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June 15, 1984

HAND CARRY

Mr. Clair Fancy
Deputy Chief
Bureau of Air Quality Management
Department of Environmental Regulation
Koger Center
Montgomery Building, Room 100-8
Tallahassee, FL 32301

DER 6/18/84
JUN 18 1984
BAQM

RE: Westinghouse Air Construction Permit Application for Bay County Resource Recovery Facility; AC03-84703 and AC03-84704.

Dear Mr. Fancy:

Enclosed please find the "Air Quality Evaluation for Bay County Resource Recovery Facility" submitted on behalf of Westinghouse Electric Corporation as part of the above-referenced air permit applications. This document, which was prepared by Southern Company Services, constitutes Attachment "J" to the air permit application filed with the Department by Westinghouse on May 25, 1984. The computer print-outs supporting the air quality modeling (Attachments 13, 14 and 15) are being provided only to Cleve Holladay.

With this submittal, the permit applications should now be complete. Your assistance in expediting the processing and issuance of the permits for this project would be much appreciated.

Thank you for your continued consideration in this matter.

Sincerely,

Peter C. Cunningham

PCC/ac
Enclosures

cc: Nancy Wright (w/enclosures except Attachments 13-15)
✓Bob King (w/enclosures except Attachments 13-15)
Cleve Holladay (w/enclosures including Attachments 13-15)

AIR QUALITY EVALUATION FOR BAY COUNTY RESOURCE RECOVERY FACILITY

Bay County Energy Resources, "A Joint Venture" proposes to construct a resource recovery facility in Bay County, Florida. This report represents an evaluation of the effect on air quality that would result from the operation of the new facility.

As shown in Tables 1 and 2 (Attachments 1 and 2), the results of the modeling for the source alone indicate that the predicted pollutant concentrations for the facility are less than significant impact levels except for sulfur dioxide; de minimis monitoring levels; Class II Prevention of Significant Deterioration (PSD) increments; and Class I PSD increments in the Class I Bradwell Bay area. Modeling with other SO_2 sources in the area indicates that the facility will not contribute to any violation of the National Ambient Air Quality Standards (NAAQS) in the area (Attachment 3). Air quality modeling for the proposed facility was performed with the air quality modeling procedures recommended in the EPA document Guideline on Air Quality Models, OAQPS No. 1.2-080, April 1978, and with the SCSTER model, which has been approved for use by the U.S. Environmental Protection Agency (EPA) as equivalent to the recommended EPA models CRSTER and MPTER (Attachment 4).

For the PSD modeling, a single source was assumed in the model with the exhaust characteristics given in Table 4 (Attachment 5). The emission rate for this source was hypothetical for the purpose of obtaining significant figures in the results printouts. Predicted concentrations were adjusted by emission rate ratio and by the number of stacks to correspond to the operation of the proposed facility. The modeling for evaluation of NAAQS attainment considered the sources described in Table 5 (Attachment 6) and used the emission rate for both stacks at the new facility. Five years (1965-1969) of meteorological data were used for the modeling: surface data from Panama city and upper air data from Eglin Air Source Base near Fort Walton. Receptor distances were selected with the PTPLU screening model, and a total of 11 receptor rings were used for the initial model runs, as shown in Table 6

(Attachment 7). For the PSD analysis, the maximum predicted concentrations and the highest, second highest predicted concentrations for the 3-hour and 24-hour averages were refined with receptor spacings of 0.1 km. A summary of the predicted concentrations for each of the five years of meteorological data is shown in Tables 7 and 8 (Attachments 8 and 9). For the NAAQS analysis of the area sources, a summary of the predicted concentrations for each of the five years of meteorological data is shown in Tables 9 and 10 (Attachments 10 and 11). Attachment 12 is the PTPLU model run; Attachment 13 is the 0.1 km refinement of the highest 1-hour (required for carbon monoxide), 3-hour and 24-hour predicted concentrations for each of the five meteorological years in the PSD analysis, respectively; and Attachment 14 is the initial 5-year model run for the single source PSD analysis. Attachment 15 is the 5 year model run for the multi-source NAAQS analysis.

Bryan Baldwin
Blanche M. McIntyre
Southern Company Services
June 13, 1984

ATTACHMENT 1

TABLE 1

AIR QUALITY MODELING RESULTS

FOR BAY COUNTY RESOURCE RECOVERY FACILITY ALONE

Pollutant	Averaging Time	Maximum* Predicted Concentration (μ/m^3)	Significant Impact Level (μ/m^3)	De Minimis Monitoring Level (μ/m^3)	Class II PSD Increment (μ/m^3)
SO_2	Annual	0.6	1	--	20
	24-Hour	6.5	5	13	91
	3-Hour	22.1	25	--	512
TSP	Annual	0.1	1	--	19
	24-Hour	1.7	5	10	37
NO_2	Annual	0.7**	1	14	--
CO	8-Hour	74.2	500	575	--
	1-Hour	147.27	2000	--	--
Lead	24-Hour	0.01***	--	0.1	--

