Memorandum

Florida Department of Environmental Protection

To: Hamilton S. Oven, P.E.
Siting Coordination Office

From: Joseph Kahn, P.E. JK
New Source Review Section

Date: October 18, 1999

Re: Pasco County Resource Recovery Facility, PA87-23
Modification of Site Certification, SNCR Addition

I reviewed the letter and attachments dated October 12, 1999 from Daniel Strobridge of CDM to Carol Moore of the Southwest District office regarding an amendment to the site certification conditions for the addition of SNCR. I agree that this does not require an air construction permit as described in my letter attached to the submittal. Al Linero and I discussed the need for a limitation on ammonia emissions (ammonia slip) from this facility and concluded that such a limit is not required for this facility. Records of the injection rate should be maintained, so I suggest the inclusion of the following requirement in the conditions of certification:

> The owner or operator shall keep records of the daily average ammonia injection rate in units of pounds of NH_3 per day, for all units combined.

Please let me know if you need any additional information.

CDM Camp Dresser & McKee Inc.

consulting
engineering
construction
operations

Westshore Center
1715 North Westshore Boulevard, Suite 875
Tampa, Florida 33607
Tel: 813 281-2900 Fax: 813 288-8787

October 12, 1999

Ms. Carol Moore
Air Programs
Department of Environmental Protection
8407 Laurel Fair Circle
Tampa, Florida 33610

Subject: Pasco County Resource Recovery Facility - PPSA Case No. PA 87-23

Dear Ms. Moore:

Camp Dresser & McKee Inc. (CDM) represents Pasco County with issues affecting its resource recovery facility ("the Facility"). Pasco County is planning to install new air pollution control and monitoring equipment at the Facility to comply with the Emission Guidelines contained in 40 CFR 60 Subpart Cb as adopted by Florida in FAC 62-204.800.

This letter constitutes an amendment to the site certification application for the Facility.

In accordance with Conditions of Certification I and XIII of the above referenced site certification, Pasco County is providing the Department this description of the Facility's proposed improvements to the Continuous Emissions Monitoring System (CEMS) and the Air Pollution Control Equipment. The improvements consist of several additional CEM probes, a CEM shelter, computer equipment, and an aqueous ammonia injection system (selective non-catalytic reduction system [SNCR]) for NOx control. Both of these systems are more fully described in Attachment 1 to this letter. Also enclosed for your review and information are the following preliminary drawings, which show the salient points of these improvements.

Drawing Number	Description
18750-M-1a-8	Site Plan
99-7 I109	CEMS sample Line Routing Air Pollution Control Area
99-7 E502	Electrical Raceway Arrangement CEMS Area
99-7 P100	Ammonia Tank Area Piping and General Arrangement
99-7 P104	Ammonia Injection Lance Installation Details
99-7 E304	Ammonia Tank Area Conduit Plan

S:\PASCO\Tb9028.doc

The operation of the SNCR system will result in some ammonia slip (e.g., ammonia which does not react with NOx) which results in minimal ammonia emissions from the Facility's stack.

Ammonia emissions from the ammonia tank filling operations may occur, but also are expected to be minimal because the ammonia storage tank loading facilities are designed to exchange ammonia vapor within the storage tank to the ammonia delivery truck during filling operations.

These improvements do not constitute a modification of the Facility as defined by Rule 62-210.200 (reference Mr. Joe Kahn's letter dated June 12, 1998, copy attached). Also attached is a copy of Mr. Hamilton Oven's letter dated April 26, 1999 which reflects the Department's approval for the proposed improvements to the Facility.

If you should require further information or have any questions, do not hesitate to contact me.

Sincerely,

CAMP DRESSER & McKEE INC.

Daniel E. Strobridge, QEP
Associate

Attachments

c: Doug Bramlett, Pasco County
Vince Mannella, Pasco County
Hamilton Oven, FDEP Siting Coordinator, Tallahassee
Joe Kahn, FDEP, New Source Review Section, Tallahassee

ATTACHMENT 1

SNCR AND CEMS TECHNICAL REQUIREMENTS

The following are excerpts of the requirements contained in the Amendment No. 4 to the Service Agreement between Pasco County and Ogden Martin Systems of Pasco Inc., which provides for the design, installation and testing of the CEMS improvements and the SNCR system.

SELECTIVE NON-CATALYTIC REDUCTION (SNCR) SYSTEM

1. GENERAL

An SNCR system shall be provided for the reduction of nitrogen oxides such that the Facility at least meets the applicable CAA Modification Acceptance Criteria. The SNCR system shall be based on the injection of aqueous ammonia into the furnace. The SNCR system shall be designed to provide a sufficient rate of aqueous ammonia injection to all three boilers while each boiler is operating at 110% of the Maximum Continuous Rating (MCR) of 90,368 pounds per hour of steam for each boiler.

The SNCR system shall comply with all federal, state and local codes, standards, laws, rules, regulations and requirements relative to aqueous ammonia receiving, storage and handling. The SNCR system shall consist of an aqueous ammonia storage tank, aqueous ammonia feed pumps, carrier water system, a purge air system and injection nozzles. The feed system design shall be based on delivering the design MCR. consumption rate simultaneously to all three boilers.

2. STORAGE AND LOADING

A 10,000-gallon aqueous ammonia storage tank with level gage, level switches, high level alarm and pressure gauges shall be provided. The aqueous ammonia storage tank shall be constructed of SA 36-plate steel for the sides, with the top and bottom components comprised of SA 515 Grade 70 steel. It shall be designed and located in accordance with applicable codes and standards and Factory Mutual recommendations, if applicable. The aqueous ammonia storage tank shall be located within a diked containment area with a containment capacity at least equal to the maximum volume of the tank plus freeboard. The diked containment area shall be constructed of reinforced concrete and shall be sloped to a sump. A pump shall be provided to remove any accumulated rainwater on an as needed basis.

Aqueous ammonia shall be delivered to the Facility in tank trucks. The tank trucks shall be unloaded such that vapor displaced from the aqueous ammonia storage tank, as the tank is being filled, shall be circulated back to the tank truck and not released to the atmosphere.

3. AQUEOUS AMMONIA FEED PUMPS

Two one hundred percent capacity aqueous ammonia feed pumps (seal-less "canned" type) shall be provided. Each pump shall be sized to transfer at least the maximum design consumption rate simultaneously to all three boilers. One pump shall therefore serve as a spare. The aqueous ammonia supply and recirculation lines shall be provided with isolations valves.

4. INJECTION NOZZLES

The aqueous ammonia solution shall be injected into the boiler via injection nozzles that penetrate the boiler walls. A minimum of two nozzles per boiler shall be provided. Access platforms, ladders and stairs shall be provided at each location as necessary.

5. PURGE AIR SYSTEM

A nozzle purge air system shall be provided to minimize slagging of the nozzles. Two one hundred percent capacity low-pressure rotary blowers shall be provided. One blower shall serve as a spare.

6. PIPING

Only carbon steel and stainless steel shall be used for piping, valves, fittings and gages that come into contact with the aqueous ammonia solution. Brass, bronze or copper bearing materials shall not be used since ammonia is corrosive to those materials.

7. ELECTRICAL SYSTEMS

All electrical equipment necessary to supply the SNCR system shall be provided. NEMA 4X or NEMA 4 shall be used for all cabinets and devices. All electrical wiring shall be run in conduit and/or existing or new cable trays.

Outdoor lighting for the aqueous ammonia storage area and power for the two aqueous ammonia feed pumps and the sump pump shall be provided. All conduit and cables shall be located outside of the corrosive area if possible. Power for the two purge air blowers shall also be provided.

8. INSTRUMENTATION AND CONTROLS

The existing Bailey DCS shall be used to monitor and control the new SNCR system. The existing DCS shall be augmented as required with hardware and software, to accept the new monitoring and control functions without any functional degradation.

New CRT graphic display screens shall be configured based upon the P&ID's for the new SNCR system. The screens shall include, at a minimum, process graphics, faceplates and trend displays.

Under normal operating conditions, aqueous ammonia shall be injected into the boilers to control the NOx level at the stack to a set point of approximately 180 ppmdv corrected to 7% O_2 in order to assure compliance with the CAA Modification Acceptance Criteria for NOx. The control system shall maintain the NOx concentration at the stack by adjusting the aqueous ammonia feed rate to each boiler. The aqueous ammonia injection control loop shall be a cascade arrangement, with the inner loop controlling the aqueous ammonia flow to the flow set point, based on aqueous ammonia flow measurement, and the outer loop controlling the aqueous ammonia flow set point based on the NOx concentration at the stack. The stack NOx concentration signal shall be generated by the CEMS.

The aqueous ammonia feed pumps recirculation flow shall be controlled by the restriction orifice.

A rotameter with a high turn down needle valve shall be installed in the aqueous ammonia line to each injection nozzle. The rotameters shall be designed to provide the means for equally distributing the aqueous ammonia flow among the nozzles.

At least two emergency stop button switches shall be installed for each boiler, one at the nozzle elevation area, and each of them shall trip the aqueous ammonia injection control valve closed. The aqueous ammonia injection control valve shall also trip closed when the boiler forced draft fan trips or is stopped.

The carrier water pressure at the nozzles shall be maintained constant. A self-contained pressure control valve shall be installed for each distribution header. A rotameter shall be installed in the carrier water line to each injection nozzle. The rotameters shall provide visual indication of carrier water flow to the nozzles and help detect nozzle pluggages.

A aqueous ammonia truck filling panel shall be provided for filling the aqueous ammonia storage tank, and shall have a "high level" and "low level" indicating lights, one for each, and a lights test push-button.
All of the eyewash and shower stations shall have a flow switch in the water supply line. The switch shall be sized to actuate at the smaller flow of the eyewash fountain.

The SNCR system shall be monitored and controlled remotely from the control room through the existing Bailey DCS.

All control actions, including start/stop equipment, open/close valves, manual/auto and set point shall be from the operator interface station in the control room.

CONTINUOUS EMISSION MONITORING SYSTEM (CEMS) IMPROVEMENTS

1. GENERAL

The existing CEMS shall be upgraded with new equipment (with some of the existing equipment being reused) such that the CEMS shall comply with all the applicable rules and regulations.

2. NEW ENCLOSURE

A new environmentally controlled, weather tight enclosure shall be provided. The enclosure shall house the new inlet and outlet monitoring components, the existing outlet monitoring components (including the existing SO_2, O_2, CO and opacity controller instruments), the existing auxiliary control racks, and new sample line heating controls. New chilled condensers that are less prone to plugging by ammonia salts and new power distribution panels shall also be supplied. The new enclosure shall include a new air conditioning system and a new backup air conditioning system, both sized to ensure the appropriate temperature environment for the instrumentation. The new shelter shall be sized to provide adequate space to meet all NEMA code requirements.

3. EQUIPMENT IN EXISTING ENCLOSURE TO BE RELOCATED TO NEW ENCLOSURE

The maximum amount of equipment in the existing enclosure shall be relocated to the new enclosure for use as part of the CAA Modifications. This equipment shall include, but is not limited to, the following:

a) Three (3) Outlet CO_2 Analyzers

b) Three (3) Outlet SO_2 Analyzers

c) Three (3) CO Analyzers

d) Three (3) CO_2 Analyzers

e) Three (3) Sample Probes

f) Three (3) Opacity Monitors

g) Three (3) Auxiliary controls for the computer network

4. SAMPLE LINES AND PROBES

The existing sample probe at the stack shall be incorporated into the new CEMS. The spray dryer absorber inlet locations shall be supplied with new probes. The probes shall be thermostatically controlled. All sample lines shall be of the hybrid heated hose type which is temperature controlled by a microprocessor based regulator module and an RTD temperature sensor. A power/temperature control panel for each segment of the installed hose (150 ft. maximum length each segment) shall be built into the new enclosure. These controls shall provide power through relays controlled by the microprocessor operated temperature regulator to assure that the sample line heaters can not fail in the on position.

Power for probe operation shall be delivered from power distribution panels (PDPs). The PDPs shall also supply power for the sample lines. There shall be one dedicated PDP for each boiler. The PDPs shall be located within the new enclosure. At a minimum, each PDP shall meet NEMA code requirements for conductor density within the shelter raceways.

5. MODIFICATIONS TO THE CEMS CONTROL ROOM COMPONENTS

New enclosures for the DAS computer and CEMS network file servers shall be supplied which protects the components from potential RF interference. New UPS power supplies shall also be supplied for the DAS computer and the CEMS network file servers.

Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

April 26, 1999

Mr. Daniel E. Strobridge
Camp Dresser & McKee Inc.
1715 N. Westshore Boulevard
Suite 875
Tampa, Florida 33607

Re: Pasco County RRF PA 87-23

Dear Mr. Strobridge:

The Department has reviewed your letter of January 14, 1999, concerning the addition of a deNOx system and an improved Continuous Emission Monitoring system to the Pasco County Solid Waste Resource Recovery Facility. Although there may be no significant environmental impacts from the construction and operation of the proposed improvements, the installation of the new CEMs system will not require any modification of the Conditions of Certification, per Condition XIV.A.3.a. However, the deNOx system will require a modification of the Conditions of Certification in accordance with the provisions of Condition I. Plans detailing changes in the onsite equipment should be submitted as required by Condition XIII.

The Department has no objection to the installation of the proposed equipment as long as the applicable conditions of certification and regulations are complied with. The Bureau of Air Regulation has suggested that the following condition be added to Condition XIV:

> The owner or operator shall, for each of its three combustor units, attain full compliance with the emission limitations and compliance requirements of 40 CFR 60, Subpart Cb no later than April 19, 2000, pursuant to Florida's 111(d) implementation plan.

The department will include the above modification to the ongoing modification process.

Sincerely,

Hamilton S. Oven

Hamilton S. Oven, P.E.
Administrator, siting
Coordination Office

cc: Scott Goorland
Al Linero
Bill Thomas

Department of Environmental Protection

JUN 15 1998

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

June 12, 1998

CERTIFIED MAIL

Mr. Douglas S. Bramlett
Assistant County Administrator
Pasco County
Utilities Services Branch
Public Works/Utilities Bldg., S-213
7530 Little Road
New Port Richey, Florida 34654

Re: Municipal Waste Combustor, SNCR Addition

Dear Mr. Bramlett:

The Department has reviewed your letter of May 21, 1998 and agrees that the addition of selective non-catalytic reduction (SNCR) to the existing plant does not constitute a modification as defined by Rule 62-210.200, F.A.C. However, the Department has typically requested that source owners that are installing new pollution control equipment for major sources, or any pollution control equipment which must be custom designed, apply for an operation permit amendment to reflect the change. Such request would need to be signed and sealed by a professional engineer registered in Florida. The application for permit amendment need not be extensive, but should include a site plan showing the addition of equipment (the ammonia tank in this case), a description of the control equipment, and a sketch or manufacturer's cut sheet showing the physical changes or additional piping and injectors at the furnace walls. Pursuant to Rule 62-4.050(r)2., F.A.C., there is no application fee required for this amendment. No public notice is required for this type of permit amendment, once issued.

Please submit this information prior to undertaking construction at the plant. Please call me at 850/921-9519 if you have any questions.

Sincerely,

Joseph Kahn, P.E.
New Source Review Section

Post-it® Fax Note 7671	Date 6/18/98	# of pages ▶ 1
To Dan Strohbridge	From Vinie Mangila	
Co./Dept. CDM	Co. Pasco County/Solid Waste	
Phone #	Phone # 813-856-0119	
Fax # 813-288-8987	Fax # 813-856-0080	

Department of
Environmental Protection

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

Jeb Bush
Governor

David B. Struhs
Secretary

April 26, 1999

Mr. Daniel E. Strobridge
Camp Dresser & McKee Inc.
1715 N. Westshore Boulevard
Suite 875
Tampa, Florida 33607

Re: Pasco County RRF PA 87-23

Dear Mr. Strobridge:

The Department has reviewed your letter of January 14, 1999, concerning the addition of a deNOx system and an improved Continuous Emission Monitoring system to the Pasco County Solid Waste Resource Recovery Facility. Although there may be no significant environmental impacts from the construction and operation of the proposed improvements, the installation of the new CEMs system will not require any modification of the Conditions of Certification, per Condition XIV.A.3.a. However, the deNOx system will require a modification of the Conditions of Certification in accordance with the provisions of Condition I. Plans detailing changes in the onsite equipment should be submitted as required by Condition XIII.

The Department has no objection to the installation of the proposed equipment as long as the applicable conditions of certification and regulations are complied with. The Bureau of Air Regulation has suggested that the following condition be added to Condition XIV:

> The owner or operator shall, for each of its three combustor units, attain full compliance with the emission limitations and compliance requirements of 40 CFR 60, Subpart Cb no later than April 19, 2000, pursuant to Florida's 111(d) implementation plan.

The department will include the above modification to the ongoing modification process.

Sincerely,

Hamilton S. Oven

Hamilton S. Oven, P.E.
Administrator, siting
Coordination Office

cc: Scott Goorland
Al Linero
Bill Thomas

January 14, 1999

Mr. Daniel E. Strobridge
Camp Dresser & McKee Inc.
1715 N. Westshore Boulevard
Suite 875
Tampa, Florida 33607

Subject: Pasco County Solid Waste Resource Recovery Facility (Case No. PA 87-23)

Dear Mr. Strobridge:

I have reviewed your letter dated January 11, 1999, concerning Pasco County's plan to install a deNOx System and improved Continuous Emissions Monitoring system for the Pasco County Solid Waste Resource Recovery Facility. According to the County, there will be no significant adverse environmental impacts associated with the construction or operation of these proposed improvements. I have also discussed the County's proposal with representatives of the Department who are familiar with the County's preliminary plans and advised me that they have no objections to these proposed improvements.

Assuming that the information provided to me is correct, the County does not need to modify the conditions of certification for the Pasco County Solid Waste Resource Recovery Facility or otherwise obtain approval under the Florida Electrical Power Plant Siting Act for the proposed deNOx and Continuous Emissions Monitoring Systems. The submittal of your letter to the Department is sufficient to amend the County's application for site certification. No other action under the PPSA is required.

Of course, the construction and operation of these improvements must be conducted in compliance with the conditions of certification, DEP's air rules, and any other applicable environmental regulations. To ensure compliance with all applicable standards, the County should submit its final plans for these improvements to the Department's Tallahassee Bureau of Air Regulation office for their review at least 14 days before the commencement of construction.

Sincerely,

Hamilton S. Oven, P.E.
Administrator
Siting Coordination Office

S:\PASCO\PAS_SW\PASTB99.006

PASCO COUNTY, FLORIDA

DADE CITY (352) 521-4274
LAND O' LAKES (813) 996-7341
NEW PORT RICHEY (813) 847-8145
FAX (813) 847-8064

UTILITIES SERVICES BRANCH
PUB. WKS./UTILITIES BLDG., S-213
7530 LITTLE ROAD
NEW PORT RICHEY, FL 34654

May 21, 1998

Mr. Al Linero, P.E.
Bureau of Air Regulation
Florida Department of
Environmental Protection
3804 Coconut Palm Drive
Tampa, FL 33619-8318

RE: Permit Requirement/Municipal Waste Combustor

Dear Mr. Linero:

Pasco County owns a 1,050 ton-per-day Municipal Waste Combustor subject to the provisions of 40 CFR 60, Subpart Cb. Pursuant to the provisions of Subpart Cb, the facility intends to enhance the air pollution control equipment (APC) to include a selective non-catalytic reduction (SNCR) system to reduce emissions of nitrogen oxides.

It is our reading of Rule 62-210.300(1), F.A.C., entitled "Permits Required", that an air construction permit is required in the case of "any proposed new or modified facility or emissions unit" prior to construction. The applicable Florida Department of Environmental Protection (FDEP) definitions are clear that the installation of SNCR equipment does not constitute a "modification" because there will be no "increase in the actual emissions of any air pollutant subject to regulation under the Act" (see 62-210.200(182), F.A.C.). Accordingly, we conclude that a separate air construction permit is not necessary for the retrofit to proceed. Please note that ammonia is not a "pollutant subject to regulation under the Act" for municipal waste combustors.

Because the FDEP rules do not require a construction permit, we are seeking your guidance as it relates to any other administrative notifications that may be necessary. Thank you in advance for your consideration in this matter.

Sincerely,

Douglas S. Bramlett
Assistant County Administrator
(Utilities Services)

DSB/mvv\19\linero

cc: Daniel E. Strobridge, QEP, Associate, Camp Dresser & McKee Inc., 1715 N. Westshore Blvd., Suite 875, Tampa, FL 33607
John J. Gallagher, County Administrator
Vincent Mannella, P.E., Solid Waste Facility Manager

Department of Environmental Protection

JUN 15 1998

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

June 12, 1998

CERTIFIED MAIL

Mr. Douglas S. Bramlett
Assistant County Administrator
Pasco County
Utilities Services Branch
Public Works/Utilities Bldg., S-213
7530 Little Road
New Port Richey, Florida 34654

Re: Municipal Waste Combustor, SNCR Addition

Dear Mr. Bramlett:

The Department has reviewed your letter of May 21, 1998 and agrees that the addition of selective non-catalytic reduction (SNCR) to the existing plant does not constitute a modification as defined by Rule 62-210.200, F.A.C. However, the Department has typically requested that source owners that are installing new pollution control equipment for major sources, or any pollution control equipment which must be custom designed, apply for an operation permit amendment to reflect the change. Such request would need to be signed and sealed by a professional engineer registered in Florida. The application for permit amendment need not be extensive, but should include a site plan showing the addition of equipment (the ammonia tank in this case), a description of the control equipment, and a sketch or manufacturer's cut sheet showing the physical changes or additional piping and injectors at the furnace walls. Pursuant to Rule 62-4.050(r)2., F.A.C., there is no application fee required for this amendment. No public notice is required for this type of permit amendment, once issued.

Please submit this information prior to undertaking construction at the plant. Please call me at 850/921-9519 if you have any questions.

Sincerely,

Joseph Kahn, P.E.
New Source Review Section

Post-it® Fax Note 7671	Date 6/18/98	# of pages ▶ 1
To Dan Strohbridge	From Vince Mannella	
Co./Dept. CDM	Co. Pasco County/Solid Waste	
Phone #	Phone # 813-856-0119	
Fax # 813-288-8987	Fax # 813-856-0511	

Memorandum

Florida Department of Environmental Protection

To: Buck Oven
Siting Coordination Office

From: Joe Kahn
New Source Review Section

Date: February 4, 1999

Re: Pasco County RRF, PA 87-23

Al Linero and I discussed your memo of January 19, 1999 and Al asked me to reply. We had previously written to Pasco County regarding whether the SNCR system addition would constitute a modification as defined by Rule 62-210.200, F.A.C., although we received no response. We did not consider such a project a modification pursuant to air rules because ammonia is not classified in our rules as a criteria pollutant or a HAP. As you know, under the air rules a modification requiring a construction permit results when emissions of a "regulated" pollutant are increased. We do not disagree that such a project will require modification of the Conditions of Certification because the site plan and other documents supporting the certification did not address the SNCR system, and because ammonia will be emitted, even though such emission is not subject to a unit-specific air regulatory requirement.

The Conditions of Certification should be updated to require compliance with the municipal waste combustor MACT requirements of 40 CFR 60, Subpart Cb. The requirements will most likely be codified in the Title V permit, so if you include the "automatic modification" language in the certification conditions, issuance of the Title V permit will address these requirements in detail. For now, you could include a condition such as:

> The owner or operator shall, for each of its three combustor units, attain full compliance with the emission limitations and compliance requirements of 40 CFR 60, Subpart Cb no later than April 19, 2000, pursuant to Florida's 111(d) implementation plan.

Please let me know if you have any questions.

cc: Al Linero

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PASCO COUNTY BOARD OF
COUNTY COMMISSIONERS, and
OGDEN MARTIN SYSTEMS OF
PASCO, INC.,

Petitioners,

vs.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION,

Respondent,

and

Legal Environmental Assistance Foundation,
Inc, ("LEAF"), and Susan M. Elko and
Nathan Elko,

Intervenors,
_____/

Final Order

Pursuant to notice, an informal administrative hearing in accordance with 120.57(2), F.S., (Supp 1996) was conducted in the above-styled proceeding before F. Perry Odom, the assigned Hearing Officer, on July 25, 1997, in Tallahassee, Florida.

APPEARANCES

For the Petitioners: Mary F. Smallwood, Esq.
215 South Monroe Street
Tallahassee, Florida 32301

For the Respondent: W. Douglas Beason, Esq.
Assistant General Counsel
2600 Blair Stone Road
Tallahassee, Florida 32301

For the Intervenors: Andrew J. Smith, Esq.
1115 North Gadsden Street
Tallahassee, Florida 32303

STATEMENT OF THE ISSUE

The issue is whether the Prevention of Significant Deterioration ("PSD") permit issued to the Pasco County Board of County Commissioners authorizes the County to combust "Additional Solid Waste" as that term is defined in the Amendment to the Service Agreement between the Pasco County Board of County Commissioners and Ogden Martin Systems of Pasco, Inc.,

PRELIMINARY STATEMENT

By letter dated December 30, 1996, the Petitioners requested an interpretation from the Department of Environmental Protection ("DEP") regarding the definition of municipal solid waste ("MSW") as that term is utilized in the PSD permit for the Pasco County Resource Recovery Facility (PSD-FL-127). By letter dated February 6, 1997, the Director of DEP's Division of Air Resources Management notified the Petitioners that DEP did not interpret the term municipal solid waste to include "Additional Solid Waste" as that term is defined in the Amendment to the Service Agreement.

On March 13, 1997, the DEP received a Petition for an Informal Administrative Hearing challenging the DEP's interpretation of the term "municipal solid waste" ("MSW"). On May 29, 1997, DEP entered an Order

Establishing Informal Proceeding which appointed an Informal Hearing Officer and established a prehearing procedure to consider and determine the pertinent issues of law and fact raised in the Petition for an Informal Administrative Proceeding. On June 20, 1997, the Informal Hearing Officer entered an Initial Order, Notice of Hearing and Order of Pretrial Instruction which, among other things, scheduled the informal hearing for July 25, 1997.

On July 7, 1997, the Petitioners filed a Memorandum of Law in Support of Petition for Informal Administrative Hearing which included a Statement of Facts and Petitioners' Exhibits one through nine. The Petitioners also filed a Response to the Initial Order, Notice of Hearing and Order of Pretrial Instruction.

On July 23, 1997, DEP entered an Order Appointing Substitute Informal Hearing Officer which designated F. Perry Odom, General Counsel to DEP, to act as the Informal Hearing Officer for the purpose of conducting the informal proceeding. On July 23, 1997, the Intervenor, Legal Environmental Assistance Foundation ("LEAF"), filed a Petition to Intervene in Informal Administrative Proceeding in support of DEP's position concerning the interpretation of the definition of MSW.

On July 24, 1997, DEP filed a Motion to Terminate Informal Proceedings which requested that the Hearing Officer terminate the informal proceeding based upon the existence of disputed issues of material fact. The DEP alleged, in part, that disputed issues of material fact existed with respect to:(a) whether the PSD permit application proposed the use of Additional Solid Wastes as a

fuel; (b) whether the PSD permit application authorized the use of Additional Solid Wastes as a fuel; and (c) whether the Additional Solid Wastes were municipal solid wastes.

At the commencement of the informal administrative hearing, the Hearing Officer received argument concerning the disposition of DEP's Motion to Terminate Informal Proceeding. The DEP withdrew the motion after the Petitioners agreed both to withdraw Petitioners' Exhibit 4 (the affidavit of a Mr. David Dee) and that Paragraph 8 of the Petitioners' Statement of Facts would be stricken. The parties then agreed that the disposition of the Petition for Informal Administrative Hearing, would be based on the Statement of Facts (excluding Paragraph 8) and Petitioners' Exhibits 1 through 3 and 5 through 11 contained in or attached to the Petitioners' Memorandum of Law in Support of Petition for Informal Administrative Hearing. The parties did not offer any testimony at the final hearing but Petitioner had submitted facts and exhibits previous to the hearing which were received in evidence at the final hearing. The Petition to Intervene filed by LEAF was not opposed by either party, and was therefore granted by the Hearing Officer.

FINDINGS OF FACT

1. Petitioner Pasco County, Board of County Commissioners, (hereafter the "County") owns and operates the Pasco County Resource Recovery Facility (Units 1, 2, and 3) (hereafter the "Facility") located in Pasco County, Florida, under the terms of Department Permit No.: PSD-FL-127 (the

"PSD permit") and the Conditions of Certification issued under the PPSA in Case No. PA 87-23 (the "Conditions of Certification")..[1]

2. As an incinerator constructed after 1971, but prior to the applicability of 40 CFR 60, Subpart 60, Ea, the Facility is subject to the provisions of 40 CFR Part 60, Subpart E, Standards of Performance of Incinerators. The Facility is also subject to the provisions of Chapters 17-2, 17-7, and 17-30, Florida Administrative Code (1988), the Department's rules in effect at the time the application for a permit and site certification were approved.

3. The Facility is a "resource recovery and management facility" as that term was defined in Section 17-7.020(51), Florida Administrative Code (1988). A resource recovery and management facility was defined as follows:

> any solid waste disposal area, volume reduction plant, or other facility the purpose of which is resource recovery or the disposal, recycling, processing, or storage of *solid* waste (Emphasis added). Section 17-7.020(51) F.A.C.

4. The PSD permit issued to the Facility provides, in pertinent part:

> SPECIFIC CONDITIONS:
>
> 1.e The [Facility] shall be fueled with *municipal solid waste* only. Other wastes shall not be burned without specific prior written approval of [the Department]. (Emphasis added).

5. The Conditions of Certification provide, in pertinent part:

> B. The [Facility] shall utilize *refuse* such as *garbage and trash* (as defined in Chapter 17-7, FAC) as its fuel. Use of alternative fuels except for distillate fuel oil or natural gas in start-up burners would necessitate modification of these Conditions of Certification.

[1] A copy of the PSD permit is attached hereto as Exhibit 1 while a copy of the Conditions of Certification is attached hereto as Exhibit 2.

Refuse as fuel shall not include "hazardous waste" as defined in Chapter 17-30, FAC. (Emphasis added). §XIV.B., page 14.

6. The terms "municipal solid waste" and "refuse" were not defined in either the applicable federal or state regulations governing the permitting or operation of the Facility at the time the permits were approved.

7. The PSD permit, General Condition 10., provides:

> 10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

8. In its application for PPSA certification and a PSD permit, the County identified the fuel source for the proposed facility as "municipal solid waste," specifically including residential waste, commercial wastes, institutional wastes, and industrial wastes. More specifically, the application stated:

> The term "municipal solid waste" applies to all of the solid waste generated within Pasco County, except hazardous and pathogenic wastes and sludges. Since this waste is heterogeneous, characteristics such as heating value, moisture content and ash content will vary. However, Pasco County's solid waste may be classified according to the following general characteristics and sources of generation:
>
> - Residential Wastes. Mixed domestic household wastes (including yard wastes) generated by individuals or families in single or multiple family dwellings.
>
> - Commercial Wastes. Wastes generated by the commercial and retail sector of the county. The physical characteristics of these wastes are similar to residential wastes, consisting primarily of combustible materials in the form of paper and food wastes from offices, restaurants and retail establishments.
>
> - Institutional Wastes. Wastes generated by hospitals, schools, and churches. These wastes have characteristics similar to residential and commercial wastes. Any wastes classified as infectious by federal and state regulations will be excluded.

- Industrial Wastes. Wastes generated by industrial process and manufacturing operations, excluding any wastes classified as hazardous or infectious by federal and state regulations. These wastes also include general housekeeping and support activity wastes associated with industry.

9. In April, 1988, a formal administrative hearing was conducted by a Division of Administrative Hearing ("DOAH") hearing officer to evaluate the County's request for certification under the Power Plant Siting Act...[2]

10. Testimony at that hearing reflected that the Facility would process residential and commercial non-hazardous waste. No medical waste was to be processed. (T. at 52).

11. Petitioner Ogden Martin Systems of Pasco, Inc., (hereafter "Ogden") operated the Facility on behalf of the County under the terms of a service agreement with the County. On July 6, 1996, the County Commission modified the service agreement to allow Ogden to contract with other public and private entities to accept and process "Additional Solid Waste" (as that term was defined in the amendment to the service agreement) at the Facility. [3] The amendment to the service agreement defined "Additional Solid Waste" as

> Non-hazardous items suitable for human consumption and/or application whose shelf-life has expired or which the generator wishes to remove from the market and wishes to ensure proper destruction such as off-specification pharmaceuticals (excluding beauty aids).

[2] The transcript of that hearing is attached to the Petitioner's Memorandum as Exhibit 5. Reference to the Transcript shall be indicated as (T.at_).

[3] A copy of the Amendment to Service Agreement is attached to the Petitioners' Memorandum of Law as Exhibit 7.

Non-hazardous consumer-packaged products not intended for human consumption and/or applications.

Non-hazardous materials used in the manufacture of items in the categories above that are or contain commercially useless (expired, rejected or spent), or finished products not yet formed or packaged for commercial distribution.

Non-hazardous, non-recyclable plastics, packaging materials, shredded carpet, natural and synthetic fibers, clothing or fabric remnants, containers, (including but not limited to items such as; aprons, gloves, floor sweepings and latex paint).

Non-hazardous materials that contain oil from routine clean-up of industrial establishments and machinery or the oil contaminated materials used in the clean-up of spills of petroleum products in transit or storage, and which are liquid free (including but not limited to items such as: rags, lints, and absorbents) plus oil filters.

Non-hazardous materials generated by manufacturers and industrial activities. This category includes filtercake from the manufacture of synthetic oil, paint overspray, and other filtration materials from industrial processes and systems.

Confidential documents (including but not limited to items such as: records and microfilm).

12. Prior to voting on the proposal to modify the service agreement with Ogden, the County Commissioners considered the report of the Solid Waste Management Citizens Advisory Committee for Pasco County, which unanimously recommended approval of the amendment to the service agreement.

13. Over the course of the Facility's operation, its actual fuel source has included residential, commercial and industrial wastes generated in Pasco County. The facility has also received solid waste from Hillsborough, Citrus and Hernando Counties and Plant City.

14. In addition to the waste streams discussed in paragraph 13 above, the Facility has processed waste resulting from certain emergency management situations. Pasco County, with the knowledge of the Department, utilized the Facility to properly manage the large volume of materials resulting from the "no name" storm of March 1995. In managing this event, the Facility processed in excess of 8000 tons of storm damage related waste materials, including, but not limited to: household furnishings; personal belongings; and water damaged residential, commercial, and industrial wastes. At no time during the processing of waste materials from any such special events did the Facility exceed applicable emission limiting standards or otherwise fail to perform in accordance with permit conditions.

15. Ogden Corporation, through its subsidiary Ogden Waste Treatment Services USA, Inc. (OWTS), has initiated a program at many waste-to-energy facilities around the country to manage "Additional Solid Waste" streams, similar to that approved by the County in the amended service agreement. OWTS's internal procedures for handling these waste streams are described in two documents: (1) Ogden Waste Treatment Services: An Overview, and (2) Material

Characterization Forms and Instructions for Waste Generators. . .[4] The Overview includes a comprehensive listing of the types of waste streams that are commonly handled as part of the OWTS program. The proposed "Additional Solid Waste" program for the Facility would be operated in a manner consistent with the OWTS program; however, the waste stream would be limited to those materials identified in the amended service agreement with the County.

16. The Facility has operated in compliance with all Department emission limiting standards since its start-up in 1991, except for an exceedance of the mercury standard which occurred in 1996. That exceedance has been corrected in accordance with a Consent Order with the Department in Case No. 97-0273, and no further exceedances of that standard, or any other standard, have occurred.

17. Ogden's Supplemental Waste Program was developed after DEP issued the relevant PSD permit and site certification. The "Ogden Waste Treatment Services: An Overview" provides in part:

> HISTORY
>
> Ogden's Supplemental Waste Program. . . was a natural outgrowth of service to our client communities. The program began as a means to provide an environmentally safe and efficient alternative for managing nonhazardous, non-RCRA/non-TSCA-regulated commercial and industrial wastes. [*These waste streams often require special handling to ensure safe and proper disposal. OTWS refers to these waste streams as "supplemental wastes." These are waste streams brought to the waste-to-energy facility in addition - as a supplement -- to the community's waste stream.*] This designation is also indicative of the

[4] Copies of each of these documents are attached to Petitioner's Memorandum as Composite Exhibit 10.

waste generators' need for confidentiality, assured destruction and environmental destruction. . .[5] (Emphasis added)

18. The Amendment to the Amended and Restated Service Agreement between the Petitioners provides, in pertinent part:

> WHEREAS, in addition to the disposal of municipal solid waste, the Parties wish to have disposed of at the Facility certain wastes designated as Additional Solid Wastes. . .[6]

19. There is no evidence that the permitting proceeding for the County's PSD permit and site certification included a review of OWTS's internal procedures for handling the waste streams as described in (1) Ogden Waste Treatment Services: An Overview, and (2) Material Characterization Forms and Instructions for Waste Generators. Similarly, the DEP's review did not include the Amendment to the Amended and Restated Service Agreement between the Petitioners[7].

21. On May 16, 1989, the Department promulgated the Solid Waste Grants Program Rule and in section 17-716.200(6), Fla. Admin. Code, the Department defined municipal solid waste as:

> any solid waste, except for sludge, resulting from the operation of residential, commercial, governmental, or institutional establishments that would normally be collected, processed, and disposed of through a public or private solid waste management service. The term includes yard trash, but does not include solid waste from industrial, mining, or agricultural operations.

[5] Petitioners' Composite Exhibit 10, Page 1.
[6] Petitioners' Exhibit 7.
[7] Petitioners' Exhibit 7.

This definition is similar to the combined descriptions of "garbage" and "trash" found in Chapter 17-7, Fla. Admin. code.

Additionally, the Department incorporated certain EPA standards, including the definition of municipal solid waste, into its present air pollution program. Section 62-204.800(8)(b), Fla. Admin. code. This definition reads in full:

> Municipal solid waste or **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, nonmedical waste discarded by hospitals, material discarded by nonmanufacturing activities at prisons and government facilities, and material discarded by other similar establishments or facilities. Household, commercial/retail, and institutional waste does not include used oil; sewage sludge; wood pallets; construction, renovation, and demolition wastes (which includes but is not limited to railroad ties and telephone poles); clean wood; industrial process or manufacturing wastes; medical waste; or motor vehicles (including motor vehicle parts or vehicle fluff). Household, commercial/retail, and institutional wastes include:
>
> (1) Yard waste;
> (2) Refuse-derived fuel; and
> (3) Motor vehicle maintenance materials limited to vehicle batteries and tires except as specified in § 60.50b(g). (Emphasis added).

40 CFR Part 60, Subpart Eb § 60.51b (1996). The EPA adopted an almost identical definition in 1991. 40 CFR Part 60, Subpart Ea, § 60. 51a (1991). The definitions in the Department's and the EPA's regulations show where the

Department was headed and verify the intent of the Department's restriction on the fuel stream of the Facility.

CONCLUSIONS OF LAW

1. As to the burden of proof in this proceeding, the Petitioners have the burden of going forward with the evidence as well as the ultimate burden of demonstrating the PSD permit authorizes the combustion of Additional Solid wastes. Young v. Department of Community Affairs, 625 So. 2d at 831, 835 (Fla. 1993).

2. Pasco County's PSD permit application and Power Plant Siting Act certification both identified the fuel source for the proposed facility as "municipal solid waste." Specific Condition 1(e) of the PSD permit provides the County's municipal waste combustors (MWC) shall be fueled with municipal solid waste *only*. The combustion of other wastes requires the prior written approval of DEP. The Conditions of Certification provide the [Facility] shall utilize *refuse* such as *garbage and trash* (as defined in Chapter 17-7, FAC) as its fuel.

3. The PSD permit was issued prior to the effective date of 40 CFR 60, Subpart Ea, which specifically applies to municipal solid waste incinerators. The Petitioners concede the facility is subject to the provisions of 40 CFR Part 60, Subpart E, Standards of Performance of Incinerators.

4. The term "municipal solid waste" was not specifically defined in either the applicable federal or state regulations at the time the PSD permit was issued. However, 40 CFR § 60.40, defined "solid waste" to mean:

> refuse, more than 50 percent of which is municipal type waste consisting of a mixture of paper, wood, yard wastes, food wastes, plastics, leather, rubber, and other combustible, and noncombustible materials such as glass and rock.

5. The Subpart E definition of "solid waste" encompasses wastes other than municipal solid waste: however, the definition describes "municipal type wastes" as consisting of a mixture of paper, wood, yard wastes, food wastes, plastics, leather, rubber, and other combustibles. . ." Given this definition it is reasonable to conclude that municipal solid waste is a type of solid waste. Phrased another way, MSW is a subset of solid waste.

6. The DEP's applicable rules did define the term "solid waste." Rule 17-7.020(58), F.A.C., contained the following definition of Solid Waste:

> . . . sludge from a waste treatment works, water supply treatment plant, or air pollution control facility or garbage, rubbish, refuse, or other discarded material. . . resulting from domestic , industrial, commercial, mining, agricultural, or governmental operations.

7. Rule 17-7.020(21), F.A.C., defined "Garbage" to mean:

> all kitchen and table food waste, animal or vegetative waste that is attendant with or results from the storage, preparation, cooking or handling of food materials.

8. Rule 17-7.020(65), F.A.C., defined "Trash" to mean:

> combinations of yard trash and construction and demolition debris along with other debris such as paper, cardboard, cloth, glass, street sweepings, vehicle tires and other like matter.

9. The Petitioners have failed to meet their burden to provide competent substantial evidence to demonstrate the PSD permit and site certification authorize the combustion of the Additional Solid Waste ("ASW"). The DEP cannot be bound by the provisions and definitions contained in an agreement between Petitioners, an agreement to which DEP was not a party.

10. The Petitioners assert the combustion of the ASW is authorized because the combustion of ASW is not expressly prohibited by the permit. Although the PSD permit does not expressly define the term MSW, this lack of such a definition does not create a presumption that the combustion of ASW is authorized under the PSD permit. This argument attempts to shift the burden of proof to DEP to demonstrate the combustion of waste stream is not authorized under the PSD permit.

Clearly, the burden is on the Petitioners to demonstrate the combustion of the ASW is authorized by the PSD permit. The question is not whether an argument may be crafted today which makes it appear that a particular issue may or may not have been addressed during the permitting process. Rather, the relevant inquiry is whether the issue was addressed during the permitting process.

11. The Petitioners asset there was no regulatory definition of municipal solid waste at the time the "PSD permit or conditions of site certification were issued, and therefore, the other terms specified in the

permit and Conditions of Certification are controlling in determining what fuels are allowed." The Petitioners contend the term municipal solid waste should be construed as being synonymous with the definition of solid waste. The Petitioners contend this conclusion flows from the fact the permit application defined the term municipal solid waste to have the same meaning as the term solid waste.

With regard to the definition of MSW contained in County's PSD permit application, the County asserts that it was *"well aware that the terminology used in the application to describe the fuel stream was not defined in agency regulations."* The County also alleges that it created its own *"definition to describe the type of materials that would be processed at the facility."* However, the County concedes the DEP had already adopted a regulatory definition of the term solid waste at the time the County submitted the PSD permit application.

If the County and DEP intended the term municipal solid waste to be construed as being synonymous with the definition of solid waste, then why was it necessary for the County to create its own definition of MSW? If the County and DEP intended the term MSW to have the same meaning as the term solid waste, then there is no basis for County's assertion that "*the terminology used in the application to describe the fuel steam was not defined in agency regulations.*" The County's permit application could have simply cross-referenced the existing definition of solid waste contained in

Rule 17-7.020(58), F.A.C. Instead, the County made the decision to use the term municipal solid waste - a term which was not defined in the applicable regulations. A logical and permissible inference is that the County did not plan on accepting solid waste as defined under the DEP's existing rule. There is no competent substantial evidence to explain why the County did not incorporate the DEP's existing definition.

12. A similar analysis may be applied to the specific condition in the PSD permit which limits fuel to the combustion to MSW. If the term municipal solid waste is to be construed as being synonymous with the definition of solid waste, then one would reasonably expect the PSD permit to incorporate the existing definition of solid waste.

13. Based on the presumption that DEP was aware of the definitions contained within its own rules, then the fact the permit does not incorporate the definition of solid waste is significant. The PSD permit's failure to incorporate the definition of solid waste is evidence of the fact that DEP did not consider the definition of solid waste to be synonymous with the definition of MSW. The issue becomes even murkier when reviewing the conditions of site certification. These conditions provide the [Facility] shall utilize refuse such as garbage and trash (as defined in Chapter 17-7, FAC) as its fuel. Again, there is no evidentiary basis to explain why the site certification fails to incorporate the definition of solid waste.

CONCLUSION

Based upon the foregoing Findings of Fact and Conclusions of Law, the Department hereby DENIES the Petitioners' request for the entry of a Final Order holding that the PSD Permit No. PSD-FL-127 and Conditions of Certification in Case No.PA 87-23 authorized the permittee (County) to burn "Additional Solid Waste" at the Facility except upon prior written approval of the Department.

F. Perry Odom
Hearing Officer
Douglas Building
3900 Commonwealth Boulevard
Mail Station #35
Tallahassee, Florida 32399-3000
Telephone: (850) 488-9314

CERTIFICATE OF SERVICE

I CERTIFY that a copy of the foregoing was mailed on this 10th day of December, 1997, to Mary F. Smallwood, Esq., 215 South Monroe Street, Tallahassee, Fl. 32301, W. Douglas Beason, Assistant General Counsel, 2600 Blair Stone Road, Tallahassee, Fl. 32301, and Andrew J. Smith, Esq, 1115 North Gadsden Street, Tallahassee, Fl. 32303.

Florida Department of
Environmental Protection

Memorandum

TO: Scott Gorland
Al Linero
Bill Thomas

FROM: Buck Oven

DATE: January 19, 1999

SUBJECT: Pasco County RRF PA 87-23

Pasco County has submitted the attached amendment of their Resource Recovery plant. Please review the request and supporting material for completeness and sufficiency. Submit any recommendations to me by February 18, 1999. In my opinion, Mr Strobridge is incorrect. If the emission limits are changed to reflect the new Federal requirements, the Conditions of Certification must be MODIFIED not amended.

cc: Steve Palmer

Attach:

Attach:

CDM Camp Dresser & McKee Inc.

consulting engineering construction operations

1715 North Westshore Boulevard, Suite 875
Tampa, Florida 33607
Tel: 813 281-2900 Fax: 813 288-8787

January 14, 1999

DEPARTMENT OF ENVIRONMENTAL PROTECTION

JAN 19 1999

SITING COORDINATION

Mr. Hamilton Oven, Jr
Power Plant Siting Coordinator
Department of Environmental Protection
2600 Blair Stone Road
Twin Towers Office Building
Tallahassee, Florida 32399

Subject: Amendment to Application for Pasco County Solid Waste Resource Recovery Facility (Case No. PA 87-23)

Dear Mr. Oven:

At the request of Pasco County, I am sending this letter to the Department because Pasco County wishes to amend its application for certification of the Pasco County Solid Waste Resource Recovery Facility ("Facility").

Pasco County would like to install a system for controlling nitrogen oxide emissions ("deNOx System") and an improved continuous emissions monitoring system ("CEMS") in accordance with 40 CFR 60, Subpart Cb requirements. The proposed improvements will be installed entirely on the certified site for the Facility. An ammonia storage tank, its containment structure and appurtenances for the deNOx System, and a new CEMS prefabricated metal building will be installed adjacent to the Facility. Other associated improvements will be contained within the Facility structure.

The County has corresponded with the Department's Bureau of Air Regulation and they have concluded that the improvements do not constitute a modification of the air emission source as defined by Rule 62-210.200 F.A.C. The County has agreed to supply certain information and details of these improvements when they become available. Copies of this correspondence is attached for your review.

Based upon Camp Dresser & McKee's knowledge of the equipment and construction associated with its installation and the fact that the lower air emissions will result from the operation of the proposed improvements, it is our opinion that the deNOx System and the CEMS improvements will cause no significant or adverse environmental impacts.

Further, based on our review of the conditions of certification for the Facility, we have concluded that the proposed amendment to the application for certification does not conflict with any of the conditions of certification. Consequently, we believe that it is unnecessary to amend or modify any of the conditions of certification for the Facility due to these improvements at this time.

Upon completion of the proposed improvements, we will request that the conditions of certification regarding air emissions be amended to reflect the emission limits contained in 40 CFR 60 Subpart Cb as adopted in DEP 62-204.800(8)(b).

This letter is the County's formal notification to the Department of the County's intent to install the deNOx System and CEMS improvements on the certified site. This letter constitutes an amendment to Pasco County's application for Site Certification for the Facility. It is our understanding that the submittal of this letter is sufficient to accomplish this amendment.

If the Department has any questions about this amendment, please call Mr. Doug Bramlett, Assistant County Administrator for Public Utilities at (727) 847-8145 or call me at (813) 281-2900.

Thank you for your assistance in this matter.

Sincerely,
CAMP DRESSER & McKEE INC.

Daniel E. Strobridge, QEP
Associate

c: Doug Bramlett (w/attachments)
Vince Mannella (w/attachments)

al

Florida Department of
Environmental Protection

Memorandum

To Ogden/Pasco
PSD Files

TO: Buck Oven

THROUGH: Scott Sheplak, PE
Al Linero, PE
C. H. Fancy, PE

FROM: Edward Svec

DATE: January, 4, 1999

SUBJECT: Pasco County RRF PA 87-23

Thank you for the opportunity to review the above referenced request for completeness and sufficiency. The Division of Air Resources Management deems the request and the supporting, air related, materials to be complete and sufficient. Additionally, the air permitting requirements for this project are adequately addressed by the specific conditions contained in permit 1010056-001-AC issued by the Department's Southwest District office on March 20, 1996.

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

June 25, 1997

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Vincent Manella, P.E.
Solid Waste Facility Manager
Ogden Martin Systems of Pasco County
Spring Hill, Florida 34610

Re: FINAL Permit Amendment No. PSD-FL-127
Pasco County Resource Recovery Facility

Dear Mr. Manella:

The Department is in receipt of your letter dated June 10, 1997 requesting to use EPA Method 29 in lieu of Method 101A for Mercury. The Department hereby amends the Specific Condition related to methods of compliance in the subject PSD permit. The PSD permit is modified as follows:

Specific Condition No. 4.f.13

FROM:

(13) Method 101A for determination of mercury emission rate.

TO:

(13) Method 29 for determination of mercury emission rate.

A person whose substantial interests are affected by this permit amendment may petition for an administrative hearing in accordance with Sections 120.569 and 120.57 F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000, telephone: 850/488-9730, fax: 850/487-4938. Petitions must be filed within fourteen days of receipt of this permit amendment. A petitioner must mail a copy of the petition to the applicant at the address indicated above, at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-5.207 of the Florida Administrative Code.

A petition must contain the following information: (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Permit File Number and the county in which the project is proposed; (b) A statement of how and when each petitioner received notice of the Department's action or proposed action; (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action; (d) A statement of the material facts disputed by petitioner, if any; (e) A statement of the facts that the petitioner contends warrant reversal or modification of the Department's action or proposed action; (f) A statement identifying the rules or statutes that the petitioner contends require reversal or modification of the Department's action or proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wants the Department to take with respect to the action or proposed action.

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

A person whose substantial interests are affected by the Department's proposed permitting decision, may elect to pursue mediation by asking all parties to the proceeding to agree to such mediation and by filing with the Department a request for mediation and the written agreement of all such parties to mediate the dispute. The request and agreement must be filed in (received by) the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000, by the same deadline as set forth above for the filing of a petition.

A request for mediation must contain the following information: (a) The name, address, and telephone number of the person requesting mediation and that person's representative, if any; (b) A statement of the preliminary agency action; (c) A statement of the relief sought; and (d) Either an explanation of how the requester's substantial interests will be affected by the action or proposed action addressed in this notice of intent or a statement clearly identifying the petition for hearing that the requester has already filed, and incorporating it by reference.

The agreement to mediate must include the following: (a) The names, addresses, and telephone numbers of any persons who may attend the mediation; (b) The name, address, and telephone number of the mediator selected by the parties, or a provision for selecting a mediator within a specified time; (c) The agreed allocation of the costs and fees associated with the mediation; (d) The agreement of the parties on the confidentiality of discussions and documents introduced during mediation; (e) The date, time, and place of the first mediation session, or a deadline for holding the first session, if no mediator has yet been chosen; (f) The name of each party's representative who shall have authority to settle or recommend settlement; and (g) The signatures of all parties or their authorized representatives.

As provided in Section 120.573 F.S., the timely agreement of all parties to mediate will toll the time limitations imposed by Sections 120.569 and 120.57 F.S. for requesting and holding an administrative hearing. Unless otherwise agreed by the parties, the mediation must be concluded within sixty days of the execution of the agreement. If mediation results in settlement of the administrative dispute, the Department must enter a final order incorporating the agreement of the parties. Persons whose substantial interests will be affected by such modified final decision of the Department have a right to petition for a hearing only in accordance with the requirements for such petitions set forth above. If mediation terminates without settlement of the dispute, the Department shall notify all parties in writing that the administrative hearing processes under Sections 120.569 and 120.57 F.S. remain available for disposition of the dispute, and the

notice will specify the deadlines that then will apply for challenging the agency action and electing remedies under those two statutes.

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

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

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

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

This permit amendment is final and effective on the date filed with the Clerk of the Department unless a petition is filed in accordance with the above paragraphs or unless a request for extension of time in which to file a petition is filed within the time specified for filing a petition and conforms to Rule 62-103.070, F.A.C. Upon timely filing of a petition or a request for an extension of time this permit amendment will not be effective until further order of the Department.

When the Order (Permit Amendment) is final, any party to the Order has the right to seek judicial review of the Order pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Legal Office; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of appeal must be filed within 30 (thirty) days from the date this Notice is filed with the Clerk of the Department.

A copy of this letter shall be filed with the referenced permit and shall become part of the permit.

Sincerely,

Howard L. Rhodes, Director
Division of Air Resources
Management

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this AMENDMENT was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 6-26-97 to the person(s) listed:

Mr. Vincent Manella, P.E., Pasco Co. RRF *
Mr. Hamilton Oven, SCO
Mr. Len Kozlov, SWD

Clerk Stamp

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

Kyri Tober 6-26-97
(Clerk) (Date)

Memorandum

Florida Department of
Environmental Protection

TO: Howard L. Rhodes

THRU: Clair Fancy ag for CHF

FROM: Al Linero AA Linero

DATE: June 24, 1997

SUBJECT: Pasco County Resource Recovery Facility
Amendment to PSD-FL-127

Attached is a letter modifying PSD-FL-127. Ogden Martin at Pasco County request to use EPA Method 29 in lieu of Method 101A for Mercury. EPA Method 29 is incorporated in 40 CFR 60 Subpart Eb, Standards of Performance for Municipal Waste Combustors. It is a more accurate and less expensive procedure than presently used.

I recommend your approval and signature.

P 265 659 234

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

Sent to Vincent Manella	
Street & Number Pasco Co	
Post Office, State, & ZIP Code Spring Hill, Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date PSD-FL-127	

PS Form **3800**, April 1995

Fold at line over top of envelope to...

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

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. Vincent Manella, PE
Solid Waste Facility Mgr
Ogden Martin Sys. of Pasco Co.
Spring Hill, Fl
34610

4a. Article Number P 265 659 234

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery 6-20-97

5. Received By: *(Print Name)*

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

6. Signature: *(Addressee or Agent)*
X

PS Form **3811**, December 1994 Domestic Return Receipt

Is your RETURN ADDRESS completed on the reverse side?

Thank you for using Return Receipt Service.

PASCO COUNTY, FLORIDA

June 10, 1997

Mr. A.A. Linero, P.E.
Administrator, New Source Review Section
Florida Department of Environmental Protection
2600 Blair Stone Rd., M.S. #5505
Tallahassee, Florida 32399-2400

SUBJ: Pasco County Resource Recovery Facility
Permit No. PSD-FL-127
Request for Amendment to Specific Condition No. 4.f.13

Dear Mr. Linero:

Pasco County requests that Specific Condition No. 4.f.13 of Permit No. PSD-FL-127 be changed in order to be consistent with Chapter 62-296.416, F.A.C. Chapter 62-296.416, FA.C. was modified in October 1996 to require that EPA Method 29 be used for mercury emission compliance demonstrations. However, Specific Condition No. 4.f.13 requires the use of EPA Method 101A. Accordingly, we request the following change:

Old Language: (13) Method 101A for determination of mercury emission rate.

New Language: (13) Method 29 for determination of mercury emission rate.

This change is being requested merely to rectify the inconsistency between the permit and the regulation. Because compliance testing is scheduled for next week, an expeditious review to this request would be most appreciated. A $50 amendment processing fee is attached.

Sincerely,

Vincent Manella, P.E.
Solid Waste Facility Manager

cc: M. Harley (FDEP Source Testing)
B. Oven (FDEP Power Plant Siting)
J. Gallagher (Pasco County Administrator)
D. Bramlett (Pasco County Utilities)
B. Sitz (OMS Pasco)

sent Back ?

If IMAGESAFE™ logo in light gray tone is not present on back of document - Do not cash.

OGDEN MARTIN SYSTEMS
OF PASCO, INC.
14230 HAYS ROAD
SPRING HILL, FL 34610

4514

[redacted]

6-16 1997

PAY TO THE ORDER OF Florida Department of Environmental Protection $ 50.00

Fifty dollars and 00/100 DOLLARS

Security feature is included. Details on back.

FIRST UNION

First Union National Bank of Florida
New Port Richey, Florida
24 Hour Information Service
1-800-735-1012

VOID AFTER 90 DAYS

FOR [redacted]

MP

GUARDIAN® SAFETY ECLAIRE AMERICAN BA

Date: 2/6/97 8:03:27 AM
From: Patricia Comer TAL
Subject: Re: Response to Mary Smallwood's Letter
To: John Reynolds TAL

I don't like using the term "permit amendments" to describe any permit changes. The reason is that we use that term in 62-210 to describe changes in the permit that are done without review and that isn't what we're contemplating here. A change in the allowed fuel could require an amendment or a revision, as those two terms are used in 62-210, depending on the circumstances and expected effects. So I'd recommend using "permit changes" instead of "permit amendments" in the letter. Or we could say "permit amendments or permit revisions". Or we could just say "permit revisions" and close the issue.

My choice.
JR

Pasco - File

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

February 6, 1997

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Ms. Mary F. Smallwood
Ruden, McClosky, Smith, Schuster & Russell, P.A.
Attorneys at Law
P.O. Box 10888
Tallahassee, Florida 32302

RE: Pasco County Resource Recovery Facility - PSD-FL-127

Dear Ms. Smallwood:

This is in reply to your December 30, 1996 letter requesting an interpretation of the term "municipal solid waste" appearing in Specific Conditions 1.a. and 1.e. of the subject permit.

The permit was issued prior to the effective date of Subpart Ea which applies specifically to municipal waste incinerators rather than the generic "incinerators" regulated under Subpart E. The Subpart E definition of "solid waste" would therefore be the controlling reference for interpreting the above permit conditions. Even though the Subpart E definition of "solid waste" is broader in that it encompasses waste other than municipal type waste, it contains a description of municipal type waste within the solid waste definition as follows: "...municipal type waste consisting of a mixture of paper, wood, yard wastes, food wastes, plastics, leather, rubber, and other combustibles...". Since the permit authorizes municipal solid waste only, it is clear that the intent was to limit the fuel to the categories listed under that internal definition, with other wastes requiring prior written approval. It is our opinion that this interpretation should supersede all other references in the Site Certification conditions as to what constitutes "refuse", "garbage", or "trash".

The Department believes that approving supplemental fuels as "other combustibles" on a case by case basis through permit revisions is still the best approach and is consistent with established BACT procedures. Where necessary, the Subpart Ea restrictions on industrial and other wastes not listed as municipal solid waste may provide guidance in making these case by case determinations.

If there are questions regarding the above, please contact Clair Fancy or John Reynolds at (904)488-1344.

Sincerely,

Howard L. Rhodes

Howard L. Rhodes, Director
Division of Air Resources Management

HLR/jr

c: R. Garrity, SWD
B. Beals, EPA Region IV

Fold at line over top of envelope to

SENDER:

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

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

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mary A. Smallwood
Ruden, McClosky, Smith
Schuster & Russell, P.A.
PO Box 10555
Tallahassee, FL 32302

4a. Article Number
P 265 659 173

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

5. Received By: *(Print Name)*

7. Date of Delivery
TALLAHASSEE FL PM ALI AVE 24 1997

6. Signature: *(Addressee or Agent)*
X

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

PS Form **3811,** December 1994

Domestic Return Receipt

Is your RETURN ADDRESS completed on the reverse side?

Thank you for using Return Receipt Service.

P 265 659 173

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

Sent to: Mary Smallwood	
Street & Number: Ruden, McClosky SSR	
Post Office, State, & ZIP Code: 1000. FL	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date: Pasco RRF 2-18-97 PSD-FI-127	

PS Form **3800**, April 1995

RUDEN
McCLOSKY
SMITH
SCHUSTER &
RUSSELL, P.A.
ATTORNEYS AT LAW

215 SOUTH MONROE STREET
SUITE 815
TALLAHASSEE, FLORIDA 32301

POST OFFICE BOX 10888
TALLAHASSEE, FLORIDA 32302

TELEPHONE: (904) 681-9027
FAX: (904) 224-2032

E-MAIL: MFS@RUDEN.COM

December 30, 1996

VIA HAND DELIVERY

Howard Rhodes, Director
Division of Air Resources Management
Department of Environmental Protection
Suite 24, Magnolia Courtyard
Tallahassee, FL 32301

Re: Pasco County Resource Recovery Facility

Dear Howard:

As we discussed at our meeting of November 25, 1996, please accept this letter as our request for an interpretation from the Department of Environmental Protection (DEP) of the conditions of the power plant certification and the Prevention of Significant Deterioration (PSD) permit for the Pasco County Resource Recovery Facility (the "Facility") related to the type of fuel that may be burned at the Facility.

Ogden Corporation (Ogden), through its subsidiary Ogden Waste Treatment Services USA, Inc. (OWTS), has long had a "supplemental waste" program at many of the waste to energy facilities around the country. We have previously provided you with copies of the company's internal procedures for handling such wastes and describing the types of materials that would fall within the supplemental waste program in the form of two documents: (1) Ogden Waste Treatment Services: An Overview and (2) Material Characterization Forms and Instructions for Waste Generators. The Overview includes a comprehensive listing of the types of waste streams that are commonly part of the supplemental waste program. We believe these documents, together, should give you a good perspective on the precautions OWTS and the individual facilities take in managing supplemental wastes.

In July, 1996, the Pasco County Commission entered into a service agreement modification with Ogden Martin Systems of Pasco, Inc. (Ogden Martin). This agreement contains the commercial arrangement between the County and Ogden Martin under which the Facility would begin participating in Ogden's supplemental waste program. This agreement more specifically identifies the types of supplemental wastes that the County will allow to be processed at the Pasco Facility.

The Southwest District office of DEP has suggested that Ogden Martin and the County seek an interpretation of the relevant permit conditions. We believe that a review of those provisions will confirm that the existing conditions of the power plant certification and PSD permit for the Facility

have always authorized the County to process supplemental waste at the Facility. The County has not previously chosen to excercise this authority granted to it.

At our November 25 meeting, we referred you to the conditions of the PSD permit (Paragraph 3.3.1) which provided that the Facility would burn "municipal solid waste," defined in the permit as all solid waste except hazardous and pathogenic wastes and sludges. The waste stream was identified in the permit application as (1) residential waste, (2) commercial waste, (3) institutional waste, and (4) industrial waste. There is no definition of "municipal solid waste" in DEP's present regulations or in the regulations that were in effect at the time of permit issuance. However, the permit, itself, in conjunction with the application, clearly defined the type of materials that could be burned at the Facility. As you can see from the OWTS Overview, the materials included in the company's supplemental waste program are the types wastes typically generated by commercial and industrial enterprises.

Since the meeting, we have further reviewed the power plant certification conditions authorizing the construction of a resource recovery facility in Pasco County, in particular, Section XIV.B. related to fuel. The conditions of certification provide that the Facility "shall utilize refuse such as garbage and trash (as defined in Chapter 17-7, FAC) as its fuel. . . . Refuse shall not include 'hazardous waste' as defined in Chapter 17-30, FAC." This construction suggests that the meaning of "refuse" is broader than, not limited to, "garbage" and "trash." In fact, the only type of waste specifically precluded from use is hazardous waste.

We have reviewed the Department's regulations in effect in 1988 when the power plant certification was issued for this facility. The term "refuse" was not defined in Chapter 17-7 at that time, nor is it in the present regulations. However, refuse is defined by most dictionaries to mean virtually any discarded materials. The terms "garbage" and "trash" were defined in those rules as follows

> "Garbage" means all kitchen and table food waste, animal or vegetative waste that is attendant with or results from the storage, preparation, cooking or handling of food materials.
>
> "Trash" means combinations of yard trash and construction and demolition debris along with other debris such as paper, cardboard, cloth, glass, street sweepings, vehicle tires and other like matter. (Emphasis added.)

While garbage and trash are two examples of the type of fuel that may be used, they are clearly not exclusive definitions. It is probably more helpful to consider the two other definitions in the 1988 regulations with respect to the issue of the type of materials to be burned at the facility. In particular, is the definition of "resource recovery and management facility" which is the specific facility for which the certification was issued. That term was defined as:

> any solid waste disposal area, volume reduction plant, of other facility the purpose of which is resource recovery or the disposal, recycling, processing, or storage of solid waste.

In turn, "solid waste" was defined to include "garbage, rubbish, refuse, or other discarded material . . . resulting from domestic, industrial, commercial, mining, agricultural, or governmental operations."

It is clear from a review of the full permit and certification conditions that the original approvals for the Facility anticipated the use of a broad range of fuels. In fact, the only materials which the Facility was prohibited from using were hazardous or infectious wastes. As the use of supplemental waste is not prohibited by rule and the materials are within the definitions of "municipal solid waste" and "refuse," we would appreciate your written concurrence that the Facility can accept supplemental waste under the existing regulatory authority. If you have any questions about the proposal that were not addressed in our meeting or this correspondence, please feel free to contact me.

Sincerely,

RUDEN, McCLOSKY, SMITH,
SCHUSTER & RUSSELL, P.A.

Mary F. Smallwood

Mary F. Smallwood

MFS/db
cc: Clair Fancy
Richard D. Garrity
Joe Threshler
Kurt Rieke
Jason Gorrie
Gary Thein

Department of Environmental Protection

File Copy

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

June 27, 1994

Mr. Daniel E. Strobridge
Camp Dresser & McKee
One Tampa City Center
Suite 1750
Tampa, Florida 33602

Dear Mr. Strobridge:

RE: PASCO COUNTY RESOURCE RECOVERY FACILITY
PSD-FL-127

We are in receipt of your June 8, 1994, documentation regarding the Sorbalit control technology. Approval of an air pollution control system or control technology is done on a case by case basis. We do not give a blanket approval of any new technology.

In accordance with F.A.C. Rule 17-04.080 (d) Modification of Permit Conditions, Pasco County Resource Recovery facility must install mercury control air pollution control equipment to comply with F.A.C. Rule 17-296.410 Waste to Energy Facilities requirements. They need to submit an application for a permit to construct/modify an air pollution source, DEP Form 17-1.202(1), which describes the mercury controls they propose to use.

If you have additional questions, please feel free to contact me.

Sincerely,

G. Preston Lewis, P.E.
Supervisor
Air Permitting and Standards

GPL/TH/bjb

cc: Mike Hewett, DEP
Bill Thomas S.W. District

DEP ROUTING AND TRANSMITTAL SLIP

TO: (NAME, OFFICE, LOCATION)

1. ~~PRESTON~~ Jeosse

2.

3.

4.

5.

PLEASE PREPARE REPLY FOR:	COMMENTS:
____ SECRETARY'S SIGNATURE	INFO REGARDING PASCO CO. WTE FACILITY USING SORBALIT INSTEAD OF LIME.
____ DIV/DIST DIR SIGNATURE	
____ MY SIGNATURE	
____ YOUR SIGNATURE	
____ DUE DATE ________	PLEASE REVIEW & DETERMIN IF PERMIT AMENDMENT IS REQUIRED.
ACTION/DISPOSITION	
____ DISCUSS WITH ME	
____ COMMENTS/ADVISE	
____ REVIEW AND RETURN	Please respond by 6/27 with Draft memo to CDM FOR MY SIGN
____ SET UP MEETING	
____ FOR YOUR INFORMATION	
____ HANDLE APPROPRIATELY	THANKS
____ INITIAL AND FORWARD	
____ SHARE WITH STAFF	
____ FOR YOUR FILES	

FROM: M. HEWETT DATE: 6/13 PHONE:

DEP 15-026 (12/93)

cc: Pat, John B., Larry, Clair
sing - return
from: Howard
6/21

Florida Chemical Industry Council, Inc.

Suite 300 Barnett Bank Building 315 S. Calhoun Street
Tallahassee, Florida 32301-1837
(904) 224-8141 FAX (904) 224-5283

June 14, 1994

Mr. Howard Rhodes
Director
Division of Air Resources Management
Florida Department of Environmental
Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Section 112(g) of the Clean Air Act

Dear Howard:

On April 1, 1994, EPA released proposed regulations for section 112(g) of the Clean Air Act. The 112(g) regulation will establish a framework for how state permitting agencies must handle changes at modified, reconstructed or newly constructed major sources of hazardous air pollutants. As proposed, this regulation would restrict industry's ability to make the changes necessary to remain competitive in today's changing market. EPA's proposed regulation will also create additional burdens for DEP and local air environmental programs.

As you know, the rule comment period closes June 30, 1994. We are hopeful that DEP will be making comments. In the event that you will, we'd like you to have the benefit of some of our thoughts on the proposal. They are as follows.

- **The rule should allow a source to continue to conduct all operations authorized under state permit programs or by a Title V permit without triggering requirements applicable to modification or reconstruction.** (The proposed rule only recognizes permit authorizations and not other authorization types in the state programs.) This full range of exclusions is necessary so that states and sources can avoid reevaluating operations which have already been considered and approved during the permitting process.

- **When an applicable MACT standard has not been established, the rule should provide a streamlined process for making a case-by-case MACT determination.** States do not have the resources

to perform the intensive analysis required to establish case-by-case MACT using all the procedures in the Act for development of source category MACT standards.

- **The rule should allow sources to proceed with a change without delay if offsets are provided.** More effort and innovation is needed to streamline 112(g) offset showings in order to develop a more effective and efficient program.

- **New source MACT should not be required for portions of facilities not actively being changed.** EPA has proposed two options for the definition of construction and reconstruction. Congress specifically avoided imposing new source MACT even when a process is being modified and does not even require existing source MACT under 112(g) if a source is not being changed. Regardless of which option is selected, new source MACT should not be required for portions of facilities not actively being changed.

Again, we encourage DEP to comment on this rule; also, we'd certainly like to get a copy of such comments, if possible. Should you have any questions, please contact Bill Van Duyn, Bush Boake Allen (904) 782-2180. Thank you for your consideration.

Sincerely,

Nancy Stephens

Nancy D. Stephens
Executive Director

ns
cc: Bill Van Duyn, BBA
Heather Keith, CMA

CDM
environmental engineers, scientists, planners, & management consultants

CAMP DRESSER & McKEE INC.

One Tampa City Center
Suite 1750
Tampa, Florida 33602
813 221-2833

June 8, 1994

Mr. Michael Hewett
Division of Air
Florida Department of Environmental Protection
2600 Blairstone Road
Tallahassee, FL 32399-2400

Re: Pasco County Waste-to-Energy Facility, Mercury Compliance Transmittal of Sorbalit Information

Dear Mr. Hewett:

Transmitted under this cover are two articles that describe the Sorbalit reagent and test results. Also, included is a copy of some literature describing the product.

Please let me know if you need anything else. I appreciate the assistance you have provided thus far, thank you.

Sincerely,

CAMP DRESSER & McKEE INC.

Daniel E. Strobridge
Associate

DES:tmp

c: J. Gallagher, County Administrator
D. Bramlett, Assistant County Administrator
V. Mannella, Pasco County

C:dspasco.ep

MR SERDB210-E

Post-it™ Fax Note 7671	Date 6/1/94	# of pages ▶ 15
To VINCE MANNELLA	From TONY LICATA	
Co./Dept.	Co.	
Phone #	Phone #	
Fax # 813 854-6007	Fax #	

Adsorbent B is Sorbalit

JUN - 7

MERCURY REMOVAL STUDIES AT A MUNICIPAL WASTE COMBUSTOR IN MARION COUNTY, OREGON

By:
Mark Richman
Daryll Fickling
Jeffrey Hahn

Mark Richman
Research-Cottrell
Box 1500
Somerville, NJ 08876

Daryll Fickling
Research-Cottrell
Box 1500
Somerville, NJ 08876

Jeffrey Hahn
Ogden Martin Systems
40 Lane Road
Fairfield, NJ 07007

ABSTRACT

A program to study mercury removal from waste gases was completed at the Ogden Martin Systems of Marion #1 municipal waste combustor (MWC) in Brooks, Oregon. The testing determined the baseline mercury reduction capabilities of the existing semi-dry scrubber without supplemental adsorbents and then compared these with the mercury removal capabilities of several different adsorbents. Care was taken to control process variables so that mercury removal influencing factors could be clearly defined. Special test methods and procedures were used to isolate the types of mercury in the gas stream for each test in order to aid in the evaluation of the different adsorbents. The test results show significant mercury reduction levels could be achieved. Finally, comparison between mercury adsorbents is discussed.

Paper presented at the 1993 International Conference on Municipal Waste Combustion, (sponsored by the U. S. Environmental Protection Agency and the Air and Waste Management Association), Williamsburg, VA, March 30 to April 2, 1993.

