087-158

Resource Recovery Office
Room 521, 115 South Andrews Avenue
Fort Lauderdale, Florida 33301
(305) 357-6458

April 9, 1987

Mr. Wayne Aronson
Air Program Branch
Environmental Protection Agency, Region IV
345 Courtland Street
Atlanta, Georgia 30365

RE: South Broward Resource Recovery Project (PSD-FL-105) -- Follow-up To Meeting of March 25, 1987.

Dear Mr. Aronson,

I am enclosing the revised Final Determination Tables V-1, V-2, V-3, V-5, and V-6 which we agreed to provide at our meeting on March 25, 1987. If you have any questions concerning these Tables, then please telephone directly to Ken Kosky or Bob McCann of KBN Engineering at (904)375-8000.

I would also appreciate your sending Ken a copy of the draft Final Determination and Permit. Because of an insufficient address which was apparently used on Bruce Miller's transmittal letter to me, we have not yet received this material. I will be out of the office most of next week but I will be in contact with Ken. I would, therefore, appreciate your getting him a copy overnight. Please send the copy by Federal Express and charge it to my account number (1109-9482-6).

Thank you for your assistance.

Sincerely yours,

Thomas M. Henderson
Project Director

cc: Celiene Bruce, County Administrator
Cliff Schulman, Greenberg Traurig Askew
Tim Smith, Greenberg Traurig Askew
Ken Kosky, KBN Engineering
Ron Mills, Malcolm Pirnie, Inc.

Bruno Dunn, Signal Environmental Systems
Andy Zergot, Signal Environmental Systems
Jerry W. Whitt, Waste Management, Inc.
Steve Smallwood, FDER Air Bureau
Clair Fancy, FDER Air Bureau
Barry Andrews, FDER Air Bureau

Table V-1. Broward County Resource Recovery Facility Source Parameters

Source (1)	UTM - E (km)	UTM - N (km)	Stack Height (M)	Exit Temp. (K)	Exit Velocity (M/S)	Stack Diameter (M)
Unit 1	579.6	2883.3	59.4	381	18.0 (2)	2.29
Unit 2	579.6	2883.3	59.4	381	18.0 (2)	2.29
Unit 3	579.6	2883.3	59.4	381	18.0 (2)	2.29

(1) Three 750 TPD MSW fired boilers, each with a flue to a common stack. For modeling purposes, the common stack was given a stack diameter of 5.03 m and an exit velocity of 11.2 m/s, providing for a minimum flow rate.

(2) Estimated by using flow rate of 157,200 ACFM and calculating with given diameters.

Table V-2. Broward County Resource Recovery Facility Maximum Emission Rates[a]

Pollutant	(lb/MMBTU)	(PPM)	(lb/hr)	(ton/yr)
PM	0.038[b]	--	37	162
SO_2	0.31	124-60[c]	301	1318[c]
NO_x	0.56	350[d]	615.6	2380
CO	0.089	e	425.6	378
VOC	0.013[f]	--	12.6	55.2
Pb	0.0015	--	1.46	6.4
F^-	0.004	--	3.88	17.0
H_2SO_4 Mist	g	--	g	g
Be	9.3×10^{-7}	--	0.0009	0.004
Hg	7.5×10^{-4}	--	0.73	3.2
As	0.000031	--	0.030	0.13

a. Based on facility capacity of 970.5 MMBTU/hr firing MSW. Maximum emissions in lb/hr calculated based on maximum ppm level if applicable. Maximum tons per year based on maximum lb/hr emission rate except for NO_x and CO; these are based on maximum lb/MMBTU level.

b. Based on 0.015 gr/dscf corrected to 12% CO_2.

c. A maximum 3-hour rolling average corrected to 12% CO_2. A removal efficiency of 65% required. Actual tons per year will be between 1318 and 639 depending on actual sulfur in MSW.

d. A maximum 3-hour rolling average corrected to 12% CO_2.

e. Maximum 1-hour average of 400 ppm, maximum 8-hour rolling average of 200 ppm and maximum 30 day rolling average of 81 ppm; corrected to 12% CO_2.

f. Covered under nonattainment provisions for O_3 and not applicable for PSD review.

g. Operating practice to reduce SO_2 (see c).