*Highest, second highest

**Assumes 100% conversion of NO_x to NO_2

***Maximum 24-hour average

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ATTACHMENT 2

TABLE 2
AIR QUALITY MODELING RESULTS
FOR BRADWELL BAY CLASS I AREA

Pollutant	Averaging Time	Maximum* Predicted Concentration (μ/m^3)	Class I PSD Increment (μ/m^3)
SO_2	Annual	0.02	2
	24-Hour	0.6	5
	3-Hour	2.9	25
TSP	Annual	0.1	5
	24-Hour	0.2	10

*Highest, second highest

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ATTACHMENT 3

TABLE 3

AIR QUALITY MODELING RESULTS

FOR BAY COUNTY RESOURCE RECOVERY FACILITY AND OTHER SOURCES

Pollutant	Averaging Time	Maximum* Predicted Concentration (μ/m^3)	Florida AAQS (μ/m^3)	NAAQS (μ/m^3)
SO_2	Annual	7.2	60	80
	24-Hour	116.9	260	365
	3-Hour	408.7	1300	1300
TSP**	Annual	1.86	60	75
	24-Hour	30.26	150	260
NO_2**	Annual	2.06	100	100
CO**	8-Hour	3003.1	10,000	10,000
	1-Hour	943.6	40,000	40,000
Lead**	24-Hour	0.2	1.5	1.5

*Highest, second highest

**Resource Recovery Facility only

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ATTACHMENT 4

3/18/82 Research Triangle Park, North Carolina 27711

Equivalent Air Quality Models

Signed

Joseph A. Tikvart, Chief
Source Receptor Analysis Branch (MD-14)

Chief, Air Programs Branch, Regions I-X

Some time ago, we agreed to provide an opportunity for model developers to demonstrate that their models are equivalent to EPA models. The intent was that a new justification for applying their models would not have to be made every time the models are used in a regulatory context. Several test data sets were prepared for a variety of source/climatic/topographic conditions that would allow a convincing demonstration of equivalency (see attachment). This demonstration has been successfully completed for three models. If other developers submit additional demonstrations to us, we will inform you of our review and decision.

SCSTER (Southern Company Services), PLUME5 (Pacific Gas and Electric Co.), and MPSDM (Environmental Research and Technology, Inc.) have all been shown to provide nearly identical estimates to recommended EPA models (CRSTER and MPTER) when specific options in these three models are implemented. Thus, the use of these models with the specific options that provide equivalent estimates should be acceptable for those situations discussed in the Guideline on Air Quality Models. I have not attempted to tabulate the specific options in question since that would require a lengthy listing. If your staff requires further specific information, please contact J. Dicke at FTS 629-5681.

The purpose of this memorandum is to document for you that these three models can be made to provide estimates consistent with those routinely calculated by your staff. However, this is not intended to be a general endorsement of these models. Obviously, if options other than those employed for the equivalency tests are used, a separate case-by-case demonstration is likely to be necessary.

Some further clarification is perhaps appropriate here. In part, due to the question of equivalency demonstrations, we have been criticized for requiring "numerical agreement" with EPA models before a nonguideline model can be used. This is simply not true. We have always maintained and have stated in the introduction to the Guideline that: "The preferred model is that which best simulates transport and dispersion in the area of interest. However, deviations from this guide should be fully supported and documented."

The purpose of the equivalency demonstration discussed above is to facilitate documentation for model developers who choose to use that mechanism. If you have any questions, please contact me.

Attachment

cc: Regional Modeling Contact, Regions I-X
J. Dicke
C. Hopper
J. Mersch

bcc: ✓B. Baldwin
B. Egan
M. Mooney
R. Smith
F. White

TABLE 4

[redacted]AY COUNTY RESOURCE RECOVERY FAC[redacted]ITY

STACK CHARACTERISTICS

SO_2 Emission Rate:	22.1 lb/hr (2.78 g/s)
Particulate Matter Emission Rate:	5.72 lb/hr (0.7207 g/s)
NO_x Emission Rate:	24.5 lb/hr (3.087 g/s)
CO Emission Rate:	115.4 lb/hr (1.4540 g/s)
Lead Emission Rate:	0.0358 lb/hr (0.00451 g/s)
Stack Diameter:	4 ft. (1.22m)
Stack Exit Temperature:	400°F (477.6°K)
Stack Exit Velocity:	3403 fpm (17.3 m/s)

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ATTACHMENT 6

TABLE 5

BAY COUNTY EMISSIONS INVENTORY

	Height (m)	Dia. (m)	Exit Vel. (m/s)	Flow Rate (m^3/s)	Exit Temp. (°K)	SO_2 Emission Rate (g/s)
Southwest Forest Industries UTM 16 632.6 E 3335.1 N						
Recovery Boilers 1 & 2	73.3	2.0	24.51	77.0	440	36.54
Bark Boilers 3 & 4	62.4	2.4	24.01	108.62	349	67.38
Power Boiler 5	87.2	3.7	5.00	52.60	484	11.07
Power Boiler 6	73.4	2.4	25.81	120.69	532	26.78
Lime Kiln	18.2	2.0	10.28	32.30	365	1.50
Arizona Chemical UTM 16 633.1 E 3335.4 N						
Boilers 1 & 2	30.5	1.2	17.90	20.92	464	10.46
Lansing Smith UTM 16 625.2 E 3349.0 N						
Units 1 & 2	60.96	5.49	19.64	464.82	401	27.13

