A.C.]**
2. ***Carbon Monoxide (CO)***: The emission rate of CO from each engine/generator set exhaust shall not exceed 2.75 g/bhp-hr and a maximum of 13.54 lb/hr and 59.30 TPY. **[Rule 62-212.400(12), F.A.C.]**
3. ***Particulate Matter less than 10 microns (PM_{10})***: The emission rate of PM_{10} from each engine/generator set exhaust shall not exceed 0.24 g/bhp-hr and a maximum of 1.18 lb/hr and 5.17 TPY. **[Rule 62-212.400(12), F.A.C.]**
4. ***Volatile Organic Compounds (VOC)***: The emission rate of total VOC from each engine/generator set exhaust shall not exceed 0.28 g/bhp-hr and a maximum of 1.37 lb/hr and 5.99 TPY. **[Rule 62-212.400(12), F.A.C.]**

   {Permitting Note: Project avoids PSD review for VOC based on emission limits.}
5. ***Hydrogen Chloride (HCl)***: The emission rate of HCl from each engine/generator set shall not exceed 10.9 lb/MMscf and 1.66 TPY. **[Rule 62-210.200(184), F.A.C.]**

   {Permitting Note: Facility remains a minor source of HAP emissions based on permit limits.}
6. ***Sulfur Dioxide (SO_2)***: The emission rate of SO_2 from each engine/generator set shall not exceed 27.5 lb/MMscf. **[Rule 62-212.400(12), F.A.C.]**

   {Permitting Note: Project avoids PSD review based on permit limits.}

7. Visible emissions from each engine/generator set exhaust shall not exceed 10% opacity. **[Rule 62-212.400, F.A.C.]**

C. TEST METHODS AND PROCEDURES

1. Sampling Facilities

   The permittee shall design the internal combustion engine stack to accommodate adequate testing and sampling locations in order to determine compliance with the applicable emission limits specified by this permit. **[Rule 62-297.310(6), F.A.C.]**

2. Performance Test Methods

   Initial (I), Annual (A) and permit renewal (R) compliance tests shall be performed in accordance with the following reference methods as described in 40 CFR 60, Appendix A and 40 CFR 51 Appendix M, adopted by reference in Chapter 62-204.800, F.A.C. Initial, annual and renewal compliance tests shall be conducted on only one of the six engines. A different engine shall be tested each year such that all engines are tested during the six year cycle.

   (a) EPA Method 7 or 7E – Determination of NOx Emissions from Stationary Sources (I,A);

   (b) EPA Method 9 – Visual Determination of the Opacity of Emissions from Stationary Sources (I,A);

   (c) EPA Method 10 – Determination of CO Emissions from Stationary Sources (I,A);

   (d) EPA Method 18 – Measurement of Gaseous Organic Compounds Emissions (I,R);

   (e) EPA Method 26 – Determination of HCl Emissions from Stationary Sources (I,A);

   (f) EPA Method 201 – Determinations of PM_{10} Emissions (I,A)

   EPA Methods 1 through 4 shall be used as necessary to support other test methods. No other test methods may be used for compliance testing unless prior DEP approval is received, in writing, from the Department. **[Rule 62-297.310(7), F.A.C.]**

3. The permittee shall comply with the following requirements to monitor the sulfur and chlorine content of the landfill gas:

   a. At least 180 days prior to commercial startup of the engines, the permittee shall sample and analyze the landfill gas for sulfur and chlorine content. The gas sample collected for the analyses shall be a composite sample and collected under normal operating conditions (i.e., with valves open for all operating cells). The gas sample collection and analyses for sulfur and chlorine content shall be done semi-annually. Based on the sampling results and Rule 62-297.310(7)(b), F.A.C., the Department may request additional gas sampling and analyses. Results shall be reported as SO_2 and HCl emission factors in terms of lb/MMscf of landfill gas.

   b. During each required compliance test conducted for HCl, the permittee shall sample and analyze the landfill gas for the chlorine content. Results for the compliance test shall be reported in terms of HCl emissions in lb/hr and the sample analysis result shall be reported as HCl emission factor in terms of lb/MMscf of landfill gas.

c. Analysis of the chlorine content shall be used to track changes in the landfill gas. Based on the analysis, the Compliance Authority may require additional stack testing for HCl emissions to determine compliance with the emissions standard.

d. Compliance with the fuel sulfur specification shall be determined based on each analysis for the sulfur content of the landfill gas.

[Rules 62-210.200(184), 62-210.200(232) and 62-212.400(12), F.A.C.]

