


Memorandum

Florida Department of Environmental Protection

TO: Clair Fancy
FROM: Joe Kahn 
DATE: May 21, 1999
SUBJECT: Miami-Dade WASD Alexander Orr, Jr. WTP
0250314-002-AC, PSD-FL-249

Attached for approval and signature is the draft PSD permit package for the standby diesel generators at Miami-Dade Water and Sewer Department's Alexander Orr, Jr. Water Treatment Plant. The applicant applied on May 19, 1998, to the Department for an air construction permit for its Alexander Orr, Jr. Water Treatment Plant Standby Diesel Engine Generators located at 6800 SW 87th Avenue, Miami, Miami-Dade County. The permit is to allow the applicant to increase operation of four existing diesel engine generators to provide power generation capacity during periods of load-sharing with the local utility, during power failures and other circumstances including severe weather warnings and events of potential electric utility power losses or reductions. A BACT determination was required for NO_x. NO_x emissions will be controlled by the use of fuel injection timing retardation and turbocharger aftercooling.

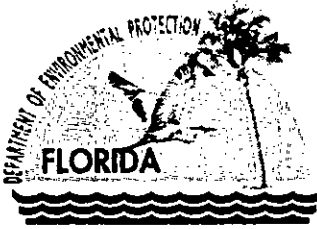
Total emissions of pollutants shall not exceed the following annual emission rates in tons per year: NO_x, 403; PM/PM₁₀, 5.6; Sulfur dioxide, 5.0; VOC, 7.8; CO, 20.8.

An air quality impact analysis was conducted. Emissions from the facility will not cause or contribute to a violation of any state or federal ambient air quality standards.

I recommend your approval and signature.

Attachments

/jk



Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

May 24, 1999

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Jorge S. Rodriguez, P.E., Assistant Director, Water
Miami-Dade Water and Sewer Department
4200 Salzedo Street
Coral Gables, Florida 33146-0316

Re: DEP File No. 0250314-002-AC, PSD-FL-249
Alexander Orr, Jr. WTP, Standby Diesel Engine Generators

Dear Mr. Ready:

Enclosed is one copy of the Draft air construction permit for the Alexander Orr, Jr. Water Treatment Plant Standby Diesel Engine Generators located at 6800 SW 87 Avenue, Miami, Miami-Dade County. The Technical Evaluation and Preliminary Determination, the Department's Intent to Issue Air Construction Permit and the Public Notice of Intent to Issue Air Construction Permit are also included.

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

Please submit any written comments you wish to have considered concerning the Department's proposed action to A. A. Linero, P.E., Administrator, New Source Review Section at the above letterhead address. If you have any other questions, please contact Joseph Kahn, P.E. at 850/921-9519 or Mr. Linero at 850/488-0114.

Sincerely,

C. H. Fancy, P.E., Chief,
Bureau of Air Regulation

CHF/jk

Enclosures

In the Matter of an
Application for Permit by:

Jorge S. Rodriguez, P.E.
Assistant Director, Water
Miami-Dade Water and Sewer Department
4200 Salzedo Street
Coral Gables, Florida 33146-0316

DEP File No. 0250314-002-AC
PSD-FL-249
Alexander Orr, Jr. WTP, Standby Diesel Engine Generators
Miami-Dade County

INTENT TO ISSUE AIR CONSTRUCTION PERMIT

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit (copy of Draft permit attached) for the proposed project, detailed in the application specified above and the enclosed Technical Evaluation and Preliminary Determination, for the reasons stated below.

The applicant, Miami-Dade Water and Sewer Department, applied on April 13, 1998, to the Department for an air construction permit for its Alexander Orr, Jr. Water Treatment Plant Standby Diesel Engine Generators located at 6800 SW 87 Avenue, Miami, Miami-Dade County. The permit is to allow the applicant to increase operation of four existing diesel engine generators to provide power generation capacity during periods of load-sharing with the local utility, during power failures and other circumstances including severe weather warnings and events of potential electric utility power losses or reductions.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-212. The above actions are not exempt from permitting procedures. The Department has determined that an air construction permit is required to allow the applicant to increase operation of four existing diesel engine generators.

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

Pursuant to Section 403.815, F.S., and Rule 62-110.106(7)(a)1., F.A.C., you (the applicant) are required to publish at your own expense the enclosed Public Notice of Intent to Issue Air Construction Permit. The notice shall be published one time only in the legal advertisement section of a newspaper of general circulation in the area affected. Rule 62-110.106(7)(b), F.A.C., requires that the applicant cause the notice to be published as soon as possible after notification by the Department of its intended action. For the purpose of these rules, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. If you are uncertain that a newspaper meets these requirements, please contact the Department at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400 (Telephone: 850/488-0114; Fax 850/ 922-6979). You must provide proof of publication within seven days of publication, pursuant to Rule 62-110.106(5), F.A.C. No permitting action for which published notice is required shall be granted until proof of publication of notice is made by furnishing a uniform affidavit in substantially the form prescribed in section 50.051, F.S. to the office of the Department issuing the permit. Failure to publish the notice and provide proof of publication may result in the denial of the permit pursuant to Rules 62-110.106(9) & (11), F.A.C.

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

The Department will accept written comments and requests for public meetings concerning the proposed permit issuance action for a period of 30 (thirty) days from the date of publication of Public Notice of Intent to Issue Air Permit. Written comments and requests for public meetings should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a

significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

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

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

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301.

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

Mediation is not available in this proceeding.

In addition to the above, a person subject to regulation has a right to apply for a variance from or waiver of the requirements of particular rules, on certain conditions, under Section 120.542 F.S. The relief provided by this state statute applies only to state rules, not statutes, and not to any federal regulatory requirements. Applying for a variance or waiver does not substitute or extend the time for filing a petition for an administrative hearing or exercising any other right that a person may have in relation to the action proposed in this notice of intent.

The application for a variance or waiver is made by filing a petition with the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. The petition must specify the following information: (a) The name, address, and telephone number of the petitioner; (b) The name, address, and telephone number of the attorney or qualified representative of the petitioner, if any; (c) Each rule or portion of a rule from which a variance or waiver is requested; (d) The citation to the statute underlying (implemented by) the rule identified in (c) above; (e) The type of action requested; (f) The specific facts that would justify a variance or waiver for the petitioner; (g) The reason why the variance or waiver would serve the purposes of the underlying statute (implemented by the rule); and (h) A statement whether the variance or waiver is permanent or temporary and, if temporary, a statement of the dates showing the duration of the variance or waiver requested.

The Department will grant a variance or waiver when the petition demonstrates both that the application of the rule would create a substantial hardship or violate principles of fairness, as each of those terms is defined in Section 120.542(2) F.S., and that the purpose of the underlying statute will be or has been achieved by other means by the petitioner.

Persons subject to regulation pursuant to any federally delegated or approved air program should be aware that Florida is specifically not authorized to issue variances or waivers from any requirements of any such federally delegated or approved program. The requirements of the program remain fully enforceable by the Administrator of the EPA and by any person under the Clean Air Act unless and until the Administrator separately approves any variance or waiver in accordance with the procedures of the federal program.

Executed in Tallahassee, Florida.


C. H. Fancy, P.E., Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE


The undersigned duly designated deputy agency clerk hereby certifies that this Intent to Issue Air Construction Permit (including the Public Notice of Intent to Issue Air Construction Permit, Technical Evaluation and Preliminary Determination, and the Draft permit) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 5-24-99 to the person(s) listed:

Jorge S. Rodriguez, P.E. *
Ms. Bertha Goldenberg, P.E.
Mr. David Lindberg, P.E., CH2M Hill
Mr. Isidore Goldman, P.E., DEP SED

Mr. Patrick Wong, P.E., DERM
Mr. Gregg Worley, EPA
Mr. John Bunyak, NPS

Clerk Stamp

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


(Clerk) 5-24-99
(Date)

Z 333 618 152

US Postal Service
Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail (See reverse)

PS Form 3800, April 1995

Sent to	
Jorge Rodriguez	
Street & Number	
1111 W 150	
Post Office, State, & ZIP Code	
Coral Gables FL	
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	
0250314-002-AC 5-21-99 PSD-FL-249	

Is your RETURN ADDRESS completed on the reverse side?

