


Florida Department of Environmental Protection

Memorandum

To: Jeff Koerner, Program Administrator, Office of Permitting and Compliance 
Through Syed Arif, Office of Permitting and Compliance SA 8/19
From: Christy DeVore, Office of Permitting and Compliance CD
Date: August 19, 2011
Subject: Draft Air Construction Permit Project No. 0310358-012-AC/PSD374C
Draft Air Title V Permit Revision No. 0310358-013-AV
City of Jacksonville Trail Ridge Landfill, Trail Ridge Energy
Landfill Gas-to-Energy Expansion

The Trail Ridge Landfill is an existing municipal solid waste landfill. The applicant proposes to install and operate four lean-burn reciprocating internal combustion engine/generator sets as part of the existing landfill gas-to-energy plant at the Trail Ridge Landfill. In addition, the applicant has requested a modification to the CO emissions standard as Best Available Control Technology (BACT) for the existing engine/generator sets. The landfill gas will be used to fuel the proposed four and existing six lean-burn reciprocating internal combustion engine/generator sets. The plant will have the potential to generate an additional 6.4 megawatts (MW) of electricity for a combined nominal 16 MW of power to the electrical grid. The two existing flares will be retained as additional combustion devices for the landfill gas. The landfill gas will be routed through a landfill gas treatment system and then to the engines. As necessary, residual landfill gas will be routed to the flares. The project will result in the following potential emissions increases at the existing landfill: 284.7 tons/year of carbon monoxide (CO); 51.7 tons/year of nitrogen oxides (NO_x); 20.7 tons/year of particulate matter (PM), particulate matter with a mean particle diameter of 10 microns or less (PM₁₀) and particulate matter with a mean particle diameter of 2.5 microns or less (PM_{2.5}); 16.6 tons/year of sulfur dioxide (SO₂); and 24.2 tons/year of volatile organic compounds (VOC).

The proposed project is subject to preconstruction review pursuant to Rule 62-212.400, Florida Administrative Code (F.A.C.) for the Prevention of Significant Deterioration (PSD) of Air Quality for emissions of CO, NO_x, PM and PM₁₀. In accordance with this rule, the Department is required to make a determination of the Best Available Control Technology (BACT) for CO, NO_x, PM and PM₁₀ emissions. The draft permit includes the following preliminary BACT determinations: emissions of CO and NO_x will be minimized by the lean-burn combustion design combined with good operating and maintenance practices; and emissions of PM/PM₁₀ will be controlled by filtration in the landfill gas treatment system prior to combustion. In addition, the applicant requested a concurrent revision of the Title V air operation permit. The attached Technical Evaluation and Preliminary Determination provides a detailed description of the project and the rationale for permit issuance. The project is considered a new source review reform project. Day 60 of the permitting time clock is August 19, 2011. I recommend your approval of the attached draft permit package.

Attachments

JFK/scd

P.E. CERTIFICATION STATEMENT

PERMITTEE

City of Jacksonville
Public Works Department
117 West Duval Street, St. James Building, 4th Floor
Jacksonville, FL 32202

Draft Construction Permit No. 0310358-012-AC/PSD-374C
Draft Title V Permit No. 0310358-013-AV
Trail Ridge Energy
Landfill Gas-to-Energy Expansion
Duval County, Florida

PROJECT DESCRIPTION

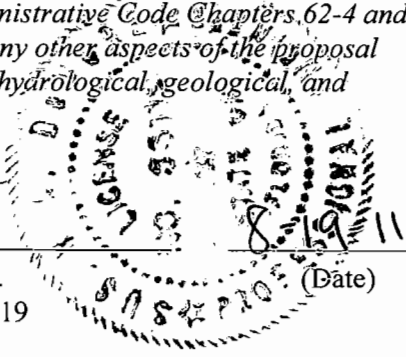
The Trail Ridge Landfill is an existing municipal solid waste landfill. The applicant proposes to install and operate four lean-burn reciprocating internal combustion engine/generator sets as part of the existing landfill gas-to-energy plant at the Trail Ridge Landfill. In addition, the applicant has requested a modification to the CO emissions standard as Best Available Control Technology (BACT) for the existing engine/generator sets. The landfill gas will be used to fuel the proposed four and existing six lean-burn reciprocating internal combustion engine/generator sets. The plant will have the potential to generate an additional 6.4 megawatts (MW) of electricity for a combined nominal 16 MW of power to the electrical grid. The two existing flares will be retained as additional combustion devices for the landfill gas. The landfill gas will be routed through a landfill gas treatment system and then to the engines. As necessary, residual landfill gas will be routed to the flares. The project will result in the following potential emissions increases at the existing landfill: 284.7 tons/year of carbon monoxide (CO); 51.7 tons/year of nitrogen oxides (NO_x); 20.7 tons/year of particulate matter (PM), particulate matter with a mean particle diameter of 10 microns or less (PM₁₀) and particulate matter with a mean particle diameter of 2.5 microns or less (PM_{2.5}); 16.6 tons/year of sulfur dioxide (SO₂); and 24.2 tons/year of volatile organic compounds (VOC).

The proposed project is subject to preconstruction review pursuant to Rule 62-212.400, Florida Administrative Code (F.A.C.) for the Prevention of Significant Deterioration (PSD) of Air Quality for emissions of CO, NO_x, PM and PM₁₀. In accordance with this rule, the Department is required to make a determination of the Best Available Control Technology (BACT) for CO, NO_x, PM and PM₁₀ emissions. The draft permit includes the following preliminary BACT determinations: emissions of CO and NO_x will be minimized by the lean-burn combustion design combined with good operating and maintenance practices; and emissions of PM/PM₁₀ will be controlled by filtration in the landfill gas treatment system prior to combustion.

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



S. Christine DeVore, P.E.
Registration Number 63119



(Date)



Florida Department of Environmental Protection

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

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

August 19, 2011

Sent by Electronic mail – Received Receipt Requested

Ms. Kerri Stewart, Chief Administrative Officer
City of Jacksonville
Public Works Department
117 West Duval Street, St. James Building, 4th Floor
Jacksonville, FL 32202

Re: Trail Ridge Landfill, Trail Ridge Energy, LLC
Landfill Gas-to-Energy Expansion
Draft Permit No. No. 0310358-012-AC/PSD-FL-374C, Air Construction Permit Revision
Draft Permit No. 0310358-013-AV, Title V Air Operation Permit Revision

Dear Ms. Stewart:

On March 17, 2011 you submitted an application and on June 20, 2011, you submitted additional information requesting authorization for installation and operation of four new Caterpillar Model No. G3520C engine generator sets and to modify the CO emissions standard as Best Available Control Technology (BACT) for the proposed and existing engine/generator sets. In addition, you requested a concurrent revision of the Title V air operation permit. The existing facility is located in Duval County at 5110 US Highway 301 South, Baldwin, Florida. The permit package includes the following documents:

- The Written Notice of Intent to Issue Air Permits provides important information regarding: the Permitting Authority's intent to issue air permits for the proposed project; the requirements for publishing a Public Notice of the Permitting Authority's intent to issue air permits; the procedures for submitting comments on the draft Title V air operation permit revision and the draft air construction permit revision; the process for filing a petition for an administrative hearing; and, the availability of mediation.
- The Public Notice of Intent to Issue Air Permits is the actual notice that you must have published in the legal advertisement section of a newspaper of general circulation in the area affected by this project. The Public Notice of Intent to Issue Air Permits must be published as soon as possible and the proof of publication must be provided to the Department within seven days of the date of publication. Because this permit is being processed a combined draft permit in order to reduce processing time, a duplicate copy of the proof of publication must also be transmitted by electronic mail within seven days of the date of publication to Ms. Ana Oquendo at EPA Region 4 at the following address: oquendo.ana@epamail.epa.gov.
- The Statement of Basis, which summarizes the facility, the equipment, and the primary rule applicability.
- The draft Title V air operation permit revision, which includes the specific permit conditions that regulate the emissions units covered by the proposed project. Only the appendices that were changed are included, all of the remaining appendices will be provided in the final permit.
- The Technical Evaluation and Preliminary Determination, which explains the revisions to underlying construction permit conditions.
- The draft air construction permit revision.

Please submit any written comments you wish to have considered concerning the permitting authority's proposed action to Mr. Syed Arif, P.E., Environmental Administrator, at the above letterhead address. If you have any questions, please contact the project engineer, Christy DeVore, by telephone at 850/717-9085 or by email at christy.devore@dep.state.fl.us.

Sincerely,

Jeffery F. Koerner, P.E., Program Administrator
Office of Permitting and Compliance
Division of Air Resource Management

Enclosures

JFK/scd

WRITTEN NOTICE OF INTENT TO ISSUE AIR PERMIT

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

City of Jacksonville
Public Works Department
117 West Duval Street, St. James Building, 4th Floor
Jacksonville, FL 32202

Draft Construction Permit No. 0310358-012-AC/PSD-374C
Draft Title V Permit No. 0310358-013-AV
Trail Ridge Energy, LLC
Landfill Gas-to-Energy Expansion
Duval County, Florida

Authorized Representative:

Ms. Kerri Stewart, Chief Administrative Officer

Facility Location: City of Jacksonville operates the existing Trail Ridge Landfill where Trail Ridge Energy is located. The landfill is located in Duval County at 5110 US Highway 301 South, Baldwin, Florida.

Project: The Trail Ridge Landfill is an existing municipal solid waste landfill. The applicant proposes to install and operate four lean-burn reciprocating internal combustion engine/generator sets as part of the existing landfill gas-to-energy plant at the Trail Ridge Landfill. In addition, the applicant has requested a modification to the CO emissions standard as Best Available Control Technology (BACT) for the existing engine/generator sets. The landfill gas will be used to fuel the proposed four and existing six lean-burn reciprocating internal combustion engine/generator sets. The plant will have the potential to generate an additional 6.4 megawatts (MW) of electricity for a combined nominal 16 MW of power to the electrical grid. In addition, the applicant requested a concurrent revision of the Title V air operation permit. The two existing flares will be retained as additional combustion devices for the landfill gas. The landfill gas will be routed through a landfill gas treatment system and then to the engines. As necessary, residual landfill gas will be routed to the flares. The project is subject to the preconstruction review requirements of Rule 62-212.400, Florida Administrative Code (F.A.C.) for the Prevention of Significant Deterioration (PSD) of Air Quality for the following pollutants: carbon monoxide (CO), nitrogen oxides (NO_x), total particulate matter (PM) and particulate matter with a mean particle diameter of 10 microns or less (PM₁₀). Details of the project are provided in the application and the enclosed Technical Evaluation and Preliminary Determination.

Permitting Authority: Applications for air construction permits and Title V air operation permits are subject to review in accordance with the provisions of Chapter 403, Florida Statutes (F.S.) and Chapters 62-4, 62-210, 62-212 and 62-213 of the Florida Administrative Code (F.A.C.). The proposed project is not exempt from air permitting requirements and an air permit is required to perform the proposed work. The Office of Permitting and Compliance is the Permitting Authority responsible for making a permit determination for this project. The Permitting Authority's physical address is: 111 South Magnolia Drive, Suite #4, Tallahassee, Florida. The Permitting Authority's mailing address is: 2600 Blair Stone Road, MS #5505, Tallahassee, Florida 32399-2400. The Permitting Authority's telephone number is 850/717-9000.

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

Notice of Intent to Issue Permit: The Permitting Authority gives notice of its intent to issue an air construction permit and concurrent draft Title V to the applicant for the project described above. The applicant has provided reasonable assurance that operation of the proposed equipment will not adversely impact air quality and that the project will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296 and 62-297, F.A.C. The Permitting Authority will issue a Final Permit in accordance with the conditions of the

WRITTEN NOTICE OF INTENT TO ISSUE AIR PERMIT

proposed Draft Permit unless a timely petition for an administrative hearing is filed under Sections 120.569 and 120.57, F.S. or unless public comment received in accordance with this notice results in a different decision or a significant change of terms or conditions.

Public Notice: Pursuant to Section 403.815, F.S. and Rules 62-110.106 and 62-210.350, F.A.C., you (the applicant) are required to publish at your own expense the enclosed Public Notice of Intent to Issue Air Permit (Public Notice). The Public Notice shall be published one time only as soon as possible in the legal advertisement section of a newspaper of general circulation in the area affected by this project. The newspaper used must meet the requirements of Sections 50.011 and 50.031, F.S. in the county where the activity is to take place. If you are uncertain that a newspaper meets these requirements, please contact the Permitting Authority at above address or phone number. Pursuant to Rule 62-110.106(5) and (9), F.A.C., the applicant shall provide proof of publication to the Permitting Authority at the above address within 7 days of publication. Failure to publish the notice and provide proof of publication may result in the denial of the permit pursuant to Rule 62-110.106(11), F.A.C.

Comments: The Permitting Authority will accept written comments concerning the draft Title V air operation permit revision and the draft air construction permit revision for a period of 30 days from the date of publication of the Public Notice. Written comments must be received by the close of business (5:00 p.m.), on or before the end of this 30-day period by the Permitting Authority at the above address. If timely received written comments result in a significant change to the draft Title V air operation permit revision or the draft air construction permit revision, the Permitting Authority shall issue a revised draft Title V air operation permit revision or a revised draft air construction permit and require, if applicable, another Public Notice. All comments filed will be made available for public inspection. For additional information, contact the Permitting Authority at the above address or phone number.

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

A petition that disputes the material facts on which the Permitting Authority's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner; the name, address and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of when and how each petitioner received notice of the agency action or proposed decision; (d) A statement of all disputed issues of material fact. If there are none, the petition must so state; (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

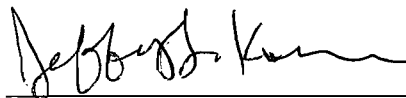
WRITTEN NOTICE OF INTENT TO ISSUE AIR PERMIT

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

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

Mediation: Mediation is not available in this proceeding.

Executed in Tallahassee, Florida.



Jeffery F. Koerner, P.E., Program Administrator
Office of Permitting and Compliance
Division of Air Resource Management

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Written Notice of Intent to Issue Permits package (including the Public Notice, the Statement of Basis, the Draft Title V Permit, the Technical Evaluation and Preliminary Determination and the Draft Construction Permit with Appendices) was sent by electronic mail, or a link to these documents made available electronically on a publicly accessible server, with received receipt requested before the close of business on 8-19-11 to the persons listed below.

- Ms. Kerri Stewart, City of Jacksonville(kstewart@coj.net)
- Mr. Scott Salisbury, Trail Ridge Energy, LLC (scott.salisbury@landfillenergy.com)
- Mr. Robert Harvey, P.E., Derenzo and Associates, Inc. (rharvey@derenzo.com)
- Mr. Chris Kirts, Northeast District (christopher.kirts@dep.state.fl.us)
- Mr. Richard Robinson, Duval County Environmental Resources Management (robinson@coj.net)
- Ms. Kathleen Forney, EPA Region 4 (forney.kathleen@epa.gov)
- Ms. Heather Abrams, EPA Region 4 (abrams.heather@epa.gov)
- Ms. Ana Oquendo, US EPA Region 4 (oquendo.ana@epa.gov)
- Ms. Barbara Friday, DEP OPC (barbara.friday@dep.state.fl.us) (for posting with U.S. EPA, Region 4)
- Ms. Lynn Scarce, DEP OPC Reading File (lynn.scarce@dep.state.fl.us)

Clerk Stamp

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

Lynn Scarce
(Clerk)

August 19, 2011
(Date)

PUBLIC NOTICE OF INTENT TO ISSUE AIR PERMITS

Florida Department of Environmental Protection
Division of Air Resource Management, Office of Permitting and Compliance
Draft Permit No. 0310358-012-AC/PSD-FL-374C, Air Construction Permit Revision
Draft Permit No. 0310358-013-AV, Title V Air Operation Permit Revision
Trail Ridge Landfill, Trail Ridge Energy
Duval County, Florida

Applicant: The applicant for this project is the City of Jacksonville. The applicant's authorized representative and mailing address is: Ms. Kerri Stewart, Chief Administrative Officer, City of Jacksonville, Public Works Department, 117 West Duval Street, St. James Building, 4th Floor, Jacksonville, FL 32202.

Facility Location: City of Jacksonville operates the existing Trail Ridge Landfill where Trail Ridge Energy is located. The landfill is located in Duval County at 5110 US Highway 301 South, Baldwin, Florida.

Project: The Trail Ridge Landfill is an existing municipal solid waste landfill. The applicant proposes to install and operate four lean-burn reciprocating internal combustion engine/generator sets as part of the existing landfill gas-to-energy plant at the Trail Ridge Landfill. In addition, the applicant has requested a modification to the CO emissions standard as Best Available Control Technology (BACT) for the existing engine/generator sets. The landfill gas will be used to fuel the proposed four and existing six lean-burn reciprocating internal combustion engine/generator sets. The plant will have the potential to generate an additional 6.4 megawatts (MW) of electricity for a combined nominal 16 MW of power to the electrical grid. In addition, the applicant requested a concurrent revision of the Title V air operation permit. The two existing flares will be retained as additional combustion devices for the landfill gas. The landfill gas will be routed through a landfill gas treatment system and then to the engines. As necessary, residual landfill gas will be routed to the flares. The project will result in the following potential emissions increases at the existing landfill: 284.7 tons/year of carbon monoxide (CO); 51.7 tons/year of nitrogen oxides (NO_x); 20.7 tons/year of particulate matter (PM), particulate matter with a mean particle diameter of 10 microns or less (PM₁₀) and particulate matter with a mean particle diameter of 2.5 microns or less (PM_{2.5}); 16.6 tons/year of sulfur dioxide (SO₂); and 24.2 tons/year of volatile organic compounds (VOC).

The proposed project is subject to preconstruction review pursuant to Rule 62-212.400, Florida Administrative Code (F.A.C.) for the Prevention of Significant Deterioration (PSD) of Air Quality for emissions of CO, NO_x, PM and PM₁₀. In accordance with this rule, the Department is required to make a determination of the Best Available Control Technology (BACT) for CO, NO_x, PM and PM₁₀ emissions. The draft permit includes the following preliminary BACT determinations: emissions of CO and NO_x will be minimized by the lean-burn combustion design combined with good operating and maintenance practices; and emissions of PM/PM₁₀ will be controlled by filtration in the landfill gas treatment system prior to combustion.

The Department reviewed the air quality analysis prepared by the applicant. The project has no predicted significant impact for any pollutants in the nearest PSD Class I area (Okefenokee National Wildlife Refuge). Therefore, a multi-source modeling analysis for PSD Class I increment was not required. The predicted impacts of CO, PM₁₀, and SO₂ are well below the corresponding PSD Class II significant impact level and no further analysis is required. The 24-hour PM_{2.5} and the 1-hour predicted impacts of NO_x are greater than the corresponding PSD Class II significant impact levels; therefore, a full impact analysis for these pollutants was conducted, including an increment analysis.

The PSD increment represents the amount that new sources in an area may increase ambient ground level concentrations of a pollutant from a regulatory baseline concentration. The emission values input into the model for predicting increment consumption are based on the maximum emissions rates from increment-consuming sources at the facility as well as all other increment-consuming sources in the vicinity of the facility. The following table summarizes the results of the PSD Class II increment analysis.

(Public Notice to be Published in the Newspaper)

PSD Class II Increment Analysis				
Pollutant	Averaging Time	Maximum Predicted Impacts ($\mu\text{g}/\text{m}^3$)	Allowable Increment ($\mu\text{g}/\text{m}^3$)	Greater than PSD Class II Allowable Increment?
PM _{2.5}	24-hour	3.5	4	NO

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

Permitting Authority: Applications for air construction permits and for Title V air operation permits are subject to review in accordance with the provisions of Chapter 403, Florida Statutes (F.S.) and Chapters 62-4, 62-210, 62-212 and 62-213 of the F.A.C. The proposed project is not exempt from air permitting requirements and an air permit is required to perform the proposed work. The Permitting Authority responsible for making a permit determination for this project is the Office of Permitting and Compliance in the Department of Environmental Protection's Division of Air Resource Management. The Permitting Authority's physical address is: 111 South Magnolia Drive, Suite #4, Tallahassee, Florida. The Permitting Authority's mailing address is: 2600 Blair Stone Road, MS #5505, Tallahassee, Florida 32399-2400. The Permitting Authority's telephone number is 850/717-9000.

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

Notice of Intent to Issue Air Permit: The Permitting Authority gives notice of its intent to issue an air construction permit and concurrent draft Title V air operation permit revision to the applicant for the project described above. The applicant has provided reasonable assurance that operation of proposed equipment will not adversely impact air quality and that the project will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296 and 62-297, F.A.C. The Permitting Authority will issue a Final Permit in accordance with the conditions of the draft Title V air operation permit revisions and the draft air construction permit revision unless a timely petition for an administrative hearing is filed under Sections 120.569 and 120.57, F.S. or unless public comment received in accordance with this notice results in a different decision or a significant change of terms or conditions.

Comments: The Permitting Authority will accept written comments concerning the draft Title V air operation permit revision and the draft air construction permit revision for a period of 30 days from the date of publication of the Public Notice. Written comments must be received by the close of business (5:00 p.m.), on or before the end of this 30-day period by the Permitting Authority at the above address. If timely received written comments result in a significant change to the draft Title V air operation permit revision or the draft air construction permit revision, the Permitting Authority shall issue a revised draft Title V air operation permit revision or a revised draft air construction permit and require, if applicable, another Public Notice. All comments filed will be made available for public inspection. For additional information, contact the Permitting Authority at the above address or phone number.

Petitions: A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed with (received by) the Department's Agency Clerk in the Office of General Counsel of the Department of Environmental Protection at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. Petitions filed by any persons other than those entitled to written notice under Section 120.60(3), F.S. must be filed within 14 days of publication of this Public Notice or receipt of a written notice, whichever occurs first. Under Section 120.60(3), F.S., however, any person who asked the Permitting Authority for notice of agency action may file a petition within 14 days of receipt of that notice,

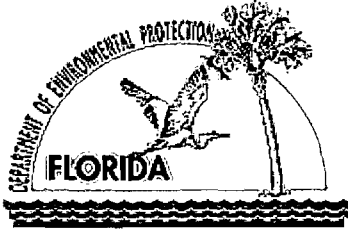
(Public Notice to be Published in the Newspaper)

regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above, at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C.