4. Within 60 days of achieving the permitted capacity, but no later than 180 days after initial startup, and annually, the subject emissions units as described in Specific Condition C.2 shall be tested for compliance with the applicable emission limits. For the duration of all tests the emission units shall be operating at permitted capacity. Permitted capacity is defined as 90-100 percent of the maximum operating rate allowed by the permit. If it is impracticable to test at permitted capacity, then the emission unit may be tested at less than permitted capacity (i.e., 90% of the maximum operating rate allowed by the permit); in this case, subsequent emission unit operation is limited to 110 percent of the test load until a new test is conducted. Once the emission unit is so limited, then operation at higher capacities is allowed for no more than 15 consecutive days for the purposes of additional compliance testing to regain the permitted capacity in the permit. **[Rule 62-297.310, F.A.C.]**

D. RECORDKEEPING, REPORTING AND MONITORING REQUIREMENTS

1. Total landfill gas flow to the engines shall be continuously measured and recorded. **[Rule 62-210.200 (232), F.A.C.]**
2. Gross electrical power generation (kw-hrs) shall be continuously measured and recorded for each engine individually and for the six engines combined. **[Rule 62-210.200(232), F.A.C.]**
3. Each engine/generator set shall be equipped with a non-resetable elapsed time meter to indicate, in cumulative hours, the elapsed engine operating time. **[Rule 62-210.200(232), F.A.C.]**
4. The permittee shall maintain the following records on a monthly basis:
   a. The hours of operation of each engine/generator set, including any start-up, shutdown or malfunction in the operations of the engine/generator set.
   b. The total landfill gas flow to each engine.
   c. Gross electrical power generation in kw-hr for each engine and the six engines combined.

   [Rule 62-210.200(232), F.A.C.]
5. The permittee shall submit the results and the corresponding data of the site specific HCl emission factor and the SO_2 emission factor within 45 days of gas sampling to the Bureau of Air Regulation. The results shall also be submitted to the Northeast District and the Local Program. **[Rules 62-210.200(232) and 62-210.200(264), F.A.C.]**

APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

Trail Ridge Energy, LLC
Trail Ridge Landfill, Inc.
PSD-FL-374/0310358-004-AC
Baldwin, Duval County

Trail Ridge Energy, LLC has applied to modify Trail Ridge Landfill facility by installing six (6) lean-burn internal combustion (IC) Caterpillar (CAT) Model G3520C gas IC engines and electricity generators. The electricity 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 electricity generation operations (e.g., engine oil storage tanks and LFG temperature and moisture conditioning equipment).

The six lean-burn IC engines will be connected to individual electricity generators. Each gas IC engine will be connected to a 1,600 kilowatt electricity generator. The plant will have the potential to generate 9.6 megawatts of electricity under base load operating conditions and will be interconnected to the Jacksonville Electric Authority distribution network through a nearby power line.

The LFG fueled IC engines will be housed in a single building constructed near the existing LFG collection system header and control system flare. A gas transmission line will be connected to the header of the existing LFG collection system and a dedicated gas blower/compressor will be used to draw methane-rich gas (fuel) from the existing LFG collection system to the proposed electricity generation plant.

The Trail Ridge Landfill facility is a major source of air pollution or a Title V source based on Rule 62-210.200(184), Florida Administrative Code (F.A.C.). Additionally, based on this modification, potential emissions of carbon monoxide (CO) will be greater than 250 tons per year (TPY) making the facility a Major Stationary Source for Prevention of Significant Deterioration (PSD) review with respect to Rule 62-210.200(185)(a)2., F.A.C. The increases in emissions of nitrogen oxide (NOx) and particulate matter less than or equal to 10 microns (PM_{10}) will exceed the significant emission rates listed in Rule 62-210.200(264), F.A.C. A Best Available Control Technology (BACT) determination is part of the review required for CO, NOx and PM_{10} by Rule 62-210.200(39), F.A.C.

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.