ATTACHMENT 7

TABLE 6

BAY COUNTY RESOURCE RECOVERY FACILITY

RECEPTOR DISTANCES

Receptor Distances Calculated From PTPLU	Receptor Distances Used in SCSTER Model
	0.4 km*
0.474 km	0.5
0.616	0.6
	0.7*
0.806	0.8
1.090	1.1
1.422	1.4
1.850	1.9
2.465	2.5
3.223	3.2
4.266	4.3
	92.5**
	84.4**
	88.0**

*Additional receptors

**Receptors at Bradwell Bay Class I PSD area

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ATTACHMENT 8

TABLE 7

BAY COUNTY RESOURCE RECOVERY FACILITY ALONE*

MAXIMUM PREDICTED CONCENTRATIONS FOR SULFUR DIOXIDE

	3-HOUR	24-HOUR	ANNUAL
1965 Maximum	22.36μg/m^3	6.68μg/m^3	0.44μg/m^3
Distance	0.6km	0.8km	1.1km
Direction	60°	10°	30°
Day	187	209	
1966 Maximum	22.64μg/m^3	11.79μg/m^3	0.44μg/m^3
Distance	0.6km	1.7km	1.1km
Direction	80°	230°	70°
Day	186	21	
1967 Maximum	26.56μg/m^3	6.72μg/m^3	0.58μg/m^3
Distance	0.5km	0.7km	0.8km
Direction	220°	60°	60°
Day	185	145	
1968 Maximum	25.06μg/m^3	7.22μg/m^3	0.58μg/m^3
Distance	0.7km	0.8km	0.8km
Direction	80°	210°	60°
Day	140	156	
1969 Maximum	26.10μg/m^3	6.66μg/m^3	0.52μg/m^3
Distance	0.5km	1.7km	0.8km
Direction	20°	60°	60°
Day	175	192	

*Two stacks, each with an emission rate of 22.1 lb/hr.

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ATTACHMENT 9

TABLE 8

BAY COUNTY RESOURCE RECOVERY FACILITY ALONE*

HIGHEST, SECOND HIGHEST PREDICTED CONCENTRATIONS FOR SULFUR DIOXIDE

		3-Hour	24-Hour
1965	High	20.16μg/m^3	5.06μg/m^3
	2nd High		
	Distance	0.7km	0.8km
	Direction	30°	60°
	Day	163	188
1966	High	19.66μg/m^3	6.52μg/m^3
	2nd High		
	Distance	0.6km	1.9km
	Direction	60°	230°
	Day	200	20
1967	High	22.12μg/m^3	6.32μg/m^3
	2nd High		
	Distance	0.6km	1.9km
	Direction	60°	330°
	Day	215	111
1968	High	20.68μg/m^3	5.34μg/m^3
	2nd High		
	Distance	0.6km	0.8km
	Direction	20°	60°
	Day	87	177
1969	High	21.42μg/m^3	5.96μg/m^3
	2nd High		
	Distance	0.6km	1.9km
	Direction	50°	230°
	Day	210	303

*Two stacks, each with an emission rate of 22.1 lb/hr.

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ATTACHMENT 10

TABLE 9

BAY COUNTY RESOURCE RECOVERY FACILITY AND OTHER SOURCES*

MAXIMUM PREDICTED CONCENTRATIONS FOR SULFUR DIOXIDE

	3-HOUR	24-HOUR	ANNUAL
1965 Maximum	370.3μg/m^3	112.7μg/m^3	7.2μg/m^3
Distance	3.2km	4.3km	4.3km
Direction	310°	300°	290°
Day	321	282	
1966 Maximum	354.7μg/m^3	99.1μg/m^3	7.2μg/m^3
Distance	4.3km	4.3km	4.3km
Direction	20°	320°	280°
Day	185	96	
1967 Maximum	404.6μg/m^3	91.8μg/m^3	6.4μg/m^3
Distance	3.2km	4.3km	4.3km
Direction	160°	250°	280°
Day	108	108	
1968 Maximum	401.0μg/m^3	116.9μg/m^3	6.6μg/m^3
Distance	4.3km	4.3km	4.3km
Direction	20°	220°	330°
Day	229	62	
1969 Maximum	408.7μg/m^3	108.1μg/m^3	6.4μg/m^3
Distance	1.1km	3.2km	4.3km
Direction	60°	280°	260°
Day	206	206	

*Two stacks, each with an emission rate of 22.1 lb/hr.