A petition that disputes the material facts on which the Permitting Authority's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address and telephone number of the petitioner; the name address and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial rights will be affected by the agency determination; (c) A statement of when and how the petitioner received notice of the agency action or proposed decision; (d) A statement of all disputed issues of material fact. If there are none, the petition must so state; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action including an explanation of how the alleged facts relate to the specific rules or statutes; and, (g) A statement of the relief sought by the petitioner, stating precisely the action the petitioner wishes the agency to take with respect to the agency's proposed action. A petition that does not dispute the material facts upon which the Permitting Authority's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

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

Mediation: Mediation is not available for this proceeding.



**TECHNICAL EVALUATION
&
PRELIMINARY DETERMINATION**

APPLICANT

City of Jacksonville
Public Works
117 West Duval Street, St. James Building, 4th Floor
Jacksonville, FL 32202

Trail Ridge Landfill
ARMS Facility ID No. 0310358

PROJECT

Draft Permit No. PSD-FL-374C
Project No. 0310358-012-AC
Landfill Gas-to-Energy Project

COUNTY

Duval County, Florida

PERMITTING AUTHORITY

Florida Department of Environmental Protection
Division of Air Resource Management
Office of Permitting and Compliance
2600 Blair Stone Road, MS#5505
Tallahassee, Florida 32399-2400

August 19, 2011

1. GENERAL PROJECT INFORMATION

Facility Description and Location

The existing Trail Ridge Landfill facility is located at 5110 U.S. Highway 301 South in Baldwin, Duval County, Florida. The Trail Ridge Energy, LLC facility is located at the existing Trail Ridge Landfill facility. The Trail Ridge Energy, LLC facility includes six lean-burn spark-ignition reciprocating internal combustion engine (RICE)-generator sets firing landfill gas, is categorized under Standard Industrial Classification (SIC) Code No. 4953, Refuse Systems. The UTM coordinates are Zone 17, 399.873 km East, and 3344.309 km North.

Trail Ridge Landfill is a Class I Municipal Solid Waste (MSW) Landfill consisting of 176 acres. This landfill commenced construction in 1992. Trail Ridge Landfill receives approximately 2,500 - 3,000 tons of waste daily. The site totals 977 acres of land and currently has a 148-acre "footprint" which serves residential and commercial customers.

The nonmethane organic compounds (NMOC) emissions are greater than 50 megagrams per year. Landfill gas (LFG) is directed to an enclosed flare where methane, NMOC and HAPs contained in the gas are destroyed at high temperatures. The facility currently operates two flares – one 5,000 standard cubic feet per minute (scfm) open flare and one 1,600 scfm open flare.

In order to reduce the amount of LFG wasted by flaring, all available LFG from the landfill is supplied to Trail Ridge Energy for use as fuel to power the proposed internal combustion (IC) engine electricity generation plant.



Primary Regulatory Categories

- The facility is not a major source of hazardous air pollutants (HAP).
- The facility has no units subject to the acid rain provisions of the Clean Air Act.
- The facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.
- The facility is a major stationary source in accordance with Rule 62-212.400, F.A.C.

Project Description

The City of Jacksonville submitted an application for an air construction permit subject to the preconstruction review requirements of the Prevention of Significant Deterioration (PSD) of Air Quality pursuant to Rule 62-212.400, F.A.C.

The proposed project will add four Caterpillar (CAT) Model G3520C gas IC engines and electricity generators. The four 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 an additional 6.4 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 separate building constructed in an area adjacent to the existing building near the 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 is used to draw methane-rich gas (fuel) from the LFG collection system to the electricity generation plant. Ancillary equipment to support the electric generation plant (e.g., fan-cooled radiators, drums for engine radiator coolant and lube oil tanks).

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

The following existing emissions units will be affected by this project.

ID No.	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 landfill gas will go through a gas treatment system prior to combustion in the engines.

The following new emissions units will be added by this project.

ID No.	Description
012-015	Four Caterpillar Model G3520C landfill gas fueled internal combustion engines and electricity generators.

Processing Schedule

March 17, 2011 Department received the application for an air pollution construction permit.

April 8, 2011 Department requested additional information.

June 20, 2011 Department received additional information; application complete.

2. APPLICABLE REGULATIONS

State Regulations

This project is subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The Florida Statutes authorize the Department of Environmental Protection to establish rules and regulations regarding air quality as part of the Florida Administrative Code (F.A.C.). This project is subject to the applicable rules and regulations defined in the following Chapters of the F.A.C.: 62-4 (Permitting Requirements); 62-204 (Ambient Air Quality Requirements, PSD Increments, and Federal Regulations Adopted by Reference); 62-210 (Permits Required, Public Notice, Reports, Stack Height Policy, Circumvention, Excess Emissions, and Forms); 62-212 (Preconstruction Review, PSD Review and BACT, 62-213 (Title V Air Operation Permits for Major Sources of Air Pollution); 62-296 (Emission Limiting Standards); and 62-297 (Test Methods and Procedures, Continuous Monitoring Specifications, and Alternate Sampling Procedures). PSD applicability and the preconstruction review requirements of Rule 62-212.400, F.A.C. are discussed in Section 2 of this report. Additional details of the other state regulations are provided in Section 3 of this report.

Federal Regulations

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

3. PSD APPLICABILITY REVIEW

General PSD Applicability

The Department regulates major stationary sources in accordance with Florida's PSD program pursuant to Rule 62-212.400, F.A.C. PSD preconstruction review is required in areas that are currently in attainment with the state and federal Ambient Air Quality Standards (AAQS) or areas designated as "unclassifiable" for these regulated pollutants. As defined in Rule 62-210.200, F.A.C., a facility is considered a "major stationary source" if it emits or has the potential to emit 5 tons per year of lead, 250 tons per year or more of any PSD pollutant, or

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

100 tons per year or more of any PSD pollutant and the facility belongs to one of the 28 listed PSD major facility categories. PSD pollutants include: carbon monoxide (CO); nitrogen oxides (NO_x); sulfur dioxide (SO₂); particulate matter (PM); particulate matter with a mean particle diameter of 10 microns or less (PM₁₀); volatile organic compounds (VOC); lead (Pb); Fluorides (Fl); sulfuric acid mist (SAM); hydrogen sulfide (H₂S); total reduced sulfur (TRS), including H₂S; reduced sulfur compounds, including H₂S; municipal waste combustor organics measured as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans; municipal waste combustor metals measured as particulate matter; municipal waste combustor acid gases measured as SO₂ and hydrogen chloride (HCl); municipal solid waste landfills emissions measured as nonmethane organic compounds (NMOC); and mercury (Hg).

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

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

- 1. Energy, environmental and economic impacts, and other costs;*
- 2. All scientific, engineering, and technical material and other information available to the Department; and*
- 3. The emission limiting standards or BACT determinations of Florida and any other state; determines is achievable through application of production processes and available methods, systems and techniques (including fuel cleaning or treatment or innovative fuel combustion techniques) for control of each such pollutant.*

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

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

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

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

PSD Applicability for the Project

The project is located in Duval County, which is in an area that is currently in attainment with the state and federal AAQS or otherwise designated as unclassifiable. The facility emits or has the potential to emit 250 tons per year or more of at least one PSD pollutant. Therefore, the facility is a major stationary source and the project is subject to a PSD applicability review. The following table identifies the estimated emissions increases based on the initial application.

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Summary of the Applicant's PSD Applicability Analysis

POLLUTANT	POTENTIAL EMISSIONS (TPY)		PSD SIGNIFICANT EMISSIONS RATE (TPY)	SUBJECT TO PSD REVIEW?
	Per Engine	All 4 Engines		
PM	5.17	20.7	25	N
PM ₁₀ ^(a)	5.17	20.7	15	Y
PM _{2.5} ^(a)	5.17	20.7	10 ^(b)	Y ^(b)
SO ₂ ^(c)	4.17	16.7	40	N
NO _x	12.9	51.7	40	Y
CO	71.2	284.6	100	Y
VOC	6.04	24.1	40	N
HAPS	0.76	3.0	25/10	N

Notes:

- (a) All front-end PM assumed to also be particulate matter less than 10 microns (PM₁₀) and particulate matter less than 2.5 microns (PM_{2.5}).
- (b) The Department adopted by reference the federal ambient air quality standard for PM_{2.5}, but has not yet promulgated the implementing regulations for PSD preconstruction review (e.g., define PM_{2.5} as a PSD pollutant with a significant emission rate for PSD applicability). The Department is in the process of completing a rulemaking action to implement this remaining piece of the PM_{2.5} program.
- (c) The Department will require stack testing to show compliance with the emission limit.

As shown in the table, the project is subject to PSD preconstruction review for emissions of: PM₁₀, PM_{2.5}, NO_x and CO in accordance with the provisions of Rule 62-212.400, F.A.C. Therefore, BACT determinations are required for CO, NO_x and PM/PM₁₀ emissions. An air quality modeling analysis is required for CO, nitrogen dioxide (NO₂) and PM₁₀ emissions.

PROJECT DETAILS

LFG Fuel Requirement/Availability

The Trail Ridge Landfill currently has two existing flares, a 5,000 scfm open flare and a 1,600 scfm open flare, and six gas IC engines. The LFG fuel has a minimum lower heating value (LHV) of 430 Btu/scf (British thermal units per standard cubic foot) and higher heating value (HHV) of 578 Btu/scf, with an average heating value of 472 Btu/scf resulting in approximately 526 scfm of LFG fuel utilization for each engine. The operation of the additional four gas IC engines under base load conditions (100% capacity) will result in average LFG fuel utilization rates of approximately 2,104 scfm and 3.03 million standard cubic feet per day (MMscf/day).

Approximately 6,600 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. At current waste placement tonnages, the site should be at permitted waste placement capacity in 2015/16. LFG generation estimates predict that a peak gas flow of 5,600 scfm will occur in 2016. An adequate amount of LFG is currently available to fuel the existing 6 engine facility. Historical data indicate that each CAT 3520 uses approximately 520 scfm of LFG, which correlates to 5,200 scfm for the proposed 10

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

Trail Ridge Energy engines (6 existing and 4 proposed). Landfill gas generation models predict that 5,200 scfm of LFG is expected to be available in approximately 2014. This gas extraction rate is adequate to fuel and power the additional two of the four IC engine/generators proposed for installation at Trail Ridge Energy. It is not known when there will be additional LFG to support the operation of the other two IC engine/generators. The LFG generation model indicates that the Trail Ridge Landfill may produce additional quantities of LFG to support the operation of the proposed four IC engine/generator sets based on permitted capacity and waste placement values, however there are uncertainties in the information calculated with these tools. Therefore, construction activities for the installation and operation of the two IC engine/generator sets will be evaluated at future dates based on the sufficient quantities of additional LFG fuel. The permittee will provide requests for permit extensions should they be determined to be necessary. The permittee has been made aware of the source obligation rule in 62-212.400(12)(a), F.A.C. Authorization to construct shall expire if construction is not commenced within 18 months after receipt of the permit or if construction is discontinued for a period of 18 months. The permittee will be required to submit construction schedule for the four IC engine/generators.

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.

Treatment of Landfill Gas

The equipment and processes used to treat (dewater, filter and compress) the collected landfill gas prior to its combustion as fuel in the proposed engines consists of the following.

- Landfill gas passes through the suction separator, which is used for moisture knockout and mechanically filters the gas in the initial portion of the treatment system.
- Landfill gas enters the blowers, which supply the compressor. The heat of compression increases the temperature of the gas.
- Landfill gas in excess of the engines design capacity bypasses the treatment system prior to being routed to the flares for destruction.
- Landfill gas is dewatered by cooling the gas in the after-cooler to condense remaining water vapor in the landfill gas.
- Landfill gas passes through a coalescing filter to remove particles down to 1 micron. The cooled and filtered gas is then reheated in the re-heater/economizer to vaporize any remaining moisture before being fired in the engines.

Engine/Generator Specifications (Emission Unit ID Nos. 012-015)

Four identical lean-burn IC engines, CAT Model G3520C gas IC engines will be used to power electricity generators. Each engine will have the following specifications:

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. Will fire a maximum of approximately 526 scfm of landfill gas.
4. Has a power generation rating of 2,233 brake horsepower (bhp).
5. Will be connected to a 1,600 kW electricity generator.

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6. The maximum fuel consumption rate of each engine is 526 scf per minute or 31,600 scf per hour.
7. The heat content ranges from 476 Btu/scf to 594 Btu/scf on a higher heating value (HHV) basis. The average HHV heat content since Trail Ridge Energy has been in operation is 527 Btu/scf. The LFG fuel heat content on a lower heating value (LHV) basis ranges from 430 Btu/scf to 535 Btu/scf. The average LHV heat content is 472 Btu/scf. Based on a landfill gas heating value of 500 Btu per scf, the heat input rating for each engine is 17.64 million Btu (MMBtu) per hour.

The proposed addition of the four engine/generator sets to the facility will result in a total electricity generation capacity of 16,000 kW (16 MW) with all ten engine/generator sets. Emissions produced by the combustion of LFG fuel in the four 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 building that houses the engines. The engines will be housed in an enclosed building adjacent to the existing power generating building. Each engine exhaust stack is 23-feet tall.

New Source Performance Standards (NSPS) Provisions

The landfill gas engines and generator sets are subject to applicable NSPS provisions in 40 Code of Federal Regulations (CFR) 60 for Subpart A (General Provisions) and Subpart JJJJ (Standards of Performance for Stationary Spark Ignition Internal Combustion Engines). These regulations establish operating limitations and emissions standards for CO, NO_x and VOC. The vendor, Caterpillar, will not certify the CAT G3520C engines when burning landfill gas as fuel. Therefore, the engines must meet the following emission standards required by 40 CFR 60.4233(e), as defined by Table B of this subpart.

Table B: CAT G3520C Emission Limits

Pollutant	NSPS Subpart JJJJ Emission Standards	Proposed Limits	Regulation
CO	5.0 g/bhp-hr	3.5 g/bhp-hr	Rule 62-212.400(BACT), F.A.C.
NO _x	3.0 g/bhp-hr	0.6 g/bhp-hr	Rule 62-212.400(BACT), F.A.C.
VOC	1.0 g/bhp-hr	0.28 g/bhp-hr (1.38 lb/hour)	Rule 62-212.400(12), F.A.C., Avoids PSD Review

The engines must be tested to demonstrate compliance with these emissions standards. The draft permit will identify NSPS Subpart A and JJJJ in the Appendices.

In addition, the existing landfill gas collection and control system must meet the applicable requirements of the following NSPS provisions: Subpart A (General Provisions) and Subpart WWW (Standards of Performance for Municipal Solid Waste Landfills) in 40 CFR 60. When operating, the CAT G3520C engines will serve as the control device to meet the applicable NSPS Subpart WWW requirements.

National Emission Standards for Hazardous Air Pollutants (NESHAP) Provisions

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 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 applicable NESHAP provisions in 40 CFR 63 for Subpart A (General Provisions) and Subpart ZZZZ (Reciprocating Internal Combustion Engines).

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

Pursuant to 40 CFR 63.6590, these units comply with NESHAP Subpart ZZZZ by complying with NSPS Subpart JJJJ. The draft permit will identify NESHAP Subpart A and ZZZZ in the Appendices.

Emission Standards

Trail Ridge Energy provided Ocean Energy Corp's monitoring results of the same equipment and the Best Available Control Technology (BACT) analysis, the applicant proposes the following maximum emission rates for the CAT G3520C engines:

- NO_x: 0.60 grams per brake-horsepower hour (g/bhp-hour)
2.95 lb/hour and 12.9 TPY per engine
51.7 TPY for all four engines
- CO: 3.3 g/bhp-hour
17.2 lb/hour and 75.3 TPY per engine
301.2 TPY for all four engines
- VOC/NMOC: 0.28 g/bhp-hour
1.38 lb/hour and 6.0 TPY per engine
24.2 TPY for all four engines
- PM/PM₁₀/PM_{2.5}: 0.24 g/bhp-hour
1.18 lb/hour and 5.17 TPY per engine
20.7 TPY for all four engines
- SO₂: 164.2 ppmv of H₂S and 526 scfm
0.95 lb/hour and 4.17 TPY per engine
16.6 TPY for all four engines

Potential CO, NO_x and PM/PM₁₀/PM_{2.5} emissions were based on the results of BACT analyses. These emissions were estimated using emission factors developed based on operating similar units at Ocean Energy Corp. and CAT G3520C engine/generator specifications. VOC emissions were 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.

Sulfur dioxide (SO₂) emissions can be produced during the combustion of landfill gas since it contains sulfur-bearing compounds (such as hydrogen sulfide (H₂S)) that are oxidized at normal engine operating temperatures. The H₂S concentration for LFG samples obtained in 2008 and 2009 ranged from 34.1 to 54.1 ppmv. The maximum H₂S concentration results in a calculated SO₂ emission factor of 13.98 lb/MMcf based upon the complete conversion of sulfur to SO₂. Potential SO₂ emissions were estimated based on a maximum H₂S content of the landfill gas of 164.2 ppmv due to potential variability of H₂S in LFG. This limit allows the facility to avoid PSD review with the four proposed engine/generator sets at 16.6 TPY of SO₂ emissions. It is assumed that all the H₂S is converted to SO₂ during combustion of the landfill gas.

Hazardous Air Pollutants

Hazardous Air Pollutants (HAP) as specified in Rule 62-210.200(155), F.A.C are produced during the combustion of landfill gas to be used as fuel by the internal combustion engines since:

1. HAP compounds are present in the gas generated by Trail Ridge Landfill and the fuel combustion process is not 100% complete (ie. a small portion of the HAPs pass through the fuel combustion system).
2. When combusted, chlorinated compounds present in landfill gas can form hydrogen chloride (HCl), which is a regulated HAP.

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The emission rate of HCl from each engine/generator set is limited to 5.9 lb/MMscf and 0.90 TPY in the permit to maintain the facility as a minor source of HAP emissions with total HCl emissions limited to 9.0 TPY. The table below shows the actual HCl emissions from stack tests.

Emission Unit	Year	HCl emissions (lb/MMscf) Each Engine	HCl emissions (lb/hr) Each Engine	HCl emissions (TPY) Each Engine	HCl emissions (TPY) Ten Engines
004	2009	0.68	0.02	0.0876	0.876
006	2010	1.4	0.044	0.192	1.92
002	2011	0.97	0.037	0.162	1.62

Other site-specific HAP content analyses have not been performed on the landfill gas generated by Trail Ridge Landfill. Therefore, data developed by EPA in AP-42, Section 2.4 (Table 2.4-1) were used to estimate the total potential HAP content of the landfill gas to be used as fuel. Based on the maximum operating scenarios, the applicant estimates total annual HAP emissions (all ten engines plus flares) to be 7.6 tons per year (TPY) and is well under the 25 TPY thresholds.

Flares (Emission Unit ID Nos. 010-011)

The two existing flares consist of:

Open Flare (EU 010): The 5,000 scfm open, non-assisted flare was installed in 2006. The open flare stack is feet in diameter with a height of feet above ground. The flare is subject to a minimum exit velocity requirement of 18.3 meters per second. The flare is designed for an overall 98% destruction efficiency of total hydrocarbons at a design flow with a landfill gas methane content of 40% to 60%.

Open Flare (EU 011): The 1,600 scfm enclosed flare was installed in 2006. The open flare stack is 9 inches in diameter with a height of 31 feet above ground. The flare is subject to a temperature requirement of 1,400° F - 2000° F. At the maximum flow rate of 1,600 scfm, the flare has a maximum hourly design rate of 42.58 MMBtu/hr using a landfill gas heating value of 443.5 BTU/scf. The flare has an estimated destruction and removal efficiency of 98 percent of NMOCs.

The flares will operate under the following scenarios: when the engines are not available because of downtime or maintenance; or when landfill gas is generated in excess of the design fuel requirements of the proposed engines. The landfill gas will not be treated when combusted in the flares.

NSPS Provisions

The existing Trail Ridge Landfill is subject to the following applicable provisions: NSPS Subparts A (General Provisions) and WSW (Standards of Performance for Municipal Solid Waste Landfills) in 40 CFR 60. The existing flares have met the applicable requirements of these subparts. The draft permit will authorize the relocation of these flares, but will not change any currently applicable requirements with regard to these regulations.

NESHAP Provisions

The existing Trail Ridge Landfill is subject to the following applicable NESHAP provisions: Subpart M (Standards for Asbestos) in 40 CFR 61; and Subparts A (General Provisions) and AAAA (National Emission Standards for Hazardous Air Pollutants for Municipal Solid Waste Landfills) in 40 CFR 63. The existing flares have met the applicable requirements of these subparts. The draft permit will authorize the relocation of these flares, but will not change any currently applicable requirements with regard to these regulations.

4. DEPARTMENT REVIEW

Carbon Monoxide – Existing Engines (Emission Unit ID Nos. 004-009)

Emissions data from Caterpillar indicates a not to exceed (NTE) CO emissions limit of 4.13 g/bhp-hr. Annual compliance tests conducted at the facility over the past three years report CO emissions ranging between 2.23 and 2.40 g/bhp-hr. While these CO compliance test results are significantly less than the manufacturers NTE limit, variability in the LFG fuel methane content and engine maintenance cycles will have a significant impact on projected emissions in the future.

The original CO BACT determination was based on the engine design and good combustion practices (including maintenance). The Department is unaware of any new control equipment that would be cost effective. The LFG contains siloxanes, which are silica compounds that form glass-like deposits on the pistons, cylinders, valves, intake manifold and exhaust manifolds of the engine. These deposits degrade the performance of the engine and extensive maintenance is required to restore the combustion equipment to proper operation. As the engine performance degrades, it is difficult to maintain the engine tuned for low CO and NO_x emissions.