INTRODUCTION

Mercury in municipal solid waste combustion flue gas streams can exist in both vapor and solid phases. Nearly all of the solid phase mercury is normally removed by the installed air pollution control system. The large majority of mercury emissions from the stacks of municipal waste combustors is in the vapor phase.[1]

Considerable success has been achieved in reducing emissions of mercury from effluent gas streams in municipal solid waste applications utilizing activated carbon (in the presence of HCl) in controlled concentrations as an adsorbent.[2] This study examines the effectiveness of activated carbon and two other adsorbents in the removal of mercury from the gas stream of an MWC in Brooks, Oregon.[3] Since the semi-dry scrubber/fabric filter removes a large percentage of the solid phase mercury without the aid of adsorbents, the laboratory analyses of these tests have been divided into vapor phase and solid phase (as functionally defined by the test method as pre-filter and post-filter) to illustrate the true effectiveness of adsorbents in controlling gaseous mercury from MSW combustors.

FACILITY DESCRIPTION

There are two R-C/Teller systems at the Marion County facility, one serving each of the two identical 275 ton per day combustors. The mercury removal test program was conducted on Unit #1. Figure 1 shows the general arrangement of the air quality control system including the injection locations for the test program. Combustion gases at or above 400°F containing particulate matter (including small quantities of solid phase mercury) and gaseous pollutants (including among others SO_2, HCl, NO_x and relatively low concentrations of vapor phase mercury) enter the quench reactor. There they are contacted by an atomized spray of lime slurry emitted from 5 spray nozzles. The quench reactor cools the flue gas to approximately 300°F and initiates the neutralization process to recover portions of acid gases. The quantity of lime slurry delivered to the quench reactor will be varied based upon baghouse outlet SO_2 concentration. As required by permit, a base flow of slurry to control HCl is fed to the quench reactor, even if the outlet SO_2 reading is less than 10 ppm. The secondary automatic control is based on temperature. Water is added as necessary to control quench reactor outlet temperature at the setpoint.

The cooled and partially neutralized flue gas exits the quench reactor and travels through the ductwork crossing the path of the dry venturi. The dry venturi serves as a feed system for activated carbon adsorbent and the two other adsorbents tested (Adsorbent A and Adsorbent B). The adsorbent is introduced through the dry venturi into the effluent gas stream in a counterflow direction. For the test program, the activated carbon, Adsorbent A and Adsorbent B were fed in metered quantities from a screw feeder to the 10-inch diameter transport duct leading to the dry venturi to enhance vapor phase mercury removal.

Ogden Martin Systems of Marion
Mercury Removal Test Program

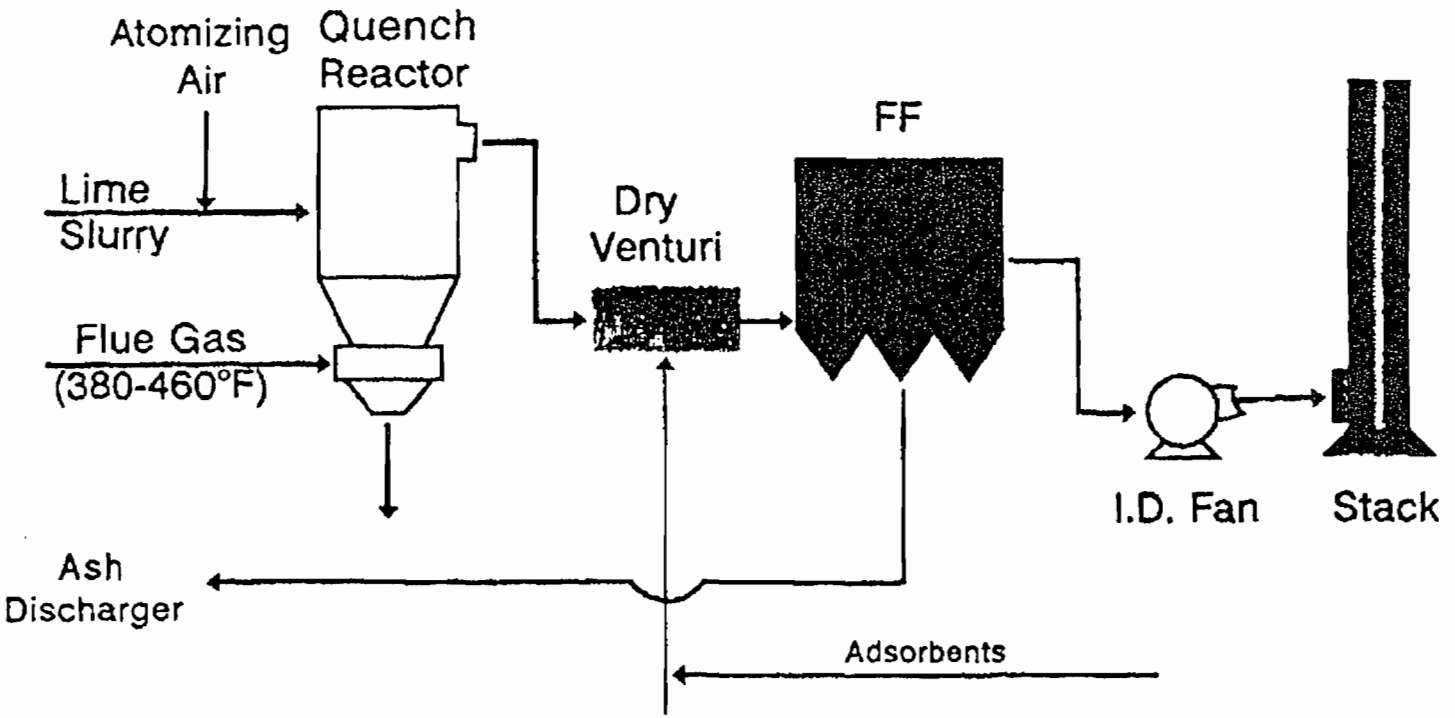


Fig. 1

The mixed gas then proceeds to the baghouse before exhausting through the stack. The baghouse serves as the final particulate collecting device as well as the fixed bed reactor for the removal of acid gases. The cleaned gas of 60,000 ACFM then leaves the stack at approximately 290°F.

Although the mercury removal test program was devised and segregated into four distinct test phases characterized by the type or lack of adsorbent injection into the R-C/Teller system, it was important from the beginning to establish a set of process operating conditions which could be run on Unit #1 throughout the entire test program. Establishment of the process conditions was based primarily on existing "normal" operating conditions. Plant management and operating personnel provided the majority of the input in optimizing the settings for balanced operation and in identifying the historical effects of varying conditions on the system. To minimize undue influence from changing process variables, the following parameters formed the basis of process operation during the test runs on Unit #1:

- normal quantity of refuse burned, > 200 tons/day at full load
- normal quantity of medical waste burned, 0-20 tons/weekday
- normal steam flow, approximately 67,000 #/hr
- quench reactor inlet temperature 380-450°F, normally around 420°F
- quench reactor outlet setpoint at 300°F
- slurry density 1.2-1.25 Baume based on plant measurement
- slurry feed to all 5 nozzles
- dry venturi feed duct blower discharge pressure 4" WC
- adsorbent feed through the dry venturi feed duct (when in operation)
- baghouse cleaning cycle: one compartment every 45 minutes (sooner if high ΔP setpoint is reached), 25 second reverse air clean period, 25 second null period

ANALYTICAL PROCEDURE

EPA Method 101A does not require a filter (which is optional and usually used when the particulate loading is expected to be high). For this test program, a particulate collection filter was used for each test at both the inlet and the outlet sampling locations. The analytical procedure adhered to by the analytical laboratory allows for separate preparation of the front half catch and back half catch per the EPA Method. Rather than combine them prior to analysis, however, the laboratory analyzed the front half separately from the back half, functionally separating the solid phase mercury from the vapor phase. We understand that some residual activated carbon on the particulate filter could skew partitioning from the vapor phase to the particulate phase.

A general description of the analytical procedure is as follows. The liquid in the back half of the sampling train, which includes glassware downstream of the filter holder and the liquid filled impingers, is placed into a container, and the glassware is rinsed with 4% potassium permanganate solution. The rinse is added to the impinger catch. If there were residual brown deposits in the glassware, it was rinsed with a minimum amount of 8 N HCl

which was then added to the container. The contents of this container are filtered through a Whatman 40 filter, and the filter is rinsed with 4% permanganate solution and 8 N HCl. The filtrate is diluted to a known volume with deionized water and the sample analyzed using cold vapor atomic adsorption spectrophotometry (CVAA). The Whatman 40 filter from the back half preparation is archived.

The sampling probe up to the filter holder (but not including the filter) is rinsed with 4% potassium permanganate solution. The contents of this container are filtered through a Whatman 40 filter, and the filter is rinsed with 4% potassium permanganate and 8 N HCl. The filtrate is saved and constitutes a portion of the front half catch. The Whatman 40 filter from this preparation is archived.

The sample filter is placed into a container and 4% permanganate solution added. The sample filter is transferred to a beaker and evaporated on a steam bath to 25 ml. liquid. 20 ml. of nitric acid is then added to the beaker containing the sample filter and permanganate solution. The beaker is then covered and heated for 2 hours at 70°C. The beaker is then cooled and the solution filtered through Whatman 40 filter paper. The Whatman 40 filter paper is then rinsed with 4% potassium permanganate and 8 N HCl and the liquid added to the filtrate. The Whatman filter is then archived with the other front half Whatman filter from the probe rinse preparation. The filtrate is mixed with the filtrate from the probe wash preparation and diluted to a known volume with deionized water. The sample is then analyzed using CVAA. Unlike the EPA testing at Stanislaus[2], these laboratory filters were not digested and analyzed for mercury. Incorporation of the laboratory filters in the uncontrolled and controlled mercury values would lower the total mercury removal efficiency.

On a daily basis, a filter blank and a solution blank are taken. The filter blank is prepared and analyzed using the same procedure as the sample filter. The solution blank is prepared and analyzed using the same procedure as the impinger solution. The daily blank results are then used for correction of sample results for both of the mercury tests conducted that day.

TEST MATRIX

Four phases of mercury removal tests were successfully completed on the Ogden-Martin Systems of Marion #1 municipal waste combustor train. Phase 1 which lasted from March 18-27, 1992 consisted of testing for removal of mercury from the R-C/Teller air quality control system without the addition of adsorbent material. Phase 2 from March 31-April 10, 1992 characterized mercury removal using activated carbon as an adsorbent. Phase 3 testing consisted of mercury removal tests with a Research-Cottrell activated carbon-based proprietary product, Adsorbent A, being added to the system as the adsorbent material. The test period for Phase 3 was May 20-28, 1992. The test period for Phase 4 was from July 14-18, 1992. The fourth phase characterized mercury removal using Adsorbent B, another activated carbon-based proprietary product, as an adsorbent.

Table I indicates program test dates, assigned test run numbers, and test condition. For baseline testing, no mercury adsorbent was injected.

TABLE I. TEST MATRIX FOR MERCURY REMOVAL TEST PROGRAM

1992 DATE	TEST CONDITION	Hg RUNS
03-18	Baseline	MWC-1,-3
03-19	Baseline	MWC-5,-7
03-20	Baseline	MWC-9,-10
03-22	Baseline	MWC-13,-14
03-23	Baseline	MWC-17,-18
03-24	Baseline	MWC-21,-22
03-26	Baseline	MWC-25,-26
03-27	Baseline	MWC-29,-30
03-31	5#/hr Activated Carbon*	MWC-33,-34
04-01	5#/hr Activated Carbon	MWC-37,-38
04-02	5#/hr Activated Carbon	MWC-41,-42
04-04	5#/hr Activated Carbon	MWC-45,-46
04-05	5#/hr Activated Carbon	MWC-49,-50
04-06	5#/hr Activated Carbon	MWC-53,-54
04-09	10#/hr Activated Carbon**	MWC-57,-58
04-10	10#/hr Activated Carbon	MWC-61,-62
05-20	Baseline	MWC-65,-66
05-21	Baseline	MWC-69,-70
05-22	Adsorbent A***	MWC-74
05-23	Adsorbent A	MWC-77,-78
05-24	Adsorbent A	MWC-81,-82
05-25	Adsorbent A	MWC-85,-86
05-26	Adsorbent A	MWC-89,-90
05-27	Adsorbent A	MWC-93,-94
05-28	Adsorbent A	MWC-97,-98
07-14	Baseline	MWC-101,-102
07-15	Adsorbent B***	MWC-105,-106
07-16	Adsorbent B	MWC-110
07-17	Adsorbent B	MWC-113,-114
07-18	Adsorbent B	MWC-117,-118

* Equivalent to 51 mg activated carbon/DSCM, corrected to 12% CO_2

** Equivalent to 102 mg activated carbon/DSCM, corrected to 12% CO_2

*** 5#/hr equivalent activated carbon for all Adsorbent A and Adsorbent B tests

TEST RESULTS

Baseline Tests

The importance of the baseline tests to the mercury removal test program is in the characterization of pollutant removal by the air quality control system under "baseline" process operating conditions (as defined in the facility description, but without adsorbent injection). This would serve as a basis for comparison with improvements in mercury removal by addition of adsorbents in later test phases.

As shown for the baseline tests in Table II, the average mercury removal efficiency of the front half catch, which consists of solid phase mercury, is very high at 97.82%. Virtually all the mercury existing as particulate is removed by the semi-dry scrubber/baghouse. The back half catches, which functionally represent vapor phase mercury, have a much broader and generally lower range of collection efficiencies. Numerous test runs resulted in negative efficiencies for the vapor phase back half catch. Some sources have suggested this is due to release of mercury vapor when particulate mercurous chloride is oxidized to elemental mercury and chloride ions on the sampling train filter. Further study needs to be undertaken to examine this and other potential reaction mechanisms as well as deficiencies in executing the test method. The baseline tests averaged 20.0% vapor phase removal efficiency.

The total mercury removal efficiency averaged 37.6% for the baseline runs. Nearly 28% of the mercury entering the air pollution control system during the baseline tests has been identified as front half (solid phase) catch. The highly efficient solid phase removal by the semi-dry scrubber/baghouse raises the total mercury capture substantially from the vapor phase efficiency.

Activated Carbon Injection

The emphasis of Phase 2 testing (activated carbon injection) was to determine the effects of activated carbon on mercury removal in the R-C/Teller system. Baseline tests were not conducted during Phase 2, which began just four days after completion of the Phase 1 baseline tests. Activated carbon was fed to the air quality control system at a rate of 5 #/hr for a period of approximately two days prior to the first Phase 2 mercury removal test runs. A 5#/hr feed rate equated to 51 mg activated carbon/DSCM, corrected to 12% CO_2. After completion of the 5 #/hr activated carbon runs, a 10 #/hr injection rate was used for testing. 10 #/hr carbon feed rate equated to 102 mg activated carbon/DSCM at 12% CO_2.

Similar to the results in Phase 1, solid phase mercury removal was very high for both the 5 #/hr and 10 #/hr injection rates, which averaged 99.2% and 99.7% efficiency, respectively.

Vapor phase mercury removal emissions and corresponding removal efficiencies were greatly improved from the baseline condition with injection of activated carbon. Average vapor phase removal efficiency increased from approximately 20% to 75-77%. Another effect of activated carbon injection was to reduce variability in the outlet mercury emissions.

TABLE II
OGDEN MARTIN – MARION COUNTY
MERCURY REMOVAL TEST PROGRAM

MERCURY REMOVAL TEST RESULTS

Baseline

TEST	BK HALF (#/HR) INLET	OUT	BACK % EFF	FRONT HALF (#/HR) INLET	OUTLET	FRONT % EFF	TOTAL (#/HR) INLET	OUTLET	TOTAL % EFF
MWC-1	0.0243	0.0220	9.47	0.0152	0.0011	92.76	0.0395	0.0231	41.52
MWC-3	0.0350	0.0285	18.57	0.0103	0.0003	97.09	0.0453	0.0287	36.64
MWC-5	0.0329	0.0457	*0.00	0.0096	0.0001	98.96	0.0425	0.0457	*0.00
MWC-7	0.0296	0.0368	*0.00	0.0514	0.0001	99.81	0.0811	0.0369	54.50
MWC-9	0.0654	0.0174	73.39	0.0372	0.0001	99.73	0.1025	0.0175	82.93
MWC-10	0.0332	0.0184	44.58	0.0124	0.0001	99.19	0.0456	0.0184	59.65
MWC-13	0.0471	0.0713	*0.00	0.0281	0.0001	99.64	0.0752	0.0713	5.19
MWC-14	0.0697	0.0567	18.65	0.0085	0.0001	98.82	0.0783	0.0567	27.59
MWC-17	0.1712	0.1049	38.73	0.0150	0.0001	99.33	0.1862	0.1051	43.56
MWC-18	0.1588	0.0708	55.42	0.0282	0.0002	99.29	0.1870	0.0709	62.09
MWC-21	0.0209	0.0362	*0.00	0.0212	0.0001	99.53	0.0421	0.0363	13.78
MWC-22	0.0325	0.0278	14.46	0.0097	0.0001	98.97	0.0422	0.0279	33.89
MWC-25	0.0319	0.0359	*0.00	0.0226	0.0001	99.56	0.0545	0.0360	33.94
MWC-26	0.0307	0.0219	28.66	0.0124	0.0005	95.97	0.0431	0.0224	48.03
MWC-29	0.0266	0.0278	*0.00	0.0142	0.0001	99.30	0.0408	0.0279	31.62
MWC-30	0.1012	0.0211	79.15	0.0431	0.0001	99.77	0.1443	0.0212	85.31
MWC-65	0.0430	0.0339	21.16	0.0107	0.0002	98.13	0.0537	0.0341	36.50
MWC-66	0.0284	0.0245	13.73	0.0141	0.0002	98.58	0.0425	0.0247	41.88
MWC-69	0.1033	0.1506	*0.00	0.0338	0.0044	86.98	0.1371	0.1550	*0.00
MWC-70	0.0312	0.0438	*0.00	0.0130	0.0011	91.54	0.0442	0.0449	*0.00
MWC101	0.0347	0.0367	*0.00	0.0270	0.0001	99.63	0.0617	0.0368	40.36
MWC102	0.0337	0.0257	23.74	0.0166	0.0001	99.40	0.0502	0.0258	48.61
AVG	0.0539	0.0436	19.99	0.0206	0.0004	97.82	0.0745	0.0440	37.62

*Negative efficiencies, reported as 0.00

Note: Averages shown are columnar inlet, outlet and efficiency averages. Average efficiency is not calculated directly from inlet average and outlet average.

TABLE II
OGDEN MARTIN – MARION COUNTY
MERCURY REMOVAL TEST PROGRAM

MERCURY REMOVAL TEST RESULTS

5#/hr Activated Carbon Injected
(51 mg Activated/DSCM, corrected to 12% CO2)

TEST	BK HALF (#/HR) INLET	OUT	BACK % EFF	FRONT HALF (#/HR) INLET	OUTLET	FRONT % EFF	TOTAL (#/HR) INLET	OUTLET	TOTAL % EFF
MWC–33	0.0272	0.0057	79.04	0.0106	0.0001	99.06	0.0378	0.0057	84.92
MWC–34	0.0328	0.0083	74.70	0.0061	0.0001	98.36	0.0390	0.0084	78.46
MWC–37	0.0321	0.0121	62.31	0.0195	0.0002	98.97	0.0516	0.0123	76.16
MWC–38	0.0355	0.0071	80.00	0.0160	0.0001	99.38	0.0515	0.0072	86.02
MWC–41	0.0336	0.0111	66.96	0.0169	0.0003	98.22	0.0505	0.0114	77.43
MWC–42	0.2064	0.0114	94.48	0.0932	0.0007	99.25	0.2996	0.0122	95.93
MWC–45	0.0477	0.0114	76.10	0.0173	0.0001	99.42	0.0651	0.0115	82.33
MWC–46	0.0516	0.0164	68.22	0.0213	0.0001	99.53	0.0729	0.0165	77.37
MWC–49	0.0376	0.0096	74.47	0.0187	0.0001	99.47	0.0563	0.0097	82.77
MWC–50	0.0593	0.0122	79.43	0.0095	0.0001	98.95	0.0687	0.0123	82.10
MWC–53	0.1085	0.0120	88.94	0.0752	0.0001	99.87	0.1837	0.0121	93.41
MWC–54	0.0992	0.0132	86.69	0.1687	0.0001	99.94	0.2678	0.0134	95.00
AVG	0.0643	0.0109	77.61	0.0394	0.0002	99.20	0.1037	0.0111	84.32

10#/hr Activated Carbon Injected
(102 mg Activated Carbon/DSCM, corrected to 12% CO2)

MWC–57	0.0274	0.0112	59.12	0.0676	0.0004	99.41	0.0950	0.0116	87.79
MWC–58	0.0659	0.0104	84.22	0.0230	0.0001	99.57	0.0890	0.0105	88.20
MWC–61	0.0407	0.0118	71.01	0.1108	0.0002	99.82	0.1515	0.0120	92.08
MWC–62	0.1126	0.0149	86.77	0.0522	0.0001	99.81	0.1648	0.0150	90.90
AVG	0.0617	0.0121	75.28	0.0634	0.0002	99.65	0.1251	0.0123	89.74

Note: Averages shown are columnar inlet, outlet and efficiency averages. Average efficiency is not calculated directly from inlet average and outlet average.

TABLE II
OGDEN MARTIN– MARION COUNTY
MERCURY REMOVAL TEST PROGRAM

MERCURY REMOVAL TEST RESULTS

Adsorbent A Injected

TEST	BK HALF (#/HR) INLET	OUT	BACK % EFF	FRONT HALF (#/HR) INLET	OUTLET	FRONT % EFF	TOTAL (#/HR) INLET	OUTLET	TOTAL % EFF
MWC–74	0.0362	0.0047	87.02	0.0064	0.0002	96.88	0.0427	0.0049	88.52
MWC–77	0.0379	0.0097	74.41	0.0110	0.0002	98.18	0.0488	0.0099	79.71
MWC–78	0.0279	0.0097	65.23	0.0066	0.0002	96.97	0.0345	0.0100	71.01
MWC–81	0.0331	0.0036	89.12	0.0068	0.0002	97.06	0.0399	0.0038	90.48
MWC–82	0.0321	0.0029	90.97	0.0073	0.0006	91.78	0.0394	0.0035	91.12
MWC–85	0.0285	0.0055	80.70	0.0110	0.0002	98.18	0.0396	0.0057	85.61
MWC–86	0.0621	0.0071	88.57	0.0080	0.0002	97.50	0.0702	0.0074	89.46
MWC–89	0.2151	0.0050	97.68	0.0367	0.0002	99.46	0.2517	0.0052	97.93
MWC–90	0.0374	0.0052	86.10	0.0179	0.0003	98.32	0.0553	0.0054	90.24
MWC–93	0.0376	0.0022	94.15	0.0161	0.0002	98.76	0.0537	0.0024	95.53
MWC–94	0.0312	0.0020	93.59	0.0177	0.0002	98.87	0.0490	0.0022	95.51
MWC–97	0.0763	0.0015	98.03	0.0627	0.0002	99.68	0.1389	0.0017	98.78
MWC–98	0.0618	0.0028	95.47	0.0330	0.0002	99.39	0.0947	0.0030	96.83
AVG	0.0552	0.0048	87.77	0.0186	0.0002	97.77	0.0737	0.0050	90.06

Adsorbent B Injected

MWC105	0.0753	0.0117	84.46	0.0279	0.0001	99.64	0.1031	0.0118	88.55
MWC106	0.2217	0.0410	81.51	0.0287	0.0001	99.65	0.2504	0.0412	83.55
MWC110	0.0393	0.0079	79.90	0.0184	0.0001	99.46	0.0577	0.0079	86.31
MWC113	0.0709	0.0107	84.91	0.0156	0.0001	99.36	0.0866	0.0107	87.64
MWC114	0.0766	0.0101	86.81	0.0400	0.0001	99.75	0.1166	0.0101	91.34
MWC117	0.0351	0.0085	75.78	0.0073	0.0001	98.63	0.0424	0.0085	79.95
MWC118	0.0351	0.0038	89.17	0.0190	0.0001	99.47	0.0540	0.0039	92.76
AVG	0.0791	0.0134	83.22	0.0224	0.0001	99.42	0.1015	0.0134	87.16

Note: Averages shown are columnar inlet, outlet and efficiency averages. Average efficiency is not calculated directly from inlet average and outlet average.

An average vapor phase removal efficiency of 75.3% for the 10 #/hr activated carbon runs as well as average outlet emissions in the same range as the 5 #/hr injection runs indicate that the higher feed rates of activated carbon to the system through the dry venturi did not improve the vapor phase removal efficiency. It appears that there was an incremental increase in total efficiency for the 10 #/hr activated carbon injection over the 5 #/hr injection (respectively, 89.7% efficiency compared to 84.3%). This is due to the highly efficient relatively larger, average solid phase inlet catch during the 10 #/hr injection (50.7% solids as a percent of total mercury species) compared to the average of the 5 #/hr injections (38.0% solids as a percent of total mercury).

Injection of Adsorbents A and B

Two series of tests were run each with injection of a different activated carbon-based adsorbent. These adsorbents (designated A and B) which contained other materials in addition to activated carbon, were injected at overall larger mass rates. The active constituents (activated carbon) which directly affected mercury removal accounted for 5 #/hr feed rate.

Vapor and total mercury removal emissions and corresponding removal efficiencies were improved from the baseline condition with injection of Adsorbents A and B. There was also an improvement in vapor phase mercury removal efficiency with Adsorbents A and B as compared to 5 #/hr activated carbon (respectively, 87.8 and 83.2% removal versus 77.6% removal). Adsorbent B vapor phase emission rates were very close to the activated carbon injection emission rates. Total mercury removal efficiencies for the Adsorbent A and B tests were higher than for the 5 #/hr activated carbon runs (90.1 and 87.9% versus 84.3%, respectively), but were essentially equivalent when activated carbon was fed at 10 #/hr (90.1 and 87.2% versus 89.7%, respectively).

Metric Units

Mercury results are commonly reported in metric units. Table III presents inlet and outlet total mercury concentrations in mg/DSCM at 12% CO_2. The average efficiencies are approximately the same as those calculated from the mass pollutant rates in Table II.

TABLE III
OGDEN MARTIN – MARION COUNTY
MERCURY REMOVAL TEST PROGRAM

MERCURY REMOVAL TEST RESULTS

Mercury concentrations are mg/DSCM @ 12% CO2

Baseline

TEST	INLET TOTAL	OUTLET TOTAL	TOTAL %EFF
MWC–1	0.4277	0.2516	41.17
MWC–3	0.4841	0.3106	35.84
MWC–5	0.5145	0.4991	2.99
MWC–7	0.7407	0.3787	48.87
MWC–9	1.0801	0.1808	83.26
MWC–10	0.4898	0.1926	60.68
MWC–13	0.8121	0.6534	19.54
MWC–14	0.8577	0.5982	30.26
MWC–17	1.7905	1.1685	34.74
MWC–18	1.9662	0.8071	58.95
MWC–21	0.4361	0.3691	15.36
MWC–22	0.4230	0.3057	27.73
MWC–25	0.5633	0.4186	25.69
MWC–26	0.4469	0.2372	46.92
MWC–29	0.4408	0.2805	36.37
MWC–30	1.4921	0.2310	84.52
MWC–65	0.5333	0.3739	29.89
MWC–66	0.3950	0.2552	35.39
MWC–69	1.3082	1.7569	0.00
MWC–70	0.4534	0.4967	0.00
MWC–101	0.7128	0.4506	36.78
MWC–102	0.5425	0.2784	48.68
AVG	0.6947	0.3756	35.91

Note: Averages shown are columnar inlet, outlet and efficiency averages. Average efficiency is not directly calculated from average inlet and average outlet.

TABLE III
OGDEN MARTIN – MARION COUNTY
MERCURY REMOVAL TEST PROGRAM

MERCURY REMOVAL TEST RESULTS

Mercury concentrations are mg/DSCM @ 12% CO2

5 #/hr Activated Carbon Injected
(51 mg Activated Carbon/DCSM, corrected to 12% CO2)

TEST	INLET TOTAL	OUTLET TOTAL	TOTAL %EFF
MWC–33	0.4243	0.0564	86.71
MWC–34	0.4033	0.0810	79.92
MWC–37	0.5519	0.1259	77.19
MWC–38	0.4948	0.0691	86.03
MWC–41	0.5013	0.1101	78.04
MWC–42	2.8537	0.1315	95.39
MWC–45	0.7414	0.1402	81.09
MWC–46	0.7850	0.1859	76.32
MWC–49	0.6210	0.1185	80.92
MWC–50	0.6973	0.1342	80.75
MWC–53	1.8876	0.1140	93.96
MWC–54	2.5478	0.1471	94.23
AVG	1.0424	0.1178	84.21

10 #/hr Activated Carbon Injected
(102 mg Activated Carbon/DSCM, corrected to 12% CO2)

MWC–57	1.0127	0.1300	87.16
MWC–58	0.9676	0.1081	88.83
MWC–61	1.6252	0.1269	92.19
MWC–62	1.7619	0.1541	91.25
AVG	1.3419	0.1298	89.86

Note: Averages shown are columnar inlet, outlet and efficiency averages. Average efficiency is not directly calculated from average inlet and average outlet.

TABLE III
OGDEN MARTIN – MARION COUNTY
MERCURY REMOVAL TEST PROGRAM

MERCURY REMOVAL TEST RESULTS

Mercury concentrations are mg/DSCM @ 12% CO2

Adsorbent A Injected

TEST	INLET TOTAL	OUTLET TOTAL	TOTAL %EFF
MWC–74	0.4052	0.0504	87.56
MWC–77	0.4807	0.1002	79.16
MWC–78	0.3305	0.1023	69.05
MWC–81	0.3921	0.0382	90.26
MWC–82	0.3621	0.0384	89.40
MWC–85	0.3922	0.0582	85.16
MWC–86	0.7145	0.0875	87.75
MWC–89	2.7028	0.0572	97.88
MWC–90	0.5492	0.0545	90.08
MWC–93	0.5297	0.0267	94.96
MWC–94	0.4705	0.0239	94.92
MWC–97	1.3618	0.0165	98.79
MWC–98	0.9360	0.0318	96.60
AVG	0.7406	0.0528	89.35

Adsorbent B Injected

MWC–105	1.2462	0.1305	89.53
MWC–106	2.6951	0.4604	82.92
MWC–110	0.6148	0.0825	86.58
MWC–113	0.9345	0.0980	89.51
MWC–114	0.1166	0.0101	91.34
MWC–117	0.5080	0.0972	80.87
MWC–118	0.5591	0.0384	93.13
AVG	0.9535	0.1310	87.70

Note: Averages shown are columnar inlet, outlet and efficiency averages. Average efficiency is not directly calculated from average inlet and average outlet.

CONCLUSIONS

The following conclusions are supported by the test results in Table II:

1. The removal efficiency of total mercury species by a semi-dry scrubber and baghouse system increases substantially with the addition of activated carbon, Adsorbent A, or Adsorbent B. This enhancement is attributable to an increase in the vapor phase reduction.

2. Solid phase mercury removal efficiency is very high (average range of 97.8 to 99.7%) both with and without injection of adsorbents. This supports the premise that removal of solid phase mercury from the gas stream, as with other particulate, is a function of the capability of the semi-dry scrubber/baghouse.

3. Injection of either activated carbon, Adsorbent A or Adsorbent B into the air quality control system between the quench reactor and baghouse substantially increases removal of vapor phase mercury from the gas stream. This consistent result is not surprising due to the presence of activated carbon in both Adsorbent A and B.

REFERENCES

1. N.S. Bloom, "Mercury Speciation in Flue Gases: Overcoming the Difficulties," EPRI Conference, November, 1991.

2. K.L. Nebel, D.M. White, C.R. Parrish et al., Emission Test Report: Ogden Martin Systems of Stanislaus, Inc. Field Test on Carbon Injection for Mercury Control, EPA-600/R-92-192, U.S. Environmental Protection Agency, September, 1992.

3. D.B. Fickling, "Mercury Removal Test Program at Ogden Systems of Marion Unit 1, Brooks, Oregon," Research Control, [illegible] September, [illegible]

DRAVO LIME COMPANY

April 29, 1994

Reply to:
Licata Energy
345 Concord Rd.
Yonkers, NY 10710-1848

Mr. Vince Mannella
Pasco County Resource Recovery Facility
14230 Hays Road
Spring Hill, Fl 34610

Dear Vince:

As an owner of a Municipal Waste Combustor (MWC) you have a vested interest in controlling acid gases and air toxic emissions from your facility. My client, Dravo Lime, has a cost effective and proven emission control technology for these emissions. Dravo Lime has just completed an exclusive license agreement with Märker Umwelttechnik of Germany to manufacture and market Sorbalit®, a new technology for the U.S. market. We are very excited about this technology for it addresses the removal of mercury and dioxin that will meet the existing and anticipated new EPA standards.

Sorbalit is a patented air pollution control system that reduces eco-toxic pollutants such as volatile heavy metals (mercury), organics (dioxin and PCBs), and acid gases (SO_2 and HCl). The Sorbalit process produces a special sorbent comprised of a combination of lime, activated carbon and other proprietary sulfur components. This unique lime-based product will reduce several pollutants in a single application and, in most cases, without replacing or adding significantly to a plant's existing air pollution control equipment. The primary markets for Sorbalit are: waste-to-energy facilities; medical waste and hazardous waste incinerators; wood and coal fired boilers; and metal and glass smelting plants. Sorbalit applications for air pollution control systems are dry sorption, conditioned dry sorption, spray sorption, and wet scrubbing.

Sorbalit is currently being used in 25 fully operational projects in Germany and other European countries. Facility operators in Europe and the U.S. have obtained mercury reductions in the range of 70% to 99.9%, and dioxin reductions that exceed 90%. Test data has demonstrated that Sorbalit can meet the US EPA emission standards for acid gases for both coal and municipal waste fired boilers.

3600 One Oliver Plaza
Pittsburgh, PA 15222-2682
Phone: 412-566-5500
FAX: 412-566-5551

Sorbalit is a technology not a product. The sorbent is custom blended for each client and source of emissions. Applications of Sorbalit range in carbon concentrations from 3 to 65% and it can be made with either hydrated lime or quick lime. In addition, we use special types of carbon based on the source of the mercury emissions. The amount of lime used is dictated by the amount of acid gases that need to be removed. The sulfur compounds enables the carbon to capture more of the vapor phase mercury. The actual adsorption capacity of Sorbalit for mercury is affected by:

- Gas temperature
- Flue gas moisture
- Inlet concentration of mercury
- Species of mercury
- Acid content of the flue gas
- Concentration of organics such as dioxin
- Type of carbon used and surface area
- Contact time

Dravo Lime is the leading producer of lime-based sorbents for air pollution control systems in the USA. They provide a complete service for their clients and have extensive research and development capabilities. The array of technical services provided include process design and/or evaluation, sample analyses, system start-up services and optimization.

Please find enclosed a Sorbalit brochure, a paper we recently presented, and other pertinent information for your review. Additional information can be obtained from either Lewis Benson at (502) 426-8355 or my office at (914) 779-3451. We look forward to the opportunity of working with you and possibly providing this new air pollution control system to your facility. We would be pleased to meet with you to make a technical presentation on Sorbalit at your earliest convenience.

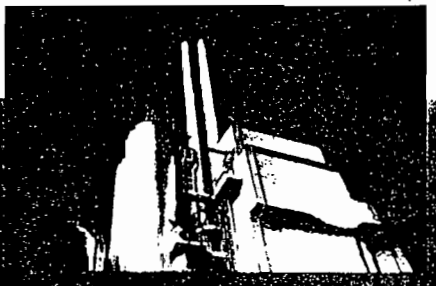
Very truly yours,

Anthony Licata
Technical Advisor

Enc.(s)

cc: L. Benson
M. Babu
R. Roden

Sorbalit®



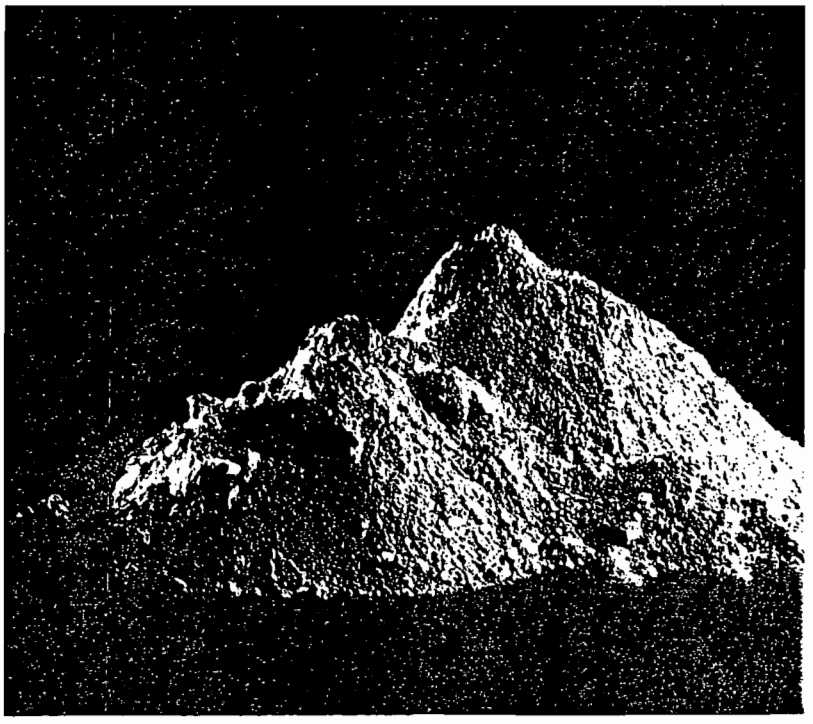
Clean air smells funny

Märker Sorbalit* is produced with ultra-modern equipment by a process of dry-slaking fine, primary-ground, softburned calcium lime together with additives to improve flue-gas cleaning.

Märker Sorbalit* is highly effective against eco-toxic pollutants such as mercury, volatile heavy metals, dioxins, furans, polyaromatic hydrocarbons and chlorinated hydrocarbons. The rates of mercury reduction range from 70 to 99.9 % (Higher amounts of **Sorbalit*** can result in almost zero emission). In the case of dioxins and furans, the rates of removal exceed 90 %.

The Märker Umwelttechnik team, each member a specialist in flue-gas purification.

3 years ago our team inaugurated our first development program for proprietary lime products used in flue-gas purification of power plants and incinerators. Extensive tests allowed us to constantly improve the performance of our special lime products resulting in **Sorbalit*** modified calcium hydroxide, a unique product patented.*



Composition

Märker Sorbalit* is composed of Märker calcium hydroxide and additives comprising organic and/or inorganic constituents, selection depends on the toxic substances to be removed.

Technological parameters

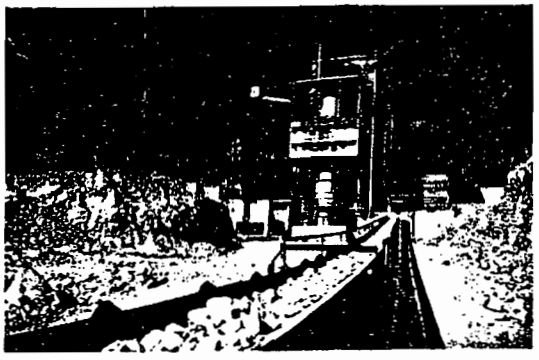
$Ca(OH)_2$ - content in calcium hydroxide ca. 93 percent in weight %.
BET surface in calcium hydroxide > 20 sqm/g
Settled apparent density $< 0{,}39$ kg/l
Activated hydrate surface as a result of additives.

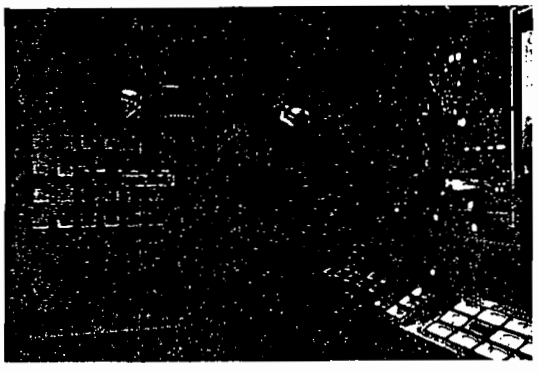
Sorbalit* will always reduce toxic emissions significantly, independent of an application, a certain process concept or air volume.

*) patents pending

Our latest state-of-the-art production equipment guarantees chemical and physical properties for each of our end-products.

Märker-Sorbalit® subject to constant quality control in the Märker laboratories.





Each single step of our process is monitored and if necessary corrected from our central (computerized) control station.

Flue-gas purification has undergone radical progress in the course of the past twenty years or so. Following the brilliant success obtained in the initial phase, the focus of attention now turned to organic pollutants above all dioxins and furans as well as heavy metals e.g. mercury.
Severe problems develop particularly in connection with dioxin reduction from incinerators. The conventional method of combining numerous units has simply not produced any results.
As a consequence an improved method promises the utilization of modified adsorbents.

Here, **Sorbalit®** serves to reduce volatile organic and inorganic substances. The combination of pulverized calcium hydroxide, acting as a basic material, with special substances caters for a wide variety of different applications with the aim to solve specific problems.

The modification of adsorbents was not aimed at the removal performance of acid constituents in the flue-gas currents but rather at reducing eco-toxic pollutants e.g.

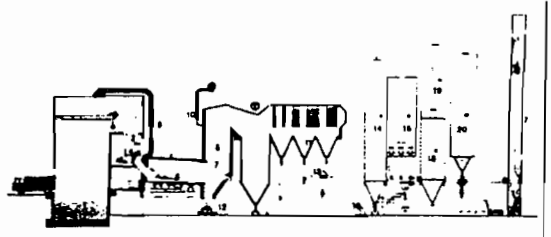
- volatile heavy metals, mercury, cadmium, thallium, selenium and arsenic
- chlorinated dibenzodioxins and dibenzofurans (called dioxins and furans)
- chlorinated hydrocarbons difficult to volatize, e.g. hexachlorobenzene and hexachlorcyclohexane
- polychlorobiphenyls (abbreviated PCB)
- polyaromatic hydrocarbons (abbreviated PAK)

Because of the importance to reduce emission of organic substances – particularly those considered to be hazardous – the interest focused on a simple control system responsive to a wide range of toxic pollutants. **Sorbalit®** offers a system favored by inexpensive modification to address changing conditions in the control of eco-toxic substances.

Calcium hydroxide proved to be an ideal carrier for specific substances which as additives have a reduction or destructive effect on numerous substances specified above.
It is proven that **Sorbalit®** shows superior performance in a variety of different applications, including flue-gas purification, several of which have already been accomplished as described previously.

Numerous Applications

1 garbage bunker
2 charging crane for solid waste
3 loading chute
4 drum loading
5 kiln furnace head plate with burner and lances for pasty and liquid waste
6 combustion chamber
7 after-burner
8 burner and waste-water lances



9 primary air system
10 secondary air system
11 boiler
12 slag discharge
13 fly ash conveyor
14 reactor
15 fabric filter
16 flue gas fan
17 stack
18 recirculation silo
19 Sorbalit® silo
20 disposal storage bin

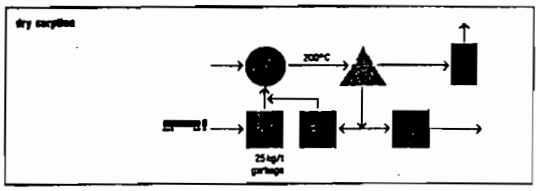
Sorbalit® can be employed for flue-gas purification in connection with the following incinerator systems:

- Municipal incinerating plants, hazardous waste, sewage sludge and medical waste incinerators
- Industrial coal-fired boilers
- Power plants
- Combustion systems of glass furnaces and in the ceramic industry.

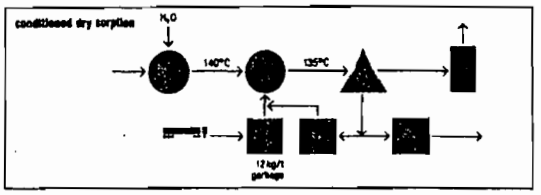
Other applications include:

- Wood drying kilns especially for the reduction of water insoluble terpentines after wet scrubber
- Chemical industry
- Surface treatment plants in the metal coating industry.

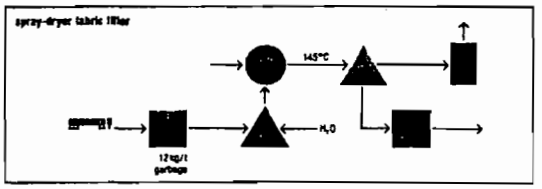
Dry Sorption
Injecting dry **Sorbalit®** into the flue-gas ahead of a fabric filter at inlet gas temperature of 240° C.



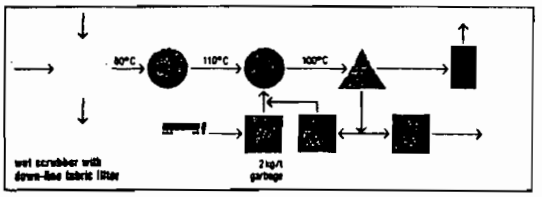
Conditioned Dry Sorption
Injecting dry **Sorbalit®** into the flue-gas after the evaporation cooler ahead of a fabric filter at a flue-gas temperature of 145° C.



Spray Sorption
Injecting a **Sorbalit®** suspension inside a spray dryer followed by a fabric filter at inlet gas temperature of 165° C.

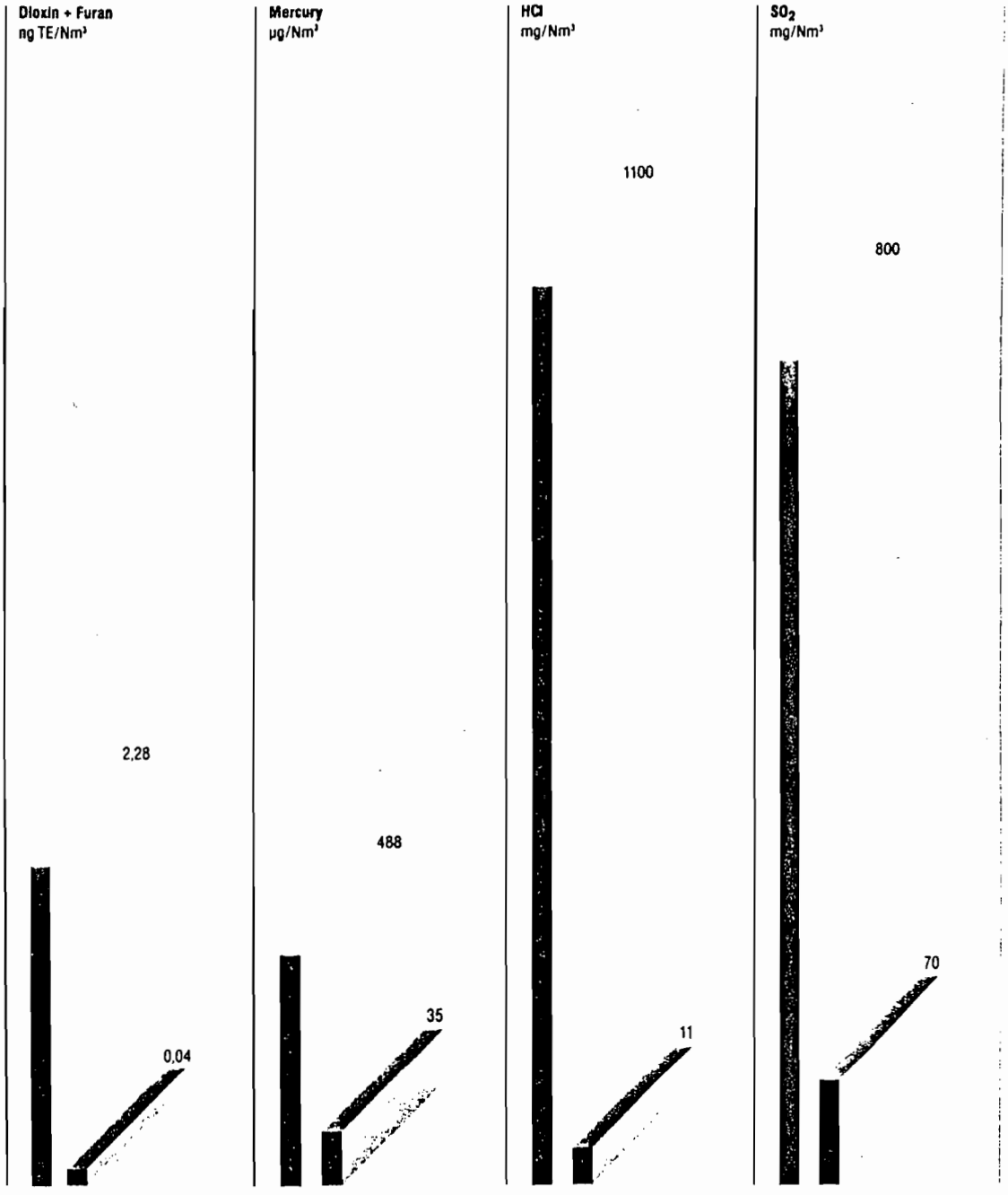


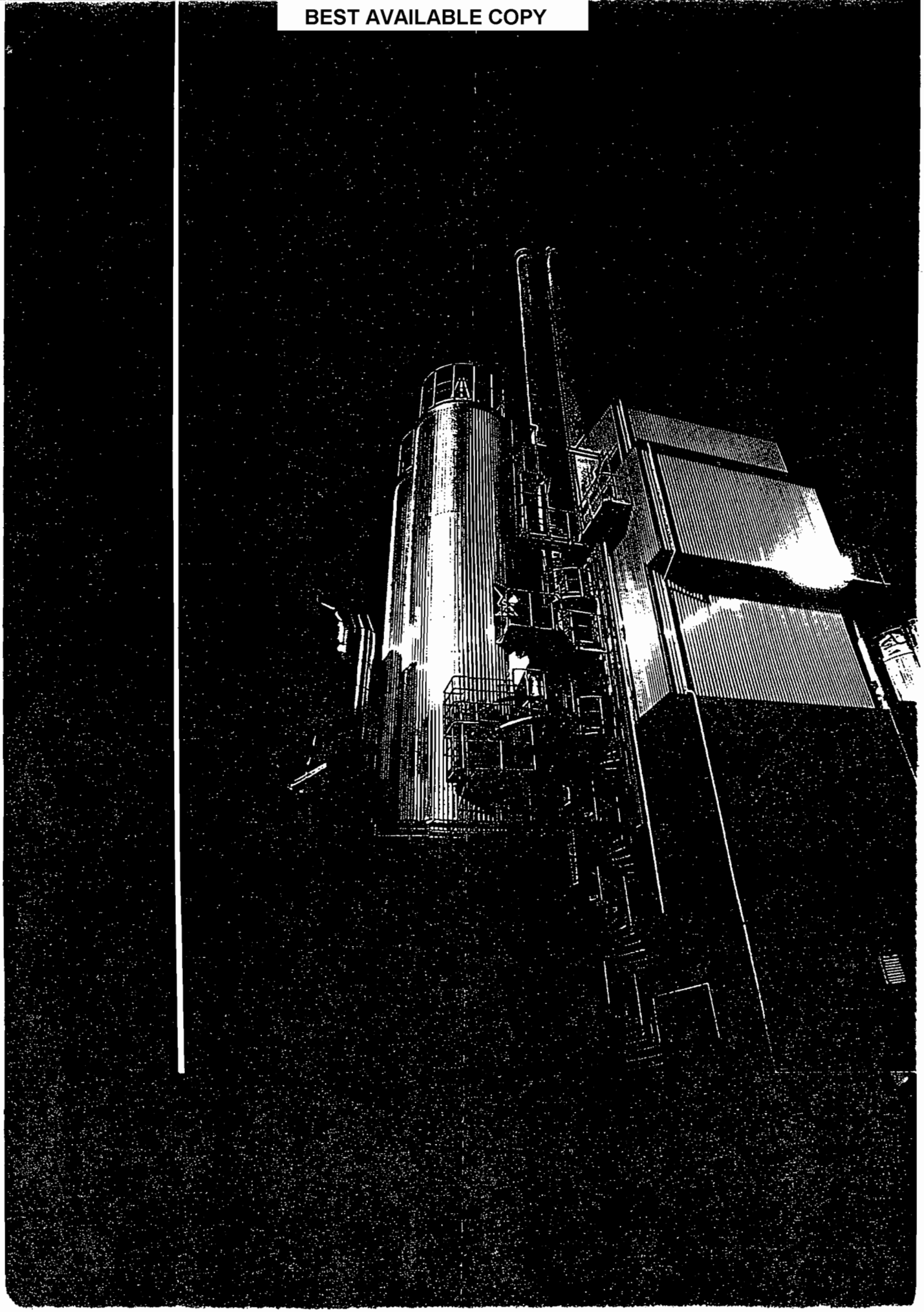
Wet Scrubber with Dry Sorption
Injection of **Sorbalit®** into the flue-gas between a wet scrubber and pre-heater into a fabric filter at inlet temperatures of 100° C.



- recirculation silo
- disposal storage bin
- sorbalit silo
- fabric filter
- reactor
- stack
- mixing tank
- cooler
- reheating
- scrubber

Emissions reduction





Top results in different plants

Waste-to-energy plant GfA Geiselbullach/Munich

Capacity 3 x 144 tpd
Gas volume 3 x 35 000 Nm³/h

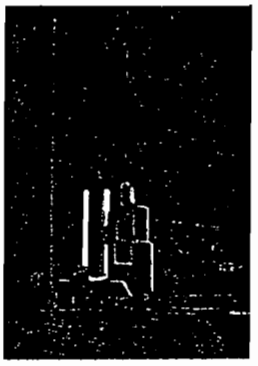
Stoker

Flue-gas purification/Dry sorption
- Injection of **Sorbalit®**
- Reactor
- Fabric filter
- Recirculation system

Flue-gas temperature
205° C – 220° C
Quantity of Sorbalit®
25 kg/t of garbage

Outlet emission rate
SO_2 – 70 mg/Nm³
HCl – 22 mg/Nm³
Hg – < 0,05 mg/Nm³
Dioxin/Furan – 0,019 ng TEQ/Nm³

Hazardous waste incinerator Schöneiche/Berlin



Capacity 55 tpd
Gas volume 31 000 Nm³/h

Rotary kiln

Flue-gas purification/Conditioned dry sorption
- Injection of **Sorbalit®**
- Reactor
- Fabric filter
- Recirculation system

Flue-gas temperature 140° C
Quantity of Sorbalit®
12 kg/t of garbage

Outlet emission rate
SO_2 – 20 mg/Nm³
HCl – 9 mg/Nm³
Hg – 0,02 mg/Nm³
Dioxin/Furan – 0,03 ng TEQ/Nm³

Waste-to-energy plant Würzburg

Capacity 2 x 300 tpd
Gas volume 2 x 70 000 Nm³/h

Stoker

Flue-gas purification/Dry sorption
- Injection of **Sorbalit®**
- Reactor
- Fabric filter

Flue-gas temperature
210° C – 240° C
Quantity of Sorbalit®
25 kg/t of garbage

Outlet emission rate
SO_2 – 3 mg/Nm³
HCl – 5 mg/Nm³
Hg – 0,037 mg/Nm³
Dioxin/Furan – 0,03 ng TEQ/Nm³

Hazardous waste incinerator GSB Schweinfurt

Capacity 60 tpd
Gas volume 28 000 Nm³/h

Stoker

Flue-gas purification/Spray dryer system
- Slurry mixing station
- Spray dryer
- Fabric filter

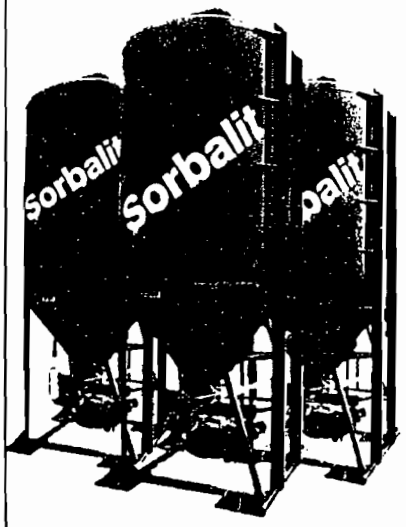
Flue-gas temperature 165° C
Quantity of Sorbalit®
12 kg/t of garbage

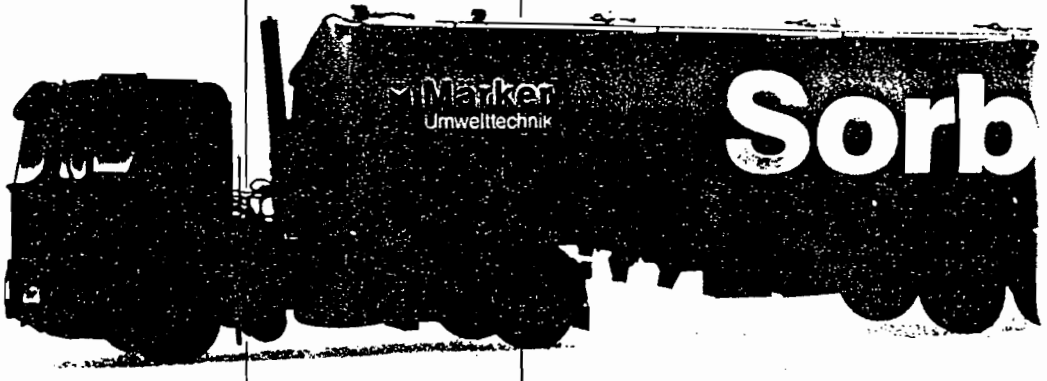
Outlet emission rate
SO_2 – 4 mg/Nm³
HCl – 4 mg/Nm³
Hg – 0,04 mg/Nm³
Dioxin/Furan – 0,06 ng TEQ/Nm³

Major Sorbalit® features

- Suitable for virtually unlimited use in dry injection and spray dryer systems
- Low initial capital investment
- Simple process procedure
- For targeted source emission limits, special Sorbalit® types are available

Our specialists will assist you and your plant personnel during introduction and application of our Sorbalit® process. Please contact us.





Märker Umwelttechnik GmbH
P. O. Box 20

Oskar-Märker-Str. 24
D-86655 Harburg/Schwaben
Germany

Tel. 49-90 03-83 07 or 82 55
Telefax 49-90 03-83 03
Telex 5 1 851

Märker
Umwelttechn

SORBALIT - A New Economic Approach reducing Mercury and Dioxin Emissions

Jochen Blumbach
Executive Vice President
MÄRKER ZEMENTWERK GMBH
Oskar-Märker-Str. 24
D-8856 Harburg
Germany

Lutz-P. Nethe
Manager
MÄRKER UMWELTTECHNIK
Oskar-Märker-Str. 24
D-8856 Harburg
Germany

Presented at
AWMA Conference
June 24, 1992
Kansas City, Missouri

1. Introduction

Dissatisfaction with the existing state of technology is at the root of technical progress - and dissatisfaction with the emission situation at waste incineration plants is widespread indeed. This dissatisfaction is not only expressed in public opinion; the engineers running incineration plants are just as dissatisfied.

What are the main reasons for their dissatisfaction?

- The high emissions of mercury (this being the index element for toxic heavy metals)

- The high emissions of dioxins and furans (these being the index compounds for toxic organic compounds).

The above-mentioned dissatisfaction has had several results. On the one hand, administrations all over the world have sought to reduce authorized emission rates by regulations (to take the German example, by the 17th Federal Regulation on Immission Protection) (1). On the other hand, processes have been developed to meet these requirements.

In this paper a process is presented that has already stood its test in Europe.

Basically, the process consists of two components:

1. a specially developed agent characterized by high adsorption material focussed on the toxic elements;

2. a reaction unit in the flue-gases of any incineration plant (that is, not a waste incineration plant only) ensuring a vortexing of the mixture of the adsorbing agent with the flue-gas, plus the separation of the adsorbing agent in a fabric filter.

The aim of this paper is not the discussion of theoretical background problems, but the presentation of results based on practical experience. The adsorbing agent will be briefly described and results concerning various types of flue-gas purification systems will be presented.

2. The Sorbalit System (2)

Patents for the Sorbalit^{R} System are pending (3). The Sorbalit agent is produced by mixing calcium hydroxide with surface-activated substances like activated carbon or lignite coke as well as other components in a special process. In this way a homogeneous powder is obtained that will not dissociate when used later, either. It is particularly important to avoid flotation or separation of the substances added to hyrated lime. In order to maintain product uniformity and effective levels of air pollution control, the components must stay in suspension.

The purification unit consists in its simplest form of an flue-gas pipe into which dosed Sorbalit is injected plus a fabric filter down-line.

This simple solution has the special advantage that it can be easily integrated into existing plants without have to expend significant capital for new equipment.

The following chapter deals with the Sorbalit solutions for the flue-gas treatments usually employed at waste incineration plants. It will also demonstrate the improvement in emission values.

3. Areas of Application

3.1 Dry sorption process
Waste-to-energy station Würzburg

The waste-to-energy station at Würzburg possesses two lines for incinerating municipal waste, each with a capacity of 12.5 Mg/h. The temperature of the flue-gas down-line of the boiler is reduced to a range of 180 to 200 ^{o}C by means of water cooling (4).

The hydrated lime used to be mixed with the flue-gas in a following fluidized bed reactor to reduce the emission of acid gases. The fluidized bed reactor also acts as a preliminary filter before the flue-gas gases are purified in a fabric filter, in accordance with the state of the art.

In the spring of 1989, tests were carried out with Sorbalit only by switching from hydrated lime to Sorbalit.

The dioxin and furan emissions were reduced from 9 - 10 ng TEQ/Nm^3 to 0.02 - 0.06 ng TEQ/Nm^3 (Figure 1). Sorbalit also displayed its effectiveness in reducing mercury emissions (Figure 2).

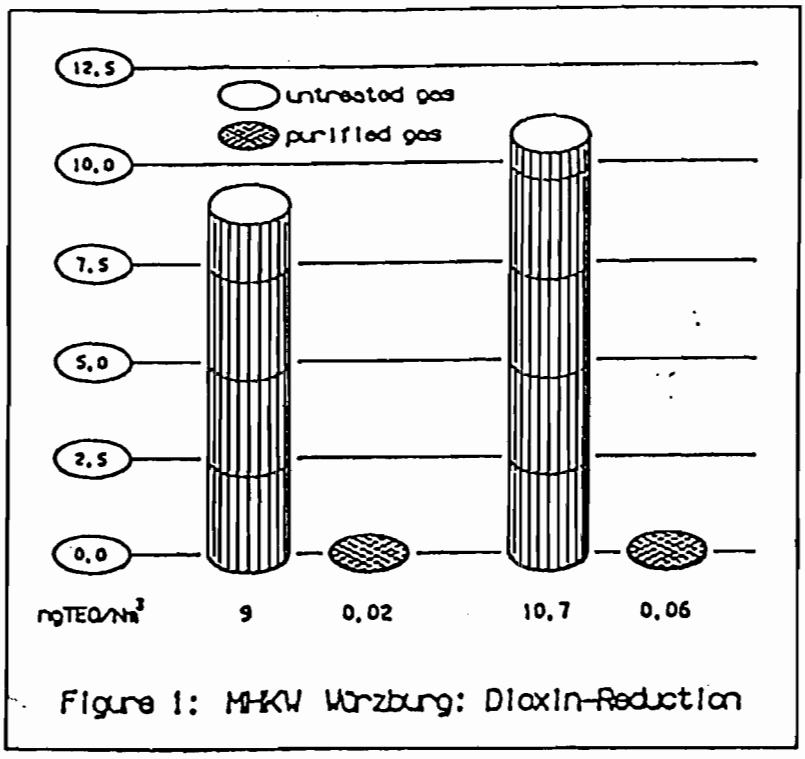


Figure 1: MHKW Würzburg: Dioxin-Reduction

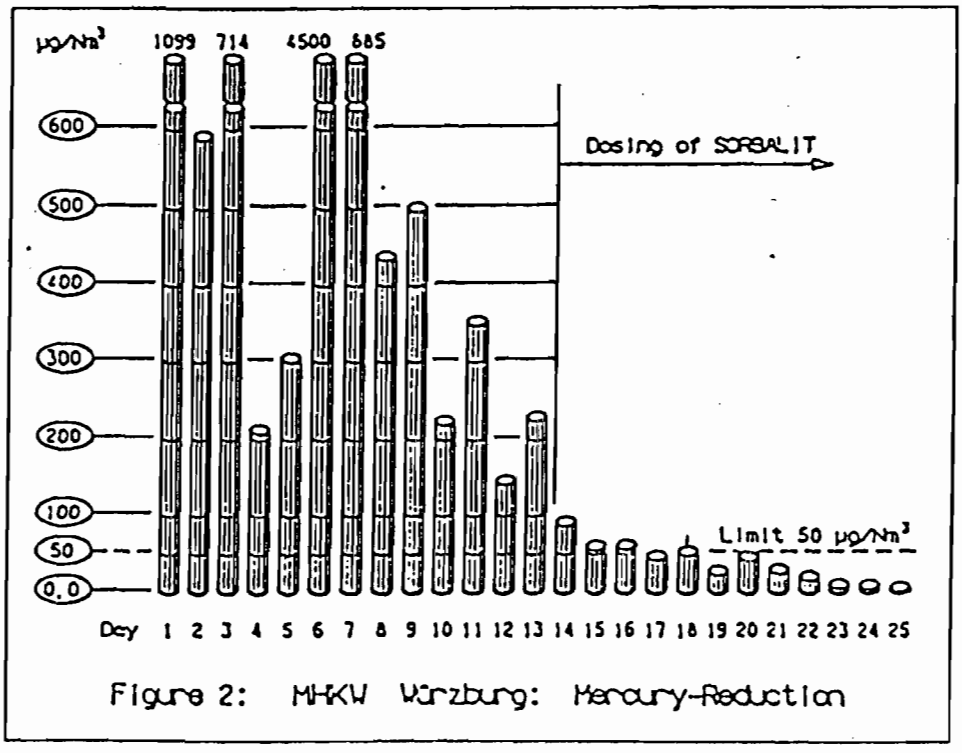


Figure 2: MHKW Würzburg: Mercury-Reduction

As can be seen from Figure 2, the use of Sorbalit reduces the emission of mercury to a level below the German limit of 50 ug/Nm^3. What is remarkable is the fact that this result was achieved without any modification of the plant configuration (5).

3.2 Conditioned dry sorption process
Hazardous waste incineration plant Schöneiche/Berlin

The hazardous waste incineration plant at Schöneiche in the former GDR is designed for a waste capacity of 2.3 Mg/h. The flue-gases down-line of the boiler are cooled to a temperature of 140 ^oC by the addition of water. The gas volume rate is then 31000 Nm^3/h. Prior to the use of Sorbalit, standard hydrated lime was employed as the adsorbing agent.

The operator of the plant decided to use Sorbalit, as this was the only way in which the approved limits for mercury could be complied with.

The tests were accompanied by measurements carried out by the Berlin Technical Control Association (TÜV) (6).

An overall summary of the most important results of the measuring work has been drawn up by Jungmann, Zürich (7).

Mercury measurements were carried out on the purified gas in January, 1990. The measurements are shown in Figure 3.

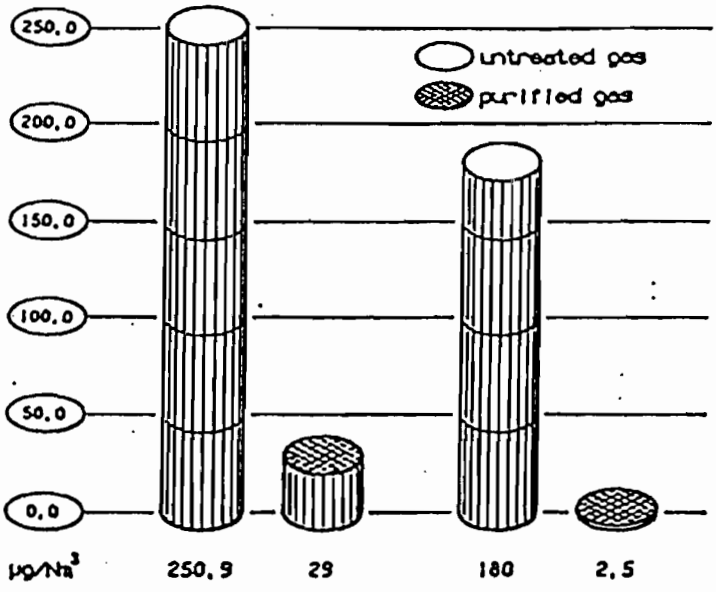


Figure 3: SVA Schöneiche: Mercury-Reduction

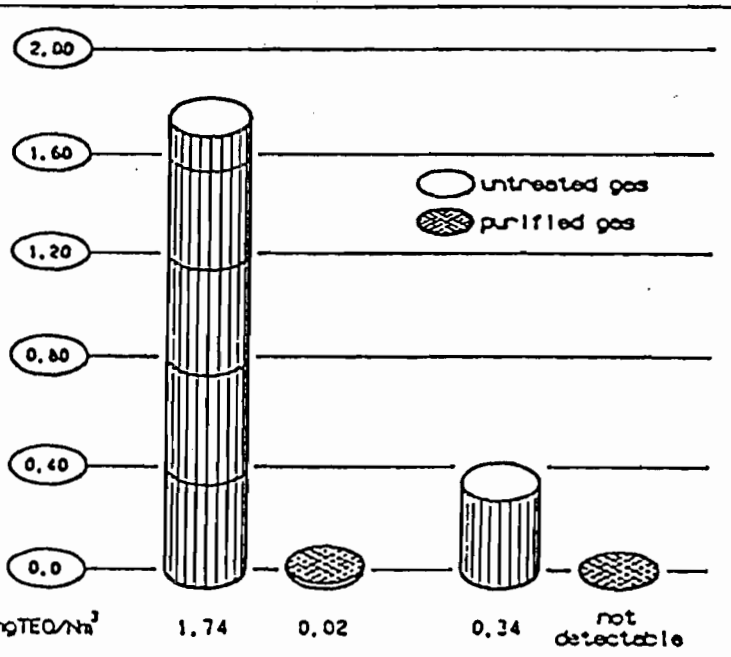


Figure 4: SVA Schöneiche: Dioxin-Reduction

Theses figures represent values well below the maximum limit for mercury in purified gas as stipulated in the 17th Federal Pollution Control Directive (17.BImSchV). Since this time, over 80 measurements have been carried out, each revealing barely detectable concentration levels.

It should be pointed out in particular that the operational tests with substantially lower levels of lignite coke content in the Sorbalit produced considerably better results than the laboratory experiments.

Figure 4 shows the respective levels of dioxin content in the untreated and in the purified gas. The level of dioxin concentration was in some cases even undetectable. The control levels fluctuate from 95.6 to 99,99 %.

The level of polychlorinated biphenyls in the untreated and in the purified gas was also measured. The values measured are shown in Table 1. The level of PCB content in the untreated gas was 130 ng/Nm^3, in the purified gas the various types of PCBs were no longer detectable (8).

PCB type	Content level in untreated gas ng/Nm^3	Content level in purified gas ng/Nm^3
Monochlorobiphenyls	< 1	< 1
Dichlorobiphenyls	< 1	< 1
Trichlorobiphenyls	10	< 2
Tetrachlorobiphenyls	18	< 3
Pentachlorobiphenyls	30	< 3
Hexachlorobiphenyls	38	< 2
Heptachlorobiphenyls	34	< 2
Octachlorobiphenyls	30	< 1
Nonachlorobiphenyls	24	< 1
Decachlorobiphenyls	14	< 1
Total PCBs	130	

Table 1: PCB-Reduction: SVA Schönelche

The excellent rate of separation for the polychlorinated biphenyls also justifies the assumption that additional heavy superchlorinated compounds such as hexachlorobenzene and hexachlorocyclohexane can be removed from the flue-gas flow. The separation rates for the polyaromatic hydrocarbons cannot be established until the relevant measurements are available. A high level of separation is expected, however (9).

It should in particular be emphasized again that these outstanding levels for the purified gases were attained without any modifications to the plant or modification to the flue-gas purification system.
The viability of the concept of improving flue-gas purification via the use of modified calcium hydroxide is thus confirmed.
The flue-gas gas purification system at the Schöneiche hazardous waste incineration plant has been operating with Sorbalit since December, 1989. About 50 dioxin measurements have been taken since; at no time the limits have been exceeded.

3.3 Spray dryer system: Hazardous waste incineration plant Schweinfurt

At the hazardous waste incineration plant Schweinfurt 2.5 Mg/h of hazardous waste are incinerated. The gas volume rate is 28000 Nm^3/h. The plant consists of a lime slurry preparation station with the spray dryer and a fabric filter down-line. Instead of the lime slurry traditionally used a Sorbalit suspension was employed, with no further modifications to the plant being necessary (10).
The results are shown in Figure 5 for dioxins and in Figure 6 for mercury.

What appears remarkable is the fact that on account of the convincing results the test run was immediately followed by continuous operation.

