TECHNICAL EVALUATION
&
PRELIMINARY DETERMINATION

APPLICANT

Solid Waste Authority of Palm Beach County

Facility ID No.: 0990234

PROJECT

DEP File No.: 0950137-006-AC and
PSD-FL-108F

Biosolids Pelletization Facility

COUNTY

Palm Beach County

PERMITTING AUTHORITY

Florida Department of Environmental Protection
Division of Air Resource Management
Bureau of Air Regulation
Air Permitting South Section
Mail Station #5505, 2600 Blair Stone Road
Tallahassee, Florida 32399-2400

November 18, 2005

1. GENERAL PROJECT INFORMATION

Solid Waste Authority of Palm Beach County
7501 North Jog Road
West Palm Beach, Florida 33412-2414

Authorized Representative: Mr. John D. Booth, Executive Director

Application Processing Schedule

May 4, 2005 Received application to construct; incomplete.

July 15, 2005 Incompleteness letter.

August 30, 2005 Received additional information; application complete.

{Note: The applicant requested a modification to their original project submitted in July 2002. The applicant has withdrawn the lime recalcination part of the project and increased the biosolids pelletization rate from 400 wet TPD to 675 wet TPD.}

Relevant Documents

- Permit PSD-FL-108E
- Power Plant Siting Act Certification PA84-20
- Current Title V Air Operation Permit 0990234-004-AV
- Department's Technical Evaluation & Preliminary Determination dated [Month day, 2005]

2. FACILITY DESCRIPTION AND LOCATION

The facility, North County Resource Recovery Facility (NCRRF), is located at 7501 North Jog Road, West Palm Beach, Palm Beach County. The UTM coordinates are Zone 17; 585.8 km E; 2960.2 km N. {See **Figure No. 2-4** provided by the applicant showing the proposed site for this project}

This existing facility consists of a *very large* municipal waste combustor plant designed to process 2,000 tons per day (TPD) of municipal solid waste (MSW). This existing facility includes two boilers and two landfills, a Class I Landfill and a Class III Landfill, each with its own gas collection system and flare.

North County Resource Recovery Facility

http://www.swa.org/site/information and documents/ncrrf.htm

3. PROPOSED PROJECT

Proposed Activity

The applicant, Solid Waste Authority of Palm Beach County, proposes to construct a 675 wet tons of sludge per day (wtpd, at 20% solids) Biosolids Pelletization Facility (BPF). The BPF will have two

337.5 wtpd process trains and related appurtenances. The proposed BPF will be located adjacent to the existing landfill. Each dryer train at the BPF will combust landfill gas generated from the nearby landfill in a rotary drum dryer to dry sewage sludge, and then screen the dried sludge into marketable fertilizer pellets. Natural gas will be used as a backup fuel. Each dryer has a rated capacity of 34.2 MMBTU/hr based on landfill gas or 34.1 MMBTU/hr based on natural gas. An additional 2 MMBtu/hr is required for each regenerative thermal oxidizer (RTO) making the total design capacity of each train 42 MMBtu (84 MMBtu total for the BPF).

The BPF will help eliminate phosphorus loading of the Lake Okeechobee drainage basin and other environmentally sensitive basins in the area due to land application of wastewater sludge. Major metropolitan areas in the U.S. are pelletizing sludge rather than applying it to land.

The proposed activity is to begin as soon as possible and is scheduled to last 18 months. An expiration date of March 31, 2008, for this air construction permit should allow sufficient time to complete the required testing and to submit the test reports.

The proposed new emissions units are:

E.U. ID Nos.	Brief Description
-###	Sludge Dryer Train #1
-###	Sludge Dryer Train #2
-###	Recycle Material Bin & Pellet Storage Silo for Sludge Dryer Train #1
-###	Cooling Tower Train #1
-###	Recycle Material Bin & Pellet Storage Silo for Sludge Dryer Train #2
-###	Cooling Tower Train #2
-###	Emergency Generator

4. APPLICABLE REGULATIONS

Regulatory Classifications

Title III: The facility is identified as a major source of hazardous air pollutants (HAPs).

NESHAP: The proposed project will be subject to the requirements of the National Emission Standard for Hazardous Air Pollutants of 40 CFR 61 Subpart E, NESHAP for Mercury.

NESHAP: The facility operates one or more units subject to National Emission Standards for Hazardous Air Pollutants of 40 CFR 63.