In support of this concept, the Department found a recent white paper report by the Bay Area Air Quality Management District (BAAQMD) titled, “Revisiting BACT for Lean-Burn Landfill Gas Fired Internal Combustion Engines” from February of 2009. The study discovered that the variability in engine combustion efficiency was not being accounted for since, “... *CO deterioration during the year is not typically detected nor limited*”. Existing BACT emissions limits “achieved in practice” were based on once per year compliance tests. Such tests do not account for variability of emissions due to degraded engine performance resulting from siloxane deposits on combustion surfaces. In addition, existing BACT limits were “... *established based on early, limited source test data for digester gas fired engines ...*” and as such, are not appropriate for LFG combustion engines. Wastewater digester gas has higher methane content than LFG meaning that it also has a higher amount of energy per unit volume. The BAAQMD concluded that “... *Our discussions with waste gas engine operators leads us to believe that engines generally perform at their best after overhaul events and that combustion performance tends to deteriorate as siloxane deposits form throughout the combustion surfaces.*” The white paper concluded “... *it is apparent that:*

- 1. it is normal for CO emissions to increase as the engines are operated, and*
- 2. establishment of not to exceed limits based on a nominal rate of CO increase would seem to be a reasonable approach for these engines, and*
- 3. additional monitoring is needed to ensure that the engines get needed maintenance in a timely fashion. Engine maintenance events may not have a significant impact on NO_x emissions, but for landfill gas engines, regular maintenance is of paramount importance for minimizing CO emissions.”* The BAAQMD recommends a NTE emissions limit of 3.6 g/bhp-hr for low-CO biased engines.

The Department also agrees that additional flexibility with CO emissions is necessary to concurrently maintain and tune the engines for low NO_x emissions. Therefore, the current CO BACT emission standards for each existing engine/generator set will be revised as follows:

- From 2.75 to 3.5 g/bhp-hr;
- From 13.54 to 17.2 lb/hour; and
- From 59.3 to 75.3 tons/year.

5. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) DETERMINATION

The project to install four landfill gas engines is a physical modification of the facility. As previously described, the project is subject to PSD preconstruction review for CO, NO_x and PM/PM₁₀/PM_{2.5} emissions from the landfill gas engines (Emission Unit ID Nos. 006-011).

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

General Discussion of Emissions

The CAT G3520C engines are the primary source of CO, NO_x and PM₁₀ emissions from this project. Table C summarizes the potential annual emissions produced from the engines.

Table C: Potential Annual Emissions

Pollutant	Tons/Year	
	FOUR PROPOSED CAT G3520C Engines	TEN (PROPOSED AND EXISTING) CAT G3520C Engines
CO	301.2	753
NO _x	51.7	129.2
PM ₁₀	20.7	51.7

The applicant reviewed data in EPA’s RACT/BACT/LAER Clearinghouse (RBLC) to identify control technology determinations for the operation of reciprocating internal combustion engines firing landfill gas. The following table summarizes this information.

Table D: CO, NO_x and PM BACT Determination for landfill gas fired internal combustion engines.

Facility	Engine Type and Size	Date	Control Method CO/NO _x	Type	g/bhp-hour		
					CO	NO _x	PM ₁₀
Sampson County Disposal, LLC (NC)	CAT 3520 2233 HP	09/09/2009	GCP	BACT	2.75	0.5	0.15
Pine Tree Landfill (ME)	LFG-ICE 1359 HP	10/15/2007	---	BACT	2.75	0.65	---
University of New Hampshire (NH)	LFG-ICE 2233 HP	07/25/2007	Combustion Controls	BACT/LAER	2.75	0.5	0.10
Waste Management Midpenn (VA)	CAT 3516 1148 HP	05/29/2007	GCP	BACT	2.7 ^a	1.45 ^a	1.52 ^b
Brevard Energy, LLC (FL)	CAT 3520 2233 HP	06/21/2011	GCP	BACT	3.5	0.6	GCP
Seminole Energy, LLC (FL)	CAT 3520 2146 HP	01/17/2007	GC	BACT	2.75	0.6	0.24
Monmouth County Reclamation Center (NJ)	LFG-ICE 1468 HP	12/12/2006	---	CBC/LAER	2.53	0.53	0.12
Manchester Renewable	CAT	10/06/2006	A/F Controller	BACT/LAER	2.75	0.5	0.20 ^b

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Facility	Engine Type and Size	Date	Control Method CO/NO _x	Type	g/bhp-hour		
					CO	NO _x	PM ₁₀
Burlington County Resource Recovery (NJ)	Jenbacher 2012 HP	08/03/2006	GCP	CBC/LAER	2.5	0.6	0.16
Trail Ridge Energy, LLC (FL)	CAT 3520 2233 HP	02/24/2006	GC	BACT	2.75	0.6	0.24
Ridgewood Rhode Island Generation (RI)	CAT 3520 2229 HP	01/05/2005	A/F Controller	BACT/LAER	2.75	0.5	0.10
Bio Energy Texas, LLC (TX)	CAT 3520 2172 HP	07/23/2004	Lean Burn Design	BACT	2.8	0.6	0.15
Carlton Farms Landfill (MI)	LFG-ICE 1095 HP	12/23/2003	GCP				
Northwest Regional Landfill (AZ)	LFG-ICE 1410 HP	10/27/2003	Proper Operation & Maintenance	BACT	2.5	0.6	---
Carbon Limestone LFG (OH)	LFG-ICE 1877 HP	04/10/2003	Lean Burn Design	BACT	2.27	1.2	0.097
Chino Basin Desalter Authority (CA)	LFG/DG-ICE 1408 HP	06/18/2002	A/F Controller	BACT	2.5	0.6	0.049
MM San Bernardino Energy (CA)	LFG-ICE 1850 HP	05/16/2002	A/F Controller	BACT	2.5	0.6	---
Reliant Security LFGTE (TX)	Jenbacher 2231 HP	01/31/2002	GCP	BACT	3.0	0.6	0.039
Reliant Energy Galveston Plant (TX)	Jenbacher 2343 HP	01/24/2002	---	CBC	3.0	0.6	0.095

Abbreviations: Horsepower (HP); Landfill Gas (LFG); Internal Combustion Engines (ICE); Case-By-Case (CBC); Good Combustion Practices (GCP); Good Combustion (GC); and Air/Fuel Controller (A/F Controller)

- a. Project shows BACT limit for CO as 239 tons/year and NO_x as 128.30 tons/year, conversion done for 8 engines operating 8,760 hours/year.
- b. BACT limit for PM_{2.5} also.

The specified CO and NO_x BACT/LAER determinations are applicable to the operation of lean-burn engines with air-to-fuel ratio control. The proposed CAT G3520C engines have a power rating of 2,233 bhp. As shown in the table, for landfill gas engines rated greater than 1,100 bhp and less than 2,400 bhp, the CO BACT ranges from 2.27 to 3.5 g/bhp-hour. The corresponding NO_x BACT/LAER range from approximately 0.5 to 0.6 g/bhp-hour. It is important to note that the low CO BACT determination of 2.27 g/bhp-hour corresponds to a NO_x BACT standard of 1.2 g/bhp-hour.

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BACT Emission Limits Proposed by Applicant (per Engine)

Pollutant	Emission Limit	Control Technology
CO	3.3 g/bhp-hr and 17.23 lb/hour	Lean-burn engine with air-to-fuel controller
NO _x	0.6 g/bhp-hr and 2.95 lb/hour	Lean-burn engine with air-to-fuel controller
PM ₁₀	0.24 g/bhp-hr and 1.18 lb/hour	Pretreatment of landfill gas and good combustion practices

BACT for CO and NO_x

Combustion byproducts are generally controlled by an efficient combustion design, but catalytic technologies are available for reducing these emissions. Since CO and NO_x emissions are related combustion byproducts, these pollutants will be grouped together for convenience of review.

Identification of Control Technologies

The applicant provided the following control technologies:

- *Combustion Design and Air-Fuel Controllers:* The design and operation of the combustion chamber is the primary mechanism in controlling CO emissions. The CAT G3520C engines are designed for high-combustion efficiency to extract the most useful energy from the landfill gas possible, which will minimize CO emissions. Combustion controls include technologies designed to limit the formation of CO and NO_x by controlling the combustion temperature and the mixing of air and fuel in the combustion zone. Combustion controls for NO_x include injection timing retard, pre-ignition chamber combustion, controlling air-to-fuel ratio, or de-rating of the engine. The primary NO_x control is a lean-burn combustion design, which uses approximately 75% more air than needed for complete combustion into the combustion chambers. The weak air-fuel mixture leads to lower combustion temperatures and therefore reduces thermal NO_x formation. The proposed CAT G3520C engines are lean-burn engines equipped with an electronic air-fuel ratio controller that will minimize incomplete combustion and maintain a proper balance between CO and NO_x emissions.
- *Oxidation Catalyst:* In the presence of an oxidation catalyst at a given temperature, excess oxygen in the exhaust reacts with CO to form CO₂. This option includes non-selective catalytic reduction (NSCR). The primary design is a flow through exhaust device that contains a honeycomb structure covered with a layer of chemical catalyst that operates at high temperatures. This layer contains small amounts of precious metal that promote the complete oxidation of pollutants in the exhaust stream. This control device will reduce CO emissions as well as VOC emissions, depending on the type and concentration. Destruction efficiencies for CO and VOC emissions can be greater than 90%.
- *Selective Catalytic Reduction (SCR):* The basic principle of SCR is the injection of ammonia (NH₃) into the exhaust stream prior to a catalyst. In the presence of a catalyst, ammonia and NO_x will be reduced to nitrogen (N₂) and water vapor (H₂O). Several different catalysts are available for use at different exhaust gas temperatures. Such systems can also include an oxidation catalyst for CO reduction. Removal efficiencies may be greater than 90%.
- *Regenerative Selective Catalytic Reduction (RSCR):* Regenerative selective catalytic reduction is a new technology targeted for tail-end applications. RSCR utilizes beds of ceramic media to retain the temperature of the flue gas in the optimum range for the catalytic reaction (approximately 300° F to 400° F), which is a key operating parameter for effective NO_x removal. Such systems are capable of 95% heat recovery, which minimizes operating costs while reducing NO_x emissions by 80% to 90% or more. Such systems can also include an oxidation catalyst for CO reduction.

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- *Selective Non-Catalytic Reduction (SNCR)*: Selective non-catalytic reduction uses ammonia injection into the high temperature combustion zone or flue gas. This is a post-combustion control technology that reduces NO_x to nitrogen and water vapor. The chemical reaction for this technology is driven by high temperatures (1600°F to 2100°F) normally found in combustion sources. Removal efficiencies may be greater than 50% depending on the application.

Discussion of Technically Infeasible Control Options and Ranking of Remaining Options

Landfill gas contains siloxanes, which are a class of compounds that exist in the form of R₂SiO, where R is a hydrogen atom or a hydrocarbon and Si is silicon. Siloxanes are present in certain landfill waste streams such as toiletries, cosmetics and other personal grooming items. When combusted, such compounds produce silica (SiO₂), which can quickly poison a catalyst rendering it ineffective. A separate treatment system to remove SiO₂ would be necessary to avoid the adverse effects of deposits and the rapid decrease in reactivity of the catalyst.

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

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

Other state regulatory agencies (e.g., Texas, Rhode Island and New Jersey) have made similar determinations and issued permits that specify BACT for LFG-fueled engines that do not include the use of add-on emission controls because of catalyst poisoning by siloxanes. Such poisoning leads to poor reduction efficiencies and eventually destruction and early replacement of the catalyst. In the preamble to the NSPS for Stationary Spark Ignition Internal Combustion engines and the NESHAP for Reciprocating Internal Combustion Engines, EPA agrees siloxanes will poison the catalyst in add-on control technologies such as SCR, NSCR and oxidation catalysts, which makes the equipment ineffective in a very short period of time.

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

In September of 2010, the Trail Ridge Landfill reported a siloxane level of 21 ppm (1.6 micrograms (ug)/Btu), which is higher than the level recommended by the engine manufacturer, Caterpillar (0.60 ug/Btu). This will mean more frequent preventative maintenance as well as major maintenance overhauls. Therefore, add-on control technologies using a catalyst are considered technically infeasible for this project due to premature deactivation by siloxanes. Also, SNCR is not feasible for the landfill gas engines because there is no high-temperature window that will forward this chemical reaction. The remaining control option is combustion design and controls. As previously shown by the applicant, data in the RBLC database (2002 – 2009) supports

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the lean-burn combustion design, air-fuel controller and good combustion practices as BACT for landfill gas engines.

Selection of BACT and Rationale

The applicant proposes to use efficient combustion design and air-fuel controllers to establish BACT for CO as 3.3 g/bhp-hour and for NO_x as 0.6 g/bhp-hour. As shown in previous Table D summarizing BACT standards posted in the RBLC database, the range of previous CO BACT standards is 2.27 to 3.5 g/bhp-hour and NO_x BACT standards is 0.5 to 1.45 g/bhp-hour. The applicant's proposed limits are based on operating similar landfill gas-fired engines and the ambient temperatures by Ocean Energy Corp. Caterpillar LLC states that a nominal CO emission rate from the CAT G3520C engines is 2.5 g/bhp-hour; however, this is only representative of the first 100 hours of operation. Caterpillar LLC also specifies a "not to exceed" limit of 4.13 g CO/bhp-hour at 100% load. The proposed limits are lower than NSPS Subpart JJJJ emissions standards of 5.0 g CO/bhp-hour and 2.0 g NO_x/bhp-hour.

For several previous projects using the CAT G3520C engines firing landfill gas, the Department established CO BACT as 2.75 g/bhp-hour and NO_x BACT as 0.6 g/bhp-hour, which were based on the applicant's proposals as well as the efficient combustion design and air-fuel controllers. The engines have been installed and are in operation. Other applicants have approved draft permits to increase the CO emissions standards stating that the gradual degradation of the engines will cause higher CO emissions. The Department reconsidered these previous determinations because of the inverse relationship between CO and NO_x emissions. In other words, an engine can be tuned to achieve low NO_x emissions at the price of higher CO emissions or vice versa. The Department has approved in draft permits BACT for CO as 3.5 g/bhp-hour for Brevard Energy and Medley Landfill.

In 2009, the Bay Air Quality Management District issued a white paper¹ discussing this very issue. Based on actual test data (62 individual tests) for firing landfill gas in three types of spark-ignited reciprocating internal combustion engines (15 total engines), the report indicates the following:

- The engines were annually demonstrating compliance with the CO and NO_x standards; however, this appeared to be more of a function of careful preparation of the engine for the annual test rather than the design of the engine.
- The same engine type could be "biased for low NO_x emissions" (0.5 g NO_x/bhp-hour or less with greater than 2.1 g CO/bhp-hour) or "biased for low CO emissions" (2.1 g CO/bhp-hour or less with greater than 0.5 g NO_x/bhp-hour) depending on the air-fuel controller.
- The exhaust from some of the tested engines was periodically monitored throughout the year by hand-held portable probes. This data showed degradation with regard to CO emissions such that many engines were frequently in excess of the CO standard. The report indicates a gradual CO increase of up to 1.5 g/bhp-hour over a year of operation.

The conclusion of the report is that CO and NO_x emissions standards should be paired when relying on combustion design and control. As shown below, the Bay Air Quality Management District chose to establish standards based on a low NO_x bias or a low CO bias and then allow the CO standard to increase approximately 1.5 g/bhp-hour over a year of operation calling the upper CO standard a "not to exceed (NTE)" limit:

Low NO _x Bias:	NO _x : 0.5 g/bhp-hour
	CO: 2.5 g/bhp-hour (and NTE 3.9 g/bhp-hour)
Low CO Bias:	NO _x : 0.6 g/bhp-hour
	CO: 2.1 g/bhp-hour (and NTE 3.6 g/bhp-hour)

¹ "Revisiting BACT for Lean Burn Landfill Gas Fired Internal Combustion Engines"; Toxics Section, Engineering Division, Bay Air Quality Management District; February 26, 2009.

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The applicant's proposed BACT limits of 3.3 g CO/bhp-hour and 0.6 g NO_x/bhp-hour appear to be in line with this concept and is based on actual performance of these engines at Ocean Energy Corp. and other facilities. The Department has established a BACT limit of 3.5 g CO/bhp-hour for the same engine/generator sets at other facilities in Florida. Therefore, considering all available information, the Department establishes the following preliminary paired BACT standards for the proposed engines:

CO: 3.5 g/bhp-hour and 17.2 lb/hour (initial and annual EPA Method 10 stack test)

NO_x: 0.6 g/bhp-hour and 3.0 lb/hour (initial and annual EPA Method 7E stack test)

This will allow the engines to be tuned for NO_x emissions while providing adequate room for reasonable CO emission levels.

BACT for Particulate Matter

Identification of Available Control Technologies

“Smoke” is defined as the collection of airborne solid and liquid particulates and gases emitted as products of incomplete combustion. In AP-42 Section 3.3, EPA identifies two types of smoke that may be emitted from internal combustion engines during stable operations: blue smoke and black smoke, both indicate problems with the engine operation. Blue smoke is emitted when lubricating oil leaks (result from normal wear on piston rings and seals) into the combustion chamber of the engine and is partially burned. Black smoke is agglomerated carbon particles (soot) formed in regions of the combustion mixtures that are oxygen deficient. Black smoke reflects inefficient combustion. Proper maintenance is the most effective method of preventing blue smoke emissions from all types of internal combustion engines, while proper design minimizes black smoke. The applicant identified the following control techniques for reducing and minimizing particulate matter emissions from the engines.

- *Fuel Pre-Treatment (Filtration)*: The landfill gas will be pre-treated to remove moisture and condensable impurities as well as filtered to remove particulate matter before combustion.
- *Good Combustion Practices*: The primary options for reducing and minimizing particulate matter emissions from the engines typically include optimizing the design of the combustion chamber, implementing practices that improve the oxidation process to minimize incomplete combustion and proactive maintenance, which are collectively referred to as good combustion practices.
- *Add-On Controls (Filtration)*: Wet or dry filtration equipment could be added to capture and filter the exhaust gas to remove particulates.

Identification of Technically Feasible Control Alternatives and Ranking

According to Section 2.4 in AP-42 (Municipal Solid Waste Landfills), data posted in the RBLC database, and other recent permits and permit applications, no add-on controls have been required for reducing particulate matter from engines firing landfill gas. Landfill gas contains siloxanes, which are oxidized to silicon dioxide during combustion. This abrasive substance is also very sticky and can clog add-on controls such as fabric filters making them inoperable in a short period of time. As previously discussed, the technology to remove siloxane from landfill gas for engines is just emerging. In addition, satisfactory pretreatment of the landfill gas makes it cost prohibitive to install add-on particulate controls and/or a siloxane removal system. Therefore, post-combustion add-on control technologies are not considered appropriate for internal combustion engines. Therefore, the combination of fuel pre-treatment combined with good combustion practices is selected as the top control option.

Selection of BACT and Rationale

As shown in previous Table D summarizing BACT standards posted in the RBLC database, the range of previous BACT for particulate matter ranges from 0.039 to 1.52 g/bhp-hour. Florida's most recent BACT determination for a similar landfill gas engine was 0.24 g/bhp-hour based on fuel pretreatment and good

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combustion practices. Although initial stack tests for particulate matter emissions from new landfill gas engines have been very low (< 0.1 g/bhp-hour), subsequent tests on the same equipment tend to show higher emission levels with increased engine operating hours. Based on operating experience, Caterpillar, Inc. confirms an increase in particulate matter resulting from normal wear and tear on piston rings and seals. Therefore, the Department establishes the following work practice standards as the preliminary BACT determination for particulate matter from the engines:

- The permittee shall install, operate and maintain a landfill gas pretreatment system to dewater, compress and filter (down to 1 micron) the landfill gas prior to combustion in the engines.
- The permittee shall implement the following good combustion practices to minimize particulate matter emissions: lean-burn combustion design, efficient combustion through the air-fuel controller and preventive and periodic maintenance in accordance with the requirements of NSPS Subpart JJJJ.
- As determined by EPA Method 9, visible emissions from the landfill gas engines shall not exceed 10% opacity.

The above work practice standards should achieve a particulate matter (PM/PM₁₀) emission rate of less than 0.24 g/bhp-hour.

Discussion of PM_{2.5} Emissions

The Department adopted by reference the federal ambient air quality standard for PM_{2.5}, but has not yet promulgated the implementing regulations for PSD preconstruction review (e.g., define PM_{2.5} as a PSD pollutant with a significant emission rate for PSD applicability). We are in the process of completing a rulemaking action to implement this remaining piece of the PM_{2.5} program. The draft permit includes the following requirements, which address PM_{2.5} emissions:

- Use of landfill gas as the only fuel;
- Requirement to pre-treat the LFG with filtration down to 1 micron prior to combustion;
- Sampling, analysis and reporting requirements to ensure that the project remains minor with respect to SO₂ emissions, which is a precursor of PM_{2.5} emissions; and
- Establishing a NO_x standard of 0.6 g/bhp-hour (another precursor of PM_{2.5} emissions), which is 80% below the applicable 2008 NSPS Subpart JJJJ limitation of 3.0 g/bhp-hour.

Also, regional SO₂ and NO_x emissions (precursors of PM_{2.5} emissions) have dramatically decreased in recent years due to regulatory programs such as the Clean Air Interstate Rule (CAIR). For additional details, see the discussion under the "Additional Impacts Analysis" (page 23) in the Air Quality Analysis in Section 6 of this Technical Evaluation and Preliminary Determination. The Department believes that these techniques and limitations effectively minimize PM_{2.5} emissions.

6. OTHER REQUIREMENTS

Based on the PSD applicability analysis, increased emissions of SO₂ (16.6 tons/year) and VOC (24.2 tons/year) are just below the PSD significant emission rates. Emissions of SO₂ may vary greatly depending on the wastes being land filled. Therefore, the draft permit requires semiannual sampling, analysis and reporting to ensure the SO₂ emissions remain minor with respect to this project. The VOC emissions will be a function of the combustion controls and compliance with the CO BACT standard will ensure low VOC emissions. The draft permit specifies the NSPS Subpart JJJJ limit of 1.0 g VOC/bhp-hour as well as a limit of 1.38 lb VOC/hour to avoid PSD preconstruction review.

7. AIR QUALITY IMPACT ANALYSIS

This section provides a general overview of the modeling analyses required for PSD preconstruction review

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followed by the specific analyses required for this project.

Overview of the Required Modeling Analyses

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

- A preconstruction ambient air quality analysis,
- A source impact analysis based on EPA-approved models, and
- An additional impact analyses.