Table V-3. Broward County Resource Recovery Facility Maximum Air Quality Impacts Compared to the De Minimis Ambient Levels

Pollutant and Averaging Time	Predicted Impact (ug/m^3)	De Minimis Ambient Impact Level (ug/m^3)
SO_2 (24-hour)	6.2	13
PM (24-hour)	0.8	10
NO_2 (Annual)	1.4	14
CO (8-hour)	11.8	575
Pb (24-hour)	0.03	0.1
F^- (24-hour)	0.081	0.25
Be (24-hour)	0.00002	0.0005
Hg (24-hour)	0.015	0.025

Table V-5. Broward County Resource Recovery Facility Comparison of New Source Impacts with PSD Increments

Pollutant and Averaging Time	PSD Class II Increment (ug/m^3)	Predicted Increased Concentration (ug/m^3)	Percent Increment Consumed	PSD Class I Increment (ug/m^3)	Predicted Increased Concentration (ug/m^3)	Percent Increment Consumed
SO_2*						
3-hour	512	26	5	25	4	16
24-hour	91	6	7	5	1	20
Annual	20	<1	<5	2	<1	<50
PM						
24-hour	37	<1	<3	10	<1	<10
Annual	19	<<1	<<5	5	<<1	<<20

* Based on a maximum emission of 301 lb/hr; actual emissions would likely be much lower based on 65% SO_2 removal efficiency.

Table V-6. Broward County Resource Recovery Facility Comparison of Total Impact with the AAQS

Pollutant and Averaging Time	Maximum Impact Project (ug/m^3)	Maximum Impact (1) All Sources (ug/m^3)	Existing Background (2) (ug/m^3)	Maximum Total Impact (ug/m^3)	Florida AAQS (ug/m^3)
SO_2					
3-hour	26	625	63 (3)	688	1300
24-hour	6	216	28	244	260
Annual	<1 (4)	-	4	-	60
PM					
24-hour	<1 (4)	-	93	-	150
Annual	<<1 (4)	-	59	-	60
NO_2					
Annual	1.4	-	42	43	100
CO					
1-hour	64 (4)	-	17,000	-	40,000
8-hour	12 (4)	-	10,000	-	10,000
Pb					
3-months	<0.1	-	0.9	1	1.5

(1) Maximum impact includes the FPL Port Everglades and Fort Lauderdale power plants.

(2) Existing background is estimated using the highest monitored concentrations in the area near the proposed facility.

(3) The 3-hour background is estimated by multiplying the 24-hour background by 2.25.

(4) Less than significant, no further analysis completed.

PM
3-13-87
Ft. Lauderdale, FL

Resource Recovery Office
Room 521, 115 South Andrews Avenue
Fort Lauderdale, Florida 33301
(305) 357-6458

DER

MAR 16 1987

BAQM

March 11, 1987

Mr. Bruce Miller
Air Programs Branch
Environmental Protection Agency
Region IV
345 Courtland Street
Atlanta, Georgia 30365

Dear Mr. Miller,

Enclosed is a copy of the U. S. Department of the Interior's comments of the South Broward Resource Recovery Project (PSD-FL-105) from our files.

Yours very truly,

Thomas M. Henderson
Project Director

TMH/bd
Enclosure
cc: Clair Fancy, FDER Air Bureau
✓Barry Andrews, FDER Air Bureau
Ron Mills, Malcolm Pirnie, Inc.
Tom Rogers
Main File } 3-16-87 for

87-416

United States Department of the Interior

NATIONAL PARK SERVICE
SOUTHEAST REGIONAL OFFICE
75 Spring Street, S.W.
Atlanta, Georgia 30303

IN REPLY REFER TO:
N3615 (SER-OPS)

JUL 8 1985

Mr. Tom Rodgers
Bureau of Air Quality Management
State of Florida
Department of Environmental Regulation
Twin Towers Office Buildings
2600 Blair Stone Road
Tallahassee, Florida 32301-8241

Dear Mr. Rodgers:

Thank you for sending us a copy of South Broward County Resource Recovery Project, Inc.'s power plant site certification application for a proposed resource recovery facility in Broward County, Florida, approximately 57 km northeast of Everglades National Park. Your early notification of this project is appreciated.

We have reviewed the information you sent to us and, based on that information, we would not expect emissions from the proposed facility to adversely impact the air quality or the air quality related values of Everglades National Park. However, we have several comments regarding the air quality and control technology analyses contained in the application. Responses to these comments could affect our recommendation. These comments are discussed in the enclosed technical review document. We ask that you consider these comments while performing your review of the application. We also ask that you forward us a copy of your preliminary determination document once your technical review of the project is completed. We will review your preliminary determination and submit any additional comments regarding the project during the 30-day public comment period.