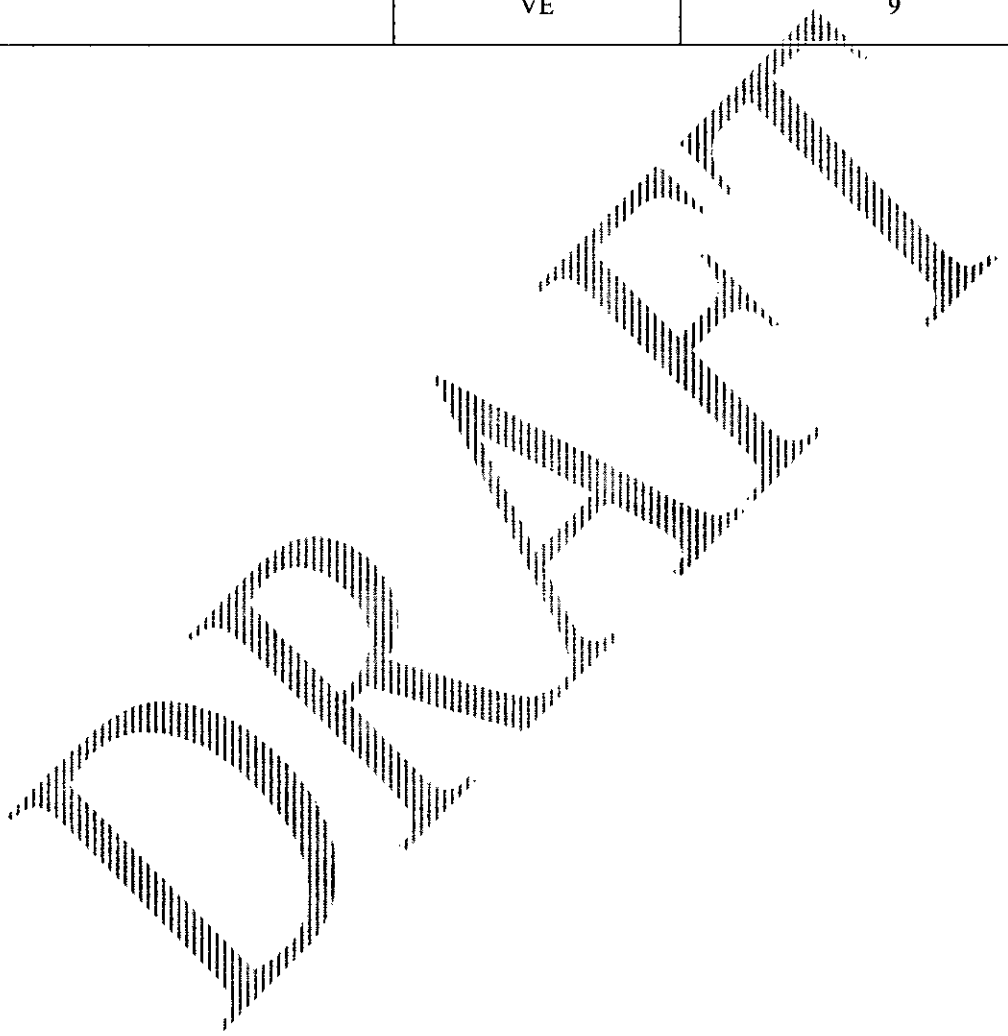
The Department proposes the following as BACT for each engine:

POLLUTANT	EMISSION LIMIT	CONTROL TECHNOLOGY
CO	2.75 g/bhp-hr and 13.54 lb/hr and 59.30 TPY	Combustor design and good combustion practices
NOx	0.6 g/bhp-hr and 2.95 lb/hr and 12.94 TPY	Combustor design and good combustion practices
PM_{10}	0.24 g/bhp-hr and 1.18 lb/hr and 5.17 TPY	Pretreatment of landfill gas and proper engine maintenance

APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

Compliance with the emission limits shall be in accordance with the following EPA Reference Methods as contained in 40 CFR 60, Appendix A or as otherwise approved by the Department:

EMISSION UNIT	POLLUTANT	EPA REFERENCE METHOD
Six (6) Caterpillar Model G 3520C Landfill gas fueled Internal Combustion Engines	PM_{10}	201
	NOx	7 or 7E
	CO	10
	VE	9



APPENDIX GC
GENERAL PERMIT CONDITIONS [F.A.C. 62-4.160]

G.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, Florida Statutes. 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.

G.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 or exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

G.3 As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, 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.

G.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.

G.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 Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

G.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.

G.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.

G.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.

G.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 Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida

Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

G.10 The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

G.11 This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 62-4.120 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.

G.12 This permit or a copy thereof shall be kept at the work site of the permitted activity.

G.13 This permit also constitutes:

a) Determination of Best Available Control Technology (X)
b) Determination of Prevention of Significant Deterioration (X);
c) Compliance with New Source Performance Standards (X). Subpart WWW requirements and
d) Compliance with National Emission Standards for Hazardous Air Pollutants (X). Subpart AAAA and ZZZZ requirements

G.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.

G.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.