Preconstruction Ambient Monitoring Analysis

Generally, the first step is to determine whether the Department will require preconstruction ambient air quality monitoring. Using an EPA-approved air quality model, the applicant must determine the predicted maximum ambient concentrations and compare the results with regulatory thresholds for preconstruction ambient monitoring, known as de minimis air quality levels. The regulations establish de minimis air quality levels for several PSD pollutants as shown in the following table. For ozone, there is no de minimis air quality level because it is not emitted directly. However, since NO₂ and VOC are considered precursors for ozone formation, the applicant may be required to perform an ambient impact analysis (including the gathering of ambient air quality data) for any net increase of 100 tons per year or more of NO₂ or VOC emissions.

If the predicted maximum ambient concentration is less than the corresponding de minimis air quality level, Rule 62-212.400(3)(e), F.A.C. exempts that pollutant from the preconstruction ambient monitoring analysis. If the predicted maximum ambient concentration is more than the corresponding de minimis air quality level (except for non-methane hydrocarbons), the applicant must provide an analysis of representative ambient air concentrations (preconstruction monitoring data) in the area of the project based on continuous air quality monitoring data for each such pollutant with an Ambient Air Quality Standard (AAQS). If no such standard exists, the analysis shall contain such air quality monitoring data as the Department determines is necessary to assess ambient air quality for that pollutant.

PSD Pollutant	De Minimis Air Quality Levels
CO	575 µg/m ³ , 8-hour average
NO ₂	14 µg/m ³ , annual average;
PM ₁₀	10 µg/m ³ , 24-hour average
SO ₂	13 µg/m ³ , 24-hour average
Pb	0.1 µg/m ³ , 3-month average
Fl	0.25 µg/m ³ , 24-hour average
TRS	10 µg/m ³ , 1-hour average
H ₂ S	0.2 µg/m ³ , 1-hour average
RSC	10 µg/m ³ , 1-hour average
Hg	0.25 µg/m ³ , 24-hour average

If preconstruction monitoring data is necessary, the Department may require the applicant to collect representative ambient monitoring data in specified locations prior to commencing construction on the project. Alternatively, the Department may allow the requirement for preconstruction monitoring data to be satisfied with data collected from the Department's extensive ambient monitoring network. Preconstruction monitoring data must meet the requirements of Appendix B to 40 CFR 58 during the operation of the monitoring stations. The preconstruction monitoring data will be used to determine the appropriate ambient background concentrations to support any required AAQS analysis.

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

Source Impact Analysis

For each PSD-significant pollutant identified above, the applicant is required to conduct a source impact analysis for affected PSD Class I and Class II areas. This analysis is to determine if emissions from this project will significantly impact levels established for Class I and II areas. Class I areas include protected federal parks and national wilderness areas (NWA) that are under the protection of federal land managers. The table identifies the Class I areas located in Florida or that are within 200 kilometers in nearby states. Class II areas

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represent all other areas in the vicinity of the facility open to public access that are not Class I areas.

The Department is in the process of adopting Significant Emission Rates (SER), Significant Impact Levels (SIL) and AAQS for PM_{2.5}. The department extended the applicant's PM_{2.5} results with respect to the federal maximum 24-

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

hour and annual impacts as discussed further below. In conducting this analysis, the applicant conservatively assumed that all PM₁₀ is actually PM_{2.5}. In addition, the department scaled the SIL for PM₁₀ in proportion to the ratio of the respective national AAQS to develop SIL applicable to PM_{2.5}. The rationale for the SIL used for PM_{2.5} is as follows:

- The promulgated annual SIL for PM₁₀ is 2% of the corresponding state/national AAQS;
- The project-specific annual SIL for PM_{2.5} is also 2% of the corresponding NAAQS;
- The promulgated 24-hour SIL for PM₁₀ is 3.3% of the state/national AAQS; and
- The project-specific SIL for PM_{2.5} is also 3.3% of the NAAQS.

The applicant believes this approach encompasses all meaningful PM_{2.5} sources capable of interacting with the project for the purposes of determining impacts with respect to the 24-hour and annual NAAQS for PM_{2.5}.

An initial significant impact analysis is conducted using the worst-case emissions scenario for each pollutant and corresponding averaging time. The regulations define separate significant impact levels for Class I and Class II areas for CO, NO₂, Pb, PM₁₀ and SO₂. Based on the initial significant impact analysis, no additional modeling is required for any pollutant with a predicted ambient concentration less than the corresponding significant impact level. However, for any pollutant with a predicted ambient concentration exceeding the corresponding significant impact level, the applicant must conduct a full impact analysis. In addition to evaluating impacts caused by the project, a full impact modeling analysis also includes impacts from other nearby major sources (and any potentially-impacting minor sources within the radius of significant impact) as well to determine compliance with:

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

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

PSD Class II Area Model

The EPA-approved American Meteorological Society and EPA Regulatory Model (AERMOD) dispersion model is used to evaluate short range impacts from the proposed project and other existing major sources. AERMOD version (09292) was used. In November of 2005, the EPA promulgated AERMOD as the preferred regulatory model for predicting pollutant concentrations within 50 kilometers of a source. The AERMOD model is a replacement for the Industrial Source Complex Short-Term model (ISCST3). The AERMOD model calculates hourly concentrations based on hourly meteorological data. The model can predict pollutant concentrations for annual, 24-hour, 8-hour, 3-hour and 1-hour averaging periods. AERMOD contains two input data processors, AERMET and AERMAP. AERMAP is the terrain processor and AERMET is the meteorological data processor. In addition to the PSD Class II modeling, it is also used to model the predicted impacts for comparison with the de minimis ambient air quality levels when determining preconstruction monitoring requirements.

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

The AERMET meteorological data used in the AERMOD model consisted of a concurrent five-year period of hourly surface weather observations from the National Weather Service office located in Jacksonville International Airport and twice-daily upper air soundings from Jacksonville International Airport. The five-year period of meteorological data was from 2001 through 2005. The location of the proposed facility is approximately 40 km southwest of the Jacksonville International Airport. 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.

Stack Height Considerations

GEP stack height means the greater of 65 meters (213 feet) or the maximum nearby building height plus 1.5 times the building height or width, whichever is less. The calculated GEP stack height for the proposed facility is 11.4 meters (37.5 feet). Therefore, the release height of emissions from the proposed facility are less than GEP height, and have the potential to be influenced by aerodynamic downwash created by buildings that house the equipment. Therefore, building downwash was considered in the modeling analyses, as part of the PRIME downwash algorithm mentioned above.

Additional Impact Analysis

In addition to the above analyses, the applicant must provide an evaluation of impacts to: soils, vegetation, and wildlife; air quality related to general commercial, residential and industrial growth in the area that may result from the project. Additionally, the proposed project will be located 45 km from the closest portion of the nearest PSD Class I area, the Okefenokee NWR. Because the project is less than 50 km from the Class I area, a visibility impairment modeling analysis was required.

PSD Significant Pollutants for the Project

As discussed previously, the proposed project will increase emissions of the following pollutants in excess of the PSD significant emissions rates: CO, PM₁₀, PM_{2.5} and NO_x.

Major Stationary Sources Near the Proposed Trail Ridge Energy

To provide some perspective on the relative scale of the proposed project, the following tables list the largest stationary sources, by pollutant, in and around Duval County. The maximum expected future emissions in TPY from the proposed project are also shown for comparison.

Table 12 - Largest Sources of SO₂ (2010) Nearest to the Proposed Trail Ridge Energy Site (TPY)

Owner/Company Name	Site Name	County	Emissions
JEA	Northside/SJRPP	Duval	13,506
Rock Tenn CP, LLC	Fernandina Beach Mill	Nassau	3,983
Cedar Bay Generating Company, LP	Cedar Bay Cogen Facility	Duval	1,833
IFF Chemical Holdings	IFF Chemical Holdings	Duval	1,176
Rayonier Performance Fibers LLC	Sulfite Mill	Nassau	779
Renessenz LLC	Jacksonville Facility	Duval	320
Anchor Glass Container	Jacksonville Plant	Duval	196
El Dupont De Nemours & Co-TrailRidge	El Dupont De Nemours & Co-TrailRidge	Clay	124
Trail Ridge Energy (proposed)	Trail Ridge Landfill	Duval	17 (proposed)

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Table 13 - Largest Sources of NO_x (2010) Nearest to the Proposed Trail Ridge Energy Site (TPY)

<u>Owner/Company Name</u>	<u>Site Name</u>	<u>County</u>	<u>Emission</u>
JEA	Northside/SJRPP	Duval	9,142
Rayonier Performance Fibers LLC	Sulfite Mill	Nassau	2,256
Rock Tenn CP, LLC	Fernandia Beach Mill	Nassau	2,141
Cedar Bay Generating Co, LP	Cedar Bay Cogen Facility	Duval	1,832
FL Gas Transmission Co	Bradford Co Station #16	Bradford	907
Anchor Glass Container Corp	Jacksonville Plant	Duval	851
Anheuser Busch Inc	Jacksonville Plant	Duval	224
Renessenz LLC	Jacksonville Facility	Duval	107
Trail Ridge Energy (proposed)	Trail Ridge Landfill	Duval	52 (proposed)

Table 14 - Largest Sources of CO (2010) Nearest to the Proposed Trail Ridge Energy Site (TPY)

<u>Owner/Company Name</u>	<u>Site Name</u>	<u>County</u>	<u>Emission</u>
JEA	Northside/SJRPP	Duval	6,633
Rock Tenn CP, LLC	Fernandina Beach Mill	Nassau	1,082
Rayonier Performance Fibers LLC	Rayonier Performance Fibers LLC	Nassau	1,064
Cedar Bay Generating Co	Cedar Bay Cogen Facility	Duval	432
Gerdau Ameristeel	Jacksonville Mill	Duval	357
Trail Ridge Energy (proposed)	Trail Ridge Landfill	Duval	285 (proposed)
JEA	Brandy Branch Facility	Duval	152
Florida Gas Transmission Co	Bradford Co Station #16	Bradford	109

Table 15 - Largest Sources of PM₁₀ (2010) Nearest to the Proposed Trail Ridge Energy Site (TPY)

<u>Owner/Company Name</u>	<u>Site Name</u>	<u>County</u>	<u>Emission</u>
JEA	Northside/SJRPP	Duval	378
Rock Tenn CP, LLC	Fernandina Beach Mill	Nassau	352
JEA	Brandy Branch Facility	Duval	127
Rayonier Performance Fibers LLC	Sulfite Mill	Nassau	100
Anchor Glass Container Corporation	Jacksonville Plant	Duval	67
El Dupoint De Nemours & Co	El Dupoint De Nemours & Co	Bradford	30
Trail Ridge Energy (proposed)	Trail Ridge Landfill	Duval	21 (proposed)

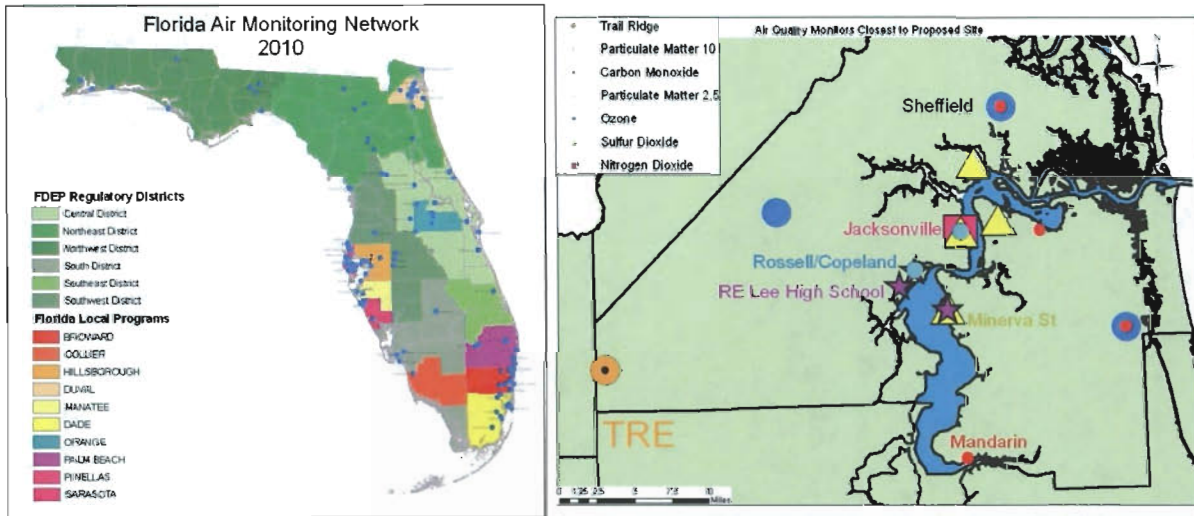
TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

Preconstruction Ambient Monitoring Analysis

Using the AERMOD model, the applicant predicted the following maximum ambient impacts from the project. Proposed SO₂ emissions are less than corresponding PSD significant emission thresholds, but were included in the analysis for informational purposes.

De Minimis Air Quality Levels				
Pollutant	Averaging Time	Maximum Predicted Impact (µg/m³)	De Minimis Concentration (µg/m³)	Greater than De Minimis?
CO	8-hr	215	575	No
PM ₁₀	24-hr	3.3	10	No
PM _{2.5}	24-hr	3.3	4	No
SO ₂	24-hour	2.7	13	No
NO _x	Annual	0.44	14	No

As shown above, all pollutants are exempt from preconstruction monitoring because the predicted impacts are less than the de minimis levels. Nevertheless, the Department and its partners (local air pollution control programs) maintains an extensive quality-assured ambient monitoring network throughout the state. As the following figures indicate, the ambient air monitoring sites are concentrated in areas of high population density, along the coasts and near major highways in the interior portion of the state.



These monitors are used to estimate the existing air quality in the area of the proposed facility. The following table summarizes CO, PM₁₀, PM_{2.5}, SO₂ and NO_x ambient data from 2010 available for existing nearby monitoring locations. The existing monitoring data show no violations of any ambient air quality standards. The Department determines that the data collected from these monitors is representative of the air quality in the vicinity of the project and may be used to satisfy the preconstruction monitoring requirements for PM_{2.5}. As necessary, the above ambient concentrations will be used as the ambient background concentrations for any required AAQS analysis, which also includes PM₁₀ emissions as will be discussed further.

Representative Ambient Concentrations			
Pollutant	Averaging Time	Ambient Concentration	Monitor Location
CO	8-hour	1.2 ppm	R.E Lee High School, Duval County
	1-hour	1.9 ppm	
PM _{2.5}	Annual	8.2 (µg/m ³)	Mandarin Rd, Duval County
	24-hour	17.8 (µg/m ³)	
PM ₁₀	Annual	63 (µg/m ³)	Russell/Copeland, Duval County
	24-hour	22 (µg/m ³)	
NO ₂	Annual	17.5 (µg/m ³)	Jacksonville, Duval County
	1-hour	77.1 (µg/m ³)	
SO ₂	Annual	3.4 (µg/m ³)	Minerva Street, Duval
	24-hour	10.5 (µg/m ³)	
	3-hour	26.2 (µg/m ³)	
	1-hour	44.5 (µg/m ³)	
Ozone	8-hour	0.068 ppm	Sheffield, Duval

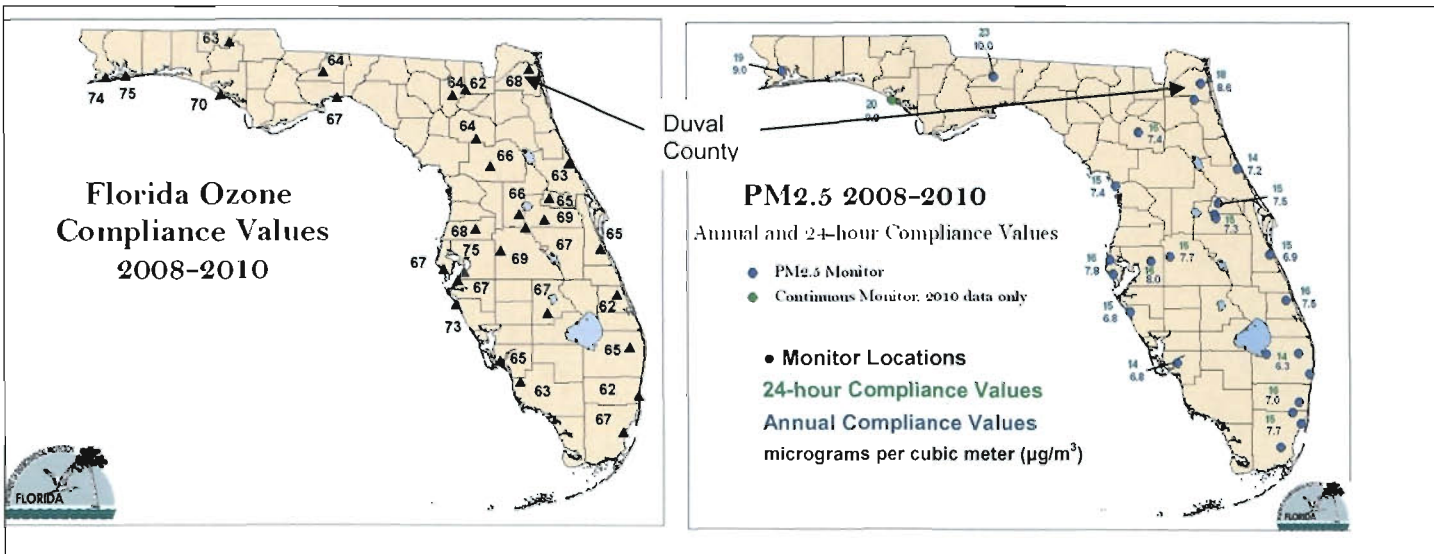
Existing Ambient Air Quality – PM_{2.5} and Ozone

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

Ozone limits and measurements are summarized on three year blocks, rolled annually. The reported ozone value was calculated by taking the maximum 8-hour readings recorded each day during the three years. The fourth highest of the recorded maxima were identified for each year and then the average of those three values was reported as the compliance value, and is

compared to the standard of 75 parts per billion (ppb).

The Mandarin Road PM monitor, and the Sheffield ozone monitor, both located in Duval County, is closest to and most representative of the ambient air quality at the proposed Trail Ridge Energy project site. The Duval County ozone compliance value is 68 ppb. It is shown in below, which shows the highest compliance values measured in each county where at least one ozone station is located.



Florida Ozone Compliance Values

Figure 22 – Florida PM_{2.5} Compliance Values

PM_{2.5} (also known as PM_{fine}) is another key indicator of the overall state of regional air quality. Some PM_{2.5} is directly emitted as a product of combustion from transportation and industrial sources as well as fires. Much of it consists of particulate nitrates and sulfates formed through chemical reactions between gaseous precursors

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

such as SO₂ and NO_x from combustion sources and ammonia (NH₃) naturally present in the air or added by other industrial sources.

PM_{2.5} limits and measurements are summarized on three year blocks, rolled annually. The reported 24-hour compliance value for PM_{2.5} is 18 µg/m³, shown in Figure 22 above for the Duval site, and was calculated by taking the average 24-hour readings recorded each day during the three years (2008-2010). The value for each year that exceeds 98% of all daily measurements within each given year was identified and then the average of those three numbers was reported as the 24-hour compliance value and compared with the standard of 35 µg/m³.

The simple average of all PM_{2.5} measurements within each three years (2008-2010) was also calculated and then the mean of the three averages (8.2 µg/m³) was reported as the annual compliance value and compared with the standard of 15 µg/m³.

The results indicate that Duval County is in attainment with the applicable ozone and PM_{2.5} AAQS.

PM_{2.5} Precursor Emissions from Power Plants in the Southeastern U.S.

There is a regional effort underway through the CAIR and other regulatory programs to reduce emissions of PM_{2.5} precursors including NO_x (also an ozone precursor) and SO₂. Regional SO₂ emission reductions from existing power plants between 2007 and 2010 are listed below. SO₂ emissions from power plants in Florida were reduced by over 170,000 TPY and regional SO₂ emissions were reduced by over 1.4 million TPY.

The state and regional SO₂ reduction trends will continue as coal-fueled power plants continue to install scrubbers to control SO₂ emissions. Regional NO_x emission reductions from existing power plants between 2007 and 2010 are listed in below.

NO_x emissions from power plants in Florida were reduced by nearly 100,000 TPY and regional NO_x emissions were reduced by nearly 400,000 TPY. The state and regional NO_x reduction trends will continue as coal-fueled power plants operators throughout the southeastern states continue to install SCR systems to control NO_x.

Table 17 - SO₂ Emission Reductions from Power Plants in the Southeast between 2007 and 2010

State	2007 (TPY)	2010 (TPY)	Reduction (TPY)	Reduction (%)
Alabama	447,189	204,197	242,992	54
Florida	317,582	144,552	173,030	54
Georgia	635,484	218,911	416,573	66
Kentucky	379,837	271,514	108,323	29
Mississippi	69,796	54,696	15,100	22
North Carolina	370,826	120,387	250,439	68
South Carolina	172,726	94,656	78,070	45
Tennessee	237,231	118,723	118,508	50
Total	2,630,671	1,227,636	1,403,035	53

Table 18 - NO_x Emission Reductions from Power Plants in the Southeast between 2007 and 2010

State	2007 (TPY)	2010 (TPY)	Reduction (TPY)	Reduction (%)
Alabama	122,374	66,049	56,325	46
Florida	184,171	79,493	104,678	57
Georgia	107,471	60,588	46,883	44
Kentucky	174,840	91,979	82,861	47
Mississippi	48,546	29,774	18,772	39

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

State	2007 (TPY)	2010 (TPY)	Reduction (TPY)	Reduction (%)
North Carolina	59,417	57,305	2,112	4
South Carolina	46,062	28,833	17,229	37
Tennessee	102,886	35,056	67,830	66
Total	845,767	449,077	396,690	47

Source Impact Analysis for PSD Class I Areas

Affected PSD Class I Areas

For PSD Class I areas within 200 kilometers of the facility, the table identifies each affected Class I area as well as the distance to the facility and the number of receptors used in the modeling analysis. For the preliminary significant impact analysis, the highest short-term predicted concentrations will be compared to the significant impact levels.

PSD Class I Area	Distance	Receptors
Okefenokee NWR (ONWR)	44 km	500

Results of PSD Class I Significant Impact Analysis

The California Puff (CALPUFF) dispersion model was used to evaluate the pollutant emissions from the proposed project in the Class I Okefenokee National Wildlife Refuge (ONWR). Meteorological MM4 and MM5 data used in this model was from 2001 to 2003.