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ATTACHMENT 11

TABLE 10

BAY COUNTY RESOURCE RECOVERY FACILITY AND OTHER SOURCES*

HIGHEST, SECOND HIGHEST PREDICTED CONCENTRATIONS FOR SULFUR DIOXIDE

		3-Hour	24-Hour
1965	High	297.1μg/m³	85.6μg/m³
	2nd High		
	Distance	4.3km	4.3km
	Direction	30°	310°
	Day	121	256
1966	High	305.1μg/m³	6.52μg/m³
	2nd High		
	Distance	4.3km	1.9km
	Direction	310°	310°
	Day	91	194
1967	High	322.5μg/m³	74.6μg/m³
	2nd High		
	Distance	3.2km	2.5km
	Direction	270°	240°
	Day	217	345
1968	High	383.5μg/m³	82.1μg/m³
	2nd High		
	Distance	4.3km	2.5km
	Direction	320°	240°
	Day	302	106
1969	High	305.1μg/m³	102.0μg/m³
	2nd High		
	Distance	1.4km	3.2km
	Direction	40°	280°
	Day	207	207

*Two stacks, each with an emission rate of 22.1 lb/hr.

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****

VMRBHM14 D1955934 6/13/84 9:10:54 G.M.T. WAS THE ORIGIN

DEST: R5 FILE: 5991 NAME: PTPLU OUTPUT DIST: BLANCHE RECS: 00000096

1 PTPLU (VERSION 80364)
AN AIR QUALITY DISPERSION MODEL IN
SECTION 3. MODELS PROPOSED SEP80 FOR 81 GUIDELINES.
IN UNAMAP (VERSION 4) DEC 80
SOURCE: FILE 13 ON UNAMAP MAGNETIC TAPE FROM NTIS.

PTPLU TRIAL RUN BAY CO PROJECT 100%

>>>INPUT PARAMETERS<<<

SOURCE		***OPTIONS***	***METEOROLOGY***	
EMISSION RATE	= 2784.55 (G/SEC)	IF = 1, USE OPTION	AMBIENT AIR TEMPERATURE	= 293.00 (K)
STACK HEIGHT	= 38.10 (M)	IF = 0, IGNORE OPTION	ANEMOMETER HEIGHT	= 7.00 (M)
STACK DIAM.	= 1.22 (M)	IOPT(1) = 0 (GRAD PLUME RISE)	MIXING HEIGHT	= 5000.00 (M)
EXIT VELOCITY	= 17.29 (M/SEC)	IOPT(2) = 0 (STACK DOWNWASH)	WIND PROFILE EXPONENTS	= A: .10, B: .15, C: .20
STK GAS TEMP	= 477.59 (K)	IOPT(3) = 0 (BUOY. INDUCED DISP.)		D: .25, E: .30, F: .30
			RECEPTOR HEIGHT	= 0.0 (M)

>>>CALCULATED PARAMETERS<<<

VOLUMETRIC FLOW = 20.21 (M**3/SEC) BUOYANCY FLUX PARAMETER = 24.38 (M**4/SEC**3)

ANALYSIS OF CONCENTRATION AS A FUNCTION OF STABILITY AND WIND SPEED

					****EXTRAPOLATED WINDS****			
STABILITY	WIND SPEED (M/SEC)	MAX CONC (G/CU M)	DIST OF MAX (KM)	EFFECT HT (M)	WIND SPEED (M/SEC)	MAX CONC (G/CU M)	DIST OF MAX (KM)	EFFECT HT (M)
1	0.50	1.0046E-02	0.971	508.3(2)	0.59	1.0573E-02	0.902	435.0(2)
1	0.80	1.1483E-02	0.794	332.0(2)	0.95	1.1964E-02	0.741	286.2(2)
1	1.00	1.2109E-02	0.724	273.2(2)	1.18	1.2538E-02	0.677	236.6(2)
1	1.50	1.3039E-02	0.617	194.8	1.78	1.3311E-02	0.580	170.4
1	2.00	1.3448E-02	0.555	155.6	2.37	1.3560E-02	0.523	137.3
1	2.50	1.3572E-02	0.514	132.1	2.96	1.3635E-02	0.474	117.5
1	3.00	1.3638E-02	0.472	116.5	3.55	1.3615E-02	0.442	104.3

					****EXTRAPOLATED WINDS****			
STABILITY	WIND SPEED (M/SEC)	MAX CONC (G/CU M)	DIST OF MAX (KM)	EFFECT HT (M)	WIND SPEED (M/SEC)	MAX CONC (G/CU M)	DIST OF MAX (KM)	EFFECT HT (M)
2	0.50	4.5095E-03	3.100	508.3(2)	0.64	5.3239E-03	2.506	402.8(2)
2	0.80	6.0848E-03	2.100	332.0(2)	1.03	7.0455E-03	1.716	266.0(2)
2	1.00	6.9255E-03	1.758	273.2(2)	1.29	7.9223E-03	1.445	220.4(2)
2	1.50	8.5178E-03	1.291	194.8	1.93	9.4794E-03	1.076	159.7
2	2.00	9.5997E-03	1.052	155.6	2.58	1.0430E-02	0.887	129.3
2	2.50	1.0338E-02	0.905	132.1	3.22	1.0999E-02	0.774	111.0
2	3.00	1.0836E-02	0.808	116.5	3.87	1.1316E-02	0.695	98.9
2	4.00	1.1358E-02	0.683	96.9	5.16	1.1495E-02	0.597	83.7
2	5.00	1.1496E-02	0.606	85.1	6.45	1.1344E-02	0.537	74.6