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

- Addressee's Address
- Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Jorge Rodriguez PE
Miami - Dade Water
& Sewer
4700 Salzedo St.
Coral Gables, FL
3346-0316

4a. Article Number

2333 618 152

4b. Service Type

- Registered
- Express Mail
- Return Receipt for Merchandise
- Certified
- Insured
- COD

7. Date of Delivery

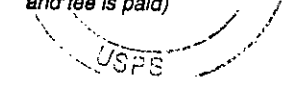
MAY 21 1999

5. Received By: (Print Name)

6. Signature: (Addressee or Agent)

[Signature]

8. Addressee's Address (Only if requested and fee is paid)



Thank you for using Return Receipt Service.

PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEP File No. 0250314-002-AC, PSD-FL-249

Miami-Dade Water and Sewer Department
Alexander Orr, Jr. Water Treatment Plant
Standby Diesel Engine Generators
Miami-Dade County

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit to Miami-Dade Water and Sewer Department, for the Alexander Orr, Jr. WTP located at 6800 SW 87 Avenue, Miami, Miami-Dade County. The permit is to allow the applicant to increase operation of four existing diesel engine generators to provide power generation capacity during periods of load-sharing with the local utility, during power failures and other circumstances including severe weather warnings and events of potential electric utility power losses or reductions. The applicant's mailing address is: 4200 Salzedo Street, Coral Gables, Florida 33146-0316. A Best Available Control Technology (BACT) determination was required for nitrogen oxides (NOx) pursuant to Rule 62-212.400, F.A.C. and 40 CFR 52.21, Prevention of Significant Deterioration (PSD). Nitrogen Oxides (NOx) emissions will be controlled by the use of fuel injection timing retardation and turbocharger aftercooling.

Total emissions of pollutants shall not exceed the following annual emission rates in tons per year: NOx, 403; PM/PM₁₀, 5.6; Sulfur dioxide, 5.0; VOC, 7.8; CO, 20.8.

An air quality impact analysis was conducted. Emissions from the facility will not cause or contribute to a violation of any state or federal ambient air quality standards. The maximum predicted PSD NO₂ increment consumed by all sources, including this project, in the nearest Class I (Everglades National Park) and Class II areas will be as follows:

Averaging Time and Class	Allowable Increment ($\mu\text{g}/\text{m}^3$)	Increment Consumed ($\mu\text{g}/\text{m}^3$)	Percent Consumed
Annual - Class I	2.5	0.86	34
Annual - Class II	25	24.1	96

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

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

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

Mediation is not available in this proceeding.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions

NOTICE TO BE PUBLISHED IN THE NEWSPAPER

filed by the permit applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by rule 28-106.301

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

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

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

Dept. of Environmental Protection
Southeast District
400 North Congress Avenue
West Palm Beach, Florida 33401
Telephone: 561/681-6600

Dade County Department of
Environmental Resources Mgmt.
Suite 900, 33 Southwest 2nd Ave.
Miami, Florida 33130-1540
Telephone: 305/372-6925

The complete project file includes the application, technical evaluations, Draft permit, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Administrator, New Source Review Section, or the Department's reviewing engineer for this project, Joseph Kahn, P.E., at 111 South Magnolia Drive, Suite 4, Tallahassee, Florida 32301, or call 850/488-0114, for additional information.

NOTICE TO BE PUBLISHED IN THE NEWSPAPER

TECHNICAL EVALUATION
AND
PRELIMINARY DETERMINATION

Miami-Dade Water and Sewer Department
Alexander Orr, Jr. WTP
Standby Diesel Engine Generators
Miami-Dade County

DEP File No. 0250314-002-AC
PSD-FL-249

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

May 21, 1999

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

1. GENERAL INFORMATION

1.1 APPLICANT NAME AND ADDRESS

Miami-Dade Water and Sewer Department
Alexander Orr, Jr. WTP
4200 Salzedo Street
Coral Gables, Florida 33146-0316

Authorized Representative: Jorge S. Rodriguez, P.E., Assistant Director, Water

1.2 REVIEWING AND PROCESS SCHEDULE

4/27/98	Received permit application
5/19/98	Received sufficient application fee
6/17/98	Department's request for additional information
4/5/99	Received response to request for additional information
4/5/99	Application complete

2. FACILITY INFORMATION

2.1 FACILITY LOCATION

This facility is located at 6800 SW 87 Avenue, Miami, Miami-Dade County. UTM coordinates are: Zone 17; 566.6 km E and 2843.5 km N.

This site is approximately 17 kilometers from Everglades National Park, a Class I PSD Area.

2.2 STANDARD INDUSTRIAL CLASSIFICATION CODES (SIC)

Industry Group No.	49	Electric, Gas, and Sanitary Services
Industry No.	4941	Water Supply

2.3 FACILITY CATEGORY

This facility consists of a municipally owned water treatment plant providing potable water to the public. The Miami-Dade Water and Sewer Department (WASD) is the sixth largest public utility in the United States, providing direct services to approximately 356,000 retail customers. Wholesale water service is provided to 14 municipalities and wholesale sewer service to 12 of the County's 29 municipalities. Miami-Dade County's current population of 2 million is expected to reach the 3 million mark by the year 2015.¹ The Alexander Orr, Jr. WTP supplies approximately half of the water supply of the WASD system.²

This facility is classified as a Major or Title V Source of air pollution because emissions of at least one regulated air pollutant, such as particulate matter (PM/PM₁₀), sulfur dioxide (SO₂), nitrogen oxides (NO_x), carbon monoxide (CO), or volatile organic compounds (VOC) exceeds 100 tons per year (TPY).

This facility is not within an industry included in the list of the 28 Major Facility Categories per Table 62-212.400-1, F.A.C. Because potential emissions are greater than 250 TPY for at least one criteria pollutant, the facility is also a major facility with respect to Rule 62-212.400, Prevention of Significant Deterioration (PSD). (The applicant estimated emissions of NO_x at this facility less than the 250 TPY major facility threshold, but there is no current limitation on operation of the diesel engine generators and, considering the potential emissions from these emissions units before the application of BACT, potential emissions from this facility exceed the major facility threshold.)

This facility is not a major source of hazardous air pollutants (HAPs).

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

3. PROJECT DESCRIPTION

The applicant proposes to increase operation of four existing diesel engine generators at its Alexander Orr, Jr. Water Treatment Plant in Miami. This will allow the applicant to provide power generation capacity during periods of load-sharing with the local utility, Florida Power and Light; during power failure events; or as needed under other circumstances including severe weather warnings and events of potential electric utility power losses or reductions.

This permitting action is to increase the operation of four existing diesel engine generators, and to modify the engines to comply with the emission limit specified by the BACT determination by retarding the fuel injector timing and installing turbocharger aftercoolers. Emissions units addressed by this permit are:

EMISSIONS UNIT NO.	EMISSIONS UNIT DESCRIPTION
009	Diesel Engine Generator #1, EMD model 20-645F4B
010	Diesel Engine Generator #2, EMD model 20-645F4B
011	Diesel Engine Generator #3, EMD model 20-645F4B
012	Diesel Engine Generator #4, EMD model 20-645F4B

All engines are General Motors Electro-Motive Diesel (EMD) model 20-645F4B generators, each with a nominal base load rating of 2.865 megawatts (MW) driven by a 4,000 bhp prime mover. Each prime mover is a 20 cylinder, 2 cycle turbocharged diesel engine.

4. PROJECT EMISSIONS

The applicant has indicated that the maximum annual air pollutant emission rates in tons per year for the six diesel generators, based on consumption of 1,415,000 gallons per year of diesel fuel oil, with a maximum sulfur content of 0.05 percent, by weight, will be:

POLLUTANT	PSD SIGNIFICANCE LEVELS ¹	MAXIMUM EMISSIONS	SUBJECT TO PSD REVIEW?
NO _x	40	403 ²	Yes
CO	100	20.8 ³	No
PM/PM ₁₀	25/15	5.6 ⁴	No
SO ₂	40	5.0 ⁵	No
VOC (NMHC)	40	7.8 ⁶	No

¹ Florida Administrative Code 212.400-2.