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, is 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 mechanism.

Significant Impact Analysis for PSD Class I Areas					
Pollutant	Averaging Time	Maximum Predicted Impact ($\mu\text{g}/\text{m}^3$)	Significant Impact Level ($\mu\text{g}/\text{m}^3$)	Significant Impact?	Affected Class I Area
PM ₁₀	Annual	0.003	0.2	NO	ONWR
	24-hour	0.03	0.3	NO	ONWR
NO ₂	Annual	0.002	0.1	NO	ONWR
SO ₂	Annual	0.001	0.1	NO	ONWR
	24-hr	0.018	0.2	NO	ONWR
	3-hr	0.064	1.0	NO	ONWR

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

Source Impact Analysis for PSD Class II Areas

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

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

increment analysis with regard to short-term averages. However, for annual averages, the highest predicted annual average will be compared with the corresponding annual level.

Results of the Significant Impact Analysis

The following table shows the results of the preliminary PSD Class II significant impact analysis.

Significant Impact Analysis for PSD Class II Areas (Vicinity of Facility)					
Pollutant	Averaging Time	Maximum Predicted Impact ($\mu\text{g}/\text{m}^3$)	Significant Impact Level ($\mu\text{g}/\text{m}^3$)	Significant Impact?	Radius of Significant Impact (km)
CO	8-hr	209	500	NO	NONE
	1-hr	282	2,000	NO	NONE
PM ₁₀	Annual	0.2	1	NO	NONE
	24-hr	3.3	5	NO	NONE
PM _{2.5}	Annual	0.2	0.3	NO	NONE
	24-hr	3.3	1.2	YES	2.3
NO _x	Annual	0.44 ^a	1	NO	NONE
	1-hr	18.1 ^b	7.6	YES	8.3
SO ₂	Annual	0.2	1	NO	NONE
	24-hr	2.7	5	NO	NONE
	3-hr	6.8	25	NO	NONE
	1-hr	7.4	7.8	NO	NONE
a. Assumes 75% conversion of annual NO _x to NO ₂ , i.e., the tier 2 modeling approach.					
b. Assumes 80% conversion of 1-hour NO _x to NO ₂ , i.e., the tier 2 modeling approach.					

As shown above, the predicted impacts of CO, PM₁₀, and SO₂ are well below the corresponding PSD Class II significant impact level and no further analysis is required. However, the 24-hour PM_{2.5} and the 1-hour predicted impacts of NO_x are greater than the corresponding PSD Class II significant impact levels; therefore, a full impact analysis for these pollutants is required within the applicable significant impact area as defined by the predicted radius of significant impact identified above.

Receptor Grids for Performing PSD Increments and AAQS Analyses

For the Class II analysis of CO, PM₁₀, PM_{2.5}, SO₂ and NO_x (annual), a combination of fence line and near-field receptors were chosen for predicting maximum concentrations in the vicinity of the project. The fence line receptors consisted of discrete Cartesian receptors spaced at 100-meter intervals around the already existing facility fence line. The remaining receptor grid consisted of densely spaced Cartesian receptors at 100 meters apart extending to 3.6 kilometers in all directions from the facility.

For the Class II analysis of 1-hour NO₂, the receptor grid was expanded. The fence line receptors consisted of discrete Cartesian receptors spaced at 70-meter intervals around the facility fence line. The remaining receptor grid consisted of densely spaced Cartesian receptors at 70 meters apart extending to 6 kilometers from the facility. From 6 to 10 kilometers, polar receptors with a spacing of 10 degrees and a linear spacing of 500 meters were used from the facility.

PSD Class II Increment Analysis

The PSD increment represents the amount that new sources in an area may increase ambient ground level concentrations of a pollutant from a regulatory baseline concentration. The emission values input into the model

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

for predicting increment consumption are based on the maximum emissions rates from increment-consuming sources at the facility as well as all other increment-consuming sources in the vicinity of the facility. NO_x does not have an established increment for the 1-hour averaging period, but its multisource-modeling result was included for informational purposes. The following table summarizes the results of the PSD Class II increment analysis.

PSD Class II Increment Analysis				
Pollutant	Averaging Time	Maximum Predicted Impacts (µg/m ³)	Allowable Increment (µg/m ³)	Greater than PSD Class II Allowable Increment?
PM _{2.5}	24-hour	3.5	4	NO
NO _x	1-hour	34.7	N/A	-

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

AAQS Analysis

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

The sources that are explicitly modeled include the subject facility and nearby sources that are judged to potentially have a significant interaction with the proposed facility. The appropriate calculations for the modeled and background values are different for each pollutant, but generally follow the form for compliance with the AAQS. The North Carolina 20D approach was used to determine which sources are appropriate to be included into the multi-source model. As a result, 5 background sources were included in the NO_x 1-hour background model, and 1 background source was included in the PM_{2.5} model (in which, all potential particulate matter emissions were considered to be PM_{2.5}.)

The following table summarizes the results of the AAQS analysis for the affected pollutants. Since no attempt is typically made to subtract out the impacts due to the explicitly modeled sources on these monitored values, there is some amount of double-counting reflected in the total concentration (modeled + background) used to compare with the appropriate AAQS.

AAQS Analysis						
Pollutant	Averaging Time	Modeled Sources (µg/m ³)	Ambient Background Concentration (µg/m ³)	Total Impact (µg/m ³)	AAQS (µg/m ³)	Greater than AAQS?
NO _x	1-hour	34.7	77.1	111.8	189	NO
PM _{2.5}	24-hour	3.5	17.5	21.0	35	NO

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

Additional Impacts Analysis

Impacts on Soils, Vegetation and Wildlife

The effects that air pollutants have on vegetation can be classified into three general categories: acute, chronic and long term. Acute effects are those that result from relatively short exposures (i.e., less than one month) to high concentrations of pollutant emissions. Chronic effects occur when organisms are exposed for months or even years to certain threshold levels of pollutants. Long-term effects include abnormal changes in ecosystems and subtle physiological alterations in organisms. Acute and chronic effects are caused by pollutants acting directly on an organism, and long-term effects can be indirectly caused by secondary agents such as changes in the pH of soil.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

The USEPA Air Quality Planning and Standards, Air Strategies and Standards Division, has developed secondary NAAQS for the protection of the public welfare from any known or anticipated adverse effects associated with the presence of such air pollutant in the ambient air. The values set for the secondary NAAQS incorporate the protection of ecosystems, which include vegetation and soil.

The maximum ground-level concentrations predicted to occur due to PM₁₀, NO_x and CO emissions as a result of the proposed project are less than the associated secondary NAAQS. The NAAQS 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.

Class I Area Impacts - Air Quality Related Values (AQRV)

An air quality related values (AQRV) analysis was also done by the applicant for the Class I area. No significant impacts on this area are expected. Visibility and regional haze analyses using 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.

Maximum 24-hour CALPUFF Visibility Impairment Predicted from the Proposed Facility at OWRN Class I Area			
Meteorological Year	Visibility Impairment %	Visibility Impairment Criterion %	Greater than Visibility Impact Criterion?
2001	0.76	5	NO
2002	0.81	5	NO
2003	0.86	5	NO
Average	0.81	5	NO

Because the project is located less than 50 km away from the Class 1 area, a VISCREEN plume visibility analysis was also performed to further analyze visibility impacts at the ONWA. Results are shown in the tables below. VISCREEN is an EPA recommended screening model for calculating the potential visual impact of a plume (including color difference, parameter, and plume contrast against a background) of proposed TRE's emissions from a given vantage point. The applicant used the Level 1 Screening Analysis, which uses the worst-case meteorological conditions possible. VISCREEN assumes all emissions as being emitted from a point source. As shown in the two tables below, this analysis also showed no significant impact on visibility in this area.

VISCREEN Level 1 Analysis: Maximum Visual Impacts <i>Inside</i> the OWRN Class 1 Area								
Background	Theta (°)	Azi (°)	Distance (Km)	Alpha (°)	Delta E		Contrast	
					Criteria	Plume	Criteria	Plume
Sky	10	84	43.9	84	2.00	0.141	0.05	0.001
Sky	140	84	43.9	84	2.00	0.048	0.05	-0.001
Terrain	10	84	43.9	84	2.00	0.070	0.05	0.001
Terrain	140	84	43.9	84	2.00	0.013	0.05	0.001

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

VISCREEN Level 1 Analysis: Maximum Visual Impacts <i>Outside</i> the OWNR Class 1 Area								
Background	Theta (°)	Azi (°)	Distance (Km)	Alpha (°)	Delta E		Contrast	
					Criteria	Plume	Criteria	Plume
Sky	10	45	37.3	124	2.00	0.149	0.05	0.001
Sky	140	45	37.3	124	2.00	0.047	0.05	-0.001
Terrain	10	0	1.0	124	2.16	0.151	0.05	0.002
Terrain	140	0	1.0	124	2.00	0.044	0.05	0.002

Air Quality Impacts Related to Growth

The construction and operation of the proposed Trail Ridge Energy facility will not produce significant growth in the Baldwin, Florida area. The proposed facility will interconnect to the JEA distribution network through a nearby power line. This power will supplement or offset power that would otherwise be produced by JEA and does not cause an increase in electricity demand, nor significantly increase emissions from residential and commercial construction and growth.

Conclusion on Air Quality Impacts

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

7. PRELIMINARY DETERMINATION

The Department makes a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations as conditioned by the Draft Permit. This determination is based on a technical review of the complete application, reasonable assurances provided by the applicant, and the conditions specified in the Draft Permit. Christy DeVore is the project engineer responsible for reviewing the application and drafting the permit changes. Melody Lovin is the meteorologist responsible for reviewing and approving the ambient air quality analyses. Additional details of this analysis may be obtained by contacting the project engineer at the Department’s Office of Permitting and Compliance at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

DRAFT PERMIT

PERMITTEE

City of Jacksonville
Public Works Department
117 West Duval Street, St. James Building, 4th Floor
Jacksonville, FL 32202

Air Permit No. 0310358-012-AC/ PSD-FL 374C
Permit Expires: September 1, 2016
Trail Ridge Energy, LLC
Facility ID No. 0310358
Landfill Gas-to-Energy Project

Authorized Representative:

Ms. Kerri Stewart, Chief Administrative Officer

PROJECT

This is the final air construction permit, which authorizes the installation and operation of four new Caterpillar Model No. G3520C engine generator sets and modifies the CO emissions standard as Best Available Control Technology (BACT) for the proposed and existing engine generator sets. In addition, the applicant requested a concurrent revision of the Title V air operation permit. The proposed work will be conducted at the existing Trail Ridge Energy Landfill, which is a landfill categorized under Standard Industrial Classification No. 4953. The existing facility is located in Duval County at 5110 US Highway 301 South, Baldwin, Florida. The UTM coordinates are Zone 17, 399.765 km East, and 3344.919 km North.

This final permit is organized into the following sections: Section 1 (General Information); Section 2 (Administrative Requirements); Section 3 (Emissions Unit Specific Conditions); Section 4 (Appendices). Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of Section 4 of this permit. As noted in the Final Determination provided with this final permit, only minor changes and clarifications were made to the draft permit.

STATEMENT OF BASIS

This air pollution construction permit is issued under the provisions of: Chapter 403 of the Florida Statutes (F.S.) and Chapters 62-4, 62-204, 62-210, 62-212, 62-296 and 62-297 of the Florida Administrative Code (F.A.C.). The permittee is authorized to conduct the proposed work in accordance with the conditions of this permit. This project is subject to the general preconstruction review requirements in Rule 62-212.300, F.A.C. and is not subject to the preconstruction review requirements for major stationary sources in Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.

Upon issuance of this final permit, any party to this order has the right to seek judicial review of it under Section 120.68 of the Florida Statutes by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel (Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000) and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within 30 days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida
For the Division of Air Resource Management

(DRAFT)

(Name)

(Date)

(Print Name of Designated Representative)

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Final Air Permit package (including the Final Determination and Final Permit with Appendices) was sent by electronic mail, or a link to these documents made available electronically on a publicly accessible server, with received receipt requested before the close of business on _____(DRAFT)_____ to the persons listed below.

- Ms. Kerri Stewart, City of Jacksonville(kstewart@coj.net)
- Mr. Scott Salisbury, Trail Ridge Energy, LLC (scott.salisbury@landfillenergy.com)
- Mr. Robert Harvey, P.E., Derenzo and Associates, Inc. (rharvey@derenzo.com)
- Mr. Chris Kirts, Northeast District (christopher.kirts@dep.state.fl.us)
- Mr. Richard Robinson, Duval County Environmental Resources Management (robinson@coj.net)
- Ms. Kathleen Forney, EPA Region 4 (forney.kathleen@epa.gov)
- Ms. Heather Abrams, EPA Region 4 (abrams.heather@epa.gov)
- Ms. Ana Oquendo, US EPA Region 4 (oquendo.ana@epa.gov)
- Ms. Barbara Friday, DEP OPC (barbara.friday@dep.state.fl.us) (for posting with U.S. EPA, Region 4)
- Ms. Lynn Searce, DEP OPC Reading File (lynn.searce@dep.state.fl.us)

Clerk Stamp

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

(DRAFT)

(Clerk)

(Date)

SECTION 1. GENERAL INFORMATION (DRAFT)

FACILITY DESCRIPTION

The Trail Ridge Energy Landfill operates a 176 acre, Class I municipal solid waste (MSW) landfill in Baldwin, Duval County which is allocated for Class I MSW. The landfill gas (LFG) is produced from both active and capped cells. The gas is collected by an active, landfill gas collection system and routed to a treatment system that treats the landfill gas for subsequent use as fuel to power the six reciprocating internal combustion engines (RICE)-generator sets at the Trail Ridge Energy, LLC electricity generation plant. Trail Ridge Energy, LLC electricity generation operations are under contract with the landfill and the operations will be fueled with the landfill gas provided by the landfill. Any excess landfill gas that exceeds the volume that the Trail Ridge Energy LLC Plant is able to accept will be diverted to open flares for control. The existing facility consists of the following emissions units.

Facility ID No. 0310358	
ID No.	Emission Unit Description
001	Municipal Solid Waste Landfill
002	Fugitive Dust Emissions
004-009	Six Caterpillar Model G3520C landfill gas fueled internal combustion engines and electricity generators
010	5,000 scfm open, non-assisted flare
011	1,600 scfm open, non-assisted flare

PROPOSED PROJECT

This draft permit approves the installation of four new Caterpillar Model No. G3520C engine generator sets and sets the CO emissions standard at 3.5 grams per brake horsepower per hour (g/bhp-hour) as Best Available Control Technology (BACT). Since this is higher than the BACT determination for CO emissions for the originally installed engines, the draft permit revises CO BACT standard from 2.75 g/bhp-hour to 3.5 g/bhp-hour for the six existing, lean-burn Caterpillar Model No. G3520C engines. The addition to the existing electrical generation plant will consist of:

- LFG treatment equipment for dewatering, filtration and compression.
- Four new reciprocating internal combustion engines, each coupled to a 1,600 kilowatt (kW) electrical generator. Under base load operating conditions, the plant will generate a total of 16 megawatts (MW, nominal) of electricity and will be interconnected to the JEA distribution network through a nearby power line.
- Unregulated ancillary equipment that supports the electric generation plant consists of:
 - A stand-alone fan-cooled radiator for each IC engine.
 - Drums for the engine radiator coolant.
 - One used lube oil tank (approximately 1,000 gallons) and moisture conditioning equipment.
 - One new lube oil tank (approximately 2,000 gallons) and moisture conditioning equipment.

This project will add following emissions units.

Facility ID No. 0310358	
ID No.	Emission Unit Description
012-015	Four Caterpillar Model G3520C landfill gas fueled internal combustion engines and electricity generators.

SECTION 1. GENERAL INFORMATION (DRAFT)

FACILITY REGULATORY CLASSIFICATION

- The facility is not a major source of hazardous air pollutants (HAP).
- The facility does not operate units subject to the acid rain provisions of the Clean Air Act (CAA).
- The facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.
- The facility is a major stationary source in accordance with Rule 62-212.400(PSD), F.A.C.
- The facility operates or will operate units subject to the following applicable New Source Performance Standards (NSPS) in Title 40, Part 60 of the Code of Federal Regulations (40 CFR 60): Subpart A (General Provisions), Subpart WWW (MSW Landfills). In addition the four proposed engine/generator sets, Emission Unit ID Nos. 012-015, are subject to Subpart JJJJ (Spark Ignition Reciprocating Internal Combustion Engines). The existing engine/generator sets, Emission Unit ID Nos. 004-009, are not subject to Subpart JJJJ.
- The facility operates or will operate units subject to the following applicable National Emissions Standards for Hazardous Air Pollutants (NESHAP) in Title 40, Part 63 of the Code of Federal Regulations (40 CFR 63): Subpart AAAA (MSW Landfills) and initial notification, reporting and recordkeeping requirement of the subpart applicable NESHAP provisions in 40 CFR 63 for Subpart A (General Provisions). In addition the four proposed engine/generator sets, Emission Unit ID Nos. 012-015, are subject to Subpart ZZZZ (Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines). The existing engine/generator sets, Emission Unit ID Nos. 004-009, are not subject to Subpart ZZZZ.

SECTION 2. ADMINISTRATIVE REQUIREMENTS (DRAFT)

1. Permitting Authority: The permitting authority for this project is the Office of Permitting and Compliance (OPC), Division of Air Resource Management, Florida Department of Environmental Protection (Department). The OPC's mailing address is 2600 Blair Stone Road (MS #5505), Tallahassee, Florida 32399-2400. All documents related to applications for permits to operate an emissions unit shall be submitted to the Northeast District Office at: 7825 Baymeadows Way, Suite B-200, Jacksonville, FL 32256-7590.
2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the Northeast District Office at: 7825 Baymeadows Way, Suite B-200, Jacksonville, FL 32256-7590.
3. Appendices: The following Appendices are attached as a part of this permit: Appendix A (Citation Formats and Glossary of Common Terms); Appendix B (General Conditions); Appendix C (Common Conditions); Appendix D (Common Testing Requirements); Appendix E (Final BACT Determinations); Appendix ICE (NSPS and NESHAP Provisions).
4. Applicable Regulations, Forms and Application Procedures: Unless otherwise specified in this permit, the construction and operation of the subject emissions units shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403, F.S.; and Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296 and 62-297, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations.
5. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]
6. Modifications: The permittee shall notify the Compliance Authority upon commencement of construction. No new emissions unit shall be constructed and no existing emissions unit shall be modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]
7. Source Obligation:
 - (a) Authorization to construct shall expire if construction is not commenced within 18 months after receipt of the permit, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time. This provision does not apply to the time period between construction of the approved phases of a phased construction project except that each phase must commence construction within 18 months of the commencement date established by the Department in the permit.
 - (b) At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by virtue of a relaxation in any enforceable limitation which was established after August 7, 1980, on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then the requirements of subsections 62-212.400(4) through (12), F.A.C., shall apply to the source or modification as though construction had not yet commenced on the source or modification.
 - (c) At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by exceeding its projected actual emissions, then the requirements of subsections 62-12.400(4)

SECTION 2. ADMINISTRATIVE REQUIREMENTS (DRAFT)

through (12), F.A.C., shall apply to the source or modification as though construction had not yet commenced on the source or modification.

[Rule 62-212.400(12), F.A.C.]

8. **Actual Emissions Reporting:** This permit is based on an analysis that compared baseline actual emissions with projected actual emissions and avoided the requirements of subsection 62-212.400(4) through (12), F.A.C. for several pollutants. Therefore, pursuant to Rule 62-212.300(1)(e), F.A.C., the permittee is subject to the following monitoring, reporting and recordkeeping provisions.
- a. The permittee shall monitor the emissions of any PSD pollutant that the Department identifies could increase as a result of the construction or modification and that is emitted by any emissions unit that could be affected; and, using the most reliable information available, calculate and maintain a record of the annual emissions, in tons per year on a calendar year basis, for a period of 10 years following resumption of regular operations after the change. Emissions shall be computed in accordance with the provisions in Rule 62-210.370, F.A.C., which are provided in Appendix C of this permit.
 - b. The permittee shall report to the Department within 60 days after the end of each calendar year during the 10-year period setting out the unit's annual emissions during the calendar year that preceded submission of the report. The report shall contain the following:
 - 1) The name, address and telephone number of the owner or operator of the major stationary source;
 - 2) The annual emissions calculations pursuant to the provisions of 62-210.370, F.A.C., which are provided in Appendix C of this permit;
 - 3) If the emissions differ from the preconstruction projection, an explanation as to why there is a difference; and
 - 4) Any other information that the owner or operator wishes to include in the report.
 - 5) The information required to be documented and maintained pursuant to subparagraphs 62-212.300(1)(e)1 and 2, F.A.C., shall be submitted to the Department, which shall make it available for review to the general public.
 - c. The information required to be documented and maintained pursuant to subparagraphs 62-212.300(1)(e)1 and 2, F.A.C., shall be submitted to the Department, which shall make it available for review to the general public.

For this project, the permit requires the annual reporting of actual sulfur dioxide (SO₂) emissions from the flares and landfill gas engines. *{Permitting Note: Baseline SO₂ emissions were reported as 25 tons/year.}* [Application 0310358-012-AC; and Rules 62-212.300(1)(e) and 62-210.370, F.A.C.]

9. **Title V Permit:** This permit authorizes new construction of the proposed emissions units as well as initial operation to determine compliance with conditions of this permit. A Title V operation permit is required for regular operation of the permitted emissions unit. The permittee shall apply for a Title V operation permit at least 90 days prior to expiration of this permit, but no later than 180 days after completing the required work and commencing operation. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the appropriate Permitting Authority with copies to each Compliance Authority. [Rules 62-4.030, 62-4.050, 62-4.220, and Chapter 62-213, F.A.C.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

A. EU 004-009

This section of the permit addresses the modification of the following emissions units.

ID 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.