MACT: A case-by case MACT was not required. Since neither the NCRRF or the proposed projects are constructed or reconstructed major sources of HAPs, this rule does not apply.

Title IV: The facility operates no units subject to the acid rain provisions of the Clean Air Act.

Title V: The facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.

NSPS: The facility operates one or more units subject to New Source Performance Standards of 40 CFR 60.

Stationary Sources - Emission Standards in Chapter 62-296, F.A.C.: The facility operates one or more units subject to an emission standard.

RACT: The entire State of Florida is either classified as attainment or considered to be in attainment (i.e., unclassifiable) with respect to the NAAQS for all pollutants. In addition, Palm Beach County is not part of any maintenance areas for lead or PM. Therefore, the proposed projects are not subject to the Reasonably Available Control Technology (RACT) requirements for these pollutants in Rule 62-296, F.A.C. The NOx RACT provisions of Rule 62-296.500(b), FAC, do apply to facilities in Palm Beach County. However, new or modified NOx emitting facilities subject to major-source PSD permitting and preparing a BACT analysis are exempt from these requirements. Since the BPF will be meeting NOx BACT, these rules do not apply.

PSD: The facility is an existing PSD-major source of air pollution in accordance with Rule 62-212.400, F.A.C.

Power Plant Siting Act: This project was requested to be an amendment leading to the modification of the existing power plant siting certification PA84-20.

Permit(s) Required

The Department requires the owner or operator of any emissions unit to obtain an appropriate permit prior to beginning construction, modification, or initial or continued operation, unless exempted pursuant to Department rule or statute. The Department has specific rules on when an air construction permit is required {see Rule 62-210.300(1), F.A.C.}, when an air operation permit is required {see Rule 62-210.300(2), F.A.C.} and when activity is exempt from permitting {see Rules 62-210.300(3) and 62-4.040, F.A.C.}. The proposed activity is not specifically exempted from permitting in Rules 62-210.300(3) or 62-4.040, F.A.C.

Air Construction Permit Required

The proposed activity involves the addition of an emissions unit which will result in an increase of actual emissions. The Department requires an air construction permit for the owner or operator to proceed with the proposed activity.

Prevention of Significant Deterioration (PSD) Applicability

The Department regulates major air pollution sources in accordance with Florida's Prevention of Significant Deterioration (PSD) Program, as defined in Rule 62-212.400, F.A.C. PSD preconstruction review is required in areas that are currently in attainment with the state and federal Ambient Air Quality Standards (AAQS) for each regulated pollutant or areas designated as "unclassifiable" for such pollutants. A facility is considered "major" with respect to PSD if it emits or has the potential to emit:

- $\geq$ 250 tons per year of any regulated pollutant, or
- $\geq$ 100 tons per year of any regulated pollutant and belonging to one of 28 PSD Major Facility Categories, or
- $\geq$ 5 tons per year of lead.

This facility includes municipal incinerators, which belongs to the "List of 28 PSD Facility Categories" specified in Table 62-212.400-1, F.A.C. For facilities in the listed categories, the

threshold for classification as a PSD major source is 100 tons per year. This facility is a PSD-major source of air pollution because the potential emissions of several pollutants are greater 100 tons per year. The proposed activity will be located in Palm Beach County, which is in an area that is in attainment (or designated as unclassifiable) for all air pollutants subject to state and federal Ambient Air Quality Standards (AAQS). As such, all new projects are reviewed for the applicability of PSD preconstruction review based on the PSD Significant Emission Rates (SER) specified in Table 62-212.400-2, F.A.C. Pollutant emissions from the project exceeding these rates are considered "significant" and subject to PSD preconstruction review. This means that the applicant must employ the Best Available Control Technology (BACT) to minimize emissions of each PSD-significant pollutant as well as evaluate the air quality impacts. Although a facility may be "major" with respect to PSD for only one regulated pollutant, the project may be subject to PSD preconstruction review for several PSD-significant pollutants.

The following table summarizes the applicant's PSD applicability analysis for this project.

Table 1. Summary of the Applicant's PSD Applicability

Pollutant	Net Increase, TPY[a]	PSD Threshold, TPY SER	Subject to PSD Review?
CO	33.7	100	No
NOx	52.5	40	Yes
SO_2	39.1	40	No
VOC	9.3	40	No
PM	22.6	25	No
PM_{10}	22.3	15	Yes
TRS compounds H_2S	0.00	10	No
Lead[b]	6.39E-03	0.60	No
Mercury[b]	8.08E-03	0.17	No
Total HAPs[c]	0.85	25	No

a. "TPY" means tons per year.
b. Equivalent TPY values are shown for these air pollutants; the actual rate values are in pounds per year
c. Total HAPs for case-by-case MACT applicability.