If you have any questions regarding the enclosed comments, please contact Mark Scruggs of our Air Quality Division in Denver at (303) 236-8765.

Sincerely,

Regional Director
Southeast Region

Enclosure

Technical Review of
Power Plant Site Certification Application for
South Broward County Resource Recovery Project, Inc.
South Broward County, Florida

By

Permit Review and Technical Support Branch
Air Quality Division - Denver

South Broward County Resource Recovery Project, Inc. is proposing to construct a resource recovery facility in unincorporated Broward County, Florida, near the intersection of U.S. Route 441 and State Road 84. This location is approximately 57 km northeast of Everglades National Park, a PSD class I area administered by the National Park Service. The purpose of the facility is to dispose of solid waste generated predominantly within southern Broward County. The project will be a mass-burn facility with a maximum continuous design rated capacity of 3300 tons per day of solid waste and a maximum electrical generating capacity of approximately 96 megawatts. The emissions from the proposed facility are estimated as follows: 3491 tons per year (TPY) of nitrogen oxides, 3428 TPY of sulfur dioxide, 555 TPY of carbon monoxide, 461 TPY of particulate matter, 187 TPY of lead, 156 TPY of fluorides, 81 TPY of volatile organic compounds, 17.3 TPY of sulfuric acid mist, 1.6 TPY of mercury, 0.19 TPY of arsenic and 0.0058 TPY of beryllium.

These emission rates are all considered significant, and therefore, new source review is required for each listed pollutant except volatile organic compounds (VOC). Review for VOC is not required because Broward County is designated as not attaining the ozone national ambient air quality standard and new source review does not apply to nonattainment pollutants unless the emissions of the nonattainment pollutants are greater than 100 TPY. Following are our comments on the best available control technology, air quality, and air quality related values analyses with respect to the project's expected impacts on Everglades National Park.

BEST AVAILABLE CONTROL TECHNOLOGY ANALYSIS

The major sources of emissions at the proposed facility are the four associated boilers. Therefore, our review will focus on emission controls on these units. Also, there is a relatively recent publication entitled, "Air Pollution Control at Resource Recovery Facilities" that discusses resource recovery facilities in detail. This document was published in May 1984 by the California Air Resources Board, and was summarized in a technical paper presented at the 77th annual meeting of the Air Pollution Control Association held in June 1984. As of 1984, all refuse-burning facilities with applications pending in California are proposing control technologies that are consistent with or more stringent than the guideline emission limits discussed in this report. We refer to this publication throughout our comments on the proposed air pollution control technology analysis.

Particulate Matter (PM)

Broward County proposes to use electrostatic precipitators (ESPs) to minimize PM emissions generated by combustion of the solid waste in the boilers. Each ESP will be capable of reducing the exhaust gas PM concentration to 0.03 grains per dry standard cubic foot (gr/dscf). Broward County claims that an ESP with an outlet grain loading of 0.03 gr/dscf is best available control technology (BACT) for the proposed facility.

We agree that high efficiency control devices such as ESPs or baghouses represent BACT for PM emissions from the proposed facility. However, based on information provided in the California Air Resources Board (CARB) document referenced above, an emission limit of 0.01 gr/dscf can be achieved with these devices. This is the guideline emission limit proposed by the CARB for new refuse recovery facilities in California and should be considered as the BACT limit.

Sulfur Dioxide (SO_2)

Broward County is proposing the firing of low sulfur refuse as BACT for the proposed facility. The resulting BACT limit proposed is 0.55 pounds per million Btu heat input ($lb/10^6$ Btu).

The emission guideline recommended in the CARB document is 30 ppm, which corresponds to an SO_2 emission rate of approximately 0.08 $lb/10^6$ Btu. To achieve this emission level, flue gas controls such as wet or dry scrubbing are required. Dry scrubbing processes have been effectively employed at pilot and full-scale refuse burning facilities in Europe, Japan, and the United States. Wet scrubbers have also been employed at full-scale refuse burning facilities. In light of this information, we recommend that Broward County re-evaluate flue gas scrubbing as BACT for SO_2 emissions from the proposed facility.