EQUIPMENT

1. Landfill Gas Engine/Generator Sets: The permittee is authorized to install and operate six (Caterpillar Model G3520C or equivalent) spark-ignited reciprocating internal combustion engines. Each engine is a 4-cylinder engine with a total displacement of 86.3 liters. Each engine has a maximum rating of 2,233 bhp and is coupled to a 1,600 kW generator (nominal rating) for the generation of up to a total of 9.6 MW of electricity. The maximum rating when coupled to the electrical generator is 2,233 bhp. Each engine will fire LFG. The LFG will pass through a gas treatment system prior to combustion in the engines.
 - a. Each engine shall be equipped with an air-to-fuel ratio controller and ignition timing to maintain efficient fuel combustion.
 - b. Each engine shall be equipped with an automatic fail-safe block valve which must be designed to stop the flow of landfill gas in the event of an engine failure. Excess landfill gas not fired in the engines shall be flared in accordance with the requirements of Subpart WWW in 40 CFR 60.
 - c. Each engine shall be equipped with a non-resettable elapsed time meter to indicate the elapsed engine operating time in cumulative hours.
 - d. A gas flow meter shall be installed to monitor the total flow rate to all of the landfill gas engines.
{Permitting Note: The heat input rate is based on 100% load (2,233 bhp), a nominal landfill gas heating value of 500 British thermal units (Btu) per scf and an approximate landfill gas firing rate of 580 scfm per engine.} [Application No. 0310358-004-AC; and Rules 62-4.070(3), 62-210.200(PTE) and 62-212.400(PSD), F.A.C.]
2. LFG Treatment System: The permittee shall design, install, operate and maintain a LFG Treatment System including equipment for: gas compression (blowers/compressors), de-watering (knock-out and chilling system) and particulate removal (filtration). Specifically, the permittee shall design, install, maintain and operate 1 micron primary and polishing filters to remove particulate matter from the LFG prior to combustion in the engines. The LFG treatment system shall not be equipped with atmospheric vents. LFG shall be directed to the new engines, the existing flares or some other appropriate treatment or control system. [Application No. 0310358-004-AC; and Rule 62-212.400, F.A.C.]
3. LFG Flaring: The permittee shall install and maintain an automatic fail-safe block valve on each engine. The fail-safe block valve must stop the flow of LFG in the event of an engine failure. Excess LFG not used as fuel in an engine must be flared or directed to some other appropriate treatment or control system in accordance with the requirements of NSPS Subpart WWW in 40 CFR 60. [Rule 62-4.070, F.A.C.]

PERFORMANCE RESTRICTIONS

4. Permitted Capacity: Each landfill gas engine has a maximum power rating of 2,233 bhp at 100% load (approximately 17.6 MMBtu/hour). The electrical generator set has a nominal power rating of 1,600 kilowatts. [Rule 62-210.200(PTE), F.A.C.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

A. EU 004-009

1. Authorized Fuel: Each engine shall fire only landfill gas. [Application No. 0310358-004-AC and Rule 62-210.200(PTE), F.A.C.]
2. Restricted Operation: The hours of operation are not limited (8760 hours per year). [Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]
3. Operating Requirements: The permittee shall set the air-to-fuel ratio for each engine based on the most recent emissions tests demonstrating compliance with the standards specified in this permit and other operating conditions. [Rule 62-212.400(BACT), F.A.C.]

EMISSIONS STANDARDS

4. Nitrogen Oxides (NO_x): The emission rate of NO_x from each engine/generator set exhaust shall not exceed 0.6 gram per brake horsepower hour (g/bhp-hr) and a maximum of 3.0 pounds per hour (lb/hr). [Rule 62-212.400(12), F.A.C.]
5. Carbon Monoxide (CO): The emission rate of CO from each engine/generator set exhaust shall not exceed 3.5 g/bhp-hr and a maximum of 17.2 lb/hr. [Rule 62-212.400(12), F.A.C.]
6. Particulate Matter/Particulate Matter less than 10 microns (PM/PM₁₀): Emissions of PM/PM₁₀ shall be minimized by the following work practice standards: installing, maintaining and operating the LFG Treatment System that meets the filtration specification; the firing of diesel/biodiesel that meets the maximum sulfur specification; and, as determined by EPA Method 9, visible emissions from each engine exhaust shall not exceed 10% opacity. {Permitting Note: Based on these work practice standards, the expected maximum PM/PM₁₀ emissions from each engine is 0.24 g/bhp-hr and a maximum of 1.2 lb/hr.} [Rule 62-212.400(BACT), F.A.C.]
7. 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 1.4 lb/hr. {Permitting Note: Project avoids PSD review for VOC based on emission limits.} [Rules 62-204.800 and 62-212.400(12), F.A.C.]
8. Sulfur Dioxide (SO₂): Sulfur dioxide emissions from all six engines shall not exceed 25.0 tons during any consecutive 12 months. Emissions shall be calculated based on the representative sulfur content of each fuel and the actual monthly fuel consumption rate of each fuel based on the following:
 - a. LFG: The representative sulfur content for a given month shall be the sulfur content determined from sampling and analysis within the same semiannual period.
 - b. Fuel Consumption: The monthly fuel consumption shall be determined from the fuel flow monitors. Compliance with the SO₂ emissions cap shall be determined by summing the calculated monthly SO₂ emissions from each fuel based on stoichiometry for a given 12-month period. {Permitting Note: The project avoids PSD review based on this emissions cap.} [Rule 62-212.400(12)(Source Obligation), F.A.C.]
9. Hydrochloric Acid (HCl): Hydrochloric acid emissions from the facility shall not exceed 9.0 tons during any consecutive 12 months. Emissions shall be calculated based on the representative chlorine content of LFG and the actual monthly fuel consumption rate of the engines and the amount flared based on the following:
 - a. LFG: The representative chlorine content for a given month shall be the chlorine content determined from sampling and analysis within the same semiannual period.
 - b. Fuel Consumption: The monthly fuel consumption shall be determined from the fuel flow monitors on the engines as well as the flares.

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

A. EU 004-009

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

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

EXCESS EMISSIONS

- 11. Excess Emissions Allowed: Excess CO and NOx emissions (as specified in this subsection) resulting from startup, shutdown or malfunction of any emissions unit shall be permitted providing best operational practices to minimize emissions are adhered to and:
a. To the extent practicable, the operator shall strive to complete engines startups within 30 minutes; and
b. The duration of excess emissions due to malfunctions shall be minimized but in no case exceed two hours in any 24-hour period.

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

TESTING REQUIREMENTS

- 12. Performance Tests: 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.
13. Test Requirements: During each required compliance stack test, the permittee shall operate a tested landfill gas engine at permitted capacity (90% to 100% of 2,233 bhp). The permittee shall notify the Compliance Authority in writing at least 15 days prior to any scheduled stack tests. Tests shall be conducted in accordance with the applicable requirements specified in Appendix D (Common Testing Requirements) of this permit. {Permitting Note: Although the NSPS provides for a 30-day test notification, a 15-day notice is sufficient in Florida.} [Rule 62-297.310(7)(a)9, F.A.C.]
14. Test Methods: Tests required by this permit shall be performed in accordance with the following reference methods.

Table with 2 columns: Method, Description of Method and Comments. Rows include methods 1-4, 7 or 7E, 9, 10, 19, 18, and 25A with detailed descriptions of testing procedures and notes.

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

A. EU 004-009

The above methods are described in Appendix A of 40 CFR 60 and are adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Department. [Rules 62-204.800, 62-212.400(BACT) and Appendix A of 40 CFR 60]

15. LFG Composition Analysis: The following methods shall be used to satisfy the sampling/analysis of LFG:
- Lower Heating Value: ASTM Method D3588 or equivalent.
 - Sulfur Content: ASTM Method D5504-01 or equivalent.
 - Chlorine Content: Modified EPA Method TO-15 or equivalent.
 - The LFG shall be collected and transported in an appropriate canister (e.g. SUMMA®, Bottle-Vac Sampler or equivalent).

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

MONITORING REQUIREMENTS

16. Landfill Gas Sampling/Analysis: At least semiannually, the permittee shall obtain the following representative samples of landfill gas: a sample taken during each required compliance stack test; and a sample taken during the next semiannual period. A representative sample shall be taken in each calendar semiannual period (January – June and July – December) approximately six months apart. Each gas sample shall be collected under normal operating conditions (i.e., with valves open for all operating cells) by appropriate canister (e.g. SUMMA®, Bottle-Vac Sampler or equivalent). Each sample shall have an ultimate analysis conducted for at least sulfur. For at least one sample each year, the analysis shall also report chlorine. Results shall also be reported as SO₂ and HCl emission factors in terms of lb/million standard cubic feet (lb/MMscf) of landfill gas. Based on the sampling results and Rule 62-297.310(7)(b)(Special Compliance Tests), F.A.C., the Compliance Authority may request additional gas sampling and analyses. [Rules 62-210.200 and 62-212.400, F.A.C.]
17. Monthly Records: Within ten calendar days following each month, the permittee shall observe and record the following information in a written log: number of hours of operation of each engine; total monthly landfill gas flow rate to all engines combined; and hydrochloric acid (HCl) and sulfur dioxide (SO₂) emissions for the month and previous 12 months, rolling total. Emissions of HCl and SO₂ shall be calculated from the monthly fuel consumption as well as the analytical results for the chlorine and sulfur contents of the landfill gas representative of the given month of operation. [Rule 62-210.200 (232), F.A.C.]

RECORDS AND REPORTS

18. Test Reports: The required test report shall be filed with the Department as soon as practical but no later than 45 days after the last sampling run of each test is completed. The test report shall provide sufficient detail on the emissions unit tested and the test procedures used to allow the Department to determine if the test was properly conducted and the test results properly computed. As a minimum, the test report, other than for an EPA test, shall provide the applicable information identified in Rule 62-297.310(8)(c). [Rule 62-297.310(8), F.A.C.]

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.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

A. EU 004-009

~~{Permitting Note: The power generation rating of 2,233 bhp is based on a minimum fuel heating value requirement of 467 BTU/sef and landfill gas usage of 580 sefm 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 O₂ 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:
 - ~~i. 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, including permittee's return of LFG to the Trail Ridge Landfill flares 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.]~~
 - ~~ii. 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.]~~~~

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

A. EU 004-009

- iii. — 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 (NO_x)*~~: The emission rate of NO_x 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 (PM₁₀)*~~: The emission rate of PM₁₀ 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/MMsef 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 (SO₂)*~~: The emission rate of SO₂ from each engine/generator set shall not exceed 27.5 lb/MMsef. [~~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

2. ~~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.~~]

3. ~~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 NO_x 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, 25, 25A or 25C—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 PM₁₀ Emissions (I,A)~~

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

A. EU 004-009

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.]~~

4. ~~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 SO₂ and HCl emission factors in terms of lb/MMsef 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/MMsef 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.]~~

5. ~~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-resettable 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.~~~~

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

A. EU 004-009

e. ~~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 SO₂ 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.]~~

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

B. EU 012-015

This section of the permit addresses the following emissions units.

ID No.	Emission Unit Description
012-015	Four 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

{Permitting Note: Emission Unit ID Nos. 012 and 013 are planned to be installed once the permit is issued and Emission Unit ID Nos. 014 and 015 will be installed at a later date.}

EQUIPMENT

1. Landfill Gas Engine/Generator Sets: The permittee is authorized to install and operate four (Caterpillar Model G3520C or equivalent) spark-ignited reciprocating internal combustion engines. Each engine is a 4-cylinder engine with a total displacement of 86.3 liters. Each engine has a maximum rating of 2,233 bhp and is coupled to a 1,600 kW generator (nominal rating) for the generation of up to a total of 6.4 MW of electricity. The maximum rating when coupled to the electrical generator is 2,233 bhp. Each engine will fire LFG. The LFG will pass through a gas treatment system prior to combustion in the engines.
 - d. Each engine shall be equipped with an air-to-fuel ratio controller and ignition timing to maintain efficient fuel combustion.
 - e. Each engine shall be equipped with an automatic fail-safe block valve which must be designed to stop the flow of landfill gas in the event of an engine failure. Excess landfill gas not fired in the engines shall be flared in accordance with the requirements of Subpart WWW in 40 CFR 60.
 - f. Each engine shall be equipped with a non-resettable elapsed time meter to indicate the elapsed engine operating time in cumulative hours.
 - e. A gas flow meter shall be installed to monitor the total flow rate to all of the landfill gas engines.

{Permitting Note: The heat input rate is based on 100% load (2,233 bhp), a nominal landfill gas heating value of 500 British thermal units (Btu) per scf and an approximate landfill gas firing rate of 580 scfm per engine.} [Application No. 0310358-012-AC; and Rules 62-4.070(3), 62-210.200(PTE) and 62-212.400(PSD), F.A.C.]
2. LFG Treatment System: The permittee shall design, install, operate and maintain a LFG Treatment System including equipment for: gas compression (blowers/compressors), de-watering (knock-out and chilling system) and particulate removal (filtration). Specifically, the permittee shall design, install, maintain and operate 1 micron primary and polishing filters to remove particulate matter from the LFG prior to combustion in the engines. The LFG treatment system shall not be equipped with atmospheric vents. LFG shall be directed to the new engines, the existing flares or some other appropriate treatment or control system. [Application No. 0310358-012-AC; and Rule 62-212.400, F.A.C.]
3. LFG Flaring: The permittee shall install and maintain an automatic fail-safe block valve on each engine. The fail-safe block valve must stop the flow of LFG in the event of an engine failure. Excess LFG not used as fuel in an engine must be flared or directed to some other appropriate treatment or control system in accordance with the requirements of NSPS Subpart WWW in 40 CFR 60. [Rule 62-4.070, F.A.C.]
4. Construction Milestones: The permittee shall submit to the Office of Permitting and Compliance a construction schedule and any changes to the schedule for the first two engines (Emission Unit ID Nos. 012 and 013) within 90 days of the permit issuance. For the remaining two engines (Emission Unit ID Nos. 014

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

B. EU 012-015

and 015), the permittee shall submit the construction schedule within one year of issuance of the permit. [Rule 62-212.400(12), F.A.C.]

PERFORMANCE RESTRICTIONS

5. Permitted Capacity: Each landfill gas engine has a maximum power rating of 2,233 bhp at 100% load (approximately 17.6 MMBtu/hour). The electrical generator set has a nominal power rating of 1,600 kilowatts. [Rule 62-210.200(PTE), F.A.C.]
6. Authorized Fuel: Each engine shall fire only landfill gas. [Application No. 0310358-012-AC and Rule 62-210.200(PTE), F.A.C.]
7. Restricted Operation: The hours of operation are not limited (8760 hours per year). [Rules 62-4.070(3) and 62-210.200(PTE), F.A.C.]
8. Operating Requirements: The permittee shall set the air-to-fuel ratio for each engine based on the most recent emissions tests demonstrating compliance with the standards specified in this permit and other operating conditions identified in NSPS 40 CFR 60, Subpart JJJJ. [Rule 62-212.400(BACT), F.A.C. and NSPS Subpart JJJJ in 40 CFR 60]
9. Applicable NSPS Provisions: The landfill gas engines are subject to, and shall comply with, the applicable provisions in NSPS Subpart A (General Provisions) and NSPS Subpart JJJJ (Stationary Spark Ignition Internal Combustion Engines) of 40 CFR 60, which are identified in Appendix ICE of this permit. [NSPS Subparts A and JJJJ in 40 CFR 60 and Rule 62-204.800, F.A.C.]
10. Applicable NESHAP Provisions: The landfill gas engines are subject to, and shall comply with, initial notification, reporting and recordkeeping requirement of the subpart applicable NESHAP provisions in 40 CFR 63 for Subpart A (General Provisions) and Subpart ZZZZ (Reciprocating Internal Combustion Engines) of 40 CFR 63, which are identified in Appendix ICE of this permit. Pursuant to 40 CFR 63.6590, the landfill gas engines shall comply with NESHAP Subpart ZZZZ by complying with NSPS Subpart JJJJ. [NESHAP Subparts A and ZZZZ in 40 CFR 63 and Rule 62-204.800, F.A.C.]

EMISSIONS STANDARDS

11. Nitrogen Oxides (NO_x): The emission rate of NO_x from each engine/generator set exhaust shall not exceed 0.6 gram per brake horsepower hour (g/bhp-hr) and a maximum of 3.0 pounds per hour (lb/hr). [Rule 62-212.400(12), F.A.C.]
12. Carbon Monoxide (CO): The emission rate of CO from each engine/generator set exhaust shall not exceed 3.5 g/bhp-hr and a maximum of 17.2 lb/hr. [Rule 62-212.400(12), F.A.C.]
13. Particulate Matter/Particulate Matter less than 10 microns (PM/PM₁₀): Emissions of PM/PM₁₀ shall be minimized by the following work practice standards: installing, maintaining and operating the LFG Treatment System that meets the filtration specification; the firing of diesel/biodiesel that meets the maximum sulfur specification; and, as determined by EPA Method 9, visible emissions from each engine exhaust shall not exceed 10% opacity. *{Permitting Note: Based on these work practice standards, the expected maximum PM/PM₁₀ emissions from each engine is 0.24 g/bhp-hr and a maximum of 1.2 lb/hr.}* [Rule 62-212.400(BACT), F.A.C.]
14. 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 1.4 lb/hr. *{Permitting Note: 1.0 g/bhp-hour limit is the NSPS Subpart JJJJ standard, however the "g/bhp-hour" and "lb/hour" limits allow the project to*

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS (DRAFT)

B. EU 012-015

avoid PSD preconstruction review for VOC emissions.] [NESHAP Subparts A and JJJJ in 40 CFR 63 and Rules 62-204.800 and 62-212.400(12), F.A.C.]

15. **Sulfur Dioxide (SO₂):** Sulfur dioxide emissions from all four engines shall not exceed 16.6 tons during any consecutive 12 months. Emissions shall be calculated based on the representative sulfur content of each fuel and the actual monthly fuel consumption rate of each fuel based on the following:
- LFG: The representative sulfur content for a given month shall be the sulfur content determined from sampling and analysis within the same semiannual period.
 - Fuel Consumption: The monthly fuel consumption shall be determined from the fuel flow monitors.

Compliance with the SO₂ emissions cap shall be determined by summing the calculated monthly SO₂ emissions from each fuel based on stoichiometry for a given 12-month period. *{Permitting Note: The project avoids PSD review based on this emissions cap.}* [Rule 62-212.400(12)(Source Obligation), F.A.C.]

16. **Hydrochloric Acid (HCl):** Hydrochloric acid emissions from the facility shall not exceed 9.0 tons during any consecutive 12 months. Emissions shall be calculated based on the representative chlorine content of LFG and the actual monthly fuel consumption rate of the engines and the amount flared based on the following:
- LFG: The representative chlorine content for a given month shall be the chlorine content determined from sampling and analysis within the same semiannual period.
 - Fuel Consumption: The monthly fuel consumption shall be determined from the fuel flow monitors on the engines as well as the flares.

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

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

EXCESS EMISSIONS

18. **Excess Emissions Allowed:** Excess CO and NO_x emissions (as specified in this subsection) resulting from startup, shutdown or malfunction of any emissions unit shall be permitted providing best operational practices to minimize emissions are adhered to and:
- To the extent practicable, the operator shall strive to complete engines startups within 30 minutes; and
 - The duration of excess emissions due to malfunctions shall be minimized but in no case exceed two hours in any 24-hour period.

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

TESTING REQUIREMENTS

19. **Initial Compliance Tests:** Each landfill gas engine shall be tested to demonstrate initial compliance with the emissions standards for CO, NO_x and VOC under 40 CFR 60, Subpart JJJJ as well as the BACT standards of this permit. In addition, each unit shall be tested for opacity in accordance with EPA Method 9. The initial performance test must be conducted within 60 days after achieving permitted capacity, but not later than 180 days after initial startup of each unit. *{Permitting Note: Since the BACT emission standards are more*

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stringent than 40 CFR 60, Subpart JJJJ emission standards, compliance with the BACT emission standards will satisfy compliance with the 40 CFR 60, Subpart JJJJ emission standards.} [Rules 62-212.400(BACT), 62-297.310(7)(a)1, F.A.C. and NSPS Subpart JJJJ in 40 CFR 60]

- 20. Periodic Compliance Tests: Every 8,760 engine hours or at least once every three years, whichever comes first, each landfill gas engine shall be tested to demonstrate compliance with the emissions standards for CO, NOx and VOC under 40 CFR 60, Subpart JJJJ as well as the BACT standards of this permit. During these periodic tests, at least one landfill gas engine shall also be tested for opacity in accordance with EPA Method 9. {Permitting Note: Since the BACT emission standards are more stringent than 40 CFR 60, Subpart JJJJ emission standards, compliance with the BACT emission standards will satisfy compliance with the 40 CFR 60, Subpart JJJJ emission standards.} [Rules 62-212.400(BACT), 62-297.310(7)(a)1 and 4, F.A.C., and NSPS Subpart JJJJ in 40 CFR 60]
21. Test Requirements: During each required compliance stack test, the permittee shall operate a tested landfill gas engine at permitted capacity (90% to 100% of 2,233 bhp). The permittee shall notify the Compliance Authority in writing at least 15 days prior to any scheduled stack tests. Tests shall be conducted in accordance with the applicable requirements specified in Appendix D (Common Testing Requirements) of this permit. {Permitting Note: Although the NSPS provides for a 30-day test notification, a 15-day notice is sufficient in Florida.} [Rule 62-297.310(7)(a)9, F.A.C.]
22. Test Methods: Tests required by this permit shall be performed in accordance with the following reference methods.

Table with 2 columns: Method, Description of Method and Comments. Rows include methods 1-4, 7 or 7E, 9, 10, 19, 18, and 25A with their respective descriptions and notes.

The above methods are described in Appendix A of 40 CFR 60 and are adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used unless prior written approval is received from the Department. [Rules 62-204.800, 62-212.400(BACT) and Appendix A of 40 CFR 60]

- 23. LFG Composition Analysis: The following methods shall be used to satisfy the sampling/analysis of LFG:
e. Lower Heating Value: ASTM Method D3588 or equivalent.
f. Sulfur Content: ASTM Method D5504-01 or equivalent.
g. Chlorine Content: Modified EPA Method TO-15 or equivalent.

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- h. The LFG shall be collected and transported in an appropriate canister (e.g. SUMMA®, Bottle-Vac Sampler or equivalent).