² Maximum emissions based on operation of engines consuming all permitted diesel fuel oil, equivalent to operating all engines 7,180 hours per year combined, or each engine equally 1,795 hours per year.

³ Maximum emissions based on operation of engines at 25 percent load while firing diesel fuel oil.

⁴ Maximum emissions based on operation of engines consuming all permitted diesel fuel oil.

⁵ Maximum emissions based on operation of engines consuming all permitted diesel fuel oil (0.05% sulfur by weight).

⁶ Maximum emissions based on operation of engines consuming all permitted diesel fuel oil.

The proposed project will result in "significant increases" with respect to Table 62-212.400-2, F.A.C., of emissions of nitrogen oxides (NO_x). The project is therefore subject to review for the Prevention of Significant Deterioration (PSD) and a determination of Best Available Control Technology (BACT) in accordance with Rules 62-212.400, F.A.C.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

The proposed project results in less-than-significant increases in carbon monoxide (CO), sulfur dioxide (SO₂), particulate matter (PM/PM₁₀), and volatile organic compounds (VOC).

5. RULE APPLICABILITY

The proposed project is subject to preconstruction review requirements under the provisions of Chapter 403, Florida Statutes, and Chapters 62-4, 62-204, 62-210, 62-212, 62-214, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.).

This facility is located in an area designated, in accordance with Rule 62-204.340, F.A.C., as attainment for the criteria pollutants ozone, carbon monoxide, sulfur dioxide, and nitrogen dioxide; designated as unclassifiable for lead and PM₁₀; and also designated as a maintenance area for ozone.

The proposed project was reviewed under Rule 62-212.400(5), F.A.C., New Source Review (NSR) for Prevention of Significant Deterioration (PSD), because it will be a major modification to a major facility. (The proposed modification, in and of itself, would also constitute a new major facility subject to PSD.) This review consisted of a determination of Best Available Control Technology (BACT) and an analysis of the air quality impact of the increased emissions. (The BACT determination is documented separately.) The review also includes an analysis of the project's impacts on soils, vegetation and visibility, along with air quality impacts resulting from associated commercial, residential and industrial growth.

The BACT limits for NO_x for these emissions units are more stringent than the NO_x RACT limit of 4.75 lb/mmBtu specified by Rule 62-296.570(4)(b)7., F.A.C. The draft permit for this project will require compliance with the more stringent BACT limits rather than the RACT limit, and the permit will not include the RACT rule as an applicable requirement.

The emissions units in this permitting action shall comply with all applicable provisions of the Florida Administrative Code (including applicable portions of the Code of Federal Regulations incorporated therein) and, specifically, the following Chapters and Rules.

5.1 STATE REGULATIONS

Chapter 62-4	Permits
Rule 62-204.220	Ambient Air Quality Protection
Rule 62-204.240	Ambient Air Quality Standards
Rule 62-204.260	Prevention of Significant Deterioration Increments
Rule 62-204.360	Designation of Prevention of Significant Deterioration Areas
Rule 62-204.800	Federal Regulations Adopted by Reference
Rule 62-210.200	Definitions
Rule 62-210.300	Permits Required
Rule 62-210.350	Public Notice and Comments
Rule 62-210.370	Reports
Rule 62-210.550	Stack Height Policy
Rule 62-210.650	Circumvention
Rule 62-210.700	Excess Emissions
Rule 62-210.900	Forms and Instructions
Rule 62-212.300	General Preconstruction Review Requirements
Rule 62-212.400	Prevention of Significant Deterioration
Rule 62-212.410	Best Available Control Technology (BACT)
Rule 62-213	Operation Permits for Major Sources of Air Pollution
Rule 62-296.320	General Pollutant Emission Limiting Standards
Rule 62-297.310	General Test Requirements
Rule 62-297.401	Compliance Test Methods

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

6. AIR POLLUTION CONTROL TECHNIQUES

The applicant proposed to control NO_x emissions by fuel injection timing retardation and installation of a turbocharger aftercooler to cool combustion air. Following is the BACT limit and the control techniques for this project.

POLLUTANT	EMISSION LIMIT
Nitrogen Oxides	4.12 lb/mmBtu achieved by fuel injection timing retardation and turbocharger aftercooling

The control techniques for NO_x are discussed in more detail in the BACT Determination for this project.

The emissions of sulfur dioxide will be limited by the use of very low sulfur diesel fuel (0.05% sulfur by weight). Use of this fuel will also limit PM₁₀ emissions. Emissions of VOCs, PM₁₀ and CO will also be limited by proper engine maintenance and operation.

6.1 COMPLIANCE PROCEDURES

POLLUTANT	COMPLIANCE PROCEDURE
NO _x	Annual test using EPA Method 7 or 7E, with rake probe

6.2 EXCESS EMISSIONS

Allowable Excess Emissions: Pursuant to Rule 62-210.700 F.A.C., excess emissions are allowable for startup, shutdown and malfunction as allowed by rule.

7. SOURCE IMPACT ANALYSIS

7.1 INTRODUCTION

The proposed project will increase NO_x emissions at a level in excess of PSD significant amounts. The air quality impact analyses required by the PSD regulations for this pollutant include:

- An analysis of existing air quality;
- A significant impact analysis;
- A PSD increment analysis;
- An Ambient Air Quality Standards (AAQS) analysis; and
- An analysis of impacts on soils, vegetation, and visibility and of growth-related air quality modeling impacts.

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

Based on the required analyses, the Department has reasonable assurance that the proposed project, as described in this report and subject to the conditions of approval proposed herein, will not cause or significantly contribute to a violation of any AAQS or PSD increment. However, the following EPA-directed stack height language is included: "In approving this permit, the Department has determined that the application complies with the applicable provisions of the stack height regulations as revised by EPA on July 8, 1985 (50 FR 27892). Portions of the regulations have been remanded by a panel of the U.S. Court of Appeals for the D.C. Circuit in NRDC v. Thomas, 838 F. 2d 1224 (D.C. Cir. 1988). Consequently, this

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

permit may be subject to modification if and when EPA revises the regulation in response to the court decision. This may result in revised emission limitations or may affect other actions taken by the source owners or operators." A discussion of the required analyses follows.

7.2 ANALYSIS OF EXISTING AIR QUALITY

Preconstruction ambient air quality monitoring is required for all pollutants subject to PSD review unless otherwise exempted or satisfied. This monitoring requirement may be satisfied by using previously existing representative monitoring data, if available. An exemption to the monitoring requirement may be obtained if either of the following conditions is met: the maximum predicted air quality impact resulting from the projected emissions increase, as determined by air quality modeling, is less than a pollutant-specific de minimus concentration, or the existing ambient concentrations are less than a pollutant-specific de minimus concentration. If preconstruction ambient monitoring is exempted, determination of background concentrations for PSD significant pollutants with established AAQS may still be necessary for use in any required AAQS analysis. These concentrations may be established from the required preconstruction ambient air quality monitoring analysis or from the existing representative monitoring data. These background ambient air quality concentrations are added to pollutant impacts predicted by modeling and represent the air quality impacts of sources not included in the modeling.

Annual NO₂ impacts from the project are predicted to be 23.7 ug/m³, which is greater than the de minimus level of 14 ug/m³; therefore, preconstruction monitoring is required. However, previously existing representative monitoring data does exist from the Rosenstiel-Virginia Key monitor in the vicinity of the project. A background concentration was established for use in the required AAQS analysis from these data. This monitor had a measured annual average NO₂ concentration of 12 ug/m³ in 1997.

7.3 MODELS AND METEOROLOGICAL DATA USED IN SIGNIFICANT IMPACT, PSD INCREMENT AND AAQS ANALYSES

The EPA-approved Industrial Source Complex Short-Term (ISCST3) dispersion model was used to evaluate the pollutant emissions from the proposed project and other existing major facilities. The model determines ground-level concentrations of inert gases or small particles emitted into the atmosphere by point, area, and volume sources. The model incorporates elements for plume rise, transport by the mean wind, Gaussian dispersion, and pollutant removal mechanisms such as deposition. The ISCST3 model allows for the separation of sources, building wake downwash, and various other input and output features. 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. Direction-specific downwash parameters were used for all sources for which downwash was considered. The stacks associated with this project all satisfy the good engineering practice (GEP) stack height criteria.