As shown in this table, the proposed project is subject to PSD preconstruction review for emissions of: NOx and PM_{10}. {For the detailed summary of emissions see the applicant's **Table 2-1 SWA Biosolids Pelletization Facility, and Class I Landfill Flares Proposed Maximum Potential Controlled Emission Rates and PSD Applicability** in Section 2 of the permit application.}

Applicant's PSD Applicabilty

The Class I Landfill's 1,800 scfm flare has been replaced by a 3,500 scfm flare. Two more flares, a

1,000 scfm flare and a 2,000 scfm flare will be added at the Class I Landfill in the next few years to handle gas generation at full build-out of the Landfill, and to allow for flow variability as the BPF draws up to 2,800 scfm of landfill gas. The flares are a separate project from the BPF, but are being considered in this PPSA because they meet the definition of "contemporaneous" projects in the Prevention of Significant Deterioration Rules (40 CFR 51.166 and 62-212.400, F.A.C.).

A modification to an existing major source is subject to PSD regulations if it is located in a PSD attainment area and it is a major modification. The project site and vicinity are currently considered to be in attainment with air quality standards for all PSD pollutants (40 CFR 81.310 and Rule 62-204, F. A.C.). A major modification is a physical change or a change in method of operation of a major source which would result in a “significant net emissions increase” of a regulated pollutant. In this case, the physical change is the addition of the BPF and the three flares.

Each proposed modification at the NCRRF site is required to take into account all other permitted air emission increases and decreases that have occurred in the 5 years prior to the proposed modification. Since the BPF and flares would all be built within 5 years of each other, they must be considered together in the PSD applicability determination. Similarly, the decommissioning of the existing 1,800 scfm flare at the Class I Landfill has already occurred and must be included with this project for permitting purposes. The rules for calculating the “net emissions increase” for these projects state that maximum potential emission rates be used for the new sources, and actual annual average emission rates (over the most recent 2 years) be used for the calculation of decreases for the decommissioned sources. Since the existing 1,800 scfm was decommissioned before the BPF had commenced full-scale operation, the SWA can take credit for the net reduction in emissions. The calculated net emissions increases for all PSD pollutants are shown in Table 2-1 of the permit application submitted to the Department’s power plant siting office. The totals in Table 2-1 reflect that the flare emissions have been reduced by the amount of gas consumed by the BPF. The emissions from the now decommissioned 1,800 scfm flare have been subtracted from the total. The maximum potential annual emission rates presented in Table 2-1 for the new sources were calculated with the assumption that each unit could operate 365 days per year at 100 percent load. As explained in Section 2 of Volume II, three flares (3,500 scfm; 2,000 scfm; and 1,000 scfm each) are proposed to be installed at the Class I Landfill in the same 5-year period as these projects. The 3,500 scfm flare has already been installed and is in use. These three flares are exempt from PSD permitting. However, because they are contemporaneous projects with the BPF, their emission rates are included in the first total shown in Table 2-1. The second total in Table 2-1 shows that the net emissions increase for the BPF project alone would exceed the PSD “significant net emissions increase” threshold (Rule 62-212.400, F.A.C., Table 212.400-2) for nitrogen oxides (NOx) and particulate matter (PM). The proposed BPF project, therefore, is subject to PSD requirements, and a “major” modification to the NCRRF site's existing PSD permit must be prepared.

The SWA is required to apply for a major modification to their existing NCRRF Site PSD Permit due to the emissions increase from the new BPF. More specific details regarding the air emissions from the dryer stack can be found in the PSD permit application.

A detailed summary of the net emissions increases is found in the applicant’s **Table 2-1 SWA Biosolids Pelletization Facility, and Class I Landfill Flares Proposed Maximum Potential**

Controlled Emission Rates and PSD Applicability Air Operation Permit Required

The existing facility operates under a Title V permit. A revision to the Title V permit will be required to allow the operation of the proposed activity.

5. APPLICANT'S PROCESS/OPERATION DESCRIPTION

The New England Fertilizer Company (NEFCO) was selected to design, build and operate the project. **Figure 2-4 Process Flow Diagram** in the permit application is a process flow diagram of the drum drying system (DDS). The **Figure 2-3 Proposed Site Plan** is a site layout diagram showing the proposed location of the specific equipment.