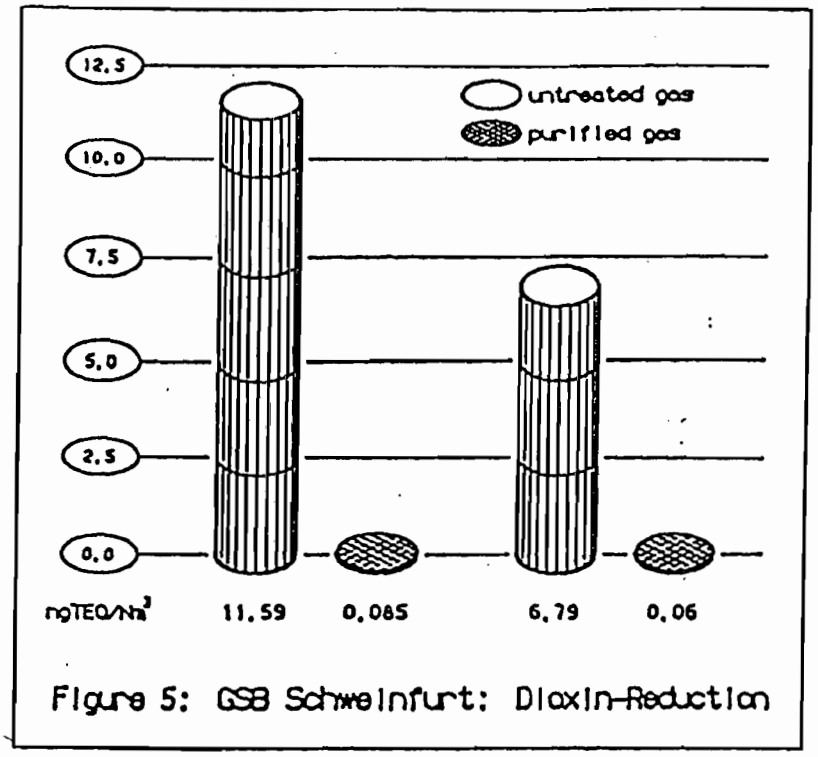


Figure 5: GSB Schwelnfurt: Dioxin-Reduction

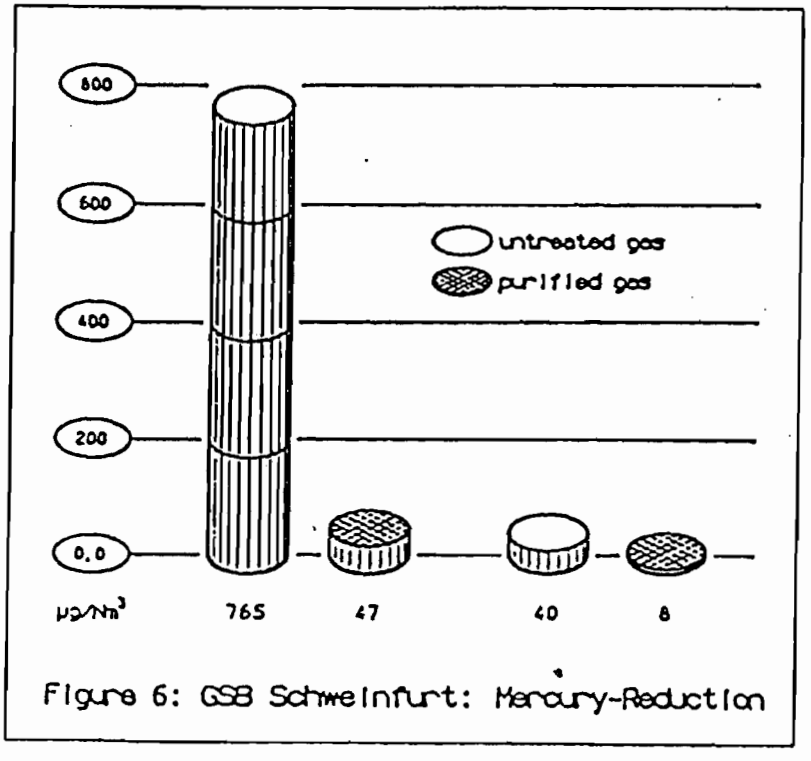


Figure 6: GSB Schwelnfurt: Mercury-Reduction

3.4 "Police filter" down-line
Low temperature incineration plant KWU Siemens, Ulm

This plant constitutes a pilot project having a flue-gas volume rate of 13000 Nm^3/h only. The flue-gas purification system consists of an ESP, a spray dryer, a cyclone and a wet scrubber.

This configuration makes it possible to separate the acid components and the heavy metals, but not the organic pollutants. For that reason, a Sorbalit stage was added down-line as a "police filter" consisting of a Sorbalit dosage device and a fabric filter. The separation rates are shown in the Figures 7 - 10. The measurement results for mercury demonstrate that even extremely high concentrations of mercury can be mastered through this two-stage system. The Sorbalit stage acts as an additional safeguard against excessive concentrations in wet scrubbing - that is why the term "police filter" was introduced (11).

It was with this process in mind that the municipal waste incineration plant Bonn (18 Mg/h, 90000 Nm^3/h) was planned and built, and that the existing municipal waste incineration plant Zirndorf (8 Mg/h, 80000 Nm^3/h) was modified.

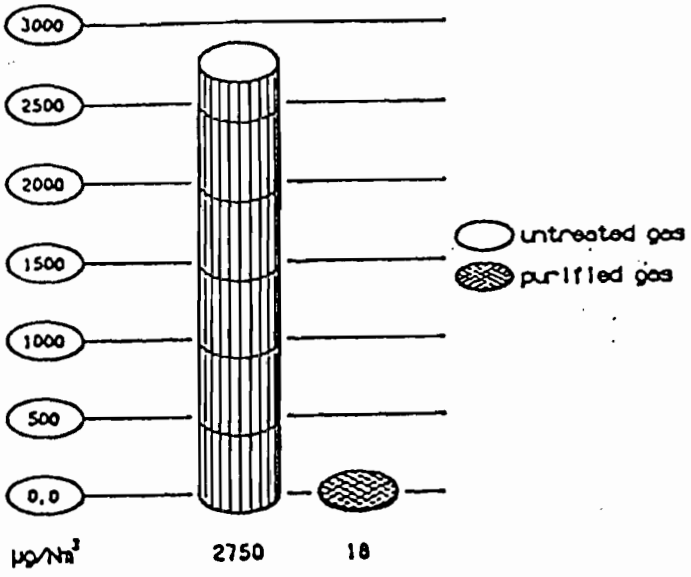


Figure 7: KWU/Siemens Ulm: Mercury-Reduction

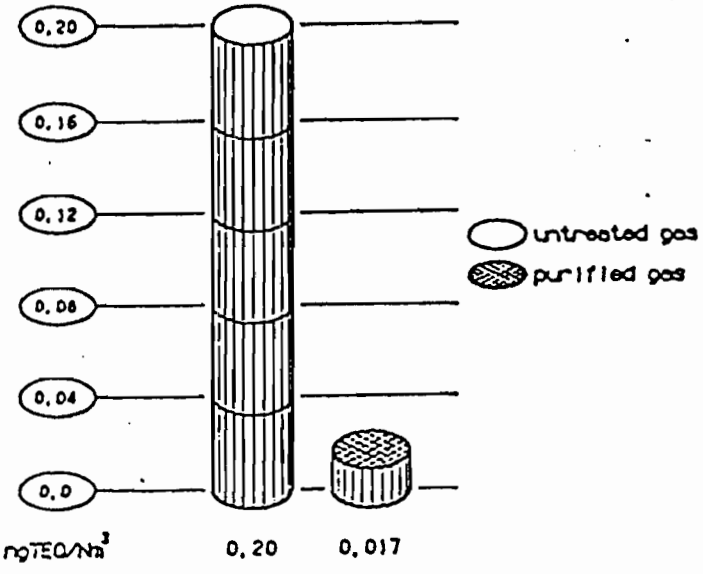


Figure 8: KWU/Siemens Ulm: Dioxin-Reduction

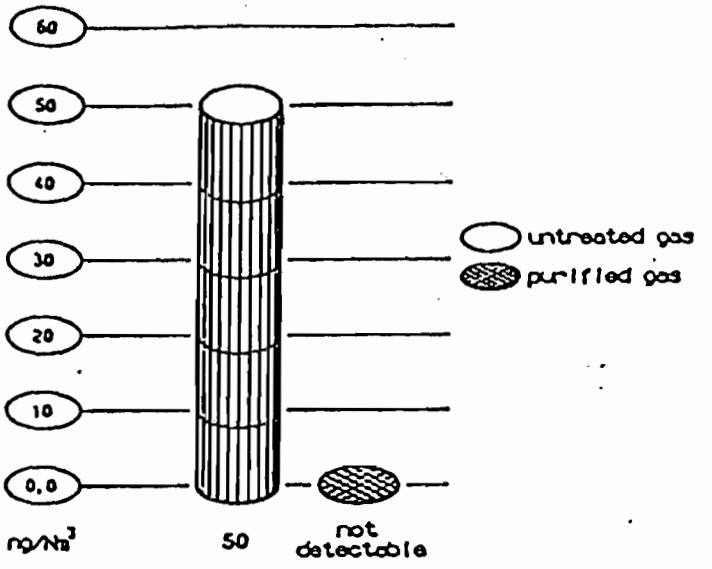


Figure 9: KWU/Siemens Ulm: PCB-Reduction

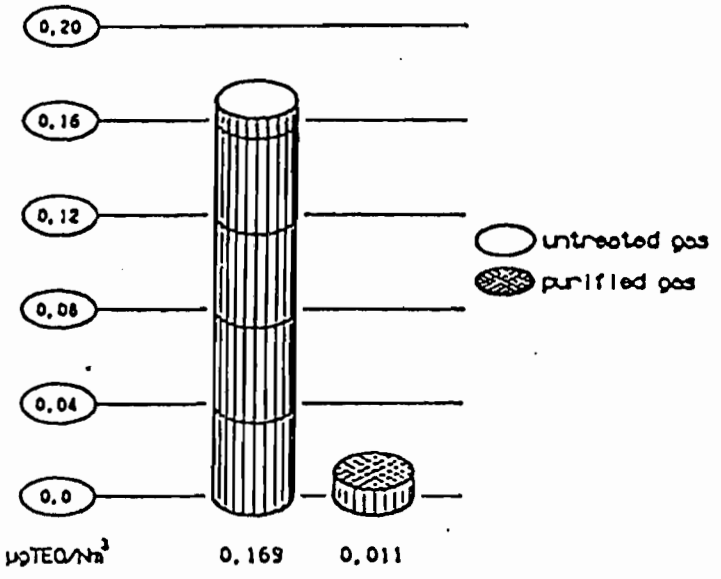


Figure 10: KWU/Siemens Ulm: PAH-Reduction

4. Safety aspects

The use of combustible substances like activated carbon, even though in small quantities only, requires consideration with regard to the risk of fire and explosion (12).

No problems relating to the combustibility of Sorbalit are known with regard to the operation of flue-gas gas purification plants whose temperatures are reliably maintained in the range of 140 °C.

Problems are to be expected at temperatures above 200 °C, however, unless precautionary measures are taken.

Overheating may occur at two points in the plants under unfavourable conditions, in each case involving used, and not fresh Sorbalit:

- discharge from the fabric filter
- discharge from the silo for used Sorbalit ("used lime silo").

These problems can be solved via relatively simple measures: any blocking in the discharge of used Sorbalit must be avoided. Blocking during discharge of the hot used Sorbalit from the fabric filter chamber can be detected via level indicators. Temperature indicators have to be installed as well. In the event of a blocking actually occurring the chamber can be rendered inert by nitrogen (13).

Overheating in the silo is similarly prevented by carrying out discharge operations under nitrogen and ensuring that no inlet of air is possible.

These measures have proven highly successful and are the only additional measures recommendable in the use of Sorbalit.

5. Summary and Outlook

The objective of the development concept for Sorbalit was to modify the calcium hydroxide previously employed at waste incineration plants in such a manner as to make it suitable as a carrier for absorption materials and in this way to minimize the emissions of ecotoxic substances. This paper has described and presented the initial results.

When Sorbalit is employed, emission values of

- < 0.05 mg Hg/Nm^3 for mercury
- < 0.1 ng TEQ/Nm^3 for dioxins and furans
- below the detectable limit for PCBs
- below the limit emission for PAHC

are reliably attained.

The use of Sorbalit in waste incineration processes furthermore entails considerable advantages with regard to the process engineering involved. Tried and tested facilities which are already available, from the supply silo through conveyance and dosing facilities to the mixing lines, filters and checking facilities, all remain in use.

The use of fabric filters is particularly effective. Residual dust levels of < 10 mg/Nm^3 can be attained, and values of 1 mg/Nm^3 are quite realistic (14).

This good separating capacity is also of importance with regard to the use of Sorbalit, as it means that Sorbalit to which the separated pollutants are attached is not emitted.

The flow-treatment process, that is, the injection of Sorbalit into the flue-gas flow, followed by vortexing of the flow and subsequent separation on the fabric filter, can be installed as a "Sorbalit stage" down-line of any incineration plant (15).

This is therefore a universally applicable process. Consequently, numerous areas of application are envisaged for Sorbalit in the field of flue-gas purification, some of which have already been put into practice.

The Sorbalit stage for separating volatile inorganic and organic substances can be integrated into the flue-gas purification systems of the most diverse processes:

- waste incineration plants and sewage sludge incineration plants
- large-scale furnaces
- power stations
- furnaces in the glass-manufacturing and ceramic industries
- wood-drying plants
- steelmills
- aluminium melting plants

Some results are shown in Table 2.

Name of the plant	Outlet Emissions Mercury µg/Nm³	Dioxin ngTEQ/Nm³
Waste to energy station Geiselbullach	23	0,019
Waste Incenerator Berlin-Ruhleben	40	0,06
Waste to energy station Würzburg	37	0,03
Hazardous waste incineration plant Schönelche	20	0,03
Hazardous waste incineration plant Schweinfurt	40	0,06
Waste incineration plant Marktoberndorf	27	0,06
Waste incineration plant Zirndorf	< 50	0,05
Low temperature incineration plant Ulm/Wiblingen	18	0,017
Low temperature incineration plant Burgau	< 50	0,09
Aluminium work Stockach		0,013
Crematory Düsseldorf		0,03
Copper melting plant Hamburg	23	0,06

Table 2: Use of Sorbalit
Results of measurement of Mercury and Dioxin

Reports have been completed on test measurements for six plants not referenced in this report and will be published shortly.
Actual test results from four additional plants will be available in the next few weeks.

The use of Sorbalit is therefore only in its beginnings. The modification of calcium hydroxide has opened up totally new areas of application for lime in the field of high technology.

6. Bibliography

(1) "17. Verordnung zur Durchführung des Bundesimmissionsschutzgesetzes vom 23.11.1990"
Bundesgesetzblatt Teil 1, 30.11.1990, Seite 2545

(2) "Warenzeicheneintrag M 65 749/1 Wz"
Deutsches Patentamt München

(3) Patents pending Europe EP 0 367 148 A 1
U.S. 07 - 302 593

(4) G. Kerber, "Rauchgasreinigung nach dem Trockenverfahren mit Sorbaliteinsatz zur Dioxinminderung
- Beispiel Müllheizkraftwerk Würzburg".
VDI-Seminar Dioxin- und NO_X-Minimierungstechniken
Düsseldorf 03./04.06.1991

(5) L.-P. Nethe, "Modifiziertes Calciumhydroxid zur Rauchgasreinigung hinter Verbrennungsanlagen"
Müllverbrennung und Umwelt-Band 4
EF-Verlag Berlin, S. 299 - 314

(6) TÜV Berlin, "Emissionsmessungen im Roh- und Reingas während des Probebetriebes II
Sondermüllverbrennungsanlage Schöneiche".
Technischer Bericht D 90/064 vom 28.02.1990

(7) G. Jungmann, "Gewebefiltereinsatz mit kohlenstoffangereicherter Precoat-Schicht"
VDI-Seminar "kombinierte und zukunftsweisende Rauchgasreinigungstechniken
München, 22./23.05.1990

(8) H. Jager, T. Obermeier, "SVA Schöneiche - verfahrenstechnisches und emissionstechnisches Gutachten",
ITU GmbH, Berlin, März 1990

(9) H.T. Kempin, "Betriebsergebnisse zur NO_X- und Dioxin-/Furanminimierung der MVA Berlin Ruhleben."
VDI-Seminar, Dioxin- und NO_X-Minimierungstechniken,
Düsseldorf 03./04.06.1991

(10) "Emissionsuntersuchungen Roh- und Reingas einer MVA"
Meßbericht GSB Schweinfurt

(11) L.-P. Nethe, "Fortschritt in der Dioxinminderung mit modifizierten Adsorbentien
Müllverbrennung und Umwelt - Band 5
EF-Verlag Berlin

(12) Brenn- und Explosionskenngrößen - "Ergebnisse einer Untersuchung des berufsgenossenschaftlichen Instituts für Arbeitssicherheit", Institut für Explosionsschutz und Sprengtechnik der Bergbau-Versuchsstrecke
Dortmund

(13) D. Böcker, und andere, "Edle Körner - feinkörniger Braunkohlenkoks - Energieträger und Reduktionsmittel"
Energie Jahrgang 35, H 3, 1983, S. 35 - 37

(14) D. Holl, "Emissionen nach unterschiedlichen Rauchgasreinigungsverfahren - Bestand und Neuanlagen", Handbuch VDI - Vortrag Nr. BW 8572

(15) D.D. Reimann, "Dioxinemissionen - Mögliche Techniken zur Einhaltung des zukünftigen Grenzwertes von 0,1 ng TE/m^3 VDI-Seminar Dioxin- und NO_X-Minimierungstechniken München 20./21.09.1990

Sorbalit®

Waste incinerator plant Berlin-Ruhleben

Capacity	7 x 7 t/h
Gas volume	7 x 35 000 Nm^3/h
Incinerator	Stoker
Flue-gas purification	Conditioned dry sorption -Dosing of **SORBALIT** -Reactor -Fabric filter
Flue-gas temperatur (before fabric filter)	165 ^{o} C
Quantity of SORBALIT	12 kg / t of garbage
Emission rate	SO_2 - 4 mg/Nm^3
	HCl - 4 mg/Nm^3
	Hg - 0,04 mg/Nm^3
	Dioxon/Furan - 0,06 ng TEQ/Nm^3

Sorbalit®

Waste incineration plant Marktoberndorf

Capacity	3	t/h
Gas volume	18 000	Nm^3/h
Incinerator	Stoker	
Flue-gas purification	-Dosing of **SORBALIT**	
	-Fabric filter	
	-Wet scrubber	
Flue-gas temperatur (before fabric filter)	160	°C
Quantity of SORBALIT	15	kg / t of garbage

Emission rate

SO_2	-	62	mg/Nm^3
HCl	-	6	mg/Nm^3
Hg	-	0,027	mg/Nm^3

Dioxon/Furan - 0,06 ng TEQ/Nm^3

Sorbalit®

Hazardous waste incineration plant

Schweinfurt

Capacity	2,5 t/h
Gas volume	28 000 Nm^3/h
Incinerator	Stoker
Flue-gas purification	Spray dryer
	-Slorry mixing station
	-Spray dryer
	-Fabric Filter
Flue-gas temperatur (before fabric filter)	165 °C
Quantity of SORBALIT	12 kg / t of garbage
Emission rate	SO_2 - 4 mg/Nm^3
	HCl - 4 mg/Nm^3
	Hg - 0,04 mg/Nm^3
	Dioxon/Furan - 0,06 ng TEQ/Nm^3

Sorbalit®

Waste incineration plant Zirndorf

Capacity	2 x 4 t/h
Gas volume	2 x 40 000 Nm^3/h
Incinerator	Stoker
Flue-gas purification system	-ESP -Wet scrubber -Dosing of **SORBALIT** -Fabric filter
Flue-gas temperature (before fabric filter)	110 °C
Quantity of SORBALIT	2 kg / t of garbage
Emission rate	SO_2 - 50 mg/Nm^3
	HCl - 10 mg/Nm^3
	Hg - <0,05 mg/Nm^3
	Dioxon/Furan - 0,1 ng TEQ/Nm^3

Sorbalit®

Waste to energy station Bonn

Capacity	3 x 6	t/h
Gas volume	3 x 30 000	Nm^3/h
Incinerator	Stoker	
Flue-gas purification	-Spray dryer	
	-ESP	
	-Wet scrubber	
	-Dosing of **SORBALIT**	
	-Fabric filter	
Flue-gas temperatur (before fabric filter)	110	°C
Quantity of SORBALIT	2	kg / t of garbage
Emission rate (guaranteed max.rate)	SO_2 - 30	mg/Nm^3
	HCl - 10	mg/Nm^3
	Hg - < 0,05	mg/Nm^3

Sorbalit®

Low temperatre incineration plant

KWU-SIEMENS Ulm-Bieblingen

Capacity	0,25	t/h	(Pilot plant)
Gas volume	13 000	Nm^3/h	
Incinerator	Rotary kiln		
Flue-gas purification system	- ESP -Spray dryer -Cyclon -Wet scrubber -Fabric filter		
Flue-gas temperature (before fabric filter)	110	^{o} C	
Quantity of SORBALIT	2	kg / t of garbage	
Emission rate	SO_2	- 45	mg/Nm^3
	HCl	- 10	mg/Nm^3
	Hg	- 0,018	mg/Nm^3
	Dioxon/Furan	- 0,017	ng TEQ/Nm^3

Sorbalit®

Low temperatur incineration plant Burgau

Capacity	2 x 3,5	t/h
Gas volume	2 x 18 000	Nm^3/h
Incinerator	Rotary kiln	
Flue-gas purification system	-Cyclon	
	-Dosing of **SORBALIT**	
	-Fabric filter	
Flue-gas temperatur (before fabric filter)	190	^{o} C
Quantity of SORBALIT	12 kg / t of garbage	
Emission rate	SO_2 - 17	mg/Nm^3
	HCl - 2	mg/Nm^3
	Hg - < 0,05	mg/Nm^3
	Dioxon/Furan - 0,09	ng TEQ/Nm^3

Sorbalit®

Waste to energy station GSB Geiselbullach

Capacity	3 x 6 t/h
Gas volume	3 x 35 000 Nm^3/h
Incinerator	Stoker
Flue-gas purification	Dry sorption -Dosing of **SORBALIT** -Reactor -Fabric filter -Recirculation system
Flue-gas temperatur (before fabric filter)	205-220 ^{o} C
Quantity of SORBALIT	25 kg / t of garbage
Emission rate	SO_2 - 70 mg/Nm^3
	HCl - 22 mg/Nm^3
	Hg - < 0,05 mg/Nm^3
	Dioxon/Furan - 0,019 ng TEQ/Nm^3

Sorbalit®

Hazardous waste incineration plant

Schöneiche

Capacity	2,3 t/h
Gas volume	31 000 Nm^3/h
Incinerator	Rotary kiln
Flue-gas purification	Conditioned dry sorption -Dosing of **SORBALIT** -Reactor -Fabric Filter -Recirculation system
Flue-gas temperatur (before fabric filter)	140 °C
Quantity of SORBALIT	12 kg / t of garbage
Emission rate	SO_2 - 20 mg/N^{m3} HCl - 9 mg/Nm^3 Hg - 0,02 mg/Nm^3 Dioxon/Furan - 0,03 ng TEQ/Nm^3

Sorbalit®

Waste to energy station Würzburg

Capacity	2 x 12,5 t/h
Gas volume	2 x 70 000 Nm^3/h
Incinerator	Stoker
Flue-gas purification	Dry sorption
	-Dosing of **SORBALIT**
	-Reactor
	-Fabric filter
	-Recirculation system
Flue-gas temperatur	210-240 ° C
Quantity of SORBALIT	20-25 kg / t garbage
Emission rate	SO_2 - 3 mg/Nm^3
	HCl - 5 mg/Nm^3
	Hg - 0,037 mg/Nm^3
	Dioxon/Furan - 0,03 ng TE/Nm^3

Sorbalit - modified calcium hydroxide for flue-gas purification

Jochen Blumbach, Lutz-Peter Nethe

1. Introduction

Refuse incineration plants have - unjustly - acquired an exceedingly bad reputation. There is barely another type of large-scale technical facility in which exhaust gas purification has experienced such a rapid course of development.

The initial requirement to retain visible impurities, such as dust, was quickly followed by the need to neutralise the acidic pollutants, such as hydrogen chloride, hydrogen fluoride and sulphur oxides.

Today, the public quite justifiably demands that exhaust gases should be purified as extensively as technical capabilities allow. This means that heavy metals, particularly mercury, must also be removed and, of course, "horror compounds" such as dioxins and furans.

The technology required for this purpose is available. This talk is intended to describe a new development in this field, and it will reveal this development to be optimal in both ecological and economic terms.

2. Dry sorption in refuse incineration plants

The "classical" purification processes which have been employed up to now are:

- wet cleaning
- spray sorption
- dry sorption
- conditioned dry sorption

A common feature of all these processes is that, although they adequately neutralise the exhaust gases, they nevertheless have problems with heavy metals and other ecotoxic substances.

This talk is concerned primarily with dry sorption, quite simply because the most comprehensive experience is available in this area.

In the dry sorption process, calcium hydroxide is injected into and mixed with the exhaust gas flow, in the course of which the neutralisation reactions take place and the solids are separated in filters. This process takes place at temperatures of between 180°C and 200°C.

Conditioned dry sorption refers to the practice of reducing this temperature to approximately 140°C by the addition of water.

The advantage of dry sorption is that it does not produce any waste water and guarantees simple and, subsequently, safe and reliable operation. It can be operated at a high temperature level, which is beneficial for subsequent denitration. Extremely low levels of dust emission can be attained by the use of fabric filters.

The otherwise excellent economic efficiency is limited by a high level of calcium hydroxide consumption, which is greater for pure dry sorption than for conditioned dry sorption. A further drawback, this time a technical one, has also applied to both processes up to now: the high level of mercury emission.

D. Holl from the Bavarian State Pollution Control Office has published data on this area from various flue-gas purification plants employed for refuse incineration operations (1):

On the basis of this information, the expected emissions are roughly as follows:

- 0.27 mg/m^3 for dry sorption with E filter
- 0.12 mg/m^3 for dry sorption with fabric filter (although more recent measurements have also revealed values of 0.2 mg/m^3 here)

And other processes are no better, either:
For spray sorption with fabric filter, a level of 0.18 mg/m^3 has been measured.

This data shows that it is not even possible to maintain a limit reliably below 0.2 mg Hg/m^3, let alone to comply with the requirements of the 17th Federal Pollution Control Directive (BImSchV) for Hg concentrations of < 0.05 mg/m^3. Additional emission minimisation measures are therefore necessary.

Such measures may involve the complete modification of plant configurations - the most obvious solution - or the use of modified calcium hydroxide - the intelligent and economical solution.

Why?

3. The modification of calcium hydroxide to minimise emissions

The basic material of calcium hydroxide is a substance with which mankind has been involved for thousands of years, above all as a building material. The earth's lime resources are quite inexhaustible, and processing capacities exist in all countries. This is not least of all the reason why hydrated lime is the most widespread lye in technical use. Hydrate is non-combustible and non-toxic. It reacts with carbon dioxide to form calcium carbonate - limestone. Limestone is relatively insoluble, which prevents it from being spread via the medium of water.

Hydrated lime is easy to handle for technical purposes, including in refuse incineration plants. It can be added to the exhaust gas flow in controlled doses in well tested conveyor systems, in which tried and tested facilities are available for mixing gases and solids. Separation by retention in filters, particularly fabric filters, can be carried out without any problems whatsoever.

It was therefore an obvious measure to make use of this tried and tested technology, whereby the objective was to employ the calcium hydroxide not only as a reagent, but also as a carrier for an adsorbing agent. This would ensure both the neutralisation and separation of acidic constituents from the exhaust gas flow and the adsorption of heavy metals and other ecotoxic constituents.

It appeared conceivable to select such adsorbent substances for separating individual substances on the one hand, and for a broad-ranging effect on the other hand.

Calcium hydroxide did actually prove to be the ideal carrier when certain processes were employed, above all because these adsorbent substances often require to be added reliably to the exhaust gas flow in only the most minute amounts and evenly distributed.

4. Laboratory experiments

For the experiments a plant was employed which could be operated with synthetically produced exhaust gas of typical composition in a temperature range of 100°C to 200°C. This enables a large number of substances to be checked for their suitability in the stated temperature range. In this way, the modification of calcium hydroxide was optimised and experience was acquired regarding the quantities required and the separating capacity of the adsorbent substance. This talk is concerned with open-hearth furnace coke as an adsorbing agent. The results of experiments with other substances will be provided on a separate occasion.

Table 1 shows the most important chemical and physical properties of open-hearth furnace coke in the form of coke dust (2).

Table 1

Analysis values for lignite coke

Brief analysis:		
Water content	% by weight	1.0
Ash content	% by weight	9.0
Volatile constituents	% by weight	3.5
Fixed carbon	% by weight	86.5
Calorific value (Hz)	kJ/kg	29 700
	kcal/kg	7 100
Oxide analysis of coke ash:		
SiO_2	% by weight	6
Al_2O_3	% by weight	4
Fe_2O_3	% by weight	10
SO_3	% by weight	11
CaO	% by weight	55
MgO	% by weight	12
$Na_2 + K_2O$	% by weight	2
Physical characteristics:		
Density	g/cm^3	1.90
Bulk density	g/cm^3	0.95
Specific surface	m^2/g	250
Spontaneous ignition temperature	^oC	300
Sulphur (wf)	% by weight	0.45

Table 2 shows the test results for the separation of mercury from a synthetic exhaust gas. The degree of separation was investigated in relation to the proportion of open-hearth furnace coke in the modified calcium hydroxide, for two different admixing processes.

These results clearly show that a good level of mercury separation is possible at the relatively high temperatures, whereby the degree of separation increases together with the proportion of open-hearth furnace coke.

Table 2

Mercury-separating capacity of open-hearth furnace coke (OHFC) - Laboratory experiments at 180 to 200 °C

Manner of adding OHFC to $Ca(OH)_2$	Proportion of OHFC %	Degree of separation %
OHFC suspended in slaking water for quick lime	2.5	68
	5.0	75
	10.0	88
OHFC added separately to the $Ca(OH)_2$	2.5	66
	5.0	75
	10.0	95

On the basis of similar experiments relating to other pollutants, it was concluded that substantial reductions could also be expected in the emissions of

- volatile heavy metals - cadmium, thallium, selenium and arsenic, in addition to mercury,
- chlorinated dibenzodioxins and dibenzofurans,
- other heavy chlorinated hydrocarbons, e.g. hexachlorobenzene and hexachlorocyclohexane,
- polychlorinated biphenyls - PCB,
- polyaromatic hydrocarbons.

On the basis of the extremely satisfactory laboratory results, it appeared justifiable to test modified calcium hydroxide on an operational scale, without any intermediate pilot phase, particularly as the required national and international patents for this process had by this time been filed.

5. Operational-scale experiments

The modified calcium hydroxide which had, in the meantime, been produced by means of a special process, was employed under the trade name of Sorbalit(R)*. OHFC is employed as the primary adsorbing agent.

---

* Sorbalit(R) is a registered trademark of the company Märker Zementwerk GmbH, Harburg.

5.1 Using Sorbalit in dry sorption

5.1.1 Waste-fuelled heating and power station of the GfA at Geiselbullach

The waste-fuelled heating and power station of the GfA waste disposal company disposes of the waste in the districts of Dachau and Fürstenfeldbruck, in the direct vicinity of Munich.

The waste is subjected to thermal processing on two lines with a capacity of 6 Mg/h and the resulting exhaust gases are purified in a dry sorption process. The exhaust gas purification plant is equipped with a cyclone dust separator, a mixing stage for thoroughly mixing the hydrated lime and the exhaust gas, and a fabric filter for separating the solid matter.

Sorbalit was tested in operation for the first time in this waste-fuelled heating and power station in January, 1989. Only the active substance was changed: instead of the customary hydrated white lime which was previously used, Sorbalit was employed, without any other changes.

In spite of the high temperatures, which occasionally reached 240 °C, it was immediately confirmed that the mercury emission level, which is normally in the range of 0.2 to 0.25 mg/m^3, can be reduced to well below 0.1 mg/m^3.

The operator of the plant subsequently commissioned dioxin measurements to be carried out. The results of the measurements, which were carried out by the Bavarian Technical Control Association (TÜV Bayern) and Prof. Hutzinger, University of Bayreuth, were presented to the public at a press conference on 18th May, 1990.

These results revealed that the dioxin concentration is 2.2 ng TEQ/Nm^3 in the untreated gas and markedly less than 0.1 ng TEQ/Nm^3 in the purified gas. The

calculations were carried out in accordance with the international toxicity equivalence factors.

These experiments showed that Sorbalit is suitable for separating dioxins and furans, even in the high temperature range of 180 to 220°C.

Due to the good separating results for mercury and dioxins, Sorbalit has been in continuous use at this plant since May, 1990.

5.1.2 Würzburg heating and power station

The heating and power station at Würzburg possesses two lines for incinerating domestic refuse, each with a capacity of 12.5 Mg/h. The temperature of the exhaust gases down-line of the boiler is reduced to a range of 180 to 200°C by means of water cooling.

The calcium hydroxide is mixed with the exhaust gas in a following fluidized bed reactor. The fluidized bed reactor also acts as a preliminary filter, before the exhaust gases are purified in a fabric filter, in accordance with the state of the art.

In the spring of 1989, tests were carried out with Sorbalit of varying composition at this plant; here again, only the active substance was changed.

The dioxin and furan emissions were reduced from 9 - 10 ng TEQ/Nm^3 to 0.02 - 0.06 ng TEQ/Nm^3. Sorbalit also displayed its effectiveness in reducing mercury emissions: the levels were reduced from 3 mg/Nm^3 to < 0.05 mg/Nm^3.

5.2 The use of Sorbalit in conditioned dry sorption

Pollutive waste incineration plant at Schöneiche

The pollutive waste incineration plant at Schöneiche in the former GDR is designed for a waste throughput rate of 2.3 Mg/h. The exhaust gases down-line of the boiler are cooled to a temperature of 140°C by the addition of water. The volumetric flow rate is then 25,000 m^3/h. Prior to the use of Sorbalit, standard hydrated lime was employed as the adsorbing agent.

The operator of the plant decided to use Sorbalit, as this was the only way in which the approved limits for mercury could be complied with.

The tests were accompanied by measurements carried out by the Berlin Technical Control Association (TÜV) (3).

An overall summary of the most important results of the measuring work has been drawn up by Jungmann, Zürich (4).

Mercury measurements were carried out on the purified gas on 5th Jan., 1990 and 9th Jan., 1990. The measurements revealed values of 0.012, 0.033, 0.043 and 0.053 mg/m^3. These figures represent values well below the maximum limit for mercury in purified gas as stipulated in the 17th Federal Pollution Control Directive (BImSchV). Since this time, over 80 measurements have been carried out, each revealing barely detectable concentration levels.

It should be pointed out in particular that the operational tests with substantially lower levels of OHFC content in the Sorbalit produced considerably better results than the laboratory experiments.

Further tests were carried out regarding the separation of special organic pollutants, in particular dioxins and

polychlorinated biphenyls.

Table 3 shows the respective levels of dioxin content in the untreated and purified gas as measured in the test run from 20th Dec., 1989 to 6th Feb., 1990. The table reveals that in four out of six measurements the dioxin content level was no more than 0.03 ng TEQ/Nm³ in the purified gas. Only when the untreated gas contained 5.4 ng TEQ/Nm³ was a level of 0.12 ng TEQ/Nm³ measured in the purified gas. In two cases, the level dioxin concentration was even undetectable. The separation levels fluctuate from 95.6 to 100 %.

Table 3

Dioxin content levels in the untreated and purified gas at the Schönecche pollutive waste incineration plant, measurements carried out from 20th Dec., 1989 to 6th Feb., 1990

Date	Untreated gas	Purified gas	Separation level
20.12.89	1,73 ng TEQ/Nm^3	0,03 ng TEQ/Nm^3	98,3 %
21.12.89	5,44 ng TEQ/Nm^3	0,12 ng TEQ/Nm^3	93,8 %
26.01.90	1,26 ng TEQ/Nm^3	0,022 ng TEQ/Nm^3	98,3 %
31.01.90	0,34 ng TEQ/Nm^3	0,015 ng TEQ/Nm^3	95,6 %
02.02.90	1,05 ng TEQ/Nm^3	undetectable	100,0 %
06.02.90	1,74 ng TEQ/Nm^3	undetectable	100,0 %

On 11th Feb., 1990, the level of polychlorinated biphenyls in the untreated and purified gas was also measured. The measured values are shown in Table 4. The level of PCB content in the untreated gas was 130 ng/m^3, in the purified gas the various types of PCBs were no longer detectable.

Table 4

PCB content levels in the untreated and purified gas at the Schöneiche pollutive waste incineration plant when using Sorbalit, measurements on 11th Dec., 1990

PCB type	Content level in untreated gas ng/m^3	Content level in purified gas ng/m^3
Monochlorobiphenyls	< 1	< 1
Dichlorobiphenyls	< 1	< 1
Trichlorobiphenyls	10	< 2
Tetrachlorobiphenyls	18	< 3
Pentachlorobiphenyls	30	< 3
Hexachlorobiphenyls	38	< 2
Heptachlorobiphenyls	34	< 2
Octachlorobiphenyls	30	< 1
Nonachlorobiphenyls	24	< 1
Decachlorobiphenyls	14	< 1
Total PCBs	130	

The excellent rate of separation for the polychlorinated biphenyls also justifies the assumption that additional heavy superchlorinated compounds, such as hexachlorobenzene and hexachlorocyclohexane, can be removed from the exhaust gas flow. The separation rates for the polyaromatic hydrocarbons cannot be established until the relevant measurements are available. A high level of separation is expected, however.

The company Ingenieurgemeinschaft Technischer Umweltschutz GmbH accompanied and verified the measurements carried out on the Schöneiche pollutive waste incineration plant by TÜV Berlin in the capacity of a neutral specialist organisation. The companies findings with regard to dioxin emission include the following statement, contained in (5), page 4:

"After modification of the flue-gas purification process, measured values have also been established for

these emissions which indicate that the proposed limit of 0.1 ng TEQ/Nm^3 can be attained under the test conditions.
The Schöneiche pollutive waste incineration plant is therefore the first plant in Germany to demonstrate this standard."

It should be emphasized in particular that these outstanding levels for the purified gases were attained without any modifications to the plant and modification of the exhaust gas purification system.
The viability of the concept of improving flue-gas purification via the use of modified calcium hydroxide is thus confirmed. The exhaust gas purification system at the Schöneiche pollutive waste incineration plant has been operating with Sorbalit since December, 1989. No problems have occurred as yet.

5.2.2 Refuse incineration plant at Berlin-Ruhleben

The Berlin-Ruhleben refuse incineration plant possesses 7 incineration lines.
Down-line of the boiler, the exhaust gas temperature is reduced to 140°C, after which hydrated lime is added for the purpose of neutralisation. Dust removal is carried out by means of a fabric filter.

Due to the outstanding results obtained with Sorbalit at the Schöneiche pollutive waste incineration plant, large-scale trials were also carried out here. Although the measurement results have yet to be published, it can be concluded that the problem of mercury emission has been solved in convincing manner and that the level of dioxin emissions is also well below the stipulated limit of 0.1 ng TEQ/Nm^3. This is the only way in which the operator's decision to refit the plant for operation with Sorbalit can be interpreted (cf. also Table 5).

5.3 Summary of measured values

Table 5 shows the results of the tests carried out on the above-stated plants. It also demonstrates that the use of Sorbalit is not restricted to dry sorption and conditioned dry sorption. Values for a low-temperature incineration plant with wet washing system and down-line fabric filter are also included. Here again, the mercury and dioxin absorption rates are in the same range as those for the other plants. The proportion of polyaromatic hydrocarbons and polychlorinated biphenyls in the untreated and purified gas were additionally measured here. The excellent adsorbent capacity of Sorbalit is confirmed here by the reduction from 0.169 ng/m^3 to 0.011 ng/m^3 of polyaromatic hydrocarbons and polychlorinated biphenyls, a level which is barely detectable.

6. Safety aspects

As Table 1 showed, open-hearth furnace coke is a combustible material. Safety aspects therefore require consideration with regard to the risk of fire and explosion.

Tests carried out by the Bergbauinstitut (Mining Institute) in Dortmund have revealed that Sorbalit is not subject to a danger of explosion up to an OHFC content level of 35%. This means that Sorbalit can be treated in the same manner as standard hydrated lime up to this limit. No modifications to the transportation vehicles, silo facilities and dosing facilities are therefore required.

No problems relating to the combustibility of Sorbalit are known with regard to the operation of exhaust gas purification plants whose temperatures are reliable maintained in the range of 140 °C.

Problems are to be expected at temperatures above 200°C however, unless precautionary measures are undertaken.

Overheating may occur at two points in the plants under unfavourable conditions, in each case involving used, and not fresh Sorbalit:

- discharge from the fabric filter

- discharge from the silo for used Sorbalit ("used lime silo")

Problems occurred during discharge from the fabric filter at Geiselbullach waste-fuelled heating and power station, while malfunctions relating to discharge operations from the "used lime silo" applied at the waste-fuelled heating and power station at Würzburg.

Analysis of the malfunctions revealed the following:

In each case, overheating of the material was preceded by discharging problems.

The static layers of used material become increasingly hotter, as the carbon is combusted when oxygen is present. The resultant heat cannot be discharged in the static material, and in this way the spontaneous ignition temperature of the used Sorbalit is reached, which for a 5% HCK concentration, for example, is around 340°C.

Although no fire results, the hydrated lime contained in the Sorbalit reacts with the CO2 which is produced, to form calcium carbonate. This calcium carbonate becomes caked together and renders discharge of the material difficult or impossible.

These problems can be solved via relatively simple measures on the basis of this explanation: blockages in the discharge of used Sorbalit must be avoided.

Measures for identifying transportation difficulties were therefore carried out at the waste-fuelled heating and power stations of the GfA at Würzburg and Berlin-Ruhleben. Blockages during discharge of the hot, used Sorbalit from the fabric filter chamber can be detected via level indicators. Temperature indicators were also installed. In the event of a blockage actually occurring now, the chamber or the silo can be rendered inert with nitrogen.

Overheating in the silo is similarly prevented by carrying out discharge operations under nitrogen and ensuring that no inlet of air is possible.

These measures have proven highly successful at Geiselbullach since May, 1990.

7. Treatment of residual substances

In accordance with the technical directive for waste subject to particularly stringent control requirements, which came into effect on 1st October, 1990, the reaction products from the exhaust gas purification process are classified as substances which are either to be disposed of at a landfill site for pollutive waste or deposited underground. This is necessary on account of the high proportion of salt, heavy metal and dioxin content involved. The use of Sorbalit does not result in any fundamental change with regard to this assessment. The reaction products from the exhaust gas purification process are already polluted with heavy metals and dioxins, prior to adding any adsorbing substances.

In the case of the plants currently in operation, the residual substances are disposed of at monitored landfills belonging to the operators.

It is planned, however, to transport the reaction products from the plants at Geiselbullach and Würzburg to the mining landfill at Heilbronn. This is the most effective manner of solving the problem of the reaction products from the exhaust gas purification process which are classified toxic. An additional alternative would involve solidifying the substances with the aid of cement, a process which is also already employed.

When Sorbalit is employed down-line of wet washing systems, the situation is incomparably more favourable. First of all, the specific consumption rate for Sorbalit is much lower, amounting to only around 10 % of the consumption rate for dry sorption. Furthermore, the used Sorbalit contains a lower level of mercury contamination.
In these cases, disposal thus represents no problem - the used Sorbalit can be reinjected into the combustion chamber, to destroy any dioxins which may still be present.

Reference should be made to the level of dioxin content in the used Sorbalit. The dioxin balance revealed an expected concentration of 93000 ppt TE for used Sorbalit from the Schöneich plant. However, in actual fact, a value of only 238 ppt TE was established (7). Assuming that the dioxin is desorbable, this means that 97.5% of the absorbed dioxins and furans were no longer detectable.

8. Summary and outlook

The objective of the development concept for Sorbalit was to modify the calcium hydroxide previously employed in waste incineration plants in such a manner as to make it suitable as a carrier for absorption materials and in this way to minimise the emissions of ecotoxic substances. This paper has described the modification of open hearth furnace coke and presented the initial results.

When Sorbalit is employed with an OHFC content level of 2 - 3 %, emission values of

- < 0,05 mg Hg/Nm^3 for mercury
- < 0.1 ng TEQ/Nm^3 for dioxins and furans
- below the detectable limit for PCBs
- below the limit emission for PAHC

are reliably attained.

The use of Sorbalit in dry sorption and conditioned dry sorption processes furthermore entails considerable advantages with regard to the process engineering involved. Tried and tested facilities which are already available, from the supply silo, through conveyance and dosing facilities to the mixing lines, filters and checking facilities, all remain in use. The use of fabric filters is particularly effective. Residual dust levels of < 10 mg/m^3 can be attained, and values of 1 mg/m^3 are quite realistic.

This good separating capacity is also of importance with regard to the use of Sorbalit, as it means that Sorbalit to which the separated pollutants are attached is not emitted.

The flow-treatment process, that is, the introduction of Sorbalit into the exhaust gas flow, followed by vortexing of the flow and subsequent separation on the

fabric filter, can be installed as a "Sorbalit stage" down-line of any incineration plant.

This is therefore a universally applicable process. Consequently, numerous areas of application are envisaged for Sorbalit in the field of exhaust gas purification, some of which have already been put into practice.

In dry sorption processes, Sorbalit is employed to separate the acidic pollutants and, at the same time, to minimise other ecotoxic pollutants. After washers which do not require neutralisation, limestone powder or other fine-ground materials could be used as the carrier for the adsorbing agent.

The Sorbalit stage for separating volatile inorganic and organic substances can be integrated into the exhaust gas purification systems of the most diverse processes:

- refuse incineration plants, pollutive waste incineration plants and sewage sludge incineration plants
- large-scale furnaces
- power stations
- furnaces in the glass-manufacturing and ceramic industries
- wood-drying plants
- steelworks
- aluminium works

The combination of fine-powdered calcium hydroxide as an alkaline carrier with additives of adsorbing substances is thus suitable for diverse applications, whereby the precise adsorbent additives and dosages can be selected for the specific case of application concerned.

The use of Sorbalit with the described plants is therefore only in its beginnings. The modification of calcium hydroxide has opened up totally new areas of applications for lime in the field of high technology.

9. Bibliography

(1) Holl, D.: Emissionen nach unterschiedlichen Rauchgasreinigungsverfahren - Bestand und Neuanlagen. Handbuch des VDI-Bildungswerkes, Vortrag Nr. BW 8572

(2) Böcker, D., and others: Edle Körner - Feinkörniger Braunkohlenkoks - Energieträger und Reduktionsmittel. Energy, volume 35, no. 3; 1983, pp. 35-37

(3) TÜV Berlin, Technical Report D 90/064 of 28th Feb., 1990. Emissionsmessungen im Roh- und Reingas während des Probebetriebes II. Sondermüllverbrennungsanlage Schäneiche

(4) Jungmann, G.: Gewebefiltereinsatz mit kohlenstoff-angereicherter Precoat-Schicht sowie Schockabkühlung für Minimalemissionen. Handbuch des VDI-Bildungswerkes, BW 9909, VDI conference on combined, pioneering flue-gas purification processes, Munich, 22nd/23rd May, 1990

(5) SVA Schöneiche - Verfahrenstechnisches und Emissionstechnisches Gutachten der ITU-Ingenieurgemeinschaft Technischer Umweltschutz GmbH Dr. Jager, Dr. Obermeier, Berlin, March 1990

(6) Brenn- und Explosionskenngrößen, results of an investigation project carried out by the Berufsgenossenschaftliches Institut für Arbeitssicherheit, Institut für Explosionsschutz und Sprengtechnik der Bergbau-Versuchsstrecke Dortmund-Derne

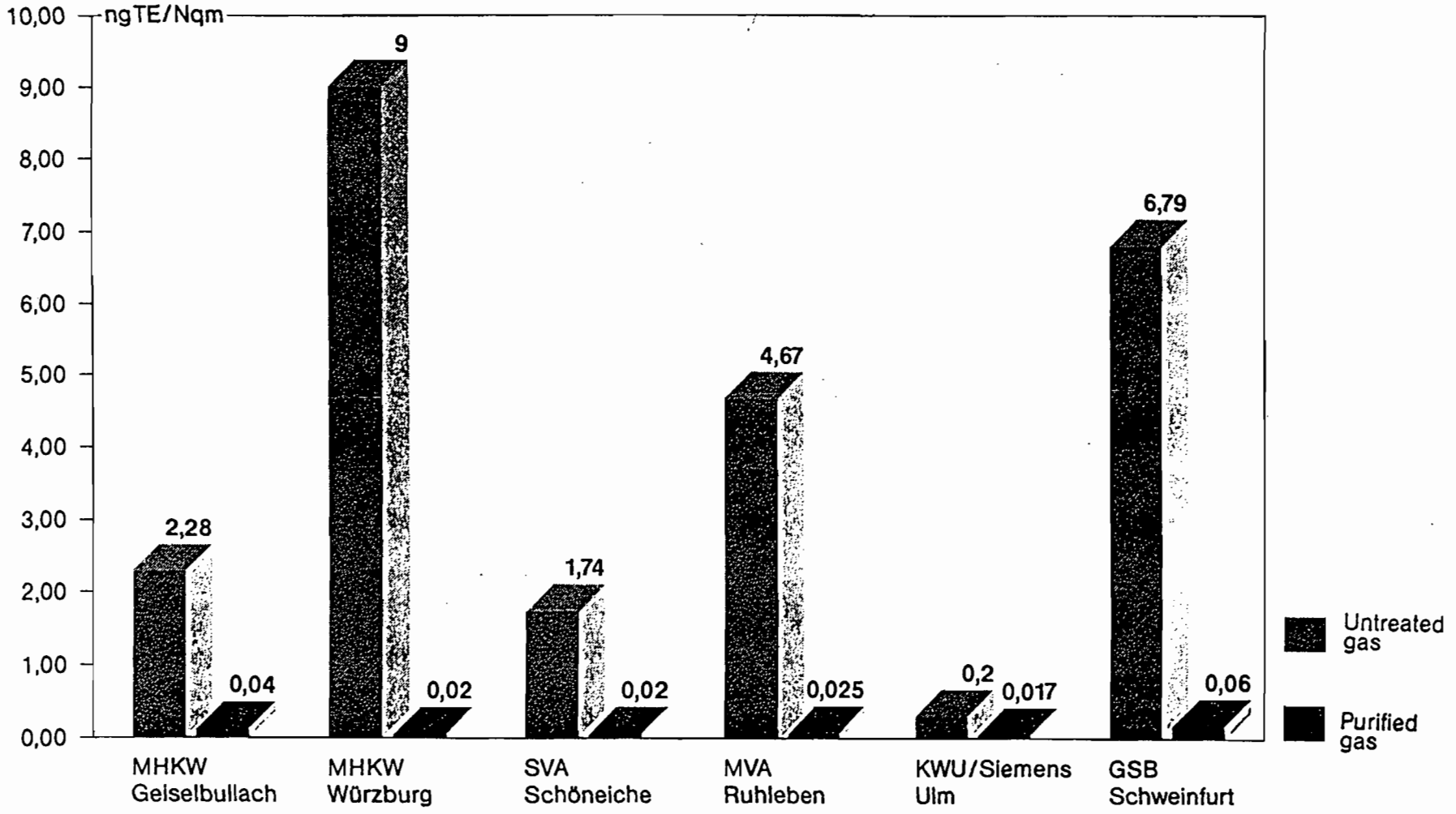
(7) Results of analysis work and TCDD equivalents on used Sorbalit, Ökometrik GmbH, Bayreuth, 14th Aug., 1990

Table 5

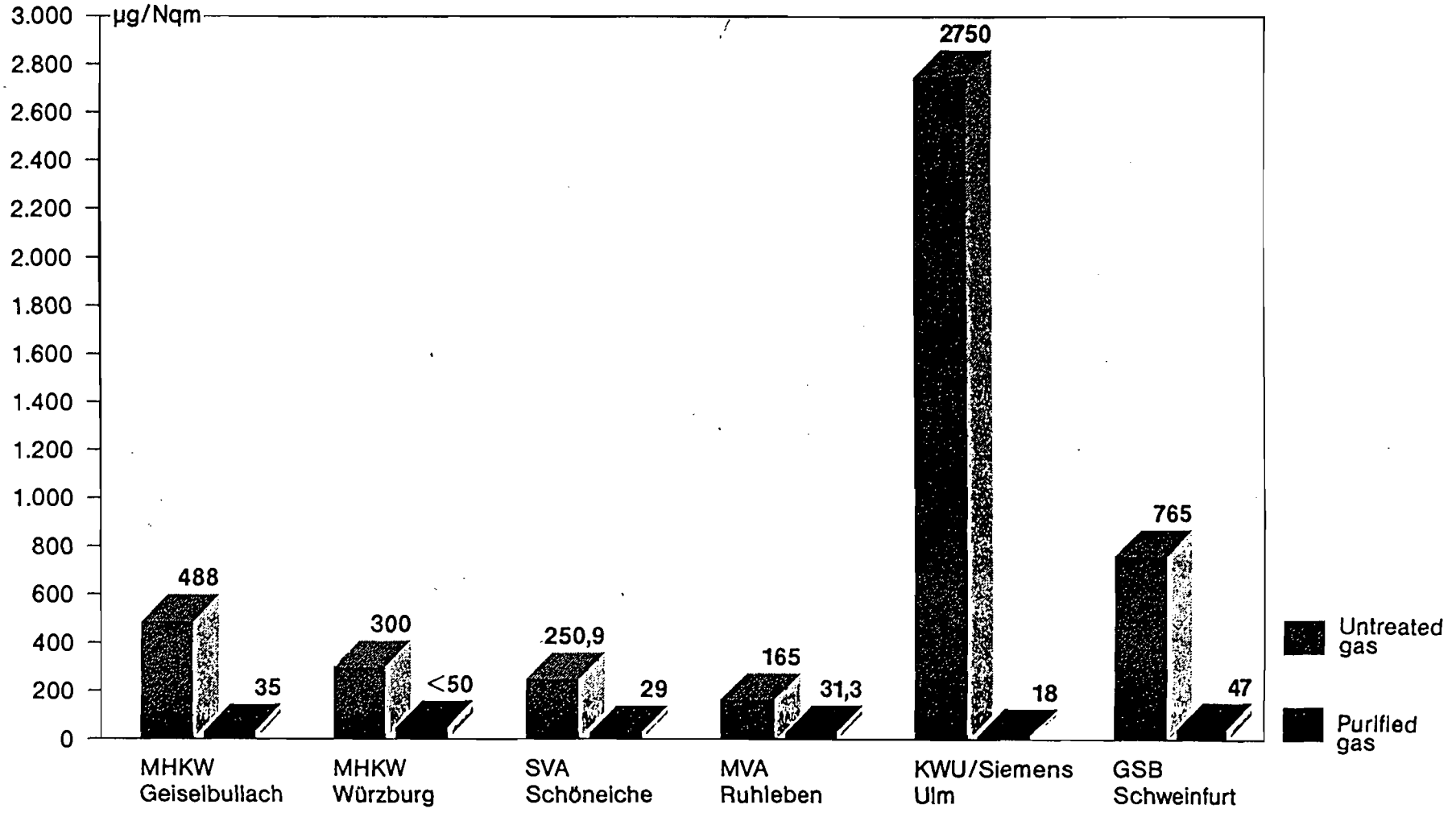
Use of Sorbalit in waste incineration plants – a summary

Plant	Flue-gas purification	OHFC content	Dioxins ng TEQ/Nm³ Untreated gas	Dioxins ng TEQ/Nm³ Purified gas	Mercury µg/Nm³ Untreated gas	Mercury µg/Nm³ Purified gas	PCB ng/m³ Unt. gas	PCB ng/m³ Pur. gas	PAHC µg/Nm³ Unt. gas	PAHC µg/Nm³ Pur. gas
Waste-fuelled heating and power station, Geiselbullach	Dry sorption	3 %	2,28	0,04 – 0,08	109 – 488	9,0 – 35,0	–	–	–	–
Waste-fuelled heating and power station, Würzburg	Dry sorption	3 %	9,0 – 10,7	0,02 – 0,06	300	< 50	–	–	–	–
Pollutive waste incineration plant, Schöneiche	Conditioned dry sorption	2 %	0,34 – 1,74	n. d. – 0,022	180 – 250,9	2,5 – 29,0	130	n. d.	–	–
Waste incineration plant, Ruhleben	Conditioned dry sorption	2 %	4,67 – 23,77	0,025 – 0,092	165 – 546	31,3 – 94,8	–	–	–	–
Siemens-KWU low-temp. incineration plant, Ulm-Wieblingen	Wet washer with down-line fabric filter	5 %	0,2	0,017	2750 (before wet washer)	18	50	n. d.	0,169	0,011
Pollutive waste incineration plant, GSB Schweinfurt	Spray Dryer fabric filter	3 %	6,79 – 11,59	0,06 – 0,085	40 – 765	8,0 – 47	–	–	–	–

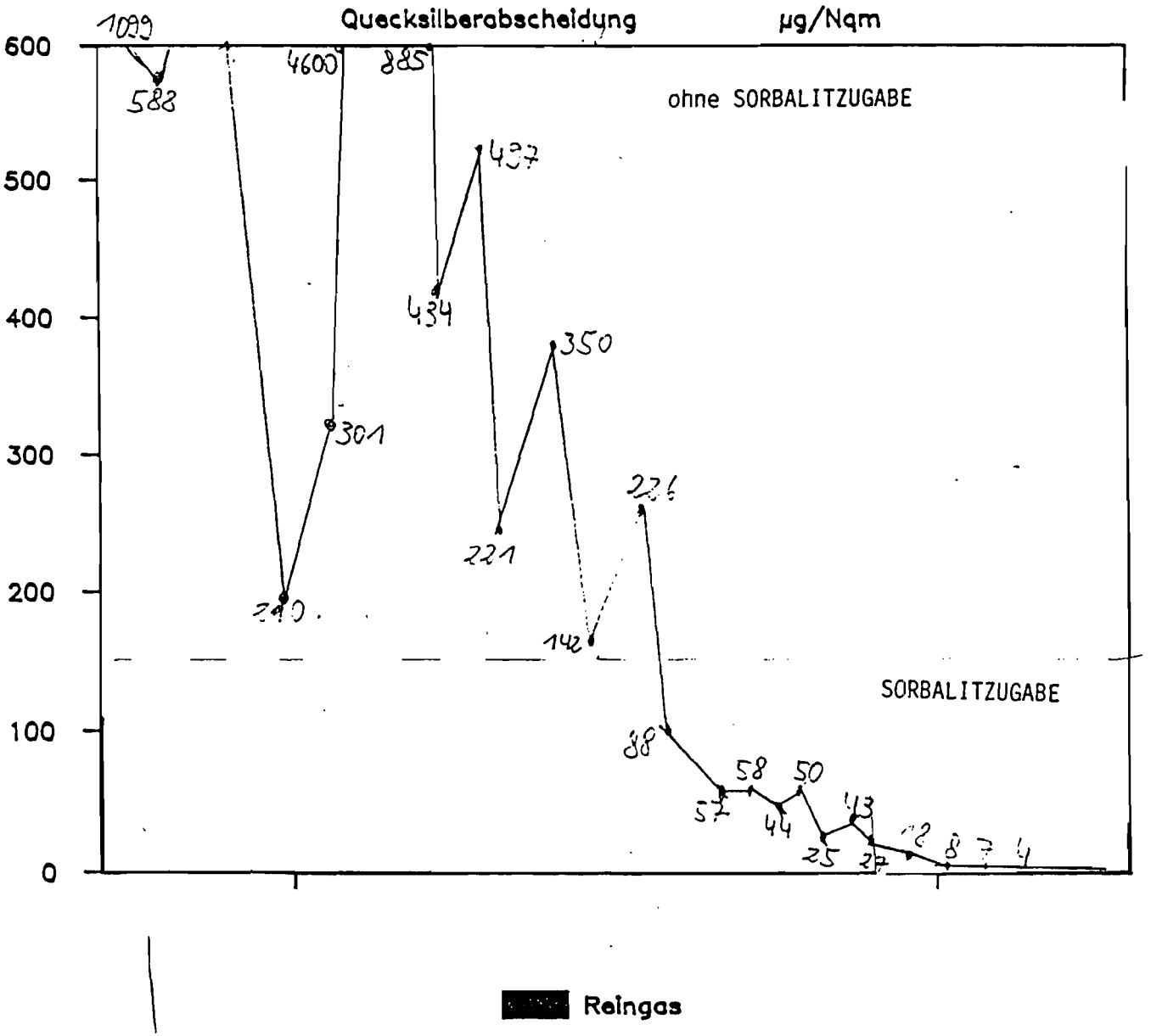
Dioxin reduction by Sorbalit®



Mercury reduction by Sorbalit®



MHKW Geiselbullach Sorbalit

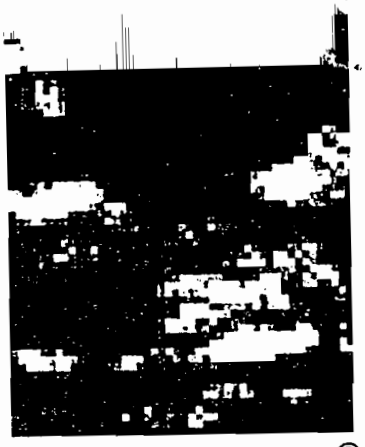


Quecksilber-Gehalte des Roh- und Reingases

einer Müllverbrennungsanlage mit Trockensorption

mit und ohne S O R B A L I T

mit und ohne Abgas temperatur senkung



Sorbalit®

Rohgas Hg µg/m³	Abgastemperatur °C	Reingas Hg µg/m³	Abgastemperatur °C
	190	1099	190
		588	
		714	
		210	
573		301	
4590		4500	
964		885	
615		434	
541		497	
260		221	
316		350	
180		142	
278		226	
		S O R B A L I T	
245	190	88	190
188		57	
308		58	
396		44	
350	190	50	175
597		25	
250		43	
594	190	27	165
465		18	
253		8	
198		7	
164		4	

An Alternative Economic Approach to Mercury and Dioxin Control for MWCs

Anthony Licata
President
Licata Energy & Environmental Consultants, Inc.
345 Concord Road
Yonkers, NY 10710

Jim W. McKee
Regional Sales Manager
Dravo Lime Company
Longview Division
P.O. Box 37
Saginaw, AL 35137

Lutz-Peter Nethe
Manager
Märker Umwelttechnik
Oskar-Marker-Str. 24
D-8856 Harburg
Germany

Presented at

ASME Solid Waste Processing Division
Eastern Chapter Meeting
Tampa, Florida
September 21, 1993

1. INTRODUCTION

The endeavor to improve the existing state of technology, and the widespread concern with certain emissions at solid and hazardous waste-treatment facilities is at the root of technical progress. This concern is not only expressed in public opinion and regulations, but also by the owners and operators of MWC facilities who also desire reduced emissions.

The main reasons for their concern are:

- The higher than desired emission of mercury, an index element for volatile heavy metals.
- The higher than desired emission of dioxins and furans, an index for various organic compounds.

The above mentioned concerns have had several results. On the one hand, environmental control agencies all over the world have sought to reduce emission rates by the implementation of new regulations; for example, Germany's 17th Federal Regulation on Emission Protection (1), the Clean Air Act Amendments of 1990 in the united States, and recent regulatory action in New Jersey and Florida. In other cases, concern and regulatory uncertainty has delayed the implementation and permitting of projects.

A process is presented in this paper that has already stood its test in Europe and has been demonstrated in the U.S.

Basically, the process consists of two components:

1. A specially developed agent characterized by a high adsorption material focusing on the toxic elements, and
2. Air pollution control systems used by various types of combustion sources including MWCs, which provide through agitation, a vortexing of the adsorbing agent mixture in a collection devise, usually a fabric filter or ESP.

The aim of this paper is not the discussion of theoretical background problems but the presentation of field test results which illustrate applications that reduce the concerns related to mercury and dioxins based on practical experience. The adsorbing agent will be briefly described and results concerning various types of air pollution control systems will be presented.

2. THE SORBALIT® SYSTEM

Sorbalit is a patented system not a product. The Sorbalit agent (sorbent) is produced by mixing lime, either calcium hydroxide ($Ca(OH)_2$) or quick lime (CaO), with surface-activated substances such as activated carbon or lignite, coke and sulfur-based components in a special process.

In the Sorbalit process, a homogeneous powder is produced that will not dissociate (demix) when used in air pollution control systems. It is particularly important to avoid flotation or separation of the carbon and sulfur substances which have been added to the lime. In order to maintain product uniformity and effective levels of air pollution control, the components must stay in suspension from the manufacturing process through transportation and the air pollution control system. The basis for the Sorbalit System is their proprietary mixing technology.

In its simplest form, the air pollution control system consists of a pipe, into which dosed Sorbalit is injected into the flue gas, plus a fabric filter or ESP which is located down stream. This simple solution has an economic advantage in that it can easily be integrated in existing plants without have to expend significant capital for new equipment.

The following Sections deal with the Sorbalit application for the air pollution control systems usually employed in various waste treatment plants. These systems include dry, dry/water conditioning, and spray dryer technologies. They also demonstrate the improved reduction in emission values obtained with this process. Typical application of Sorbalit using these three technologies are illustrated in Drawings 1, 2 and 3.

3. AREAS OF APPLICATION

3.1 Dry Sorption Process

Würzburg Waste-to-Energy Plant

The waste-to-energy plant at Würzburg has two process lines for converting municipal solid waste to energy. Each line has a capacity of 12.5 Mg/h (330 T/D). The temperature of the flue gas down stream of the boiler is reduced to 180 to 200°C (356 to 392°F) by means of water cooling.

Prior to the application of the Sorbalit System, hydrated lime was injected into the flue gas, in a fluidized bed reactor to control, the emission of acid gases. The fluidized bed reactor acts as a preliminary filter before the flue gases are cleaned in a pulse jet fabric filter.

In the spring of 1989, tests were conducted to evaluate switching from hydrated lime to Sorbalit. The dioxin and furan emissions were reduced from 9 - 10 ng TEQ/Nm^3 when normal lime was used, to 0.02 - 0.06 ng TEQ/Nm^3, a 200 time reduction, when Sorbalit was used (Figure 1). Sorbalit also displayed its effectiveness in reducing mercury emissions (Figure 2).

As can be seen from Figure 2, the use of Sorbalit reduces the emission of mercury to a level below the German limit of 50 $\mu g/Nm^3$ at 11% O_2. What is remarkable is the fact that this result was achieved without any modification of the plant configuration. The overall reduction of Hg is limited by the relatively high flue gas temperature of the facility. Unfortunately, due to the design limitations of this plant, the flue gas temperature can not be lowered, which would reduce the emission of mercury and thereby lower their consumption rate of Sorbalit.

3.2 Dry/Wet Conditioned Sorption Process

Hazardous Waste Incineration Plant Schöneiche/Berlin

The hazardous waste incineration plant at Schöneiche, in the former GDR, is designed for a waste capacity of 2.3 Mg/h (60 T/D). The flue gases down stream of the boiler are cooled to a temperature of 140°C (284°F) by the injection of water. The gas volume rate during the test was 31,000 Nm^3/h (19,657 scfm).

The operator of this plant decided to use Sorbalit, as this was the only way in which the approved limits for mercury could be achieved without the addition of new control equipment. Prior to the use of Sorbalit, standard hydrated lime was employed as the adsorbing agent.

The tests were accompanied by measurements carried out by the Berlin Technical Control Association (TUV). An overall summary of the most important results of the measuring work have been prepared by Jungmann of Zurich.

In January, 1990, mercury measurements were carried out on the untreated flue gases before and after the injection of Sorbalit. The measurements are shown in Figure 3.

These figures represent values well below the maximum emission limit for mercury as stipulated in the 17th Federal Pollution Control Directive (17.BimSchV). Since that time, over 80 measurements for mercury have been carried out, each revealing barely detectable concentration levels.

It should be pointed out that these operational tests were conducted with a substantially lower carbon content (3% C) in the Sorbalit than in the original laboratory experiments (10% C). The field tests with 3% carbon demonstrated better results than the laboratory tests conducted with 10% carbon.

Figure 4 shows the respective levels of the dioxin concentration in the untreated and in the cleaned flue gases. The dioxin concentration in the Sorbalit treated flue gas was in some cases undetectable. The removal levels fluctuate from 95.6 to 100%.

The concentration of polychlorinated biphenyls (PCBs) in the untreated and in the cleaned flue gas was also measured. The values measured are shown in Table 1. The level of PCB content

in the untreated flue gas was 130 ng/Nm³; in the cleaned flue gas the various types of PCBs were no longer detectable.

The excellent rate of removal of the polychlorinated biphenyls also justified the assumption that additional heavy superchlorinated compounds such as hexachlorobenzane and hexachlorocyclohexane can be removed from the flue gases. The separation rates for the polyaromatic hydrocarbons cannot be established until the relevant measurements are available, however, high levels of removal are expected.

It should be emphasized again that these outstanding levels for the treated cleaned flue gases were attained without any modifications to the plant or the air pollution control system.

The viability of the concept of improving a flue gas cleaning system via the use of modified calcium hydroxide is thus confirmed. The air pollution control system at the Schöneiche hazardous waste incineration plant has been operating with Sorbalit since December, 1989. About 50 dioxin measurements have been taken since; at no time have the limits been exceeded.

3.3 Spray Dryer System

Hazardous Waste Incineration Plant Schweinfurt

At the hazardous waste plant at Schweinfurt 2.5 Mg/h (66 T/D) of hazardous waste are converted to energy. The flue gas volume rate is 28,000 Nm³/h (17,755 scfm). The original plant consists of a pebble lime slurry preparation station with a spray dryer and a fabric filter. In the retrofit, instead of the traditional lime slurry, a Sorbalit suspension was employed, with no further modifications to the plant being employed. The results are shown in Figure 5 for dioxins and in Figure 6 for mercury.

What appears remarkable is the fact that based on these convincing results, the test run was immediately followed by continuous operation.

4. Safety Aspects

The use of any technology which utilizes carbon injection requires consideration with regards to the risk of fire and explosion, even when used in small quantities. However, since Sorbalit is a mixture of lime and a carbon material, the smoldering and flash point of the carbon are raised beyond any anticipated temperatures that can be expected with normal handling procedures.

No problems relating to the combustibility of Sorbalit are known with regard to the operations of air pollution control systems whose gas temperatures are maintained in the range of 140°C (284°F). Problems may occur at facilities where the flue gas temperature exceeds 200°C (392°F) unless operating and design precautionary measures are taken. The exothermic reaction of lime

can add 90°C (194°F) to the gas temperature of 200°C which brings the total temperature close to the smoldering temperature of carbon.

Overheating of the carbon may occur at two points in operating plants under unfavorable conditions. These conditions involve only used and not fresh Sorbalit:

- Discharge from the fabric filter or ESP hoppers
- Discharge from the storage silo for used Sorbalit and flyash

It is important to note that in a retrofit application, if the project is not experiencing problems with the plugging of hoppers under present operating conditions, they should will not have any problems when Sorbalit is used. If the plant is having hopper plugging, the potential problems can be solved via relatively simple measures:

- Any blockage in the discharge hoppers of used Sorbalit must be avoided (use extra rappers and/or change the discharge valve).
- Blockages during discharge of the hot, used Sorbalit from the fabric filter hopper can be detected via level indicators (install level detectors).
- Temperature indicators have to be installed.
- In the event of a blockage actually occurring, the hopper can be rendered inert by a simple (manual) injection of nitrogen or CO_2.

Overheating in a discharge storage silo, if used, is similarly prevented by carrying out discharge operations under a nitrogen blanket to prevent infiltration of air. These measures have proven highly successful and are the only additional measures recommended in the use of Sorbalit. **More substantial safety measures will have to be utilized when employing other carbon based technologies.**

5. Summary and Outlook

The objective of the development concept for Sorbalit was to modify the lime based sorbents previously employed at various sources of combustion in such a manner as to make it suitable as a carrier for absorption materials and; in this way, to minimize the emissions of ecotoxic substances. This paper has described and presented the initial operating results from various combustion facilities.

When Sorbalit is employed, the following emission values are reliably attained:

* < 50 μg mg Hg/Nm^3 for mercury at 11% O_2 (70 μg at 7% O_2)
* < 0.1 ng TEQ/Nm^3 for dioxins and furans at 11% O_2
* Below the detectable limit for PCBs
* Below the emission limit for PAHC

Furthermore, the use of Sorbalit in waste combustion processes entails considerable advantages with regard to the process engineering involved. Tried and tested facilities which are already available, from the supply silo through conveyance and dosing equipment to the mixing lines, filters, and flow controllers, all remain in use.

The use of fabric filters is particularly effective. Residual dust levels of < 10 mg/Nm^3 (0.004 grs/scf) at 11% O_2 can be attained and; values of 1 mg/Nm^3 (0.0004 grs/scf) are quite realistic. This good separating capacity is also of importance with regard to the use of Sorbalit, as it means that Sorbalit, to which the separation pollutants are attached, is not emitted and the sorbent usage is reduced.

As a rule of thumb, if an ESP is utilized instead of a fabric filter, it requires approximately twice the amount of Sorbalit to achieve the same results. An economic comparison can be made in a retrofit application on the trade-off of increased operating cost versus the capital cost for installing a fabric filter and its associated down time.

The gas cleaning process, that is, the injection of Sorbalit into the flue gas flow, followed by vortexing of the flow and subsequent separation on the fabric filter or ESP, can be installed as a "Sorbalit System" down stream of any combustion plant.

This is, therefore, a universally applicable process. Consequently, numerous areas of application are envisioned for Sorbalit in the field of flue gas cleaning, some of which have already been put in to practice.

The Sorbalit sysytem for separating volatile inorganic and organic substances can be integrated into the flue gas cleaning systems of the most diverse processes:

* solid and hazardous waste incineration plants
* sewage/sludge incineration plants
* coal fired power plants
* wood fired boilers

* furnaces in the glass manufacturing and ceramic industries

* wood drying plants

* steel mills

* aluminum melting plants (primary and secondary)

Some test results are shown in Table 2.

Reports have been completed on test measurements for six plants not referenced in this report and they will be published shortly. Actual test results from four additional plants will be available in the next few weeks.