Meteorological data used in the ISCST3 model consisted of a concurrent 5-year period of hourly surface weather observations and twice-daily upper air soundings from the National Weather Service (NWS) stations at Miami, Florida (surface data) and West Palm Beach, Florida (upper air data). The 5-year period of meteorological data was from 1987 through 1991. These NWS stations were selected for use in the study because they are the closest primary weather stations to the study area and are most representative of the project site. The surface observations included wind direction, wind speed, temperature, cloud cover, and cloud ceiling.

For this project, since only the impacts of NO_x emissions are being evaluated and since the NO₂ standards and increments are based on annual averages, the highest predicted annual averages were compared with the significant impact level, the AAQS and the PSD increments.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

7.4 SIGNIFICANT IMPACT ANALYSIS

Initially, the applicant conducted modeling to determine whether the proposed project's NO_x emissions were predicted to have a significant impact in the vicinity of the facility or in the Class I area. The applicant placed over 1,000 receptors along the site boundary and out to 16 km from the facility, which is located in a PSD Class II area. A total of 32 receptors were placed along the northern and eastern boundaries of the Everglades National Park (ENP). ENP is a PSD Class I area which is located approximately 17 km from the project at its closest point. The tables below show the results of this modeling. The radius of significant impact is also shown in the first table below.

**MAXIMUM PROJECT AIR QUALITY IMPACT FOR COMPARISON
TO THE PSD CLASS II SIGNIFICANT IMPACT LEVEL IN THE VICINITY OF THE FACILITY**

POLLUTANT	AVERAGING TIME	MAXIMUM PREDICTED IMPACT (ug/m ³)	SIGNIFICANT IMPACT LEVEL (ug/m ³)	SIGNIFICANT IMPACT?	RADIUS OF SIGNIFICANT IMPACT (km)
NO ₂	Annual	23.7	1	YES	7

**MAXIMUM PROJECT AIR QUALITY IMPACT IN THE ENP FOR
COMPARISON TO THE PSD CLASS I SIGNIFICANT IMPACT LEVEL**

POLLUTANT	AVERAGING TIME	MAXIMUM PREDICTED IMPACT (ug/m ³)	SIGNIFICANT IMPACT LEVEL (ug/m ³)	SIGNIFICANT IMPACT?
NO ₂	Annual	0.34	0.1	YES

As shown in the tables the maximum predicted air quality impacts due to NO_x emissions from the proposed project are greater than the PSD significant impact levels both in the vicinity of the facility and in the ENP. Therefore, the applicant was required to do full impact NO₂ modeling in the vicinity of the facility, within the applicable significant impact area, to determine the impacts of the project along with all other sources in the vicinity of the facility. The significant impact area is based upon the predicted radius of significant impact. Full impact modeling is modeling that considers not only the impact of the project but the impacts of the existing facility and other major sources, including background concentrations, located within the vicinity of the project to determine whether all increments or AAQS are predicted to be met.

7.5 PROCEDURE FOR PERFORMING PSD INCREMENTS AND AAQS ANALYSES

For the PSD and AAQS analyses, receptor grids normally are based on the size of the significant impact area for each pollutant. The size of the significant impact areas for the required NO₂ analyses were based on a 7 km radius of significant impact.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

7.6 PSD INCREMENT ANALYSIS

The PSD increment represents the amount that new sources in an area may increase ambient ground level concentrations of a pollutant. The results of the required PSD Class I and II increment analyses presented in the tables below show that all of the maximum predicted impacts are less than the allowable Class II increments.

PSD CLASS II INCREMENT ANALYSIS IN THE VICINITY OF THE FACILITY

POLLUTANT	AVERAGING TIME	MAXIMUM PREDICTED IMPACT (ug/m ³)	IMPACT GREATER THAN ALLOWABLE INCREMENT?	ALLOWABLE INCREMENT (ug/m ³)
NO ₂	Annual	24.1	NO	25

PSD CLASS I INCREMENT ANALYSIS IN THE ENP

POLLUTANT	AVERAGING TIME	MAXIMUM PREDICTED IMPACT (ug/m ³)	IMPACT GREATER THAN ALLOWABLE INCREMENT?	ALLOWABLE INCREMENT (ug/m ³)
NO ₂	Annual	0.86	NO	2.5

7.7 AAQS ANALYSIS

The results of the NO₂ AAQS analysis are summarized in the table below. As shown in this table, emissions from the proposed facility are not expected to cause or significantly contribute to a violation of any AAQS. The maximum predicted impact is located along the property fenceline 195 m north of the standby generators.

AMBIENT AIR QUALITY IMPACTS

AVERAGING TIME	MODELED SOURCES IMPACT (ug/m ³)	BACKGROUND CONC. (ug/m ³)	MAXIMUM PREDICTED IMPACT (ug/m ³)	AAQS (ug/m ³)	PREDICTED IMPACT GREATER THAN AAQS?
Annual	87.5	12	99.5	100	NO

7.8 ADDITIONAL IMPACTS ANALYSIS

7.8.1 IMPACTS ON SOILS, VEGETATION, WILDLIFE, AND VISIBILITY

The maximum ground-level concentrations predicted to occur due to NO_x emissions as a result of the proposed project, including all other nearby sources, will be below the associated AAQS. The AAQS are designed to protect both the public health and welfare. As such, this project is not expected to have a harmful impact on soils and vegetation in the PSD Class II area. An air quality related values (AQRV) analysis was done by the applicant for the Class I area. No significant impacts on this area are expected. A visibility analysis was done by the Department for the Class I area. This analysis showed no significant impact on visibility in this area.

7.8.2 GROWTH-RELATED AIR QUALITY IMPACTS

There will be no growth associated with this project.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

8. CONCLUSION

Based on the foregoing technical evaluation of the application and additional information submitted by the applicant, the Department has made a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations. The Department will issue a draft permit to the applicant that allows the applicant to modify the engines to comply with the emission limit specified by the BACT determination and increase the use of the four existing diesel engine generators.

Joseph Kahn, P.E. and Cleve Holladay (modeling)
Mail Station #5505
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
850/921-9519

¹ Provided by WASD at www.metro-dade.com/wasd/customer.htm.

² Telephone conversation with Richard O'Rourke of WASD, January 1999.

DRAFT

PERMITTEE

Miami-Dade Water and Sewer Department
Alexander Orr, Jr. WTP
4200 Salzedo Street
Coral Gables, Florida 33146-0316

Permit No.	0250314-002-AC, PSD-FL-249
Project	Diesel Engine Generators
SIC No.	4941
Expires:	^DRAFT

Authorized Representative:

Jorge S. Rodriguez, P.E., Assistant Director, Water

PROJECT AND LOCATION

This permit authorizes Miami-Dade Water and Sewer Department to increase the operation of four existing diesel engine generators, and to modify the engines to comply with the emission limit specified by the BACT determination by retarding the fuel injector timing and installing turbocharger aftercoolers.

This facility is located at 6800 SW 87 Avenue, Miami, Miami-Dade County. UTM coordinates are: Zone 17; 566.6 km E and 2843.5 km N.

STATEMENT OF BASIS

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

APPENDICES

The attached appendices are a part of this permit:

Appendix BD BACT Determination
Appendix GC General Permit Conditions

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Howard L. Rhodes, Director
Division of Air Resources
Management

SECTION I. FACILITY INFORMATION

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FACILITY DESCRIPTION

This facility consists of a municipally owned water treatment plant providing potable water to the public.

PROJECT DETAILS

This permitting action is to increase the operation of four existing diesel engine generators, and to modify the engines to comply with the emission limit specified by the BACT determination by retarding the fuel injector timing and installing turbocharger aftercoolers. Emissions units addressed by this permit are:

EMISSIONS UNIT NO.	EMISSIONS UNIT DESCRIPTION
009	Diesel Engine Generator #1, EMD model 20-645F4B
010	Diesel Engine Generator #2, EMD model 20-645F4B
011	Diesel Engine Generator #3, EMD model 20-645F4B
012	Diesel Engine Generator #4, EMD model 20-645F4B

All engines are General Motors Electro-Motive Diesel (EMD) model 20-645F4B generators, each with a nominal base load rating of 2.865 megawatts (MW) driven by a 4,000 bhp prime mover. Each prime mover is a 20 cylinder, 2 cycle turbocharged diesel engine.