Sludge will be delivered to the site in the form of cake sludge with 20 percent solids content. It is anticipated that the sludge will need to be hauled in dump trucks or trailer trucks that can easily be emptied. The truck will off- load into one of two 30 wet ton reclaim bins that will ultimately feed the two BPF trains.

The DDS uses a portion of the already-dried material as an additive to the dewatered sludge cake to get it past the sticky phase. When mixed, the cake, or "wet" material, coats the dried particles, or "recycled" material, to obtain a non-sticky mixture, usually in the 50 to 70 percent dry solids content range. The added benefit to this process is that the heat energy now needs only to be spent on removing moisture from the surface of each particle, while the core of the particle is already dry.

The evaporation process in the DDS actually takes place within the triple-pass rotating drum. The sludge is conveyed through the rotating drum via flights mounted on the drum walls, until such time as it is dry enough and, therefore, light enough to be lifted and pneumatically-conveyed out of the drum. DDS technology significantly limits over-drying of material, which is where odors are created. The high-speed airstream carries dried particles and the evaporated moisture. The DDS uses a two-stage separation process to remove the solids from the air. Following these stages, the airstream is more than 98 percent clear of particulates.

The material exiting the rotary valve following the separation devices is an agglomerate of particles of all sizes. Many beneficial reuse options require a uniform distribution of particle size. For this reason, it may be necessary to classify the particles by size prior to discharge as final product.

The final product is biosolids pellets, also referred to as pelletized sludge (see the picture below).

http://faculty.washington.edu/clh/leaddemoa.html

The DDS can use different types of fuels such as natural gas or landfill gas/methane. It is the intent of this design to use the landfill gas as the primary source with natural gas as a backup. The gas will fuel the burner to warm the recycled process air via a heat exchanger before it enters the furnace. The maximum heat input to each dryer is 34.2 MMBTU/hr based on landfill gas or 34.1 MMBTU/hr based on natural gas.

6. AIR POLLUTANT EMISSIONS AND CONTROLS

The Class I Landfill has an existing landfill gas collection and control system that combusts the gas in a 3,500 scfm open flare. During operation of the BPF, the flare will be "turned-down" and the Class I Landfill would supply the approximately 2,800 scfm of landfill gas needed by the BPF at the design capacity (84 MMBtu/hr of landfill gas with a heat content of 500 British thermal units per standard cubic feet (btu/scf). The landfill gas burners at the BPF will themselves serve as air pollution devices for controlling the emissions of non-methane organic compounds (NMOCs) from landfill gas. They will be designed to provide 98 percent destruction removal efficiency for NMOCs.

Hot combustion gases (about 841°F at the dryer inlet) will flow through a rotating drum with the biosolids, driving off water, and volatile organic compounds (VOCs). At the dryer exhaust end, a cyclonic separator will remove the pellets and heavier dust particles from the gas stream and send these to screens for size sorting. The exhaust gases, containing products of combustion (nitrogen oxide (NOx), carbon monoxide (CO), and sulfur dioxide (SO_2)), particulate matter (PM), and VOCs, will then go through a tray condenser and venturi scrubber. These devices will remove PM and some SO_2. The gases will then go through a RTO to combust the VOCs before exiting the exhaust stack.

The BPF will include a tray condenser/scrubber and venturi scrubber with cyclonic separator to remove PM_{10} and possible SO_2 along with a regenerative thermal oxidizer (RTO) to combust the VOCs before exiting the exhaust stack. The tray condenser/scrubber will also remove some NH_3. Particulate matter emissions from the screening operation , recycle material and the two pellet storage silos will be controlled by baghouses; the pellets will be conveyed to trucks in an enclosed area to minimize fugitive dust emissions.

Odors of wastewater origin are often formed as a result of bacterial action on wastes when insufficient dissolved oxygen is available to the bacteria or when anaerobic bacteria are part of the unit process as

anaerobic digestion. One way of treating this odor is to collect and treat the odorous gases. There are several methods of treatment for these odors. One such proven technology is wet scrubbing (absorption) by use of packed tower scrubbers. Two separate odor control systems are proposed for the facility. The odor control system will include packed tower scrubbers for the sludge receiving area and an RTO for reduction of odors from the process air train.