					****EXTRAPOLATED WINDS****			
STABILITY	WIND SPEED (M/SEC)	MAX CONC (G/CU M)	DIST OF MAX (KM)	EFFECT HT (M)	WIND SPEED (M/SEC)	MAX CONC (G/CU M)	DIST OF MAX (KM)	EFFECT HT (M)
3	2.00	8.0154E-03	1.906	155.6	2.81	9.2972E-03	1.458	121.9
3	2.50	8.8833E-03	1.593	132.1	3.51	9.9869E-03	1.239	105.1
3	3.00	9.5197E-03	1.387	116.5	4.21	1.0412E-02	1.095	93.9
3	4.00	1.0307E-02	1.134	96.9	5.61	1.0765E-02	0.919	80.0
3	5.00	1.0673E-02	0.983	85.1	7.02	1.0740E-02	0.815	71.6
3	7.00	1.0742E-02	0.817	71.7	9.82	1.0218E-02	0.697	62.0
3	10.00	1.0176E-02	0.691	61.6	14.03	9.1462E-03	0.609	54.9
3	12.00	9.6699E-03	0.643	57.7	16.84	8.4610E-03	0.575	52.1
3	15.00	8.9037E-03	0.595	53.8	21.05	7.5576E-03	0.541	49.3

****EXTRAPOLATED WINDS****

STABILITY	WIND SPEED (M/SEC)	MAX CONC (G/CU M)	DIST OF MAX (KM)	EFFECT HT (M)	WIND SPEED (M/SEC)	MAX CONC (G/CU M)	DIST OF MAX (KM)	EFFECT HT (M)
4	0.50	7.2574E-04	45.171	508.3(2)	0.76	1.3123E-03	23.082	345.9(2)
4	0.80	1.3919E-03	21.492	332.0(2)	1.22	2.3220E-03	11.193	230.5(2)
4	1.00	1.8339E-03	15.131	273.2(2)	1.53	2.9397E-03	8.463	192.0
4	1.50	2.8875E-03	8.672	194.8	2.29	4.2367E-03	5.062	140.7
4	2.00	3.7779E-03	5.987	155.6	3.05	5.2418E-03	3.628	115.1
4	2.50	4.5392E-03	4.554	132.1	3.82	5.9857E-03	2.946	99.7
4	3.00	5.1786E-03	3.692	116.5	4.58	6.4765E-03	2.482	89.4
4	4.00	6.1180E-03	2.814	96.9	6.11	7.0506E-03	1.951	76.6
4	5.00	6.6799E-03	2.300	85.1	7.64	7.2797E-03	1.653	68.9
4	7.00	7.2148E-03	1.760	71.7	10.69	7.2282E-03	1.335	60.1
4	10.00	7.2760E-03	1.389	61.6	15.27	6.6992E-03	1.114	53.5
4	12.00	7.1050E-03	1.254	57.7	18.33	6.2862E-03	1.031	50.9
4	15.00	6.7358E-03	1.124	53.8	22.91	5.6849E-03	1.000	48.4
4	20.00	6.0647E-03	1.000	49.9	30.55	4.7987E-03	0.973	45.8

****EXTRAPOLATED WINDS****

STABILITY	WIND SPEED (M/SEC)	MAX CONC (G/CU M)	DIST OF MAX (KM)	EFFECT HT (M)	WIND SPEED (M/SEC)	MAX CONC (G/CU M)	DIST OF MAX (KM)	EFFECT HT (M)
5	2.00	6.1925E-03	6.578	106.5	3.32	4.9913E-03	5.337	95.8
5	2.50	5.6459E-03	5.988	101.6	4.16	4.5140E-03	4.876	91.7
5	3.00	5.2216E-03	5.569	97.9	4.99	4.1468E-03	4.558	88.5
5	4.00	4.5937E-03	4.957	92.4	6.65	3.6091E-03	4.099	83.9
5	5.00	4.1419E-03	4.549	88.5	8.31	3.2192E-03	4.000	80.6

****EXTRAPOLATED WINDS****

STABILITY	WIND SPEED (M/SEC)	MAX CONC (G/CU M)	DIST OF MAX (KM)	EFFECT HT (M)	WIND SPEED (M/SEC)	MAX CONC (G/CU M)	DIST OF MAX (KM)	EFFECT HT (M)
6	2.00	4.6760E-03	14.132	94.9	3.32	3.8252E-03	11.141	86.0
6	2.50	4.2926E-03	12.742	90.8	4.16	3.4786E-03	10.093	82.6
6	3.00	3.9907E-03	11.681	87.7	4.99	3.2089E-03	9.312	80.0
6	4.00	3.5368E-03	10.242	83.2	6.65	2.8089E-03	8.278	76.1
6	5.00	3.2052E-03	9.314	79.9	8.31	2.5210E-03	7.568	73.4

(1) THE DISTANCE TO THE POINT OF MAXIMUM CONCENTRATION IS SO GREAT THAT THE SAME STABILITY IS NOT LIKELY TO PERSIST LONG ENOUGH FOR THE PLUME TO TRAVEL THIS FAR.