Nitrogen Oxide (NO_x) and Carbon Monoxide (CO)

The proposed BACT for NO_x and CO emissions is boiler design and good combustion practices. The resulting NO_x and CO emissions limits proposed are 0.56 and 0.089 $lb/10^6$ Btu, respectively. Based on information presented in the CARB report, combustion modifications such as staged combustion, low excess air, and flue gas recirculation can reduce NO_x emissions to between 140 to 200 ppm or 0.28 to 0.4 $lb/10^6$ Btu. We recommend this limit be specified as the BACT limit for the proposed facility. Regarding CO emissions, proper application of the above combustion modification techniques will also minimize CO emissions.

Other Pollutants

Other pollutants emitted from the proposed resource recovery facility requiring BACT review include lead, fluoride, beryllium, mercury, sulfuric acid mist, and inorganic arsenic. The proposed BACT for lead, beryllium and arsenic is the ESPs for the control of particulate matter emissions. These pollutants are emitted in the solid phase, therefore control of PM emissions will also control these pollutants. We agree that the proposed ESPs represent BACT for these pollutants.

Fluorides, sulfuric acid mist and mercury are emitted in small quantities primarily in the gaseous phase. No additional controls are proposed for these pollutants. However, if the wet or dry scrubbers recommended for SO_2 control were installed, the fluoride and sulfuric acid mist emissions could be reduced by over 90 percent.

AIR QUALITY ANALYSIS

General Comments

The application indicates that ISCST was used to predict the maximum air quality impacts due to the proposed plant. This seems to be an appropriate application of this model for this source. It is difficult, however, to determine the completeness and accuracy of the analysis due to a lack of essential information. The applicant needs to document every element of the analysis and all assumptions made to complete the analysis. A description of all emission units including locations, stack parameters, allowable emissions and any nearby tall buildings, should be submitted. In order to review the modeling analysis, the applicant should provide us with receptor locations and grid spacing, model inputs and modeling assumptions. Without this information it is hard to verify that the model has been applied properly and that the data presented is complete and accurate.

Specific Comments

The following specific comments should also be addressed before the proposed project is granted a power plant siting certification.

Page	Paragraph	Line	Comment
2-67	3	3 & 4	The sentence on mean temperature is confusing and should be reworded.
2-67	3	5	3± °F appears to be a typographical error.
2-71	2	4 & 5	The sentence on mean mixing depth subsidence is unclear and should be reworded.
2-76			Page 2-76 and 2-77 appear to be out of order.
Figure 2.3.7.1			Pages are out of order.
2-80	3	8	There is no monitoring site No.4 shown in table 2.3.7.7. The narrative and/or table should be corrected.

Page	Paragraph	Line	Comment
2-84	4		The discussion of models used for the analysis should be a separate subsection rather than mixed with measurement programs. This discussion should include more information on how ISCST was used for this analysis. The discussion as presented is only a description of the ISCST model.
2-85	1	5-9	It appears the applicant is misinterpreting EPA's meaning of "insignificant." Referring to the significant levels EPA states, "... since the 1977 Amendments provide special concern for class I areas, any reasonably expected impacts for these areas, must be considered irrespective of the 50 kilometer limitation or the above significance levels." (See June 19, 1978, Federal Register, Page 26398). Since the proposed facility is to be located near Everglades National Park, a class I area, the applicant should not be referencing the EPA significant levels, and should perform a cumulative air quality analysis including the proposed source and previously permitted sources.
5-25	3	9	Figures 5.6.1.1 and 5.6.1.2 should compare predicted impacts with the PSD class II available increment in order to show how much of the available increment is being consumed by this project.
5-25	3	19	The concentration values in tables 5.6.1.2, 5.6.1.4, 5.6.1.5, and 5.6.1.6 should be compared to the class I PSD increments not the significant impacts levels. See the comment for page 2-85 paragraph 1 line 5-9.
5-30	1	14	It is not clear how the proposed plant is expected to comply with PSD class II increments when the SO_2 concentration values are predicted to be 16 percent and 18 percent above the 3- and 24-hour increments respectively.

Page	Paragraph	Line	Comment
5-33	1	1-6	Caution should be exercised in making a general statement of this sort. In some cases impacts to resources may occur although concentration values are not predicted to exceed standards and increments. Analyses of impacts need to be done on a case by case basis to insure that impacts to sensitive species in a particular area are not overlooked regardless of the relationship of the concentration values to standards and increments.
5-33	1	6-7-8	At a minimum, a Level I analysis should be done and the results given. It is not adequate to merely state that adverse visibility impairment in Everglades National Park is unlikely. This conclusion should be verified by technical analysis. (Note: Due to the lack of such a technical analysis, we performed a Level I visibility analysis. Based on the expected emissions and the distance to the park, the analysis confirms the assertion that the project should not significantly impact the visibility at Everglades National Park.)