REGULATORY CLASSIFICATION

This facility is classified as a Major or Title V Source of air pollution because emissions of at least one regulated air pollutant, such as particulate matter (PM/PM₁₀), sulfur dioxide (SO₂), nitrogen oxides (NO_x), carbon monoxide (CO), or volatile organic compounds (VOC) exceeds 100 tons per year (TPY).

This facility is not within an industry included in the list of the 28 Major Facility Categories per Table 62-212.400-1, F.A.C. Because emissions are greater than 250 TPY for at least one criteria pollutant, the facility is also a Major Facility with respect to Rule 62-212.400, Prevention of Significant Deterioration (PSD).

This facility is not a major source of hazardous air pollutants (HAPs).

The emissions units included in this project are subject to regulation under Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD) (version dated 2/5/98).

REVIEWING AND PROCESS SCHEDULE

4/27/98	Received permit application
5/19/98	Received sufficient application fee
6/17/98	Department's request for additional information
4/5/99	Received response to request for additional information
4/5/99	Application complete
5/~/99	Distributed Notice of Intent to Issue and supporting documents
^	Notice of Intent published in ^

RELEVANT DOCUMENTS

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

SECTION I. FACILITY INFORMATION

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- Permit application
- Department's request for additional information
- Applicant's additional information
- Department's Technical Evaluation and Preliminary Determination dated May 21, 1999
- Department's Intent to Issue dated ^

SECTION II. FACILITY-WIDE SPECIFIC CONDITIONS

The following specific conditions apply to all emissions units at this facility addressed by this permit.

ADMINISTRATIVE

1. **Regulating Agencies:** All documents related to applications for permits to construct, operate or modify an emissions unit should be submitted to the Bureau of Air Regulation (BAR), Florida Department of Environmental Protection at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, phone number 850/488-0114. All documents related to reports, tests, minor modifications and notifications shall be submitted to the Department's Southeast District office at PO Box 15425, West Palm Beach, Florida, 33416-5425, and phone number 561/681-6600. Copies of all documents should be sent also to the Air Quality Management Division, Miami-Dade County Department of Environmental Resources Management, Suite 900 33 SW Second Avenue, Miami, Florida 33130-1540.
2. **General Conditions:** The owner and operator is subject to and shall operate under the attached General Permit Conditions G.1 through G.15 listed in Appendix GC of this permit. General Permit Conditions are binding and enforceable pursuant to Chapter 403 of the Florida Statutes. [Rule 62-4.160, F.A.C.]
3. **Terminology:** The terms used in this permit have specific meanings as defined in the corresponding chapters of the Florida Administrative Code.
4. **Applicable Regulations, Forms and Application Procedures:** Unless otherwise indicated in this permit, the construction and operation of the subject emissions unit shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of Chapter 403, F.S. and Florida Administrative Code Chapters 62-4, 62-110, 62-204, 62-212, 62-213, 62-296, 62-297 and the Code of Federal Regulations Title 40, Part 60, adopted by reference in the Florida Administrative Code (F.A.C.) regulations. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C. and follow the application procedures in Chapter 62-4, F.A.C. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]
5. **New or Additional Conditions:** Pursuant to Rule 62-4.080, F.A.C., 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. **Expiration:** This air construction permit shall expire on ^DRAFT. The permittee, for good cause, may request that this construction/PSD permit be extended. Such a request shall be submitted to the Department's Bureau of Air Regulation prior to 60 days before the expiration of the permit. [Rules 62-210.300(1), 62-4.070(4), 62-4.080, and 62-4.210, F.A.C.]

PSD Expiration: Approval to construct shall become invalid if construction is not commenced within 18 months after receipt of such approval, or if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time. The Department may extend the 18-month period upon a satisfactory showing that an extension is justified. [40 CFR 52.21(r)(2)]

BACT Determination: In conjunction with extension of the 18 month periods to commence or continue construction, or extension of the permit expiration date, the permittee may be required to demonstrate

SECTION II. FACILITY-WIDE SPECIFIC CONDITIONS

the adequacy of any previous determination of Best Available Control Technology (BACT) for the source. [40 CFR 52.21(j)(4)]

7. Modifications: No emissions unit or facility subject to this permit shall be constructed or modified without obtaining an air construction permit from the Department. Such permit must be obtained prior to the beginning of construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]
8. Title V Operation Permit Required: This permit authorizes construction and/or installation of the permitted emissions unit and initial operation to determine compliance with Department rules. A Title V operation permit is required for regular operation of the permitted emissions unit. The owner or operator shall apply for and receive a Title V operation permit prior to expiration of this permit. 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 Department's Southeast District office at PO Box 15425, West Palm Beach, Florida, 33416-5425, and phone number 561/681-6600. Copies of all documents should be sent also to the Air Quality Management Division, Miami-Dade County Department of Environmental Resources Management, Suite 900 33 SW Second Avenue, Miami, Florida 33130-1540. [Rules 62-4.030, 62-4.050, 62-4.220, and Chapter 62-213, F.A.C.]

EMISSION LIMITING STANDARDS

9. General Visible Emissions Standard: Except for emissions units that are subject to a particulate matter or opacity limit set forth or established by rule and reflected by conditions in this permit, no person shall cause, let, permit, suffer, or allow to be discharged into the atmosphere the emissions of air pollutants from any activity, the density of which is equal to or greater than that designated as Number 1 on the Ringelmann Chart (20% opacity). The test method for visible emissions shall be EPA Method 9, incorporated and adopted by reference in Chapter 62-297, F.A.C. Test procedures shall meet all applicable requirements of Chapter 62-297, F.A.C. [Rule 62-296.320(4)(b)1, F.A.C.]
10. Unconfined Emissions of Particulate Matter: [Rule 62-296.320(4)(c), F.A.C.]
 - (a) No person shall cause, let, permit, suffer or allow the emissions of unconfined particulate matter from any activity, including vehicular movement; transportation of materials; construction, alteration, demolition or wrecking; or industrially related activities such as loading, unloading, storing or handling; without taking reasonable precautions to prevent such emissions.
 - (b) Any permit issued to a facility with emissions of unconfined particulate matter shall specify the reasonable precautions to be taken by that facility to control the emissions of unconfined particulate matter.
 - (c) Reasonable precautions include the following:
 - Paving and maintenance of roads, parking areas and yards.
 - Application of water or chemicals to control emissions from such activities as demolition of buildings, grading roads, construction, and land clearing.
 - Application of asphalt, water, oil, chemicals or other dust suppressants to unpaved roads, yards, open stock piles and similar activities.

SECTION II. FACILITY-WIDE SPECIFIC CONDITIONS

- Removal of particulate matter from roads and other paved areas under the control of the owner or operator of the facility to prevent reentrainment, and from buildings or work areas to prevent particulate from becoming airborne.
- Landscaping or planting of vegetation.
- Use of hoods, fans, filters, and similar equipment to contain, capture and/or vent particulate matter.
- Confining abrasive blasting where possible.
- Enclosure or covering of conveyor systems.

(d) In determining what constitutes reasonable precautions for a particular source, the Department shall consider the cost of the control technique or work practice, the environmental impacts of the technique or practice, and the degree of reduction of emissions expected from a particular technique or practice.

11. General Pollutant Emission Limiting Standards: [Rule 62-296.320(1)(a)&(2), F.A.C.]

- (a) No person shall not store, pump, handle, process, load, unload or use in any process or installation, volatile organic compounds or organic solvents without applying known and existing vapor emission control devices or systems deemed necessary and ordered by the Department.
- (b) No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor.

[Note: An objectionable odor is defined in Rule 62-210.200(198), F.A.C., as any odor present in the outdoor atmosphere which by itself or in combination with other odors, is or may be harmful or injurious to human health or welfare, which unreasonably interferes with the comfortable use and enjoyment of life or property, or which creates a nuisance.]