In general terms, Sorbalit is effective in removing mercury over a wide range of operating conditions and applications. Figure 7 presents a graphic summation of test data from European facilities and an American test program. This summary includes dry, dry/wet conditioned and spray dryer equipped plants. This data clearly indicates the effectiveness of the Sorbalit System. Our test data has found that two of the key parameters in determining the overall removal efficiency of mercury are the inlet concentration and the temperature of the flue gas. Figure 8 illustrates the impact flue gas temperature has on mercury emissions.

The development of applications for Sorbalit is continuing in many new areas. The modification of lime products, both quick lime and calcium hydroxide, has opened up totally new areas of opportunities for lime in the field of high technology air pollution control.

Drawings 4 and 5 show two recent developments in the Sorbalit System that are specific for the U.s. retrofit spray dryer applications. Drawing 4 illustrates the application with Sorbalit manufactured with quick lime. Drawing 5 shows the application of adding a concentrated form of Sorbalit to an existing facility. This was accomplished by simply adding one storage silo and one mixing tank to the system.

We believe that this brief summation has demonstrated that Sorbalit has the flexibility to be integrated into many existing applications and systems.

TABLE 1

PCB REDUCTION

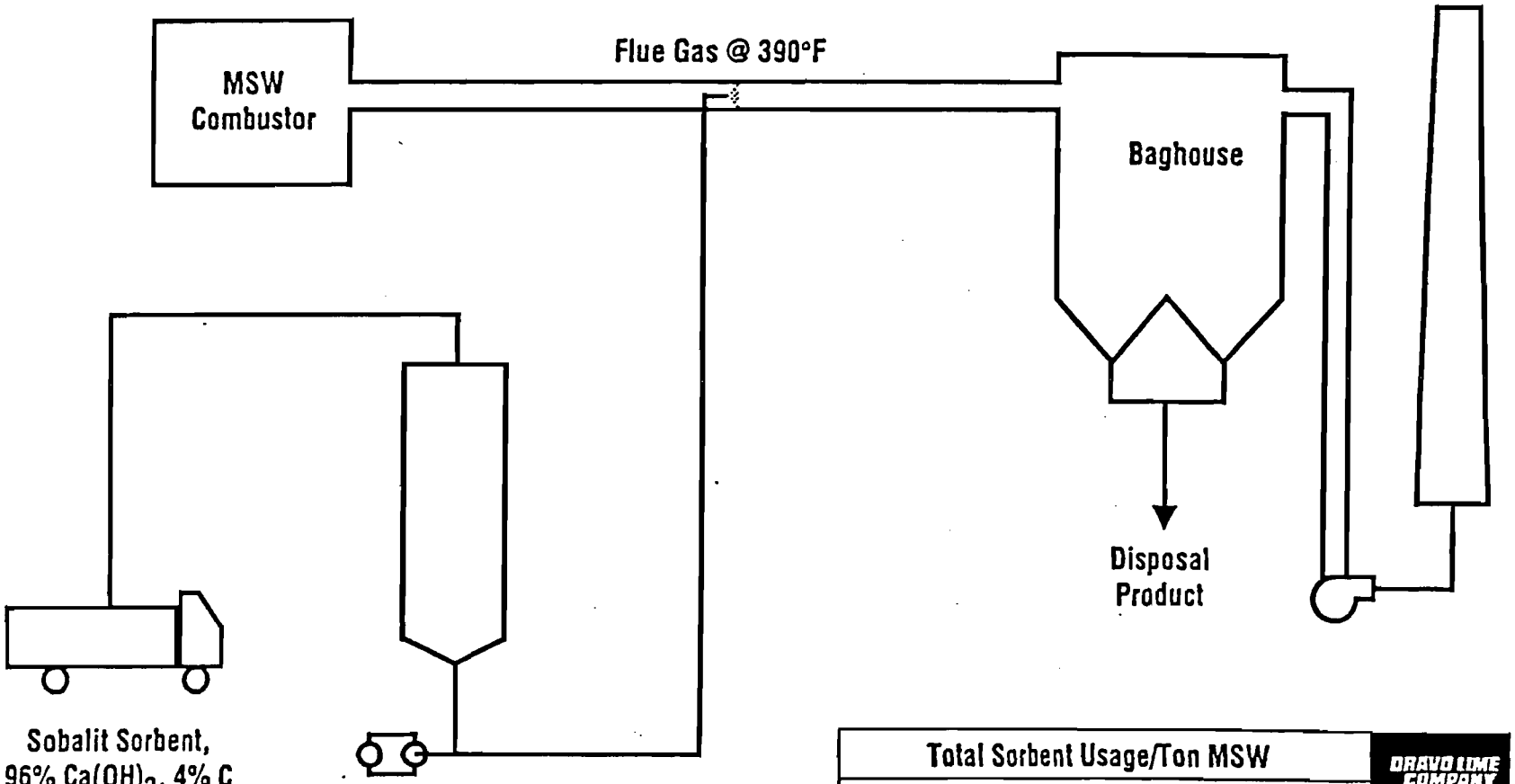
SVA SCHÖNEICHE/BERLIN

PCB Type	Concentration in untreated gas ng/Nm³	Concentration in cleaned gas ng/Nm³
Monochlorobiphenyls	< 1	< 1
Dichiorobiphenyls	< 1	< 1
Trichiorobiphenyls	10	< 2
Tetrachiorobiphenyls	18	< 3
Pentachiorobiphenyls	30	< 3
Hexachiorobiphenyls	38	< 2
Heptachiorobiphenyls	34	< 2
Octachiorobiphenyls	30	< 1
Nonachiorobiphenyls	24	< 1
Decachiorobiphenyls	14	< 1
TOTAL PCBs	130	

Drawing 1.

SORBALIT Technology

Hydrated Lime/Carbon/Sulfur Blend, Duct Injection Application



Total Sorbent Usage/Ton MSW
Baghouse: 50 lbs Sorbalit

DRAVO LIME COMPANY

TABLE 2

MERCURY AND DIXOIN

EMISSION DATA

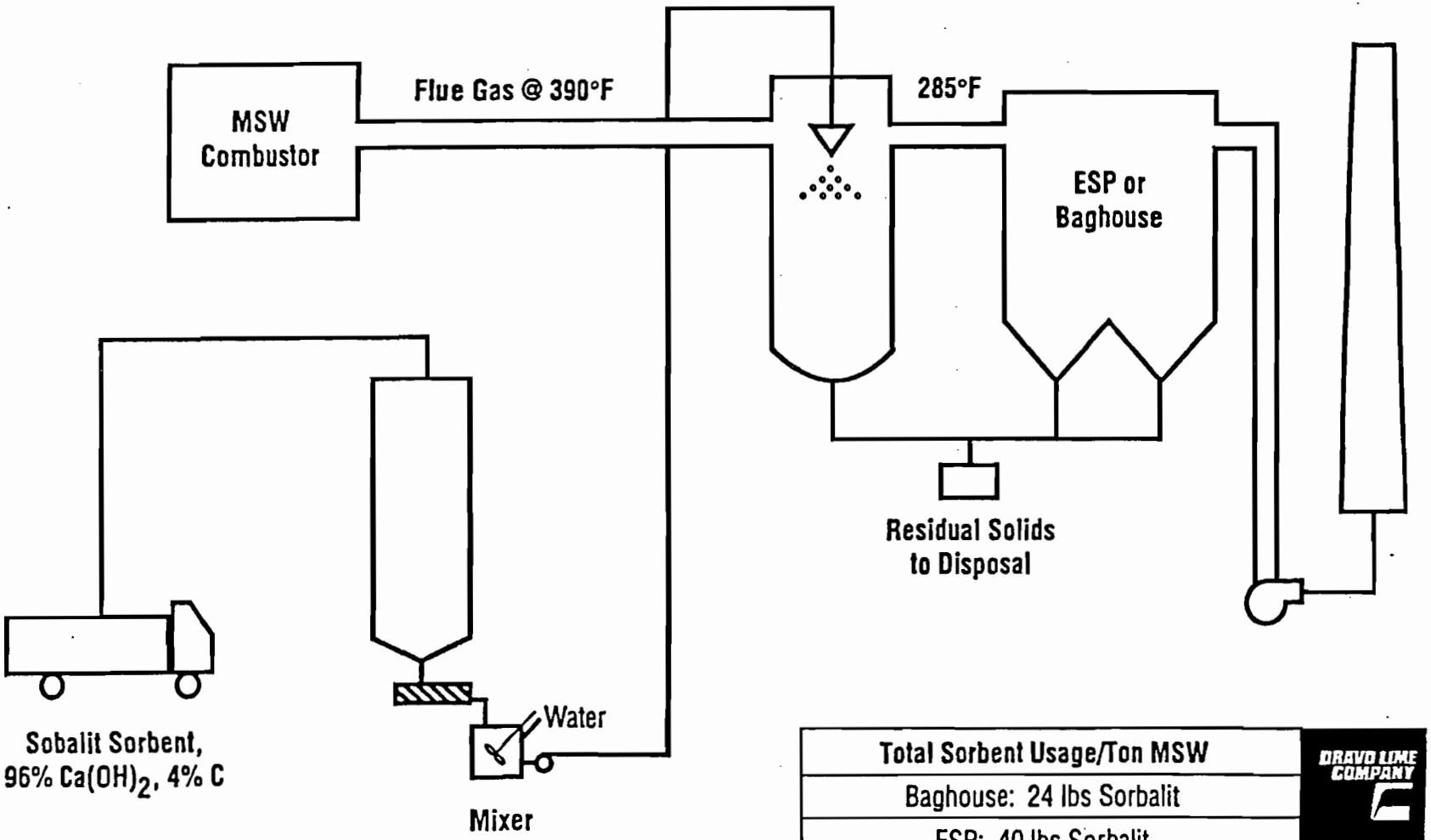
Name of Plant		Outlet Emissions [1]	
		Mercury $\mu g/Nm^3$	Dioxin ng/Nm^3
Waste-to-energy plant Gelselbullach	32.2	23	0.019
Waste incinerator Berlin-Ruhieban	56	40	0.06
Waste-to-energy plant Würtzburg	51.8	37	0.03
Hazardous waste incinerator Schöneiche	28	20	0.03
Hazardous waste incinerator Schweinfurt	56	40	0.06
MSW incinerator Marktoberndorf	37.8	27	0.06
MSW incinerator Zirndorf	<70	<50	0.05
Low temperature incinerator Ulm/Wieblingen	25.2	18	0.017
Low temperature incinerator Burgau	<70	<50	0.09
Aluminium plant Stockach	—		0.013
Cremetory Düsseldorf	—		0.03
Copper melting plant Hamburg	32.2	23	0.06

Note 1: Corrected to 11% O_2

Drawing 3.

SORBALIT Technology

Hydrated Lime/Carbon/Sulfur Blend, Spray Dryer Application

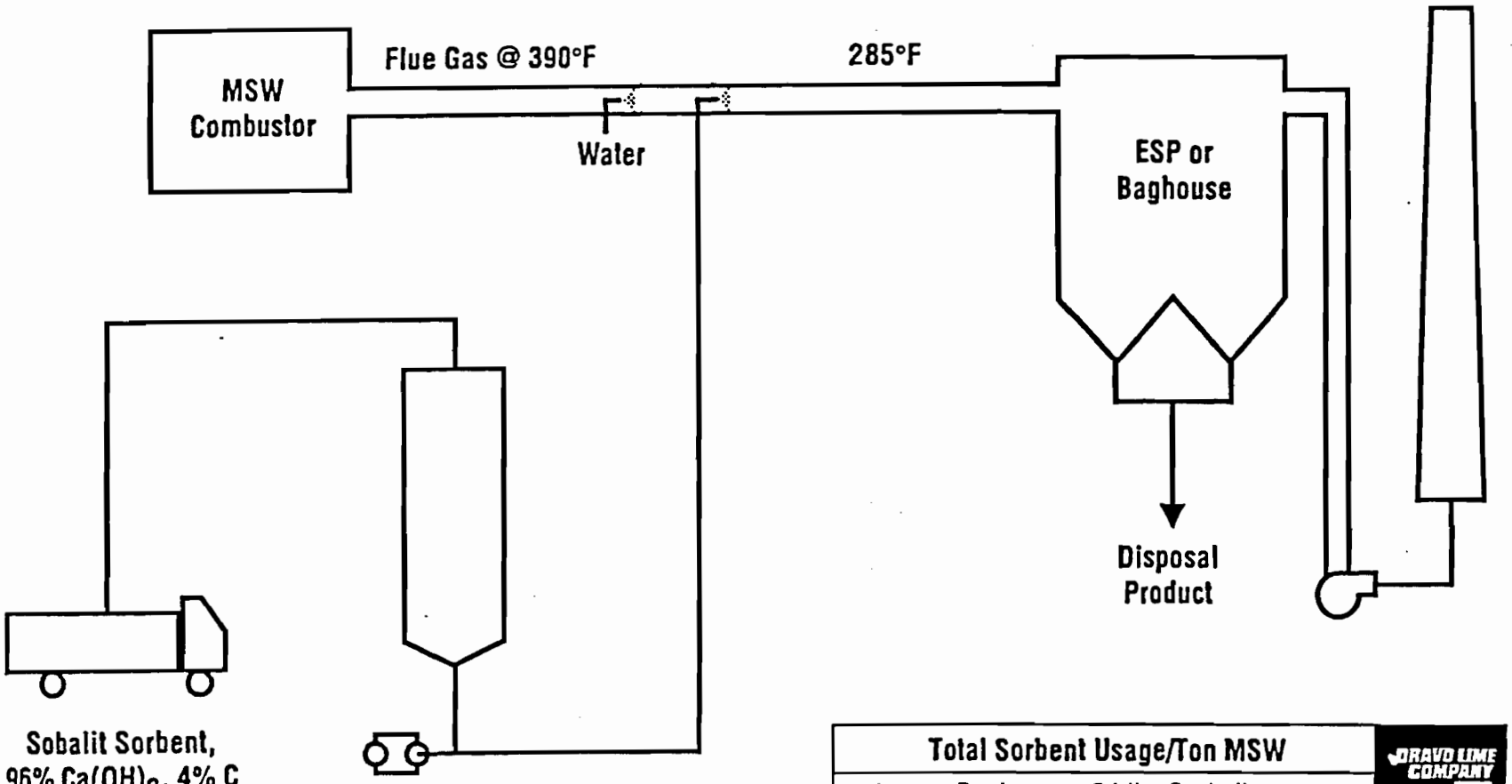


Total Sorbent Usage/Ton MSW
Baghouse: 24 lbs Sorbalit
ESP: 40 lbs Sorbalit

DRAVO LIME COMPANY

Drawing 2.

SORBALIT Technology Hydrated Lime/Carbon/Sulfur Blend, Conditioned Duct Injection Application

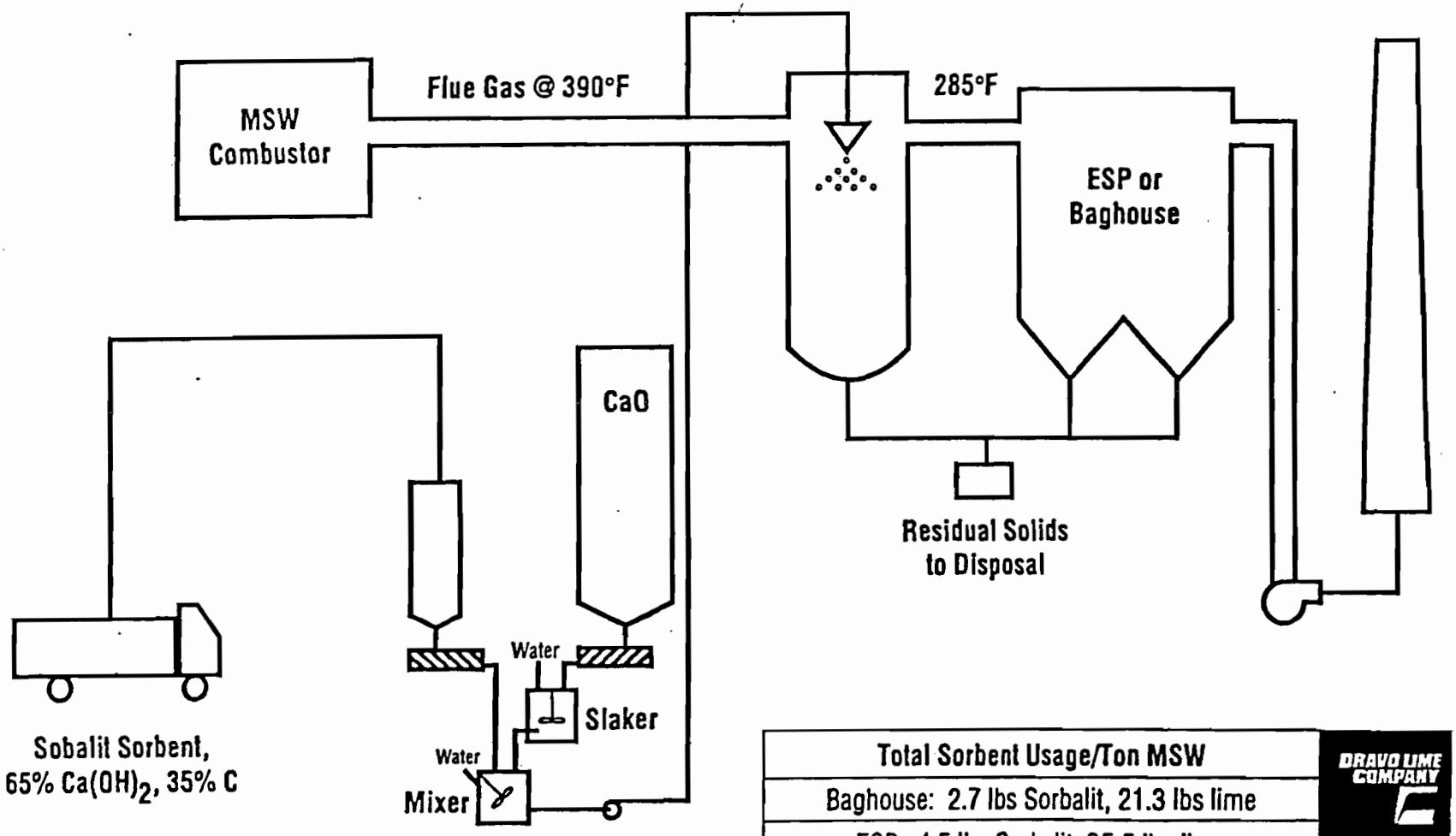


Total Sorbent Usage/Ton MSW
Baghouse: 24 lbs Sorbalit
ESP: 40-50 lbs Sorbalit

BRAVO LIME COMPANY

Drawing 5.

SORBALIT Technology — 35% Carbon Concentrate/Sulfur Blend, Spray Dryer Application



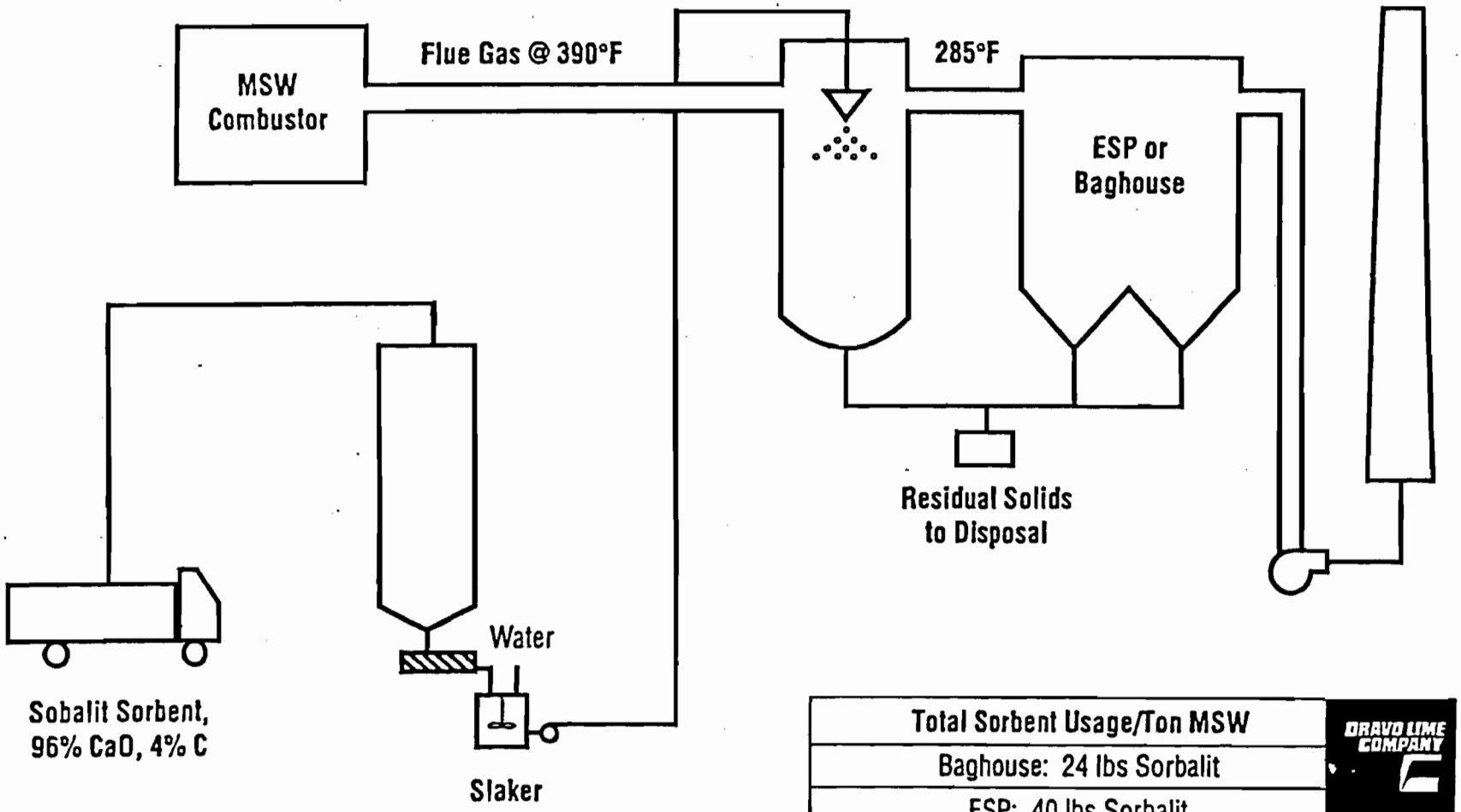
Total Sorbent Usage/Ton MSW
Baghouse: 2.7 lbs Sorbalit, 21.3 lbs lime
ESP: 4.5 lbs Sorbalit, 35.5 lbs lime

DRAVO LIME COMPANY

Drawing 4.

SORBALIT Technology

Quicklime/Carbon/Sulfur Blend, Spray Dryer Application



Total Sorbent Usage/Ton MSW
Baghouse: 24 lbs Sorbalit
ESP: 40 lbs Sorbalit

DRAVO LIME COMPANY

Figure 1: Würzburg

Dioxin Reduction

Untreated Gas

Post-Sorbalit Treatment

DRAVO LIME COMPANY

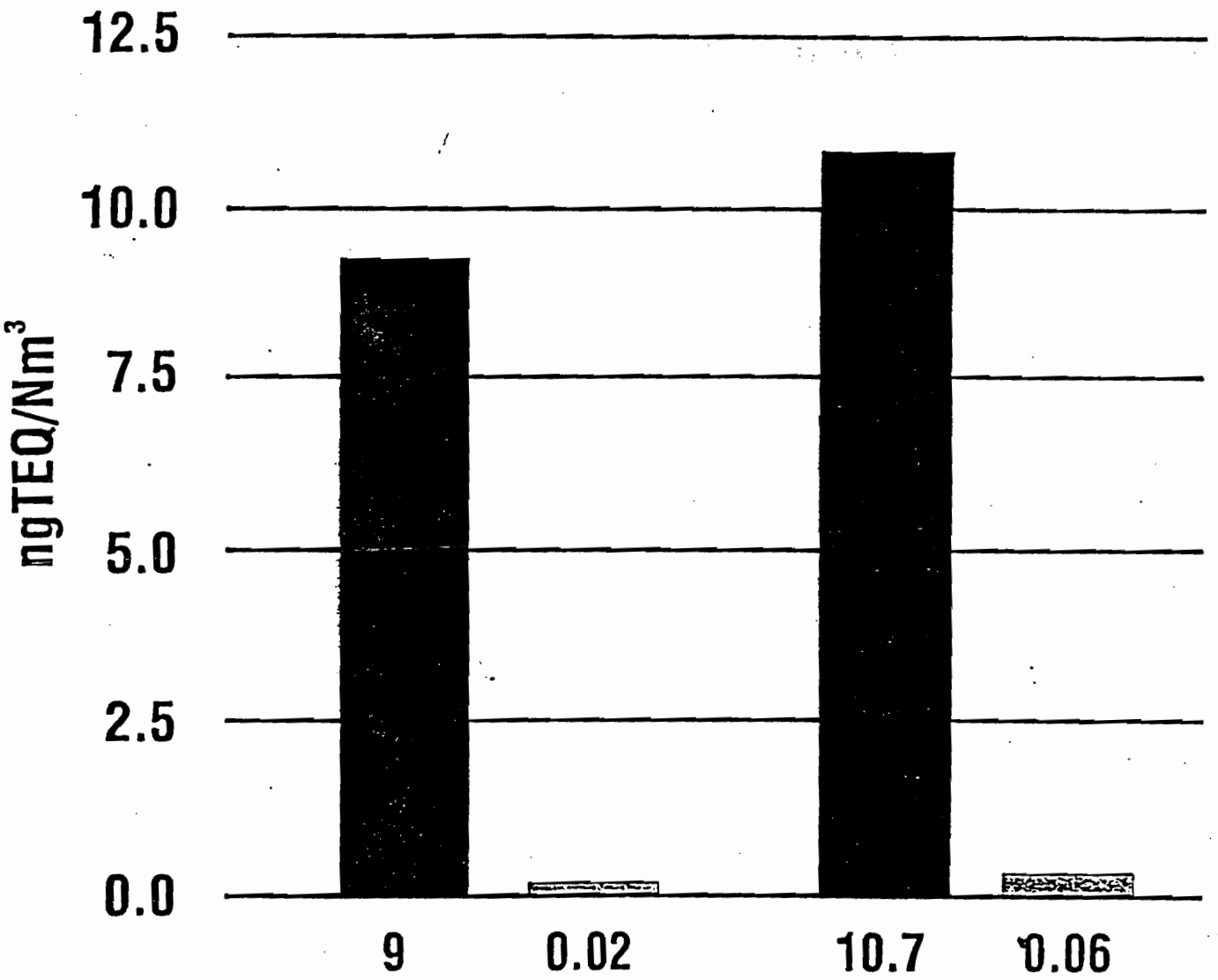


Figure 2: Würzburg

Mercury Reduction

DRAVO LIME COMPANY

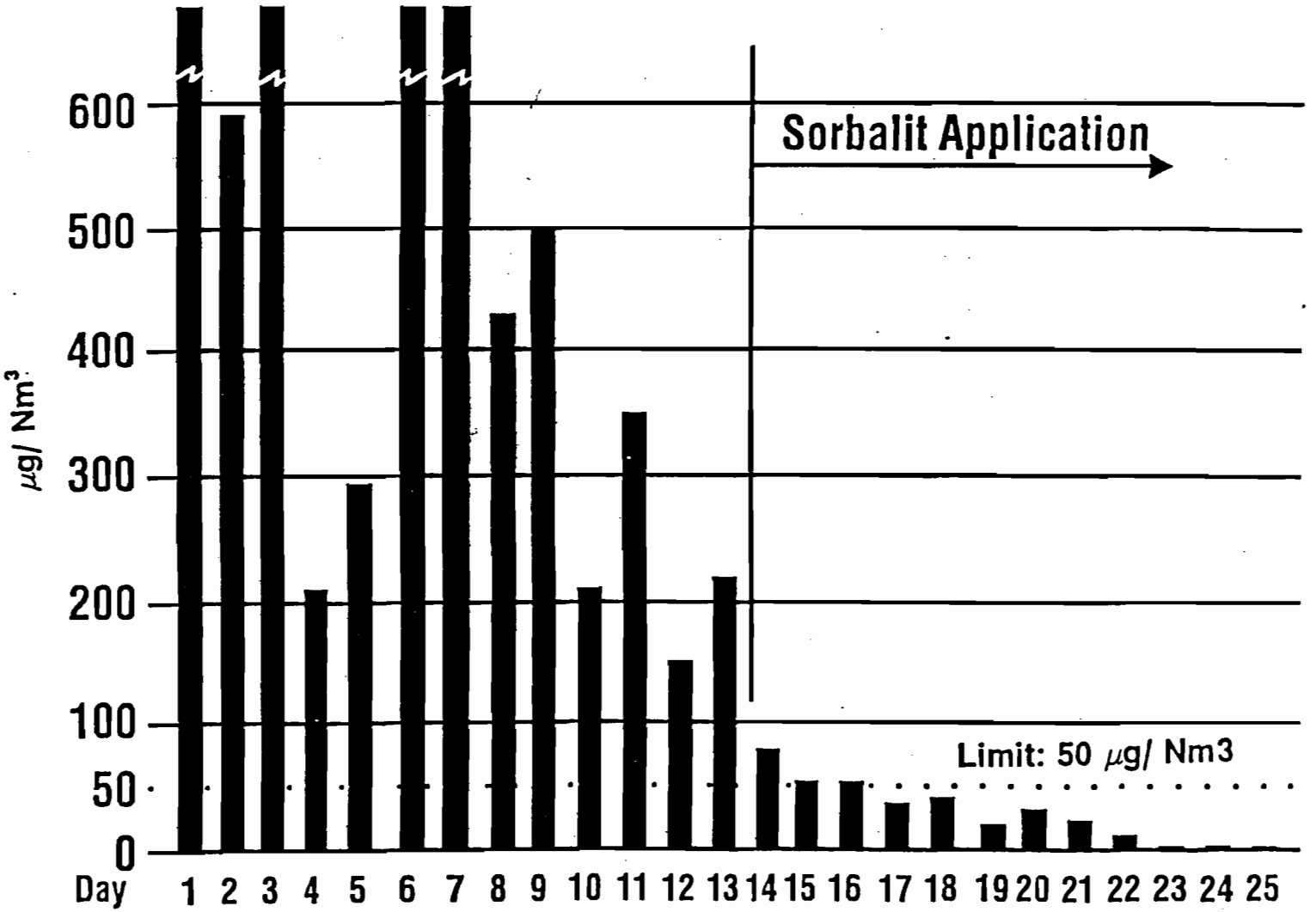


Figure 3: SVA Schöneiche

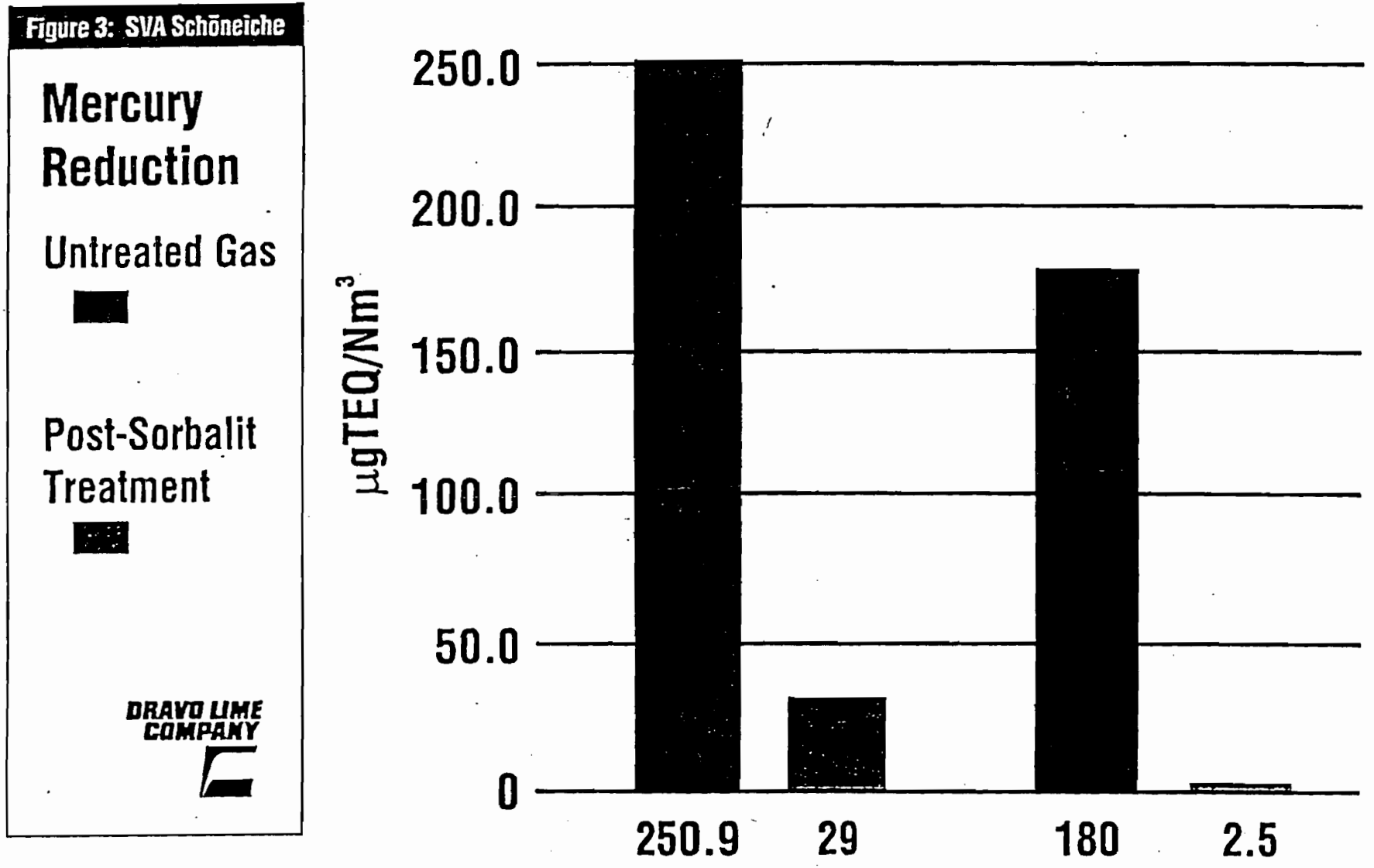


Figure 4: SVA Schöneiche

Dioxin Reduction

Untreated Gas

Post-Sorbalit Treatment

DRAVO LIME COMPANY

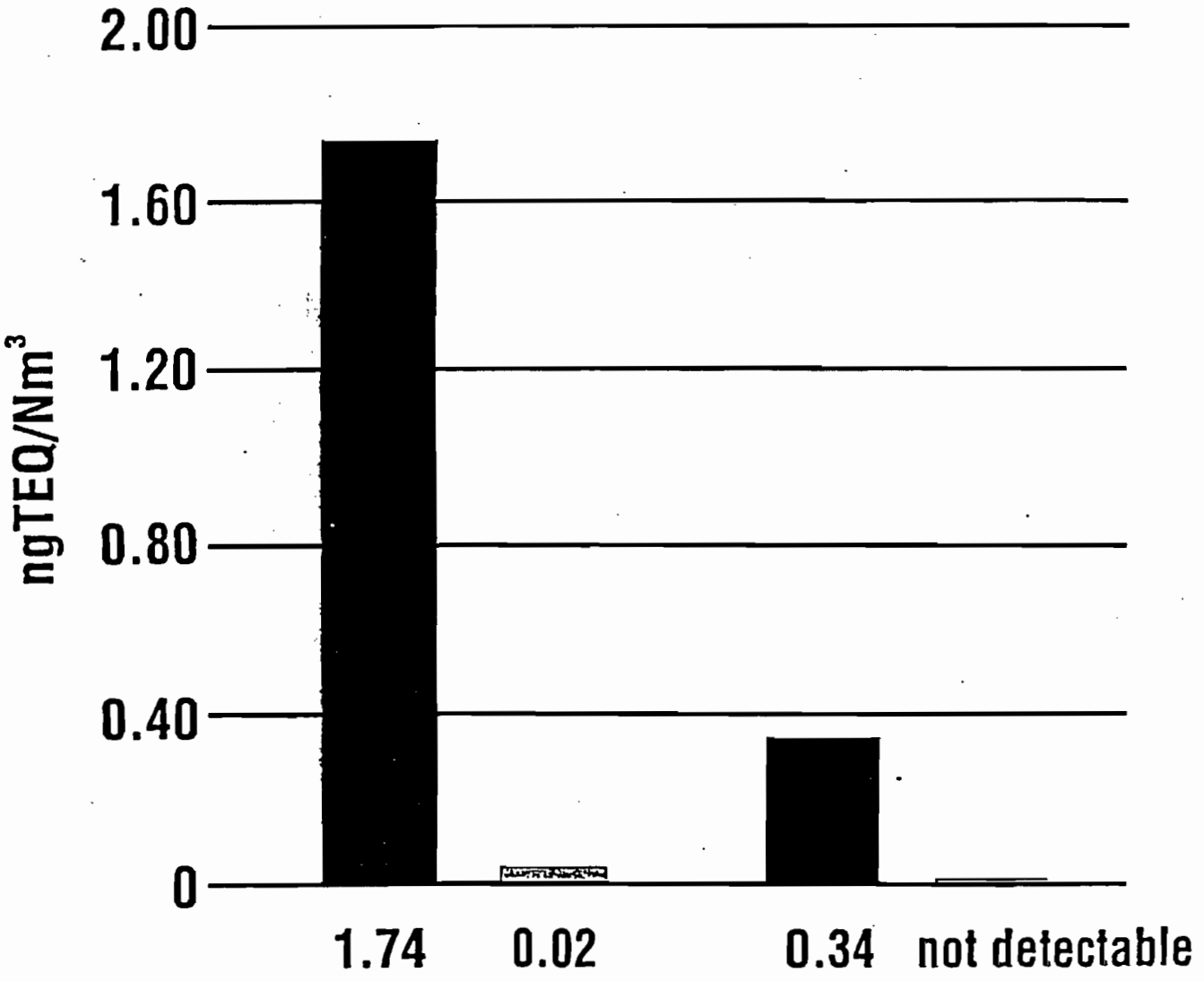


Figure 5: GSB Schweinfurt

Dioxin Reduction

Untreated Gas

Post-Sorbalit Treatment

DRAVO LIME COMPANY

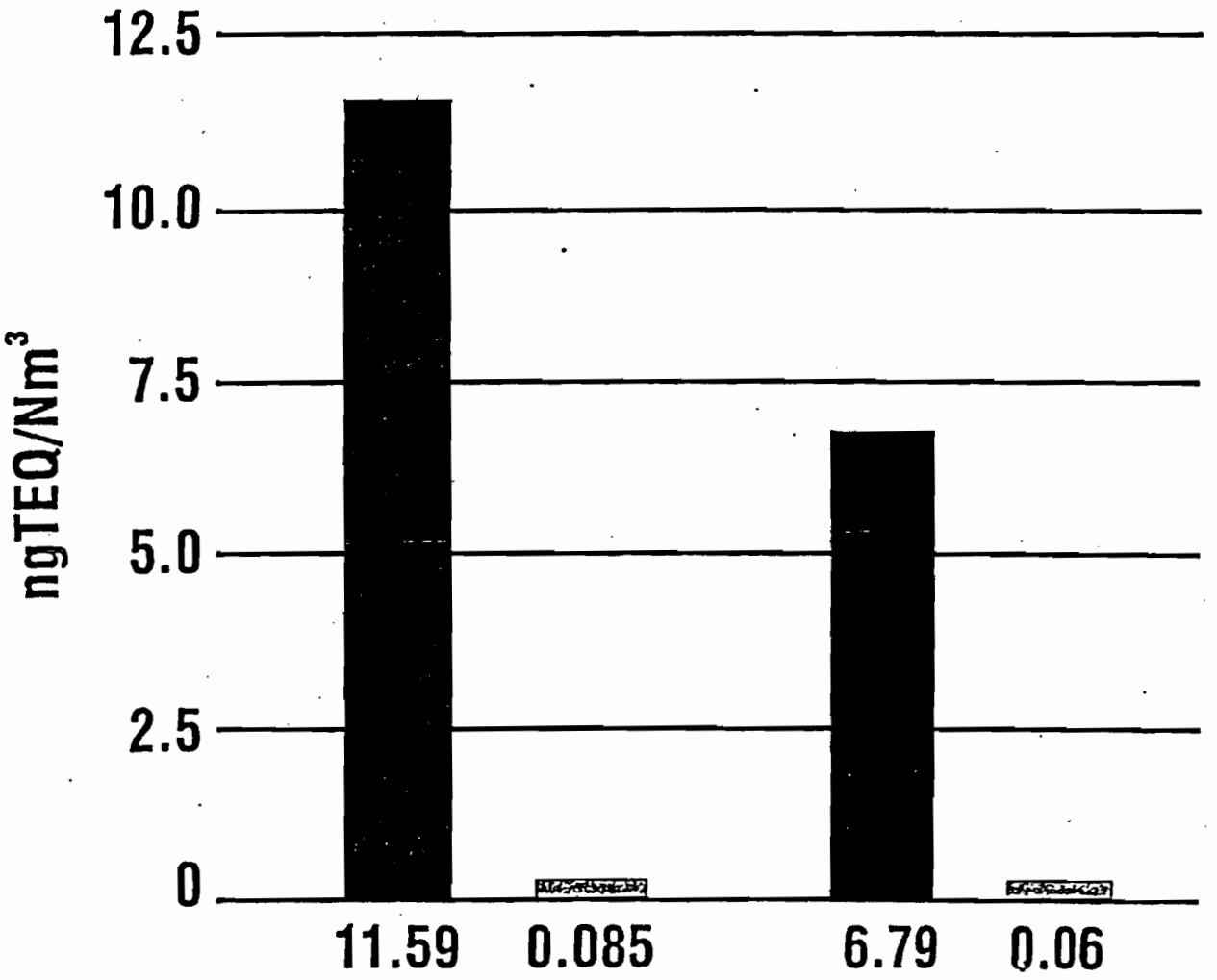


Figure 6: GSB Schweinfurt

Mercury Reduction

Untreated Gas

Post-Sorbalit Treatment

DRAVO LIME COMPANY

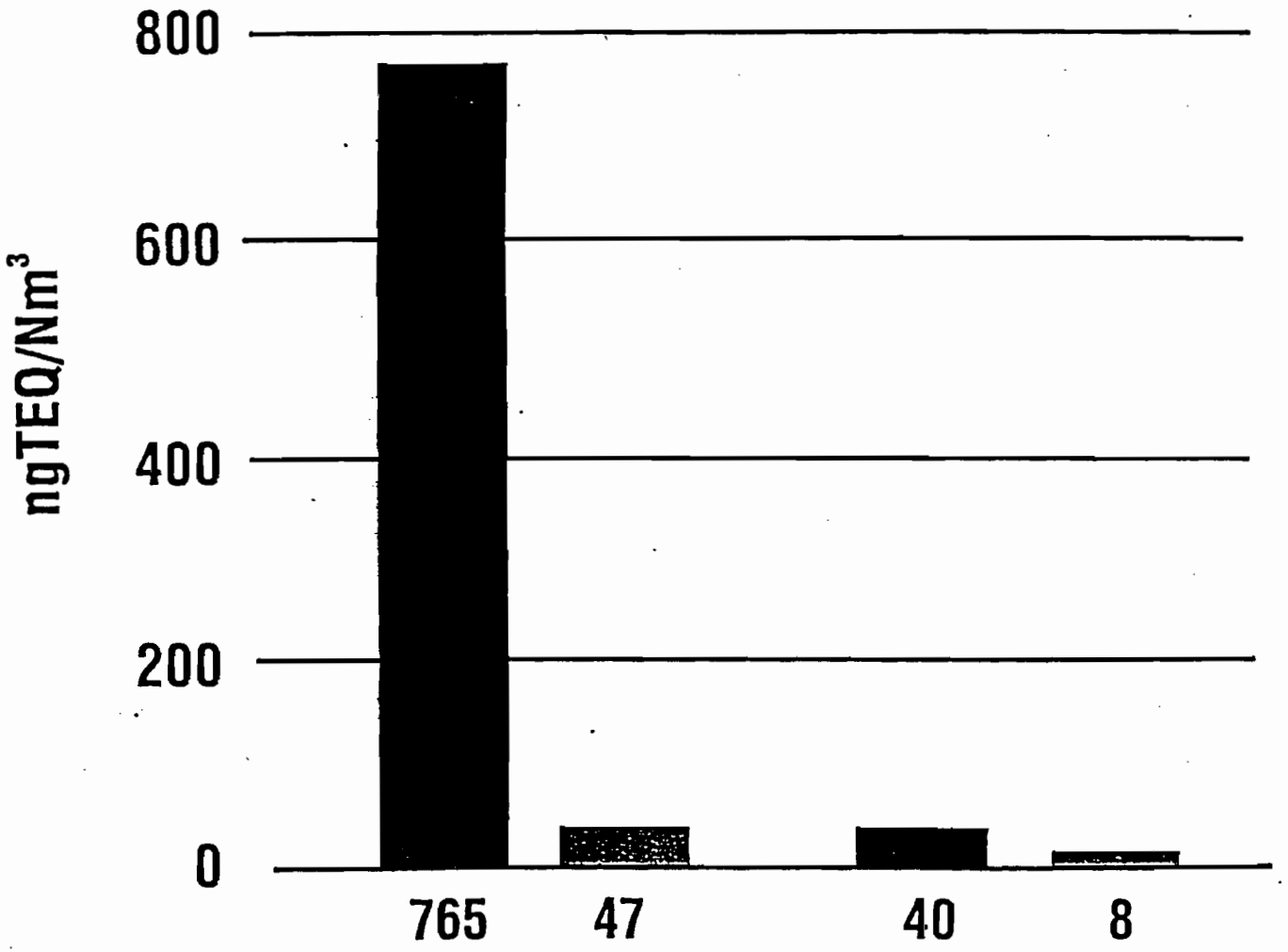


Figure 7

Mercury Removal (All Sorbalit Data)

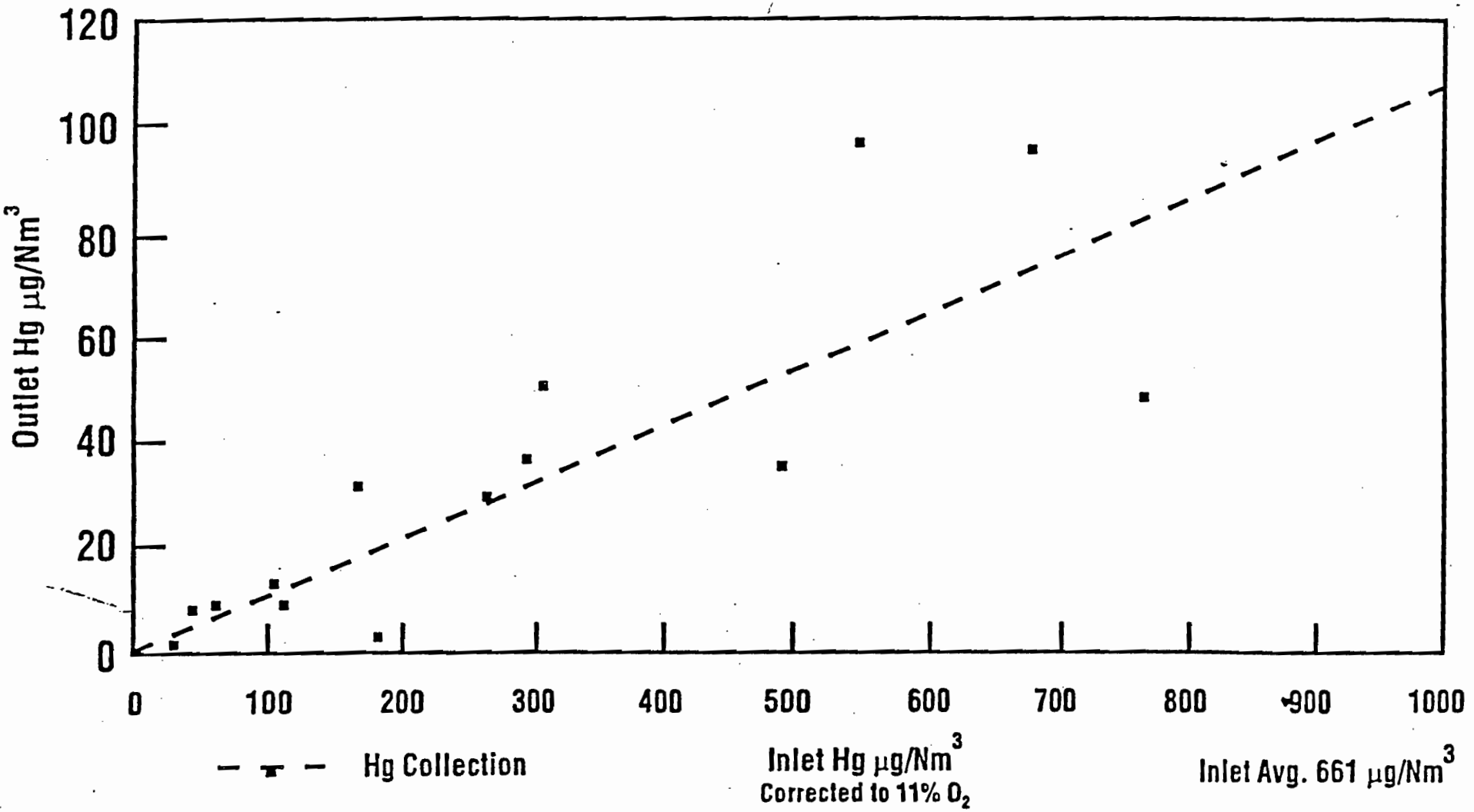
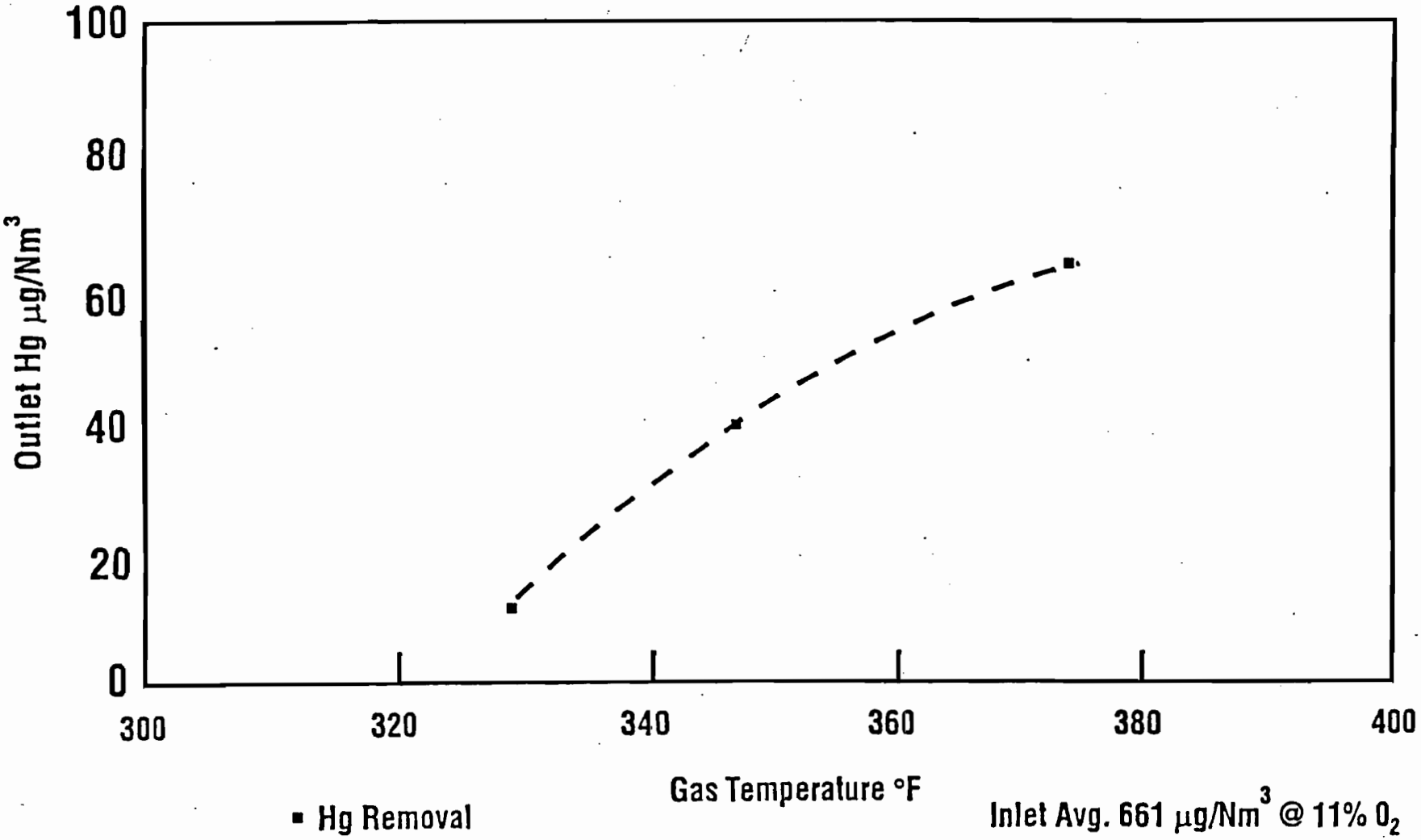


Figure 8

Effect of Temperature on Hg Removal (Sobalit — Dry Injection)



State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee	
To:	Location:
To:	Location:
To:	Location:
From:	Date:

Interoffice Memorandum

FILE - PASCO RRF

TO: Preston Lewis

FROM: Bill Thomas

DATE: July 31, 1992

RE: **Pasco County Resource Recovery Facility Complaint**

The District has received and investigated numerous complaints from ~~Wayne~~ Nathan & Susan Elko, 13623 Treaty Road, Spring Hill, FL 34610, telephone (813) 862-8193, regarding the Pasco facility. To date, no air pollution violations have been found. The facility is in compliance with the specific air emission limits and permit conditions. A stack test recently performed demonstrated compliance with the specific emission limits. The District performs inspections of the facility on a quarterly basis per the state's commitment.

For your information, the District has investigated complaints concerning health effects, reports of excessive visible emissions, odors, and medical and hazardous waste burning at the facility. The Division of Forestry and Pasco County have found and cited several illegal open burning activities in the area. The open burning of copper wire, garbage, and trash is frequently found in the area.

Our staff has had lengthy discussions with the Elkos. The county owned facility routinely offers tours to interested citizens and groups. Interested citizens or groups can contact the facility at (813) 856-2917.

SS/vsa

Elko

- Called Ms. ELKO and read letter to her
- Diversion in past two weeks
- no air moving before 9 am
- different colors early morning explosion - arcad

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

For Routing To Other Than The Addressee

To: _____ Location: _____
To: _____ Location: _____
To: _____ Location: _____
From: _____ Date: _____

RECEIVED
MAY 18 1992
Division of Air
Resources Management

TO: Barry D. Andrews, AIR BAR, Tallahassee

FROM: J. Harry Kerns, S.W. District Air, Tampa

DATE: May 13, 1992

SUBJECT: NOx Control at Waste to Energy Facilities

A citizen specifically asked the S.W. District Office to refer her question to the appropriate person in Tallahassee. The question is:

> Why does the Pasco County Resource Recovery Facility (waste-to-energy incinerator) not have NOx control (de-NOx) according to the Clean Air Act? Also, please answer the same question for the Hillsborough, Pinellas, and Lake County facilities.

This request is forwarded to you because your office handled the BACT analysis during the Site Certification process.

The citizen's name, address, and phone number are:

Ms. Susan Elko
13632 Treaty Road
Spring Hill, FL 34610

Phone (813) 862-8193

Barry, thank you for handling this citizen request.

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary

December 8, 1989

Mr. Joseph N. Conover
Ogden Martin Systems, Inc.
40 Lane Road, CN 2615
Fairfield, New Jersey 07007-2615

Dear Mr. Conover:

Re: Pasco County Solid Waste Resource Recovery Facility,
PSD-FL-127

The Department has reviewed your letter dated September 20, 1989, concerning the permit changes required to substitute natural gas as auxiliary fuel with propane, at the above referenced facility.

The use of propane as auxiliary fuel is acceptable to the Department. No permit modification is required in this instance for the PSD permit, or the Conditions of Certification.

Sincerely,

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

CHF/PR/plm

cc: H. Oven, DARM
B. Thomas, SW District
W. Aronson, EPA
C. Shaver, NPS
J. Gallagher, Pasco Co.

BEST AVAILABLE COPY

OGDEN MARTIN SYSTEMS, INC.

AN OGDEN COMPANY

40 LANE ROAD
CN 2615
FAIRFIELD, NEW JERSEY 07007-2615
(201) 882-9000

RECEIVED
SEP 28 1989
DER - BAQM

September 20, 1989

Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Attention: Mr. C.H. Fancy, Deputy Bureau Chief

SUBJECT: PASCO COUNTY SOLID WASTE RESOURCE RECOVERY FACILITY PSD – FL – 127

Dear Mr. Fancy:

Specific condition 1.F. of the above referenced PSD Permit for the Pasco County Solid Waste Resource Recovery Facility states that only natural gas be utilized to fuel the auxiliary burners. Subsequent to the PSD application and the power plant site certification applications, natural gas has been determined to be unavailable to this facility. As a result, Ogden Martin has been directed by the county to substitute natural gas with propane for the auxiliary burners. Ogden Martin understands with discussions to Barry Andrews that these two fuels can be used interchangeably without permit modification according to current FDER Policy.

Please verify in writing that the above change in auxiliary fuel is acceptable and that no permit modification is required.

If you have any questions regarding this matter, please do not hesitate to contact the undersigned or our resident construction manager, Mr. Paul Hauck at (813) 856-7697.

Sincerely,

OGDEN MARTIN SYSTEMS OF PASCO, INC.

Joseph N. Conover
Project Manager

LB:rj/2-96

cc: J. Gallagher – Pasco County
D. Bramlett – Pasco County
D. Strobridge – CDM
P. Hauck – OMSP

C. Shaver, NPS

OGDEN MARTIN SYSTEMS OF PASCO, INC.

40 LANE ROAD
CN 2615
FAIRFIELD, NEW JERSEY 07007-2615

AN OGDEN COMPANY

Mr. C. H. Fancy - Deputy Bureau Chief
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

JAN 06 1989

4APT-APB

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. John L. Gallagher
County Administrator
Pasco County, Florida
County Administrator's Office
7530 Little Road
New Port Richey, Florida 34654

Re: Pasco County's Resource Recovery Facility (PSD-FL-127)

Dear Mr. Gallagher:

This is to acknowledge receipt of your December 15, 1988, letter to me regarding Pasco County's objections for installing thermal de-NO_x equipment on the proposed resource recovery facility (RRF).

Although your letter attempts to demonstrate that the use of thermal de-NO_x would be economically prohibitive, we do not believe that valid, unique and convincing arguments have been presented which would clearly substantiate your contention. The arguments you presented concerning the relatively small benefits projected in ambient nitrogen dioxide concentrations may not be used as the sole reason for rejecting these controls. Finally, your letter has not convinced us that the installation of thermal de-NO_x controls on the Pasco County RRF is technically infeasible.

However, we have concluded that the specific circumstances involved in this isolated case warrant special consideration. As you indicated in your December 15 letter, Pasco County attempted to obtain all of the relevant pollution control guidelines and requirements for this proposed facility from the very beginning of the application preparation phase. On February 19, 1987, Pasco County met with EPA staff to discuss the proposed facility. Because Pasco County acted in good faith with all agencies concerned during the permitting process and because the agencies did not suggest that thermal de-NO_x controls may be required prior to the Pasco County PSD application (November 1987), we feel that it would not be equitable for EPA to insist that these controls be installed on this facility. Therefore, we will concur with the PSD final determination and permit issued to Pasco County RRF by the Florida Department of Environmental Regulation.

If you have any questions, please feel free to contact Bruce P. Miller, Chief, Air Programs Branch, of my staff at (404) 347-2864.

Sincerely yours,

Winston A. Smith

Winston A. Smith, Director
Air, Pesticides, and Toxics
Management Division

cc: Mr. Clair Fancy, P.E.
Deputy Bureau Chief
Bureau of Air Quality Management
Florida DER

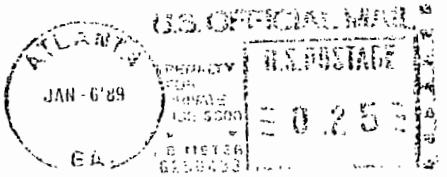
Mr. David S. Dee
Carlton, Fields, Ward,
Emmanuel, Smith & Cutler, P.A.
First Florida Bank Building
P.O. Drawer 190
Tallahassee, Florida 32302

copied: Pradeep Raval
Tom Rogers
Barry Andrews
Bill Thomas, SW Dist.
CHF/BT

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

AIR-4



Mr. Clair Fancy, P.E.
Deputy Bureau Chief
Bureau of Air Quality Management
FL Dept. of Environmental Regulation
Twin Towers Office Bldg.
2600 Blair Stone Rd.
Tallahassee, FL 32399-2400

Florida Department of Environmental Regulation

Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400

Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary

December 9, 1988

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

Dear Mr. Miller:

This is to confirm my comments during the December 1, 1988, meeting with Pasco County, the EPA Staff, and myself regarding the installation of de-NOx on the recently permitted Pasco County Waste-to-Energy Facility.

As I mentioned, Central Air Permitting did not believe that the information was available to justify de-NOx on this facility. This was discussed between Wayne Aronson and myself just before the final PSD permit was transmitted to Secretary Twachtmann for signature. The de-NOx issue was mentioned well after the Power Plant Site Certification hearing and our neogiations with the county. The county worked closely with the Department during the entire permitting process and agreed initially to installing a scrubber and baghouse on this facility.

Waste-to-Energy Facilities have been more stringently regulated during the last two years than any other source category. As I mentioned at the meeting, Florida has a significant solid waste problem and a very sensitive ground water situation that need to be addressed. Waste-to-Energy Facilities are one of the best all around solutions to these problems. Unlike many facilities, Waste-to-Energy Facilities have a definite environmental benefit in that they dramatically reduce the amount of waste needed to be landfilled and reduce potential ground water contamination

problems from waste buried in a landfill. The EPA policy of continually requiring more air pollution control on these facilities could reduce the number of these facilities built. I believe that before EPA requires any additional controls on these facilites, that sound evidence be provided that it is necessary.

I request that EPA allow Pasco County to build the Waste-to-Energy Facility in accordance with the Department of Environmental Regulation PSD Permit issued during on September 22, 1988.

Very Truly Yours,

C.H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/mch

File

CARLTON, FIELDS, WARD, EMMANUEL, SMITH & CUTLER, P. A.

ATTORNEYS AT LAW

ONE HARBOUR PLACE
P. O. BOX 3239
TAMPA, FLORIDA 33601
(813) 223-7000

FIRSTATE TOWER
P. O. BOX 1171
ORLANDO, FLORIDA 32802
(407) 849-0300

HARBOURVIEW BUILDING
P. O. BOX 12426
PENSACOLA, FLORIDA 32562
(904) 434-0142

FIRST FLORIDA BANK BUILDING
P. O. DRAWER 190
TALLAHASSEE, FLORIDA 32302
(904) 224-1585

PLEASE REPLY TO:

Tallahassee

M E M O R A N D U M

TO: John Gallagher
Ben Harrill
Bob Hauser
Don Elias
Clair Fancy

FROM: David S. Dee D. Dee

DATE: November 17, 1988

VIA: Telecopy and Hand Delivery

RE: Pasco County Resource Recovery Facility

RECEIVED
NOV 17 1988
DER-BAQM

Gentlemen:

We have scheduled a meeting with the United States Environmental Protection Agency in Atlanta, Georgia at 10 AM on December 1, 1988, to discuss EPA's recent request for additional information about the use of thermal deNOx equipment at the Pasco County resource recovery facility. The EPA representatives at the meeting will include Bruce Miller, Wayne Aronson, and Mark Armantrout. Gary McCutchen, the Chief of EPA's New Source Review Section at Research Triangle Park, will participate by telephone conference call. Winston Smith will be out-of-town

This is an extremely important meeting and I urge each of you to attend. Please call me and tell me whether you will be able to do so.

cc: Dale Twachtmann
Steve Smallwood
Bob Varner
Dan Strobridge

DSD/vc:Gallagher

CARLTON, FIELDS, WARD, EMMANUEL, SMITH & CUTLER, P. A.

ATTORNEYS AT LAW

ONE HARBOUR PLACE
P. O. BOX 3239
TAMPA, FLORIDA 33601
(813) 223-7000

FIRSTATE TOWER
P. O. BOX 1171
ORLANDO, FLORIDA 32802
(407) 849-0300

HARBOURVIEW BUILDING
P. O. BOX 12426
PENSACOLA, FLORIDA 32582
(904) 434-0142

FIRST FLORIDA BANK BUILDING
P. O. DRAWER 190
TALLAHASSEE, FLORIDA 32302
(904) 224-1585

PLEASE REPLY TO:

Tallahassee

November 15, 1988

VIA TELECOPY

Bruce P. Miller
Chief
Air Program Branch
Air, Pesticides, and Toxics
Management Division
U.S. Environmental Protection Agency
Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Re: Pasco County Resource Recovery Facility

Dear Mr. Miller:

This law firm represents Pasco County with regard to certain environmental law matters and we have been assisting Pasco County with its efforts to obtain the environmental permits for its proposed resource recovery facility. I am sending you this letter to confirm our understanding about the issues I discussed with Wayne Aronson this afternoon.

Today we received your letter dated November 4, 1988 to Mr. Clair Fancy at the Florida Department of Environmental Regulation. In your letter, you indicate that EPA is still trying to determine whether additional de-NOx controls are warranted at the Pasco County resource recovery facility.

On behalf of Pasco County, we were greatly surprised and disappointed to learn that EPA is still considering this issue. The County's PSD permit application was filed one year ago in November 1987. In response to EPA's request for additional information, the County submitted additional information about deNOx to EPA on March 9, 1988. The County has not received any additional requests for information from EPA since March, 1988. It was our understanding, based on our discussions with EPA and the Department of Environmental Regulation (DER), that this issue had been conclusively resolved months ago. Indeed, the DER issued a PSD permit to Pasco County on September 22, 1988

The County is now in the critical, final stages of its negotiations with the vendors that want to construct and operate the resource recovery facility. EPA's re-evaluation of the deNOx issue now jeopardizes the County's ability to conduct or conclude its negotiations in a timely manner. Since all of the permits for the facility have been issued, EPA's action is extremely disruptive to the County's efforts to respond to its current solid waste disposal needs.

In light of these circumstances, the County respectfully requests EPA to hold an immediate meeting with the County's representatives so that the County and EPA can resolve this issue. The County further requests that the meeting include all of the appropriate decision-makers from EPA Atlanta and Washington because the County cannot afford the delays that would occur if a series of on-going meetings were necessary with Atlanta and then Washington. Of course, the County is willing to meet with EPA in Atlanta, Washington, or any other place that is convenient for EPA. It is critically important, however, that the meeting be conducted immediately. Wayne Aronson has agreed to promptly schedule this meeting with the appropriate EPA personnel.

Please call me at your earliest opportunity so that we can discuss these issues in greater detail.

Sincerely,

David S. Dee

David S. Dee

cc: Dale Twachtmann ✓
Winston Smith
Clair Fancy
John Gallagher
Wayne Aronson

DSd/vc/Miller

BEFORE THE ADMINISTRATOR
U.S. ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.

In the Matter of:	
Pennsauken County, New Jersey Resource Recovery Facility	PSD Appeal No. 88-8

REMAND ORDER

In separate petitions filed pursuant to 40 CFR §124.19 (1987), [1] the Township of Cinnaminson et al. [2] and Robert Filipczak requested review of a Prevention of Significant Deterioration (PSD) permit issued to the Pennsauken Solid Waste Management Authority for construction of a municipal waste combustor. The permit determination was made by the New Jersey Department of Environmental Protection (NJDEP) pursuant to a delegation of authority from EPA Region II, New York, New York. Because of the delegation, NJDEP's permit determination is subject to the review provisions of 40 CFR §124.19, and any permit it issues will be an EPA-issued permit for purposes of federal law. 40 CFR §124.41; 45 Fed. Reg. 33,413 (May 19, 1980).

---

[1] All references to the Code of Federal Regulations are to the 1987 edition.

[2] The Township of Cinnaminson is joined in the petition by the Borough of Palmyra and the Borough of Riverton, which are municipalities located in Burlington County, New Jersey, and by Allied Citizens Opposing Pollution (ACOP), a civic association.

Under the rules governing this proceeding, there is no appeal as of right from the permit decision. Ordinarily, a petition for review of a PSD permit determination is not granted unless it is based on a clearly erroneous finding of fact or conclusion of law, or involves an important matter of policy or exercise of discretion that warrants review. The preamble to the regulations states that "this power of review should be only sparingly exercised," and that "most permit conditions should be finally determined at the Region level * * *." 45 Fed. Reg. 33,412 (May 19, 1980). The burden of demonstrating that the permit conditions should be reviewed is therefore on the petitioners.

Discussion

Cinnaminson et al. object to issuance of the permit because they believe NJDEP's determination of best available control technology (BACT) is deficient. [3/] According to these petitioners, NJDEP did not give adequate consideration to thermal de-NO_x

---

[3/] To obtain a PSD permit, the applicant must demonstrate that the proposed facility will employ BACT for each regulated pollutant. Section 169 of the Clean Air Act defines BACT as an "emission limitation reflecting the maximum degree of reduction" that the "permitting authority," on a "case-by-case basis, taking into account energy, environmental, and economic impacts and other costs" determines is "achievable." 42 U.S.C. §7479(3). Because BACT is determined on a case-by-case basis and takes into account energy, environmental, and economic impacts and other costs, which may vary from location to location, a BACT determination for a municipal waste combustor at one site may differ from one reached at another site, even though the technology employed may be identical. In other words, the emission limitations for the sites can differ.

technology in performing the BACT analysis. Petitioners argue that NJDEP's determination not to set an emission limitation based on thermal de-NO_x technology was based on an inadequate record, resulting in part from NJDEP having made its BACT determination prior to the time of permit issuance. Petitioners also argue that the BACT analysis submitted by the permit applicant did not adequately justify use of combustion controls (the means chosen by the applicant for controlling NO_x emissions from the proposed facility) instead of thermal de-NO_x technology. NJDEP responded to these contentions by arguing that the record actually discloses that the BACT determination was made at the time of permit issuance; that the permit applicants' BACT evaluation fully evaluates alternative control technologies, including thermal de-NO_x technology; and that thermal de-NO_x technology is not yet "available" within the meaning of the statutory definition of BACT. Regarding the last point, NJDEP stated that there was just one facility in the United States (the Commerce facility in Whittier, California) employing thermal de-NO_x technology, and that it had been in operation only one year; that there is just one facility currently under construction (in Modesto, California); and that a third (in Long Beach, California) began operations after the Pennsauken permit was issued and therefore could not have been considered at the time of permit issuance. With respect to these facilities, NJDEP says they were reviewed

under legal standards [4] and NO_x control strategies [5] not pertinent to the Pennsauken facility.

An examination of the materials identified by NJDEP as representing the NO_x BACT analysis [6] generally bears out petitioners' contention that the BACT analysis on which NJDEP relied is inadequate. Specifically, the record fails to disclose that the applicant met its burden of showing that an emission limitation based on combustion controls alone represents BACT. The basic attributes of that burden are set out in Honolulu Resource Recovery Facility ("H-Power"), PSD Appeal No. 86-8 (June 22, 1987), where I interpreted the statutory definition of BACT as placing the burden on the applicant of "demonstrating that signi-

---

[4] NJDEP points out that the South Coast Air Quality Management District in California (SCAQMD) treats NO_x as a non-attainment pollutant requiring lowest achievable emission rate (LAER). In point of fact, however, one of the three facilities (Modesto) is located in an area that is attainment for NO_x, and EPA issued a PSD permit for it with a BACT limitation based on thermal de-NO_x. EPA Region IX issued the permit on August 11 1986. Telephone conversations between Ronald L. McCallum, EPA Chief Judicial Officer, and Bob Baker, EPA Region IX (October 5 and November 11, 1988).

[5] According to NJDEP, the Commerce facility was permitted under California rules as innovative technology, and all of the facilities are in locations where NO_x emissions fall under the South Coast Air Quality Management District's (SCAQMD's) control strategy for ozone. Conversely, New Jersey focuses on volatile organic compounds (VOC's) for its ozone control strategy.

[6] See Final Environmental and Health Impact Statement ("FEHIS"), Volume I, at 5-36 through 5-56 (Jan. 1987); FEHIS Response to Comments, Volume I at 211-213 (June 1987); Hearing Officer's Report at 226 (June 30, 1988).

ficant technical defects, or substantial local economic, energy, or environmental factors or other costs warrant a control technology less efficient than [the most stringent available technology]." Id. at 7, 6 n.9. This interpretation was disseminated in operational guidance for municipal waste combustors on June 26, 1987, [1] and was further refined in general guidance issued by EPA's Assistant Administrator for Air and Radiation on December 1, 1987. The latter guidance refers to the applicant's burden as the "top-down" approach to BACT analysis:

> The first step in this approach is to determine, for the emission source in question, the most stringent control available for a similar or identical source or source category. If it can be shown that this level of control is technically or economically infeasible for the source in question, then the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental or economic objections. Thus, the "top-down" approach shifts the burden of proof to the applicant to justify why the proposed source is unable to apply the best technology available. It also differs from other processes in that it requires the applicant to analyze a control technology only if the applicant opposes that level of control; the other processes required a full analysis of all possible types and levels of control above the baseline case.
>
> The "top-down" approach is essentially required for municipal waste combustors pursuant to the June 22, 1987, Administrator's remand to Region IX of the H-Power BACT decision and the OAQPS June 26, 1987, "Operational Guidance on Control Technology for New and Modified Municipal Waste Combustors (MWC's)." It is also currently being successfully implemented by many permitting agencies and some of the

---

[1] Memorandum from Gerald Emison, Director, EPA Office of Air Quality Planning and Standards (OAQPS) to EPA Regional Air Office Directors, enclosing "Operational Guidance on Control Technology for New and Modified Municipal Waste Combustors."