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

MONITORING REQUIREMENTS

24. Landfill Gas Sampling/Analysis: At least semiannually, the permittee shall obtain the following representative samples of landfill gas: a sample taken during each required compliance stack test; and a sample taken during the next semiannual period. A representative sample shall be taken in each calendar semiannual period (January – June and July – December) approximately six months apart. Each gas sample shall be collected under normal operating conditions (i.e., with valves open for all operating cells) by appropriate canister (e.g. SUMMA®, Bottle-Vac Sampler or equivalent). Each sample shall have an ultimate analysis conducted for at least sulfur. For at least one sample each year, the analysis shall also report chlorine. Results shall also be reported as SO₂ and HCl emission factors in terms of lb/million standard cubic feet (lb/MMscf) of landfill gas. Based on the sampling results and Rule 62-297.310(7)(b)(Special Compliance Tests), F.A.C., the Compliance Authority may request additional gas sampling and analyses. [Rules 62-210.200 and 62-212.400, F.A.C.]
25. Monthly Records: Within ten calendar days following each month, the permittee shall observe and record the following information in a written log: number of hours of operation of each engine; total monthly landfill gas flow rate to all engines combined; and hydrochloric acid (HCl) and sulfur dioxide (SO₂) emissions for the month and previous 12 months, rolling total. Emissions of HCl and SO₂ shall be calculated from the monthly fuel consumption as well as the analytical results for the chlorine and sulfur contents of the landfill gas representative of the given month of operation. [Rule 62-210.200 (232), F.A.C.]

RECORDS AND REPORTS

26. Test Reports: The required test report shall be filed with the Department as soon as practical but no later than 45 days after the last sampling run of each test is completed. The test report shall provide sufficient detail on the emissions unit tested and the test procedures used to allow the Department to determine if the test was properly conducted and the test results properly computed. As a minimum, the test report, other than for an EPA test, shall provide the applicable information identified in Rule 62-297.310(8)(c). [Rule 62-297.310(8), F.A.C.]

SECTION 4. APPENDICES (DRAFT)

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Citation Formats and Glossary of Common Terms

CITATION FORMATS

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

Old Permit Numbers

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

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

New Permit Numbers

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

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

PSD Permit Numbers

Example: Permit No. PSD-FL-317

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

Florida Administrative Code (F.A.C.)

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

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

Code of Federal Regulations (CFR)

Example: [40 CFR 60.7]

Means: Title 40, Part 60, Section 7

GLOSSARY OF COMMON TERMS

° F: degrees Fahrenheit

µg: microgram

AAQS: Ambient Air Quality Standard

acf: actual cubic feet

acfm: actual cubic feet per minute

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

BACT: best available control technology

bhp: brake horsepower

Btu: British thermal units

CAM: compliance assurance monitoring

SECTION 4. APPENDIX A (DRAFT)

Citation Formats and Glossary of Common Terms

CEMS: continuous emissions monitoring system	NESHAP: National Emissions Standards for Hazardous Air Pollutants
cfm: cubic feet per minute	NO_x: nitrogen oxides
CFR: Code of Federal Regulations	NSPS: New Source Performance Standards
CAA: Clean Air Act	O&M: operation and maintenance
CMS: continuous monitoring system	O₂: oxygen
CO: carbon monoxide	OPC: Office of Permitting and Compliance
CO₂: carbon dioxide	Pb: lead
COMS: continuous opacity monitoring system	PM: particulate matter
DARM: Division of Air Resource Management	PM₁₀: particulate matter with a mean aerodynamic diameter of 10 microns or less
DEP: Department of Environmental Protection	ppm: parts per million
Department: Department of Environmental Protection	ppmv: parts per million by volume
dscf: dry standard cubic feet	ppmvd: parts per million by volume, dry basis
dscfm: dry standard cubic feet per minute	QA: quality assurance
EPA: Environmental Protection Agency	QC: quality control
ESP: electrostatic precipitator (control system for reducing particulate matter)	PSD: prevention of significant deterioration
EU: emissions unit	psi: pounds per square inch
F: fluoride	PTE: potential to emit
F.A.C.: Florida Administrative Code	RACT: reasonably available control technology
F.A.W.: Florida Administrative Weekly	RATA: relative accuracy test audit
F.D.: forced draft	RBLC: EPA's RACT/BACT/LAER Clearinghouse
F.S.: Florida Statutes	SAM: sulfuric acid mist
FGD: flue gas desulfurization	scf: standard cubic feet
FGR: flue gas recirculation	scfm: standard cubic feet per minute
ft²: square feet	SIC: standard industrial classification code
ft³: cubic feet	SIP: State Implementation Plan
gpm: gallons per minute	SNCR: selective non-catalytic reduction (control system used for reducing emissions of nitrogen oxides)
gr: grains	SO₂: sulfur dioxide
HAP: hazardous air pollutant	TPD: tons/day
Hg: mercury	TPH: tons per hour
I.D.: induced draft	TPY: tons per year
ID: identification	TRS: total reduced sulfur
kPa: kilopascals	UTM: Universal Transverse Mercator coordinate system
lb: pound	VE: visible emissions
MACT: maximum achievable technology	VOC: volatile organic compounds
MMBtu: million British thermal units	
MSDS: material safety data sheets	
MW: megawatt	

General Conditions

The permittee shall comply with the following general conditions from Rule 624.160, F.A.C.

1. The terms, conditions, requirements, limitations and restrictions set forth in this permit, are "permit conditions" and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, F.S. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.
2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
3. As provided in subsections 403.987(6) and 403.722(5), F.S., the issuance of this permit does not convey any 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 of or approval of any other department permit that may be required for other aspects of the total project which are not addressed in this permit.
4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.
6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.
7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at reasonable times, access to the premises where the permitted activity is located or conducted to:
 - a. Have access to and copy any records that must be kept under conditions of the permit;
 - b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and
 - c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules. Reasonable time may depend on the nature of the concern being investigated.
8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:
 - a. A description of and cause of noncompliance; and
 - b. The period of noncompliance, including dates and times; or, if not corrected, the anticipated time then noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.
9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.111 and 403.73, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

General Conditions

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. A reasonable time for compliance with a new or amended surface water quality standard, other than those standards addressed in Rule 62-302.500, F.A.C., shall include a reasonable time to obtain or be denied a mixing zone for the new or amended standard.
11. This permit is transferable only upon Department approval in accordance with Rules 62-120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.
12. This permit or a copy thereof shall be kept at the work site of the permitted activity.
13. This permit also constitutes:
 - a. Determination of Best Available Control Technology (landfill gas engines: CO, NO_x and PM/PM₁₀/PM_{2.5});
 - b. Determination of Prevention of Significant Deterioration (landfill gas engines: CO, NO_x and PM/PM₁₀/PM_{2.5}); and
 - c. Compliance with New Source Performance Standards (landfill gas engines: NSPS Subparts A and JJJJ in 40 CFR 60).
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 for 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:
 - (a) The date, exact place, and time of sampling or measurements;
 - (b) The person responsible for performing the sampling or measurements;
 - (c) The dates analyses were performed;
 - (d) The person responsible for performing the analyses;
 - (e) The analytical techniques or methods used;
 - (f) The results of such analyses.
15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

Common Conditions

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

EMISSIONS AND CONTROLS

1. **Plant Operation - Problems:** If temporarily unable to comply with any of the conditions of the permit due to breakdown of equipment or destruction by fire, wind or other cause, the permittee shall notify each Compliance Authority as soon as possible, but at least within one working day, excluding weekends and holidays. The notification shall include: pertinent information as to the cause of the problem; steps being taken to correct the problem and prevent future recurrence; and, where applicable, the owner's intent toward reconstruction of destroyed facilities. Such notification does not release the permittee from any liability for failure to comply with the conditions of this permit or the regulations. [Rule 62-4.130, F.A.C.]
2. **Circumvention:** The permittee shall not circumvent the air pollution control equipment or allow the emission of air pollutants without this equipment operating properly. [Rule 62-210.650, F.A.C.]
3. **Excess Emissions Allowed:** Excess emissions resulting from startup, shutdown or malfunction of any emissions unit 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 2 hours in any 24-hour period unless specifically authorized by the Department for longer duration. Pursuant to Rule 62-210.700(5), F.A.C., the permit subsection may specify more or less stringent requirements for periods of excess emissions. Rule 62-210-700(Excess Emissions), F.A.C., cannot vary or supersede any federal NSPS or NESHAP provision. [Rule 62-210.700(1), F.A.C.]
4. **Excess Emissions Prohibited:** Excess emissions caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure that may reasonably be prevented during startup, shutdown or malfunction shall be prohibited. [Rule 62-210.700(4), F.A.C.]
5. **Excess Emissions - Notification:** In case of excess emissions resulting from malfunctions, the permittee shall notify the Compliance Authority in accordance with Rule 62-4.130, F.A.C. A full written report on the malfunctions shall be submitted in a quarterly report, if requested by the Department. [Rule 62-210.700(6), F.A.C.]
6. **VOC or OS Emissions:** No person shall store, pump, handle, process, load, unload or use in any process or installation, volatile organic compounds (VOC) or organic solvents (OS) without applying known and existing vapor emission control devices or systems deemed necessary and ordered by the Department. [Rule 62-296.320(1), F.A.C.]
7. **Objectionable Odor Prohibited:** No person shall cause, suffer, allow or permit the discharge of air pollutants, which cause or contribute to an objectionable odor. An "objectionable odor" means any odor present in the outdoor atmosphere which by itself or in combination with other odors, is or may be harmful or injurious to human health or welfare, which unreasonably interferes with the comfortable use and enjoyment of life or property, or which creates a nuisance. [Rules 62-296.320(2) and 62-210.200(Definitions), F.A.C.]
8. **General Visible Emissions:** No person shall cause, let, permit, suffer or allow to be discharged into the atmosphere the emissions of air pollutants from any activity equal to or greater than 20% opacity. This regulation does not impose a specific testing requirement. [Rule 62-296.320(4)(b)1, F.A.C.]
9. **Unconfined Particulate Emissions:** During the construction period, unconfined particulate matter emissions shall be minimized by dust suppressing techniques such as covering and/or application of water or chemicals to the affected areas, as necessary. [Rule 62-296.320(4)(c), F.A.C.]

RECORDS AND REPORTS

10. **Records Retention:** All measurements, records, and other data required by this permit shall be documented in a permanent, legible format and retained for at least 5 years following the date on which such measurements, records, or data are recorded. Records shall be made available to the Department upon request. [Rule 62-213.440(1)(b)2, F.A.C.]
11. **Emissions Computation and Reporting:**
 - a. **Applicability.** This rule sets forth required methodologies to be used by the owner or operator of a facility for computing actual emissions, baseline actual emissions, and net emissions increase, as defined at Rule 62-210.200, F.A.C., and for computing emissions for purposes of the reporting requirements of subsection 62-210.370(3) and paragraph 62-212.300(1)(e), F.A.C., or of any permit condition that requires emissions be computed in accordance

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with this rule. This rule is not intended to establish methodologies for determining compliance with the emission limitations of any air permit. [Rule 62-210.370(1), F.A.C.]

- b. *Computation of Emissions.* For any of the purposes set forth in subsection 62-210.370(1), F.A.C., the owner or operator of a facility shall compute emissions in accordance with the requirements set forth in this subsection.
- (1) **Basic Approach.** The owner or operator shall employ, on a pollutant-specific basis, the most accurate of the approaches set forth below to compute the emissions of a pollutant from an emissions unit; provided, however, that nothing in this rule shall be construed to require installation and operation of any continuous emissions monitoring system (CEMS), continuous parameter monitoring system (CPMS), or predictive emissions monitoring system (PEMS) not otherwise required by rule or permit, nor shall anything in this rule be construed to require performance of any stack testing not otherwise required by rule or permit.
- (a) If the emissions unit is equipped with a CEMS meeting the requirements of paragraph 62-210.370(2)(b), F.A.C., the owner or operator shall use such CEMS to compute the emissions of the pollutant, unless the owner or operator demonstrates to the department that an alternative approach is more accurate because the CEMS represents still-emerging technology.
- (b) If a CEMS is not available or does not meet the requirements of paragraph 62-210.370(2)(b), F.A.C., but emissions of the pollutant can be computed pursuant to the mass balance methodology of paragraph 62-210.370(2)(c), F.A.C., the owner or operator shall use such methodology, unless the owner or operator demonstrates to the department that an alternative approach is more accurate.
- (c) If a CEMS is not available or does not meet the requirements of paragraph 62-210.370(2)(b), F.A.C., and emissions cannot be computed pursuant to the mass balance methodology, the owner or operator shall use an emission factor meeting the requirements of paragraph 62-210.370(2)(d), F.A.C., unless the owner or operator demonstrates to the department that an alternative approach is more accurate.
- (2) **Continuous Emissions Monitoring System (CEMS).**
- (a) An owner or operator may use a CEMS to compute emissions of a pollutant for purposes of this rule provided:
- 1) The CEMS complies with the applicable certification and quality assurance requirements of 40 CFR Part 60, Appendices B and F, or, for an acid rain unit, the certification and quality assurance requirements of 40 CFR Part 75, all adopted by reference at Rule 62-204.800, F.A.C.; or
- 2) The owner or operator demonstrates that the CEMS otherwise represents the most accurate means of computing emissions for purposes of this rule.
- (b) Stack gas volumetric flow rates used with the CEMS to compute emissions shall be obtained by the most accurate of the following methods as demonstrated by the owner or operator:
- 1) A calibrated flow meter that records data on a continuous basis, if available; or
- 2) The average flow rate of all valid stack tests conducted during a five-year period encompassing the period over which the emissions are being computed, provided all stack tests used shall represent the same operational and physical configuration of the unit.
- (c) The owner or operator may use CEMS data in combination with an appropriate factor, heat input data, and any other necessary parameters to compute emissions if such method is demonstrated by the owner or operator to be more accurate than using a stack gas volumetric flow rate as set forth at subparagraph 62-210.370(2)(b)2., F.A.C., above.
- (3) **Mass Balance Calculations.**
- (a) An owner or operator may use mass balance calculations to compute emissions of a pollutant for purposes of this rule provided the owner or operator:
- 1) Demonstrates a means of validating the content of the pollutant that is contained in or created by all materials or fuels used in or at the emissions unit; and

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- 2) Assumes that the emissions unit emits all of the pollutant that is contained in or created by any material or fuel used in or at the emissions unit if it cannot otherwise be accounted for in the process or in the capture and destruction of the pollutant by the unit's air pollution control equipment.
 - (b) Where the vendor of a raw material or fuel which is used in or at the emissions unit publishes a range of pollutant content from such material or fuel, the owner or operator shall use the highest value of the range to compute the emissions, unless the owner or operator demonstrates using site-specific data that another content within the range is more accurate.
 - (c) In the case of an emissions unit using coatings or solvents, the owner or operator shall document, through purchase receipts, records and sales receipts, the beginning and ending VOC inventories, the amount of VOC purchased during the computational period, and the amount of VOC disposed of in the liquid phase during such period.
- (4) Emission Factors.
- (a) An owner or operator may use an emission factor to compute emissions of a pollutant for purposes of this rule provided the emission factor is based on site-specific data such as stack test data, where available, unless the owner or operator demonstrates to the department that an alternative emission factor is more accurate. An owner or operator using site-specific data to derive an emission factor, or set of factors, shall meet the following requirements.
 - 1) If stack test data are used, the emission factor shall be based on the average emissions per unit of input, output, or gas volume, whichever is appropriate, of all valid stack tests conducted during at least a five-year period encompassing the period over which the emissions are being computed, provided all stack tests used shall represent the same operational and physical configuration of the unit.
 - 2) Multiple emission factors shall be used as necessary to account for variations in emission rate associated with variations in the emissions unit's operating rate or operating conditions during the period over which emissions are computed.
 - 3) The owner or operator shall compute emissions by multiplying the appropriate emission factor by the appropriate input, output or gas volume value for the period over which the emissions are computed. The owner or operator shall not compute emissions by converting an emission factor to pounds per hour and then multiplying by hours of operation, unless the owner or operator demonstrates that such computation is the most accurate method available.
 - (b) If site-specific data are not available to derive an emission factor, the owner or operator may use a published emission factor directly applicable to the process for which emissions are computed. If no directly-applicable emission factor is available, the owner or operator may use a factor based on a similar, but different, process.
- (5) Accounting for Emissions During Periods of Missing Data from CEMS, PEMS, or CPMS. In computing the emissions of a pollutant, the owner or operator shall account for the emissions during periods of missing data from CEMS, PEMS, or CPMS using other site-specific data to generate a reasonable estimate of such emissions.
- (6) Accounting for Emissions During Periods of Startup and Shutdown. In computing the emissions of a pollutant, the owner or operator shall account for the emissions during periods of startup and shutdown of the emissions unit.
- (7) Fugitive Emissions. In computing the emissions of a pollutant from a facility or emissions unit, the owner or operator shall account for the fugitive emissions of the pollutant, to the extent quantifiable, associated with such facility or emissions unit.
- (8) Recordkeeping. The owner or operator shall retain a copy of all records used to compute emissions pursuant to this rule for a period of five years from the date on which such emissions information is submitted to the department for any regulatory purpose.

[Rule 62-210.370(2), F.A.C.]

c. *Annual Operating Report for Air Pollutant Emitting Facility*

- (1) The Annual Operating Report for Air Pollutant Emitting Facility (DEP Form No. 62-210.900(5)) shall be completed each year for the following facilities:
 - a. All Title V sources;
 - b. All synthetic non-Title V sources;
 - c. All facilities with the potential to emit ten (10) tons per year or more of volatile organic compounds or twenty-five (25) tons per year or more of nitrogen oxides and located in an ozone nonattainment area or ozone air quality maintenance area; and
 - d. All facilities for which an annual operating report is required by rule or permit.
- (2) Notwithstanding paragraph 62-210.370(3)(a), F.A.C., no annual operating report shall be required for any facility operating under an air general permit.
- (3) The annual operating report shall be submitted to the appropriate Department of Environmental Protection (DEP) division, district or DEP-approved local air pollution control program office by April 1 of the following year. If the report is submitted using the Department's electronic annual operating report software, there is no requirement to submit a copy to any DEP or local air program office.
- (4) Emissions shall be computed in accordance with the provisions of subsection 62-210.370(2), F.A.C., for purposes of the annual operating report.
- (5) Facility Relocation. Unless otherwise provided by rule or more stringent permit condition, the owner or operator of a relocatable facility must submit a Facility Relocation Notification Form (DEP Form No. 62-210.900(6)) to the Department at least 30 days prior to the relocation. A separate form shall be submitted for each facility in the case of the relocation of multiple facilities which are jointly owned or operated.

[Rule 62-210.370(3), F.A.C.]

Common Testing Requirements

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

COMPLIANCE TESTING REQUIREMENTS

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

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- c. Calibration of Sampling Equipment. Calibration of the sampling train equipment shall be conducted in accordance with the schedule shown in Table 297.310-1, F.A.C.
- d. Calibration of Sampling Equipment. Calibration of the sampling train equipment shall be conducted in accordance with the schedule shown in Table 297.310-1.
- e. Allowed Modification to EPA Method 5. When EPA Method 5 is required, the following modification is allowed: the heated filter may be separated from the impingers by a flexible tube.

TABLE 297.310-1 CALIBRATION SCHEDULE			
ITEM	MINIMUM CALIBRATION FREQUENCY	REFERENCE INSTRUMENT	TOLERANCE
Liquid in glass thermometer	Annually	ASTM Hg in glass ref. thermometer or equivalent or thermometric points	+/-2%
Bimetallic thermometer	Quarterly	Calibration liquid in glass	5° F
Thermocouple	Annually	ASTM Hg in glass ref. thermometer, NBS calibrated reference and potentiometer	5° F
Barometer	Monthly	Hg barometer or NOAA station	+/-1% scale
Pitot Tube	When required or when damaged	By construction or measurements in wind tunnel D greater than 16" and standard pitot tube	See EPA Method 2, Fig. 2-2 & 2-3
Probe Nozzles	Before each test or when nicked, dented, or corroded	Micrometer	+/- 0.001" mean of at least three readings; Max. deviation between readings, 0.004"
Dry Gas Meter and Orifice Meter	1. Full Scale: When received, when 5% change observed, annually	Spirometer or calibrated wet test or dry gas test meter	2%
	2. One Point: Semiannually		
	3. Check after each test series	Comparison check	5%

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

5. Determination of Process Variables:

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

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

6. **Sampling Facilities:** The permittee shall install permanent stack sampling ports and provide sampling facilities that meet the requirements of Rule 62-297.310(6), F.A.C. Sampling facilities include sampling ports, work platforms, access to work platforms, electrical power, and sampling equipment support. All stack sampling facilities must also comply with all applicable Occupational Safety and Health Administration (OSHA) Safety and Health Standards described in 29 CFR Part 1910, Subparts D and E.
- a. **Permanent Test Facilities.** The owner or operator of an emissions unit for which a compliance test, other than a visible emissions test, is required on at least an annual basis, shall install and maintain permanent stack sampling facilities.
 - b. **Temporary Test Facilities.** The owner or operator of an emissions unit that is not required to conduct a compliance test on at least an annual basis may use permanent or temporary stack sampling facilities. If the owner chooses to use temporary sampling facilities on an emissions unit, and the Department elects to test the unit, such temporary facilities shall be installed on the emissions unit within 5 days of a request by the Department and remain on the emissions unit until the test is completed.
 - c. **Sampling Ports.**
 - (1) All sampling ports shall have a minimum inside diameter of 3 inches.
 - (2) The ports shall be capable of being sealed when not in use.
 - (3) The sampling ports shall be located in the stack at least 2 stack diameters or equivalent diameters downstream and at least 0.5 stack diameter or equivalent diameter upstream from any fan, bend, constriction or other flow disturbance.
 - (4) For emissions units for which a complete application to construct has been filed prior to December 1, 1980, at least two sampling ports, 90 degrees apart, shall be installed at each sampling location on all circular stacks that have an outside diameter of 15 feet or less. For stacks with a larger diameter, four sampling ports, each 90 degrees apart, shall be installed. For emissions units for which a complete application to construct is filed on or after December 1, 1980, at least two sampling ports, 90 degrees apart, shall be installed at each sampling location on all circular stacks that have an outside diameter of 10 feet or less. For stacks with larger diameters, four sampling ports, each 90 degrees apart, shall be installed. On horizontal circular ducts, the ports shall be located so that the probe can enter the stack vertically, horizontally or at a 45 degree angle.
 - (5) On rectangular ducts, the cross sectional area shall be divided into the number of equal areas in accordance with EPA Method 1. Sampling ports shall be provided which allow access to each sampling point. The ports shall be located so that the probe can be inserted perpendicular to the gas flow.
 - d. **Work Platforms.**
 - (1) Minimum size of the working platform shall be 24 square feet in area. Platforms shall be at least 3 feet wide.
 - (2) On circular stacks with 2 sampling ports, the platform shall extend at least 110 degrees around the stack.
 - (3) On circular stacks with more than two sampling ports, the work platform shall extend 360 degrees around the stack.
 - (4) All platforms shall be equipped with an adequate safety rail (ropes are not acceptable), toe board, and hinged floor-opening cover if ladder access is used to reach the platform. The safety rail directly in line with the sampling ports shall be removable so that no obstruction exists in an area 14 inches below each sample port and 6 inches on either side of the sampling port.
 - e. **Access to Work Platform.**
 - (1) Ladders to the work platform exceeding 15 feet in length shall have safety cages or fall arresters with a minimum of 3 compatible safety belts available for use by sampling personnel.
 - (2) Walkways over free-fall areas shall be equipped with safety rails and toe boards.