(2) THE PLUME IS OF SUFFICIENT HEIGHT THAT EXTREME CAUTION SHOULD BE USED IN INTERPRETING THIS COMPUTATION AS THIS STABILITY TYPE MAY NOT EXIST TO THIS HEIGHT. ALSO WIND SPEED VARIATIONS WITH HEIGHT MAY EXERT A DOMINATING INFLUENCE.

(3) NO COMPUTATION WAS ATTEMPTED FOR THIS HEIGHT AS THE POINT OF MAXIMUM CONCENTRATION IS GREATER THAN 100 KILOMETERS FROM THE SOURCE.

State of Florida
Department of Environmental Regulation
Notice of Proposed Agency Action
on Permit Application

The Department of Environmental Regulation gives notice of its intent to issue permits to Bay County Energy Resources to construct two 65.6 million Btu incinerators that will burn municipal solid waste and wood wastes. The project location is approximately eight miles from the center of Panama City on U.S. Highway 231. A determination of best available control technology (BACT) was required.

This application was reviewed under Florida Administrative Code Rule 17-2.500, Prevention of Significant Deterioration. Emissions of air pollutants, in tons per year, will increase by the following amounts:

PM	SO_2	NO_x	CO	HC	Pb
50	192	214	1010	78	0.3

The maximum percentages of allowable PSD increments consumed by the proposed project will be as follows:

	Annual	24-Hour	3-Hour
Class I			
PM	2	2	N/A
SO_2	1	12	12
Class II			
PM	1	5	N/A
SO_2	3	7	4

Persons whose substantial interests are affected by the department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must conform to the requirements of Chapters 17-103 and 28-5, Florida Administrative Code, and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32301, within fourteen (14) days of publication of this notice. Failure to file a request for hearing within this time period shall constitutes a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this preliminary statement. Therefore, persons who may not object to the proposed agency action may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Model Rule 28-5.207 at least five (5) days before the final hearing and be filed with the hearing officer is one has been assigned at the Division of Administrative Hearings, Department of Administration, 2009 Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the peitition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32301. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

The application 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 Regulation
Northwest District
106 Governmental Center
Pensacola, Florida 32501

DER, Northwest District
Branch Office
217 E. 23rd St., Suite B
Panama City, Florida 32405

Dept. of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32301

Any person may send written comments on the proposed action to Mr. Bill Thomas at the department's Tallahassee address. All comments mailed within 30 days of the publication of this notice will be considered in the department's final determination.

RULES OF THE ADMINISTRATIVE COMMISSION
MODEL RULES OF PROCEDURE
CHAPTER 28-5
DECISIONS DETERMINING SUBSTANTIAL INTERESTS

28-5.15 Requests for Formal and Informal Proceedings

(1) Requests for proceedings shall be made by petition to the agency involved. Each petition shall be printed typewritten or otherwise duplicated in legible form on white paper of standard legal size. Unless printed, the impression shall be on one side of the paper only and lines shall be double spaced and indented.

(2) All petitions filed under these rules should contain:

(a) The name and address of each agency affected and each agency's file or identification number, if known;

(b) The name and address of the petitioner or petitioners;

(c) All disputed issues of material fact. If there are none, the petition must so indicate;

(d) A concise statement of the ultimate facts alleged, and the rules, regulations and constitutional provisions which entitle the petitioner to relief;

(e) A statement summarizing any informal action taken to resolve the issues, and the results of that action;

(f) A demand for the relief to which the petitioner deems himself entitled; and

(g) Such other information which the petitioner contends is material.

Preliminary Determination

and

Technical Evaluation

Bay County Energy Resources
Resource Recovery Facility
Units No. 1 and 2
Panama City, Bay County

Permit Number

AC 03-84703
AC 03-84704

Florida Department of Environmental Regulation
Bureau of Air Quality Management
Central Air Permitting

July 27, 1984

Preliminary Determination
and
Technical Evaluation

Table of Contents

I. Applicant and Source Location

A. Applicant

Bay County Energy Resources
c/o Westinghouse Waste Technology Service Division
Bay County Waste-To-Energy Project
Post Office Box 286
Madison, Pennsylvania 15663

B. Source Location

The proposed construction will occur at a new plant site located in the Industrial Park on U.S. Highway 231, approximately eight miles from the center of Panama City, Florida. The UTM coordinates are: Zone 16, 644.1 km east and 3348.9 km north.

II. Project Description

The proposed project involves the construction of a resource recovery facility that will generate electric power by burning municipal solid waste (MSW) generated within Bay County. The facility will consist of two O'Connor RC 120 combustor units with provision for future addition of a third unit. Capacity of the facility will be 350 tons per day of municipal waste plus 135 tons per day of waste wood and bark which will be used as a supplemental fuel to maximize plant capacity factor and revenues. The average fuel consumption per day will be 300 tons MSW and 178 tons wood wastes. Steam produced in the two incinerators will be used to generate electrical energy by turbine generators. The electrical energy will be sold to Gulf Power Company. Design of the facility will provide for future steam sales for manufacturing or other uses in the adjacent industrial park.