> Regional Offices for all sources. I have therefore determined it should be adopted across the board. [8/]

The H-Power decision, the operational guidance for municipal waste combustors, [9/] and the "top-down" guidance are all applicable to the Pennsauken permit determination. H-Power was my direct administrative interpretation of the statutory BACT requirement; the subsequent operational guidance and "top-down" guidance implement H-Power through statements of Agency policy. All three documents antedate issuance of the permit. [10/] These

---

[8/] Memorandum from J. Craig Potter, Assistant Administrator, to Regional Administrators (Regions I-X) at 4 (Dec. 1, 1987) (the Potter Memorandum).

[9/] The Operational Guidance expressly states that it applies to all PSD permits issued through State and local agencies pursuant to delegation agreements made under 40 CFR §52.21(u), except where a final permit was issued and administrative appeals under 40 CFR Part 124 were exhausted prior to June 26, 1987. Operational Guidance at 7; see also 52 Fed. Reg. 25399, 25406 (July 7, 1987); 52 Fed. Reg. 47826 (December 16, 1987). The "top-down" guidance contains statements to the same effect. Potter Memorandum 4.

[10/] The chronology of the Pennsauken permit is as follows: the permit application was filed in January 1987; it was supplemented with a BACT analysis for NO_x in June 1987 (including an evaluation of thermal de-NO_x technology); NJDEP completed its BACT assessment in December 1987; hearings were held and public comment was solicited in January-February 1988, in which commenters questioned the absence of an NO_x emission limitation based on application of thermal de-NO_x technology; and lastly, the permit was issued in July 1988, specifically rejecting thermal de-NO_x as representing BACT for this facility.

interpretations and policy statements were therefore available to the applicant and NJDEP for the Pennsauken permit. [11]

The permit applicant's burden of showing that a more stringent technology is not BACT obviously does not come into existence unless the so-called "more stringent" technology is available. If the technology is not available, the permit applicant is under no duty to consider it in the BACT analysis. Here, NJDEP contends that thermal de-NO_x technology is not available; however, there is nothing of substance in the applicant's BACT analysis to bear out this contention. If anything, it is

---

[11] As a practical matter, BACT determinations will ordinarily be made at some time prior to actual issuance of the permit, for there is always a lag between closure of the administrative record (usually the close of the public comment period) and the time when the permit determination is announced. As noted in Vermont Yankee Nuclear Power Corp. v. NRDC, 435 U.S. 519 (1978), quoting ICC v. Jersey City, 332 U.S. 503 (1944):

> Administrative consideration of evidence * * * always creates a gap between the time the record is closed and the time the administrative decision is promulgated [and, we might add, the time the decision is judicially reviewed] * * *. If upon the coming down of the order litigants might demand rehearings as a matter of law because some new circumstance has arisen, some new trend has been observed, or some new fact discovered, there would be little hope that the administrative process could ever be consummated in an order that would not be subject to reopening.

435 U.S. at 554-55; see Nance v. EPA, 645 F.2d 701 (9th Cir. 1981) (quoting Vermont Yankee supra).

Absent unusual delay between the close of the public comment period and the date of permit issuance, or the presence of other extraordinary circumstances, the close of the public comment period can be used as the reference by which the adequacy of the administrative record is judged.

refuted by reference to the Commerce facility, which was in existence and operating during NJDEP's review of the permit application, and by reference to the evident willingness of the Modesto and Long Beach applicants to commence construction of their municipal waste combustors during the same period of consideration. The fact that these projects were undertaken to comply with allegedly different legal requirements (LAER or California rules) and different control strategies is not especially material to the issue of availability. [12/] The question of availability for purposes of BACT is a practical, factual determination, using conventional notions of whether the technology can be put into use. [13/] The record here raises a strong presumption in favor of concluding that thermal de-NO_x technology is available in the sense just described. The operational guidance, issued June 26, 1987, also treats thermal de-NO_x technology as an available technology that "should be considered by permitting authorities in making BACT determinations." Operational Guidance at 6. In short, the applicant's BACT analysis must evaluate thermal de-NO_x as an available technology.

The applicant's BACT analysis, however, does not contain the level of detail and analysis necessary to satisfy the applicant's

---

12/ See notes 4 and 5 supra.

13/ The dictionary defines the word "available" as that which can be "used," or is "usable," or can be "got, had, or reached; * * * accessible." Webster's New World Dictionary of the American Language 96 (2d College ed. 1972).

burden, as previously described, of showing that thermal de-NO_x technology is technically or economically unachievable for this source. The applicant's assertions that the technology has not yet been demonstrated to be efficient, [14] reliable, and cost effective in controlling NO_x are merely conclusory. [15] Moreover, they were made in a January 1987 submission and are undoubtedly out-of-date in view of the rapid developments in the application of this technology. Although the BACT analysis shows control costs in the range of $1300-1500 per ton of NO_x removed, [16] there is no serious discussion of cost effectiveness. For example, the applicant estimated annual costs of removing NO_x at $200,000 to $250,000 using thermal de-NO_x technology. FEHIS (Response to Comments) at 212 (Table 16.1-1). However, there is no discussion that even purports to show that these costs are unusually high. Greater efforts must be made by the applicant to show that thermal de-NO_x is economically infeasible or otherwise not achievable in this case. This might be done, for example, by

---

[14] The applicant's own submissions refute this contention. According to the applicant, NO_x emissions for the proposed facility would be 88.9 lb/hr using combustion controls compared with 35.6 to 62.2 lb/hr using thermal de-NO_x technology. FEHIS Response to comments 211-212 (Table 16.1-1 (June 1987). Pollutant reductions of this magnitude are clearly significant.

[15] See FEHIS at 5-48.

[16] When operated at the peak fuel feed rate of 500 tons per day, for 365 days per year, the total annual emissions of NO_x at the proposed facility are estimated at 389.3 tons. FEHIS at 5-37 (Table 5.3-3).

obtaining and analyzing operating data and other information from the Commerce facility -- and perhaps also from the Long Beach facility, which recently commenced operations. H-Power and EPA's guidance implementing that decision contemplate a much more thorough explanation, based on consideration of objective technical and economic data, to substantiate the contention that thermal de-NO_x is an experimental, unproven technology. In sum, the BACT analysis does not contain sufficient justification, specific to the proposed facility, to justify the level of control proposed in the permit. More detail and analysis is required.

Petitioner Robert Filipczak's fundamental objections to the Pennsauken permit are not with the control technology, but rather, with the municipal waste combustor itself. He urges rejection of the combustor in favor of co-firing a mixture of 20% refuse derived fuel and 80% coal at existing power plants. These objections are beyond the scope of this proceeding and therefore are not reviewable under 40 CFR §124.19, which restricts review to "conditions" in the permit. Permit conditions are imposed for the purpose of ensuring that the proposed source of pollutant emissions -- here, a municipal waste combustor -- uses emission control systems that represent BACT, thereby reducing the emissions to the maximum degree possible. These control systems, as stated in the definition of BACT, may require application of "production processes and available methods, systems, and techniques, including fuel cleaning as treatment or innovative

fuel combustion techniques" to control the emissions. 42 U.S.C.A. §7479(3). The permit conditions that define these systems are imposed on the source as the applicant has defined it. Although imposition of the conditions may, among other things, have a profound effect on the viability of the proposed facility as conceived by the applicant, the conditions themselves are not intended to redefine the source, as petitioner Filipczak would have them do. In other words, the source itself is not a condition of the permit. Therefore, petitioner's objections to the permit are not within the scope of this proceeding. Other matters raised by petitioner that are arguably within the scope of the proceeding, for example, the adequacy of the BACT analysis as it relates to mercury emissions and removal of metals as a fuel cleaning procedure, have not been presented in a manner to convince me that NJDEP committed clear error or that an important issue warranting review has been raised at this time. Therefore, the petition is denied.

Conclusion

The deficiencies in the BACT analysis leave two courses of action open at this juncture of the proceedings. One is to grant review of the permit and enter into the briefing phase contemplated by 40 CFR §124.19(c). However, the deficiencies in the record can not be rectified through the submission of briefs, and any ensuing decision would likely conclude that the permit should be denied (because of the deficiencies) or that it should be remanded to the permit-issuing authority to allow the ap-

plicant to supplement the BACT analysis. Considerations of time favor remanding the permit in the first instance. Therefore, rather than receiving additional briefs on appeal, I am remanding the case to NJDEP for further consideration of the BACT analysis, solely as it relates to NO_x emissions. This remand should not be viewed as prejudging the issue. NJDEP is simply directed to reopen the permit proceeding for the limited purpose of allowing the applicant to supplement its original BACT analysis in accordance with the guidance described in this decision. If, after a full review of the data NJDEP determines that NO_x emission levels obtained from combustion controls alone represent BACT, it may reissue the permit as written. It may, of course, revise the limitations and other conditions of the permit as appropriate.

After making the determination, NJDEP should reopen the public comment period to receive any supplemental comments from petitioners Cinnaminson et al. on the issue of the NO_x limitations in the permit. NJDEP's determination on remand will be subject to review under 40 CFR §124.19, and appeal of its decision on remand will be required to exhaust administrative remedies under section 124.19(f)(1)(iii).

So ordered.

Dated: Dec. 10, 1988

Lee M. Thomas
Administrator

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing Order on Petitions for Review in the matter of Pennsauken County, New Jersey, Resource Recovery Facility, PSD Appeal no. 88-8, was mail to the following by first class mail, postage prepaid.

Michael S. Caro
Deputy Attorney General
Department of Law & Public Safety
Division of Law, CN 112
Environmental Protection Section
Richard J. Hughes Justice Complex
Trenton, NJ 08625

William J. Muszynski
Acting Regional Administrator
U.S. EPA, Region II
26 Federal Plaza
New York, NY 10278

Thomas J. Germine
19 Market Street
Morristown, NJ 07960

Robert Filipczak
402 Dahlia Street
Northfield, NJ 08225

Robert P. Bedell
Myerson, Kuhn and Sterrett
1330 Connecticut Avenue, NW
Washington, DC 20036

Dated: November 10, 1988

Brenda H. Selden
Brenda H. Selden, Secretary
to the Chief Judicial Officer

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

NOV 09 1988

RECEIVED

NOV 10 1988

DER - BAQM

4APT-APB

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

C. H. Fancy, Deputy Chief
Bureau of Air Quality Management
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: Pasco County Resource Recovery Facility

Dear Mr. Fancy:

We have reviewed the final determination and final permit for the Pasco County Resource Recovery Facility (RRF), along with the March 9, 1988, letter from Camp, Dresser and McKee to Mr. Barry Andrews. In our opinion, your arguments for not choosing de-NO_x controls as best available control technology (BACT) for controlling NO_x emissions have not adequately addressed our concerns; therefore, we cannot concur with the final determination and final permit as issued.

Specifically, we have three concerns regarding your argument against installing a de-NO_x system. First, although a de-NO_x system--the most stringent control technology for controlling NO_x emissions--was considered, convincing arguments were not presented to show that installing such a system would be technically infeasible for Pasco County. Secondly, cost guidelines for New Source Performance Standards (NSPS) cannot be used solely to justify not using BACT for a particular emission unit; therefore, your argument that the proposed cost of $2478 per ton of NO_x removed exceeds the cost guideline for NSPS is irrelevant. Lastly, de-NO_x controls are presently operating on other municipal waste incinerators (MWI). According to the BACT/LAER Clearinghouse, both the Commerce Refuse-to-Energy-Facility and the Stanislaus County RRF are operating with de-NO_x controls. The de-NO_x controls at both facilities were required according to the BACT determinations for these facilities. Without unique and convincing arguments as to why these controls cannot be installed on Pasco County's RRF, we feel that de-NO_x can also operate successfully on this RRF.

In conclusion, we feel your arguments against choosing de-NO_x controls as BACT warrant additional consideration. Therefore, we, in consultation with EPA Headquarters, will determine whether additional de-NO_x controls are warranted. We will notify you and Pasco County RRF of our decision shortly.

If you have any questions, please contact me or Wayne J. Aronson of my staff at (404) 347-2864.

Sincerely yours,

Bruce P. Miller

Bruce P. Miller, Chief
Air Programs Branch
Air, Pesticides, and Toxics
Management Division

cc: Pasco County Resource Recovery Facility
7536 State Street
New Port Rickey, Florida 33553

copied: Pradeep Raval
Barry Andrews
Tom Rogers
Buck Oven
Bill Thomas, SW Dist,
CHF/BT

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

AIR-4

Mr. C. H. Fancy, Deputy Chief
Bureau of Air Quality Management
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

NO_x PERMIT LIMITS FOR REPRESENTATIVE RESOURCE RECOVERY FACILITIES

Facility	Size (Tons/Day)	NO_x Permit Limit (lb/ton)	Approx. Permit Date
Alexandria, VA	975	6.6	1988
Tulsa, OK	700	6.4	1988
Bergen, NJ	3000	5.40	Spring, 1987
Camden, NJ	1400	5.08	Spring, 1988
Essex, NJ	2000	3.00	Fall, 1986
Fort Dix, NJ	40	2.40	1986
Hudson, NJ	1500	5.28	Not Yet Permitted
Passaic, NJ	1500	5.81	Scheduled Spring, 1989
Pennsauken, NJ	500	5.70	Permitted June, 1988 Permit Limits Being Reviewed Under Appeal.
Union, NJ	1500	5.20	Permit Under Review
Warren, NJ	450	5.40	Fall, 1986
Babylon, NY	650	6.6	1988
Hillsborough, FL	1200	6.4	1988
Fairfax, VA	3000	6.6	1988
Gloucester, NJ	500	5.5	Fall, 1987
Norfolk, VA		1.778	
San Juan, PR	1000		Permit Under Review
Delaware, PA	2688	235[1]	September, 1988
York, PA	1344	300[1]	May, 1987
Bay County, FL	510	None	Winter, 1984

[1] ppm dv @ 7% O_2

6.16 #/ton
Pasco County

Florida Department of Environmental Regulation
Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400
Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary

September 26, 1988

Mr. Louis R. Tortora, P.E.
Camp, Dresser, & McKee Inc.
1321 U.S. 19S, Suite 100B
Clearwater, Florida 34624

Dear Mr. Tortora:

Re: Pasco County Resource Recovery Facility
PSD-FL-127

Please find enclosed a copy of the above referenced permit, which is based on the power plant site certification.

If you have any questions, please call Pradeep Raval at (904)488-1344 or write to me at the above address.

Sincerely,

for C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/PR/s

Final Determination

Pasco County Resource Recovery Facility
Pasco County, Florida

Permit No. PSD-FL-127

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

September 19, 1988

Final Determination

Pasco County's PSD permit application (part of the Power Plant Siting application) for a resource recovery facility in Pasco County, Florida, has been reviewed by the Bureau of Air Quality Management. Comments received concerning the proposed PSD permit are addressed in a chronological order.

I. Comments received from David Dee, on behalf of Pasco County (see Attachment 2), are addressed below.

1. The correction of the latitude/longitude of the facility is accepted as an amendment to the PSD application (Volume III), and the change will be reflected in the permit.

2. The request to allow a charging rate of upto 115% of the design capacity for the combustors cannot be granted because the resultant potential emissions would exceed the maximum emissions considered in the project evaluation. However, the Department can allow a charging rate of upto 114% of design capacity, at which level the potential emissions would match the maximum emissions evaluated for the project. Specific Condition (SC) No. 3 will be amended to reflect this.

3. SC No. 2.b. will be restated to distinguish between control of SO_2 emissions and control of other acid gases (namely HCl, H_2SO_4 mist, and fluorides).

4. The particulate matter emission limitation will remain 0.0150 gr/dscf, as this is consistent with recently issued PSD permits for similar facilities.

5. In SC No. 3, DER will change the emission limit for mercury to 0.112 lb/hr, as requested. The emission limits for SO_2, CO, and lead, will also be changed to 31.4, 54.7, and 0.098 lb/hr, respectively, to maintain consistency in the calculations.

6. Compliance testing at $\pm$ 10% of the rated 140 MMBTU/hr heat input rate is acceptable to DER and shall be incorporated into Specific Condition No. 4.e.

7. The O_2 CEM has been required as an indicator of good combustion for all recently permitted similar facilities. SC No. 5 will remain unchanged.

8. Monitoring of the furnace exit gas temperature (FEGT) at the economizer outlet, as proposed by Pasco County, is not acceptable because EPA requires the FEGT monitoring to be conducted as near the over-fire air fully-mixed zone in the

furnace as possible. The difference between the FEGT and the flue gas temperature at the economizer outlet, and the number of variables affecting that temperature difference, would be too great to make a reasonably accurate correlation as required.

II. In consideration of comments from the Central Air Permitting Staff, the following changes will be made in the proposed permit:

1. The reference to "design" will be deleted from SC Nos. 1.c., 2.b., and 2.c., to emphasize the performance of the facility.

2. Compliance test method 25A will be deleted from SC No. 4 as it may not be appropriate for the testing of VOC emissions from this facility.

3. SC Nos. 7.a., 7.b. and 8, will be standardized to reflect the wording used in other permits issued by DER for similar projects.

III. In consideration of the comments from the Southwest District office received by telephone on September 8, the following changes will be made in the proposed permit.

1. The project description on the first page will mention the design heat input rate of the combustors.

2. A requirement for the notification to DER of the air pollution control equipment and combustor to be purchased will be added to SC No. 2.

3. A SC will be added stating that the facility shall be operated in a manner which would preclude objectionable odors.

4. A SC will be added stating that reasonable precautions shall be taken to prevent/control unconfined emissions.

5. SC No. 7 will include a specific reference to the Southwest District office.

6. A requirement will be added to SC No. 4 requiring the permittee to submit to DER the pertinent operating parameters of the control devices, which would indicate proper operation.

7. A requirement will be added to SC No. 4 for the prior approval of DER for the location of the stack sampling platform.

IV. In consideration of comments dated September 8, 1988, from EPA Region IV (see Attachment 3), the following changes will be made to the proposed permit:

1. Emission limits for CO and SO_2 will be amended by including time averages as requested. However, the 24-hr limit for SO_2 does not seem practical.

2. Although the 0.643 lb/MM BTU nitrogen oxides (NO_x) emission limitation exceeds the values for other municipal waste combustors (MWCs) in Florida, the Bureau beleives that this level is representative of the NO_x emissions that are emitted from modern MWCs. Modern MWCs are designed to acheive high combustion efficiencies which require high operating temperatures resulting in higher than one time anticipated NO_x emissions. This is evident from recent permitting actions in which the original permitted NO_x emissions limitations for MWCs in Oregon, Oklahoma, and Florida were modified to reflect the actual emissions tested.

3. The compliance testing requirements will be amended to reflect that the 1987 version of 40 CFR 60 and 61 is quoted as reference. The specific mention of the number of test runs, sample volumes, and sampling times will be incorporated into future permits after further clarification from EPA.

4. Public hearings were held both during the day and at night where the issues of air toxics and unregulated pollutants were discussed.

5. The decision for not choosing de-NO_x controls as BACT for NO_x was primarily based on economics. The economic analysis of using catalytic reduction indicated that the cost would be more than twice the cost guideline that is used for BACT purposes. In addition, the use of de-NO_x control has not been extensive to the point of being considered well proven technology for MWCs. In the United States, only one facility (Commerce, California) has operating experience using de-NO_x control (approximately 1 year at the time of the Pasco County Facility permit review). Because de-NO_x control operation experience is limited, the long term cost of operating this technology is uncertain and estimates have indicated that the actual cost may be greater than those submitted for the Pasco County Facility.

6. DER does not intend to delete the requirement for an O_2 CEM from the proposed permit.

7. DER will clarify that the required temperature monitor should be placed as close to the fully mixed zone as possible.

The final action of the Department will be to issue the permit as proposed with the above mentioned amendments.

ATTACHMENT 3

PIN
9-7-88
Atlanta, GA

file

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

RECEIVED
SEP 12 1988
DER-BAQM

SEP 08 1988

4APT/APB-aes

Mr. C. H. Fancy, Deputy Bureau Chief
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Pasco County Resource Recovery Facility (PSD-FL-127)

Dear Mr. Fancy:

Our office has reviewed the draft permit and the preliminary determination package for the proposed construction of the Pasco County Resource Recovery Facility (RRF), as well as the letter to your office from David Dee of the Carlton, Fields, Ward, Emmanuel, Smith and Cutler law offices. The permit was reviewed under the Region IV Overview of State Programs policy. We offer the following comments:

Draft Permit

In order for the permit to be more sufficient and enforceable, additional permit conditions are necessary for the flue gas emissions of each source. It is our policy that, for criteria pollutants, emission limits should specify the same averaging times as are indicated in the National Ambient Air Quality Standards (NAAQS). For example, your draft permit specifies that an eight-hour rolling average be used in determining the emission limits for carbon monoxide. Because the NAAQS for carbon monoxide was determined by using an eight-hour and a one-hour averaging times, we recommend the use of both averaging time standards in your permit. Likewise, for sulfur dioxide, a 24-hour and a three-hour average need to be specified.

Concerning the permit's emission limit for nitrogen oxides (0.643 lb/MMBTU), this limit exceeds values specified in other permits for municipal waste incinerators in Florida. Therefore, we do not consider this limit to represent BACT. For example, similar emission sources in Florida specify emission limits for nitrogen oxides (NO_x) without de-NO_x controls at approximately 0.051 lb/MMBTU.

Additional information is also needed in your discussion of compliance testing. When designating the test method to be used for compliance testing, you must specify which versions of 40 CFR Parts 60 and 61 are to be used. Also, for pollutants not subject to New Source Performance Standards (NSPS), you must indicate each pollutant's sample volume, sampling time, and the number of test runs for each test method specified. Concerning the Pasco County RRF permits, sampling times, test methods, etc., need to be specified for the following pollutants: Sulfur Dioxide, Nitrogen Oxides, Lead, Fluoride, Mercury, and Beryllium.

Public Notice

The public notice did not mention that toxics or unregulated pollutants were considered in determining BACT for this source. This causes the public notice to be deficient. However, if a public hearing was held and the public was informed of potential air toxic pollutants that would be emitted from the facility, then that would satisfy our concerns of a deficient public notice.

BACT Determination

We do not feel that the BACT analysis for NO_x was properly performed as insufficient arguments were given for not choosing the "top" control technology. We request that additional information be provided which shows unique and convincing arguments as to why de-NO_x controls cannot be applied to this source. Based on the information we received, the cost to control NO_x may be reasonable. Also, your argument that BACT analysis for NO_x is not necessary because the ambient impact of increased NO_x is not significant is completely unacceptable. The use of air quality modeling results to justify not using a certain level of BACT is also unacceptable. Ambient impacts do not drive the BACT determination. Ambient impacts only serve as a check to ensure that NAAQS and increments are met once a level of BACT is chosen.

Letter from Carton, Fields, Ward, Emmanuel, Smith and Cutler Offices - Attorneys at Law

Item 7 states that the requirement for an oxygen monitor should be deleted from Pasco County's draft permit; however, EPA's policy dictates that oxygen concentrations of exhaust gases be monitored continuously (see EPA memorandum on Operational Guidance on Control Technology for New and Modified Municipal Waste Combustors, dated June 26, 1987).

In item 8, it was assumed that the temperature probe would be located after the economizer. This is unacceptable. The location selected for measuring combustion temperatures should be based on sound engineering analysis and is usually as close as possible to the "fully mixed height," or the point beyond the final air addition where complete mixing should have occurred. We request that this point be clarified with Pasco County and the location of the temperature probe be indicated in the permit, if possible.

Thank you for the opportunity for providing our input. If you have any additional information or comments, please contact me or Karrie-Jo Shell of my staff at (404) 347-2864.

Sincerely yours,

Wayne J Aronson / Acting for

Bruce P. Miller, Chief
Air Programs Branch
Air, Pesticides, and Toxics
Management Division

Copied: Pradeep Raval
Barry Andrews
Bill Thomas, SW Dist
CHF/BT

ATTACHMENT 1

Available Upon Request.

ATTACHMENT 2

PM
8-11-88
Tallahassee, FL

file copy

CARLTON, FIELDS, WARD, EMMANUEL, SMITH & CUTLER, P. A.

ATTORNEYS AT LAW

ONE HARBOUR PLACE
P. O. BOX 3239
TAMPA, FLORIDA 33601
(813) 223-7000

FIRSTATE TOWER
P. O. BOX 1171
ORLANDO, FLORIDA 32802
(407) 849-0300

HARBOURVIEW BUILDING
P. O. BOX 12426
PENSACOLA, FLORIDA 32582
(904) 434-0142

FIRST FLORIDA BANK BUILDING
P. O. DRAWER 190
TALLAHASSEE, FLORIDA 32302
(904) 224-1585

PLEASE REPLY TO:
Tallahassee

August 10, 1988

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management
Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Pasco County Resource Recovery Facility
PSD-FL-127

Dear Mr. Fancy:

On behalf of Pasco County, we have reviewed the Department's draft PSD permit for the Pasco County resource recovery facility. Our comments concerning the draft permit are set forth below.

1. On page 1 of the draft permit, the latitude and longitude should be modified because they are different than the coordinates presented in Pasco County's application for site certification.

2. On page 5, Specific Condition No. 1.b. should be modified to state that the maximum throughput "shall not exceed 115% of either the design MSW charging rate of 350 TPD or the heat input rate of 140 MMBtu/hr." The Department has historically authorized resource recovery facilities to operate at a throughput up to 115% of the design capacity. This practice is recognized in the Conditions of Certification for Pasco County which authorize a throughput of 115% of the design capacity. See Conditions of Certification, page 11, §XIV., ¶ A.1.c. We believe this condition should be changed because it is extremely important for the County to have the ability to operate at a throughput up to 115% of the nameplate capacity.

3. On page 6, Specific Condition No. 2.b. refers to 90% removal of "acid gases." To avoid confusion, it should be changed to refer to hydrogen chloride (HCL).

4. On page 6, Specific Condition No. 3.a. should refer to a particulate emission limit of 0.015 grains/dscf, rather than 0.0150 grains/dscf.

5. On page 8, the Specific Conditions contain a table of projected emissions. Our calculations indicate that the projected emissions for mercury will be 0.112 lbs/hr, rather than 0.105 lbs/hr.

6. On page 9, Specific Condition No. 4.e. should be modified to indicate that compliance tests shall be conducted at ±10% of the nameplate BTU rating (i.e., 140 million BTU). As written, the draft condition suggests that a compliance test must be conducted precisely at the maximum capacity. We believe it is very important to modify this condition because it implies that there can be no flexibility in the operating conditions at the time of the compliance test.

7. On page 10, Specific Condition No. 5 requires continuous emission monitors for various substances, including oxygen. The conditions of certification for the Pasco County facility do not require a continuous emission monitor for oxygen. See Conditions of Certification at page 12, §XIV., ¶A.3.a. Accordingly, we believe the requirement for an oxygen monitor should be deleted from the draft permit.

8. On page 11, Specific Condition No. 6.a. requires continuous montoring of the furnace exit gas temperatures. We do not know precisely where DER wants the monitor to be located for the furnace exit gas, but we assume that the monitor should be located at the economizer outlet. If our assumption is correct, we have no objections to this requirement.

Thank you for providing us with this opportunity to submit comments concerning the draft permit. Please call us if you have any questions.

Sincerely,

David S. Dee

David S. Dee

cc: Ben Harrill
John Gallagher
Bob Hauser
Don Elias

DSD/vc:FANCY
cc/ed: Pradip Raval
Tom Rogers
Bill Thomas, SW Dist
Bruce Miller, EPA
Michael Brown, NPS

Barry Andrews

Florida Department of Environmental Regulation
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400
Bob Martinez, Governor Dale Twachtmann, Secretary Jeff Shearer, Assistant Secretary

PERMITTEE:
Pasco County
7536 State Street
New Port Richey, FL 33553

Permit Number: PSD-FL-127
County: Pasco
Latitude/Longitude: 28° 22' 05"N
82° 33' 30"W
Project: Pasco County Resource Recovery Facility Units 1, 2 and 3

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rule(s) 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

For the construction of a municipal solid waste (MSW) resource recovery facility with an ultimate capacity of 1200 TPD (tons per day), generating 29 MW of electricity. Initially, three combustors will be installed each with a design capacity of 350 TPD (total of 1050 TPD for the facility). The design rated heat input capacity of each unit will be 140 MMBTU/hr. The normal operating range of each unit will be between 80% and a maximum of 114% of the design rated capacity. Acid gases and particulates will be controlled by dry scrubber and baghouse technology. DER will be notified of the final choice of control/combustor equipment. The power plant site certification number for this project is PA 87-23.

Construction shall be in accordance with the attached permit application and additional information except as otherwise noted in the Specific Conditions.

Attachments are as follows:

1. Power Plant Site Certification package PA 87-23 and its associated attachments, dated April 4, 1988.
2. Letter from David Dee, for Pasco County, of August 10, 1988.
3. Letter from EPA dated September 8, 1988.
4. DER's Final Determination dated September 14, 1988.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is hereby placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit does not constitute a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant or aquatic life or property and penalties therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

GENERAL CONDITIONS:

6. The permittee shall at all times properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

a. Having access to and copying any records that must be kept under the conditions of the permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and.

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information:

a. a description of and cause of non-compliance; and

b. the period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

GENERAL CONDITIONS:

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

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the Department, may be used by the Department as evidence in any enforcement case arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.12 and 17-30.30, as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. This permit also constitutes:

(x) Determination of Best Available Control Technology (BACT)
(x) Determination of Prevention of Significant Deterioration (PSD)
(x) Compliance with New Source Performance Standards.

14. The permittee shall comply with the following monitoring and record keeping requirements:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the department, during the course of any unresolved enforcement action.

GENERAL CONDITIONS:

b. The permittee shall retain at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be at least three years from the date of the sample, measurement, report or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the date(s) analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be submitted or corrected promptly.

SPECIFIC CONDITIONS:

1. Municipal Solid Waste Combustor

a. Each of the three municipal waste combustors (MWC) shall have a design rated capacity of 350 tons municipal solid waste (MSW) per day, 140 million Btu heat input per hour, assuming a heating value of 4,800 Btu per pound.

b. The maximum individual MWC's throughput shall not exceed 114% of either the design MSW charging rate of 350 TPD or the heat input rate of 140 MMBTU/hr.

SPECIFIC CONDITIONS:

c. The furnace mean temperature at the fully mixed zone of the combustor shall not be less than 1,800°F.

d. The normal operating range of the MWC shall be 80% to a maximum of 114% of design rated capacity.

e. The MWC shall be fueled with municipal solid waste only. Other wastes shall not be burned without specific prior written approval of Florida DER.

f. Auxiliary fuel burner(s) shall be fueled only with natural gas. If the annual capacity factor for gas is greater than 10%, as determined by 40 CFR 60.43b(d), the facility shall be subject to 40 CFR 60.44b, standards for nitrogen oxides.

g. Auxiliary fuel burner(s) shall be used at start up during the introduction of MSW fuel until design furnace gas temperature is achieved.

h. The facility may operate continuously (8760 hrs/yr).

2. Air Pollution Control Equipment Design

a. Each MWC shall be equipped with a baghouse for particulate emission control.

b. Each MWC shall be equipped with a dry scrubber for acid gas control, to remove at least 70% of SO_2 and 90% of other acid gases (namely HCL, H_2SO_4 mist, and fluorides.

c. The acid gas emission control system shall be capable of cooling flue gases to an average temperature not exceeding 300°F (3-hour rolling average).

d. DER shall be notified of the control devices chosen.

3. Flue gas emissions from each unit shall not exceed the following:

a.	Particulate:	0.0150 grains/dscf corrected to 12% CO_2
b.	Sulfur Dioxide:	104 ppmdv corrected to 7% O_2 3-hour (rolling) average, and 60 ppmdv corrected to 7% O_2 6-hour rolling average;

SPECIFIC CONDITIONS:

	or 70% reduction of uncontrolled SO_2 emissions, 6-hour rolling average. Not to exceed 100 ppmdv corrected to 7% O_2, 6-hr rolling average.
c. Nitrogen Oxides:	0.643 lb/MMBtu heat input.
d. Carbon Monoxide:	400 ppmdv corrected to 7% O_2, 1-hr average, and 100 ppmdv corrected to 7% O_2, 8-hr rolling average.
e. Volatile Organic Compounds:	0.021 lb/MMBtu heat input
f. Lead:	0.0007 lb/MMBtu heat input
g. Fluoride:	0.008 lb/MMBtu heat input
h. Beryllium:	1.35×10^{-7} lb/MMBtu heat input
i. Mercury:	0.0008 lb/MMBtu heat input
j. Visible Emissions:	Opacity of MWC emissions shall not exceed 15% opacity (6-min. average), except for one 6-min. period per hour of not more than 20% opacity. Excess emissions resulting from startup, shut down, or malfunction shall be permitted provided that best operational practices to minimize emissions are adhered to, and the duration of excess emissions are minimized.

For each pollutant for which a continuous emissions monitoring system is required in Condition No. 5, the emission averaging time specified above shall be used to establish operating limits and reportable excess emissions.

SPECIFIC CONDITIONS:

Compliance with the permit emission limits shall be determined by EPA reference test methods included in 40 CFR Parts 60 and 61, 1987 version, and listed in Condition No. 4 of this permit. Other DER approved methods may be used only after prior Departmental approval.

For the purpose of establishing specific increment consumption for TSP and SO_2 at the facility, an hourly emission rate shall be established for each pollutant at the time of performance testing using flue gas flow rates (corrected to 12% CO_2 or 7% O_2 at furnace capacity as appropriate) and the applicable concentration limits established above for TSP and SO_2. Projected emissions are listed below, based on 4800 Btu/lb heat content and 350 TPD MSW charging rate for each combustor (140 MMBTU/hr). Maximum emissions will be 14% above the tabulated values below and will occur at 114% of the design heat input rate.

Pollutant	lb/MMBtu Heat Input	Projected Emissions lb/hr 100%
Particulate	0.0322	4.5
Sulfur Dioxide	0.224	31.4
Nitrogen Oxides	0.643	90.0
Carbon Monoxide	0.098 [1], 0.391 [2]	13.7 [1], 54.7 [2]
Volatile Organics	0.021	2.9
Fluoride	0.008	1.1
Hydrogen Chloride	0.127	17.8
Sulfuric Acid Mist	0.035	5.0
Lead	7×10^{-4}	0.098
Mercury	8×10^{-4}	0.112
Beryllium	1.35×10^{-7}	1.9×10^{-5}
Arsenic	9.1×10^{-6}	1.3×10^{-3}

[1] 8-hr average
[2] 1-hr average

SPECIFIC CONDITIONS:

The combustors are subject to 40 CFR Part 60, Subpart E, and Subpart Db, New Source Performance Standards (NSPS), except that where requirements within the permit are more restrictive, the requirements of the permit shall apply.

4. Compliance Tests

a. Initial compliance tests for particulate matter, SO_2, nitrogen oxides, CO, VOC, lead, fluorides, mercury and beryllium shall be conducted in accordance with 40 CFR 60.8 (a), (b), (d), (e), and (f).

b. Annual compliance test(s) for particulate matter and nitrogen oxides shall be performed.

c. Compliance with the opacity standard shall be determined in accordance with 40 CFR 60.11(b) and (e).

d. Compliance with the requirement for 70% control of sulfur dioxide emissions will be determined by using the test methods in Condition 4.f. below or a continuous emission monitoring system for SO_2 emissions, before and after the air pollution control equipment, which meets the requirements of Performance Specification 2 of 40 CFR 60, Appendix B.

e. The compliance tests shall be conducted within $\pm$10% of the design rated capacity for each permitted fuel.

f. Prior DER approval shall be obtained for the location of the source sampling platform(s). The following test methods and procedures of 40 CFR Parts 60 and 61 (1987 version) or other DER approved methods with prior DER approval shall be used for compliance testing:

(1) Method 1 for selection of sample site and sample traverses.
(2) Method 2 for determining stack gas flow rate.
(3) Method 3 or 3A for gas analysis for calculation of percent O_2 and CO_2.
(4) Method 4 for determining stack gas moisture content to convert the flow rate from actual standard cubic feet to dry standard cubic feet.
5) Method 5 or Method 17 for concentration of particulate matter.

SPECIFIC CONDITIONS:

(6) Method 9 for visible determination of the opacity of emissions as required in this permit in accordance with 40 CFR 60.11.

(7) Method 6, 6C, or 8 for concentration of SO_2.

(8) Method 7, 7A, 7B, 7C, 7D, or 7E for concentration of nitrogen oxides.

(9) Method 10 for determination of CO concentration.

(10) Method 12 for determination of lead concentration.

(11) Method 13B for determination of fluoride concentrations.

(12) Method 25 for determination of VOC concentration.

(13) Method 101A for determination of mercury emission rate.

(14) Method 104 for determination of beryllium emission rate.

g. The permittee shall submit to DER a list of the pertinent operating parameters which indicate proper operation of the control equipment.

5. Continuous Emission Monitoring

Continuous emission monitors for opacity, oxygen, carbon monoxide, carbon dioxide, and sulfur dioxide shall be installed, calibrated, maintained and operated for each unit.

a. Each continuous emission monitoring system (CEMS) shall meet performance specifications of 40 CFR 60, Appendix B. The SO_2 CEMS sample point shall be located downstream of control devices for each unit.

b. CEMS data shall be recorded during periods of startup, shutdown and malfunction but shall be excluded from emission averaging calculations for CO, SO_2, and opacity.

SPECIFIC CONDITIONS:

c. A malfunction means any sudden and unavoidable failure of air pollution control equipment or process equipment to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation, any other preventable upset condition, or preventable equipment breakdown shall not be considered malfunctions.

d. The procedures under 40 CFR 60.13 shall be followed for installation, evaluation and operation of all CEMS.

e. Opacity monitoring system data shall be reduced to 6-minute averages, based on 36 or more data points, and gaseous CEMS data shall be reduced to 1-hour averages, based on 4 or more data points, in accordance with 40 CFR 60.13(h).

f. Average CO and SO_2 emission concentrations, corrected for O_2, shall be computed in accordance with the appropriate averaging time periods included in Condition No. 3.

g. For purposes of reports required under this permit, excess emissions are defined as any calculated average emission concentration, as determined pursuant to Condition No. 5 herein, which exceeds the applicable emission limit in Condition No. 3.

6. Operations Monitoring

a. Devices shall be installed to continuously monitor and record steam production, furnace exit gas temperature (FEGT) and flue gas temperature at the exit of the acid gas control equipment. A FEGT to combustion zone correlation shall be established to relate furnace temperature at the temperature monitor location (as close to fully mixed zone as possible) to furnace temperature in the overfire air fully mixed zone.

b. The furnace heat load shall be maintained between 80% and 114% of the design rated capacity during normal operations. The lower limit may be extended provided compliance with the carbon monoxide emissions limit and the FEGT within this permit at the extended turndown rate are achieved.

7. Reporting

a. A minimum of fifteen (15) days prior notification of compliance testing shall be given to the DER Southwest District Office.

SPECIFIC CONDITIONS:

b. The results of compliance test shall be submitted to the DER district office within 45 days after completion of the test.

c. The owner or operator shall submit excess emission reports for any calendar quarter during which there are excess emissions from the facility. If there are no excess emissions during the calendar quarter, the owner or operator shall submit a report semiannually stating that no excess emissions occurred during the semiannual reporting period. The report shall include the following:

(1) The magnitude of excess emissions computed in accordance with 40 CFR 60.13(h), any conversion factors used, and the date and time of commencement and completion of each period of excess emissions (60.7(c)(1)).

(2) Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the furnace boiler system. The nature and cause of any malfunction (if known) and the corrective action taken or preventive measured adopted (60.7(c)(2)).

(3) The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks, and the nature of the system repairs of adjustments (60.7(c)(3)).

(4) When no excess emissions have occured or the continuous monitoring system has not been inoperative, repaired, or adjusted, such information shall be stated in the report (60.7(c)(4)).

(5) The owner or operator shall maintain a file of all measurements, including continuous monitoring systems performance evaluations; monitoring systems or monitoring device calibration; checks; adjustments and maintenance performed on these systems or devices; and, all other information required by this permit recorded in a permanent form suitable for inspection (60.7(d)).

PERMITTEE: Pasco County Permit Number: PSD-FL-127

SPECIFIC CONDITIONS:

8. The construction shall reasonably conform to the plans and schedule submitted in the application. If the permittee is unable to complete construction on schedule, the Department must be notified in writing (Rule 17-2, F.A.C.).

9. Any change in the method of operation, fuels, equipment or operating hours shall be submitted for approval to DER's district office.

10. This facility shall be operated in such a manner so as to preclude objectionable odors pursuant to F.A.C. Rule 17-2.600(1).

11. All reasonable precautions shall be taken to prevent and control generation of unconfined emissions of particulate matter in accordance with F.A.C. Rule 17-2.610(3).

12. The permittee shall comply with all the applicable provisions of F.A.C. Chapter 17-2, 17-4, and 40 CFR 60 and 61.

Issued this 22 day of Sep, 1988

STATE OF FLORIDA DEPARTMENT OF
ENVIRONMENTAL REGULATION

Dale Twachtmann, Secretary

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.
1. ☒ Show to whom delivered, date, and addressee's address. 2. ☐ Restricted Delivery
↑(Extra charge)↑ *↑(Extra charge)↑*

3. Article Addressed to:

Mr. Bruce P. Miller
Air Programs Branch
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

4. Article Number
P 274 007 460

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X Charles Davis

6. Signature – Agent
X

7. Date of Delivery SEP 30 1988

8. Addressee's Address *(ONLY if requested and fee paid)*

PS Form **3811**, Mar. 1987 ★ U.S.G.P.O. 1987-178-268 DOMESTIC RETURN RECEIPT

P 274 007 460

Mr. Bruce P. Miller, EPA
345 Courtland St., N.E.
Atlanta, Georgia 30365

Mailed: 9-26-88
Permit: PSD-FL-127

PS Form 3800, June 1985

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.
1. ☒ Show to whom delivered, date, and addressee's address. 2. ☐ Restricted Delivery
↑(Extra charge)↑ *↑(Extra charge)↑*

3. Article Addressed to:

Mr. John J. Gallagher
County Administrator
Pasco County
7536 State Street
New Port Richey, FL 33553

4. Article Number
P 274 007 459

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X

6. Signature – Agent
X

7. Date of Delivery 9-28-88

8. Addressee's Address *(ONLY if requested and fee paid)*

PS Form **3811**, Mar. 1987 ★ U.S.G.P.O. 1987-178-268 DOMESTIC RETURN RECEIPT

P 274 007 459

RECEIPT FOR CERTIFIED MAIL
NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to
Mr. John J. Gallagher, Pasco Co.
Street and No.
7536 State St.
P.O. State and ZIP Code
New Port Richey, FL 33553
Postage
Certified Fee
Special Delivery Fee
Restricted Delivery Fee
Return Receipt showing to whom and Date Delivered
Return Receipt showing to whom, Date, and Address of Delivery
TOTAL Postage and Fees
Postmark or Date

PS Form 3800, June 1985 * U.S.G.P.O. 1986-490-794

Mailed: 9-26-88
Permit: PSD-FL-127

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.
1. ☒ Show to whom delivered, date, and addressee's address. 2. ☐ Restricted Delivery
↑(Extra charge)↑ *↑(Extra charge)↑*

3. Article Addressed to:

Mr. W. K. Miller
The Citrus Hill Manufacturing Co.
P. O. Box 2000
Frostproof, FL 33843

4. Article Number
P 274 007 462

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X

6. Signature – Agent
X

7. Date of Delivery 9/29/88

8. Addressee's Address *(ONLY if requested and fee paid)*

PS Form **3811**, Mar. 1987 ★ U.S.G.P.O. 1987-178-268 DOMESTIC RETURN RECEIPT

PM
9-9-88
Atlanta FL

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

SEP 08 1988

4APT/APB-aes

Mr. C. H. Fancy, Deputy Bureau Chief
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Pasco County Resource Recovery Facility (PSD-FL-127)

Dear Mr. Fancy:

Our office has reviewed the draft permit and the preliminary determination package for the proposed construction of the Pasco County Resource Recovery Facility (RRF), as well as the letter to your office from David Dee of the Carlton, Fields, Ward, Emmanuel, Smith and Cutler law offices. The permit was reviewed under the Region IV Overview of State Programs policy. We offer the following comments:

Draft Permit

In order for the permit to be more sufficient and enforceable, additional permit conditions are necessary for the flue gas emissions of each source. It is our policy that, for criteria pollutants, emission limits should specify the same averaging times as are indicated in the National Ambient Air Quality Standards (NAAQS). For example, your draft permit specifies that an eight-hour rolling average be used in determining the emission limits for carbon monoxide. Because the NAAQS for carbon monoxide was determined by using an eight-hour and a one-hour averaging times, we recommend the use of both averaging time standards in your permit. Likewise, for sulfur dioxide, a 24-hour and a three-hour average need to be specified.

Concerning the permit's emission limit for nitrogen oxides (0.643 lb/MMBTU), this limit exceeds values specified in other permits for municipal waste incinerators in Florida. Therefore, we do not consider this limit to represent BACT. For example, similar emission sources in Florida specify emission limits for nitrogen oxides (NO_x) without de-NO_x controls at approximately 0.051 lb/MMBTU.

Additional information is also needed in your discussion of compliance testing. When designating the test method to be used for compliance testing, you must specify which versions of 40 CFR Parts 60 and 61 are to be used. Also, for pollutants not subject to New Source Performance Standards (NSPS), you must indicate each pollutant's sample volume, sampling time, and the number of test runs for each test method specified. Concerning the Pasco County RRF permits, sampling times, test methods, etc., need to be specified for the following pollutants: Sulfur Dioxide, Nitrogen Oxides, Lead, Fluoride, Mercury, and Beryllium.

Public Notice

The public notice did not mention that toxics or unregulated pollutants were considered in determining BACT for this source. This causes the public notice to be deficient. However, if a public hearing was held and the public was informed of potential air toxic pollutants that would be emitted from the facility, then that would satisfy our concerns of a deficient public notice.

BACT Determination

We do not feel that the BACT analysis for NO_x was properly performed as insufficient arguments were given for not choosing the "top" control technology. We request that additional information be provided which shows unique and convincing arguments as to why de-NO_x controls cannot be applied to this source. Based on the information we received, the cost to control NO_x may be reasonable. Also, your argument that BACT analysis for NO_x is not necessary because the ambient impact of increased NO_x is not significant is completely unacceptable. The use of air quality modeling results to justify not using a certain level of BACT is also unacceptable. Ambient impacts do not drive the BACT determination. Ambient impacts only serve as a check to ensure that NAAQS and increments are met once a level of BACT is chosen.

Letter from Carton, Fields, Ward, Emmanuel, Smith and Cutler Offices - Attorneys at Law

Item 7 states that the requirement for an oxygen monitor should be deleted from Pasco County's draft permit; however, EPA's policy dictates that oxygen concentrations of exhaust gases be monitored continuously (see EPA memorandum on Operational Guidance on Control Technology for New and Modified Municipal Waste Combustors, dated June 26, 1987).

In item 8, it was assumed that the temperature probe would be located after the economizer. This is unacceptable. The location selected for measuring combustion temperatures should be based on sound engineering analysis and is usually as close as possible to the "fully mixed height," or the point beyond the final air addition where complete mixing should have occurred. We request that this point be clarified with Pasco County and the location of the temperature probe be indicated in the permit, if possible.

Thank you for the opportunity for providing our input. If you have any additional information or comments, please contact me or Karrie-Jo Shell of my staff at (404) 347-2864.

Sincerely yours,

Wayne J Aronson / Acting for

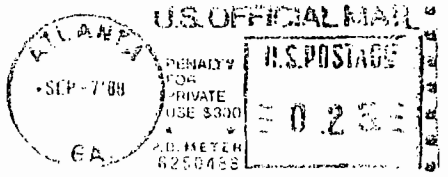
Bruce P. Miller, Chief
Air Programs Branch
Air, Pesticides, and Toxics
Management Division

copied: Pradeep Raval
Barry Andrews
Bill Thomas, SW Dist
CHF/BT

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

AIR-4



Mr. C. H. Fancy, Deputy Bureau Chief
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

CARLTON, FIELDS, WARD, EMMANUEL, SMITH & CUTLER, P. A.

ATTORNEYS AT LAW

ONE HARBOUR PLACE
P. O. BOX 3239
TAMPA, FLORIDA 33601
(813) 223-7000

FIRSTATE TOWER
P. O. BOX 1171
ORLANDO, FLORIDA 32802
(407) 849-0300

HARBOURVIEW BUILDING
P. O. BOX 12428
PENSACOLA, FLORIDA 32582
(904) 434-0142

FIRST FLORIDA BANK BUILDING
P. O. DRAWER 190
TALLAHASSEE, FLORIDA 32302
(904) 224-1585

PLEASE REPLY TO:

August 12, 1988 Tallahassee

HAND DELIVER

Sally Munroe
Chief Cabinet Aide
Office of the Governor
Suite 210
The Capitol
Tallahassee, Florida 32399

Re: Pasco County Resource Recovery Facility

Dear Ms. Munroe:

On August 10, 1988, you asked me several questions concerning the Pasco County resource recovery facility. I am sending you this letter and the attached documents in response to your questions.

I. DER's Dioxin Study at Pinellas RRF

Pasco County and the Department of Environmental Regulation (DER) evaluated the potential dioxin emissions from the proposed Pasco County resource recovery facility and concluded that those emissions would not have any significant impacts on public health. Their conclusion is supported by recent test data that have been collected by the United States Environmental Protection Agency (EPA) and DER. In 1987 EPA submitted a multi-volume report to Congress that contained data concerning resource recovery facilities located around the world. EPA found that there is no unacceptable health risk associated with a modern, well-designed resource recovery facility, like the one proposed for Pasco County.

DER has been involved in two major studies of dioxin emissions. DER joined seven other states that funded an extensive study in Pittsfield, Massachussetts. DER also spent approximately $125,000 and worked with the State of California to

measure the dioxin and other emissions at the Pinellas County resource recovery facility. DER found that the emissions of dioxins and other substances at the Pinellas plant were very small and posed no significant risk to the public.

Pasco County's emissions will be much less than Pinellas County's emissions. Pinellas County's plant is three time larger than Pasco County's proposed plant. Moreover, Pasco County will use newer and better pollution control equipment to limit its emissions. For these reasons, the dioxin emissions from Pasco County's proposed resource recovery facility should be much less than the dioxin emission at Pinellas County's plant, which were deemed insignificant.

The Executive Summary from DER's study of the Pinellas County facility was introduced into evidence at the administrative hearing. A copy of the Executive Summary is attached hereto for your review.

DER's perspective about dioxins and other air quality issues is set forth in pages 196-230 of the transcript from the administrative hearing.

II. Editorial in Pasco Times Newspaper

On August 4, 1988, the Pasco Times newspaper, the local version of the St. Petersburg Times, published an editorial concerning a candidate for the Pasco County Commission and his interest in composting, rather than resource recovery. In pertinent part, the editorial states:

> With the county wrapping up years of research into its planned disposal system which would burn up to 1,050 tons of garbage a day and generate electricity for sale to help pay off construction bonds, Pozesny and his followers stand ready to chuck it all for something that they only think may be better and cheaper.
>
> * * *
>
> If Pozesny was so civic minded and concerned about the county's planned resource recovery project, why didn't he get involved in the issue before he became a candidate? He's been in the area for several years and surely has read how the county's only landfill is rapidly running out of space.
>
> * * *

> The county's professional staff and consultants are aware of the composting business, and they have some well-founded concerns. While some opponents of incineration and some opportunistic politicians might want residents to think otherwise, there has been careful study of what will be the most ambitious public works project ever in Pasco County. (emphasis in original)

We believe this editorial reflects the opinion of those who do not live next to the site or have other personal interests at stake. A copy of the editorial is attached for your review.

III. 1988 Solid Waste Legislation

The 1988 Florida Legislature adopted a bill (CS for CS for SB 1192) which addressed a wide variety of solid waste issues. The provisions of Senate Bill 1192 will complement the County's plans for its resource recovery project. Pasco County is not exempt from the requirements of SB 1192.

SB 1192 addresses several issues raised by the Shady Hills Park and Civic Association, Inc. (Intervenor), which wants Pasco County to abandon its plan to build a resource recovery facility. Intervenor wants to utilize recycling and composting as the ultimate method of waste disposal. This approach is not viable, however, because there are no existing recycling programs anywhere in the world that can dispose of 100% of the waste. Recycling and composting only eliminate a maximum of 30% of the waste. SB 1192 recognizes this fact. It requires all counties, including Pasco, to implement recycling programs, but it only calls for reduction of 30% of the waste stream by 1994. The remaining 70% must be landfilled or incinerated in a resource recovery facility.

Pasco County has always planned to collect and recycle ferrous metals. The County also has studied recycling programs and SB 1192 requires Pasco County to start a recycling program by July 1, 1989. The recycling program must remove a majority of the newspapers, aluminum cans, glass and plastic bottles from the waste stream. This program will be in effect for at least two years before Pasco County's resource recovery facility starts commercial operations in 1991. Thus, the Intervenor's request for a recycling program will become a reality.

The Intervenor's concern about the ash from resource recovery facilities is addressed by SB 1192, which requires DER to adopt rules governing the disposal of ash. DER must initiate the rule-making process and conduct at least one public hearing by February 1, 1989. DER's rules concerning ash disposal should be in effect long before Pasco County's resource recovery facility begins operation in 1991.

SB 1192 provides that the Department of Transportation must conduct demonstration projects by January 1, 1990, to evaluate the use of ash as a road base in highway construction projects. Where appropriate, DOT must modify its construction specifications to encourage the use of recycled materials, including ash. If DOT's tests are successful, Pasco County may be able to use the ash for road construction and thus the County may be able to reduce the amount of ash that is placed in the landfill.

SB 1192 instructs the Florida Public Service Commission to establish rules concerning the purchase of energy by electric companies from resource recovery facilities. Under the new rules, Pasco County should be able to earn more money for the electricity that it generates than is currently being paid for electricity from other refuse-to-energy facilities.

SB 1192 requres DER to adopt rules establishing the minimum qualifications for the operators of landfills and resource recovery facilities. A person may not operate a solid waste management facility after January 1, 1990 unless he has completed an operator training course approved by DER. DER's rules and the operator training program will be in place before Pasco County uses its landfill or resource recovery facility.

The Department of Community Affairs found that the proposed resource recovery facility is consistent with the existing State Comprehensive Plan. SB 1192 amends the State Comprehensive Plan to require a 30% reduction in the volume of solid waste for disposal by 1994. In addition, all counties must have county-wide solid waste disposal systems by 1994. These requirements are consistent with Pasco County's plan for its solid waste management.

IV. Draft SWFWMD Report

Intervenor filed a motion with the Hearing Officer and alleged that Pasco County and the Southwest Florida Water Management District (SWFWMD) should have introduced a draft SWFWMD report into evidence at the final administrative hearing in April, 1988. Pasco County, the Department of Environmental Regulation (DER), and SWFWMD strenuously objected to the Intervenor's motion because Intervenor's allegations were totally misleading, factually unfounded, and legally erroneous. The Hearing Officer agreed and denied the motion.

The controversey focused on a draft report and recommendations prepared by John Parker, a SWFWMD hydrologist, employee, on February 10, 1988. At the County's request, Parker agreed to modify his recommendations and issue an amended report. On February 23, 1988, the SWFWMD Governing Board held a regular public meeting to discuss the District's business, including three SWFWMD staff reports concerning the proposed Pasco County resource recovery facility. The Board was advised about Parker's draft report, the amended report, the staff's recommendations and the concerns that had been raised by the County. The Governing Board questioned its attorney, its staff, and me about those issues. The Governing Board also discussed the recharge features of the County's site. The Governing Board then unanimously approved the amended report, which stated that the Governor and Cabinet should approve the County's project.

On April 11 and 12, 1988, a formal administrative proceeding was conducted to evaluate Pasco County's facility. On April 12, 1988--48 days after the SWFWMD Governing Board approved the amended report--Intervenor called John Parker as Intervenor's first witness. Intervenor questioned Parker at length about all of the material statements in the amended report and all of Parker's recommendations.

Neither Pasco County, DER, SWFWMD, or Intervenor introduced the draft report into evidence. The draft report had not been approved by the SWFWMD Governing Board and it did not contain SWFWMD's official recommendation. If Intervenor thought the draft report was important, the Intervenor could have and should have introduced the draft report into evidence or questioned Parker about it.

Intervenor's legitimate concerns were addressed at SWFWMD and the final hearing. The SWFWMD staff and Governing Board concluded that SWFWMD's amended report contains recommendations that are adequate to protect the public welfare. Intervenor has not presented any competent evidence to the contrary.

All of these issues are thoroughly discussed in the following documents which have been attached hereto for your review:

1. Intervener's [sic] Motion to Supplement Record, Reopen Hearing, and Hear Testimony.

2. Pasco County's Response In Opposition To Intervenor's Motion To Supplement Record And Reopen Hearing;

3. Department of Environmental Regulation's Response in Opposition to Intervenor's Motion to Supplement Record;

4. Southwest Florida Water Management District's Response to Intervenor's Motion to Supplement Record, Reopen Hearing, and Hear Testimony; and

5. Hearing Officer's Order on Intervenor's Motion to Supplement Record, Reopen Hearing, and Hear Testimony.

Also enclosed for your review are excerpts from the transcript of the administrative hearing on April 12, 1988. The excerpts contain John Parker's testimony at the hearing. We believe these documents clearly demonstrate that the Intervenor's allegations about Parker's draft report are completely without merit.

V. Recharge Area

Intervenor has made much ado about the fact that the County's site is located in a recharge area. However, Intervenor ignores the fact that virtually all of Pasco County is a recharge area, except for the swamps and creeks. Intervenor also ignores the fact that the County's consultants, the Department of Environmental Regulation, and the Southwest Florida Water Management District have been well aware of this issue and have carefully evaluated its significance. The issue also was discussed at length by the SWFWMD Governing Board before the Governing Board unanimously approved this project and recommended its approval by the Governor and Cabinet.

The location of the site is not as significant as Intervenor suggests because the County has carefully designed its project to utilize the best portions of the site and to provide the greatest possible protection for groundwater. The County will provide two synthetic liners and two leachate collection systems beneath the landfill. The two liners will provide two separate shields or levels of protection for the groundwater. Even if we assume a worse case scenario, any fluid (leachate) leaking from the first liner would be detected, collected, and removed from the second liner without affecting the groundwater. The secondary (lower) leachate collection system will be monitored weekly for the presence of any fluids that would indicate leakage from the primary (upper) liner.

In addition, beneath the liner there is a layer of sandy soil and then a layer of at least 5 to 15 feet of clay that will separate the landfill from the potable Floridan Aquifer. The clay will impede the downward migration of fluids and will help confine them to the sandy soil beneath the landfill. A network of monitoring wells will be installed and used to detect any pollutants that might escape from the landfill. If any leachate is detected, Pasco County will implement a contingency plan which calls for the immediate expansion of a monitor well network, the repair of the liner system, and other appropriate remedial action. Thus, the County, DER, and SWFWMD have carefully considered worst-case scenarios and taken appropriate steps to ensure that any potential problem would be detected and corrected before it had any significant impacts.

VI. Proposals by Vendors

Pasco County received five bids by vendors that want to build the proposed resource recovery facility. On August 10, 1988, the County eliminated three vendors from further consideration. The County will soon begin negotiations with one or both of the remaining vendors.

The two remaining vendors are Westinghouse and Ogden-Martin, the company that built and operates the Hillsborough County resource recovery facility. Enclosed for your review are copies of the executive summaries submitted by Westinghouse and Ogden-Martin. These summaries contain the companies' architectural designs for the Pasco County facility. The artists' drawings show that both companies, like Pasco County, are committed to building an attractive and aesthetically pleasing facility.

VII. Site Visit

As you know, Hillsborough County has a mass burn resource recovery facility that is similar to the facility that has been proposed for Pasco County. At your request, we have made arrangements for you and the other Cabinet Aides to visit Hillsborough County's facility on August 16, 1988. We will meet you at the Tampa International Airport and provide ground transportation. It will take approximately 30 minutes to drive from the Tampa International Airport to the Hillsborough County resource recovery facility and approximately 1 1/2 hours to inspect the facility. You should dress comfortably because we will be walking in areas that are not air conditioned.

I hope this information is helpful to you. Please call me if I can provide you with any additional information about the Pasco County resource recovery facility.

Sincerely,

David S. Dee

DSD/vc:Pasco-cab

cc: Will Abberger (w/attachments)
Gene Adams (w/attachments)
Charles Blair (w/attachments)
Jimmie Henry (w/attachments)
Mary Lou Rajchel (w/attachments)
Pat Smith (w/attachments)
James Flack (w/o attachments)
John Griffin (w/o attachments)
John Guthrie (w/o attachments)
Mark Ives (w/o attachments)
Ben Harrill (w/o attachments)
John Gallagher (w/o attachments)
Bob Hauser (w/o attachments)

bcc: Clair Fancy

PM
8-11-88
Tallahassee, FL

file copy

CARLTON, FIELDS, WARD, EMMANUEL, SMITH & CUTLER, P. A.

ATTORNEYS AT LAW

ONE HARBOUR PLACE
P. O. BOX 3239
TAMPA, FLORIDA 33601
(813) 223-7000

FIRSTATE TOWER
P. O. BOX 1171
ORLANDO, FLORIDA 32802
(407) 849-0300

HARBOURVIEW BUILDING
P. O. BOX 12426
PENSACOLA, FLORIDA 32582
(904) 434-0142

FIRST FLORIDA BANK BUILDING
P. O. DRAWER 190
TALLAHASSEE, FLORIDA 32302
(904) 224-1585

PLEASE REPLY TO: Tallahassee

August 10, 1988

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management
Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Pasco County Resource Recovery Facility
PSD-FL-127

Dear Mr. Fancy:

On behalf of Pasco County, we have reviewed the Department's draft PSD permit for the Pasco County resource recovery facility. Our comments concerning the draft permit are set forth below.

1. On page 1 of the draft permit, the latitude and longitude should be modified because they are different than the coordinates presented in Pasco County's application for site certification.

2. On page 5, Specific Condition No. 1.b. should be modified to state that the maximum throughput "shall not exceed 115% of either the design MSW charging rate of 350 TPD or the heat input rate of 140 MMBtu/hr." The Department has historically authorized resource recovery facilities to operate at a throughput up to 115% of the design capacity. This practice is recognized in the Conditions of Certification for Pasco County which authorize a throughput of 115% of the design capacity. See Conditions of Certification, page 11, §XIV., ¶ A.1.c. We believe this condition should be changed because it is extremely important for the County to have the ability to operate at a throughput up to 115% of the nameplate capacity.

3. On page 6, Specific Condition No. 2.b. refers to 90% removal of "acid gases." To avoid confusion, it should be changed to refer to hydrogen chloride (HCL).

4. On page 6, Specific Condition No. 3.a. should refer to a particulate emission limit of 0.015 grains/dscf, rather than 0.0150 grains/dscf.

5. On page 8, the Specific Conditions contain a table of projected emissions. Our calculations indicate that the projected emissions for mercury will be 0.112 lbs/hr, rather than 0.105 lbs/hr.

6. On page 9, Specific Condition No. 4.e. should be modified to indicate that compliance tests shall be conducted at ±10% of the nameplate BTU rating (i.e., 140 million BTU). As written, the draft condition suggests that a compliance test must be conducted precisely at the maximum capacity. We believe it is very important to modify this condition because it implies that there can be no flexibility in the operating conditions at the time of the compliance test.

7. On page 10, Specific Condition No. 5 requires continuous emission monitors for various substances, including oxygen. The conditions of certification for the Pasco County facility do not require a continuous emission monitor for oxygen. See Conditions of Certification at page 12, §XIV., ¶A.3.a. Accordingly, we believe the requirement for an oxygen monitor should be deleted from the draft permit.

8. On page 11, Specific Condition No. 6.a. requires continuous montoring of the furnace exit gas temperatures. We do not know precisely where DER wants the monitor to be located for the furnace exit gas, but we assume that the monitor should be located at the economizer outlet. If our assumption is correct, we have no objections to this requirement.

Thank you for providing us with this opportunity to submit comments concerning the draft permit. Please call us if you have any questions.

Sincerely,

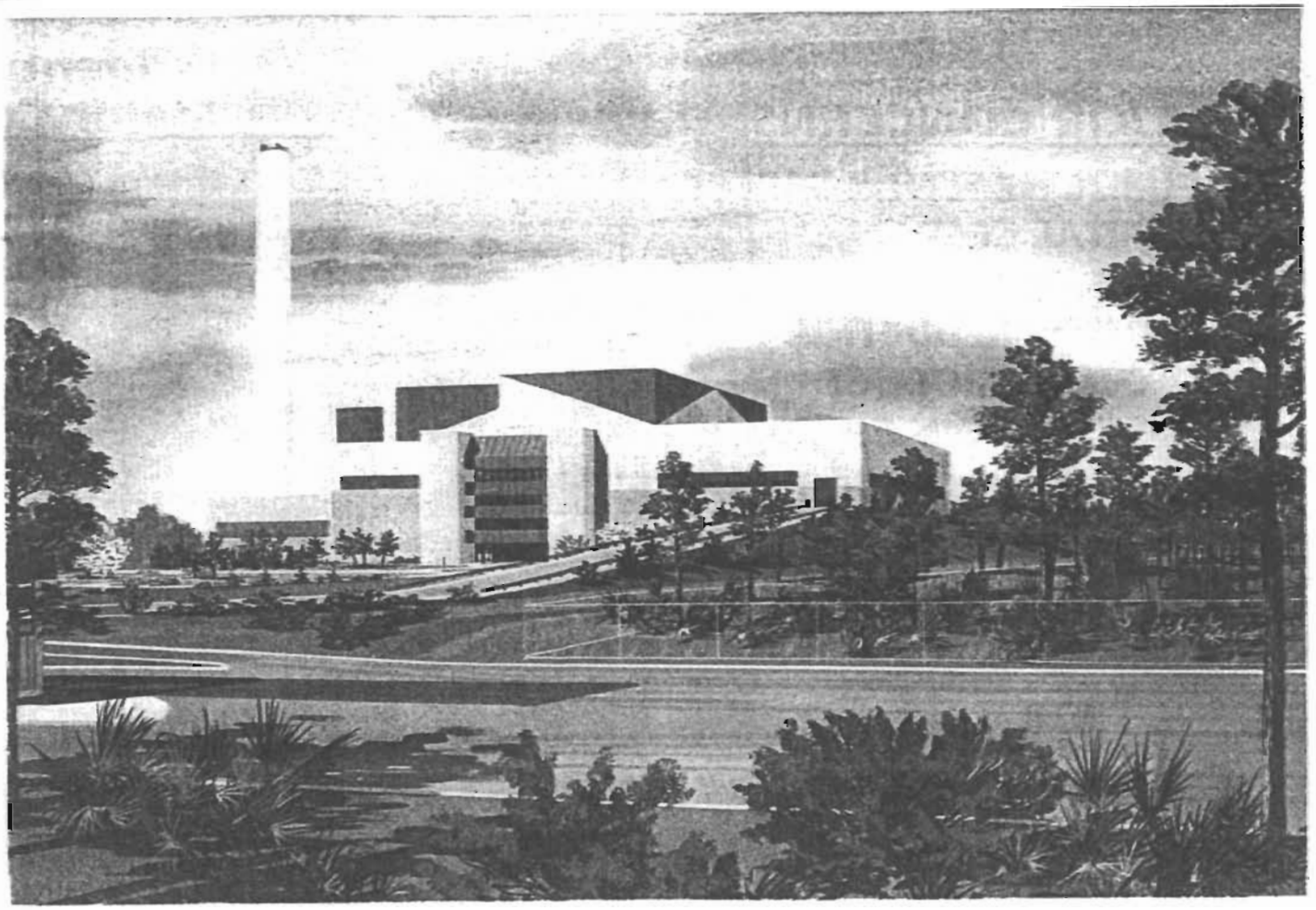
David S. Dee

David S. Dee

cc: Ben Harrill
John Gallagher
Bob Hauser
Don Elias

DSD/vc:FANCY
cupied: Pradeep Raval
Tom Rogers
Bill Thomas, SW Dist
Bruce Miller, EPA
Miguel Flores, NPS
CTF/BT

Barry Andrews



Waste-To-Energy Facility

New Port Richey, in Pasco County, is the site of a new 1,050 ton-per-day resource recovery facility. Ogden Martin Systems, of Fairfield, New Jersey was selected to design, engineer, build and operate the unit. Operation is scheduled to begin in the summer of 1991. The facility will feature the Martin Combustion System which employs a reverse reciprocating stoker grate.

Pasco County To Build Resource Recovery Unit

In 20 years Pasco County's current population of approximately 250,000 is expected to double. In order to minimize the impact on county services, such as waste disposal, the Pasco County Board of Commissioners selected Ogden Martin Systems of Fairfield, New Jersey to design, engineer, build and operate a resource recovery facility. The 1,050 ton-per-day plant will be Ogden Martin's third facility in Florida.

The Pasco County Solid Waste Resource Recovery Facility will be located in New Port Richey on a 72-acre corner of an 810-acre tract owned by the County. The site will encompass a landfill and a citizens unloading area.

The facility will feature the Martin Combustion System which is used in more than 100 facilities in 18 countries worldwide. This system employs the Martin reverse reciprocating stoker grate which continually agitates the waste as it burns to ensure thorough combustion. In order to accommodate the county's anticipated growth, the facility is designed to accommodate a fourth 350 ton-per-day combustion/steam generation unit.

Particulates will be controlled through a dry scrubber combination baghouse. Potable water for boiler makeup and domestic uses will be provided by an on-site well. Treated effluent from the county's wastewater treatment plant will be used for the cooling tower makeup water. The facility will produce 31.2 megawatts of electricity for sale to Florida Power Corporation.

Groundbreaking for the $90.5 million dollar project is expected to occur in May. All of the necessary environmental permits are in place. The project is on a 27-month construction schedule and is slated for completion in the summer of 1991.

Prior to choosing the mass burn technology, the county's solid waste disposal service consisted of city and private refuse collection and the East Pasco landfill, which is operated by the county. The East Pasco landfill receives about 460 tons of waste per day, seven days a week. As a result, most of the county's waste was being transported elsewhere for disposal. But long hauling distances and high transportation costs were making this out-of-county disposal method increasingly difficult to maintain.

See FACILITY page 4

Faced with the imminent population growth and the high cost of hauling waste out of the area, Pasco County reviewed the potential for volume reduction in the county. The county also reviewed technologies such as refuse-derived fuel. After an exhaustive investigation, the County endorsed the mass burn resource recovery technology.

A request for proposals was released in January 1988. Bidders were judged on their technology, operations and maintenance plan, the energy efficiency of the facility, the construction schedule and the aesthetic/architectural design. In December 1988, Ogden Martin Systems, Inc. was selected. When the Pasco County Solid Waste Resource Recovery Facility begins commercial operation in Fall of 1991, it will be the primary waste disposal system for Pasco County residents.

Project financing will be completed by the end of April. The facility will be owned by Pasco County. Under contract to the county, Ogden Martin will operate the facility for 20 years.

LAW OFFICES

CARLTON, FIELDS, WARD, EMMANUEL, SMITH, CUTLER & KENT, P.A.

P.O. DRAWER 190

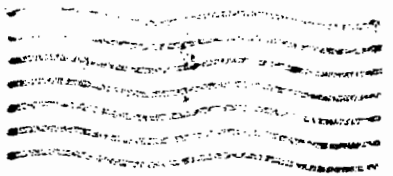
TALLAHASSEE, FLORIDA 32302

ATTORNEY #

REFERENCE #

CLAIR FANCY
DEPARTMENT OF ENVIRONMENTAL REGULATION
BUREAU OF AIR QUALITY MANAGEMENT
TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399

CARLTON, FIELDS, WARD, EMMANUEL, SMITH, CUTLER & KENT, P.A.
P.O. DRAWER 190
TALLAHASSEE, FLORIDA 32302



C.H. FANCY, P.E.
DEPUTY CHIEF
DEPARTMENT OF ENVIRONMENTAL
REGULATION
BUREAU OF AIR QUALITY MANAGEMENT
TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

CARLTON, FIELDS, WARD, EMMANUEL, SMITH & CUTLER, P. A.

ATTORNEYS AT LAW

ONE HARBOUR PLACE
P. O. BOX 3239
TAMPA, FLORIDA 33601
(813) 223-7000

FIRSTATE TOWER
P. O. BOX 1171
ORLANDO, FLORIDA 32802
(407) 849-0300

HARBOURVIEW BUILDING
P. O. BOX 12426
PENSACOLA, FLORIDA 32582
(904) 434-0142

FIRST FLORIDA BANK BUILDING
P. O. DRAWER 190
TALLAHASSEE, FLORIDA 32302
(904) 224-1585

PLEASE REPLY TO:

Tallahassee

July 29, 1988

Clair Fancy
Department of Environmental
Regulation
Bureau of Air Quality Management
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399

Re: Pasco County Resource Recovery Facility

Dear Clair:

On July 19, 1988, the Hearing Officer entered a recommended order which recommended the approval of the Pasco County resource recovery facility. A copy of her recommended order is enclosed for your review.

We expect this recommended order to be considered by the Cabinet Aides on Wednesday, August 17, 1988 and by the Governor and Cabinet on Tuesday, August 23, 1988. Since this project has been controversial, Richard Donelan may want you to accompany him to the Cabinet Aides and Cabinet meetings. We would expect the Governor and Cabinet to ask the Department about the potential impacts of the project on air quality.