OPERATIONAL REQUIREMENTS

12. Plant Operation - Problems: If temporarily unable to comply with any of the conditions of the permit due to breakdown of equipment or destruction by hazard of fire, wind or by other cause, the permittee shall immediately notify the Department's district office and, if applicable, appropriate local program. The notification shall include pertinent information as to the cause of the problem, and what steps are being taken to correct the problem and to prevent its recurrence, and where applicable, the owner's intent toward reconstruction of destroyed facilities. Such notification does not release the permittee from any liability for failure to comply with Department rules. [Rule 62-4.130, F.A.C.]
13. Circumvention: 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.]
14. Excess Emissions:
- (a) Excess emissions resulting from start-up, shutdown or malfunction of any emissions units shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized, but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration. [Rule 62-210.700(1), F.A.C.]

SECTION II. FACILITY-WIDE SPECIFIC CONDITIONS

- (b) Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during start-up, shutdown, or malfunction shall be prohibited. [Rule 62-210.700(4), F.A.C.]

COMPLIANCE MONITORING AND TESTING REQUIREMENTS

15. 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.]
16. Operating Rate During Testing: Unless otherwise stated in the applicable emission limiting standard rule, testing of emissions shall be conducted with the emissions unit operation at permitted capacity. Permitted capacity is defined as 90 to 100 percent of the maximum operation rate allowed by the permit. If it is impractical to test at permitted capacity, an emissions unit may be tested at less than the minimum permitted capacity; in this case, subsequent emissions unit operation is limited to 110 percent of the test load 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. [Rule 62-297.310(2), F.A.C.]
17. Calculation of Emission Rate: 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.]
18. Test Procedures shall meet all applicable requirements of Rule 62-297.310(4), F.A.C. [Rule 62-297.310(4), F.A.C.]
19. Determination of Process Variables: [Rule 62-297.310(5), F.A.C.]
- (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

SECTION II. FACILITY-WIDE SPECIFIC CONDITIONS

sufficient accuracy to allow the applicable process variable to be determined within 10% of its true value.

20. **Required Stack Sampling Facilities:** Sampling facilities include sampling ports, work platforms, access to work platforms, electrical power, and sampling equipment support. All stack sampling facilities must meet any Occupational Safety and Health Administration (OSHA) Safety and Health Standards described in 29 CFR Part 1910, Subparts D and E. Sampling facilities shall also conform to the requirements of Rule 62-297.310(6), F.A.C. [Rule 62-297.310(6), F.A.C.]
21. **Test Notification:** The owner or operator shall notify the Department's district office and, if applicable, appropriate local program, at least 15 days prior to the date on which each formal compliance test is to begin. Notification shall include 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. [Rule 62-297.310(7)(a)9., F.A.C.]
22. **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 facility to conduct compliance tests which identify the nature and quantity of pollutant emissions from the emissions units and to provide a report on the results of said tests to the Department. [Rule 62-297.310(7)(b), F.A.C.]

REPORTING AND RECORD KEEPING REQUIREMENTS

23. **Duration of Record Keeping:** 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. 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 five years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule. [Rules 62-4.160(14)(a)&(b) and 62-213.440(1)(b)2.b., F.A.C.]
24. **Test Reports:** 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. 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 or DEP Method 9 test, shall provide the applicable information listed in Rule 62-297.310(8)(c), F.A.C. [Rule 62-297.310(8), F.A.C.]
25. **Excess Emissions Report:** If excess emissions occur, the owner or operator shall notify the Department within one working day of: the nature, extent, and duration of the excess emissions; the cause of the excess emissions; and the actions taken to correct the problem. In addition, the Department may request a written summary report of the incident. Pursuant to the New Source Performance Standards, excess emissions shall also be reported in accordance with 40 CFR 60.7, Subpart A. [Rule 62-4.130, F.A.C.]

SECTION II. FACILITY-WIDE SPECIFIC CONDITIONS

26. Excess Emissions Report - Malfunctions: In case of excess emissions resulting from malfunctions, each owner or operator shall notify the Department or the appropriate local program in accordance with Rule 62-4.130, F.A.C. A full written report on the malfunctions shall be submitted in a quarterly report if requested by the Department. [Rule 62-210.700(6), F.A.C.]
27. Annual Operating Report for Air Pollutant Emitting Facility: The Annual Operating Report for Air Pollutant Emitting Facility shall be completed each year and shall be submitted to the Department's Southeast District office and, if applicable, the appropriate local program by March 1 of the following year. [Rule 62-210.370(3), F.A.C.]

The following specific conditions apply to the following emissions units after construction:

EMISSIONS UNIT NO.	EMISSIONS UNIT DESCRIPTION
009	Diesel Engine Generator #1, EMD model 20-645F4B
010	Diesel Engine Generator #2, EMD model 20-645F4B
011	Diesel Engine Generator #3, EMD model 20-645F4B
012	Diesel Engine Generator #4, EMD model 20-645F4B

All engines are General Motors Electro-Motive Diesel (EMD) model 20-645F4B generators, each with a nominal base load rating of 2.865 megawatts (MW) driven by a 4,000 bhp prime mover. Each prime mover is a 20 cylinder, 2 cycle turbocharged diesel engine.

[Note: These emissions units are subject to regulation under Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD) (version dated 2/5/98), and are subject to the requirements of the state rules as indicated in this permit.]

OPERATIONAL REQUIREMENTS

1. Hours of Operation: These emissions units may operate continuously, i.e., 8,760 hours/year. [Rule 62-210.200, F.A.C., Definitions-potential to emit (PTE)]
2. Diesel Fuel: Each emissions unit shall be fired with diesel fuel with a maximum sulfur content of 0.05 percent, by weight. Fuel consumption of all emissions units combined shall not exceed 1,415,000 gallons of diesel fuel in any consecutive 12-month period. [Rule 62-210.200, F.A.C., Definitions-potential to emit (PTE)]

[Note: At 100% engine load, each model 20-645F4B engine has a fuel consumption of approximately 197.1 gallons per hour, based on a heat input of 27.2 mmBtu/hr, and a 36-degree API diesel fuel higher heating value of 19,640 Btu/lb and density of 7.034 lb/gal.]

3. Operating Procedures: These emissions units shall be properly operated and maintained at all times in a condition to minimize emissions of air pollutants. The owner and operator shall ensure that all facility staff responsible for these emissions units are trained in their operation and maintenance in accordance with the guidelines and procedures as established by the equipment manufacturers. [Rule 62-4.070(3), F.A.C.]

EMISSION LIMITATIONS AND PERFORMANCE STANDARDS

4. Visible Emissions: These emissions units are subject to the VE requirements of specific condition 9 in Section II of this permit. [Rule 62-296.320, F.A.C.]
5. Emission Limitation, NOx: Emissions of NOx are limited as follows:

Emissions of NOx from each of the model 20-645F4B engines shall not exceed 4.12 lb/mmBtu. [Rule 62-212.400, F.A.C. & BACT Determination for PSD-FL-249]

[Note: This is equivalent to an emission rate of approximately 112.1 lb/hr at 100% engine load for each of the model 20-645F4B engines. Emissions of NOx are limited to 403 tons per year by the conditions of this permit.]

SECTION III. EMISSIONS UNITS SPECIFIC CONDITIONS

COMPLIANCE MONITORING AND TESTING REQUIREMENTS

6. NOx Emissions Tests: Compliance with the emission limits for NOx of this permit shall be demonstrated by an annual compliance test using EPA Method 7 or 7E, as described in 40 CFR 60, Appendix A (1997 version), adopted by reference in Rule 62-204.800, F.A.C., and adopted in Rule 62-297.401, F.A.C. Sampling of the exhaust gas shall be via a rake probe placed into the engine exhaust outlet. [Rules 62-4.070(3), 62-204.800, 62-297.340, and 62-297.401, F.A.C.]
7. Fuel Sulfur Content Tests: The owner or operator shall determine the sulfur content of each delivery of diesel fuel received for these emissions units using ASTM D 4057-88, Standard Practice for Manual Sampling of Petroleum and Petroleum Products; and one of the following test methods for sulfur in petroleum products: ASTM D 129-91, ASTM D 2622-94, or ASTM D 4294-90. These methods are adopted by Rule 62-297.440, F.A.C. The owner or operator may comply with this requirement by receiving such records provided by the diesel fuel supplier. [Rules 62-4.070(3) and 62-297.440, F.A.C.]