AIR QUALITY RELATED VALUES ANALYSIS

Due to the presently low, monitored SO_2 values occurring in Everglades National Park (NP) and the low SO_2 values predicted to occur in Everglades NP as a result of the proposed project, we would not anticipate any adverse impacts on air quality related values (AQRV's) in Everglades NP from SO_2. However, we wish to reconsider this finding when the cumulative modeling analyses are available.

Although there are presently high ozone levels being monitored in Everglades NP, we would not expect VOC emissions from this facility to cause or contribute to adverse impacts on AQRV's in Everglades NP. We also would not expect any adverse impacts on the park AQRV's from the increase in fluoride emissions.

CONCLUSION

Based on the information provided, we would not expect emissions from the proposed facility to adversely impact the air quality or air quality related values of Everglades National Park. However, we have several comments regarding the proposed control technology and air quality analyses that should be addressed before the power plant site certification is granted for the proposed project.

SUBPART Ea

Large MWC plant means an MWC plant with an MWC plant capacity greater than 225 megagrams per day (250 tons per day) of MSW.

Mass burn refractory MWC means a combustor that combusts MSW in a refractory wall furnace. This does not include rotary combustors without waterwalls.

Mass burn rotary waterwall MWC means a combustor that combusts MSW in a cylindrical rotary waterwall furnace. This does not include rotary combustors without waterwalls.

Mass burn waterwall MWC means a combustor that combusts MSW in a conventional waterwall furnace.

Maximum demonstrated particulate matter control device temperature means the maximum 4-hour block average temperature measured at the final particulate matter control device inlet during the most recent dioxin/furan test demonstrating compliance with the applicable standard for MWC organics specified under §60.53a. If more than one particulate matter control device is used in series at the affected facility, the maximum 4-hour block average temperature is measured at the final particulate matter control device.

Maximum demonstrated MWC unit load means the maximum 4-hour block average MWC unit load achieved during the most recent dioxin/furan test demonstrating compliance with the applicable standard for MWC organics specified under §60.53a.

Medical waste means any solid waste which is generated in the diagnosis, treatment, or immunization of human beings or animals, in research pertaining thereto, or in production or testing of biologicals. Medical waste does not include any hazardous waste identified under subtitle C of the Resource Conservation and Recovery Act or any household waste as defined in regulations under subtitle C of the Resource Conservation and Recovery Act.

Modular excess air MWC means a combustor that combusts MSW and that is not field-erected and has multiple combustion chambers, all of which are designed to operate at conditions with combustion air amounts in excess of theoretical air requirements.

Modular starved air MWC means a combustor that combusts MSW and that is not field-erected and has multiple combustion chambers in which the primary combustion chamber is designed to operate at substoichiometric conditions.

Municipal-type solid waste or *MSW* means household, commercial/retail, and/or institutional waste. Household waste includes material discarded by single and multiple residential dwellings, hotels, motels, and other similar permanent or temporary housing establishments or facilities. Commercial/retail waste includes material discarded by stores, offices, restaurants, warehouses, nonmanufacturing activities at industrial facilities, and other similar establishments or facilities. Institutional waste includes material discarded by schools, hospitals, nonmanufacturing activities at prisons and government facilities and other similar establishments or facilities. Household, commercial/retail, and institutional waste do not include sewage, wood pallets, construction and demolition wastes, industrial process or manufacturing wastes, or motor vehicles (including motor vehicle parts or vehicle fluff). Municipal-type solid waste does include motor vehicle maintenance materials, limited to vehicle batteries, used motor oil, and tires. Municipal type solid waste does not include wastes that are solely segregated medical wastes. However, any mixture of segregated medical wastes and other wastes which contains more than 30 percent waste medical waste discards, is considered to be municipal-type solid waste.

Municipal waste combustor or *MWC* or *MWC unit* means any device that combusts, solid, liquid, or gasified MSW including, but not limited to, field-erected incinerators (with or without heat recovery), modular incinerators (starved air or excess air), boilers (i.e., steam generating units), furnaces (whether suspension-fired, grate-fired, mass-fired, or fluidized bed-fired) and gasification/combustion units. This does not include combustion units, engines, or other devices that combust landfill gases collected by landfill gas collection systems.