As you recall, the Power Plant Siting Act was amended to address certain issues raised by the United States Environmental Protection Agency concerning the Department's issuance of PSD permits. Section 403.509(2), Florida Statutes, provides:

> Simultaneously with the [Governor and Cabinet's] action on the application, the Department shall issue or deny any permit required pursuant to any federally delegated or approved permit program.

In this case, we assume that the Department will issue a PSD permit for the Pasco County resource recovery facility when the Governor and Cabinet consider the Hearing Officer's recommended order.

Since we have not received EPA's written approval of the project, please send us any comments or approvals that you have received from EPA. If you have not yet received any, please contact EPA and take whatever steps are necessary to ensure that EPA issues its written approval of the project before the issuance of the PSD permit. Pasco County would like to receive express authorization from EPA so that Pasco County can avoid the problems that EPA created for Hillsborough County.

We sincerely appreciate your assistance and cooperation with these matters.

Sincerely,

David S. Dee

David S. Dee

cc: Richard Donelan
Buck Oven
Barry Andrews
Bob Hauser

DSD/vc:Fancy-3

Copied: Pradeep Raval
Tom Rogers
Bill Thomas, SW Dist.
Bruce Miller, EPA
Miguel Flores, NPS
CHF/BT
Barry Andrews

State of Florida
Division of Administrative Hearings
The Oakland Building, 2009 Apalachee Parkway
Tallahassee, Fl. 32399-1550
(904) 488-9675 • SunCom: 278-9675

Sharyn L. Smith
Director

Ann Cole
Clerk

July 19, 1988

Honorable Bob Martinez
Governor
The Capitol
Tallahassee, FL 32399

Honorable Gerald Lewis
Comptroller
The Capitol
Tallahassee, FL 32399

Honorable Bob Butterworth
Attorney General
The Capitol
Tallahassee, FL 32399

Honorable Bill Gunter
Insurance Commissioner
The Capitol
Tallahassee, FL 32399

Honorable Doyle Conner
Commissioner of Agriculture
The Capitol
Tallahassee, FL 32399

Honorable Betty Castor
Commissioner of Education
The Capitol
Tallahassee, FL 32399

Honorable Jim Smith
Secretary of State
The Capitol
Tallahassee, FL 32399

RE: Application for Power Plant Site Certification of Pasco County Solid Waste Resource Recovery Facility
Case No. 87-5337

Dear Members of the Siting Board:

Enclosed is my Recommended Order for the site certification portion of the referenced proceeding. Under separate cover, I am forwarding the three-volume transcript of the hearing, Pasco County's Exhibits 1 through 19, 22A through 22E, and 24, the DER's Exhibits 1 through 4, and the Intervenor's Exhibit 1 to Hamilton S. Oven, Jr., the DER Administrator of the Siting Coordination Section, for future transmittal to the Board.

Copies of this letter will serve to notify the parties that my Recommended Order and the record have been transmitted to you on this date. Pursuant to Section 120.57(1)(b)9, Florida Statutes, the parties are advised that they are allowed to file written exceptions thereto with the Governor and Cabinet, sitting as the Siting Board.

Please furnish the Division of Administrative Hearings with a copy of the Final Order rendered in this proceeding so that our files will be complete.

Sincerely,

Diane D. Tremor

DIANE D. TREMOR
Hearing Officer

DDT/dfc
Enclosures as shown

cc: Dale Twachtmann, Secretary, DER
Hamilton S. Oven, Jr., Administrator
David S. Dee, Esquire
Richard T. Donelan, Jr., Esquire
Edward B. Helvenston, Esquire
C. Laurence Keesey, Esquire
William W. Deane, Esquire

STATE OF FLORIDA
DIVISION OF ADMINISTRATIVE HEARINGS

IN RE:	)	
	)	
Application for	)	
Power Plant Site Certification	)	
of Pasco County Solid Waste	)	CASE NO. 87-5337
Resource Recovery Facility	)	
	)	

RECOMMENDED ORDER

Pursuant to notice, an administrative hearing was held before Diane D. Tremor, Hearing Officer with the Division of Administrative Hearings, on April 11 and 12, 1988, in New Port Richey, Pasco County, Florida. The issue for determination at this certification hearing, held pursuant to Section 403.508(3), Florida Statutes, is whether Pasco County's proposed resource recovery facility, landfill/ashfill and associated facilities are entitled to approval by the Governor and Cabinet, sitting as the Siting Board, in accordance with the Florida Electrical Power Plant Siting Act, Sections 403.501, et seq., Florida Statutes (1987).

APPEARANCES

For the Applicant
Pasco County:

David S. Dee, Esquire
Carlton, Fields, Ward,
Emmanuel, Smith, Cutler, P.A.
First Florida Bank Building
215 South Monroe Street
Suite 410
Tallahassee, FL 32301

For the Department of Environmental Regulation:	Richard T. Donelan, Jr., Esq. Department of Environmental Regulation 2600 Blair Stone Road Tallahassee, FL 32399-2400
For the Southwest Florida Water Management District:	Edward B. Helvenston, Esquire Southwest Florida Water Management District 2379 Broad Street Brooksville, FL 34609-6899
For the Department of Community Affairs:	C. Laurence Keesey, Esquire Department of Community Affairs 2740 Centerview Drive Rhyne Building Tallahassee, FL 32309
For Intervenor Shady Hills Park and Civic Association:	William W. Deane, Esquire 1700 9th Street North, Suite B St. Petersburg, FL 33704

INTRODUCTION

On November 17, 1987, Pasco County filed an application for approval of a resource recovery facility, landfill/ashfill and associated facilities pursuant to the Florida Electrical Power Plant Siting Act, Sections 403.501, et seq, Florida Statutes (1987). The undersigned presided over the land use hearing on February 16, 1988, to determine whether the site selected for the project was consistent and in compliance with existing applicable land use plans and zoning ordinances. A Recommended Order finding such consistency and compliance was entered on March 25, 1988.

On March 24, 1988, the Shady Hills Park and Civic

Association, Inc. filed a motion to intervene and participate as a party at the certification hearing. Thereafter, Pasco County moved to strike certain portions of the motion to intervene. After a telephone conference call, the undersigned granted the motion to intervene, but struck those portions of the intervenor's petition which attempted to raise issues beyond the scope of the certification hearing; i.e: the impact of the project upon property values; alternatives to the proposed method of solid waste disposal, except insofar as such alternatives may relate to the Best Available Control Technology; and issues regarding unadopted dioxin standards. The intervenor's post-hearing motion filed on June 7, 1988, to "supplement record, reopen hearing and hear testimony" was denied by separate order filed on June 28, 1988.

In support of its application, Pasco County presented the testimony of Robert Hauser, Jr., accepted as an expert concerning solid waste disposal, including the use of landfills and resource recovery facilities; Donald Elias, accepted as an expert concerning air pollution, including the air emissions from resource recovery facilities; Walter R. Niessen, accepted as an expert concerning resource recovery facilities, including dioxin emissions from such facilities; Clair Fancy, accepted as an expert concerning the regulation of air pollution; Hamilton S. Oven, Jr., the Department of Environmental Regulation's Administrator in charge of the Siting Coordination Section; and Suheil "Jim" Jammal, accepted as an expert in the area of geotechnical investigation, with special emphasis upon sinkholes.

Pasco County's Exhibits 1 through 19, 22A-E, and 24 were received into evidence.

The Florida Department of Environmental Regulation (DER), the Florida Department of Community Affairs (DCA), the Florida Public Service Commission (PSC) and the Southwest Florida Water Management District (SWFWMD) are parties to this proceeding pursuant to Section 403.508(4)(a), Florida Statutes. The DER called one witness, Clair Fancy, and introduced DER Exhibits 1 through 4 without objection. The DCA and SWFWMD did not call any witnesses or proffer any exhibits at the site certification hearing. The PSC made no appearance at the hearing.

Testifying on behalf of the intervenor Shady Hills Park and Civic Association, Inc. were John Parker, accepted as an expert in the area of hydrogeology (as limited to his review of the subject application for certification); Dr. Ernest Dwight Adams, accepted as an expert in physics, as it relates to solid waste mangement; John James Gallagher, the Pasco County Administrator; and Edward Kooper, accepted as an expert concerning the induced draft combustion process as it relates to foundries. Also, the intervenor's Exhibit 1, the deposition testimony of Gardner Strasser, was received into evidence.

The public comment portion of the certification hearing was conducted on the evening of April 11, 1988. Testifying as members of the general public were Brad Cecil, Irving Siegel, Mike Snider, Gerden M. Monk, Linda Johnson, John Bragg, Linda Almond, Tom Strode, Ruth Kirkman, Betty Tillis, Ernest Longo, David Hausman, John Hausman, Curtis Almond, Regina Longo, Sandra

Lugar, Richard Konst, Julie Sandlin, Steve Robinson, Amelia Bruno, Robin Bragg, Laura Osmundsen, Mary Parino, Michael May, Tom Collins, Terry Waddell, Robert Logan, Angie Almond, Sonya Logan, Lynda Economos, Florence Freudenstein, Mary Mazzuco, Donald Acreman, William Hubbardson, Rosalind Estrin, Carol Lezark and Leslie Diane Acreman. Testifying as members of the general public during other portions of the hearing were Mark D. Goldstein and William F. Belote. Several public comment letters were received into evidence.

Subsequent to the certification hearing, Pasco County, the DER and the intervenor submitted proposed findings of fact and proposed conclusions of law. The SWFWMD adopted the proposals submitted by the DER. To the extent that the parties' proposed findings of fact are not included in this Recommended Order, they are rejected for the reasons set forth in Appendix B hereto.

FINDINGS OF FACT

Upon consideration of the oral and documentary evidence presented at the site certification hearing, the following relevant facts are found:

(1) After investigating and evaluating alternative methods of solid waste disposal for several years, Pasco County determined that a mass burn resource recovery (refuse to energy) system was the most prudent long-term method of disposal for Pasco County. In 1984, the citizens of Pasco County approved a "straw ballot" proposal providing for the establishment of a

resource recovery system financed with non-tax supported bonds in lieu of utilizing sanitary landfills as a primary disposal method. (Exhibit 2, at 3-1) In 1987, the Legislature adopted a Special Act (Chapter 87-441, Laws of Florida) which authorized a solid waste disposal and resource recovery system within Pasco County and gave the County exclusive control over the collection and disposal of solid waste generated or brought within the area affected by the special act.

(2) The site selected for the proposed project, as well as the surrounding area, has been fully described and discussed in the Recommended Order entered on March 25, 1988, after the land use hearing. To briefly summarize, the project is to be located on an undeveloped 751 acre parcel of land owned by the County. The site is in an unincorporated area of northwest Pasco County, approximately two and a half miles north of Highway 52 and about four to five miles west of Route 41. It is accessible by Hays Road, which forms part of its southern and western boundaries. The property includes several isolated ponds located west of a Florida Power Corporation transmission line which bisects the property and runs in a north/south direction. The entire proposed project, with the exception of two wells and one retention pond, will be situated east of the power lines. The areas around the site consist primarily of vacant grass lands, small farms and low density residential areas. There is an existing recreational park near the north boundary of the site, and there are existing and proposed schools and parks located within five miles of the site. Aproximately 18,000

people reside within five miles of the site. In addition, there is a Girl Scout camp located about 3 miles from the site and a new development known as the Word of Life Youth Camp and Adult Conference Center being built approximately two miles southwest of the site. The resource recovery facility will be located on the southeastern portion of the site, and will be approximately 2,400 feet from the nearest home, which is located on Hays Road. The facility will be about 4,600 feet from the site's northern boundary and there will be at least 700 feet of buffer between the landfill/ashfill and the northern boundary. Approximately 65% of the site will be maintained as open areas or buffer zones.

(3) No threatened or endangered plant or animal species were discovered on the site; however, the site does provide habitat for a species of special concern - the gopher tortoise. Upon the recommendation of the Florida Game and Fresh Water Fish Commission, the County has agreed to relocate the tortoises to the southwest corner of the site and to work with the Commission in the relocation plan and long term management plan prior to the commencement of clearing activities. See Section XXI of Conditions of Certification.

(4) No significant archaeological or historical sites have been identified as lying within the boundaries of the proposed site.

(5) The proposed project will consist of an access road, a gatehouse/weigh station, an enclosed waste receiving and handling building, an incineration and cooling system, an air pollution control system, a landfill/ashfill, four stormwater

retention ponds, a transmission line from the plant to an on-site Florida Power Corporation substation, and two wells to supply the plant with potable water and to provide an alternative source of cooling water, if needed. The resource recovery system will convert solid waste into electrical power through a combustion process that utilizes a mass burn technology. The ash from the combustion process will be landfilled after metals have been removed. The combustion gases will travel through an acid gas control dry scrubber and a baghouse and be discharged through a stack into the atmosphere. There will not be any significant preprocessing of the refuse at the facility prior to combustion. Waste will be brought to the facility by approximately 90 to 100 trucks per day. All areas where refuse will be handled will be fully enclosed to prevent noise and the escape of dust and odors.

(6) The County is seeking approval of an ultimate site generating capacity of 29 megawatts and an ultimate disposal capacity of 1200 tons per day. Initial plant operation is expected to employ three mass burn furnace units of 350 tons per day capacity each, for a combined capacity of 1,050 tons per day. All of the County's environmental analysis evaluated the impacts of the facility at its ultimate site capacity of 1,200 tons per day.

(7) During normal operation, all of the facility's cooling water will be treated effluent drawn from the County's Hudson subregional wastewater treatment plant. For emergency use, an on-site well will be reserved as an alternative source of cooling water. All wastewater created will be routed back by

pipeline to the Hudson plant for treatment and disposal. No process water from the resource recovery facility will be discharged directly to surface or groundwaters.

(8) A stormwater management system with four retention ponds will be constructed on the site to ensure that the first inch of stormwater is retained for infiltration in 72 hours. The system is designed to ensure that the post-development peak run-off rate from the 25 year, 24 hour storm event will not exceed the predevelopment run-off rate from a similar storm. No wetland areas will be destroyed or otherwise affected by the proposed project.

(9) The proposed resource recovery facility will emit a variety of pollutants into the ambient air. During the application process, the County's consultants worked with the DER and the United States Environmental Protection Agency (EPA) to establish an appropriate plan of study and protocol for assessing the project's air emissions. The data utilized by Pasco County was appropriate and provided a conservative representation of air quality at the site.

(10) Since the facility will emit more than 100 tons per year of carbon monoxide, it is subject to Prevention of Significant Deterioration (PSD) review, which includes a Best Available Control Technology (BACT) review. The facility is expected to emit nine PSD-regulated pollutants in PSD significant amounts. These include the criteria pollutants of particulate matter (PM), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), volatile organic compounds (VOC), and lead (Pb),

and the non-criteria substances of flourides, sulfuric acid mist and mercury.

(11) The County performed a BACT analysis on a pollutant-by-pollutant basis, and attempted to balance energy, environmental and economic considerations. The air pollution controls proposed represent the BACT for this facility. These include a dry scrubber for the control of acid gases and a baghouse (fabric filter) for the control of particulate matter. Such controls are in accordance with the EPA's current operational guidance policies for a proposed municipal waste combustion source. The County's air quality modeling demonstrates that the operation of a 1,200 ton per day facility will not violate any state or federal guidelines or standards regulating airborne emissions. The anticipated emissions will be substantially less than the Florida Ambient Air Quality Standards.

(12) The incineration of plastics produces hydrochloric acid and yard waste produces nitrous oxide. The intervenor has contended that plastics, metals, glass and yard clippings should be removed from the waste stream before they are incinerated in the resource recovery facility. The County considered source separation and recycling when considering the BACT for this facility. Due to the difficulty of obtaining public cooperation, economic feasibility, reliability on a day-to-day basis, as well as the effectiveness of the dry scrubber and baghouse in removing acid gases and particulate matter, the County concluded that source separation would not be a feasible technique for

controlling emissions in a municipal facility of this size. While some emissions of pollutants could perhaps be reduced even further by the removal of plastics, yard trash and metals from the waste stream prior to incineration, further reductions in the emissions expected from operations of the County's proposed system would not produce any meaningful benefits and would add considerable costs. The County will, however, continue to investigate recycling and source separation as part of an overall management program.

(13) Pasco County will control dioxin emissions from the facility by maintaining a good, well-mixed combustion system that will maintain a temperature of 1800 degrees fahrenheit for a minimum of one second and through the use of the dry scrubber and baghouse system. The dioxin emissions will be extremely low and of no unacceptable risk to the health of the public.

(14) Hazardous wastes, hospital wastes and infectious wastes will not be permitted at the landfill or the resource recovery facility. If such wastes are discovered, they will be segregated and promptly removed from the site. While small quantities of pesticides or volatile organic compounds may enter the waste stream, the system is designed to handle such small quantities.

(15) The landfill will receive the non-processable waste and the ashfill will receive the ash residue resulting from the combustion of residential and commercial waste. The landfill/ashfill will be operated as a monofill -- i.e., unprocessed refuse will be placed in cells where it can be kept

apart from the incinerator ash. It will be built over a period of 30 years, and will occupy approximately 195 acres of the most favorable portions of the site. The design of the landfill/ashfill includes two separate synthetic liners, two leachate collection systems and sixteen separate cells. The two liner systems will provide two layers of protection for groundwater resources beneath the site. There will be two feet of sand between the ash and the top liner and another twelve inches of sand between the top and bottom liners. Two leachate collection systems will collect and remove any fluids that drain through the refuse. The liner systems are designed to last indefinitely; however, the manufacturers of the liner material provide only a two or three year warranty for materials, workmanship and installation. When a cell is closed, it will receive an impervious cap so that rainfall cannot enter the cell. The weight of a fully loaded cell 100 feet high is expected to cause aapproximately 15 inches of settlement at the center.

(16) The County's consultants conducted an extensive geotechnical investigation of the subsurface conditions at the site to determine its acceptability for the total facility and to evaluate the site's ability to provide an adequate foundation for the facility. Topographic maps showed some circular depressions within the property boundaries of the landfill/ashfill. Ground penetrating radar revealed some 18 anomalies, and these were all investigated to determine if there were any potentials for sinkholes or subsiding structures on the site. Some 88 borings were installed at the site. The borings demonstrated that the

anomalies were not historic sinkholes and would not adversely affect the landfill/ashfill operation.

(17) The portion of the site deemed most appropriate for the landfill/ashfill is of relatively uniform stratigraphy characterized by a uniform layer of surficial sand, a reasonably continuous clay confining layer from 5 to 15 feet thick, under which lies the limestone groundwater-bearing formation, the Floridan aquifer. The 267 acres deemed acceptable for the construction of the landfill/ashfill is believed by experts to have a low potential for sinkholes. Should a sinkhole occur, it would not be a large or catastrophic sinkhole, but instead would be expected to be no more than 10 to 15 feet in diameter and 4 to 6 feet in depth. The landfill liner is designed to elongate and stretch to accommodate a potential sinkhole of such size. Also, installation of the impervious liners will eliminate surface water recharge to the Floridan aquifer within the landfill boundaries. Since the movement of water through the subsurface contributes to the formation of sinkholes, the liner installation will substantially reduce the likelihood of new sinkholes in that area. As an additional precaution, the County intends to proof roll the area with heavy mechanical equipment prior to the installation of the liner systems. This will trigger subsidence of any collapse-prone sediments in the area. Neither the project's two wells nor other agricultural or private potable wells in the area are expected to affect the development of sinkholes at the site.

(18) The combustion of municipal solid waste will reduce the volume of waste to be landfilled by approximately 70%, and will reduce the County's need for landfill capacity by some 13.5 million cubic yards over a 24-year period. At the same time, the facility will generate at least 182 million kilowatt hours of electricity per year, or 3.7 billion kilowatt hours over the minimum 20 year life of the facility. Electricity will be produced by utilizing materials that otherwise would be buried in a landfill and the use of crude oil will be decreased by some 352,000 barrels per year, saving some $6.3 million per year. The local economy of the area will benefit from the operation and construction of the facility.

(19) By Order Number 17752, the Florida Public Service Commission granted the petition of Pasco County for a determination of need for its proposed 29 megawatt facility. The Commission found that, although the plant is small, it would contribute to the reliability and integrity of the electric system in peninsula Florida.

(20) The Florida Department of Community Affairs evaluated the compatibility of the proposed project with the applicable goals and policies contained in the State Comprehensive Plan. With certain conditions of certification relating to groundwater monitoring, a contingency plan for the mitigation of any detected leachate leakage and a buffer zone to minimize noise and aesthetic aspects, the Department found the project to be compatible with the State Comprehensive Plan's policies and goals concerning water resources, natural systems

and recreational lands, air quality, energy, hazardous and nonhazardous wastes, land use, public facilities and cultural and historical resources.

(21) The Southwest Florida Water Management District (SWFWMD) evaluated the County's proposal in accordance with its responsibilities regarding the consumptive use of water (the two on-site wells), surface water management and the project's impact on water resources. With certain recommendations regarding the construction and operation of the facility, the SWFWMD recommended approval of the project. Such recommendations have been incorporated into the conditions of certifications.

(22) The County's application for site certification was also reviewed by Florida's Department of Commerce, Department of State, Department of Natural Resources, Department of Agriculture and Consumer Services and Game and Fresh Water Fish Commission. (Exhibits 11-15) Each agency commented favorably on the project with regard to those areas within their jurisdiction and concern. To the extent that recommendations were made and concerns expressed, they have been incorporated into the conditions of certification.

(23) The County's application was thoroughly evaluated by the DER's staff from the Tampa District Office and the Bureaus of Permitting, Groundwater Protection, Air Quality Management, Waste Management, and Laboratories and Special Programs. The DER concluded that the proposed design of the facility offered reasonable assurances that DER standards would be met and

recommended certification of the project subject to the conditions of certification.

(24) Pasco County has stipulated that it will accept and comply with all proposed conditions of site certification, and the evidence demonstrates that the County will be able to do so. The County has not requested any variances from any applicable standards or regulations of any agency for the construction or operation of the proposed facility.

(25) On March 10, 1988, the DER issued a News Release announcing its intent to recommend approval of the County's proposed project and advising of the certification hearing scheduled to commence on April 11, 1988. Notice of the site certification hearing was also published on March 11, 1988, in both the Florida Administrative Weekly and the Pasco Times, a daily newspaper published at Port Richey in Pasco County. In addition, notice of the DER determination of Best Available Control Technology (BACT) to minimize air pollutant emissions from the proposed facility was published in the Florida Administrative Weekly on March 4, 1988. Copies of the County's application and notice of the DER's proposed agency action were also provided to the United States EPA, the Federal Land Manager, the Tampa Bay Regional Planning Council and other persons and agencies entitled to notice pursuant to the DER's rules.

(26) Forty-one non-party members of the general public testified at the site certification hearing in opposition to the County's proposed resource recovery facility project. Although an evening session was set aside for this purpose, most of these

citizens attended all or most of the formal presentation of evidence by the parties to this proceeding. The public comment and concern covered a wide range of issues, most of which were addressed at the hearing, in this Recommended Order and in the prior Recommended Order entered after the land use hearing. The concerns of the public included water quality and concerns for the Floridan aquifer, zoning; recreational activity in the vicinity of the project; dust from increased traffic; alternative methods of waste management, including source separation, recycling, and composting; toxic emissions and other forms of air pollution; flooding and stormwater management; the integrity and reliability of the proposed landfill/ashfill liners; the impact upon property values in the area; the safe operation of the facility; health hazards; fire protection; sinkholes; lack of opportunity for public input into the County's decision-making process; endangered wildlife; aesthetics; and the costs of resource recovery and waste disposal to the citizens of Pasco County.

CONCLUSIONS OF LAW

This proceeding is governed by the Florida Electrical Power Plant Siting Act, Sections 403.501, et seq. Florida Statutes (1987), as well as the rules and regulations contained in Chapter 17-17 and 17-2 of the Florida Administrative Code. The Act sets forth a uniform review procedure whereby state and local concerns are coordinated and decisions can be reviewed on the basis of the standards and recommendations of the various

deciding agencies. It is intended that the need for a particular facility will be balanced against the effects of its location and operation upon "human health, the environment, the ecology of the land and its wildlife, and the ecology of state waters and their aquatic life." Section 403.502, Florida Statutes.

Here, the PSC has determined that there is a need for the proposed solid waste resource recovery facility. In order to balance that need against the environmental impacts resulting from the construction and operation of such a facility, the County retained the services of highly qualified consultants to investigate and devise a system that would produce no adverse effects upon human health or the environment. Pasco County has presented competent substantial evidence that its proposed state-of-the-art design and methods of operation for the resource recovery facility, the landfill/ashfill and associated facilities at the proposed location will satisfy the criteria and balancing test required by the Legislature. All of the reports, studies and comments from the various state and regional agencies confirm such conformance and compliance with applicable standards and regulations, provided that the conditions of certification are met. Pasco County has confirmed its willingness and its ability to comply with such conditions.

The application process was conducted in accordance with the procedural requirements of Chapter 403, Part II, Florida Statutes, and all notice requirements were met. The DER properly and timely performed its functions with regard to coordination, analysis and evaluation.

The record in this proceeding amply demonstrates that if the proposed facility is constructed and operated in accordance with the terms of the application and the conditions of certification, the project will not adversely affect the quality or quantity of surface or groundwaters at or near the site and will comply with all state and federal air quality standards and guidelines. Adequate consideration for noise, odors and aesthetic appearance is encompassed within the facility's design and the conditions of certification.

While the intervenor and members of the general public raised many legitimate issues of concern, there was no competent substantial evidence presented to support their apprehensions. Indeed, the evidence presented demonstrates that the proposed project will comply with and even exceed all applicable statutes, rules, regulations and criteria of the State. In addition, there is public benefit to be derived from the proposed environmentally sound method of dealing with the increasing volume of municipal solid waste generated in Pasco County. The need for landfill space in the future will be reduced, as will the needed amount of crude oil to generate electricity. The construction of the facility will add jobs and economic benefits to the community.

The intervenor attempted to establish that another type of solid waste disposal system, such as source separation and recycling, might be preferable, less costly and safer from an environmental and safety point of view. Not only was competent substantial evidence lacking that such a system would be practical, economically feasible or in compliance with

environmental standards, there was no evidence that the attempt to withhold plastics, metals, glass and yard clippings from mass burn incineration would actually reduce expected emissions from the plant's air pollution control system. In addition, neither the intervenor, DER nor the Siting Board can rewrite the application submittal for review. The choice of alternative methods of solid waste disposal lies with the applicant. If the alternative chosen complies with applicable statutes, rules and regulations, the application is entitled to certification.

The intervenor likewise failed to demonstrate that source separation, or the elimination of sources of potential emissions, should be part of the BACT determination for this facility. The air pollution controls proposed -- the dry scrubber, the baghouse and proper operation of and mixing within the combustion units -- will comply with all environmental and safety standards and will constitute an appropriate balance of environmental, economic and energy factors. No evidence was offered to quantify the environmental benefits of the intervenor's source separation proposal, nor was it demonstrated that source separation, recycling or composting would be economically viable, socially acceptable or otherwise reliable on a day-to-day basis.

The concern of the intervenor and several members of the public about the potential for sinkholes at the site was shared and thoroughly investigated by the County's expert consultants.

Their studies, analyses and results were reviewed and concurred with by staff members from DER and SWFWMD. The uncontradicted evidence demonstrates that the site selected is stable, relatively uniform and suitable for the landfill/ashfill and resource recovery facility. Proof rolling and the double liners will further reduce the potential for a large or catastrophic sinkhole at the site. Both the design of the landfill/ashfill and the conditions of certification are intended to provide early warning of any geotechnical emergency or other threat to groundwater.

In conclusion, the applicant Pasco County has amply demonstrated its entitlement to site certification in accordance with the terms of its application and the twenty-two conditions of certification proposed by the DER. The conditions of certification were received into evidence as the applicant's Exhibit 10 and are incorporated and included as a part of this Recommended Order.

RECOMMENDATION

Based upon the findings of fact and conclusions of law recited herein, it is RECOMMENDED that the Governor and Cabinet, sitting as the Siting Board, approve the application of Pasco County for site certification of the proposed resource recovery facility at its ultimate site capacity of 29 megawatts, subject to the conditions of certification included within Exhibit 10.

Respectfully submitted and entered this 20th day of July, 1988, in Tallahassee, Florida.

DIANE D. TREMOR
Hearing Officer
Division of Administrative
Hearings
The Oakland Building
2009 Apalachee Parkway
Tallahassee, Florida 32301
(904)488-9675

Filed with the Clerk of the Division of Administrative Hearings this 20th day of July, 1988.

Copies furnished:

Honorable Bob Martinez
Governor
The Capitol
Tallahassee, FL 32301

Honorable Doyle Conner
Commissioner of Agriculture
The Capitol
Tallahassee, FL 32301

Honorable Bill Gunter
Insurance Commissioner
The Capitol
Tallahassee, FL 32301

Honorable Betty Castor
Commissioner of Education
The Capitol
Tallahassee, FL 32301

Honorable Robert Butterworth
Attorney General
The Capitol
Tallahassee, FL 32301

Honorable Jim Smith
Secretary of State
The Capitol
Tallahassee, FL 32301

Copies furnished:
(continued)

Honorable Gerald Lewis
Comptroller
The Capitol
Tallahassee, FL 32301

Dale Twachtmann, Secretary
Department of Environmental
Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Hamilton Oven, Administrator
Site Coordination Section
Department of Environmental
Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

David S. Dee, Esquire
Carlton, Fields, Ward,
Emmanuel, Smith, Cutler, P.A.
First Florida Bank Building
215 South Monroe Street
Suite 410
Tallahassee, FL 32301

Richard T. Donelan, Jr., Esq.
Department of Environmental
Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Edward B. Helvenston, Esquire
Southwest Florida Water
Management District
2379 Broad Street
Brooksville, FL 34609-6899

C. Laurence Keesey, Esquire
Department of Community
Affairs
2740 Centerview Drive
Rhyne Building
Tallahassee, FL 32309

William W. Deane, Esquire
1700 9th Street North, Suite B
St. Petersburg, FL 33704

APPENDIX
(Case No. 87-5337)

The parties' proposed findings of fact have been fully considered and are accepted and/or incorporated in this Recommended Order, with the following exceptions:

Pasco County

55 - 57.	Rejected as improper factual findings, but discussed in conclusions of law.

DER

34.	Insufficient evidence to support the term "indefinitely."

Intervenor

12.	Rejected as contrary to the evidence.
14 - 15.	Rejected as unsupported by competent, substantial evidence.
21.	Second sentence rejected as contrary to the evidence.
22.	Accepted as factually correct, but irrelevant to the subject proposal.
24.	Rejected as unsupported by competent, substantial evidence.

File copy

United States Department of the Interior
FISH AND WILDLIFE SERVICE

MAILING ADDRESS:
Post Office Box 25486
Denver Federal Center
Denver, Colorado 80225

STREET LOCATION:
134 Union Blvd.
Lakewood, Colorado 80228

IN REPLY REFER TO:

RW AIR QUALITY
MAIL STOP 60130

JUL 01 1988

RECEIVED
JUL 05 1988
DER - BAQM

Pradeep Raval
Bureau of Air Quality Management
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Raval:

We have reviewed the Orlando Utilities Commission's Prevention of Significant Deterioration application to add gas turbines to the Indian River Plant. The proposed project would be located 175 km east of Chassahowitzka National Wildlife Refuge, a class I area administered by the U.S. Fish and Wildlife Service. The source, under Prevention of Significant Deterioration regulations, would be a major source of carbon monoxide, nitrogen oxides, and sulfur dioxide, and a significant emitter of total particulates, PM-10 and volatile organic compounds. Considering the long distance of the Orlando Utilities source to Chassahowitzka National Wildlife Refuge, we do not anticipate emissions from this source having any adverse impacts on resources at the refuge.

We would like to take this opportunity to thank the Florida Department of Environmental Regulation for the letter of May 6, 1988, regarding the Pasco County resource recovery facility and look forward to receiving the list of sources within 100 kilometers of Chassahowitzka you are developing per our request in our Pasco County application response. In our response to the Pasco County application we also requested a revised modeling analysis of the class I sulfur dioxide increment consumption since the application indicated that 98 percent of the maximum allowable 24-hour sulfur dioxide increment had been consumed. Because the revised modeling analysis indicated that the 24-hour sulfur dioxide increment consumption was reduced from 98 percent to 52 percent, we feel confident that the class I increment is not being exceeded at the Chassahowitzka National Wildlife Refuge. However, since there appears to be a large number of sulfur dioxide sources in the area around Chassahowitzka, we would like to request that the State perform regional scale modeling and monitoring of sulfur dioxide to determine current total sulfur dioxide levels at the refuge.

If you have any questions, please contact Miguel Flores at 303-969-2072.

Sincerely,

for Ty Berry

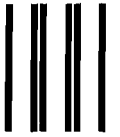
Nelson B. Kverno
Assistant Regional Director
Refuges and Wildlife, Region 6

cc: Tom Rogers
Mary Tom
Barry Andrews
CHF/BT

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
POST OFFICE BOX 25486
DENVER FEDERAL CENTER
DENVER, COLORADO 80225

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

17



POSTAGE AND FEES PAID
UNITED STATES DEPARTMENT
OF THE INTERIOR
INT 423

Pradeep Raval
Bureau of Air Quality Management
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Florida Department of Environmental Regulation
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400
Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary

May 6, 1988

Mr. Nelson B. Kuerno
Assistant Regional Director
Refuges and Wildlife, Region 6
Fish and Wildlife Service
P.O. Box 25486
Denver Federal Center
Denver, Colorado 80225

Dear Mr. Kuerno:

Thank you for your comments on the proposed new Pasco County resource recovery facility. At your request, the Department has reevaluated the PSD increment consumption for SO_2 in the Chassahowitzka National Wildlife Refuge Class I area. You also requested a list of PSD sources within 100 kilometers of this area. We are currently developing a list of sources within 100 kilometers of the Class I area (including the subset of increment affecting sources). This list will be forwarded to you when it is completed.

As you noted, the applicant has estimated through modeling that nearly all of the allowed increment for SO_2, on a 24-hour average basis, is consumed. We believe that the modeling completed by the applicant adequately shows protection of the increments for the following reasons.

1. The TECO Big Bend facility as a whole is actually increment expanding. Although the Unit 4 source (included in the Pasco modeling) is increment consuming, Units 1-3 are increment expanding due to emission reductions since the baseline date. We have remodeled for the Class I impact when Units 1-3 are included (with their increment expansion) and the net increment consumption is reduced from 98% to 52%.

2. The Gardinier phosphate plant which was not included in the Pasco modeling also represents an expansion of the allowable PSD increment. No modeling of this facility was deemed necessary.

3. No other increment consuming sources have been identified which would affect the results.

If you have any questions please call Tom Rogers at (904) 488-1344.

Sincerely,

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CF/TR/ss

20 April 1988
Tallahassee, FL

CARLTON, FIELDS, WARD, EMMANUEL, SMITH & CUTLER, P. A.

ATTORNEYS AT LAW

ONE HARBOUR PLACE
P. O. BOX 3239
TAMPA, FLORIDA 33601
(813) 223-7000

FIRSTATE TOWER
P. O. BOX 1171
ORLANDO, FLORIDA 32802
(407) 849-0300

HARBOURVIEW BUILDING
P. O. BOX 12426
PENSACOLA, FLORIDA 32582
(904) 434-0142

FIRST FLORIDA BANK BUILDING
P. O. DRAWER 190
TALLAHASSEE, FLORIDA 32302
(904) 224-1585

PLEASE REPLY TO:

April 20, 1988

Tallahassee

John Shearer
Assistant Secretary
Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399

Re: Pasco County Resource Recovery Facility

Dear John:

I am sending you this letter because I want you to know that Pasco County is grateful for the exemplary efforts of Hamilton S. (Buck) Oven, Jr., Clair Fancy, Gardner Strasser, and Richard Donelan, Jr.

I am representing Pasco County in its efforts to obtain the environmental permits for a new resource recovery (refuse-to-energy) project, landfill and associated facilities. This is a major project for Pasco County and is essential to the County's long-term plans for solid waste management. At my request, the Department, Southwest Florida Water Mangement District, and the Department of Community Affairs agreed to expedite the review process for this facility. As a result of the extraordinary efforts of your staff, the County's four volume application for site certification was reviewed by the Department in 90 days, rather than the 150 or more days provided for under the Florida Electrical Power Plant Siting Act (Act). It appears that the County will be able to complete the review process under the Act in approximately 8 months, rather than the 14 months or more that are normally required.

Buck Oven, Clair Fancy, Gardner Strasser, and Richard Donelan all played key roles in this process. Buck coordinated the Department's efforts with all of the other regulatory agencies and helped ensure that the project moved forward in a timely manner. Buck and Clair Fancy were required to testify at the formal administrative hearing on April 11 and 12, 1988. They handled themselves extremely well under cross-examination by opposing counsel and cogently stated the Department's position. Gardner Strasser provided assistance to the County by coordinating and supervising the geotechnical investigation of the site. Gardner also handled himself quite well during a deposition which was taken by opposing counsel. Finally, Richard Donelan provided legal guidance to the staff and ably represented the Department's interests at the formal administrative hearing.

On behalf of Pasco County, I want to thank all of these people and express the County's gratitude to them. Since the hearing officer's recommended order concerning the County's PSD permit will go to Secretary Twachtmann for his review, I cannot advise him about these matters at this time. However, after the administrative process has been completed, I hope you will relay these sentiments to him.

Sincerely,

David S. Dee

cc: Buck Oven, Jr.
Clair Fancy
Gardner Strasser
Richard Donelan, Jr.
Richard Garrity
Dan Thompson
Steve Smallwood

DSD/vc:Shearer

Copied CHFIBT
Rodney Rawl
Tom Rogers
Barry Andrews

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO

ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION) Clair Fancy PGM BAQM 306F	Initial	
	Date	
2.	Initial	
	Date	
3.	Initial	
	Date	
4.	Initial	
	Date	

REMARKS:

RECEIVED

APR 19 1988

DER - BAQM

INFORMATION	
	Review & Return
	Review & File
	Initial & Forward

DISPOSITION	
	Review & Respond
	Prepare Response
	For My Signature
	For Your Signature
	Let's Discuss
	Set Up Meeting
	Investigate & Report
	Initial & Forward
	Distribute
	Concurrence
	For Processing
	Initial & Return

FROM: Richard A. [illegible]

DATE 4/19

PHONE

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

For Routing To Other Than The Addressee

To _____ Location _____

To _____ Location _____

To _____ Location _____

From _____ Date _____

M E M O R A N D U M

TO: Randy Armstrong, Director
Division of Permitting

FROM: Richard T. Donelan, Jr.
Assistant General Counsel RTD

RE: In re: Pasco County Resource Recovery Facility, OGC File No. 87-1587

DATE: April 19, 1988

I would like to commend Buck Oven and Clair Fancy for their participation in the recent evidentiary hearing regarding the Pasco County Resource Recovery Facility. Both gave cogent testimony and displayed impressive technical expertise. In particular, Clair's testimony succinctly illuminated the complex issues of BACT and dioxin emissions form MWC combustors.

Buck Oven deserves special credit for pulling together all of the state agency input necessary for expeditious DER proposed action under the Power Plant Siting Act. Thanks to Buck's efforts, we were able to complete the statutory hearing process regarding the Pasco application in the absolute minimum time possible under the circumstances, in my judgment.

It is a pleasure to represent the Department in legal proceedings with the assistance of expert witnesses such as Messrs. Oven and Fancy.

cc: Hamilton S. Oven, Jr., P.E.
Clair Fancy, P.E.
Steve Smallwood, P.E.
Dan Thompson, Esquire

BEST AVAILABLE COPY -no PM

File Copy

United States Department of the Interior
FISH AND WILDLIFE SERVICE

MAILING ADDRESS:
Post Office Box 25486
Denver Federal Center
Denver, Colorado 80225

STREET LOCATION:
134 Union Blvd.
Lakewood, Colorado 80228

IN REPLY REFER TO:
RW AIR QUALITY
MAIL STOP 60130

APR 08 1988

RECEIVED
APR 11 1988
DER - BAQM

Mr. Tom Rogers
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Dear Mr. Rogers:

Thank you for the opportunity to comment on the power plant site certification application for Pasco County's proposed resource recovery facility. The proposed project is located approximately 27 km south of Chassahowitzka National Wildlife Refuge. The wilderness portion of the refuge is a class I area administered by the U.S. Fish and Wildlife Service. The applicant proposes to construct a 900 tons per day facility with expansion capability to 1200 tons per day.

Our detailed comments regarding the proposed project are enclosed. Specifically, we have commented on best available control technology, and increment consumption modeling. We are requesting lower emissions for particulate matter, sulfur dioxide, acid gases, and nitrogen oxide. In addition, we are requesting additional information on other increment consuming sources and predicted background levels of sulfur dioxide at Chassahowitzka National Wildlife Refuge to determine any impacts at the refuge. We are concerned that the modeling performed by the applicant, which may not include all increment consuming sources, indicates a 24-hour sulfur dioxide increment consumption of 4.91 micrograms per cubic meter. As you know, the maximum allowable class I 24-hour increment for sulfur dioxide is 5.0 micrograms per cubic meter. Additional sources in alignment with the Pasco County facility could contribute to a class I increment exceedance at the refuge.

If you have any questions, please call Miguel Flores, or Deborah Mangis at 303-969-2072.

Sincerely,

for Nelson B. Kverno
Assistant Regional Director
Refuges and Wildlife, Region 6

Enclosure

Tom Rogers
Barry Andrews
4-12-88

Comments on Potential Air Quality Impacts of Proposed
Pasco County Resource Recovery Facility

by

Permit Review and Technical Support Branch
National Park Service - Air Quality Division - Denver

INTRODUCTION

Pasco County is proposing to construct and operate a resource recovery facility (RRF) in New Port Ritchey, Florida, approximately 27 km south of Chassahowitzka National Wildlife Refuge. The wilderness area portion of the refuge is a class I area administered by the U.S. Fish and Wildlife Service. The facility would initially operate at a 900 tons per day (TPD) capacity and be capable of expansion to 1200 TPD.

Under Prevention of Significant Deterioration (PSD) rules, the proposed project would be a significant emitter of particulate matter (PM), sulfur dioxide (SO_2), carbon monoxide (CO), sulfuric acid mist (H_2SO_4), nitrogen oxides (NO_x), lead (Pb), mercury (Hg), fluorides (F), and volatile organic compounds (VOC). Emissions from the proposed source are estimated as follows: 68 tons per year (TPY) of PM, 471 TPY SO_2, 1,351 TPY NO_x, 103 TPY CO, 44 TPY VOC, 75 TPY H_2SO_4, 3.4 TPY Pb, 3.07 TPY Hg, 17 TPY F, and 267 TPY hydrogen chloride (HCl). Also, dioxins, furans, and other toxic organics will be emitted from the proposed facility in small quantities. Following are our comments on the best available control technology, air quality, and air quality related values analyses with respect to the proposed project's potential impacts on Chassahowitzka Wilderness Area.

BEST AVAILABLE CONTROL TECHNOLOGY (BACT)

Particulate Matter and Heavy Metals

Pasco County is proposing the use of dry scrubbers/fabric filters to control particulate matter (PM) emissions from the proposed refuse-fired boilers. The PM emission rate specified in the application is 0.015 grains per dry standard cubic foot (gr/dscf). Although the 0.015 gr/dscf rate reflects good control of PM emissions, we do not agree that this rate represents best available control technology (BACT).

According to the Environmental Protection Agency's (EPA) recent report to Congress entitled "Municipal Waste Combustion Study" (June 1987), PM emissions from refuse-fired boilers can be controlled to 0.01 gr/dscf and lower. For example, at Unit 1 of a recently constructed facility in Baltimore, Maryland, PM concentrations of 0.002 gr/dscf were measured. Also, Unit 2 at the Baltimore facility achieved an emission level of 0.003 gr/dscf during a test program conducted by the EPA. Another low PM concentration of 0.004 gr/dscf was reported for a combustor in Wurzburg, Germany. Other facilities equipped with electrostatic precipitators or dry scrubbers/fabric filters have

reported PM concentrations in the range of 0.005-0.013 gr/dscf (Marion County, Oregon; Tulsa, Oklahoma; Trushima, Japan; Malmo, Sweden; and Munich, Germany).

In addition to PM reductions, efficient control of PM emissions also minimizes emissions of heavy metals (lead, cadmium, beryllium, etc.) because heavy metal emissions, which are potentially harmful to animal and plant species, are directly related to the efficiency of the PM control devices. Therefore, based on the EPA data, and the fact that the proposed Pasco County facility will be located only 27 km from a class I Wilderness Area, we recommend a BACT PM limitation of 0.01 gr/dscf.

Sulfur dioxide and Acid Gases

For control of SO_2 and acid gas emissions (HCl, H_2SO_4, and hydrogen fluoride), Pasco County is proposing to install dry flue gas scrubbers designed for 70 percent and 90 percent control, respectively. We agree that dry flue gas scrubbers represent BACT for the Pasco County facility. However, based on data provided by the EPA and the California Air Resources Board, other dry scrubbing systems have achieved up to 90 and 98 percent control of SO_2 and acid gas emissions, respectively. Again, considering the availability of these control systems and the project's proximity to a class I Federal area, Pasco County should be required to reduce SO_2 emissions by 90 percent and acid gases emissions by 98 percent.

Other Pollutants

For control of NO_x, CO, and VOC emissions, Pasco County is proposing furnace design and combustion controls, including proper distribution of overfire and underfire air, temperature controls, and low excess air firing, as BACT. For toxic organics (i.e. dioxins and furans), Pasco County has proposed combustion controls in combination with the dry scrubber/baghouse system. We agree that the proposed control strategy represents BACT for these pollutants. However, for NO_x, we do not agree that the proposed rate of 6.17 lb/ton of refuse burned represents BACT. As we have indicated on numerous occasions in the past, based on data from the California Air Resources Board and other permitted resource recovery facilities, combustion controls can reduce NO_x emissions to less than 3.5 lb/ton. To update the data we provided previously, recent test results from the Maine Energy Recovery Company facility in Biddleford, Maine, which began commercial operation in December 1987, indicate NO_x emissions of 3.36 lb/ton. This rate is well below the permitted rate of 4.57 lb/ton. In addition, 1987 test results from the Bay County facility in Panama City, Florida, indicate that facility is emitting NO_x in the range of 2.41 lb/ton. Therefore, we recommend that the proposed 6.17 lb/ton rate be reduced to 3.5 lb/ton.

AIR QUALITY ANALYSIS

Based on our review of the applicant's Level I visibility analysis, we agree that there would be low potential for plume impacts on visibility at Chassahowitzka NWR due to emissions from the proposed project. The applicant performed an air quality dispersion modeling analysis using SO_2 increment

consuming source information provided by the Florida Department of Environmental Regulation (DER).

The results indicate that under the worst year of meteorological conditions modeled, the PSD SO_2 increment consuming sources would consume 1.43 ug/m^3 (annual average), 4.91 ug/m^3 (24-hour average), and 21.12 ug/m^3 (3-hour average). This represents 72 percent, 98 percent and 84 percent consumption of the respective SO_2 increments. It is possible that any additional sources in alignment with the Pasco County facility and with TECO Big Bend Unit 4 would exceed the 24-hour SO_2 increment. We are concerned that the modeling did not include the recently permitted PSD sources near Tampa, such as Gardinier phosphate plant. Without the inclusion of these sources, we do not know if the proposed source would cause or contribute to an increment exceedance at the Chassahowitzka NWR. Therefore, we request that the Florida DER provide us a listing of all the PSD SO_2 increment consuming sources (permitted and PSD applications) within 100 km of Chassahowitzka National Wildlife Refuge. We also ask that the Florida DER remodel the additional PSD sources along with the Pasco County RRF in order to determine total increment consumption in Chassahowitzka Wilderness Area.

AIR QUALITY RELATED VALUES ANALYSIS

We are also concerned about the total SO_2 concentrations occurring at Chassahowitzka NWR. Effects on sensitive species are the result of total pollutant concentrations, not simply the incremental level. There are at least five generating stations in the area that do not consume PSD increments, but nevertheless contribute to background pollution levels. We request the applicant or the Florida DER to provide an estimate of the total pollution levels occurring at Chassahowitzka Wilderness Area.

CONCLUSIONS AND RECOMMENDATIONS

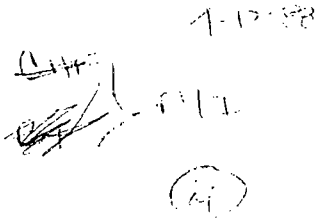
In conclusion, we are requesting that the Florida DER require lower emission limitations for sulfur dioxide, particulate matter, acid gases, and nitrogen oxides, and provide more information on the total and incremental SO_2 concentrations at the refuge. Specifically, we are requesting that (1) the particulate matter emission rate be lowered from 0.015 gr/dscf to 0.01 gr/dscf; (2) sulfur dioxide emissions be reduced by 90 percent, rather than the proposed 70 percent; (3) that acid gas emissions be reduced by 98 percent rather than the proposed 90 percent; and (4) nitrogen oxide emissions be reduced from 6.17 lb/ton to 3.5 lb/ton.

We are also requesting a list of all PSD sources located within 100 km of Chassahowitzka NWR, and remodeling of air quality impacts in Chassahowitzka Wilderness Area due to the proposed Pasco County RRF and all other PSD increment consuming sources. If any proposed source causes or contributes to an increment exceedance at a class I area, the Federal Land Manager must certify no adverse impact before that source can be permitted. Total SO_2 concentrations (background plus the proposed source and all increment consuming sources) should also be given for the Chassahowitzka Wilderness Area.

Best Available Copy

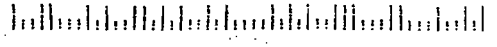
UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
POST OFFICE BOX 25486
DENVER FEDERAL CENTER
DENVER, COLORADO 80225

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300



POSTAGE AND FEES PAID
U.S. DEPARTMENT OF
THE INTERIOR
INT-423

Mr. Tom Rogers
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Raod
Tallahassee, FS 32399-2400



CARLTON, FIELDS, WARD, EMMANUEL, SMITH & CUTLER, P. A.

ATTORNEYS AT LAW

ONE HARBOUR PLACE
P. O. BOX 3239
TAMPA, FLORIDA 33601
(813) 223-7000

FIRSTATE TOWER
P. O. BOX 1171
ORLANDO, FLORIDA 32802
(407) 849-0300

HARBOURVIEW BUILDING
P. O. BOX 12426
PENSACOLA, FLORIDA 32582
(904) 434-0142

FIRST FLORIDA BANK BUILDING
P. O. DRAWER 190
TALLAHASSEE, FLORIDA 32302
(904) 224-1585

PLEASE REPLY TO:

Tallahassee

HAND-DELIVER

MEMORANDUM

TO: Richard Donelan, Jr.
Clair Fancy
Hamilton S. Oven, Jr.

FROM: David S. Dee D. Dee

DATE: April 5, 1988

RE: Pasco County Site Certification Hearing

Enclosed for your review are draft outlines of the questions that I am considering asking Clair Fancy and Buck Oven at the Pasco County site certification proceeding.

Please review and then lets discuss these questions.

DSD/vc:MEMO-2
Copied: CHFancy

CLAIR FANCY

Qualifications

Academic Training

Job Experience

Current Job Title at DER

Duties and Responsibilities at DER

Experience with BACT Determinations

Experience with Resource Recovery Facilities

INTRODUCE FANCY'S RESUME INTO EVIDENCE

PROFFER FANCY AS AN EXPERT CONCERNING THE PERMITTING AND REGULATION OF SOURCES OF AIR POLLUTION

Pasco Project--BACT

Are you familiar with the proposed Pasco County resource recovery facility?

Yes.

Have you reviewed the Pasco County application?

Have you reviewed the DER report and conditions of certification?

Based on your experience and your activities in this case, have

you formed an opinion as to whether the proposed baghouse, subject to an emission limitation of 0.015 grains per dry standard cubic foot for particulate matter, constitutes BACT for this facility?

Do you have an opinion as to whether the proposed dry scrubber constitutes BACT for the control of acid gases?

Have you formed an opinion as to whether the facility will comply with all of the other DER and EPA air quality standards?

Yes, it does.

Have you formed an opinion as to whether the County's evaluation of ambient air quality conditions at the site was satisfactory?

Yes, it was

Plastics Separation as BACT

Have you considered whether the BACT determination in this case should require Pasco County to remove plastic and styrofoam materials from the waste stream before they enter the resource recovery facility?

Theoretically interesting.

Not a practical approach.

Currently very difficult to separate these materials from the waste stream.

Do you know whether there would be any significant environmental benefit if Pasco County separated plastics and styrofoam from the waste stream?

Impacts from the facility are already very small.

May be some additional benefits from this proposal.

Benefits would not be significant.

Cost and difficulty of implementing proposal would outweigh the benefits.

What are the major pollutants created by the incineration of plastic and styrofoam?

Hydrogen Chloride

What is being done to control Hydrogen Chloride at the Pasco facility?

Dry scrubber will remove 90% of Hydrogen Chloride.

At this time, have you formed an opinion as to whether Pasco County should separate plastic and styrofoam from its waste stream?

Not appropriate now as BACT.

When the Department evaluates BACT, does it consider the BACT determinations being made elsewhere in the United States by other states and EPA?

Yes.

Do you know whether any other state or federal agency has required the removal of plastics and styrofoam from the waste stream as a method of implementing BACT?

Not aware of any cases.

Health Risks

How are health issues addressed in your assessment of the Pasco facility?

Ambient air quality standards are designed to protect the public health.

Neither DER nor EPA have standards for non criteria pollutants.

Evidence presented for Pasco and other projects indicates that health impacts for non-criteria pollutants are nominal where scrubber and baghouse are used.

Dioxin

What has the State of Florida done to evaluate the significance of dioxin emissions from resource recovery facilities?

Participated in study at Pittsfield, Mass.

Participated in study at Pinellas County facility with California Air Resources Board.

What did you learn from those studies?

Dioxin emissions from resource recovery are very small.

Did either one of these studies include a health risk assessment?

Pinellas Study showed risk of 1 in 1 million.

Do you know whether the Department of Environmental Regulation has decided what an appropriate level of risk is?

Risk of 1 in a million appears sufficiently low and this appears to be acceptable.

Notice of PSD Permit

Do you know whether the Department gave notice of its proposed action concerning the PSD permit for the Pasco resource recovery facility?

Did the Department provide a thirty day period for public comment?

Did the Department provide the material for public inspection at the Southwest District office?

Did the Department send a copy of the notice to the regional office of EPA in Atlanta and to other state and local officials, including the Tampa Bay Regional Plannig Council, the Federal Land Manager, and any other appropriate person?

Was a copy of the notice displayed at the District Office of DER?

Has the Department published notice of the PSD permit application in the Florida Administrative Weekly and in a newspaper of general circulation in Pasco County?

To the best of your knowledge, has the Department's notice of Pasco's PSD application complied with the applicable notice requirements in DER rule 17-2.220, Florida Administrative Code?

DSD/vc:Fancy

HAMILTON S. OVEN, JR.

Please state your name and business address.

Where are you employed?

What is your job title?

In general, what do you do?

Are you familiar with the proposed Pasco County resource recovery facility?

Comments from Other Agencies

In your capacity as the Siting Coordinator for DER, do you routinely send copies of applications for site certification to other state and federal agencies for their comments?

Did you send copies of the Pasco County application to other agencies for their comments?

Did you receive any comments from those agencies?

Do you recognize the documents labeled as Pasco County Exhibit ___-___?

PSC Order
DCA Report
SWFWMD Report
Department of Commerce
DNR
Archives
Agriculture
Others

BEST AVAILABLE COPY

aggie - (Clair ... of ...

Please attach this to the memo you received earlier today for Mr Fancy from David Dee.

Thanks,
Vickie
J-15

Did you receive these documents in response to your request for comments about the Pasco County application for site certification?

Did you in the normal course of your business keep copies of these reports in your file?

INTRODUCE EXHIBITS ___-___ INTO EVIDENCE AS BUSINESS RECORDS.

Comments from DER

As the Siting Coordinator, do you normally solicit comments and reports from the other members of DER concerning the applications for site certification?

In this case, did you solicit comments about Pasco's application from the other members of DER?

What bureaus or divisions of the Department were given copies of the application for site certification?

> Southwest District Office, which has solid waste, groundwater monitoring, air quality and wastewater responsibilities.
>
> In Tallahassee, Bureau of Air Quality Management, Solid Waste, Groundwater Section.

What did you do to ensure that all of these groups of people in DER reviewed the Pasco County application?

> Oven talked with them and wrote them.

How do you know that these people actually reviewed the application?

> Received written and verbal communications from them with their comments.

Did you incorporate those comments into the DER report and conditions of certification which have been marked for identification as Pasco County's Exhibit _____?

Did you use your best efforts to ensure that the report and conditions of certification are accurate and correct?

To the best of your knowledge, are the report and conditions of certification correct?

INTRODUCE THE REPORT AND CONDITIONS OF CERTIFICATION INTO EVIDENCE AS CONDITIONS ___-____.

Evaluation of Alternatives

When the Department evaluates an application for site certification, does the Department routinely require the applicant to evaluate all of the possible alternatives to the applicant's proposed project?

No

Why not?

We do not have the authority or expertise to require the applicant to adopt alternatives.

As a practical matter, it would be very difficult for the Department to do so.

In this case, why didn't the Department require Pasco County to use recycling and composting rather than resource recovery?

That change would be very significant.

That approach would require a major policy decision concerning the County's expenditures of time and money.

We did not feel that it was appropriate for the Department to force the County to utilize anything other than the approach that it proposed.

Notice For the Site Certification Hearing

As the Siting Coordinator for the Department, what responsibility do you have for the publication of notice concerning the site certification hearing?

In this case, what did you do to ensure that appropriate notice was published?

Press Release

Notice in Florida Administrative Weekly

Notice in the Pasco Times

Do you recognize the documents which have been marked for identification as Pasco County Exhibits ___-___?

The three notices.

PROFFER EXHIBITS ___-____ INTO EVIDENCE AS PROOF OF PUBLICATION FOR THE SITE CERTIFICATION HEARING.

DER Recommendation

Based on the Department's review of the Pasco County application for site certification, what is the Department's recommendation concerning the proposed resource recovery facility, ashfill and associated facilities?

Approval subject to conditions of site certification.

DSD/vc:OVEN-6

NOTICE OF CERTIFICATION HEARING ON AN APPLICATION TO CONSTRUCT AND OPERATE AN ELECTRICAL POWER PLANT ON A SITE TO BE LOCATED NEAR NEW PORT RICHEY, FLORIDA

1. Application number PA 87-23 for certification to authorize construction and operation of an electrical power plant near Port Richey, Florida, is now pending before the Department of Environmental Regulation, pursuant to the Florida Electrical Power Plant Siting Act, Part II, Chapter 403, F.S.

2. The proposed 751 acre resource recovery site is located in the northwestern portion of unincorporated Pasco County. The site is approximately two and one-half miles north of State Road 52. It is bounded on the west and south by Hayes Road, on the east by Shady Hills Road, and on the north by Blue Bird Lane. Florida Power Corporation has a 295-foot wide transmission line right-of-way crossing the site. Initially the site will house a 900 tons per day solid waste burning resource recovery facility. The power plant will ultimately be expanded to 1200 tons per day generating 29 MW of electricity.. A short transmission line will connect to an existing FPC substation to the southwest of the facility.

3. The Department of Environmental Regulation has evaluated the application for the proposed power plant and intends to recommend approval of the project subject to conditions of certification. Certification of the plant would allow its construction and operation. The application and Staff Analysis Report are available for public inspection at the addresses listed below:

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION
Southwest District Office
4520 Live Oak Fair Boulevard
Tampa, Florida 33610-7347

PASCO COUNTY UTILITIES DIVISION
7536 State Street
New Port Richey, Florida 33553

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 Broad Street
Brooksville, Florida 34609-4097

4. Pursuant to Section 403.508, Florida Statutes, the land use and zoning public hearing will be held by the Division of Administrative Hearings on February 16-17, 1988, at 9:00 a.m., Pasco-Hernando Community College Auditorium, 7025 State Road 587, New Port Richey, Florida 34654, Florida, to determine whether or not the site is consistent and in conformance with existing land use plans and zoning ordinances. No other issues will be heard at this land use and zoning hearing. A subsequent public hearing will be held to consider environmental and other impacts prior to final action by the Governor and Cabinet.

5. Pursuant to 403.508(4), F.S.: "(a) Parties to the proceeding shall include: the applicant; the Public Service Commission; the Division of State Planning; the water management district as defined in Chapter 373, in whose jurisdiction the proposed electrical power plant is to be located; and the Department. (b) Upon the filing with the Department of a notice of intent to be a party at least 15 days prior to the date set for the land use hearing, the following shall also be parties to the proceeding:

1. Any county or municipality in whose jurisdiction the proposed electrical power plant is to be located.

2. Any state agency not listed in paragraph (a) as to matters within its jurisdiction.

3. Any domestic non-profit corporation or association formed in whole or in part to promote conservation or natural beauty; to protect the environment, personal health, or other biological values; to preserve historical sites; to promote

consumer interests; to represent labor, commercial or industrial groups; or to promote orderly development of the area in which the proposed electrical power plant is to be located.

(c) Notwithstanding paragraph (4)(d), failure of an agency described in subparagraphs (4)(b)1 and (4)(b)2 to file a notice of intent to be a party within the time provided herein shall constitute a waiver of the right of the agency to participate as a party in the proceeding.

(d) Other parties may include any person, including those persons enumerated in paragraph (4)(b) who failed to timely file a notice of intent to be a party, whose substantial interests are affected and being determined by the proceeding and who timely file a motion to intervene pursuant to Chapter 120, F.S., and applicable rules. Intervention pursuant to this paragraph may be granted at the discretion of the designated hearing officer and upon such conditions as he may prescribe any time prior to 15 days before the commencement of the certification hearing.

6. When appropriate, any person may be given an opportunity to present oral or written communications to the designated hearing officer. If the designated hearing officer proposes to consider such communication, then all parties shall be given an opportunity to cross-examine or challenge or rebut such communications.

7. Notices or petitions made prior to the hearing should be made in writing to:

Ms. Diane D. Tremor
Division of Administrative Hearings
The Oakland Office Building
2009 Apalachee Parkway
Tallahassee, Florida 32399-1550

8. Those wishing to intervene in these proceedings must be represented by an attorney or other person who can be determined to be qualified to appear in administrative hearings pursuant to Chapter 120, F.S., or Chapter 17-1.21, FAC.

9. This Public notice is also provided in compliance with the federal Coastal Zone Management Act, as specified in 15 CFR Part 930, Subpart D. Public Comments on the applicant's federal consistency certification should be directed to the Federal Consistency Coordinator, Division of Environmental Permitting, Department of Environmental Regulation.

10. On November 16, 1987, Pasco County applied to the DER to construct the aforementioned resource recovery plant. The application is also subject to U.S. Environmental Protection Agency (EPA) regulations for Prevention of Significant Deterioration of air quality (PSD), codified at 40 CFR 52.21, and Florida Administrative Code Chapter 17-2.04. These regulations require that, before construction on a source of air pollution subject to PSD may begin, a permit must be obtained from DER Such permit can only be issued if the new construction has been determined by DER to comply with the requirements of the PSD regulations, which are described in 40 CFR 52.21 and 17-2.04, F.A.C. These requirements include a restriction on incremental increases in air quality due to the new source and application of best available control technology (BACT).

The DER has been granted a delegation by EPA to carry out the PSD review of this source. Acting under that delegation, the DER has prepared a draft permit which is included in the DER's staff analysis report. The DER has made a preliminary determination that the proposed construction will comply with all applicable PSD regulations. The degree of Class II increment consumption that will result from the construction is:

Pollutant	Annual Average	24-hr Average	3-hr Average
Particulate	0.5%	1%	
Sulfur Dioxide	2%	3%	2%

The source is located approximately 27 kilometers from the nearest Class I area.

The degree of Class I increment consumption that will result from the construction and operation of the source is:

Pollutant	Annual Average	24-hr Average	3-hr Average
Particulate	1%	0.04%	
Sulfur Dioxide	1%	8%	8%

Construction and operation of the source will not cause a violation of any ambient air quality standard nor will it cause an exceedance of any PSD increment.

Technical Evaluation
and
Preliminary Determination

Pasco County Resource Recovery Facility
Pasco County, Florida

Permit No. PSD-FL-127

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

April 4, 1988

TABLE OF CONTENTS

This report was prepared by the Power Plant Siting Section after coordination with and receipt of oral and written review and comments from many other Departmental staff members, in particular, the following:

Division of Environmental Permitting
Bureau of Permitting
Hamilton S. Oven, Jr., (Siting Coordination)

Southwest Florida District Office
Steve Morgan — Kim Ford
Bill Thomas — Harry Kern

Division of Environmental Programs
Bureau of Air Quality
Tom Rodgers — Clair Fancy
Barry Andrews

Bureau of Groundwater Protection
Don Kell

Bureau of Waste Management
John Reese

Bureau of Laboratories and Special Programs
Dr. Larry Olsen (Biology)

Office of General Counsel
Richard Donelan

Pursuant to Chapter 403, Part II, Florida Statutes, this report constitutes the Department of Environmental Regulation's required analysis and recommended Conditions of Certification for the Pasco County Resource Recovery Facility, PA 87-23. This report and attached Conditions of Certification are hereby approved.

9 March 88
Date

Dale H. Twachtmann
Secretary

State of Florida Department of Environmental Regulation
Pasco County - Resource Recovery Project
Electric Power Plant Site Certification Review
Case No. PA 87-23

I. INTRODUCTION

Pursuant to Chapter 403, Florida Statutes, Part II, Pasco County applied in November 1987 for certification of a solid waste-fired electric power plant at a site in the northwestern region of the county on Hays Road about two and one-half miles north of State Road 52.

The proposed project will be an energy recovery facility which will be designed to initially generate approximately 25 megawatts (MW) of electrical power. In the anticipation of future needs, certification is being sought for an ultimate electric generating capacity of 29 MW. Pasco County plans to contract with a full service vendor to design, construct, and operate the plant for 20 or more years. Generated electricity will be transmitted to Florida Power Corporation's substation adjoining the proposed Pasco County facility. The primary purpose of the facility is to dispose of solid waste. Non-processible waste (including non-combustibles and demolition debris) and unusable ash or residue will be buried at an onsite double lined landfill. The sale of electricity will help offset the overall cost of owning and operating the facility.

II. DESCRIPTION OF SITE AND FACILITIES

The Energy Recovery Facility will be located on approximately 751 acres on Hays Road about two and one-half miles north of State Road 52. The site is approximately 8.5 miles east of Hudson and a liitle over ten miles northeast of Port Richey. The proposed plant site was primarily planted pine which was

recently harvested. The site topography is irregular with low areas and low sand ridges. The surface geology on the site is generally represented by a series of sand, clay and shell beds extending from the surface to a depth of approximately 30-50 feet forming the surficial aquifer system. It is underlain by a relatively impermeable layer of clayey materials known as the Hawthorne formation which in turn overlies the permeable limestone formations of the Floridan Aquifer.

The proposed facilities will consist of a gatehouse/weigh station, receiving and handling building, furnace boilers, turbine generators, an ash and solid waste disposal area, a cooling system, air pollution control systems, stormwater runoff control ponds, and a transmission line connecting to Florida Power Corporation's electrical substation.

III. NEED FOR THE FACILITY/POWER

The primary purpose for the proposed facility is to dispose of the county's refuse and trash. The escalating cost of land for landfilling operations, limitations of land availability and environmental concerns such as leaching of contaminants from putrescible materials into the groundwater system were all factors in determining the need for a better solid waste handling system. The proposed resource recovery facility helps allow the retirement of the other county landfills, the conservation of land by reduction of the amount needed for future landfilling, a reduction of pollution of groundwater, a reduction of flies, odors, rodents and birds associated with current landfills.

The sale of electricity will help offset the cost of the system. Over the life of the plant, the new facility is estimated to save several million dollars over the cost of landfilling for a similar length of time.

Electric system reliability will be increased by the addition of a small generating facility because it offsets some of the problems associated with a large unit when that unit goes

down. The cost to the consumer per unit of electricity may be less than a similarly sized coal-fired unit because it does not require certain air pollution control equipment such as SO_2 scrubbers necessary for a coal-fired plant. Production of resource conservative electric power which does not depend on oil is in conformance with state and federal energy policy. It is also in conformance with the legislative intent of the Florida Electrical Power Plant Siting Act to provide abundant, low cost electrical energy that is of minimum adverse impact on human health and the environment and with the legislative intent of the Florida Resource Recovery and Management Act (Chapter 403, Part IV, Florida Statutes).

The Florida Public Service Commission has determined that the facility is needed. Their conclusions are contained in a latter section of this report.

IV. ZONING AND LAND USE PLANNING

The site of the proposed resource recovery facility is zoned A-C (Agricultural District). A-C zoning is designed to to preserve rural and open lands with agricultural value. Under Section 2 of Pasco County Ordinance No. 75-21, development and other activities conducted by Pasco County are exempt from the provisions of the Pasco County Zoning Ordinance.

The Solid waste and Resource Recovery Element of the County's Comprehensive Plan has been considered in the design of the resource recovery facility. The goal of the Element is to "dispose of the county's domestic and industrial waste in the safest and least expensive manner." To reach that goal, the county adopted the a number of objectives including:

1. To examine the efffects of landfill and solid waste resource recovery on the environment.
2. To insure that all future landfills or waste resource operations will have minimal adverse effects on the citizens of the county.

3. To research the feasibility of resource recovery.

4. To conform with the existing state and federal requirements.

After reviewing the goals and objectives of the Solid Waste and Resource Recovery Element, the Pasco County Planning Director has determined that the resource recovery facility would be consistent with the goals and objectives of the Pasco County Comprehensive Plan.

Previous land use on the site included cattle grazing and planted pine trees. Most of the planted pines have been recently harvested. The area north of the site is low-density rural with some residential areas mixed with vacant agricultural land. Shady HIlls Park is located about one mile north of the proposed facility. East of the site is predominately low-lying, vacant agricultural Or wooded lands. South of the site is a medium-density single family residential area at about 50% of capacity. West of the site is another area of low-density residential development.

On February 16, 1988, the Hearing Officer conducted a public hearing to determine if the site was consistent and in compliance with existing land use plans and zoning ordinances. On March 25, 1988, the Hearing Officer found the site was consistent and in compliance with applicable land use plans and zoning ordinances.

V. AGENCY COMMENTS

Copies of the application were furnished in November 1988 to the Florida Public Service Commission, the Department of Community Affairs, and the Southwest Florida Water Management District as required by Section 403.507, F.S. Shortly thereafter, copies of the application were furnished to the following agencies for their review and comments:

1. Florida Department of Commerce
2. Florida Department of Health and Rehabilitative Services
3. Florida Department of Natural Resources

4. Florida Game And Fresh Water Fish Commission
5. Florida Department of State - Division of Historical Resources
6. Tampa Bay Regional Planning Council
7. Florida Department of Agriculture and Consumer Services

A number of these agencies have commented on the application.

A. Public Service Commission

On November 19, 1988, the Executive Director of the Florida Public Service Commission sent the following letter and Order to the department:

"Pursuant to the Florida Electrical Power Plant Siting Act (Chapter 403, Florida Statutes) the Florida Public Service Commission (FPSC) is empowered to make a determination of need for any power plant for which an applicant seeks certification.

"The FPSC is also required to provide the Department of Environmental Regulation a final report stating the Commission's final decision on the applicant's request for a determination of need. Enclosed is a copy of the Commission's Order No. 17752 which grants the petitioner's request for an affirmative determination of need. This order shall constitute the FPSC's final report as required in Chapter 403, Florida Statutes."

FPSC Order No. 17752 states as follows:

"Under the Florida Electric Power Plant Siting Act (Chapter 403, Florida Statutes) this Commission is empowered to make a determination of need for any electric power plant for which an applicant seeks certification under the act. As set out in Section 403.508(3), Florida Statutes, that affirmative determination of need by the Commission is a condition precedent to the conduct of the certification hearing.

"On February 24, 1987, we received the petition of Pasco County, Florida, for a determination of need for a 29 megawatt (MW) solid waste fired cogeneration power plant. The petition states that the facility will have an in-service date of January,

1991, and will operate initially with a single 22 MW generator. At maximum capacity of 29 MW the facility will use up to 1200 tons per day of municipal solid waste as fuel. Power produced by the facility will be sold to Florida Power Corporation.

"Section 403.519, Florida Statutes, designates this Commission as the exclusive forum for determination of need and sets out the criteria which shall be considered in making such a determination. They are:

(1) The need for electric system reliability and integrity;

(2) The need for adequate electricity at a reasonable cost;

(3) The cost effectiveness of the proposed plant,i.e., whether the proposed plant is the most cost effective alternative available; and

(4) Conservation measures taken that are reasonably available to the applicant which might mitigate the need for the proposed plant.

Section 403.519 also provides that the Commission may consider such other matters as it deems relevant in making its determination of need.

"We have reviewed Pasco County's application in the light of the criteria established by the statute. It is our conclusion that Pasco County's plant meets the relevant criteria for a determination of need under Section 403.519.

"Pasco County's 29 MW plant, although small, will make some contribution to electric system reliability and integrity in Peninsular Florida. We project that without the addition of qualifying facilities or power plants before the summer of 1993, peninsular Florida will have total avaiable capacity of 32,318 MWs with an expectant coincident firm peak demand of 25,138 MWs. This equates to a reserve margin of 28 percent. The contribution of Pasco County's facility to this reserve margin would only be one one-hundredth of one percent. Clearly, this would be a small amount; yet it is a positive contribution.

"Applying the second and third criteria enumerated in Section 403.519 is somewhat problematical. In order to determine whether the facility would help meet the need for adequate

"ORDERED that this docket be closed.

"By ORDER of the Florida Public Service Commission, this 26th day of June, 1987."

A copy of the PSC order is included in Appendix A.