REPORTING AND RECORD KEEPING REQUIREMENTS

8. Fuel Sulfur Content Records: The owner or operator shall maintain records of sulfur content of each delivery of diesel fuel received for these emissions units, made pursuant to the requirements of specific condition 7 of this section. [Rule 62-4.070(3), F.A.C.]
9. Diesel Fuel Consumption Records: The owner or operator shall make and maintain daily records of diesel fuel consumption for these emissions units at the end of each day. Within ten days of the end of each month, the owner or operator shall make records of monthly diesel fuel consumption from the daily records, and shall make records of the consecutive 12-month diesel fuel consumption to demonstrate compliance with the fuel consumption limit of specific condition 2 of this section. [Rule 62-4.070(3), F.A.C.]
10. Records of Maintenance: The owner or operator shall make and maintain records of maintenance on these emissions units sufficient to demonstrate compliance with the operating procedures requirements of specific condition 3 of this section. [Rule 62-4.070(3), F.A.C.]

APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

Alexander Orr, Jr. Water Treatment Plant
 Miami-Dade Water and Sewer Department
 PSD-FL-249 and 0250314-002-AC
 Miami-Dade County

1. BACKGROUND

The Miami-Dade Water and Sewer Department (WASD) plans to increase the hours of operation of its four existing standby diesel engine generators at its Alexander Orr, Jr. Water Treatment Plant (WTP) in Miami-Dade County. The units were previously exempt from permitting because they were operated as emergency generators. The increase in operation will allow for power generation capacity needed to ensure uninterrupted operation of the WTP. The four diesel engine generators are all General Motors Electro-Motive Diesel (EMD) generators model 20-645F4B with a nominal base load rating of 2.865 megawatts (MW) each. Each generator is driven by a 4,000 bhp, 20 cylinder, 2 cycle turbocharged diesel engine prime mover. The engines burn transportation grade diesel fuel oil with a sulfur content of 0.05 percent or less, by weight. Fuel oil consumption will be limited to 1,415,000 gallons per year. Other existing sources of air emissions at this facility are the lime kiln and pump engines at this facility which are not part of this project.

WASD has indicated that the maximum annual air pollutant emission rates in tons per year for the four diesel generators, based on consumption of 1,415,000 gallons per year of diesel fuel oil, with a maximum sulfur content of 0.05 percent, by weight, will be:

POLLUTANT	PSD SIGNIFICANCE LEVELS ¹	MAXIMUM EMISSIONS	SUBJECT TO PSD REVIEW?
NO _x	40	403 ²	Yes
CO	100	20.8 ³	No
PM/PM ₁₀	25/15	5.6 ⁴	No
SO ₂	40	5.0 ⁵	No
VOC (NMHC)	40	7.8 ⁶	No

¹ Florida Administrative Code 212.400-2.

² Maximum emissions based on operation of engines consuming all permitted diesel fuel oil, equivalent to operating all engines 7,180 hours per year combined, or each engine equally 1,795 hours per year.

³ Maximum emissions based on operation of engines at 25 percent load while firing diesel fuel oil.

⁴ Maximum emissions based on operation of engines consuming all permitted diesel fuel oil. All PM is assumed to be PM₁₀.

⁵ Maximum emissions based on operation of engines consuming all permitted diesel fuel oil (0.05% sulfur by weight).

⁶ Maximum emissions based on operation of engines consuming all permitted diesel fuel oil.

Below is the BACT determination proposed by the applicant.

2. DATE OF RECEIPT OF A BACT APPLICATION

May 19, 1998

Additional information received April 5, 1999

**APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)**

3. BACT DETERMINATION REQUESTED BY THE APPLICANT

POLLUTANT	EMISSION LIMIT
Nitrogen Oxides	4.12 lb/mmBtu achieved by fuel injection timing retardation and turbocharger aftercooling

The Alexander Orr, Jr. Water Treatment Plant is a major source of air pollution or Title V source. Because potential emissions at this facility are greater than 250 TPY for at least one criteria pollutant, the facility is also a major facility with respect to Rule 62-212.400, Prevention of Significant Deterioration (PSD). This project will be a major modification to a major facility. (Because emissions of nitrogen oxides from this project are greater than 250 tons per year, the proposed modification, in and of itself, would also constitute a major facility with respect to PSD.) Because the project will result in a significant increase in nitrogen oxides emissions per Table 62-212.400-2, F.A.C., "Regulated Air Pollutants - Significant Emissions Rates," a BACT determination is required pursuant to Rule 62-212.410, F.A.C.

4. REVIEWER

Joseph Kahn, P.E., prepared BACT determination

5. BACT DETERMINATION PROCEDURE

In accordance with Chapter 62-212, F.A.C., this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department of Environmental Protection (Department), on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques for control of each such pollutant. In addition, Rule 62-212.400(6)(a), F.A.C., states that in making the BACT determination, the Department shall give consideration to:

1. Any Environmental Protection Agency determination of BACT pursuant to Section 169 of the Clean Air Act, and any emission limitation contained in 40 CFR Part 60 (Standards of Performance for New Stationary Sources) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants).
2. All scientific, engineering, and technical material and other information available to the Department.
3. The emission limiting standards or BACT determination of any other state.
4. The social and economic impact of the application of such technology.

The EPA currently directs that BACT should be determined using the "top-down" approach. In this approach, available control technologies are ranked in order of control effectiveness for the emissions unit under review. The most stringent alternative is evaluated first. That alternative is selected as BACT unless the alternative is found to not be achievable based on technical considerations or energy, environmental or economic impacts. If this alternative is eliminated for these reasons, the next most stringent alternative is considered. This top-down approach is continued until BACT is determined. In general EPA has identified five key steps in the top-down BACT process: Identify alternative control technologies; eliminate technically infeasible options; rank remaining control technologies by control effectiveness; evaluate most effective controls; select BACT.

BACT evaluation should be performed for each emissions unit and pollutant under consideration. For this project, the emissions units under consideration are identical and the only pollutant subject to PSD review is NOx.

The Department will consider the control or reduction of "non-regulated" air pollutants when determining the BACT limit for regulated pollutants, and will weigh control of non-regulated air pollutants favorably when considering control technologies for regulated pollutants. The Department will also favorably consider control technologies that utilize pollution prevention strategies. These approaches are consistent with EPA's consideration of environmental impacts.

APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

The EPA has determined that a BACT determination shall not result in a selection of a control technology which would not meet any applicable emission limitation under 40 CFR Part 60 (Standards of Performance for New Stationary Sources) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants). There are no such limits applicable to this project.

In addition to the information submitted by the applicant and that information mentioned above, the Department may rely upon other available information in making its BACT determination. For this project, the Department relied upon information from the EPA Publication: Alternative Control Techniques Document: NO_x Emission from Stationary Reciprocating Internal Combustion Engines, July 1993. The Department also relied upon recent BACT determinations it made for the same or similar engines at the applicant's Central District WWTP and John E. Preston WTP facilities.

6. BACT POLLUTANT ANALYSIS

For this project the PSD pollutant of concern is NO_x, which is a combustion product. Although not subject to BACT, other combustion products, and products of incomplete combustion -- PM/PM₁₀, SO₂, CO and VOCs -- will be controlled through the use of very low sulfur fuel (0.05% sulfur by weight), and through proper engine maintenance and operation. These control strategies were proposed by the applicant and have been included in the draft permit. BACT for NO_x is discussed below.

Nitrogen Oxides (NO_x)

Oxides of nitrogen (NO_x) are generated during fuel combustion by oxidation of chemically bound nitrogen in the fuel (fuel NO_x) and by oxidation of elemental nitrogen in the combustion air (thermal NO_x). The thermal NO_x reaction occurs in regions of high temperature associated with the combustion of fuel. As flame temperature increases, the amount of thermal NO_x increases. Fuel type affects the quantity and type of NO_x generated. Pipeline natural gas is low in nitrogen. However it causes higher flame temperatures and generates more thermal NO_x than oil or coal, which have higher fuel nitrogen content, but exhibit lower flame temperatures.