Electrostatic precipitators are proposed for control of particulate emissions from the incinerators. This choice is based upon successful operating experience with this control technology in resource recovery facilities utilizing waterwall boilers for the incineration of municipal solid waste in Nashville, Tennessee; Saugus, Massachusetts; Hampton, Virginia; and Pinellas County, Florida. The design criteria for particulate emissions from the precipitators will be 0.02 grain per standard cubic foot, corrected to 12% CO_2. This represents a particulate removal efficiency of approximately 99%.

The bottom ash and fly ash generated will be mixed and transported to the Bay County landfill. All liquid wastes, including cooling tower blowdown, boiler blowdown, ash quench water overflow, excess cooling water, sanitary waste, and plant washdown water, will be pretreated and discharged through sanitary sewers to the Bay County Sewage Treatment Plant.

III. Emissions and Controls

The major air pollutant emitted from the resource recovery facility will be particulate. The proposed precipitators will reduce particulate emissions for each incinerator from 429 pounds per hour to 5.7 pounds per hour. The precipators will also reduce lead emissions for each incinerator from 2 pounds per hour to 0.036 pound per hour.

The projected air pollutant emissions from both units are listed as follows:

Regulated Pollutant	Maximum lb/hr	tons/year
Particulate, PM	11.4	50
Sulfur Dioxide, SO_2	44.2	192
Nitrogen Oxides, NOx	48.8	214
Carbon Monoxide, CO	230.8	1010
Hydrocarbons, HC	18.0	78
Lead, Pb	0.072	0.3

IV. Rule Applicability

The proposed project is subject to preconstruction review under the provisions of Chapter 403, Florida Statutes, and Chapter 17-2, Florida Administrative Code (FAC).

The proposed facility is located in an attainment area for all regulated air pollutants. This type of facility is one of the major facility categories listed in Table 500-1, Rule 17-2.500, and, therefore, would require new source review under this rule if any pollutant would have potential emissions equal to or greater than 100 tons per year. Specifically, the project is subject to the provisions of Rule 17-2.500, Prevention of Significant Deterioration (PSD), which requires an air quality impact analysis and the use of Best Available Control Technology (BACT). All regulated air pollutants from this facility, except hydrocarbons and lead, PSD are subject to PSD review because the total emission rate of each pollutant is greater than the significant emission rate as listed in Table 500-2, Rule 17-2.500.

Each of the two incinerators will have a charging rate of more than 50 tons per day; therefore, they are subject to the provisions of 40 CFR 60.50, Subpart E - Standards of Performance for Incinerators. The particulate emission limit required by the Standards is 0.08 gr/dscf, corrected to 12 percent CO_2.

V. Control Technology Review

Electrostatic precipitators (ESPs) have been proposed by the applicant for the two incinerators, which will reduce particulate emissions to 0.02 gr/dscf, corrected to 12 percent CO_2. The baghouse is another control device capable of achieving the BACT particulate emission limit of 0.03 gr/dscf. The applicant

proposed to use precipitators because ESPs have been widely used by resource recovery facilities.

The department has determined that SO_2 emissions will be limited by fuel type and fuel quantity. That means only municipal solid waste and wood wastes will be allowed for firing, and the maximum municipal solid waste will be limited to 350 tons per day for the two incinerators. Test data obtained from existing Florida MSW incinerators indicate that SO_2 emissions are less than the SO_2 emissions from the combustion of distillate oil containing 0.3% sulfur.

During combustion of municipal solid waste, NOx is formed in high temperature zones in and around the furnace flame by oxidation of atmospheric nitrogen and nitrogen in the waste. The two primary variables that affect the formation of NOx are temperature and concentration of oxygen. The proposed incinerators are designed to provide intimate mixing of the tumbling waste and combustion air. The need for high excess air is minimized to 50%. The low excess air requirement and high moisture content of the fuel will limit NOx emissions. The department has determined that the proposed fuel type and combustor design are BACT for NOx emissions.

Carbon monoxide is a product of incomplete combustion due to deficient air. Incomplete combustion will cause the loss of heat energy to boilers. Since CO emissions represent lost heat energy, thereby affecting the return on investment, the department believes that operators will try to minimize CO emissions for higher boiler efficiency. The department agrees with the applicant that BACT is underfire and overfire air supply to reduce CO emissions.

Lead emissions will occur from MSW incinerators because lead is present in the solid waste. The inlet temperature of the proposed ESP is estimated at 425-475 °F. In this temperature range, the lead emissions should be in a nonvaporous state and can be removed by the ESP.

The applicant has stated that no municipal sewage sludge will be fired in the proposed incinerators; therefore, there should be no mercury emissions to be limited by NESHAPS, the National Emission Standard for Hazardous Air Pollutants, 40 CFR 61.50, Subpart E.