B. Department of Community Affairs

On January 20, 1988, the Department of Environmental Regulation received the following comments from the Department of Community Affairs:

"In accordance with Section 403.507, Florida Statutes, the Department of Community Affairs submits the attached preliminary report on the Pasco County Resource Recovery Project power plant site certification application. The preliminary report provides a description of the process which will be used in the final study to evaluate the compatibility of the proposed power plant with the State Comprehensive Plan."

Introduction:

"On November 16, 1987, Pasco County submitted an application for power plant site certification to the Florida Department of Environmental Regulation (DER). The proposed plant is a resource recovery facility which will utilize a mass-burn system to incinerate wastes and produce steam to power its turbine generators. Although the disposal of solid waste is the primary purpose of the facility, the plant will have a initial gross electrical generating capacity of approximately 22 megawatts, produced from the combustion of the refuse.

"Under section 403.506 of the Florida Statutes, no construction of any new electrical power plant of 75 or more megawatts in capacity may be undertaken without first obtaining site certification as provided in the Florida Electrical Power Plant Siting Act (Sections 403.501-403.517, F.S.). Certification under the act may also be sought for facilities less than 75 megawatts, at the option of the applicant. Section 403.507 of this act requires the Department of Community Affairs (DCA) to review a

electricity at a reasonable cost and whether the proposed plant is the most cost effective alternative available, it is necessary to consider the cost to Florida ratepayers of the facility's output and the terms and conditions under which the output would be provided to the power grid. Pasco County has not signed a standard offer or negotiated contract with an electric utility for the purchase of its facility's output. Thus, based on the current state of affairs, we would be unable to make the economic judgement necessary to determine if the second and third criteria of reasonable cost and cost-effectiveness have been met. However, Pasco County has made a commitment to the Commission that the facilities output, when the plant becomes operational, will be supplied in accordance with applicable Commission rules and Florida Statutes. This commitment means that the upper limit on the sale of Pasco County's generative output would be the standard offer amount as determined under the Commission's formula or other such formula as may be appropriate under existing rules and statutes at the time a contract with the utility is signed by Pasco County. This commitment from Pasco County we find that the electricity produced by the solid waste facility will be priced on a cost-effective basis and supplied at a reasonable cost, as will be judged by the Commission's standards in effect at the time.

"In as much as Pasco County's facility will serve the dual purpose of waste disposal and production of electricity we do not believe that consevation of electrical energy is directly at issue in this case. We, therefore, make no specific finding on this statutory criteria nor do we find it necessary to apply any specific criteria in making our determination of need.

"Now, therefore, in consideration of the above, it is

"ORDERED by the Florida Public Service Commission that the petition by Pasco County for a determination of need for its proposed 29 megawatt solid waste-fired generating facility is hereby granted as set forth in the body of this order. It is further

power plant siting application for compatibility with the State Comprehensive Plan (SCP) and submit preliminary and final reports to the Department of Environmental Regulation (DER), the lead agency in coordinating the power plant siting certification process. The purpose of this preliminary report is to provide a description of the process which will be used in the final study to evaluate the compatibility of the proposed power plant with the State Comprehensive Plan (SCP). This report also presents the goals and policies of the SCP which are most directly applicable to the siting of a resource recovery facility."

State Comprehensive Plan

"The SCP, authorized under the State Comprehensive Planning Act of 1972, is intended to 'provide long-range guidance of the orderly social, economic and physical growth of the state' (Section 23.0114, F.S.). The current SCP, adopted by the legislature in 1985, addresses 25 major areas as provided below:

Education	Energy	Children
Mining	Property Rights	Families
The Elderly	Land Use	Housing
Public Facilities	Health	Transportation
Governmental Efficiency	Public Safety	The Economy
Water Resources	Agriculture	Tourism
Plan Implementation	Employment	Air Quality
Coastal and Marine Resources	Cultural and Historical Resources	
Natural Systems and Recreational Lands		
Hazardous and Nonhazardous Materials and Waste		

"In the SCP, goals have been established for each of the 25 subject areas. These goals are defined as an 'expression of states to which Florida should aspire during the next 10 or 15 years'. (Summary, Conference Committee Amendments to HB 1338, the SCP bill). Each goal contained in the SCP is accompanied by policies which indicate specific ways in which to achieve the particular goal."

Method of Review

"Although the Power Plant Siting Act directs the DCA to review site certification applications, no specific process by

which to evaluate the compatibility of the project with the SCP is given. To assess the compatibility of the power plant application with the SCP, the DCA employs a method by which the projected impacts of the power plant are compared directly with the goals and policies of the state comprehensive plan. Comparison of the projected facility impacts with these goals and policies enables the identification of specific consistencies and inconsistencies of the project with the SCP. In this report, a determination of the project's overall compatibility with the SCP is made by assessing these positive and negative impacts of the project."

Project Description

"The proposed Pasco County Solid Waste Resource Recovery Facility is to be located in northwest Pasco County, in sections 24, 25, and 26 of Township 24 south, range 17 east. The 751 acre site lies 2.5 miles north of the State Road 52 and 7 miles east of U.S. 19 east. The nearest incorporated areas, Port Richey and Weeki Wachee, are about 10 miles away.

In addition to the resource recovery facility, the project site will contain stormwater retention ponds, landfill/ashfill areas, an internal roadway system, and open areas. Initially the proposed facility will have a continuous design rated capacity of 900 tons per day of municipal solid waste and a gross electrical generating capacity of approximately 22 megawatts. Certification is being sought for an eventual generating capacity of 29 gross megawatts, produced by burning 1,200 tons of MSW per day. The County will contract with a full service vendor to design, construct, and operate the project for a period of 20 years. Construction of the project is scheduled to begin in August 1988 and it is expected to be in service by August 1991.

Applicable Goals and Policies of the SCP

"The DCA will assess the compatibility of the proposed power plant with the SCP as a whole. It will do so, however, by concentrating on those SCP goals and policies that are directly applicable to the proposed resource recovery project. The goals and policies which are most relevant in evaluating resource

recovery facilities are within the SCP subject areas of Water Resoures, Natural Systems and Recreational Lands, Air Quality, Energy, Hazardous and Nonhazardous Materials and Waste, Land Use, Public Facilities, and Cultural and Historical Resources. The applicable goals and policies associated with these subjects areas are presented below. As review of this certification application continues, additional goals and policies of the SCP may be adduced, as appropriate, for the determination of compatibility with the SCP.

WATER RESOURCES

"Policy No.1-- Ensure the safety and quality of drinking water supplies and promote the development of reverse osmosis and desalinization technologies for developing water supplies.

"Policy No.2-- Identify and protect the functions of water recharge areas and provide incentives for their conservation.

"Policy No.5-- Ensure that existing development is compatible with existing local and regional water supplies.

"Policy No.8-- Encourage the development of a strict floodplain management program by state and local governments designed to preserve hydrologically significant wetlands and other natural floodplain features.

"Policy No.9-- Protect aquifers from depletion and contamination through appropriate regulatory programs and through incentives.

"Policy No.10-- Protect surface and groundwater quality and quantity in the state.

"Policy No.11-- Promote water conservation as an integral part of water management programs as well as the use and reuse of water of the lowest acceptable quality for the purpose intended.

"Policy No.12-- Eliminate the discharge of inadequately treated wastewater and stormwater runoff into the waters of the state.

"Policy No.13-- Identify and develop alternative methods of wastewater treatment, disposal, and reuse of wastewater to reduce degradation of water resources.

NATURAL SYSTEMS AND RECREATIONAL LANDS

"Policy No.1-- Conserve forests, wetlands, fish, marine life, and wildlife to maintain their environmental, economic, aesthetic, and recreational values.

"Policy No.3-- Prohibit the destruction of endangered species and protect their habitats.

"Policy No.7-- Protect and restore the ecological functions of wetlands systems to ensure their long-term environmental, economic, and recreational value.

"Policy No.8-- Promote restoration of the Everglades system and of the hydrological and ecological functions of degraded or substantially disrupted surface waters.

AIR QUALITY

"Policy No.1-- Improve air quality and maintain the improved level to safeguard human health and prevent damage to the natural environment.

"Policy No.2-- Ensure that developments and transportation systems are consistent with the maintenance of optimum air quality.

"Policy No.3-- Reduce sulfur dioxide and nitrogen oxide emissions and mitigate their effects on the natural and human environment.

"Policy No.4-- Encourage the use of alternative energy resources that do not degrade air quality.

ENERGY

"Goal-- Florida shall reduce its energy requirements through enhanced conservation and efficiency measures in all end-use sectors, while at the same time promoting an increased use of renewable energy resources.

"Policy No.5-- Reduce the need for new power plants by encouraging end-use efficiency, reducing peak demand, and using cost-effective alternatives.

"Policy No.9-- Promote the use and development of renewable energy resources.

HAZARDOUS AND NONHAZARDOUS MATERIALS AND WASTE

"Goal - All solid waste, including hazardous waste, waste-

water, and all hazardous materials, shall be properly managed, and the use of landfills shall be eventually eliminated.

"Policy No.1-- By 1995, reduce the volume of nonhazardous solid waste disposed of in landfills to 55 percent of the 1985 volume.

"Policy No.7-- Encourage the research, development, and implementation of recycling, resource recovery, energy recovery, and other methods of using garbage, trash, sewage, slime, sludge, hazardous waste, and other waste.

"Policy No.9-- Identify, develop, and encourage environmentally sound wastewater treatment and disposal methods.

LAND USE

"Policy No.3-- Enhance the liveability and character of urban areas through the encouragement of an attractive and functional mix of living, working, shopping, and recreational activities.

"Policy No.6-- Consider, in land use planning and regulation, the impact of land use on water quality and quantity, the availability of land, water, and other natural resources to meet demands, and the potential for flooding.

PUBLIC FACILITIES

"Goal-- Florida shall protect the substantial investments in public facilities that already exist, and shall plan for and finance new facilities to serve residents in a timely, orderly, and efficient manner.

"Policy No.1-- Provide incentives for developing land in a way that maximizes the uses of existing public facilities.

CULTURAL AND HISTORICAL RESOURCES

"Policy No.3-- Ensure the identification, evaluation, and protection of archaeological folk heritage and historic resources properties of the state's diverse ethnic population.

"Policy No.6-- Ensure that historic resources are taken into consideration in the planning of all capital programs and projects at all levels of government, and that such programs and projects are carried out in a manner which recognizes the preservation of historic resources.

SUMMARY

"The State Comprehensive Planning Act states that 'the plan shall be construed and applied as a whole, and no specific goal or policy in the plan shall be construed or applied in isolation from the other goals or policies in the plan'. Consequently, in the final report, the consistency of the project with the SCP will be assessed in terms of its overall compatibility with the plan rather than with specific policies. This should assure a consideration of the positive and negative impacts of the proposed Pasco County Solid Waste Resource Recovery Project."

On February 26, 1988, the Department of Community Affairs submitted their final report on the Pasco Resource Recovery Facility.

"In accordance with Section 403.507, Florida Statutes, the Department of Community Affairs (DCA) submits the attached final report on the Pasco County Resource Recovery Project power plant site certification application. The final report presents the results of our evaluation of the compatibility of the proposed resource recovery project with the State Comprehensive Plan. To summarize the report, we find the proposed power plant to be compatible with the State Comprehensive Plan, provided that certain recommended conditions of certification are met."

The applicable goals and policies and a discussion of the consistency of the project with the goals and policies is contained in the complete DCA report in Appendix B of this report. The DCA's conclusions are as follows:

"The Power Plant Siting Act requires that DCA evaluate the compatibility of electrical power plants with the State Comprehensive Plan (SCP). The State Comprehensive Planning Act states that 'the plan shall be construed and applied as a whole, and no specific goal or policy in the plan shall be construed or applied in isolation from the other goals or policies in the plan'. Consequently, in this report, the compatibility of the project with the SCP is ultimately assessed in terms of its overall compatibility rather than its compatibility with specific goals and policies."

"In summation, the Department of Community Affairs finds that the proposed Pasco County Resource Recovery Facility would be consistent with the following policies and goals:
Water Resources: Policies Nos. 8 and 13 and the water reuse portion of policy No. 11.
Natural Systems and Recreational Lands: Policy Nos. 1, 3, and 7
Energy: Goal, Policies Nos. 5 and 9
Hazardous and Non-Hazardous Materials and Waste: Goal, Policies Nos. 1, 7, and 9
Public Facilities: Goal, Policy No. 1
Cultural and Historical Resources: Policy Nos. 3 and 6

"The DCA finds that the proposed project would be consistent with the following policies if its proposed conditions of certification were met:
Water Resources: Policies Nos. 1, 2, and 12, and the water quality portions of Policies Nos. 5, 9, and 10
Land Use: Goal, Policy No. 6

"The DCA finds that the proposed project would be inconsistent with the following policies:
Air Quality: Policies Nos. 1, 2, 3, and 4

"The DCA considered the following issues important in determining overall compatibility with the SCP:

"1. The proposed PCRRF is to be located over portions of the Floridan aquifer, the major potable water source for Pasco County. The site is said to be a recharge area for the Floridan aquifer. The aquifer is poorly confined in this area, having only a thin (5 to 15 feet) layer of clay above its limestones, and is therefore vulnerable to contamination from water-borne pollutants--for example, the leachate from a solid waste landfill. Once in the aquifer, a contaminated plume could spred to adjacent portions of the aquifer. Normally, such movement through the aquifer is very slow; however, the Floridan aquifer in this area has, according to the SWFWMD, high transmissivity, and therefore a contaminated plume could spread somewhat faster through this part of the aquifer (though still slow by surface water standards). One region of the aquifer to which a

hypothetical plume could spread is that which feeds the Spring Hill pumping center. Spring Hill is located within 5 miles of the site and, potentiometrically, is down-gradient from it--that is, water within the aquifer moves from the area of the PCRRF toward the area of the Spring Hill pumping center. Then, too, western Pasco County is subject to sinkhole development, and in fact, the area south and east of the site is dotted with wet sinkholes, ponds, and lakes. These geologic conditions increase the potential for impacts of the proposed PCRRF on the quality of groundwater resources.

"On the other hand, the landfill of the PCRRF is designed to prevent leachate leakage and to detect it if it should occur. The reource recovery facility is a substitute for a sanitary landfill, which typically poses a greater threat to groundwater resources than does a resource recovery facility. The landfill of the PCRRF will receive ash from the burning process and unprocessible solid waste, neither of which is likely to have a dangerous leachate as the processible solid waste found in a sanitary landfill.

"(2) Of particular concern to the DCA is the potential impact on human health from the chlorinated hydrocarbons which can be formed as a result of the incineration of municipal solid waste. Policy No. 1 within the Air Quality element of the SCP states: "Improve air quality and maintain the improved level to safeguard human health and prevent damage to the natural environment. Policy No. 5 states: 'Ensure, at a minimum, that power plant fuel conversion does not result in higher levels of air pollution.' Neither the United States Environmental Protection Agency nor the DER have established standards for permissible levels of chlorinated hydrocarbon emissions. It is the opinion of the DCA that, until standards of permissible levels of chlorinated hydrocarbon emissions have been established for the State of Florida, mass burn facilities such as the PCRRF should be required to install pollution control technology to minimize emission of chlorinated hydrocarbons, in order to be consistent with the aforementioned SCP air quality policies. As

noted under the 'Air Quality' discussion, the PCRRF will have suitable air pollution control technology.

"(3) In its analysis, the DCA considered the alternatives to the construction of a resource recovery facility in Pasco County. One such alternative would be to increase the number of landfills in Pasco County. Pasco County is increasingly becoming more urbanized and acceptable landfill sites are becoming increasingly difficult to locate and expensive to operate. Sanitary landfills require greater amounts of land than do resource recovery facilities, can be unsightly and noisome, and may lower the value of neighboring properties. Through combustion, the resource recovery facility will reduce the volume of solid waste disposed of in its landfills by approximately 70 percent, thus reducing the need for siting and developing new landfills. Another alternative to the resource recovery project's secondary function as a generator of electricity would be to (slightly) accelerate construction of a new base load electrical generating station to serve central Florida. These large power plants are very expensive and often have significant environmental impacts. Certification and construction of the resource recovery facility will help postpone the date at which a new base-load power plant will be needed.

"(4) The development and use of resource and energy recovery facilities is a policy of the SCP. The reduction of the volume of solid wastes and the utilization of renewable energy sources are functions of the project which are clearly consistent with, and encouraged by, the policies and goals of the SCP.

"In conclusion, the DCA considers that the Pasco County Resource Recovery Facility would be compatible overall with the State Comprehensive Plan if the following recommended conditions of certification were met:

"Condition A -- The certification holder shall develop plans for the monitoring of groundwater in the area of the PCRRF site to the approval and satisfaction of the DER and the SWFWMD, and these plans shall be implemented so as to minimize potential negative impacts to groundwaters. The certification holder shall also develop a contingency plan for the mitigation of any leachate leakage that is detected. This condition of certification is intended to help make th e proposed resource recovery project consistent with SCP Water Resources policies Nos. 1, 5, 9, 10 and 12.

"Condition B -- In order to minimize noise and aesthetic impacts from the facility, the certification holder shall maintain or install a buffer of trees along the boundaries of the site. The buffer shall be of a height and width suitable for these purposes. The condition of certification is intended to moderate the aesthetic and noise impacts of the facility."

C. Southwest Florida Water Management District

On February 25, 1988, the Southwest Florida Water Management District submitted their reports with a cover letter which stated:

"As you may know, the supplementary information requested by the Soutwest Florida Water Management District for review of those matters within the District's jurisdiction on Pasco County's Solid Waste Recovery Facility application was received on January 27, 1988.

"Accordingly, enclosed are reports by the District on consumptive use of water and surface water management at the proposed facility required by Section 403.507(1)(c), Florida Statutes, and Rule 17-17.091(2)(e), Florida Administrative Code. Also enclosed is the District's report on the ashfill/landfill at the proposed facility as required by Section 403.707(4), Florida Statutes, and Rule 17-7.07(4), Florida Administrative Code. These reports were approved by the District Governing Board on February 23, 1988, as agreed in the Joint Stipulation and Motion to Expedite in the above referenced case and Kent Zaiser's letter to David S. Dee dated January 8, 1988."

The conclusions and recommendations of the District's reports are summarized as follows the entire reports are incorporated herein and attached in Appendix C.:

"As mandated by Section 403.707(4), Florida Statutes, when an application for a Class I or Class II solid waste disposal permit is made, the water management district within which the project is located shall prepare a report as to the impact on the water resources of the area. This report has been prepared to comply with 403.707(4), Florida Statutes.

"BACKGROUND

"The site selected for the Pasco County Resource Recovery Facility is located on Hays Road in northwestern Pasco County. The ashfill/landfill is an integral part of the resource recovery facility. The proposal is a solid waste disposal project consisting of facilities for disposing of processible

(combustible) wastes, non-processible (non-combustible) wastes, by-passed waste (when the resource recovery plant has an outage or waste received is in excess of capacity), and ash residue from the mass-burn facility.

"SITE CHARACTERISTICS

"The proposed site is not an optimal area for the location of a sanitary landfill for the following reasons:

"1. The Floridan Aquifer at the site is very poorly confined, so any contaminants which escape from a landfill would be able to move relatively quickly through the surface sediments to the limestone below. In western Pasco County, the only appreciable upper confinement of the Florida Aquifer is provided by a thin (5 to 15 feet) drape of residual clay overlying the limestone. The clay is discontinuous, being broken by differential subsidence which occurs as the underlying limestone slowly dissolves, and perforated by sinkholes (which are continuing processes). The discontinuous nature of the clay confining unit accounts for the fact that a continuous water-table aquifer does not exist in west Pasco County.

"2. The area is internally drained and has been recognized as a recharge area to the Floridan Aquifer, the major source of public and private water supply for the area.

"3. The Floridan Aquifer beneath the area is of relatively high transmissivity, having conduit and fracture flow. These characteristics make recovery of contaminated water difficult once it has entered the aquifer.

"4. The site is four to five miles, at the closest point, south of the Spring Hill pumping center which is projected to double withdrawals in the next six years to 10,000,000 gallons per day (gpd). The potentiometric gradient in the area indicates that water recharged at the site flows to the northwest through the southwestern corner of Hernando County and beneath the United States Highway 19 corridor before discharging to the Gulf of Mexico.

"5. The site is seven to eight miles, at the closest point,

north of the Starkey Wellfield, which is presently permitted to draw 8,000,000 gpd, and has applied for a permit to withdraw 15,000,000 gpd. However, the potentiometric gradient at the site is away from the Starkey Wellfield.

"MITIGATING FACTORS

"Two factors serve to mitigate the concerns about the suitability of the site:

"1. The proposed ashfill/landfill is a state-of-the-art, above ground landfill with a double system of underdrains and liners to collect leachate and prevent leachate migration. The waste is to be contained in sixteen segregated cells. The primary underdrain system is designed to collect leachate from the base of each waste cell for handling. The secondary underdrain system serves as backup to the primary system and is to be monitored to detect leakage from the primary liner of any waste cell. The landfill is designed to contain all leachate and not leak into the underlying aquifer.

"2. The ashfill/landfill is intended to receive largely ash residue from the mass-burn facility and nonprocessible (noncombustible) wastes. These materials will contain greatly reduced quantities of volatile and organic materials compared to unprocessed solid waste. This will result in a leachate which is less likely to cause degradation and failure of liners and underdrains, and in turn, reduce the risk of contamination of the underlying aquifer.

"These two aspects of the proposed facility are greatly respected and appreciated by District staff. The development of resource recovery facilities is welcomed as a replacement for the traditional landfill disposal of unprocessed solid wastes.

"RECOMMENDATIONS

"District staff does not share the confidence of the designers that a "leak-proof" landfill can be constructed in west Pasco County, given the geologic characteristics of the area. It is not known what effect the loading of the land surface beneath the landfill will have on the stability of potential or plugged

sinkholes. It should be assumed that the development of sinkholes and differential subsidence will continue in the area of the landfill, and that these processes, along with potential imperfections of construction, may allow some leakage of leachate from the landfill. Therefore, staff recommendations focus on limiting the types of wastes disposed of in the proposed landfill to those types which pose the least threat to ground-water resources of the region in the event of leakage of the landfill.

"The disposal of ash residue from the mass burn facility is regarded as much less threatening to the water resources of the region tha unprocessed solid waste. The following recommendations are made for the operation of the facility in such a way as to eliminate or limit the disposal of unprocessed solid waste at the site, and to require advance development of contingency plans for dealing effectively with landfill leakage.

"1. It is recommended that disposal of unprocessed waste at the ashfill/landfill site before the resource recovery facility is operational be minimized. Accordingly, it is recommended that disposal of the unprocessed waste at the ashfill/-landfill site be prohibited until the existing East Pasco County Sanitary Landfill site is filled to maximum capacity permittable by the Florida Department of Environmental Regulation, subject to the use limitations contained in the East Pasco County Sanitary Landfill site lease, or until the resource recovery facility is operational, whichever occurs first.

"2. It is recommended that the disposal of by-passed unprocessed waste at the ashfill/landfill site be minimized when the resource recovery facility is not fully operational or when capacity of the facility is exceeded, in accordance with the County's plans for operation contained in the application. It is further recommended that the County be encouraged to initiate future construction of additional capacity of the resource recovery facility as early as possible in order to avoid processible waste received exceeding capacity of the facility and to avoid disposal of unprocessed waste in the

ashfill/landfill.

"3. The segregation of ash residue in cells separate from unprocessed waste (as proposed) should be encouraged to better insure that the ash remains in alkaline state. An alkaline state is desirable for the ash, as the heavy metal ions are much less mobile under alkaline conditions.

"4. It is recommended that the secondary underdrain system be monitored weekly for the presence of leachate which would indicate leakage from a primary liner. It is also recommended that a contingency plan be developed for actions to be taken in the event that failure of a liner or underdrain is detected. The plan should include:

"a. Methods for determining which cell is leaking,

"b. Plans for immediate expansion of the monitor well network downgradient of the problematic cell for early detection of leachate in the aquifer if the secondary liner fails,

"c. Plans for repair of a leaking waste cell, and

"d. Plans for restoration of the aquifer if aquifer contamination occurs.

"5. It is recommended that the County be encouraged to collect and segregate appliances and machines containing or utilizing coolants, greases, or oils for recycling by a metals processor as proposed by the County in order to minimize their disposal in the ashfill/landfill.

It is recommended that these conditions be incorporated by the Department of Environmental Regulation and the Electrical Power Plant Siting Board in the site certification for operation of the facility.

D. State of Florida Department of Commerce

The following comments were received from the State of Florida Department of Commerce of January 8, 1988

"The project is consistent with the goals and policies of the Department. This resource recovery facility will produce a useful product from trash, while decreasing the potential threat to ground water posed by the alternative sanitary landfill."

"This installation will have a benefit to the area's economic development potential. In addition to providing a low cost fuel for power generation, it will serve as a visible symbol that local government is willing to use state-of-the-art technology to solve its problems. This type of farsightedness creates a very positive impression on businessmen considering making a capital investment in Pasco County."

E. Florida Department of State, Division of Historical Resources

On December 30, 1987, the Division of Historical Resources replied by letter indicating that they had reviewed the Pasco County Resource Recovery Facility Power Plant Site Certification application to determine its effect on significant archaeological and historical sites and properties. The Division Director stated, "A review of the Florida Master Site File indicates that no significant archaeological and/or historical sites are recorded for or considered likely to be present within the project area. Therefore, it is the opinion of this office that the proposed project will have no effect on any sites listed, or eligible for listing, in the National Register of Historic Places or otherwise of national, state, or local significance. The project is also consistent with Florida's coastal zone program and its historic preservation laws and concerns, and may proceed without further involvement with this agency."

F. Florida Department of Natural Resources

On January 7, 1988, the Department of Natural Resources made

the following comments:

"Based on the information included in these documents the site does not appear to have any major problems from a hydro-geologic standpoint. The above-ground placement of the fill, along with the redundant liners and leachate collection system, are excellent features designed to safeguard the groundwater."

G. Florida Department of Agriculture and Consumer Services

On January 7, 1988, the Division of Forestry, Florida Department of Consumer Services stated the following:

"In response to your request on November 16, 1987, for our agency's review and comments on the proposed Pasco County Resource Recovery Project. After reviewing Pasco County's application for this project, it has been determined that it will have no immediate impact on areas under the Division of Forestry's management."

"Our agency views this recovery project as a step forward by reducing the volume of solid waste which must be landfilled. This should decrease the threat of contamination of the water resources from landfills in the Pasco County area."

H. Florida Game and Fresh Water Fish Commission

On February 12, 1988, the Florida Game and Fresh Water Fish Commission submitted the following report:

"The Office of Environmental Services of the Florida Game and Fresh Water Fish Commission has reviewed the applicants response to our letter dated January 13, 1988, requesting additional information, and can now provide final review comments.

"As you recall, the two issues of concern to the Commission were the presence of gopher tortoise colonies annd the intended land use of areas not occupied by the facility. The applicant's consultant has responded with two letters to the Commission, dated January 25 and February 3, which are attached for your

information. Additionally, Commission staff, the consultant, and representatives of Pasco County have met to discuss these issues. A summary of these contacts appear below.

The consultant will conduct a detailed assessment of gopher tortoise populations within the project area, and develop an on-site relocation plan for those tortoises and their associated commensals impacted by the project. Also, a long-term management plan will be developed to ensure the maintenance and survival of these tortoises and their habitat. The relocation and management plan should be incorporated into the approval of this facility.

"Regarding the land use issue, the applicant has committed to providing 276.7 acres in buffer areas surrounding the facility. The county has also indicated its intention to offer approximately 168 acres of the southwestern corner of the site as a recipient site for elocated gopher tortoises. The applicant is also aware that additional acreage of buffer area may be necessary, dependent on the specifics of the relocation and management plan to be developed.

"Finally the consultant for the applicant has expressed the need for using approximately 80 acres of the northeastern portion of the site for borrow material. This area is remnant sandhill, a vegetative community which, because of development pressure, is a threatened habitat in peninsular Florida. If actively managed, this area could eventually provide good sandhill habitat and could be an additional recipient site for gopher tortoises. We recommend that alternate areas on site be considered for borrow material, and that this area be used only if the need is justified. Should fill materials be obtained elsewhere, this approximately 80-acre area should be incorporated into the relocation and management plan for the gopher tortoise, or incorporated into the buffer area.

VI. DEPARTMENT OF ENVIRONMENTAL REGULATION EVALUATION

Florida's Electric Power Plant Siting Act (PPSA), specifically subsections 403.507(2)(a-h), F.S., and Chapter 17-17, FAC,

information. Additionally, Commission staff, the consultant, and representatives of Pasco County have met to discuss these issues. A summary of these contacts appear below.

The consultant will conduct a detailed assessment of gopher tortoise populations within the project area, and develop an on-site relocation plan for those tortoises and their associated commensals impacted by the project. Also, a long-term management plan will be developed to ensure the maintenance and survival of these tortoises and their habitat. The relocation and management plan should be incorporated into the approval of this facility.

"Regarding the land use issue, the applicant has committed to providing 276.7 acres in buffer areas surrounding the facility. The county has also indicated its intention to offer approximately 168 acres of the southwestern corner of the site as a recipient site for relocated gopher tortoises. The applicant is also aware that additional acreage of buffer area may be necessary, dependent on the specifics of the relocation and management plan to be developed.

"Finally the consultant for the applicant has expressed the need for using approximately 80 acres of the northeastern portion of the site for borrow material. This area is remnant sandhill, a vegetative community which, because of development pressure, is a threatened habitat in peninsular Florida. If actively managed, this area could eventually provide good sandhill habitat and could be an additional recipient site for gopher tortoises. We recommend that alternate areas on site be considered for borrow material, and that this area be used only if the need is justified. Should fill materials be obtained elsewhere, this approximately 80-acre area should be incorporated into the relocation and management plan for the gopher tortoise, or incorporated into the buffer area.

On March 22, 1988, the following letter was received:

"The Office of Environmental Services of the Florida Game and Fresh Water Fish Commission has reviewed the on-site gopher tortoise relocation plan offered by the consultant for the above

referenced project, and offers the following comments.

"Overall, the plan adequately addressed our concerns regarding population status and distribution of the tortoise, as identified in our February 12, 1988, correspondence. However, we believe a long term management plan should be developed to insure the survival of relocated tortoises and their commensals.

"On-site relocation for gopher tortoises and their commensal species will be through the establishment of approximately 170 acres of the project site as a gopher tortoise preserve. Additional committment to habitat manipulation, access control, and other components of a management plan will also be necessary. The applicant has been advised to consult with the Commission Staff.

"We recommend that the following requirements be incorporated into the siting permit:"

'1. The 170-acre gopher tortoise preserve should be identified on the site master plan. The applicant should develop a management plan, as approved by the Commission staff that will ensure the maintenance and enhancement of the gopher tortoises and their commensals on this preserve area.

'2. The approximately 80 acres of remnant sandhill community, located in the northeast corner of the project site, should be utilized for borrow only when all other potential areas have been exhausted. Should adequate borrow material be obtained elsewhere, this remnant sandhill community should be incorporated into the management plan for gopher tortoises, or incorporated into the buffer area.'

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

ELECTRIC POWER PLANT SITE CERTIFICATION REVIEW

FOR

PASCO COUNTY RESOURCE RECOVERY FACILITY

CASE NO. PA 87-23

Staff Analysis

Siting Coordination Section
Bureau of Permitting
Division of Environmental Permitting
Tallahassee, Florida
32399-2400

4/4/88

VI. DEPARTMENT OF ENVIRONMENTAL REGULATION EVALUATION

Florida's Electric Power Plant Siting Act (PPSA), specifically subsections 403.507(2)(a-h), F.S., and Chapter 17-17, FAC, identify minimum criteria which must be studied by the Department in its review of a steam electric facility. The review process is concerned with many of the same factors as an environmental impact statement. This includes some factors more socio-economic in nature than environmental, but which may have associated environmental impacts. An example of this would be land use plans. Proper land use planning can help steer development away from environmentally sensitive areas, and also into areas more suited for certain types of development as well.

In return, facility-specific environmental impacts, particularly ones adverse to human health, welfare and safety, may preclude site development in areas thought to be appropriate from land use perspectives. An example of this would relate to air pollution. If emissions cannot be controlled within the limits of the new source emission standards, or if the ambient air quality standards in the area reasonably considered to be affected by the facility cannot be achieved, then further review is unwarranted and the site may be considered unacceptable. The concerns with water are adequacy of supply and chemical and biological effects of discharges. The long-term effects of noise and the disposal of solid wastes are additional aspects to be considered.

With these factors in mind, the Power Plant Siting Act criteria and others have been evaluated in the following sections. PPSA criteria include: accessibility to transmission corridors; proximity to transportation systems; cooling system requirements; environmental impacts; soil and foundation conditions; impact on water supplies; impact on terrestrial and aquatic plant and animal life; impact on water and air quality; site specific studies; impact on surrounding land uses; impact on public lands and submerged lands; impact on archaeological sites and historic preservation areas; and construction and operational safeguards.

A. Accessibility to Transmission

Florida Power Corporation has an existing 500 kV powerline that crosses the proposed site. An existing substation is located in the southwest portion of the site. A connecting line will be constructed across the applicants property from FPC's substation to the facility's switchyard.

B. Fuel

The fuel for the electrical generating unit is processable solid waste collected from within Pasco County. The proposed project will have an initial and maximum (or ultimate) installed capacities of 1050 and 1200 tpd, respectively.

The availability of energy, and of the fuels to supply that energy, is of grave concern to the State and the Nation. The choice of processed refuse as the primary fuel source has three benefits: (1) It reduces the amount of putrescible material deposited in landfills, which reduces potential water pollution from water leaching through putrescible organic material placed in a landfill. (2) Generation of over 254 gigawatt hours of electricity by the burning of 436,800 tons per year of refuse at this new facility is anticipated to reduce the amount of imported fuel oil by over 469,000 barrels per year and more than 9,000,000 barrels over the life of the project (20 years). (3) The use of solid waste as fuel to generate electricity conforms to state and federal energy and resource recovery policies.

C. Proximity to and Impacts on Transportation Systems

Traffic due to construction and operation will enter and exit the site by way of Hays Road and State Road 52. The construction impacts of this traffic will be of short duration of a few hours at a time. Existing roadways appear capable of handling the traffic provided a signal or traffic control official is put in to use at the intersection of Hays Road and SR 52 Road for construction shift changes.

There will be some impact on the roads surrounding the site due to increased utilization by construction and operation vehicles. It is expected that the existing roads will be

maintained by the County or the State. Neither aquatic nor rail transportation systems are expected to be utilized nor subsequently impacted as a result of the facility.

D. Cooling System Requirements

The heat dissipation system will employ a conventional circulating water, evaporative type cooling tower. Make-up water for the cooling tower will be reclaimed water from the Hudson Subregional wastewater treatment plant nearby and will be secondarily treated, filtered and chlorinated prior to being used as make-up water. Cooling tower blowdown will be returned to the sanitary waste treatment plant for treatment and disposal. Pumps and pipeline will be installed to transport the effluent from the County waste water treatment plant to the project site. The cooling system will require around 420 gpm of makeup water.

E. Environmental Considerations and Impacts

E.1. Soil and Foundation Conditions

The facility site is covered by sandy surficial soils with some shell and clay. The soils on site are nearly level to gently sloping and are well drained. The water table ranges in depths of 40 inches to more than six feet below the surface. The sandy soils under the site are 30 to 60 feet deep. The mixed sand and clay layers of the Hawthorne formation which forms a confining layer over the limstones of the Floridan Aquifer. On the southwest portions of the site there is evidence of sink hole activity. Extensive soil boring and ground penetrating radar testing revealed no active solution features on the portions of the site where the lanfill and resource recovery facility will be located.

Since the upper layer of sandy soils are too inconsistent to safely support large buildings and heavy equipment, actual site preparation will involve the installation of deep piling, excavation of the garbage pit and some filling to raise the site elevation for vehicular access ramps. Low load carrying areas of the facility and areas that have a moderate sensitivity to

settlement may use shallow foundation systems although some compaction may be required. With proper engineering of the foundation design, proposed buildings and facilities can be safely constructed on site.

E.2. Availability of Water

Potable water for the site can be obtained from the Floridan aquifer by use of on site wells. Information from the applicant indicates that 30 gpm of potable water from the on site wells will be needed for the steam generation system, the potable and sanitary water system and the service water system. Up to 420 gpm of reclaimed water from the county's proposed Hudson Subregional Wastewater Treatment Plant will be needed for the cooling system. Another 50 gpm of reclaimed water will be used for the air pollution control system. The use of reclaimed water (treated sewage effluent) for cooling the steam generation system will conserve potable water.

E.3 Site Modifications

The applicant's proposed site modifications include construction of the combustion/steam generation units, each with a dry scrubber and a fabric filter (baghouse) air pollution control system, a 275 foot stack, water cooled condensers, a turbine generator, mechanical draft cooling towers, refuse unloading and storage facilities, administrative offices, truck weighing station, stormwater retention ponds, and a landfill/ashfill covering 195 acres upon completion.

E.4. Plant and Animal Communities/Rare or Endangered Species

The proposed site has been previously clear cut and used for silvaculture for pine trees over much of the area. The most recent clearcuting occurred in 1986. The variety of vegetation types on site are limited. A majority of the portion of the site to be utilized is planted in rows of Slash Pine or existing areas of Sand Pine. There are areas of some small oaks, Wax Myrtle and assorted grasses. A 295-foot wide transmission line right-of-way (ROW) bisects the site in a north/south direction. This ROW is

periodically cleared by Florida Power Corporation. This clearing process encourages grasses and weeds. No sensitive, rare or endangered vegetative species have been noted on site.

No threatened or endangered species of birds or animals were observed on site. A species of special concern, the Gopher tortoise was found on site. The Gopher Tortoise burrow may provide a home for the Gopher Frog also a species of Special Concern as well as a Threatened species, the Eastern Indigo Snake. Neither of these two species have been observed on site.

While the site and adjacent areas provide habitats for a variety of terrestrial and aquatic organisms, none of these habitats are considered critical. The site development will not significantly reduce the number of wetlands in the area. It is not anticipated that the proposed project will have any significant effects on area ecology.

E.5. Wastewater/Water Quality Impacts

a. Plant Waters

The following volumes of water are expected to be produced by the resource recovery facility during normal daily operation:

1.	Cooling Tower Blowdown	105 gpm
2.	Boiler Blowdown	15 gpm
3.	Cooling Tower Evaporation and Drift	315 gpm
4.	Service Water System	8 gpm
5.	Sanitary Wastes	6 gpm
6.	Air Pollution Control System Evaporation	50 gpm

b. Surface Water

Potential operational surface water impacts would largely arise from stormwater runoff from site alteration, construction of buildings, parking lots, and other impermeable surfaces. Also, foundation soils for the plant will probably be less permeable than naturally-occurring soils, thereby increasing runoff.

Four stormwater runoff detention ponds will be used to collect, contain, and treat runoff originating on the site. Runoff will consist of stormwater originating from the plant site. Water stored by detention in these ponds will only be

released by controlled gravity discharge to the natural on site drainage paths which ultimately lead to the ponds and wetlands on the southwest portion of the site. Only ponds 3 and 4 will discharge in the event of 25-year, 24-hour storm. Normal rainfall events will be retained on site and lost by evaporation and percolation.

c. Groundwater

Due to the highly environmentally sensitive nature of the Floridan Aquifer (i.e., a semi-confined aquifer with high horizontal and vertical hydraulic conductivity, and it being the sole source aquifer for the potable water supply in Pasco County), a detailed analysis was performed. Water levels in the aquifer fluctuate in response to recharge and discharge and are influenced directly by rainfall. The average difference between maximum and minimum water levels is ± 5 feet. Available water level contour maps indicate that the water table gradient is in a general northwesterly direction and under a very low hydraulic gradient. Lining the ashfill/landfill and containing and treating in-plant waters should prevent the proposed facilities from contaminating the groundwater.

The onsite groundwater wells will slightly draw down groundwater during plant operation. During the period of maximum pumping, when the facility must get its cooling water from the on site wells, the facility could temporarily depress groundwater levels for a short period. During normal operation, no off site water supply wells would be affected.

E.6. Air Quality Impacts

a. Introduction

The proposed solid waste resource recovery facility (RRF) will emit a wide variety of pollutants into the ambient air. Some of these pollutants are specifically regulated, others are not. Of the specifically regulated pollutants some are regulated in order to protect human health and welfare, and have limiting ambient air concentration levels that are not to be exceeded. All of the specifically regulated pollutants are bound to certain emission restrictions which can differ for different source types. In many cases a pollutant is regulated for one source type and not another. For the pollutants identified as potentially being emitted from this facility, the following regulations may apply: (1) Prevention of Significant Deterioration (PSD) including Best Available Control Technology (BACT), and protection of the State and National Ambient Air Quality Standards (NAAQS); (2) New Source Performance Standards (NSPS), and; (3) National Emission Standards for Hazardous Air Pollutants (NESHAP).

This section will deal with the prevention of significant deterioration regulations. The pollutants which are potentially subject to the PSD regulations are:

Pollutant	Emissions (TPY)
carbon monoxide (CO)	100
nitrogen dioxide (NO_2)	40
sulfur dioxide (SO_2)	40
ozone (O_3)	40 (VOC)
particulate matter (PM)	25
total reduced sulfur (including H_2S)	10
reduced sulfur compounds (including H_2S)	10
sulfuric acid mist (H_2SO_4)	7
fluorides (F-)	3

E.6. Air Quality Impacts

a. Introduction

The proposed solid waste resource recovery facility (RRF) will emit various of pollutants into the ambient air, some of which are specifically regulated, while others are not. Of the specifically regulated pollutants, some are regulated to protect human health and welfare, by means of ambient air concentration limitations that are not to be exceeded. All of the specifically regulated pollutants are subject to emission restrictions which differ for different source types. In many cases a pollutant is regulated for one source type and not another. For the pollutants identified as potential emissions from this facility, the following regulations may apply: (1) Prevention of Significant Deterioration (PSD) including Best Available Control Technology (BACT), and protection of the State and National Ambient Air Quality Standards (NAAQS); (2) New Source Performance Standards (NSPS), and; (3) National Emission Standards for Hazardous Air Pollutants (NESHAP).

This section deals with the prevention of significant deterioration issues. Expected pollutants which are potentially subject to the PSD regulations are:

Pollutant	Emissions (TPY)
carbon monoxide (CO)	100
nitrogen dioxide (NO_2)	40
sulfur dioxide (SO_2)	40
ozone (O_3)	40 (VOC)
particulate matter (PM)	25
total reduced sulfur (including H_2S)	10
reduced sulfur compounds (including H_2S)	10
sulfuric acid mist (H_2SO_4)	7
fluorides (F-)	3

vinyl chloride	1
lead (Pb)	0.6
mercury (Hg)	0.1
asbestos (As)	0.007
beryllium (Be)	0.0004

The significant emission rate in tons per year (TPY) for the determination of PSD applicability is listed beside each pollutant. Volatile organic compounds (VOC) are the regulated pollutants for ozone.

1. Applicability

An air pollution source is subject to the PSD regulations if it will emit 100 tons or more per year of at least one of the PSD regulated pollutants. Because the new RRF will emit 100 tons of carbon monoxide (CO), PSD review is also required for all other pollutants listed above whose expected emission rate equals or exceeds the significant rate (on a facility wide basis). The Pasco County RRF is expected to emit nine of the PSD-pollutants in PSD-significant amounts. These include the criteria pollutants-- particulate matter, sulfur dioxide, nitrogen dioxide carbon monoxide, volatile organic compounds and lead; and non-criteria pollutants--fluorides, sulfuric acid mist and mercury. A determination of BACT and an air quality impact analysis is required for each of these pollutants.

Best Available Control Technology Determination

The applicant plans to eventually construct a 1200 ton per day (TPD) resource recovery facility (RRF) to be located at a site in Pasco County which is bounded on the west and and south by Hays Road, on the east by Shady Hills Road, and on the north by Bluebird Lane. The thermal energy from combustion of the municipal solid waste (MSW) will be used to produce steam for electric power generation.

The present plans are to install three 350 TPD mass burn units that will process a total of 1050 TPD of MSW. This BACT review will be made for the ultimate capacity of 1200 TPD as requested by the applicant.

The mass burn units will have an approximate combined heat input of 480 million Btu per hour, based upon a MSW heating value of 4800 Btu per pound. Each unit is expected to operate 8760 hours per year. The applicant projects the maximum total annual tonnage of regulated air pollutants to be emitted from the units when operating continuously at nameplate capacity and continuous operation to be as follows:

Pollutant		Maximum Annual Emissions (Tons/Year)	PSD Significant Emissions Rate (Tons/Year)
Particulate	(PM)	68	25
Sulfur Dioxide	(SO_2)	471	40
Nitrogen Dioxide	(NO_2)	1351	40
Carbon Monoxide	(CO)	103	100
Ozone	(O_3)	44 (VOC)	40
Lead	(Pb)	3.4	0.6
Mercury	(Hg)	3.07	0.1
Beryllium	(Be)	0.000285	0.0004
Fluorides	(F)	17	3
Sulfuric Acid Mist		75	7
Arsenic	(AS)	0.0191	---

The Bureau of Air Quality Management (BAQM) performed the air quality review, including this BACT determination, according to Florida Administrative Code Chapter 17-17, Electrical Power Plant Siting and Rule 17-2.500, Prevention of Significant Deterioration (PSD).

Rule 17-2.500(2)(f)3 requires a BACT review for all regulated pollutants emitted in an amount equal to or greater than the significant emission rates listed in Table 500-2, Regulated Air Pollutants. The facility is located in an area classified as attainment for all air pollutants.

BACT Determination Requested by the Applicant:

On November 6, 1987, the applicant requested establishment of the following BACT limits:

The following emission limits are based upon a unit ton of MSW charged.

PM	-	0.309 lbs	CO	-	0.470 lbs	Hg	- 0.014 lbs
SO_2	-	2.15 lbs	Pb	-	0.0155 lbs	F	- 0.077 lbs
NOx	-	6.17 lbs	Be	-	1.3 x E-6 lbs	VOC	- 0.20 lbs
As	-	8.7 x E-5 lbs	H_2SO_4	-	0.344 lbs		

Date of receipt of a BACT application:

November 6, 1987

Date of publication with Florida Administrative Weekly:
March 4, 1988

BACT Determination Procedure:

DER rules on a BACT determination require the department to consider for each pollutant emitted, on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, and determine the maximum degree of reduction which is achievable through application of production processes and available methods, systems, and techniques. The applicable regulations also require the Department to consider:

(a) Any Environmental Protection Agency determination of Best Available Control Technology pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 (Standards of Performance for New Stationary Sources) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants).

(b) All scientific, engineering, and technical material and other information available to the Department.

(c) The emission limiting standards or BACT determinations of any other state.

(d) The social and economic impact of the application of such technology.

The EPA currently stresses that BACT should be determined using the "top-down" approach. The first step in this approach is to determine for the emission source in question the most stringent control available for a similar or identical source or source category. If it is shown that this level of control is technically or economically infeasible for the source in question, then the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental, or economic objections.

The air pollutant emissions from resource recovery facilities can be grouped into categories based upon what control equipment and techniques that are available to control emissions from these facilities. Using this approach, the emissions can be are classified as follows:

° Combustion Products (Particulates and Heavy Metals). Controlled generally by particulate control devices.

° Products of Incomplete Combustion (CO, VOC, Toxic Organic Compounds). Control is largely achieved by proper combustion techniques.

° Acid Gases (SO_X, NO_X, HCl, Fl). Controlled generally by gaseous control devices.

Grouping the pollutants in this manner facilitates the BACT analysis because it enables the equipment available to control the type or group of pollutants emitted and the corresponding energy, economic, and environmental impacts to be examined on a common basis. Although all of the pollutants addressed in the BACT analysis may be subject to a specific emission limiting standard as a result of PSD review, the control of "nonregulated" air pollutants is considered in imposing a more stringent BACT limit on a "regulated" pollutants (i.e., particulates, sulfur dioxide, fluorides, sulfuric acid mist, etc.), if a reduction in "nonregulated" air pollutants can be directly attributed to the control device selected as BACT for the abatement of the "regulated" pollutants. This policy was recently reaffirmed by the Administrator in a remand of a PSD permit for the North County Resource Recovery Facility in San Marcos, California. Two additional similiar remands for resource recovery PSD permits occured in EPA Region V.

2. BACT Analysis:

a. Combustion Products

The facility's projected emissions of particulates, lead, and mercury surpass the significant emission rates given in Florida Administrative Code Rule 17-2.500, Table 500-2. Studies have shown that resource recovery facilities emit approximately 27 other metals not classified as regulated under the PSD Rule.

Uncontrolled emissions of metals from resource recovery facilities generally amount to approximately 0.01 pounds per ton of refuse incinerated. Although the expected level of emissions of metals is low in comparison to that of controlled pollutants, metals and metallic compounds emitted in fine particles (particles smaller than two microns in diameter) or as vapors, depending on the chemistry of the metal, can pose severe health risks. Minimizing the emission of metals from resource recovery facilities demands high efficiency particulate control.

Because each unit will have a charging rate of more than 50 tons per day, each is subject to the provisions of 40 CFR 60.50, Subpart E, New Source Performance Standards (NSPS). The applicable NSPS standard regulating particulate matter is 0.08 grains/dscf, corrected to 12% CO_2. This NSPS, promulgated in 1971, no longer reflects state-of-the-art for control of particulate emissions. Based on information now available, vendors currently guarantee both electrostatic precipitators and fabric filter technology to achieve grain loadings below 0.015 grains/dscf corrected to 12% CO_2. This level is slightly higher than the 0.01 grains/dscf corrected to 12% CO_2 for a fine particulate limit that other states such as California and Maine have proposed to represent BACT, but is in accordance with other recent BACT determinations for other resource recovery facilities of this size in the state of Florida.

In order to minimize aead emissions, two concurrent conditions must prevail to promote high removal efficiencies of metallic compounds emitted at refuse burning facilities: (1) operation of particulate matter control equipment at temperatures below approximately 260°C (500 °F), and (2) consistently efficent

removal of submicron-size fly ash particles. The maximum temperature of the RRF combustion gases at the inlet to the particulate control device is estimated to be 280°F, at this temperature the proposed particulate control equipment is capable of removing a significant amount of the lead emissions from the flue gas stream.

When flue gas temperatures are lowered below 260°C (500°F), metallic compounds are removed from the vapor phase by absorption and preferential condensation on fine particles. Submicron particles receive the highest concentrations of metals because there is a much larger number of small particles than large particles. Collectively, the smaller particles thus have a greater total amount of surface area than the larger particles. Properly designed and operated fabric filter systems appear at this time to offer the best method for consistent and efficient removal of fine (and in particular submicron) fly ash. Removal of fine fly ash by fabric filter systems can be in excess of 99% eficiency in MSW incinerators. Studies show that the percent of submicron particles emitted from combustion is on the order of 45% by weight, indicating the need for efficient control of particles of this size range.

The California Air Resource Board (CARB) report on resource recovery facilities indicates that the highest uncontrolled lead emission rate from refuse-fired facilities tested is 16,000 ug/MJ. Based on a heating valve of 4,800 Btu per pound of refuse, this equates to an emission rate of 8.36 lbs per ton of refuse charged. Recent testing of baghouses and high efficiency four-field electrostatic precipitators (ESPs) indicates that lead removal efficiencies of greater than 99% are being achieved with both types of control devices. Taking into consideration these efficiencies and the maximum emission rate, 0.0065 lbs per ton of refuse charged has been judged to constitute BACT for lead emissions from the most recently permitted resource recovery

facilities in Florida. Thus, this limit is also deemed as BACT for the Pasco facility.

The emission limit determined to be BACT for mercury is 0.0072 pounds per ton of refuse charged. This limitation is consistent with the majority of the RRFs recently permitted in the State of Florida.

The emissions limits which constitute BACT for these pollutants can reasonably be expected to be met by a particulate control device that would achieve a grain loading not to exceed 0.015 grains/dscf corrected to 12% CO_2, as measured by EPA Method 5.

Performance testing demonstrates that the use of a dry scrubbing system in conjunction with a fabric filter will enhance the collection efficiency of the particulate control device. A report based on testing completed in Europe (Dry Scrubbing of Municipal Solid Waste Incinerator Flue Gas By Spray Dryer Absorption, 77th Annual Meeting of APCA, San Francisco, California, June 24-29, 1984) showed that a dry scrubber used in conjunction with a baghouse provided the highest level of control of particulates and heavy metals; in both the particulate phase and the vapor phase the control ranged from 75% to more than 97%. The control of mercury is substantially improved by using a dry scrubber since 80-100% of mercury exits the boiler in the vapor phase. Enhanced control of heavy metals results from a reduction in the flue gas temperature caused by the dry scrubber's allowing the metals to cool and condense onto the particulate matter. A dry scrubber used in conjunction with a baghouse designed to achieve 0.015 grains per dry standard cubic foot corrected to 12 percent CO_2 is thus deemed to also represent BACT for the emissions of heavy metals which are not PSD regulated pollutants such as cadmium, chromium, copper, manganese, and nickle.

Energy Economic and Environmental Impacts Analysis

In accordance with previous BACT/LAER determinations for resource recovery facilities and the concept of "top down" BACT, the dry scrubber--baghouse combination represents the most stringent control availalble for particulate and heavy metals. Since this level of control has been proposed by the applicant, no further discussion regarding energy, economic, or environmental impacts of other control strategies is necessary. It should be noted however that the energy and economic impacts of using an equally efficient alternative control strategy (dry scrubber - ESP) were demonstrated to be greater than the proposed control.

b. Acid Gases

Emissions of sulfur dioxide, nitrogen dioxide, fluorides, and sulfuric acid mist, as well as other acid gases which are not "regulated" under the PSD Rule, represent significant potential pollutants which must be subjected to appropriate control. Sulfur dioxide emissions from resource recovery facilities are directly related to the sulfur content of the refuse incinerated. MSW components that appear to be major contributors of sulfur include rubber, plastics, food wastes, yard wastes and paper.

Various studies have indicated average SO_2 emission levels of 2.0 to 2.8 lb/ton MSW charged with deviations of $\pm$ 1.3 to 1.6 lb/ton. A recent test conducted on Pinellas County units 1 and 2 on May 21 and 22, 1986, revealed that the average SO_2 emissions were 0.38 and 0.14 lb/MM Btu respectively. This corresponds to an emission factor of 3.65 and 1.34 pound per ton using a heating

value of 4,800 Btu per pound of refuse incinerated. The amount of SO_2 emitted is comparable to the burning of distillate oil having less than a 0.5% sulfur content. Burning low sulfur fuel is one acceptable method of controlling SO_2 emissions in some cases. The installation of a flue gas desulfurization system to control SO_2 emissions alone is not clearly warranted when burning MSW. However, because other acid gases and their chemical reaction products are emitted from resource recovery facilities, their impacts need to be evaluated when addressing the control of acid gases. One such reaction product is sulfuric acid mist. Some of the sulfur dioxide emitted from the combustion of the sulfur containing refuse is oxidized to SO_3 which then combines with water vapor to produce sulfuric acid mist. Emissions of fluoride also originate from a number of sources in the refuse. The control of fluorides can be reduced at refuse-burning plants by removal of selected refuse components with high fluoride content, and the use of flue gas control equipment.

The expected level of acid gases discussed above is related in substantial part to the amount of plastics in the waste stream. The type of air pollutants emitted when incinerating plastics depends on the atomic composition of the plastics. Plastics composed of only carbon and hydrogen or carbon, hydrogen and oxygen form carbon dioxide and water when completely combusted. Incomplete combustion of any carbon based material including such plastics yields carbon monoxide as the major pollutant.

In constrast, plastics containing nitrogen as a heteroatom yield molecular nitrogen, some NOx, carbon dioxide, and water when completely combusted. Incomplete combustion yields hydrogen cyanide, cyanogen, nitrites, ammonia and hydrocarbon gases. Complete combustion of plastics containing halogens or sulfur

heteroatoms form acid gases such as hydrogen chloride, hydrogen fluoride, sulfur dioxide, carbon dioxide, and water. Halogen or sulfur compounds result from the incomplete combustion of the plastic. Polyvinyl chloride (PVC), one of many plastics, has been implicated as causing the most serious disposal problem due to the release of relatively large amounts of hydrogen chloride (HCl) gas when incinerated. This long - recognized problem has resulted in other types of plastics being used in packaging. For example, the weight percent of chlorine in polyurethane is 2.4, with only trace amounts in polyethylene and polystyrene, as compared to a weight percent of 45.3 in PVC.

A recent study of MSW incineration performed for the USEPA predicted that the plastics content of refuse is expected to grow by from 300-400% between the year 1968 and 2000. This growth in plastics content can be expected to cause an increase in uncontrolled HCl emissions from municipal waste incineration of roughly 400% by the year 2000.

Emissions of HCl at refuse incineration facilities can be reduced by removal of selected refuse compenents with high chlorine contents (source separation), combustion modification, and the use of flue gas control equipment. Although the combustor configuration may influence the amount of chlorine conversion, combustion modification is not a viable means of controlling HCl emissions.

Potential emissions of HCl can be reduced significantly by removing high chlorine content plastic items from the waste stream, especially those of PVC. With the exception of limited recycling efforts, however, effective source separation of plastics has not been demonstrated and the costs of source separation are uncertain at this time. Moreover, the combustion of plastics offers a relatively high heating value, and thus appears to contribute favorably to energy generation.

Plastic materials having a high heat of combustion include: coated milk cartons - 11,300 Btu/lb; latex - 10,000 Btu/lb; and polyethylene 20,000 Btu/lb). By comparison, newspaper and wood have a heat content of 8,000 Btu/lb; while kerosene offers 18,900 Btu/lb.

At this time flue gas controls are the most effective conventional means of reducing HCl emissions as well as the other acid gases at refuse burning facilities. The control equipment available to reduce the emissions of sulfur dioxide, sulfuric acid mist, fluorides, and hydrogen chloride consist primarily of the wet or dry scrubber. The wet scrubbing process is capable of removing greater than 80% of the sulfur dioxide emissions and over 90% of the other acid gases while these removal efficiencies are comparable to that achieved by dry scrubbing technology, the wet scrubber has the disadvantage of generating contaminated wastewater and/or sludges that can create a wastewater or sludge disposal problem. Because of the great concern for the state's groundwater supplies, control devices producing wastewater which needs treatment before disposal are not considered good options for these facilities. In addition, equipment corrosion and scaling problems have been encountered when using wet scrubbing technology.

The dry flue gas scrubbing system does not have the problems associated with the wet scrubber. Dry scrubbers have been successfully employed in Europe, Japan, and, to a limited extent, in the United States. Although many units have been permitted to employ dry scrubbing technology in the United States, only one facility (Framingham Massachusetts) has been operating in the U.S. for an extended period of time with this technology. Other operating facilities operating which incorporate this technology in the United States are in Marion County, Oregon and Commerce, California. Experience with dry scrubbers has indicated that control efficiencies for SO_2 and HCl are in the ranges of 70-90

percent and 80-98 percent, respectively. In addition, the use of a fabric filter in conjunction with a dry scrubber has been shown to increase SO_2 removal efficiencies by as much as 16 percent. This is primarily due to the reagent in the bag's filter cake serving as another locus for SO_2 absorption.

In accordance with the discussion on the availability of applicable control technology and previous BACT determination completed in other states as well as Florida, a dry scrubber capable of removing 70% of the sulfur dioxide emissions and 90% of the hydrogen chloride emissions is deemed to represent BACT for this facility.

Another pollutant which has been categorized as an acid gas is nitrogen oxide. During combustion of municipal solid waste, nitrogen oxides are formed in high temperature zones in and around the furnace flame by the oxidation of atmospheric nitrogen and nitrogen in the waste. The two primary variables that affect the formation of NOx are the temperature and the concentration of oxygen. Techniques used to reduce NOx emissions include: firing fuel so as to provide a correct distribution of combustion air between overfire and underfire air; exhaust gas recirculation, and decreased heat release rates.

Flue gas controls appear to offer the greatest potential for NOx reductions. Their application on full-scale RRFs has been limited however. Controls which have been applied to combustion processes are selective catalytic reduction (SCR) and selective non-catalytic reduction (SNCR). The SNCR system involves the commingling of ammonia and flue gas NOx in the boiler by means of ammonia injectors located in the boiler's wall. Like SNCR, the SCR technology also injects ammonia into the flue gas; however, its reaction with NOx is at a lower temperature and is enhanced by means of a catalyst bed.

The SNCR system has been employed primarily in Japan at several installations with small-to medium sized incinerators. U.S. installations are only in California. One SNCR unit is operating (Commerce RRF) and another is planned (Stanislaus RRF). California's 300 tpd Commerce RRF has been operating since February of 1987 with a SNCR system that achieves an average NOx reduction of 40 percent. The system, permitted as "Innovative Technology," has had minimal operating problems. The Stanislaus facility, in its 2nd year of construction, has been permitted with a SNCR system expected to achieve NOx reductions of 43.5 percent. The energy, economic, and environmental impacts of applying SNCR must be evaluated in accordance with the "top down" BACT approach.

Energy, Economic and Environmental Impacts Analysis

As is the case with the proposed particulate/heavy metals control equipment, the dry scrubber-baghouse combination represents the most stringent control available for removal of the acid gases other than nitrogen oxides that is commonly used on resource recovery facilities in this country, likewise no further discussion regarding energy, economic, or environmental impacts is necessary. Although studies indicate that the highest acid gas removal efficiencies can be achieved by using wet scrubbers, the applicant has stated that wet scrubbers are now considered an obsolete technology for resource recovery facilities due to several significant disadvantages. The applicant's proposed control for nitrogen oxides (standard combustion controls), however, does not represent the greatest level of control. To satisfy the concept of "top down" BACT the applicant has provided a cost-benefit analysis of applying SNCR to its proposed facility.

In order to justify the cost effectiveness of any air pollution control, the EPA has developed costing guidelines to obtain the highest reduction of emissions per dollar invested. Achievement of maximum emission reductions for capital invested is a major consideration when New Source Performance Standards (NSPS) are developed by the EPA. For NOx emissions, EPA has determined that a cost of up to $1,000 per ton of emissions controlled ($0.50/lb) is reasonable for NSPS.

The Thermal DeNOx System, a type of SNCR, is estimated to have a capital cost of $2,655,000 and an annual operating cost of $833,000 (including $254,000 per year for lost energy revenue due to equipment downtime). Assuming a capacity factor of 85 percent at design rate operation, the amount of NOx reduction for the 40% efficient Thermal DeNOx System would be approximately 540 tons per year. Taking this reduction in consideration with the total annualized cost (annual operating cost plus capital cost amortized over 20 years at 8 percent interest) of $1,104,000., the cost per ton of NOx controlled is approximately $2,478.00. The installation of SNCR does not appear to be cost effective or reasonable.

The cost effectiveness of SNCR does not appear to be justifiable. It should also be noted that the NOx impacts as proposed (without SNCR) are minimal. The applicant has predicted the highest annual nitrogen dioxide (NO_2) impact to be 1.03 ug/m^3. This impact level, in conjunction with the estimated background concentration of NO_2 (39 ug/m^3), is well below the National Ambient Air Quality Standard of 100 ug/m^3.

c. Products of Incomplete Combustion

Emissions of carbon monoxide, volatile organic compounds and other organics from resource recovery facilities are largely dependent upon the completeness of combustion. Carbon monoxide is a product of incomplete combustion resulting from insufficient air. Incomplete combustion will also cause the emission of solid carbon particulates in the form of smoke, or soot, and unburned and/or partially oxidized hydrocarbons. Incomplete combustion also results in the loss of heat energy to the boiler. For example, CO (calorific value: 4347 Btu/lb) discharged to the atmosphere represents a loss of heat energy. Since heat energy is used to produce the steam which drives the generator to produce electric power, there is a clear economic incentive to minimize CO emissions resulting from incomplete combustion. Hydrocarbon emissions, like carbon monoxide emissions, result from incomplete oxidation of carbon compounds. Control of CO and HC emissions can be mutually reinforcing processes.

Toxic Organic Compounds

No analysis of a proposal to construct a MSW incinerator in 1988 would be complete unless the subject of toxic organics such as dioxins and polycylic organic matter was discussed. Dioxin is a hazardous material that recently has received widespread public attention. It is found in trace amounts whenever substances containing chlorine (for example, plant and animal tissues and plastics) are burned. It is also an impurity that can be found in some herbicides, such as "2,4,5-T".

The emissions testing of RRF's and health studies have shown that Dioxin is readily minimized in properly designed and operated BACT-equipped facilities, and very small amounts have caused demonstrable health effects in some animal exposure tests. Although most of the reduction in dioxin is believed to take

place in the combustion chamber, the installation of add-on controls has been demonstrated to provide additional removal of dioxins.

Polyclic organic matter is (POM) is often defined as "PIC," or products of incomplete combustion. The emissions of POMs are minimized by ensuring that efficient combustion takes place. Four factors control combustion efficiency: 1) reaction temperature within the combustion zone and post-combustion zone, 2) residence time of reactants and intermediate products in the combustion and post-combustion zones, 3) turbulence or mixing efficiency, and 4) air to fuel ratio.

Refuse-burning furnaces can substantially reduce the formation of dioxins and other cholorinated and non-chlorinated organic compounds through efficient combustin assured by proper operating practices. Modern incinerators have successfully controlled emissions of organic compounds by achieving proper compustion. In a recent report to the U.S. Congress, the Environmental Protection Agency emphasized that good combustion is critical to curtailing emissions of dioxin and other organic compounds from refuse burning facilities.

It is generally accepted that CO emission levels serve as good measures of wheter efficient combustion is occurring. The combustion processes of automobiles, fossil fuel boilers, and hazardous waste incinerators are now controlled on the basis of CO emission measurements. As yet undetermined is whether good combustion itself minimizes dioxin emissons or whether a casual relationship exists between CO emission levels and dioxin formation.

The EPA has developed a program of combustion strategis termed "good combustion practices" for mass burn facilities. (See Table 1). The applicant has agreed to implement EPA's good combustion practices to govern the operation of the incinerator.

Table 1

Practice	Mass Burn Preliminary Target
Design temperature at fully mixed height	1800°F at fuly mixed height
Underfire air control	At least four separately adjustable plenums. One each under the drying and burnout zones and at least two separately adjustable plenums under the burning zone.
Overfire air capacity (not an operating requirement)	40% of total air
Overfire air injector design	That required for penetration and coverage of furnace cross section
Auxiliary fuel capacity	That required to meet start-up temperature and 1800°F criteria under part-load operations
Excess Air	6-12% excess oxygen (dry basis)
Turndown restrictions	80 - 110% of design - lower limit may be extended with verification tests
Start-up procedures	On auxiliary fuel to design temperature
Use of auxiliary fuel	On prolonged high CO or low furnace temperature
Oxygen in flue gas (continuous monitor)	6 - 12% dry
CO in flue gas (continuous monitor)	50 ppm on 4 hour average corrected to 12% CO_2
Furnace temperature (continuous monitor)	Minimum of 1800°F (mean) at fully mixed height across furnace
Adequate air distribution	Verification test

The Department concludes that the proposed dry scrubber - baghouse combination, good combustion practices, and practice of limiting CO emissions to 100 ppm correct to 7% O_2 based upon an 8 hour average constitutes BACT for the control of toxic organic compounds such as dioxins and polycyclic organic matter.

c. BACT DETERMINATION BY DER

Discussion

Based on the information presented in the preceeding analysis, the Department determines that the dry scrubber-baghouse combination represents BACT for this facility. The emissions limits for each pollutant are established as follows:

Air Pollutant	Emission Limit Per Unit
Particulate Matter	0.015 grains/dscf, corrected to 12% CO_2, as measured by EPA Method 5
Sulfur Dioxide	60 ppmdv corrected to 12% CO_2, 6-hour rolling average; or 70% reduction of uncontrolled SO_2 emissions, 6-hour rolling average. Not to exceed 100 ppmdv corrected to 7% O_2.
Nitrogen Oxides	6.17 lb/ton refuse charged
Carbon Monoxide	100 ppmdv corrected to 12% CO_2, 8-hr rolling average.
Fluorides	0.077 lb/ton
Sulfuric Acid Mist*	
Lead	0.0065 lb/ton
Mercury	0.0072 lb/ton
Beryllium	1.3 x E-6 lb/ton refuse charged
Arsenic	8.7 x E-5 lb/ton
VOC	0.20 lb/ton refuse charged
Visible Emission	15% opacity, six minute average

*Due to the lack of an accurate test method for measuring sulfuric acid mist emissions from RRFs, no emission limitation is proposed as BACT. Control of this pollutant will be achieved by the proposed dry scrubber-baghouse

(1) Compliance with the mercury emissions limit shall be demonstrated in accordance with 40 CFR 61, Method 101 Appendix B. Compliance with limitations for sulfur oxides, particulate matter, and nitrogen oxides will be demonstrated in accordance with Florida Administrative Code Rule 17-2.700, DER Methods 1, 2, 3, 4, and 6, and 40 CFR 60 Appendix A; Method 5, 7, 10, 12, 13A or 13B. Compliance with the opacity limit shall be demonstrated in accordance with Florida Administrative Code Rule 17-2.700(6)(a)9., DER Method 9.

A continuous monitoring system that meets all requirements found in the Federal Register, to measure combustion temperature and flue gas temperature at the exit of the acid gas control equipment plus SO_2, CO, O_2, CO_2 levels and opacity of the stack's emissions shall be installed, calibrated, and maintained in accordance with the provisions of Rule 17-2.710, Continuous Emission Monitoring Requirements. The CEM's must be installed and operational prior to compliance testing. In addition, the combustion efficiency calculated by: % CE = $(1/(1 + (CO/CO_2)))$ x 100 shall be at least 99.5%, for an 8-hour average.

V. Ambient Air Quality Analysis

Prevention of Significant Deterioration (PSD)

A. Introduction

The Pasco County Board of County Commissioners (the applicant is proposing to construct a resource recovery (solid waste disposal) facility on a 751 acre site off Hayes Road within the county. The facility will use mass-burn technology and will initially produce 22 megawatts (MW) of electricity by burning 900 tons per day (tpd) of municipal solid waste. An ultimate processing capacity of 1200 tpd is being requested by the applicant in anticipation of future need. This ultimate capacity will produce 29 MW of electricity. The facility, as reviewed, will consist of four individual incinerator/boilers each with a

350 tpd processing capacity. The operation of these units will result in the significant emissions of regulated air pollutants and thus must be reviewed by the Department.

The Pasco facility will be located in a Class II PSD area. The facility will also be located within 100 kilometers of the Chassahowitzka National Wilderness Class I area and within 50 kilometers of the Tampa particulate nonattainment area and the Pinellas County SO2 nonattainment area. The pollutant emissions estimated by the applicant, considering control equipment, indicate that the following nine compounds emit in PSD-significant amounts: particulate matter (PM, including PM10), carbon monoxide (CO), nitrogen oxides (NOx), sulfur dioxide (SO2), volatile organic compounds (VOC), lead (Pb), mercury (Hg), fluorides (F-), and sulfuric acid mist (H2S04). The air quality impact analysis required by the PSD regulations for the subject pollutants includes:

- An analysis of existing air quality;
- A PSD increment analysis (for SOS and PM only);
- An Ambient Air Quality Standards (AAQS) analysis;
- An analysis of impacts on soils, vegetation, visibility, and growth-related air quality impacts; and
- A "Good Engineering Practice" (GEP) stack height determination.

Other pollutants (aside from those specifically regulated by the PSD regulations) will also be emitted into the ambient air by the proposed facility. Some of these have become issues of public concern, such as hydrogen chloride (HCl), dioxins (2,3,7,8 -TCDD), and various heavy metals. Although these pollutants have no ambient air standards, they are considered in the Best Available Control Technology (BACT) analysis. The applicant has estimated the ambient impacts, however, of some of these pollutants and compares these concentrations to regulatory guidelines used in several other states.

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

Based on these required analyses, the Department has reasonable assurance that the proposed facility, as described in this report and subject to the conditions of approval proposed herein, will not cause or contribute to violation of any PSD increment or ambient air quality standard. In addition, the Department has evaluated, to the extent possible, the ambient impacts of several non-PSD regulated pollutants. Control and/or emission limitations have been set for some of these pollutants for the purpose of reducing any potential harmful effects.

B. Modeling Methodology

The EPA-approved industrial Source Complex Short-Term (ISCST) atmospheric dispersion model (version 6) was used to predict the impact of the new Pasco facility on the surrounding ambient air. This model determines ground-level concentrations of inert gases or small particulates emitted into the atmosphere by point, area, or volume-type sources. It incorporates elements for plume rise, transport by the mean wind, and Gaussian dispersion. In addition, the model allows for the separation of sources, building wake downwash, adjustment for calm conditions, and various other input and output features.

The applicant conducted screening modeling, for the purpose of defining the worst-case operating conditions, and refined modeling to ensure that the highest concentrations were identified. For both sets of modeling runs the applicant received prior approval from the Department on the methodology by submitting a modeling protocol.

The screening modeling identified the worst-case operating conditions to be a 1200 tpd facility burning waste with a heat content of 5000 btu per pound (btu/lb). The nominal operating conidtions of the facility are expected to be 1200 tpd at 4800 btu/lb. This worst-case condition was used in the refined modeling.

For the refined modeling, five years of sequential hourly meteorological data were used. The surface and upper-air data were National Weather Service (NWS) data collected in Tampa during the period 1970-1974. Since five years of data were used, the highest, second-high short-term predicted concentrations are compared with appropriate ambient standards or PSD increments. For the annual averages the highest predicted yearly average was compared to the standards. The stack and emission characteristics used in the refined modeling for the Pasco facility are summarized in Table I and Table II, respectively. Since the proposed stack height is equal to the calculated GEP height, building wake downwash was not included in the modeling.