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f. Electrical Power.

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

g. Sampling Equipment Support.

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

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

7. Frequency of Compliance Tests. The following provisions apply only to those emissions units that are subject to an emissions limiting standard for which compliance testing is required.

(a) General Compliance Testing.

- (1) The owner or operator of a new or modified emissions unit that is subject to an emission limiting standard shall conduct a compliance test that demonstrates compliance with the applicable emission limiting standard prior to obtaining an operation permit for such emissions unit.
- (2) For excess emission limitations for particulate matter specified in Rule 62-210.700, F.A.C., a compliance test shall be conducted annually while the emissions unit is operating under soot blowing conditions in each federal fiscal year during which soot blowing is part of normal emissions unit operation, except that such test shall not be required in any federal fiscal year in which a fossil fuel steam generator does not burn liquid and/or solid fuel for more than 400 hours other than during startup.
- (3) The owner or operator of an emissions unit that is subject to any emission limiting standard shall conduct a compliance test that demonstrates compliance with the applicable emission limiting standard prior to obtaining a renewed operation permit. Emissions units that are required to conduct an annual compliance test may submit the most recent annual compliance test to satisfy the requirements of this provision. In renewing an air operation permit pursuant to sub-subparagraph 62-210.300(2)(a)3.b., c., or d., F.A.C., the Department shall not require submission of emission compliance test results for any emissions unit that, during the year prior to renewal:
 - (a) Did not operate; or
 - (b) In the case of a fuel burning emissions unit, burned liquid and/or solid fuel for a total of no more than 400 hours,

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- (4) During each federal fiscal year (October 1 – September 30), unless otherwise specified by rule, order, or permit, the owner or operator of each emissions unit shall have a formal compliance test conducted for:
 - (a) Visible emissions, if there is an applicable standard;
 - (b) Each of the following pollutants, if there is an applicable standard, and if the emissions unit emits or has the potential to emit: 5 tons per year or more of lead or lead compounds measured as elemental lead; 30 tons per year or more of acrylonitrile; or 100 tons per year or more of any other regulated air pollutant; and
 - (c) Each NESHAP pollutant, if there is an applicable emission standard.
- (5) An annual compliance test for particulate matter emissions shall not be required for any fuel burning emissions unit that, in a federal fiscal year, does not burn liquid and/or solid fuel, other than during startup, for a total of more than 400 hours.
- (6) For fossil fuel steam generators on a semi-annual particulate matter emission compliance testing schedule, a compliance test shall not be required for any six-month period in which liquid and/or solid fuel is not burned for more than 200 hours other than during startup.
- (7) For emissions units electing to conduct particulate matter emission compliance testing quarterly pursuant to paragraph 62-296.405(2)(a), F.A.C., a compliance test shall not be required for any quarter in which liquid and/or solid fuel is not burned for more than 100 hours other than during startup.
- (8) Any combustion turbine that does not operate for more than 400 hours per year shall conduct a visible emissions compliance test once per each five-year period, coinciding with the term of its air operation permit.
- (9) The owner or operator shall notify the Department, at least 15 days prior to the date on which each formal compliance test is to begin, of the date, time, and place of each such test, and the test contact person who will be responsible for coordinating and having such test conducted for the owner or operator.
- (10) An annual compliance test conducted for visible emissions shall not be required for units exempted from air permitting pursuant to subsection 62-210.300(3), F.A.C.; units determined to be insignificant pursuant to subparagraph 62-213.300(2)(a)1., F.A.C., or paragraph 62-213.430(6)(b), F.A.C.; or units permitted under the General Permit provisions in paragraph 62-210.300(4)(a) or Rule 62-213.300, F.A.C., unless the general permit specifically requires such testing.
 - (a) Special Compliance Tests. When the Department, after investigation, has good reason (such as complaints, increased visible emissions or questionable maintenance of control equipment) to believe that any applicable emission standard contained in a Department rule or in a permit issued pursuant to those rules is being violated, it shall require the owner or operator of the emissions unit to conduct compliance tests which identify the nature and quantity of pollutant emissions from the emissions unit and to provide a report on the results of said tests to the Department.
 - (b) Waiver of Compliance Test Requirements. If the owner or operator of an emissions unit that is subject to a compliance test requirement demonstrates to the Department, pursuant to the procedure established in Rule 62-297.620, F.A.C., that the compliance of the emissions unit with an applicable weight emission limiting standard can be adequately determined by means other than the designated test procedure, such as specifying a surrogate standard of no visible emissions for particulate matter sources equipped with a bag house or specifying a fuel analysis for sulfur dioxide emissions, the Department shall waive the compliance test requirements for such emissions units and order that the alternate means of determining compliance be used, provided, however, the provisions of paragraph 62-297.310(7)(b), F.A.C., shall apply.

[Rule 62-297.310(7), F.A.C.]

REPORTS

8. Test Reports:

- a. The owner or operator of an emissions unit for which a compliance test is required shall file a report with the Department on the results of each such test.

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

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

MISCELLANEOUS

9. Stack and Duct: The terms stack and duct are used interchangeably in this rule. [Rule 62-297.310(9), F.A.C.]

SECTION 4. APPENDIX E (DRAFT)

Final BACT Determinations

PROJECT DESCRIPTION

EU No.	Emission Unit Description
004-009 and 012-015	Ten Caterpillar Model G3520C lean-burn reciprocating internal combustion engine/generator sets

The City of Jacksonville. operates the existing Trail Ridge Landfill, which is a municipal solid waste landfill located in Duval County at 5110 US Highway 301 South, Baldwin, Florida. Trail Ridge Energy proposes to install and operate four new Caterpillar Model No. G3520C engine generator sets and to modify the CO emissions standard as Best Available Control Technology (BACT) for the four proposed and six existing engine generator sets. Landfill gas will be used to fuel the ten lean-burn Caterpillar Model No. CAT G3520C engine/generator sets capable of producing a combined nominal 16 megawatts (MW) of power to the electrical grid. The two existing flares will be retained as additional combustion devices for the landfill gas. The landfill gas will be routed through a landfill gas treatment system and then to the landfill gas engines. If necessary, residual landfill gas will be routed to the flares. The landfill gas treatment system includes initial gas de-watering (moisture knock-out vessel), gas compressors and blowers, air-to-gas coolers and particulate filtration.

Exhaust gas from each engine will exit an individual stack (23 feet tall) equipped with a noise muffler. The six existing engines are housed in an enclosed building and the four proposed engines will be housed adjacent in an enclosed building. In accordance with Rule 62-212.400, F.A.C., the proposed project is subject to PSD major stationary source preconstruction review for emissions of CO, NO_x and PM/PM₁₀.

FINAL BACT DETERMINATIONS

In accordance with Rule 62-212.400, F.A.C., the Department specifies the following BACT determinations for each engine.

Pollutant	BACT Standard	Control Technology	Compliance Method
CO	3.5 g/bhp-hour and 17.2 lb/hour	Combustion design combined with good combustion and maintenance practices.	EPA Method 10
NO _x	0.6 g/bhp-hour and 2.95 lb/hour		EPA Method 7 or 7E
PM/PM ₁₀	<i>Work Practice Standard:</i> The landfill gas pretreatment system shall include a filtration system to remove particulate down to 1 micron.		Design and maintenance records
	<i>Work Practice Standard:</i> Visible emissions from each engine exhaust stack shall not exceed 10% opacity, based on a six-minute average.		EPA Method 9

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NSPS and NESHAP Provisions

This section identifies the federal New Source Performance Standards (NSPS) in 40 CFR 60 that may be applicable to emissions units regulated by this project.

NSPS SUBPART A - GENERAL PROVISIONS

The following emission units are subject to applicable NSPS in 40 CFR 60, which are adopted by reference in Rule 62-204.800(8), F.A.C.

EU No.	Emission Unit Description
012-015	Four Caterpillar Model G3520C (CAT 3520) lean burn internal combustion engines

The affected emission units are subject to the applicable General Provisions in Subpart A of the New Source Performance Standards including: §60.1 (Applicability); §60.2 (Definitions); §60.3 (Units and Abbreviations); §60.4 (Address); §60.5 (Determination of Construction or Modification); §60.6 (Review of Plans); §60.7 (Notification and Record Keeping); §60.8 (Performance Tests); §60.9 (Availability of Information); §60.10 (State Authority); §60.11 (Compliance with Standards and Maintenance Requirements); §60.12 (Circumvention); §60.13 (Monitoring Requirements); §60.14 (Modification); §60.15 (Reconstruction); §60.16 (Priority List); §60.17 (Incorporations by Reference); §60.18 (General Control Device Requirements); §60.19 (General Notification and Reporting Requirements). The General Provisions are not included in this permit, but can be obtained from the Department upon request.

40 CFR PART 60, SUBPART JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

Source: 73 FR 3591, Jan. 18, 2008, unless otherwise noted.

Emission limitations					
NOx (g/HP-hr)	CO (g/HP-hr)	VOC (g/HP-hr)	NOx (ppmvd at 15% O2)	CO (ppmvd at 15% O2)	VOC (ppmvd at 15% O2)
2	5	1	150	610	80

Emission limitations or	Compliance	Testing
<p>**May certify to the emission standards for new nonroad SI engines in 40 CFR part 1048 if you have a lean burn engine that uses LPG.</p> <p>**May certify to the emission standards for new nonroad SI engines in 40 CFR part 1048 applicable to engines that are not severe duty engines if you have an engine:</p> <p>a. $75 \leq x < 373$ KW (100 < x < 500 HP) manufactured prior to January 1, 2011; or</p> <p>b. $x \geq 373$ KW (500 HP) manufactured prior to July 1, 2010.</p>	<p>(1) Comply by purchasing an engine certified according to procedures specified in this subpart, for the same model year and demonstrating compliance according to one of the methods specified above in (1-3) (a-b) (i-iii).</p> <p>(2) Purchase a non-certified engine and demonstrate compliance with the emission standards according to testing requirement in this subpart and according to:</p> <p>a. Engines 25 HP < x ≤ 500 HP, must keep a maintenance plan and records of conducted maintenance and must maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test.</p> <p>b. Engines greater than 500 HP, same as above in item a. In addition, you must conduct subsequent performance testing every 8,760 hours or 3 years, whichever comes first.</p> <p>or Engines that are less than or equal to 500 HP and you purchase a non-certified engine or do not operate and maintain your certified engine:</p> <p>Perform initial performance testing as indicated in this section, but are not required to conduct subsequent performance testing unless the engine is rebuilt (defined in 40 CFR 94.11(a)) or undergoes major repair or maintenance.</p>	<p>(1) Must be conducted within 10% of 100% peak (or the highest achievable) load and according to the requirements in §60.8 and under the specific conditions that are specified by Table 2 to this subpart.</p> <p>(2) Cannot conduct performance tests during periods of startup, shutdown, or malfunction as specified in §60.8. If the engine is non-operational, you do not need to startup the engine solely to conduct a performance test; however, you must conduct the performance test immediately upon startup of the engine.</p> <p>(3) Conduct 3 separate test runs for each performance test required, as specified in §60.8(f). Each test run must be conducted within 10% of 100% peak (or the highest achievable) load and last at least 1 hour.</p> <p>(4) Follow 40 CFR 60.4244 (d-g) to determine compliance with specific pollutants.</p>

SECTION 4. APPENDIX ICE (DRAFT)

NSPS and NESHAP Provisions

40 CFR PART 63, SUBPART ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

In accordance with Rule 62-204.800, F.A.C., the following federal regulations in Part 63 of Title 40 of the Code of Federal Regulations were adopted by reference. The original federal rule numbering has been retained.

{Permitting Note: The engines covered by this permit, EU012– EU-015, are regulated as shown in the following table. Only the Section §63.6590 of Subpart ZZZZ is included because of the limited applicability and requirements.}

EU No.	Engine	Rule Applicability
012-015	Four lean burn internal combustion engine/generator sets (Caterpillar Model No. G3520C) that combust landfill or digester gas equivalent to 10% or more of the gross heat input on an annual basis	As defined in 40 CFR 63 NESHAP Subpart ZZZZ, the proposed engines are defined as “new units located at an area source”. To comply with the 40 CFR 63 NESHAP Subpart ZZZZ requirements, the installed engines must meet the 40 CFR 60 NSPS Subpart JJJJ requirements for spark ignition engines. No further requirements apply for such engines under 40 CFR 63 NESHAP Subpart ZZZZ.

Scearce, Lynn

From: Scearce, Lynn
Sent: Friday, August 19, 2011 4:13 PM
To: 'kstewart@coj.net'
Cc: 'scott.salisbury@landfillenergy.com'; 'rharvey@derenzo.com'; 'christopher.kirts@dep.state.fl.us'; 'robinson@coj.net'; 'forney.kathleen@epa.gov'; 'abrams.heather@epa.gov'; DeVore, Christy; Arif, Syed; Friday, Barbara; 'Scearce, Lynn'
Subject: Trail Ridge Landfill, 0310358-012-AC and 0310358-013-AV - Draft Permit
Attachments: Trail_Ridge_Energy, 0310358-012-AC_and_0310358-013-AV_Draft signature_page.pdf

Tracking:	Recipient	Delivery	Read
	'kstewart@coj.net'	✓	✓
	'scott.salisbury@landfillenergy.com'	✓	✓
	'rharvey@derenzo.com'		✓
	'christopher.kirts@dep.state.fl.us'	Delivered: 8/19/2011 4:13 PM	✓
	'robinson@coj.net'	✓	✓
	'forney.kathleen@epa.gov'		
	'abrams.heather@epa.gov'		
	DeVore, Christy	Delivered: 8/19/2011 4:13 PM	Read: 8/19/2011 4:19 PM
	Arif, Syed	Delivered: 8/19/2011 4:13 PM	
	Friday, Barbara	Delivered: 8/19/2011 4:13 PM	Read: 8/22/2011 7:27 AM
	'Scearce, Lynn'		Read: 8/19/2011 4:14 PM
	Scearce, Lynn	Delivered: 8/19/2011 4:13 PM	

Dear Ms. Stewart:

Attached is the official **Notice of Draft Permit** for the project referenced below. Click on the link displayed below to access the permit project documents and send a "reply" message verifying receipt of the document(s) provided in the link; this may be done by selecting "Reply" on the menu bar of your e-mail software, noting that you can view the documents, and then selecting "Send".

Note: We must receive verification that you are able to access the documents. Your immediate reply will preclude subsequent e-mail transmissions to verify accessibility of the document(s).

Attention: Christy

Owner/Company Name: CITY OF JACKSONVILLE
Facility Name: TRAIL RIDGE LANDFILL
Project Number: 0310358-012-AC and 0310358-013-AV
Permit Status: DRAFT
Permit Activity: CONSTRUCTION
Facility County: DUVAL

Click on the following link to access the permit project documents:
http://ARM-PERMIT2K.dep.state.fl.us/adh/prod/pdf_permit_zip_files/0310358.012.AC.D_pdf.zip

Click on the following link to access the permit project documents:
http://ARM-PERMIT2K.dep.state.fl.us/adh/prod/pdf_permit_zip_files/0310358.013.AV.D_pdf.zip

The Office of Permitting and Compliance is issuing electronic documents for permits, notices and other correspondence in lieu of hard copies through the United States Postal System, to provide greater service to the applicant and the engineering community. Access these documents by clicking on the link provided above, or search for other project documents using the "*Air Permit Documents Search*" website at <http://www.dep.state.fl.us/air/emission/apds/default.asp>.

Permit project documents addressed in this email may require immediate action within a specified time frame. Please open and review the document(s) as soon as possible, and verify that they are accessible. Please advise this office of any changes to your e-mail address or that of the Engineer-of-Record. If you have any problems opening the documents or would like further information, please contact the Florida Department of Environmental Protection, Office of Permitting and Compliance.

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

Regards,

Lynn Scearce

Office of Permitting and Compliance (OPC)

Division of Air Resources Management

850-717-9025

Scearce, Lynn

From: Robert Harvey [rharvey@derenzo.com]
Sent: Monday, August 22, 2011 8:31 AM
To: Scearce, Lynn
Subject: RE: Trail Ridge Landfill, 0310358-012-AC and 0310358-013-AV - Draft Permit

I have received this message and can access the on-line documents.

Rob Harvey
Derenzo and Associates, Inc.
RHarvey@derenzo.com
(517) 324-1880

From: Scearce, Lynn [<mailto:Lynn.Scearce@dep.state.fl.us>]
Sent: Friday, August 19, 2011 4:13 PM
To: kstewart@coj.net
Cc: scott.salisbury@landfillenergy.com; rharvey@derenzo.com; Kirts, Christopher; robinson@coj.net; forney.kathleen@epa.gov; abrams.heather@epa.gov; DeVore, Christy; Arif, Syed; Friday, Barbara; Scearce, Lynn
Subject: Trail Ridge Landfill, 0310358-012-AC and 0310358-013-AV - Draft Permit

Dear Ms. Stewart:

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Attention: Christy

Owner/Company Name: CITY OF JACKSONVILLE
Facility Name: TRAIL RIDGE LANDFILL
Project Number: 0310358-012-AC and 0310358-013-AV
Permit Status: DRAFT
Permit Activity: CONSTRUCTION
Facility County: DUVAL

Click on the following link to access the permit project documents:

http://ARM-PERMIT2K.dep.state.fl.us/adh/prod/pdf_permit_zip_files/0310358.012.AC.D_pdf.zip

Click on the following link to access the permit project documents:

http://ARM-PERMIT2K.dep.state.fl.us/adh/prod/pdf_permit_zip_files/0310358.013.AV.D_pdf.zip

The Office of Permitting and Compliance is issuing electronic documents for permits, notices and other correspondence in lieu of hard copies through the United States Postal System, to provide greater service to the applicant and the engineering community. Access these documents by clicking on the link provided above, or search for other project documents using the “*Air Permit Documents Search*” website at <http://www.dep.state.fl.us/air/emission/apds/default.asp>.

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

Regards,

Lynn Searce

Office of Permitting and Compliance (OPC)

Division of Air Resources Management

850-717-9025

The Department of Environmental Protection values your feedback as a customer. DEP Secretary Herschel T. Vinyard Jr, is committed to continuously assessing and improving the level and quality of services provided to you. Please take a few minutes to comment on the quality of service you received. Simply click on [this link to the DEP Customer Survey](#). Thank you in advance for completing the survey.

Scearce, Lynn

From: Robert Harvey [rharvey@derenzo.com]
Sent: Monday, August 22, 2011 7:03 AM
To: Scearce, Lynn
Subject: Read: Trail Ridge Landfill, 0310358-012-AC and 0310358-013-AV - Draft Permit
Attachments: ATT00001

Scearce, Lynn

From: Scott Salisbury [Scott.salisbury@landfillenergy.com]
To: Scearce, Lynn
Sent: Friday, August 19, 2011 5:04 PM
Subject: Read: Trail Ridge Landfill, 0310358-012-AC and 0310358-013-AV - Draft Permit

Your message was read on Friday, August 19, 2011 5:04:13 PM (GMT-05:00) Eastern Time (US & Canada).

Scearce, Lynn

From: Robinson, Richard [ROBINSON@coj.net]
To: Scearce, Lynn
Sent: Friday, August 19, 2011 4:17 PM
Subject: Read: Trail Ridge Landfill, 0310358-012-AC and 0310358-013-AV - Draft Permit

Your message was read on Friday, August 19, 2011 4:17:26 PM (GMT-05:00) Eastern Time (US & Canada).

Scearce, Lynn

From: Microsoft Exchange
To: scott.salisbury@landfillenergy.com
Sent: Friday, August 19, 2011 4:14 PM
Subject: Relayed: Trail Ridge Landfill, 0310358-012-AC and 0310358-013-AV - Draft Permit

Delivery to these recipients or distribution lists is complete, but delivery notification was not sent by the destination:

scott.salisbury@landfillenergy.com

Subject: Trail Ridge Landfill, 0310358-012-AC and 0310358-013-AV - Draft Permit

Sent by Microsoft Exchange Server 2007

Scearce, Lynn

From: Microsoft Exchange
To: rharvey@derenzo.com
Sent: Friday, August 19, 2011 4:13 PM
Subject: Relayed: Trail Ridge Landfill, 0310358-012-AC and 0310358-013-AV - Draft Permit

Delivery to these recipients or distribution lists is complete, but delivery notification was not sent by the destination:

rharvey@derenzo.com

Subject: Trail Ridge Landfill, 0310358-012-AC and 0310358-013-AV - Draft Permit

Sent by Microsoft Exchange Server 2007

Scearce, Lynn

From: Microsoft Exchange
To: kstewart@coj.net; robinson@coj.net
Sent: Friday, August 19, 2011 4:13 PM
Subject: Relayed: Trail Ridge Landfill, 0310358-012-AC and 0310358-013-AV - Draft Permit

Delivery to these recipients or distribution lists is complete, but delivery notification was not sent by the destination:

kstewart@coj.net

robinson@coj.net

Subject: Trail Ridge Landfill, 0310358-012-AC and 0310358-013-AV - Draft Permit

Sent by Microsoft Exchange Server 2007