The packed tower scrubber receives air from the building area to be treated, which enters the bottom of the tower. A scrubbing liquid such as sodium hypochlorite is sprayed over the top of the packing material, creating a large liquid surface area at the liquid-gas interface. The odorous gas is absorbed by the scrubbing liquid and air, free of these contaminants, will either discharge to the atmosphere or to a second stage packed tower via a mist eliminator. The scrubbing liquid is captured in a sump at the bottom of the scrubber tower where it is pumped back to the top of the scrubber tower. The addition of sodium hydroxide and sodium hypochlorite solutions to the recycling scrubbing liquid will be required to provide a constant inflow of fresh scrubbing chemicals for optimum scrubber performance. Make-up water will be added continuously to maintain a constant water supply. Spent scrubbing liquid will overflow to the onsite wastewater pump station to be pumped to the East Central Regional Wastewater Treatment Facility (WWTF) for further treatment. Two 8-foot diameter tanks, one each for sodium hydroxide and sodium hypochlorite will be used for chemical storage. Both tanks will be surrounded by containment walls.

Each biosolids dryer train will have the following additional air emissions sources: exhaust vent on one recycle material bin exhaust from one fertilizer pellet storage silo, and one cooling tower. All of these are potential sources of PM emissions. Each of two recycle material bins will be ventilated through a fugitive dust control baghouse and then through a building odor scrubber. Dusty air resulting from silo filling operations will be ducted to the recycle bin baghouses, mentioned above. Emissions from the cooling towers and emergency generator are uncontrolled.

7. AVAILABLE INFORMATION

In addition to information provided and referenced in the application, the Department also relied on the following information resources:

RACT/BACT/LAER Clearinghouse (RBLC) database.
World Wide Web site searches.
Additional Information Response.

8. COMMENTS ON THE APPLICATION

Comments from the National Park Service or EPA Region 4.

As of the date of this report, none.

9. AIR QUALITY IMPACT ANALYSIS REVIEW

9.1 Introduction

The proposed project will increase emissions of two pollutants at levels in excess of PSD significant amounts: PM/PM_{10} and NO_X. PM_{10} and NO_X are criteria pollutants and have

national and state ambient air quality standards (AAQS), PSD increments, significant impact levels and de minimis monitoring levels defined for them.

9.2 Major Stationary Sources in Palm Beach County

The current largest stationary sources of air pollution in Palm Beach County are listed below. The information is from annual operating reports submitted to the Department.

Table 9.2.1 Major Sources of NO_X in Palm Beach County (2004)

Owner	Site Name	Tons per year
Florida Power & Light	Riviera	3807.7
Solid Waste Authority	**Palm Beach County**	1121.2 + ***85***
New Hope Power Partnership	Okeelanta Cogeneration Plant	871.7
Sugar Cane Growers Co-Op	Sugar Cane Growers Co-Op	860.6
Florida Power & Light	***West County Energy (proposed)***	***856***
U.S. Sugar Corp.	Bryant Mill	443.2
Osceola Farms	Osceola Farms	348.2
United Technologies Corp.	Pratt & Whitney Aircraft	238

Table 9.2.2. Major Sources of PM in Palm Beach County (2004)

Owner	Site Name	Tons per year
Florida Power & Light	Riviera Power Plant	923
Florida Power & Light	***West County Energy (proposed)***	***652***
Sugar Cane Growers Co-Op	Sugar Cane Growers Co-Op	440
Osceola Farms	Osceola Farms	287
US Sugar Corporation	Bryant Sugar Mill	260
Atlantic Sugar Association	Atlantic Sugar Mill	240
Solid Waste Authority	**Palm Beach County**	73 + ***29***

9.4 Air Quality and Monitoring in the Palm Beach County

The Palm Beach County Health Department operates twelve monitors at seven sites measuring PM_{10}, $PM_{2.5}$, ozone, CO, NO_2 and SO_2. The 2004 monitoring network is shown in the figure below.