VI. Air Quality Impact Analysis

As noted in Section IV., the operation of the proposed Bay County Resource Recovery Facility will result in significant emissions of PM, SO_2, NOx, and CO. The air quality impact analysis required for these pollutants includes:

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

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

Based on these required analyses, the department has reasonable assurance that the proposed resource recovery facility, as described in this permit and subject to the conditions of approval proposed herein, will not cause or contribute to a violation of any PSD increment or ambient air quality standard. A discussion of the modeling methodology and required analyses follows:

1. Modeling Methodology

The EPA-approved SCSTER dispersion model was used in the air quality impact analysis. This model was used to predict annual and short-term pollutant concentrations from the proposed resource recovery facility and all other sources in the vicinity of the proposed facility. Though not required, a modeling analysis of lead emissions from the proposed facility was also performed.

Receptor distances were selected with the EPA-approved PTPLU screening model. The maximum short-term impacts were refined with a 0.1 kilometer spacing between receptors for only the days on which worst-case meteorological conditions occurred.

The surface meteorological data used in the model were Air Weather Service data collected at Tyndall Air Force Base in Panama City, Florida, during the period 1965-1969. Upper air meteorological data used in the model were collected during the same time period at Eglin Air Force Base in Valparaiso, Florida. Final stack parameters and emission rates in evaluating the air quality impact of the proposed facility are in Table I.

2. Analysis of Existing Air Quality

In order to evaluate existing air quality in the area of a proposed project, the department may require a period of continuous preconstruction monitoring for any pollutant subject to PSD review.

However, since air quality modeling predicts that emissions of SO_2, PM, NOx, CO, and Pb will result in ambient impacts less than the de minimis monitoring levels, no precontruction monitoring is required for this project.

3. PSD Increment Analysis

The Bay County Resource Recovery Facility will be located in an area where the Class II increments apply. However, the Bradwell Bay National Wilderness Area is located approximately 90 kilometers east of the facility so an analysis of Class I impacts was also performed.

There are no other increment-consuming sources in the area. Modeling results shown in Table 2 predict that the proposed facility will not cause a violation of any Class I or Class II PSD increment. The highest, second-highest short-term predicted concentrations are given in the table since five years of meteorological data were used in the modeling.

4. Ambient Air Quality Standards Analysis

As shown in Table 3, modeling results predict that maximum ground level concentrations of PM, SO_2, NOx, CO, and Pb will be considerably below all national (NAAQS) and state (FAAQS) ambient air quality standards. Modeling results predict that concentrations of PM, NO_2, and CO will be below significant impact levels; therefore, only the impacts of the recovery facility were evaluated for these pollutants. No background concentrations were assumed for the pollutants with impacts below the significant impact levels. Even though no monitoring was required for SO_2, the department has assumed a conservative background value of 20 ug/m^3.

The highest, second highest short-term concentrations are given in the table since five years of meteorological data were used in the modeling.

5. Analysis of Impact on Soils, Vegetation, and Visibility and Growth-Related Air Quality Impacts.

The maximum ground level concentrations predicted to occur as a result of emissions from the proposed facility will be well below all applicable AAQS including secondary standards designed to protect public welfare related values. Therefore no adverse effects on soils, vegetation and visibility are expected.

No secondary residential, commercial or industrial growth which will adversely effect air quality in the area is expected.

VII. Conclusions

Based on an evaluation of the applications, the department believes that compliance with all applicable state and federal air regulations will be achieved provided certain general and specific conditions are met, as set forth in the attached draft permits (AC 03-84703 and AC 03-84704).

Table 1

Proposed Bay County Resource Recovery Facility Source Parameters And Emisssion Rates Used in Assessing Air Quality Impacts

Emissions Unit	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp. (°K)	Emission Rates (g/s)				
					SO_2	PM	NOx	CO	Pb
Units 1 & 2	38.10	1.22	17.30	478	5.57	1.44	6.17	29.08	.009

Table 2

Comparison of New Source Impacts with PSD Increments

Pollutant and Time Average	PSD Class II Increment	Predicted Concentration	PSD Class I Increment	Predicted Concentration
SO_2 (ug/m^3)				
3-hour	512	22.1	25.0	2.9
24-hour	91	6.5	5.0	0.6
Annual	20	0.6	2.0	0.02
PM (ug/m^3)				
24-hour	37	1.7	10.0	0.2
Annual	19	0.2	5.0	0.1

Table 3

Comparison of Predicted Impacts of Bay County Resource Recovery Facility and Other Sources with Ambient Air Quality Standards

Pollutant	Averaging Time	Max. Predicted Concentration (ug/m^3)	Florida AAQS (ug/m^3)	NAAQS (ug/m^3)
SO_2	Annual	27[b]	60	80
	24-hour[a]	122[b]	260	365
	3-hour[a]	404[b]	1300	1300
TSP[c]	Annual	0.2	60	75
	24-hour[a]	1.7	150	260
NO_2[c]	Annual	0.7[d]	100	100
CO[c]	8-hour[a]	74	10,000	10,000
	1-hour[a]	147	40,000	40,000
Pb[c]	3-month	0.1[e]	1.5	1.5

a Highest, second highest value

b Includes conservative background of 20 ug/m^3

c Bay County Resource Recovery Facility only

d Assumes 100% conversion of NO_x to NO_2

e Maximum 24-hour average