NO_x emissions represent a significant portion of the total emissions generated by this project, and must be minimized using BACT. A review of EPA BACT/LAER Clearinghouse (BACT Clearinghouse) information indicates that NO_x emissions at most small facilities are minimized by process control and good combustion practices.

In a diesel engine, injection of fuel into the cylinder starts the combustion process. Retarding the timing of fuel injection until the piston is in its downward motion increases the volume of the combustion chamber, which reduces combustion temperature and pressure, subsequently reducing the formation of NO_x. However, fuel injection timing retardation generally increases black smoke and cold smoke (white smoke during start up) emissions, as well as increasing exhaust temperatures. The increase in exhaust temperatures affect turbocharger performance and may be detrimental to exhaust valve life. A small increase in fuel consumption (about two percent) and a significant increase in particulate emissions (about 25 percent) usually result from the application of fuel injection timing retardation alone to diesel engines. To counteract this problem, it has been demonstrated that the installation of a device to cool the combustion air upstream of the cylinder alleviates most of the negative side effects of IR.

In large bore diesel engines equipped with a turbocharger, the combustion air precooler consists of a heat exchanger, located downstream of the turbocharger, and is typically referred to as an aftercooler. Cooler air box temperatures reduce bulk combustion temperature, which reduces NO_x formation. Because cooler air is denser, the cylinders are charged with a greater mass of air that generally helps reduce emissions of unburned hydrocarbons, carbon monoxide, and particulate matter. Manufacturer's information shows that combining a 4-degree fuel injection timing retardation with the installation of a four pass aftercooler will reduce NO_x emissions by 28 percent and particulate emissions (PM₁₀) by about

APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

7 percent with a slight decrease in fuel consumption (less than 1 percent). The fuel injection timing retardation is easily performed by alteration of the timing sequence of the engine. The installation of the turbocharger aftercooler is also relatively easily accomplished, requiring little engine downtime for completion. Thus, the retrofit is relatively easy to perform, and cost effective as shown below.

The applicant has proposed modification of the combustion process through a combination of fuel injection timing retardation and cooling of combustion air resulting in exhaust temperature reduction. The design specific to these engines includes a 4-degree fuel injection timing retardation and a four pass aftercooler circuit. The combination of retarded fuel injection timing and lowered combustion air temperature results in less NOx formation, and is an effective emissions control technique.

7. BACT DETERMINATION BY DEP

Based on the information provided by the applicant and the informed judgement of the Department, employing the top-down BACT approach for these emissions units for NOx results in a determination that fuel injection timing retardation and turbocharger aftercooling is BACT for this project. This is described further below.

NOx Determination

The available control technologies for these emissions units for NOx, ranked in order of control effectiveness are:

1. Selective Catalytic Reduction (SCR)
2. Combined technologies of fuel injection timing retardation, turbocharger aftercooler

The following table summarizes the feasibility of using these control technologies with the EMD model 20-645F4B engines for WASD's Alexander Orr, Jr. Water Treatment Plant.

CONTROL TECHNOLOGY	EMISSION REDUCTION (%)	TECHNICALLY FEASIBLE	COST PER TON (\$)	ADVERSE ENVIRON. IMPACTS	ADVERSE ENERGY IMPACTS
SCR with ammonia	85	No	1,585	Yes	Minor
Fuel injection timing retardation; turbo charger aftercooler	28	Yes	143	No	No

SCR is more widely used in Japan and Germany than it is in the United States and the technology is being improved such that the hazards and costs have been reduced. It remains, however, a costly technology for small applications and has potential hazards associated with the use and storage of ammonia. SCR is not generally used with diesel engines of this size. The BACT/LAER database lists only a single facility which uses SCR on diesel engines. SCR was selected in that instance because a local ordinance mandated strict limits on emissions without regard to costs. To ensure proper removal of NOx, ammonia concentrations must be maintained at a level that will result in ammonia being present in the exhaust. This is typically known as "ammonia slip", and is not a pollutant the Department finds desirable, particularly for the urban and suburban area surrounding this facility. Aside from the issue of ammonia slip, SCR is not technically feasible for this diesel engine because the exhaust temperatures will be below 550°F for much of the range of normal engine operation, which occurs at less than full load operation. In order for SCR technology to achieve effective reduction of NOx, the catalyst temperature must be at least 550°F. The exhaust temperature for each engine model is highest at full load, and decreases as the load is reduced. For the model 20-645F4B engines, exhaust temperature ranges from 635°F at full load to 335 °F

**APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)**

at 25% load. Thus, the exhaust temperatures, for much of the operating range, are too low for SCR to be a feasible control technology.

In contrast, the combination of fuel injection timing retardation and turbocharger aftercooling is feasible, as described previously, and as shown above, is cost effective.

For these emissions units for NOx emissions, the Department accepts the applicant's proposed use of fuel injection timing retardation and cooling of combustion air (aftercooling) as BACT for this project.

The BACT emission levels established by the Department are as follows:

POLLUTANT	EMISSION LIMIT
Nitrogen Oxides	4.12 lb/mmBtu achieved by fuel injection timing retardation and turbocharger aftercooling

8. COMPLIANCE

Compliance with the NOx limitations shall be in accordance with the EPA Reference Method 7 or 7E as contained in 40 CFR 60, Appendix A, with sampling via a rake probe.

9. DETAILS OF THE ANALYSIS MAY BE OBTAINED BY CONTACTING:

Joseph Kahn, P.E.
Department of Environmental Protection
Bureau of Air Regulation
Mail Station #5505
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Recommended By:

Approved By:

DRAFT

DRAFT

C. H. Fancy, P.E., Chief
Bureau of Air Regulation

Howard L. Rhodes, Director
Division of Air Resources Management

Date:

Date:

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

- G.1 The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.
- G.2 This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings or exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
- G.3 As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey and vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.
- G.4 This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
- G.5 This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.
- G.6 The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.
- G.7 The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:
- (a) Have access to and copy and records that must be kept under the conditions of the permit;
 - (b) Inspect the facility, equipment, practices, or operations regulated or required under this permit, and,
 - (c) Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.
- Reasonable time may depend on the nature of the concern being investigated.
- G.8 If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:
- (a) A description of and cause of non-compliance; and
 - (b) The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

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

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

- G.9 In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.
- G.10 The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.
- G.11 This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.
- G.12 This permit or a copy thereof shall be kept at the work site of the permitted activity.
- G.13 This permit also constitutes:
- (a) Determination of Best Available Control Technology (X);
 - (b) Determination of Prevention of Significant Deterioration (X); and
 - (c) Compliance with New Source Performance Standards ().
- G.14 The permittee shall comply with the following:
- (a) Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
 - (b) The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application or this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
 - (c) Records of monitoring information shall include:
 - 1. The date, exact place, and time of sampling or measurements;
 - 2. The person responsible for performing the sampling or measurements;
 - 3. The dates analyses were performed;
 - 4. The person responsible for performing the analyses;
 - 5. The analytical techniques or methods used; and
 - 6. The results of such analyses.
- G.15 When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.



Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

P.E. Certification Statement

Miami-Dade Water and Sewer Department
Alexander Orr, Jr. WTP, Standby Diesel Engine Generators

DEP File No.: 0250314-002-AC
PSD-FL-249

Project: Air Construction Permit (PSD Permit)

I **HEREBY CERTIFY** that the engineering features described in the above referenced application and related additional information submittals, if any, and subject to the proposed permit conditions, provide reasonable assurance of compliance with applicable provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 62-4 and 62-204 through 62-297. However, I have not evaluated and I do not certify aspects of the proposal outside of my area of expertise (including but not limited to the electrical, mechanical, structural, hydrological, and geological features).

This review was conducted by myself.

(Seal)

Joseph Kahn, P.E.

5/21/99
Date

Permitting Authority:

Florida Department of Environmental Protection
Division of Air Resources Management
Bureau of Air Regulation
New Source Review Section
Mail Station #5505
2600 Blair Stone Road
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"Protect, Conserve and Manage Florida's Environment and Natural Resources"

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