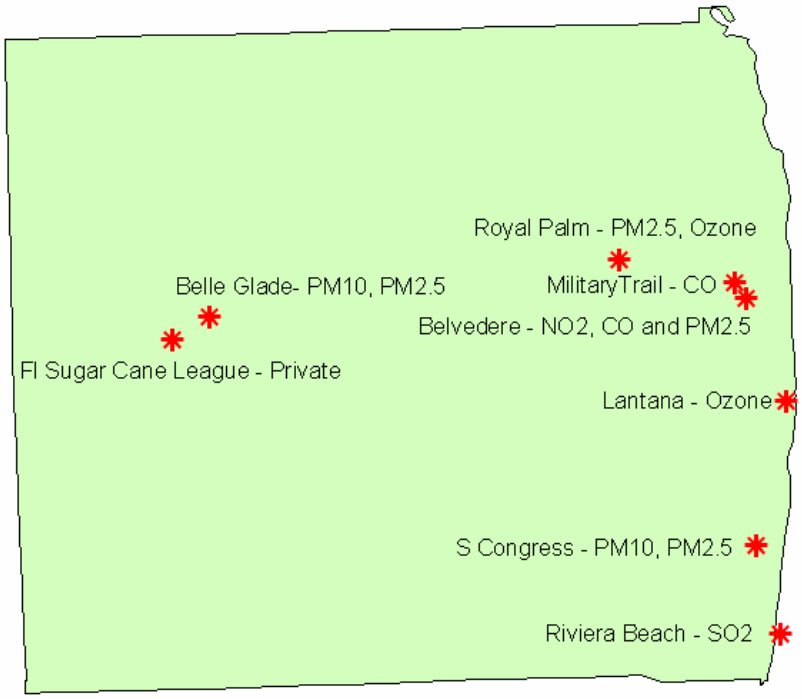

Figure 9.4. The Palm Beach County Health Department Ambient Air Monitoring Network

Measured ambient air quality information is summarized in the following table.

Table 9.4. Ambient Air Quality in Palm Beach County Nearest to Project Site (2004)

Pollutant	Location	Averaging Period	Ambient Concentration				
			High	2nd High	Mean	Standard	Units
PM_{10}	Delray Beach	24-hour	82	62		150 [a]	ug/m^3
		Annual			30*	50 [b]	ug/m^3
SO_2	Riviera Beach	3-hour	2	2		500 [a]	ppb
		24-hour	1	1		100[a]	ppb
		Annual			1*	20 [b]	ppb
NO_2	Palm Beach	Annual			10*	53 [b]	ppb
CO	WPB Military Trail	1-hour	4	4		35 [a]	ppm
		8-hour	2	2		9 [a]	ppm
Ozone	Royal Palm Beach	1-hour	0.080	0.077		0.12 [C]	ppm
		8-hour	0.072	0.069		0.08 [C]	ppm

* The Mean does not satisfy summary criteria due to missing data.

a - Not to be exceeded more than once per year

b - Arithmetic mean
c - Not to be exceeded on more than an average of one day per year over a three-year period

The highest measured values of all pollutants are all less than the respective National Ambient Air Quality Standards (NAAQS). Based on local emission trends, it is not likely that ground-level concentrations will approach the NAAQS levels. The exception is ozone because it is formed from precursors that are clearly available (NO_X and VOC). The precursors are more available during drought years. The tendency to form ozone is accentuated by hot ambient temperature, high pressure, and relatively low wind speed.

9.5 Air Quality Impact Analysis

Significant Impact Analysis

Significant Impact Levels (SILs) are defined for PM/PM_{10}, and NO_X. A significant impact analysis is performed on each of these pollutants to determine if a project can cause an increase in ground level concentration greater than the SIL for each pollutant.

In order to conduct a significant impact analysis, the applicant uses the proposed project's emissions at worst load conditions as inputs to the models. The models used in this analysis and any required subsequent modeling analyses are described below. The highest predicted short-term concentrations and highest predicted annual averages predicted by this modeling are compared to the appropriate SILs for the PSD Class I Everglades National Park (ENP) and the PSD Class II Areas (everywhere except the ENP).

The applicant, in an effort to model worst load conditions, included the three flares (not subject to PSD review) in their modeling analysis to determine whether the project would lead to a violation of the AAQS.

If this modeling at worst-load conditions shows ground-level increases less than the SILs, the applicant is exempted from conducting any further modeling. If the modeled concentrations from the project exceed the SILs, then additional modeling including emissions from all facilities or projects (multi-source modeling) is required to determine the proposed project's impacts compared to the AAQS or PSD increments.

The applicant's initial PM/PM_{10}, and NO_X, air quality impact analyses for this project indicated that maximum predicted impacts from all pollutants are less than the applicable SILs for the Class II area (i.e. all areas except ENP). These values are tabulated in the table below and compared with existing ambient air quality measurements from the local ambient monitoring network.

Table 9.5.1. Maximum Projected Air Quality Impacts from Biosolids Pelletization Facility (Including 3 Flares) for Comparison to the PSD Class II Significant Impact Levels

Pollutant	Averaging Time	Max Predicted Impact (ug/m^3)	Significant Impact Level (ug/m^3)	Baseline Concentrations (ug/m^3)	Ambient Air Standards (ug/m^3)	Significant Impact?
PM_{10}	Annual	0.3	1	~30	50	NO
	24-Hour	3.7	5	~82	150	NO
NO_2	Annual	0.9	1	~19	100	NO

It is obvious that maximum predicted impacts from the project are much less than the respective AAQS and the baseline concentrations in the area. They are also less than the respective significant impact levels that would otherwise require more detailed modeling efforts.

The applicant elected to do modeling for sulfur dioxide and carbon monoxide as well. The results showed concentrations less than the respective significant impact levels and AAQS as well.

The nearest PSD Class I area is the Everglades National Park (ENP) located about 128 km to the south-southwest of the project site. Maximum air quality impacts from the proposed project are summarized in the following table. The results of the initial PM/PM_{10}, and NO_X air quality impact analyses for this project indicated that maximum predicted impacts PM/PM_{10}, and NO_X are less than the applicable SILs for the Class I area. Therefore, no further detailed modeling efforts are required for these pollutants.

Maximum Air Quality Impacts from the Biosolids Pelletization Facility (Including Three Flares) Project for comparison to the PSD Class I SILs at ENP

The applicant also modeled to predict impacts at the Big Cypress National Preserve which is located approximately 112 km to the southwest of the facility. The modeled impacts are also less than the applicable SILs for the area.

Preconstruction Ambient Monitoring Requirements

A preconstruction monitoring analysis is done for those pollutants with listed de minimis impact levels. These are levels, which, if exceeded, would require pre-construction ambient monitoring. For this analysis, as was done for the significant impact analysis, the applicant uses the proposed project's emissions at worst load conditions as inputs to the models. As shown in the following table, the maximum predicted impacts for all pollutants with listed de minimis impact levels were less than these levels. Therefore, no pre-construction monitoring is required for those pollutants.

Table 9.5.2. Maximum Air Quality Impacts for Comparison to the De Minimis Ambient Impact Levels.

Pollutant	Averaging Time	Max Predicted Impact (ug/m^3)	De Minimis Level (ug/m^3)	Baseline Concentrations (ug/m^3)	Impact Greater Than De Minimis?
PM_{10}	24-hour	4	10	~82	NO
NO_2	Annual	0.9	14	~19	NO

Based on the preceding discussions, the only additional detailed air quality analyses (inclusive of all sources in the area) required by the PSD regulations for this project are the following:

- An analysis of impacts on soils, vegetation, visibility, and of growth-related air quality modeling impacts.

Models and Meteorological Data Used in the Air Quality Analysis

PSD Class II Area: The EPA-approved Industrial Source Complex Short-Term (ISCST3) dispersion model was used to evaluate the pollutant emissions from the proposed project in the surrounding Class II Area. This model determines ground-level concentrations of inert gases or small particles emitted into the atmosphere by point, area, and volume sources. It 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/output parameters. 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. Direction-specific downwash parameters were used for all sources for which downwash was considered. The stacks associated with this project all satisfied 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 West Palm Beach Airport. The 5-year period of meteorological data was from 1987 through 1991. This airport station was selected for use in the study because it is the closest primary weather station to the study area and is most representative of the project site. The surface observations included wind direction, wind speed, temperature, cloud cover, and cloud ceiling.

In reviewing this permit application, the Department has determined that the application complies with the applicable provisions of the stack height regulations as revised by EPA on July 8, 1985 (50 FR 27892). Portions of the regulations have been remanded by a panel of the U.S. Court of Appeals for the D.C. Circuit in NRDC v. Thomas, 838 F. 2d 1224 (D.C. Cir. 1988). Consequently, this permit may be subject to modification should EPA revise 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 more detailed discussion of the required analyses follows.

PSD Class I Area: The California Puff (CALPUFF) dispersion model was used to evaluate the pollutant emissions from the proposed project in the Class I ENP and Big Cypress National Preserve beyond 50 km from the proposed project. The applicant used CALPUFF in the "screening" mode and therefore used the same meteorological data that was used for the ISCST model processed in a different manner.

CALPUFF is a non-steady state, Lagrangian, long-range transport model that incorporates Gaussian puff dispersion algorithms. This model determines ground-level concentrations of inert gases or small particles emitted into the atmosphere by point, line, area, and volume sources.

The CALPUFF model has the capability to treat time-varying sources, is suitable for modeling domains from tens of meters to hundreds of kilometers, and has mechanisms to handle rough or complex terrain situations. Finally, the CALPUFF model is applicable for inert pollutants as well as pollutants that are subject to linear removal and chemical conversion mechanism.

9.6 Additional Impacts Analysis

Impact on Soils, Vegetation, and Wildlife:

The maximum ground-level concentrations predicted to occur for PM_{10} and NO_X as a result of the proposed project, including background concentrations and all three flares (not subject to PSD), will be considerably less than the respective AAQS. Since the project impacts are either less than significant or considerably less than the AAQS, it is reasonable to assume the impacts on soils, vegetation, or wildlife will be minimal or insignificant.

As part of the Additional Impact Analysis, Air Quality Related Values (AQRV) are evaluated with respect to the Class I area. This includes the analysis of sulfur and nitrogen deposition. The CALPUFF model is also used in this analysis to produce quantitative impacts. The results of the analysis show that nitrogen and sulfur deposition rates are below the significant impact levels (0.01 kg/ha/yr) determined by the National Park Service for the ENP.

According to the applicant, the predicted deposition rates of sulfur and nitrogen (0.0003 and 0.0001 kg/ha/yr respectively) impacts are still much less than the buffering capacities of the soils in the ENP and much less than the observed deposition rates existing in the area.

Impact on Visibility:

The applicant submitted a regional haze analysis for the ENP and the Big Cypress National Preserve. The analysis included modeling from the CALPUFF model. The Visibility Analysis showed that the proposed project will be well below the visibility threshold of 5% in change in light extinction for both sensitive areas.

Growth-Related Impacts Due to the Proposed Project:

According to the applicant, the proposed project will add approximately 13 new permanent employees. This increase will not result in significant commercial and residential growth near the project. Few new permanent employees will cause no significant impact on the local area.

Growth-Related Air Quality Impacts since 1977:

According to the applicant, the population of Palm Beach County has more than doubled since the late seventies. This population currently works in the Trade, Transportation and Utilities sector, which includes the retail industry and the Professional and Business Services sector mostly.

Although, the population has increased greatly, the air pollution trends do not show an increase in pollutant concentrations with this population growth. The county is in attainment with the NAAQS.

Despite the growth in Southeast Florida, air quality has improved as evidenced by the redesignation of the Tri-County (Broward, Miami-Dade, and Palm Beach) area to attainment status with respect to the ozone standard.

10. PRELIMINARY DETERMINATION

The Department makes a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations as conditioned by the draft permit. This determination is based on a technical review of the complete PSD permit application, reasonable

assurances provided by the applicant, the draft determinations of Best Available Control Technology (BACT), review of the air quality impact analysis, and the conditions specified in the draft permit.

Deborah Nelson is the project meteorologist responsible for reviewing and validating the air quality impact analysis. She may be contacted at deborah.nelson@dep.state.fl.us and 850/921-9537.

Scott M. Sheplak is the project engineer responsible for reviewing the application and drafting the permit. Additional details of this analysis may be obtained by contacting the project engineer by telephone 850/921-9537 or e-mail Scott.Sheplak@dep.state.fl.us in the Department's Bureau of Air Regulation at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

{Filename: PSD-FL-108F TEPD}

Filename: PSD-FL-108F TEPD.doc
Directory: O:\Bar\Title V\Scott\Permitting\Palm Beach SWA\Biosolids Pelletization Project PSD-FL-108F
Template: C:\Documents and Settings\friday_b\Application Data\Microsoft\Templates\Normal.dot
Title: TECHNICAL EVALUATION
Subject: Okeelanta Boiler No. 16, Gas
Author: JFK
Keywords:
Comments:
Creation Date: 10/18/2005 3:32:00 PM
Change Number: 110
Last Saved On: 11/18/2005 3:11:00 PM
Last Saved By: Scott Sheplak
Total Editing Time: 1,028 Minutes
Last Printed On: 11/22/2005 2:53:00 PM
As of Last Complete Printing
Number of Pages: 16
Number of Words: 5,955 (approx.)
Number of Characters: 31,801 (approx.)