The initial refined modeling selected 360 receptors surrounding the facility from 0.3 kilometers to 15 kilometers. Additional receptors were located at the Chassahowitzka National Wilderness (Class I) Area, the Cedar Keys National Wilderness Area, and the Pinellas County SO2 nonattainment area. The average terrain elevations at these receptors were used. Considering only the Pasco facility sources, the critical days and receptors were identified from these runs. Fine resolution receptor girds (100 meter spacing) for these critical days and receptors further refined the maximum concentrations.

The results of these model runs, as shown on Table III, shows that for particulate matter, sulfur dioxide, and carbon monoxide the maximum predicted concentrations are less than the defined significance levels for these pollutants. As such, no further analysis for impact in the Class II area is required.

Table I

Pasco County Resource Recovery Facility
Source Characteristics

Source	UTM E (km)	UTM N (km)	Stack Height(m)	Exit Temp.(K)	Exit Velocity(m/s)	Stack Diameter (m)
Incinerator/ Boilers (4)	347.12	3139.23	83.8	394.3	15.69	3.05(1)

(1) Effective diameter for four flues in the common stack; each individual flue has a diameter of 1.52 m.

Table II

Pasco County Resource Recovery Facility
Emission Rates

Pollutant	Emission Factor (lb/MMBtu)	Annual Emission Rate (TPY) (1)	Short-term Emission Rate (lb/hr) (2)
Particulate Matter (TSP or PM10)	0.0322	68	16.1
Sulfur dioxide (SO_2)	0.224	471	113
Nitrogen Oxides (as NO_2)	0.643	1,351	322
Carbon Monoxide (CO)			
Annual	0.0490	103	24.5
8-hour	0.0979		49.0
1-hour	0.391		195.5
Non-Methane Hydrocarbons	0.0208	44	10.4
Lead (Pb)	0.00161	3.4	0.805
Sulfuric Acid Mist (H_2SO_4)	0.0358	75	17.9
Fluoride (as HF)	0.00802	17	4.01
Mercury (Hg)	0.00146	3.07	0.729
Beryllium (Be)	1.35×10^{-7}	0.000285	0.0000677
Inorganic Arsenic (As)	9.07×10^{-6}	0.0191	0.00454
Hydrogen Choloride (HCl)	0.127	267	63.5
Dioxin (as 2,3,7,8-TCDD)	3.54×10^{-9}	7.45×10^{-6}	1.77×10^{-6}

(1) Annual rate based on 1200 TPD operation assuming 4800 Btu per pound of waste.
(2) Short-term rate based on 1200 TPD operation assuming 5000 Btu per pound of waste.

Table III

Pasco County Resource Recovery Facility
Maximum Predicted Concentrations (Pasco County RRF only)

Pollutant	Averaging Period	Maximum Conc. (ug/m^3)	Significant Impact Level (ug/m^3)	Deminimus Monitoring Level (ug/m^3)
Sulfur Dioxide	Annual	0.36	1	NA
	24-hour	2.98	5	13
	3-hour	11.49	25	NA
Particulates	Annual	0.05	1	NA
(TSP or PM_{10})	24-hour	0.43	5	10
Nitrogen Dioxide	Annual	1.03	1	14
Carbon Monoxide	8-hour	3.42	500	575
	1-hour	35.2	2,000	NA
Lead	quarterly	0.02	NA	0.1
Mercury	24-hour	2.25×10^{-2}	NA	2.5×10^{-1}
Beryllium	24-hour	2.09×10^{-6}	NA	5.0×10^{-4}
Fluorides (as HF)	24-hour	0.0124	NA	0.25

For nitrogen dioxide, the maximum predicted concentration is marginally above the defined significance level. The Department is not requiring any further modeling for this pollutant because of its small predicted impact and the fact that no large sources are near the Pasco facility. None of the other pollutants have defined significant impact levels.

A more detailed description of the modeling analysis, along with the model output, is contained in the Pasco application. The Department has reviewed the applicant's analysis and found that it conforms with the guidelines established by the EPA and followed by the Department.

C. Analysis of Existing Air Quality

Preconstruction ambient air quality monitoring may be required for all pollutants subject to PSD review. In general, one year of quality assured data using an EPA reference, or the equivalent, monitor must be submitted. Sometimes less than one year of data, but not less than four months, may be accepted when Department approval is given.

An exemption to the monitoring requirement can be obtained if the maximum air quality impact, as determined through air quality modeling, is less than a pollutant-specific deminimus concentration. In addition, if current monitoring data already exist and these data are representative of the proposed source area, then at the discretion of the Department these data may be used.

The predicted maximum air quality impacts of the proposed facility for those pollutants subject to PSD review are given in Table III. The monitoring deminimus level for each pollutant is also listed. All pollutants have maximum predicted impacts below their respective deminimus values. Therefore, specific preconstruction monitoring is not required for any pollutant.

The applicant has, however, used the available monitoring data located in Pasco and the surrounding counties to develop existing background concentrations for the proposed facility area. These background values have been used to develop the maximum total concentrations for comparison with the ambient air quality standards.

D. PSD Increment Analysis

The PSD increments represents the amount that sources may increase the ambient ground-level concentrations of SO2 and PM. The purpose of these increment limitations is to prevent areas which currently have good air quality from being significantly degraded. If an area currently has ambient concentrations near the ambient air quality standards for SO2 or PM, then the increased emissions from new sources must not cause or contribute to a violation of the standards and the allowed increments would be reduced to prevent such exceedances.

The proposed Pasco facility is to be located in a Class II area and must meet the increments defined for this class. The facility will also be approximately 27 kilometers from the Chassahowitzka National Wilderness Class I Area. The applicant must also show that the new facility will not cause or contribute to an exceedance of the more restrictive Class I increments in that area.

All of the emissions of SO2 and PM at the proposed Pasco facility will consume increment. The increased ground-level concentrations due to the Pasco facility alone has been shown, from the dispersion modeling, to be less than the defined significant impact levels for all averaging times. That is the maximum concentrations were below 5 ug/m^3, 24-hour average and 1 ug/m^3, annual average for PM, and below 25 ug/m^3, 3-hour average, 5 ug/m^3, 24-hour average, and 1 ug/m^3, annual average for SO2. As such, no other increment consuming sources were evaluated for

Table IV

Pasco County Resource Recovery Facility
Maximum Predicted Increment Consumption on
The Chassahowitzka National Wilderness Class I Area

Pollutant	Averaging Period	Maximum Conc. Pasco RRF only Concent. (ug/m^3)	Maximum, All Increment Consuming Sources (ug/m^3)	Allowed Class I Increment (ug/m^3)
Particulate Matter	Annual	0.0039	2.79	5
	24-hour	0.061	7.56	10
Sulfur Dioxide	Annual	0.027	1.43	2
	24-hour	0.42	4.91	5
	3-hour	1.98	21.12	25

The concentrations listed for the Pasco facility only represent the maximums which occurred over the five year modeling period and are not the paired (in space and time) concentrations associated with the total of all sources.

Class II area increments.

There are no defined significant impact levels for Class I areas; any impact within 100 kilometers is considered potentially significant. As such, a full PSD increment analysis was performed for this area. All increment consuming sources which could potentially interact with the Pasco facility to impact on the Class I area were modeled. The Pasco facility itself has maximum impacts on the Class I area of less than 10 percent of the defined increments. Table IV summarizes the predicted increment consumption on the Class I area. The percent consumed is quite high, due mostly to other sources, but is still within the allowed increments.

E. Ambient Air Quality Standards (AAQS) Analysis

Of the pollutants subject to review, only the criteria pollutants PM, SO_2, CO, NO_2, Pb, and ozone (O_3) have AAQS with which to compare. In general, the total ambient air quality impacts are determined by adding the predicted modeled concentrations to an estimated background concentration for each pollutant. In the case of the Pasco facility, the predicted maxmimum concentration increases are less than the sigificant impact levels defined in the State regulations for PM, SO_2, CO, and NO2. As such, no further modeling of other sources is required. Significant impact levels for Pb and O_3 are not defined. Ozone is a photochemically formed pollutant resulting mainly from motor vehicle emissions. The regulated pollutant for ozone formation is volatile organic compounds (VOC) which cannot be modeled for source-specific applications. Ozone, by way of VOC's, is regulated though BACT. Lead is also primarily a motor vehicle related pollutant and no other point sources were considered.

A new national ambient air quality standard has recently been promulgated for particulates less than 10 micrometers in diameter. This new standard, which has not yet become a State standard, is set at 150 ug/m^3. This is the same value as the current state total particulate standard. Since the mass of particles less than 10 micrometers is a subset of the total particulate mass, compliance with the current state total particulate standard ensures compliance with the national small particulate standard.

Table V summarizes the estimates of the predicted maximum air quality for these pollutants in the vicinity of the Pasco facility. These estimates are considered conservative (i.e., overestimates) because the background valeus used for each of these pollutants are generally derived from the more urban (polluted) Tampa Bay area.

Given existing air quality in the area of the proposed facility, emissions from this facility are not expected to cause or contribute to a violation of an AAQS.

F. Additional Impacts Analysis

1. Impacts on Soils and Vegetation

The ground-level concentrations of the criteria pollutants are predicted to be well below all applicable AAQS, including the national secondary standards designed to protect public welfare-related values. As such, these pollutants are not expected to have a harmful effect on soils and vegetation.

2. Impact on Visibility in the Class I Area

An EPA Level-1 visibility screening analysis was performed by the applicant for impact on the Chassahowitzka National Wilderness Area. The results indicate that no impact on

Table V

Pasco County Resource Recovery Facility
Ambient Air Quality Standards Analysis

Pollutant	Averaging Period	Pasco RRF Impact (ug/m^3)	Estimated Ambient Background (ug/m^3)	Total Impact (ug/m^3)	Florida AAQS (ug/m^3)
Sulfur Dioxide	Annual	0.4	26	26	60
	24-hour	3	103	106	260
	3-hour	12	456	468	1300
Particulates (1)	Annual	0.1	43	43	60
	24-hour	0.4	87	87	150
Nitrogen Dioxide	Annual	1	39	40	100
Carbon Monoxide	8-hour	3	1145	1148	10,000
	1-hour	35	5153	5188	40,000
Lead	3-month	0.02 (2)	0.4	0.4	1.5

(1) Particulates includes as a subset PM_{10}. Since maximum concentrations are less than 150 ug/m^3, the Federal PM_{10} standard is also met.

(2) The 24-hour average concentration was substituted for the 3-month coverage.

visibility is expected in this area as a result of the Pasco facility.

3. Growth-Related Air Quality Impacts

The proposed Pasco facility is not expected to significantly change employment, population, housing, or commercial/industrial development in the area to the extent that a significant air quality impact will result.

4. GEP Stack Height Determination

Good Engineering Practice (GEP) stack height is defined as the greater of: (1) 65 meters or (2) the maximum nearby building height plus 1.5 times the building height or projected width, whichever is less. A single stack will be constructed servicing all four incinerator/boiler units. The largest structure which may influence the plume will be the building housing the boiler units. The height of this structure will be 110 feet and represents the lesser dimension of the height and width. The calculated GEP stack height is, thus, 275 feet. The actual stack will be equal to this height, therefore, no aerodynamic building wake downwash is anticipated.

5. Noncriteria Pollutants

Mercury (Hg), fluorides (F-), and sulfuric acid mist (H_2SO_4) are subject to the PSD regulations. These noncriteria pollutants have no ambient air quality standards with which to compare predicted air concentration levels. These pollutants are regulated by the application of BACT. Mercury is additionally subject to NESHAP standards.

The applicant has evaluated the potential ambient air impacts of these pollutants by comparing their predicted ambient air concentrations with guideline ambient air levels (AAL)

developing by New York state and Massachusetts, and the threshold limiting values (TLV) developed by the American Conference of Governmental Industrial Hygenists (ACGIH). The results show that none of these pollutants exceed any of these guideline levels. The Department is reasonably assured that there will be no significant air impact from these pollutants.

6. Non-PSD Pollutants

The Department requested that the applicant address several non-PSD pollutants that will be emitted from the facility and are of some public concern. Among these pollutants are hydrogen chloride (HCl), dioxins (as 2,3,7,8-TCDD), arsenic (As), and other heavy metals. Most of these pollutants will be controlled to a greater or lesser extent by the dry scrubber/baghouse control equipment, and by proper and efficient combustion. For example, HCl will be 90% controlled by the dry scrubber and dioxins are efficiently destroyed by maintaining proper temperature and dwell time in the combustion chamber.

For some of these pollutants, namely HCl and As, predicted ambient concentrations can be compared with AAL's and TLV's. The applicant has done this and has shown that no exceedance of these guideline levels is expected.

E.7. Noise

a. Construction

During construction of the plant, noises will be those associated with earth moving, foundation work, erection of steel, pouring of concrete, and driving piling. The nearest residential area subject to potential impact from construction noise is approximately 2600 feet away near the site entrance. Construction equipment is not expected to increase noise levels noticeably above that of traffic and existing noises. The predicted noise levels are not predicted to violate Pasco County's noise ordinance.

b. Operation

The addition of the power plant/energy recovery facility itself should not result in a significant increase in noise levels present in the nearest residential areas. Activities associated with the operation of the plant such as the induced draft fans and the truck traffic bringing in refuse to the plant will likely be the significant sources of noise. Truck traffic into the plant will be for the most part through sparsely developed residential areas. Noise levels from the mobile sources will depend on types of equipment utilized over the years the and the degree of maintenance given. Concentrations of vehicular noise at the plant should be buffered by the plant's enclosed tipping area and landscaping.

Although the state does not currently have noise limitations, Pasco County has noise limits of 55 dBA at all times in residential areas but which may rise to 66 dBA from 7 a.m. to 10 p.m in industrial zones bordering residential areas.. The resource recovery facility will be expected to comply with these limits during construction and operation.

E.8. Solid Waste/Hazardous Materials

Construction debris such as paper, concrete, and plastic will be transported to the County's existing landfill for disposal or to the proposed Class III landfill as appropriate.

During plant operation, the refuse is sorted for large items or non-combustibles such as demolition debris; remaining refuse

will be incinerated. Following combustion, the residue passes to storage hoppers prior to being trucked to the adjacent landfill. The residue which then remains is approximately 10 percent by volume of the original raw waste.

In the event of a partial facility shutdown, the remaining facilities at the processing plant will be sufficient for processing incoming waste for approximately 12 days. If one-half of the plant would remain out of operation beyond a week, incoming raw wastes would be diverted to the associated ashfill/landfill until proccessing operations could resume.

F. Impacts on Surrounding Land Use and Population Density

The area surrounding the site does not have any appreciable residential population density within a kilometer of the site. The area is primarily low density rural. The area to the south, however, is zoned for medium density residential. It is about 50% developed at this time. Truck traffic to the site will increase noise levels and will increase levels of dust unless Hays Road is paved. The western side of the site acts as a partial buffer for the rest of the site as does the FPC transmission corridor.

G. Impact on Public Lands and Submerged Lands

Development of this site will not significantly impact any off site public lands nor will it impact any jurisdictional wetlands on site. Shady Hills Park is located approximately one mile north of the resource recovery facility. The stack would only be partially visible at the park while noise and air pollution impacts would be minimal.

H. Impact on Archaeological Sites and Historic Preservation Areas

The facility is to be located on a site that is not expected to have any historical or archaeological significance, an expectation concurred with by the Deputy State Historic Preservation Officer (see Agency Comments section).

VII. CONSTRUCTION AND OPERATIONAL SAFEGUARDS

As outlined in the application, construction procedures, including runoff control facilities and practices to avoid contamination of state waters, will be implemented. The construction site will be isolated from the general public by appropriate means which may include fences and guards. Compliance with OSHA standards and the provisions of Section 440.56, F.S., should adequately protect construction workers and operating personnel.

The conceptual design of most of the major pollution control equipment appears sufficient to protect the public and to protect the environmental from significant harm.

VIII. COMPLIANCE AND VARIANCES

As currently designed, the operation of the Pasco County Resource Recovery Facility will not contribute significantly to a violation of ambient air or water quality standards. No variances to pollution control standards are sought.

IX. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

1. Construction Impacts

Construction of the proposed facility would have the following impacts:

a. Disruption of land previously disturbed by silvaculture, clear cutting or cattle grazing.

b. Construction noise levels (excluding pile driving and steam blowout of boiler tubes) should be slightly less than 65

dB(A) at the boundary of the site. This should be a slight annoyance to outside activities at the nearest residences. Steam blowout may cause noticeable noise levels at the nearest residences. Steam blowout will occur intermittently over a several week period. The permittee should attempt to notify the neighboring residents prior to the start of steam tube blowout in an effort to partially mitigate any annoyance caused by the loud noises.

c. Construction traffic to and from the site should not cause any significant congestion in the plant vicinity.

2. Operation

a. The Resource Recovery Facility (RFF) will burn solid waste. Impacts on air quality will include emissions such as sulfur dioxide, oxides of nitrogen, particulate matter and other minor constituents. These emissions will be limited by use of control technology considered to be the best available. Fugitive dust from vehicles, heavy equipment and ash handling will be controlled by a variety of methods to reduce adverse impacts. The control equipment is designed to comply with federal and state emission limitations. The RRF plant is not expected to contribute to violations of ambient air quality standards.

b. There should be sufficient water available from either ground water or from reclaimed water from a county sewage treatment system to supply the volume requirements of the facility.

c. The Southwest Florida Water Management District stated the following in their report dated February 25, 1988:

"RECOMMENDATION"

"Forwarding of this report to the Florida Department of Environmental Regulation and approval by the Electrical Power Plant Siting Board of the consumptive use described subject to the proposed conditions herein."

The District also recommended approval of the surface water management system for the project subject to special conditions, and recommended special conditions for operating the facility in

such a way as to eliminate or limit the disposal of unprocessed solid waste and hazardous waste at the site, and to require advance development of contingency plans for dealing effectively with landfill leakage.

3. The Public Service Commission has concluded a need exists for the expanded facility.

4. The Department of Community Affairs concluded that for the most part the proposed RRF meets most of the objectives, goals and policies of the State Comprehensive Plan.

5. The Division of Archives, History and Records Management determined that the proposed plant was not likely to affect significant archaeological or historical areas.

6. The construction and operation of the resource recovery facility will permit a reduction in land area that would otherwise be required for future landfills.

7. Use of the facility will reduce groundwater pollution due to cessation of the disposal of raw garbage in the County's existing landfills; there will be concurrent reduction in air and noise pollution, odors, flies, scavenging birds, and other vectors due to the closure of landfills containing putrescible wastes.

8. Ninety percent of the solid waste received for burning will be reduced. Recovery of recyclable materials is possible. Electricity will be generated and sold to FPC. The remaining ten percent will be landfilled as a relatively inert residue (ash).

9. Noise generated by the construction of the plant may create a slight nuisance to the existing residential areas; operational noise should be no greater than currently occurring in the area.

B. Recommendations

If Pasco County agrees to abide by the conditions of certification, attached and incorporated herein, the DER would recommend certification of the Resource Recovery Plant site for up to 29 MW of capacity at 1200 tons per day of solid waste. This recommendation is based on the following rationale.

1. Full load operation of the RRF would not violate ambient air quality standards for SO_2, NO_x, CO or metals.

2. Proper management of stormwater runoff should prevent violations of water quality criteria off-site.

3. The conversion of solid waste into energy reduces the potential for groundwater contamination and public health hazards and will benefit the electric utility customers by producing electricity not dependent on expensive imported oils.

4. The facility's proposed design offers reasonable assurance that the standards of the department of Environmental regulation will be met.

State of Florida
Department of Environmental Regulation
Pasco County Resource Recovery Facility
Case No. PA 87-23
CONDITIONS OF CERTIFICATION

TABLE OF CONTENTS

State of Florida
Pasco County
Resource Recovery Facility
Case No. PA 87-23
CONDITIONS OF CERTIFICATION

I. CHANGE IN DISCHARGE

All discharges or emissions authorized herein shall be consistent with the terms and conditions of this certification. The discharge of any regulated pollutant not identified in the application, or more frequent than, or at a level in excess of that authorized herein, shall constitute a violation of the certification. Any anticipated facility expansions beyond the certified initial nameplate capacity of 1,200 TPD, production increases, or process modifications which may result in new, different, or increased discharges of pollutants, change in type of fuel as described in XIV.8., or expansion in steam generating capacity must be reported by submission of a supplemental application pursuant to Chapter 403, Florida Statutes.

II. NON-COMPLIANCE NOTIFICATION

If, for any reason, the Permittee (defined as the Applicant or its successors and or assigns) does not comply with or will be unable to comply with any limitation specified in this certification, the Permittee shall notify the Southeast Florida District Office of the Department of Environmental Regulation (Southeast District Office) by telephone within a working day that said noncompliance occurs and shall confirm this in writing within seventy-two (72) hours of becoming aware of such conditions, and shall supply the following information:

A. description of the discharge and cause of noncompliance; and

B. The period of noncompliance, including exact dates and times;

or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying event.

III. FACILITIES OPERATION

The Permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the Permittee to achieve compliance with the terms and conditions of this certification. Stoppages of landfill operations induced by weather conditions shall be allowed until the weather permits operations to resume. In the event of a malfunction of a resource recovery boiler's pollution control system that unit's furnace emissions must be shifted to the extent feasible to one or both of the remaining units having a properly functioning pollution control system. In the event of a prolonged (thirty (30) days or more) equipment malfunction or shutdown of air pollution control equipment, operation could be permitted to continue to take place under a consent order, only if the Permittee demonstrates that such operation will be in compliance with all applicable ambient air quality standards and PSD increments, solid waste rules, domestic waste rules and industrial waste rules. Additionally, during such malfunction or shutdown, the source shall comply with all other requirements of this certification and all applicable state and federal emission standards not affected by the malfunction or shutdown which is the subject of the consent order. Administrative action will not be initiated in the event of such a malfunction for 25 days following a malfunction unless there is an imminent health threat. However, if at thirty (30) days following a malfunction compliance has not been achieved by the source, an Order for Corrective Action may be immediately imposed upon the Applicant, subject to the provisions of Chapter 120 of the Florida Statutes. Operational stoppages exceeding two hours for air pollution control systems or four hours for other systems or operational malfunctions as noted below exceeding two hours for air pollution control systems or four hours for other systems and

as defined in the operational contingency plans as specified in Condition XVII are to be reported as specified in Condition II. Identified operational malfunctions which do not stop operation but do compromise the integrity of the operation shall be reported to the Southwest District Office as specified in Condition II.

IV. ADVERSE IMPACT

The Permittee shall take all reasonable steps to minimize any adverse impact resulting from noncompliance with any limitation specified in this certification, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

V. RIGHT OF ENTRY

The Permittee shall allow during operational or business hours the Secretary of the Florida Department of Environmental Regulation and/or authorized representatives, upon the presentation of credentials:

A. To enter upon the Permittee's premises where an effluent source is located or in which records are required to be kept under the terms and conditions of this certification, and

B. To have access during normal business hours (Mon.-Fri., 9:00 A.M. to 5:00 P.M.) to any records required to be kept under the conditions of this certification for examination and copying, and

C. To inspect and test any monitoring equipment or monitoring method required in this certification and to sample any discharge or pollutants, and

D. To assess any damage to the environment or violation of ambient standards.

VI. REVOCATION OR SUSPENSION

This certification may be suspended or revoked for violations of any of its conditions pursuant to Section 403.512, Florida Statutes.

VII. CIVIL AND CRIMINAL LIABILITY

This certification does not relieve the Permittee from civil or criminal penalties for noncompliance with any conditions of this certification, applicable rules or regulations of the Department or Chapter 403, Florida Statutes, or regulations thereunder.

Subject to Section 403.511, Florida Statutes, this certification shall not preclude the institution of any legal action or relieve the Permittee from any responsibilities or penalties established pursuant to any other applicable State Statutes, or regulations.

VIII. PROPERTY RIGHTS

The issuance of this certification does not convey any property rights in either real or personal property, nor any exclusive privileges, nor does it authorize any injury to public or private property or any invasion of personal rights nor any infringement of Federal, State or local laws or regulations.

IX. SEVERABILITY

The provisions of this certification are severable, and if any provision of this certification or the application of any provision of this certification to any circumstances, is held invalid, the application of such provisions to other circumstances and the remainder of the certification shall not be affected thereby.

X. DEFINITIONS

The meaning of terms used herein shall be governed by the definitions contained in Chapter 403, Florida Statutes and any regulations adopted pursuant thereto. In the event of any dispute over the meaning of a term in these conditions which is not defined in such statutes or regulations, such dispute shall be resolved by reference to the most relevant definitions contained in any other state or federal statute or regulation. Words or phrases used herein dealing with conditions of the South Florida Water Management District (SFWMD) shall be defined by reference to Chapter 373, Florida Statutes, or applicable rules of the SFWMD.

XI. REVIEW OF SITE CERTIFICATION

The certification shall be final unless revised, revoked or suspended pursuant to law. At least every five years from the date of issuance of certification the Department shall review all monitoring data that has been submitted to it during the preceding five-year period for the purpose of determining the extent of the Permittee's compliance with the conditions of this certification and the environmental impact of this facility. The Department shall submit the results of its review and recommendations to the Permittee. Such review will be repeated at least every five years thereafter.

XII. MODIFICATION OF CONDITIONS

Pursuant to Subsection 403.516(1), F.S., the Board hereby delegates the authority to the Secretary to modify any condition of this certification dealing with sampling, monitoring, reporting, specification of control equipment, related time schedules, emission limitations (subject to notice and opportunity for hearing), conservation easements, or any special studies conducted, as necessary to attain the objectives of Chapter 403, Florida Statutes. Requests for modifications shall not be unreasonably withheld by the Department.

All other modifications to these conditions shall be made in accordance with Section 403.516, Florida Statutes.

XIII. CONSTRUCTION

The facility shall be constructed, at a minimum, pursuant to the design standards presented in the application and the standards or plans and drawings submitted and signed by an engineer registered in the state of Florida. The Applicant shall present specific facility plans, as developed, for review by the Southwest District Office prior to construction pursuant to the portions of the plans then being submitted. Specific Southwest District Office approval of plans will be required based upon a determination of consistency with approved design concepts, regulations and these Conditions prior to initiating construction of the: leachate collection system; air pollution control equipment; stormwater runoff system; landfill closure plans and hazardous, toxic or pathological handling facilities or areas. Review and action by the Southwest District Office on said plans shall be accomplished in no longer than thirty (30) days from the date of a complete submittal of such plans and any action may be subject to review pursuant to Chapter 120, Florida Statutes.

A. Control Measures

1. Stormwater Runoff

To control runoff during construction which may reach and thereby pollute Waters of the State, necessary measures shall be utilized to settle, filter, treat or absorb silt-containing or pollutant-laden stormwater to ensure against spillage or discharge of excavated material that may cause turbidity in excess of 29 Nephelometric Turbidity Units above background in Waters of the State. Control measures may consist of sediment traps, barriers, berms, and vegetation plantings. Exposed or disturbed soil shall be protected and stabilized as soon as possible to minimize silt and sediment laden runoff. The pH of the runoff shall be kept

within the range of 6.0 to 8.5. The Permittee shall comply with Florida Administrative Code Chapters 17-25 and 40D-4. The Permittee shall complete the forms required by 17-25.09(1) and 40D-4 and submit those forms and the required information to the SWFWMD for any modifications that might occur.

2. Burning

Open burning in connection with land clearing shall be in accordance with Chapter 17-5, FAC, and Uniform Fire Code Section 33.101 Addendum. No additional permits shall be required, but prior to each act of burning, the Division of Forestry shall be contacted to determine if satisfactory conditions exist for burning. Open burning shall not occur if the Division of Forestry has issued a ban on burning due to fire hazard conditions.

3. Sanitary Wastes

Disposal of sanitary wastes from construction toilet facilities shall be in accordance with applicable regulations of the appropriate local health agency.

4. Solid Wastes

Solid wastes resulting from construction shall be disposed of in accordance with the applicable regulations of Chapter 17-7, FAC.

5. Noise

Construction noise shall not exceed either local noise ordinance specifications, or those noise standards imposed by zoning.

6. Dust and Odors

The Permittee shall employ proper odor and dust-control techniques to minimize odor and fugitive dust emissions. The applicant shall employ control techniques sufficient to prevent nuisance conditions on adjoining property.

7. Transmission Lines

The directly associated transmission lines from the Resource Recovery Facility electric generators to the existing Florida Power Corporation substation shall be cleared, maintained and prepared without the use of herbicides.

8. Protection of Vegetation

The Permittee shall develop the site so as to retain a buffer of trees or shall plant a buffer of trees sufficient to minimize the aesthetic and noise impacts of the facility. The buffer, as far as practicable, shall be of sufficient height and width suitable for the purpose of mitigating both construction and operational impacts of the facility.

9. Dewatering Operations

The dewatering operations during construction shall be carried out in such a manner that all water withdrawn will be retained onsite. There shall be no discharge of water offsite due to dewatering operations.

B. Environmental Control Program

An environmental control program shall be established under the supervision of a Florida registered professional engineer to assure that all construction activities conform to applicable environmental regulations and the applicable conditions of certification. If harmful effects or irreversible environmental damage not anticipated by the application or the evidence presented at the certification hearing are detected during construction, the Permittee shall notify the Southwest District Office as required by Condition II.

C. Reporting

1. Notice of commencement of construction shall be submitted to the Southwest District Office within 15 days of initiation. Starting three (3) months after construction commences, a quarterly construction status report shall be submitted to the Southeast District Office. The report shall be a short narrative describing the progress of construction.

2. Upon or immediately prior to completion of construction of the resource recovery facility or a phase thereof and upon or immediately prior to completion of all necessary preparation for the operation of each landfill cell, the Southwest District Office will be notified of a date on which a site or facility inspection should be performed in accordance with Condition V, and the inspection shall be performed within fourteen (14) days of the date of notification by Permittee.

XIV. OPERATION

A. Air

The operation of the Resource Recovery Facility shall be in accordance with all applicable provisions of Chapter 17-2, 17-5, and 17-7, Florida Administrative Code. In addition to the

foregoing, the Permittee shall comply with the following specific conditions of certification:

1. Emission Limitations upon Operation of Units 1-3

a. Stack emissions from each unit shall not exceed the following assuming a Btu content of 4800 Btu/lb of MSW:

(1) Particulate matter: 0.015 grains per standard cubic foot dry gas corrected to 12% CO_2.

(2) SO_2: 60 ppmdv at 12% CO_2, 6-hour rolling average; or 70% reduction by weight of uncontrolled SO_2 emissions; not to exceed 100 ppmdv corrected to 7% O_2.

(3) Nitrogen Oxides: 0.643 lbs/MBtu heat input.

(4) Carbon Monoxide: 100 ppmdv corrected to 7% O_2, 8-hour rolling average.

(5) Lead: 0.0007 lbs/MBtu heat input.

(6) Mercury: 8.0 x E-4 lb/MBtu

(7) Odor: there shall be no objectionable odor at or outside the site boundary.

(8) Visible emissions: opacity shall be no greater than 15% 6-minute average except that visible emissions with no more than 20% opacity may be allowed for up to three consecutive minutes in any one hour except during start up, shut down or malfunction when the provisions of 17-2.250,FAC, shall apply. Opacity compliance shall be demonstrated in accordance with Florida Administrative Code Rule 17-2.700(6)(a)9, DER Method 9.

(9) Fluoride: 0.0080 lb/MBtu heat input.

(10) Arsenic: 9.1 x E-6 lb/MBtu heat input.

(11) Beryllium: 1.35 x E-7 lb/MBtu heat input.

(12) VOC: 0.021 lb/MBtu heat input.

(13) Hydrogen Chloride: 0.127 lb/MBtu heat input.

b. The height of the boiler exhaust stack shall not be less than 275 feet above grade.

c. The resource recovery facility's boilers shall not be loaded in excess of either 115% of their rated nameplate capacity of 29,167 pounds of MSW or 115% of 140 x 10^6 Btu per hour each.

d. The incinerator boilers shall have a metal name plate affixed in a conspicuous place on the shell showing manufacturer, model number, type waste, and rated capacity.

e. Compliance with the limitations for particulates, sulfur oxides, nitrogen oxides, carbon monoxide, fluoride, VOC and lead shall be determined in accordance with Florida Administrative Code Rule 17-2.700, DER Methods 1,2, 3, 4, and 6 and 40 CFR 60, Appendix A, Methods 5, 7, (modified with prefilter), 10, 12, 13A or 13B (or modified method 5 for fluorides), and 18 or other methods as approved by the DER. The stack test for each unit shall be performed at $\pm$10% of the maximum heat input rate of 140 x 10^6 Btu heat input per hour or the maximum charging rate of 29,167 pounds of MSW per hour. Compliance with the beryllium emission limitation shall be determined in accordance with 40 CFR 61, Method 103 or 104, Appendix B. Compliance testing for mercury shall be determined in accordance with 40 CFR 61, Method 101A, Appendix B. Particulate testing shall include one run during representative soot blowing which shall be averaged proportionally to normal daily operations. Visible emission testing shall be conducted simultaneously with soot blowing and non-soot blowing runs. Compliance with the opacity limit shall be demonstrated in accordance with Florida Administrative Code Rule 17-2.700(6)(a)9., DER Method 9. Compliance with SO_2 emissions when firing supplemental oil may be determined by submission of a chemical analysis of the oil as fired.

f. Combustion efficiency shall be calculated by: $\%CE = (1/(1+(CO/CO_2))) \times 100$, and shall be at least 99.5% for an 8 hour average.

2. Emission Control Equipment

a. The boiler particulate control system shall be designed constructed and operated to achieve a maximum emission rate of 0.015 grains per dscf corrected to 12% CO_2. All other particulate control devices shall be designed to meet the provisions of Section 17-2.610, FAC.

b. The facility shall be equipped with dry scrubbers which are designed, constructed and operated to remove SO_2 at an efficiency of 70% by weight or to achieve an emission rate of 100 ppmdv at 7% O_2 which ever is less stringent and to cool the flue gases to an average temperature not to exceed 300^0F (3-hour rolling average).

c. The Permittee must submit to the Department within thirty (30) days after it becomes available, copies of technical data pertaining to the selected emissions control systems. These data should include, but not be limited to, guaranteed efficiency and emission rates, and major design parameters. The data shall be processed and approved or denied in accordance with Condition XIII above.

3. Air Monitoring Program

a. The Permittee shall install and operate continuously monitoring devices to measure combustion temperature and flue gas temperature at the exit of the acid gas control equipment plus SO_2, CO, and CO_2 levels and opacity for each unit. The monitoring devices shall meet the applicable requirements of Chapter 17-2, Section 17-2.710, FAC, and 40 CFR 60.45, and 40 CFR 60.13, including certification of each device in accordance with 40 CFR 60, Appendix B, Performance Specifications and 40 CFR 60.7 (a)(5). Re-certification shall be conducted annually from initial certification. Data on monitoring equipment specifications, manufacturer, type, calibration and maintenance needs, and its proposed location after the economizer or in the air pollution control equipment outlet duct shall be provided to the Southwest District Office for approval prior to installation together with and subject to the same provisions as submittal of air pollution

control equipment pursuant to Paragraph XIII hereof.

b. The Permittee shall provide sampling ports in the air pollution control equipment outlet duct or stack and shall provide access to the sampling ports in accordance with Section 17-2.700, FAC. Drawings of testing facilities including sampling port locations as required by Section 17-2.700 shall be submitted to the Department for approval at least 60 days prior to construction of the sampling ports and stack.

c. The Permittee shall have a sampling test of the emissions performed by a commercial testing firm within 60 days after achieving the maximum rate at which the boilers will be operated but not later than 180 days of the start of operation of the boilers and annually for particulate and NO_x from the date of testing thereafter. Thirty (30) days prior notice of the initial sampling test shall be provided to the Southwest District Office and fifteen (15) days notice before subsequent annual testing. The notification requirements of 40 CFR parts 60 and 61 will also be observed.

4. Reporting

a. Two copies of the results of the emissions tests for the pollutants listed in XIV.A.1.a. shall be submitted within forty-five days of the last sampling run to the Southwest District Office.

b. Emissions monitoring shall be reported to the Southwest District Office on a quarterly basis in accordance with Section 17-2.710, FAC, 40 CFR, Part 60, Subsection 60.7 or 40 CFR Part 61 as appropriate..

c. Notice of anticipated and actual start-up dates of each incinerator boiler shall be submitted to the DER Southwest District Office.

5. Unconfined Emissions

Proper dust control techniques such as water sprays or chemical wetting agents or other containment method shall be used to control visible unconfined (fugitive) emissions to the outside air no more than 10% opacity as determined by DER Method 9 for

unconfined resource recovery facility processes. Proper techniques shall also be used to control such emissions to prevent them from crossing the property line(s) from any other unconfined sources and to limit them to no more than three (3) minutes (cumulative) in any fifteen (15) minute period as determined by 40 C.F.R. 60, Appendix A, Method 22 with observations being made along the property line. Visible emissions shall not include uncombined water vapor or emissions from engine exhausts.

B. Fuel

The Resource Recovery Facility shall utilize refuse such as garbage and trash (as defined in Chapter 17-7, FAC) as its fuel. Use of alternate fuels except for distillate fuel oil or natural gas in start-up burners would necessitate modification of these Conditions of Certification. Refuse as fuel shall not include "hazardous waste" as defined in Chapter 17-30, FAC. The alternate fuel, which may be used distillate oil, shall not contain more than 0.3% sulfur by weight and shall not be used more than required during boiler startup or shutdown.

C. Wastewater Disposal

A complete submittal of plans, drawings and specifications for leachate collection systems, pumps, lift stations, sewage collection systems, and wastewater collection systems in accordance with appropriate DER rules shall be furnished to the Southwest District Office for approval at least 60 days prior to start of construction for the particular of such component. In order to obtain approval, the receiving sewage treatment plant shall indicate its ability and willingness to accept the wastewater. Also plans and specifications for connections to off-site sewage and wastewater transmission systems shall be furnished to the Southwest District Office for approval 60 days prior to start of construction. Review shall be accomplished in accordance with Condition XIII.

D. Water Discharges

1. Surface Water

a. Any discharges from the site stormwater system via the emergency overflow structure which result from an event LESS than a ten-year, 24-hour storm (as defined by the U.S. Weather Bureau Technical Paper No. 40, or the DOT drainage manual, or similar documents) shall meet applicable State Water Quality Standards, Chapter 17-3, FAC, the Standards of Chapter 17-25, FAC, and Chapter 40 D, FAC.

2. Groundwaters

a. All discharges to groundwaters, such as landfill leachate, shall be collected and treated as necessary, or otherwise be of high enough quality, to be able to meet the applicable Water Quality Standards of Sections 17-3.402 and 17-3.404, FAC, at the boundary of the site. If monitoring should indicate a violation of the standards, the Permittee shall immediately notify the Southwest district Office and SWFWMD and institute remedial action.

3. Groundwater Monitoring Program

a. Sampling of the shallow aquifer groundwater quality shall be conducted in at least six well clusters in the site vicinity. At least one of these wells shall be up the hydrologic slope from the landfill area to provide current background data. Other wells shall be located down the hydrologic slope from the landfill areas. Specific location of any new wells or modifications to the monitoring program may be proposed by the applicant, but must be approved by the Department prior to the construction of the new monitoring wells.

b. Upon completion of construction of the Ground water monitoring system, the following information shall be submitted to the Southwest District Office for all ground water monitoring wells and any new well(s) constructed:

Well identification	Drillers log
Latitude/Longitude	Total depth of well
Aqifer monitored	Casing diameter
Screen type and slot size	Casing type and length
Screen length	SWFWMD well construction
Elevation at top of pipe	permit numbers
Elevation at land surface	

c. Upon completion of construction of the ground water monitoring system, but not less than 12 months before the disposal of MSW or ash, the Permittee shall sample all ground water monitoring wells for the Primary and Secondary Drinking Water parameters includes in Chapter 17-22, FAC, Public Drinking WAter Systems. The specific parameters to be sampled are listed in Part II, Quality Standards, Analytical Methods, Sampling, Sections 17-22.210 and 17-22.220, FAC.

d. The field testing, sample collection and preservation and laboratory testing, including quality control procedures, shall be in accordance with Chapter 17-4.246 and 17-3.401, FAC. Approved methods as published by the Department or as published in Standard Methods, A.S.T.M. or EPA methods shall be used. Approved methods for chemical analyses are summarized in the Federal Register, December 1, 1976 (41FR52780) except that turbidity shall be measured by the Nephelometric Method.

e. All required submittals shall be sent to the DER Southwest Office within 60 days of installation of the ground water monitoring system. Upon receipt and review of the required data, quarterly sampling reports shall be submitted to the Southwest District Office commencing 12 months prior to disposal of any wastes in the ashfill/landfill. Any required modifications of the ground water monitoring system or program shall be modified in accoedance with the provisions of Condition XIII. The ground water monitoring program may be reviewed annually.

E. Solid/Hazardous Waste

1. Operation of the associated landfill shall be done in accordance with all applicable portions of Chapter 17-7, FAC, including prohibitions, procedures for closing of the landfill, and final cover requirements, or, as provided in this condition (XIV.E.) in its entirety. The plans of the final landfill design shall be provided to the Department for review and approval at least 90 days prior to start of operation. Review shall be performed in accordance with Condition XIII. The final plans for this Facility shall include provisions for the isolated temporary handling of suspected hazardous, toxic or infectious wastes.

2. No suspected or known hazardous, toxic, or infectious wastes as defined by Federal, State or local statutes, rules, regulations or ordinances shall be burned or landfilled at the site.

3. Rodent and insect control shall be provided as necessary to protect the health and safety of site employees and the public. Pesticides used to control rodents, flies, and other vectors shall be as specified by the Florida Department of Agriculture and Consumer Services.

4. Storage of putrescible waste for processing shall not exceed storage capacity of the refuse bunker or tipping floor as designed on the approved plan.

5. Ash prior to transport to the landfill shall be stored in an enclosed building on an impervious surface. Final disposal of the ash shall be into the lined landfill or other method approved by the Southwest District Office. Any leachate generated within the building shall be collected and disposed of by a method approved by the Southwest District Office. The Southwest District Office shall notify the SWFWMD of the plans and specifications regarding the above referenced method.

6. A monthly report shall be prepared detailing the amount and type (putrescible, special wastes, boiler residue, etc.) of materials landfilled at the site, and the treatment provided (see condition XIV.E.2. above). These reports shall be furnished to the Southwest District Office quarterly, commencing 120 days after the Resource Recovery Facility becomes operational and is producing residues.

7. Unless approved by the Department with subsequent modification of conditions, this facility shall not accept materials defined by applicable Federal, State or local statutes, rules, regulations or ordinances as "Hazardous Wastes".

8. All cells will be constructed to promote leachate drainage to a low end of the cell; all leachate collected at the low end of active or inactive cells shall be pumped or transported to the leachate collection system for transmission to a permitted treatment system. Leachate collected above the primary liner shall be monitored quarterly for conductivity, pH, copper, arsenic, zinc, phenols, oil and grease and total organic halogens. Results of such monitoring shall be reported to the operator of the receiving municipal sewage treatment plant and the Southwest District Office. Leachate collected between the primary and secondary liners shall be monitored quarterly for conductivity, chlorides, ammonia, iron, sulfur, nitrates, and zinc. Results will be reported to the Southwest District Office quarterly. The monitoring parameters set forth herein may be modified dependent upon the type of liners utilized and the manufacturer's recommendations to protect the integrity of the liners due to the classes of chemical constituents in the leachate which will be in contact with the liner(s). The Permittee shall provide the Southwest District Office with a certified letter from the liner manufacturer stating what classes of chemical constituents could damage the liners' integrity and include those parameters as part of the quarterly monitoring program noted above.

9. An EP toxicity analysis of the ash residue or other analysis as approved by the DER for ash being landfilled shall be conducted within thirty days after commencement of commercial operation and annually thereafter for the chemicals listed and using the prescribed method as set forth in 40 CFR s261, Appendix II. In addition, said ash residue shall be tested for zinc and dioxin (2, 3, 7, 8 - TCDD) content.

10. Results from said residue analysis shall be sent to the Southwest District Office within 30 days of receipt. Results of these analyses may also be used for correlation with groundwater monitoring information and in any subsequent modification of conditions.

11. If residue materials are determined to be a "Hazardous Waste", then measures shall be taken to treat or dispose of the residues pursuant to rule promulgated by Federal, State or Local authorities, as may be applicable.

12. If the nature of materials received at the facility becomes altered, either due to modification of conditions, i.e., the facility is allowed to incinerate already known hazardous wastes such as pesticides, or if groundwater monitoring reveals abnormal groundwater conditions which may be attributable to the landfilling of this residue, then a subsequent analysis may be required at that time.

13. There shall be no discharge to waters of the State of polychlorinated biphenyl compounds.

14. The Permittee shall provide the Southwest District Office with a set of full-sized engineering plans signed and sealed by an engineer registered in the State of Florida for the operational and closure phases of the landfill for review and approval at least 90 days prior to implementation of those phases. Within 90 days after completion on the closure phase of the

project, the Permittee shall submit certified as-built plans signed and sealed by a Florida Registered Professional Engineer.

15. To ensure that the bottom liners are continuous throughout the cell, the liners will be installed either by the manufacturer or by a competent experienced lining contractor according to the manufacturer's specifications. In addition, as part of quality control measures, field semas between in-place liner and newly installed liner will be tested according to ASTM specifications to ensure integrity between materials and certified in writing by the liner manufacturer, contractor, and engineer of record to the Southwest District Office. Top liners, if required, shall be installed in accordance with closure requirements of the Southwest District Office and SWFWMD.

16. An adequate quality control plan shall be submitted to the Southwest District Office 30 days prior to liner installation/construction. The quality control plan shall include installation/construction personnel, all specifications and construction methods, liner testing procedures, and sampling frequency. The liner material proposed for use shall be completely described. Laying of the liner shall comply with the specified standards as fully described in the Quality Control Plan. An acceptable method of testing for pinholes and defective areas shall be completely described. Sampling and testing shall be conducted in the field during construction and after completion by qualified personnel under the direction of a professional engineer in charge to assure the liner will meet performance standards.

17. At least 30 days prior to liner installation, the Permittee shall submit to the Southwest District Office a construction schedule or chart to include the following:

a. Beginning of liner installation,
b. Completion of liner installation,
c. Beginning of leachate collection system/removal system collection,

d. Completion of leachate collection/removal system construction.

18. After all significant initial construction of each new system, section, or phase of the landfill has been completed and prior to the operation or acceptance of any solid waste, the engineer or the authorized public officer shall complete a Certification of Construction Completion, DER Form 17-7.130(2).

19. The design, operation, and monitoring of disposal or control of any "special wastes" shall be in accordance with F.A.C. Section 17-7.060, and any other applicable department rules, to protect the public saftey, health and welfare. "Special wastes" means those wastes that require extraordinary management. They include but are not limited to abandoned automobiles, white goods, used tires, waste oil, sludges, dead animals, agricultural and industrial wastes, septic tank pumpings, and infectious and hazardous wastes. Sludges which may be hazardous due to their chemical composition should be disposed of in accordance with F.A.C. Section 17-7.040(4). Disposal of Grade III Domestic Wastewater Treatment Sludge, disposal of domestic septage, and disposal of food service sludge, shall be in accordance with F.A.C. Section 17-7.540(6).

F. Operational Safeguards

The overall design and layout of the facilities shall be such as to mitigate potential adverse effects to humans and the environment. Security control measures shall be utilized to prevent exposure of the public to hazardous conditions. The Federal Occupational Safety and Health Standards will be complied with during construction and operation. The safety standards specified under Section 440.56, Florida Statutes, by the Industrial Safety Section of the Florida Department of Commerce will be complied with during operation.

G. Transmission Lines

The directly associated transmission lines from the Resource Recovery Facility electric generators to the Florida Power and Light Company Substation shall be kept cleared without the use of herbicides.

H. Noise

Operational noises shall not exceed local noise ordinance limitations nor those noise standards imposed by zoning.

XV: SWFWMD - SURFACE WATER PERMITTING

A. Land Development

Except as authorized by this certification, any further land development, wetlands disturbance or other construction within the total land area of this site will require additional approval in accordance with Chapters 40D-4 and 17-25, F.A.C.

B. Stormwater Control

The applicant shall assure that erosion and sediment control measures required by Rule 17-25.025(7) shall be effectively implemented continuously from beginning of project construction until completion. Project detention/retention ponds and discharge control structures which are to be constructed as part of the project should be initially built and maintained continuously during project construction to avoid adverse impact to receiving waters or off site.

C. Well Plugging

Any existing wells in the path of construction shall be properly plugged and abandoned by a licensed water well contractor in accordance with Chapter 40D-3 and Rule 17-21.10(4), F.A.C.

D. Pond Slopes

All retention/detention pond side slopes, shall be sodded, and staked as necessary, to prevent erosion.

E. Liability

By issuance of this certification, the District, its employees and representatives assume no responsibility and/or liability in regard to either the design, construction or performance of the proposed facilities.

F. Plan Review

Prior to initiating construction, the final resource recovery

site plan is required to be submitted to the District for review of compliance with the conditions set forth in this recommendation and in accordance with Chapters 40D-4 and 17-25, F.A.C.

XVI SWFWMD - CONSUMPTIVE USE PERMITTING

A. Accuracy of Information

The facility operator attests that all statements made for this certification are true and accurate and based upon the best information available, and that all conditions set forth in this authorization will be complied with. If any of the statements and or supporting data are found to be untrue and inaccurate, or if the facility operator fails to comply with all of the conditions set forth herein, then certification for the facility may be revoked following notice and hearing.

B. Reasonable Use

Certification is predicated upon assertion by the applicant that the use of water applied for and granted is and continues to be reasonable and beneficial use as defined in Section 373.019(5), Florida Statutes (F.S.), is and continues to be consistent with the public interest, and will not interfere with any legal use of water existing on the date of certification is granted.

C. Reservations

In granting certification, the District has, by regulation, reserved from use by applicant, water in such locations and quantities, for such seasons of the year, as it determines may be required for the protection of fish and wildlife and public health and safety. Such reservations are subject to periodic review and revision in light of changed conditions.

D. Withdrawal Limits

Certification is for a combined average annual withdrawal of

720,000 gallons of water per day with a maximum combined withdrawal rate not to exceed 1,150,000 gallons during a single day. Withdrawals are shown in the table below.

USER ID	1	2
DISTRICT ID	1	2
WITHDRAWAL POINT		
LATITUDE	282157	282157
LONGITUDE	823430	823429
GPD AVERAGE	677,000	43,000
GPD MAXIMUM	1,010,000	60,000

E. Water Shortage

In the event the District declares that a water shortage exists pursuant to Rule 40D-2.511, Florida Administrative Code (F.A.C.), the District may alter, modify or declare inactive all or parts of this authorization for water use.

F. Sampling

The District reserves the right, at any reasonable time, to collect water samples from any withdrawal for this facility. The District may require the facility operator to submit samples in mailable containers provided by the District.

G. Access

An authorized District representative may, at any reasonable time, enter the property, inspect the facility, and make environmental or hydrologic assessments. The facility operator shall either accompany District staff onto the property or make provision for access onto the property.

H. Reconsideration

If the District, after consultation with the facility operator determines that significant water quantity or quality changes, or adverse environmental impacts are occurring, the

District, upon notice and hearing, may reconsider the allowed withdrawal quantities.

I. Minimum Water Levels

The District may, at a future date, establish minimum water levels in aquifers and lakes, and minimum flow in streams, which may require the facility operator to limit withdrawal from these sources when water levels or flows fall below the established minimums.

J. Conservation

Water conservation shall be practiced by the facility operator to increase the efficiency of transport, application and use, to decrease waste and to minimize runoff from the property. At such time as the District adopts specific conservation criteria for the facility's water use classification, the facility operator will be subject to such criteria upon notice and after a reasonable period for compliance.

K. Flow Measurement

The following points, District Withdrawal No(s). 1, 2 and supply from the regional waste water treatment plant, shall be equipped with totalizing flow meters or other flow measuring devices as approved in writing by the Director, Resource Regulation Department. Such devices shall have and maintain an accuracy within five percent (5%) of the actual flow. Those designated withdrawal points not equipped with such devices on the date the consumptive use is authorized shall be so equipped within one hundred twenty (120) days of the authorization date or upon completion of construction of the withdrawal facility, unless an extension is approved in writing by District staff.

L. Reporting

Total flow from each metered source shall be recorded on a monthly basis and reported to the District on District forms on or before the tenth (10th) day of the following month.

Reports shall be addressed to:

Permits Data Collection
Processing and Records Section
Southwest Florida Water Management District
2379 Broad Street
Brooksville, Florida 34609-6899

M. Water Quality Sampling

Water quality samples shall be collected and analyzed as indicated in the table below. Reports of the analyses shall be submitted to the District (on District forms) on or before the tenth (10th) day of the following month. The parameters and frequency of sampling and analysis may be modified by Distict staff as necessary to ensure the protection of the resource.

District W/D No(s)	Parameters	Sampling Frequency
1 and 2	Chloride	Monthly
1 and 2	Sulfate	Monthly
1 and 2	Total Dissolved Solids	Monthly

Analyses shall be performed according to procedures outlined in the current edition of Standard Methods for the Examination of Water and Wastewater by the American Public Health Association-American Water Works Association-Water Pollution Control Federation or Methods for Chemical Analyses of Water and Wastes by the United States Environmental Protection Agency.

Reports shall be addressed to:

Permits Data Collection
Processing and Records Section
Southwest Florida Water Management District
2379 Broad Street
Brooksville, Florida 34609-6899

XVII. SWFWMD - ASHFILL/LANDFILL

A. Preoperational Limitation

As far as practical, disposal of unprocessed solid waste at the ashfill/landfill site should be minimized before the resource recovery facility is operational. The disposal of unprocessed waste at the ashfill/landfill site shall be prohibited until the East Pasco County Sanitary Landfill site is filled to the maximum capacity permitted by the Florida Department of Environmental Regulation, subject to the use limitations contained in the East Pasco County Sanitary Landfill site lease or until the resource recovery facility is operational, whichever occurs first.

B. Unprocessed Waste Limitation

The disposal of by-passed unprocessed waste at the ashfill/landfill site shall be minimized when the resource recovery facility is not fully operational or when the capacity of the facility is exceeded, in accordance with the County's plans for operation contained in the application. It is further recommended that the county initiate future construction of additional capacity of the resource recovery facility as early as possible in order to avoid having the amount of incoming processible waste exceed the capacity of the facility and to avoid disposal of unprocessed waste in the ashfill/landfill

C. Waste Segregation

In so far as practical, ash residue from the resource recovery facility shall be segregated from unprocessed waste in ashfill/landfill cells in order to insure that the ash remains in an alkaline state.

D. Leachate Monitoring

The secondary underdrain system shall be monitored weekly for the presence of leachate which would indicate leakage from the primary liner. A contingency plan will be developed for actions

to be taken in event that the failure of a liner or underdrain is detected. The contingency plan shall include:

1. Methods for determining which cell is leaking,
2. Plans for immediate expansion of the monitor well network downgradient of the problematic cell for early detection of leachate in the aquifer if the secondary liner fails,
3. Plans for repair of a leaking liner, and
4. Plans for restoration of the aquifer if aquifer contamination occurs.

E. Appliances and Machines

The County, to the extent practicable, should collect and segregate appliances and machines containing or utilizing coolants, greases or oils for recycling by a metals processor in order to minimize their disposal in the ashfill/landfill.

XVIII. OPERATIONAL CONTINGENCY PLANS

A. Operating Procedures

The Permittee shall develop and furnish the Southwest District Office a copy of written operating instructions for all aspects of the operation which are critical to keeping the facility working properly. The instructions shall also include procedures for the handling of suspected hazardous, toxic and infectious wastes.

B. Contingency Plans

The Permittee shall develop and furnish the Southwest District Office written contingency plans for the continued operation of the system in event of breakdown. Stoppages which compromise the integrity of the operations must have appropriate contingency plans. Such contingency plans should identify critical spare parts to be readily available.

C. Current Engineering Plans

The Permittee shall maintain a complete current set of modified engineering plans, equipment data books, catalogs and documents in order to facilitate the smooth acquisition or fabrication of spare parts or mechanical modifications.

D. Application Modifications

The permittee shall furnish appropriate modifications to drawings and plot plans submitted as part of the application, including operational procedures for isolation and containment of hazardous wastes.

XIX. TRANSFER AND/OR ASSIGNMENT

If contractural rights, duties or obligations are transferred under this certification, notice of such transer or assignment shall immediately be submitted to the Department and SWFWMD by the previous certification holder (Permittee) and the Assignee. Included within the notice shall be the identification of the entity responsible for compliance with the certification. Any assignment or transfer shall carry with it full responsibility for the limitations and conditions of this certification.

XX. PROPRIETARY DOCUMENTS OR INFORMATION - CONFIDENTIALITY

Proprietary or confidential data, documents or information submitted or disclosed to any agency shall be identified as such by the Permittee and shall be maintained as such pursuant to applicable Florida law.

XXI GOPHER TORTOISE MANAGEMENT PLAN

A. The Permittee shall identify the proposed gopher tortoise preserve, to be located in the 170-acre southwest portion of the site, on the site master plan. The Permittee shall develop a management plan as approved by the Florida Game and Fresh Water Fish Commission staff, that will adequately ensure the maintenance and enhancement of the gopher tortoises and their commensals on this preserve area.

B. The approximately 45-acre of remnant sandhill community, located in the northeast corner of the project site, should be utilized for borrow only when other potential on-site areas have been exhausted. Should adequate borrow material be obtained elsewhere this remnant sandhill community should be incorporated into the management plan for the gopher tortoises, or incorporated into the buffer area.

XXII. COOLING TOWER

A. The Pasco County Resource Recovery Facility may utilize reclaimed water or stormwater runoff as a source of cooling water. If the Permittee is forced to use ground water for cooling due to non-availability of reclaimed water, such use shall be in accordance with Condition XVI.

B. Prior to use in the cooling tower, reclaimed water shall be disinfected by use of chlorine or other suitable biocide to achieve a 1.0 mg/l concentration of total chlorine residual after a 15 minute contact time.

APPENDIX A

Buck Goen

State of Florida

Executive Director
DAVID L. SWAFFORD
(904) 488-7181

Public Service Commission

November 19, 1987

Mr. Dale Twachtmann
Secretary, Department of Environmental Regulation
Twin Towers Office Building
2600 Blairstone Road
Tallahassee, Florida 32399-2400

Re: Final Report on determination of need for Pasco County's Resource Recovery Facility

Dear Mr. Twachtmann:

Pursuant to the Florida Electric Power Plant Siting Act (Chapter 403, Florida Statutes) the Florida Public Service Commission (FPSC) is empowered to make a determination of need for any electric power plant for which an applicant seeks certification.

The FPSC is also required to provide the Department of Environmental Regulation a final report stating the Commission's final decision on the applicant's request for determination of need. Enclosed is a copy of the Commission's Order No. 17752 which grants the petitioner's request for an affirmative determination of need. This order shall constitute the FPSC's final report as required in Chapter 403, Florida Statutes.

If you have any questions or concerns, please contact me.

Sincerely,

David Swafford
Executive Director

TB-DS:bc
Attachment

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition of Pasco County for determination of need for a solid waste-fired cogeneration power plant.	)	DOCKET NO. 870193-EG ORDER NO. 17752 ISSUED: 6-26-87

The following Commissioners participated in the disposition of this matter:

KATIE NICHOLS, Chairman
GERALD L. GUNTER
JOHN T. HERNDON
MICHAEL McK. WILSON

ORDER GRANTING DETERMINATION OF NEED

BY THE COMMISSION:

Under the Florida Electric Power Plant Siting Act (Chapter 403, Florida Statutes) this Commission is empowered to make a determination of need for any electric power plant for which an applicant seeks certification under the act. As set out in Section 403.508(3), Florida Statutes, that affirmative determination of need by the Commission is a condition precedent to the conduct of the certification hearing.

On February 24, 1987, we received the petition of Pasco County, Florida, for a determination of need for a 29 megawatt (MW) solid waste-fired cogeneration power plant. The petition states that the facility will have an in-service date of January, 1991, and will operate initially with a single 22 MW generator. At maximum capacity of 29 MW the facility will use up to 1,200 tons per day of municipal solid waste as fuel. Power produced by the facility will be sold to Florida Power Corporation.

Section 403.519, Florida Statutes, designates this Commission as the exclusive forum for determination of need and sets out the criteria which shall be considered in making such a determination. They are:

(1) The need for electric system reliability and integrity;

(2) The need for adequate electricity at a reasonable cost;

(3) The cost-effectiveness of the proposed plant, i.e., whether the proposed plant is the most cost-effective alternative available; and

(4) Conservation measures taken that are reasonably available to the applicant which might mitigate the need for the proposed plant.

Section 403.519 also provides that the Commission may consider such other matters as it deems relevant in making its determination of need.

We have reviewed Pasco County's application in the light of the criteria established by the statute. It is our conclusion that Pasco County's plant meets the relevant criteria for a determination of need under Section 403.519.

Pasco County's 29 MW plant, although small, will make some contribution to electric system reliability and integrity in Peninsular Florida. We project that without the addition of qualifying facilities or power plants before the summer of 1993, peninsular Florida will have total available capacity of 32,318 MWs with an expectant coincident firm peak demand of 25,138 MWs. This equates to a reserve margin of 28 percent. The contribution of Pasco County's facility to this reserve margin would only be one one-hundredth of one percent. Clearly, this is a small amount; yet it is a positive contribution.

Applying the second and third criteria enumerated in Section 403.519 is somewhat problematical. In order to determine whether the facility would help meet the need for adequate electricity at a reasonable cost and whether the proposed plant is the most cost-effective alternative available, it is necessary to consider the cost to Florida ratepayers of the facility's output and the terms and conditions under which that output would be provided to the power grid. Pasco County has not signed a standard offer or negotiated contract with an electric utility for the purchase of its facility's output. Thus, based on the current state of affairs, we would be unable to make the economic judgement necesary to determine if the second and third criteria of reasonable cost and cost-effectiveness have been met. However, Pasco County has made a commitment to the Commission that the facility's output, when the plant becomes operational, will be supplied in accordance with applicable Commission rules and Florida Statutes. This commitment means that the upper limit on the sale of Pasco County's generative output would be the standard offer amount as determined under the Commission's formula or such other formula as may be appropriate under existing rules and statutes at the time a contract with the utility is signed by Pasco County. With this commitment from Pasco County we find that the electricity produced by the solid waste facility will be priced on a cost-effective basis and supplied at reasonable cost, as will be judged by the Commission's standards in effect at the time.

Inasmuch as Pasco County's facility will serve the dual purpose of waste disposal and production of electricity we do not believe that conservation of electrical energy is directly at issue in this case. We, therefore, make no specific finding on this statutory criteria nor do we find it necessary to apply any other specific critieria in making our determination of need.

Now, therefore, in consideration of the above, it is

ORDERED by the Florida Public Service Commission that the petition of Pasco County for a determination of need for its proposed 29 megawatt solid waste-fired generating facility is hereby granted as set forth in the body of this order. It is further

ORDERED that this docket be closed.

By ORDER of the Florida Public Service Commission, this 16th day of June, 1987.

STEVE TRIBBLE, Director
Division of Records and Reporting

(S E A L)

by: Kay Flynn
Chief, Bureau of Records

DES

APPENDIX B

STATE OF FLORIDA
DEPARTMENT OF COMMUNITY AFFAIRS

2740 CENTERVIEW DRIVE • TALLAHASSEE, FLORIDA 32399

BOB MARTINEZ
Governor

THOMAS G. PELHAM
Secretary

February 26, 1988

Mr. Hamilton Oven
Department of Environmental Regulation
Siting Coordination Section
2600 Blairstone Road
Tallahassee, Florida 32399

Dear Mr. Oven:

In accordance with Section 403.507, Florida Statutes, the Department of Community Affairs submits the attached final report on the Pasco County Resource Recovery Facility power plant site certification application. The final report presents the results of our evaluation of the compatibility of the proposed power plant with the State Comprehensive Plan. To summarize the report, we find the proposed power plant to be compatible with the State Comprehensive Plan, provided that certain recommended conditions of certification are met.

If you have any questions regarding this report, please communicate directly with Mr. Paul Darst of this office. His telephone number is 488-4925.

Sincerely,

J. Thomas Beck

J. Thomas Beck, Chief
Bureau of State Planning

JTB/pda

Final Report
on the

PASCO COUNTY RESOURCE RECOVERY FACILITY
POWER PLANT SITE CERTIFICATION APPLICATION

Submitted to:

FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

FEBRUARY 26, 1988

Prepared by:

FLORIDA DEPARTMENT OF COMMUNITY AFFAIRS
BUREAU OF STATE PLANNING
POWER PLANT SITING PROGRAM

INTRODUCTION

On 16 November 1987 Pasco County submitted an application for power plant site certification to the Florida Department of Environmental Regulation (DER). The proposed resource recovery facility will use a mass-burn system to incinerate wastes and produce steam to power its turbine generators. Although the disposal of solid waste is the primary purpose of the facility, the plant will also have an initial gross electrical generating capacity of approximately 22 megawatts, produced from the combustion of the refuse.

Under section 403.506 of the Florida Statutes, no construction of any new electrical power plant of 75 or more megawatts in capacity may be undertaken without first obtaining site certification as provided in the Florida Electrical Power Plant Siting Act (Sections 403.501-403.517, Fla. Stat.). Certification under the act may also be sought for facilities of less than 75 megawatts, at the option of the applicant. Section 403.507 of this act requires the Department of Community Affairs (DCA) to review a power plant siting application for compatibility with the State Comprehensive Plan (SCP) and submit preliminary and final reports to the DER, the lead agency in coordinating the power plant siting certification process. The DCA submitted its preliminary report to the DER on 20 January 1988. This submittal represents the DCA's final report on the Pasco County Resource Recovery Facility.

The purpose of this final report is to present the goals and policies of the SCP which are most directly applicable to the siting of the resource recovery facility and to provide an evaluation of the compatibility of the proposed power plant with these goals and policies and with the SCP as a whole.

STATE COMPREHENSIVE PLAN

The SCP, authorized under the State Comprehensive Planning Act of 1972, is intended to provide "long-range guidance of the

orderly social, economic, and physical growth of the state" (Section 186.007, Fla. Stat.). The current SCP, adopted by the legislature as Chapter 187, Fla. Stat., in 1985, addresses 25 major areas as provided below:

Education
Children
Families
The Elderly
Housing
Health
Public Safety
Water Resources
Coastal and Marine Resources
Natural Systems and Recreational Lands
Air Quality
Cultural and Historical Resources
Hazardous and Nonhazardous Materials and Waste
Energy
Mining
Property Rights
Land Use
Public Facilities
Transportation
Governmental Efficiency
The Economy
Agriculture
Tourism
Employment
Plan Implementation

In the SCP goals have been established for each of the 25 subject areas. These goals are defined in section 186.003, Fla. Stat., as "the long-term end toward which programs and activities are ultimately directed." Each goal contained in the SCP is accompanied by policies which indicate specific ways in which to achieve the particular goal.

METHOD OF REVIEW

Although the Power Plant Siting Act directs the DCA to review site certification applications for compatibility with the SCP, no specific process by which to do so is given, either in the act or in the administrative rule (Chapter 17-17, Florida Administrative Code). To assess the compatibility of the power plant application with the SCP, the DCA employs a method by which the projected impacts of the power plant are compared directly with the goals and policies of the SCP. Comparison of the projected facility impacts with these goals and policies enables the identification of specific consistencies and inconsistencies of the project with the SCP. In this report, a determination of the project's overall compatibility with the SCP is made by assessing these positive and negative impacts of the project.

PROJECT DESCRIPTION

The proposed Pasco County Solid Waste Resource Recovery Facility (PCRRF) is to be located in northwest Pasco County, in sections 24,25, and 26 of Township 24 south, Range 17 east. The 751-acre site lies 2.5 miles north of State Road 52 and 7 miles east of U.S. Highway 19. The nearest incorporated areas, Port Richey and Weeki Wachee, are about 10 miles away.

In addition to the resource recovery facility, the project site will contain stormwater retention ponds, landfill/ashfill areas, an internal roadway system, and open areas. Initially the proposed facility will have a continuous rated capacity of 900

tons a day of municipal solid waste and a gross electrical generating capacity of approximately 22 megawatts. Certification is being sought for an eventual generating capacity of 29 gross megawatts, produced by burning 1200 tons of municipal solid waste a day. The county will contract with a full service vendor to design, construct, and operate the project for a period of 20 years. Construction of the project is projected to begin in August 1988 and it is expected to be in service by August 1991.

APPLICABLE GOALS AND POLICIES OF THE STATE COMPREHENSIVE PLAN

The DCA assessed the compatibility of the proposed power plant with the SCP as a whole. It did so, however, by concentrating on those SCP goals and policies that are directly applicable to the proposed resource recovery project. These goals and policies are within the SCP subject areas of Water Resources, Natural Systems and Recreational Lands, Air Quality, Energy, Hazardous and Nonhazardous Materials and Waste, Land Use, Public Facilities, and Cultural and Historical Resources. The applicable goals and policies associated with these subject areas are presented below, followed by a discussion of the consistency or inconsistency of the PCRRF with these goals and policies.

Water Resources

Policy No.1--Ensure the safety and quality of drinking water supplies and promote the development of reverse osmosis and desalinization technologies for developing water supplies.

Policy No.2--Identify and protect the functions of water recharge areas and provide incentives for their conservation.

Policy No.5--Ensure that existing development is compatible with existing local and regional water supplies.

Policy No.8--Encourage the development of a strict floodplain management program by state and local governments designed to preserve hydrologically significant wetlands and other natural floodplain features.

Policy No.9--Protect aquifers from depletion and contamination through appropriate regulatory programs and through incentives.

Policy No.10--Protect surface and groundwater quality and quantity in the state.

Policy No.11--Promote water conservation as an integral part of water management programs as well as the use and reuse of water of the lowest acceptable quality for the purpose intended.

Policy No.12--Eliminate the discharge of inadequately treated wastewater and stormwater runoff into the waters of the state.

Policy No.13--Identify and develop alternative methods of wastewater treatment, disposal, and reuse of wastewater to reduce degradation of water resources.

Policies Nos.1,2,5,9,and 10 encourage the protection of the quality and quantity of surface and groundwater in Florida. The proposed PCRRF is to be located over a portion of the Floridan aquifer, the major potable water source for Pasco County and, in fact, for the multicounty Southwest Florida Management District (SWFWMD) as a whole. The nearest well field drawing water from the Floridan aquifer is the Spring Hill pumping center, which is located less than 5 miles north of the site. Spring Hill is projected to be withdrawing 10 million gallons a day by 1994. There are a number of small, private wells within a 5-mile radius of the site.

The land surface east and south of this area is characterized by sink holes, ponds, and lakes. Several sink holes and associated wetlands are located in the southwestern part of the site, which is the only part of the site that contains any of the 100-year floodplain. Since this area will not be developed, the proposed resource recovery facility is consistent with policy No. 8.

Although the portion of the site proposed for the resource recovery facility and the ashfill/landfill is free of sink holes and water bodies,the geology and hydrology of this general area increase the potential for impacts of the proposed PCRRF on the quality and quantity of groundwater resources. The site is described as a recharge area to the Floridan aquifer, which is overlain here by a relatively thin layer of sediments, allowing entry into the aquifer of contaminants from a leaking landfill. The aquifer in this area is characterized by relatively high transmissivity, which could make recovery of contamination difficult. It is noted, however, that the proposed resource recovery facility presents less of a threat to groundwater than would a typical sanitary landfill of equivalent capacity.

According to the application, water for the PCRRF will be supplied from the proposed Pasco County Hudson Wastewater Treatment Plant (Hudson WWTP) and from two onsite wells. Cooling water for the plant will be ordinarily entirely supplied by a pipe delivering secondarily treated wastewater from the Hudson WWTP. The backup supply for cooling water will be an onsite well capable of delivering 1.01 million gallons a day. Facility needs for potable water and other domestic uses will be met from a smaller onsite well capable of delivering 60,000 gallons a day. This use of wastewater for cooling water will greatly reduce any potential adverse impact of the PCRRF on potable water supplies.

Wastewater and collected leachate from the resource

recovery facility will be sent back to the Hudson WWTP. The stormwater management system will be designed to meet water management district standards. All stormwater will be retained onsite. Thus there will be no discharge of wastewater or storm water to water bodies or to groundwater, except for the infiltration of retained stormwater into the groundwater. Recharge at the site may be lessened because a minor portion of the site will be covered with impermeable surfaces; however, this is not regarded as a significant impact.

Although the PCRRF will use a modern containment system for leachate from the landfill, there remains some concern that contaminated leachate could enter the groundwater and the Floridan aquifer. If it did, it could well move down the potentiometric gradient toward the Spring Hill pumping center; however, movement of the contaminated plume through the aquifer to the zone of the well field would probably take many years, allowing time for corrective action. It is recommended that a contingency plan to address aquifer contamination be developed by the applicant, subject to approval by the water management district, and that it be incorporated as a condition of certification. For additional conditions of certification needed to protect water resources, the DCA defers to those contained in the certification reports of the DER and the SWFWMD.

The DCA finds that the proposed PCRRF would be consistent with Water Resources policies Nos. 1, 2, and 12, and the water quality portions of policies Nos. 5, 9, and 10, if the following condition of certification were met: The certification holder shall develop plans for the monitoring of surface waters and groundwater in the area of the PCRRF site to the approval and satisfaction of the DER and the SWFWMD, and these plans shall be implemented so as to minimize potential impacts to the quality of surface water and groundwater.

As stated above, the source of cooling system water for the PCRRF will be treated wastewater from the county's proposed Hudson WWTP. The WWTP will provide advanced wastewater treatment to the water it sends to the PCRRF. The cooling system of the facility will utilize a wet cooling tower and will require up to 1 million gallons a day of makeup water. This is considerably more water than would be required by a system utilizing a dry cooling tower or a dry condenser, which, however, are generally more expensive than wet cooling towers. According to the application, it is possible to supplement water demands for the dry scrubbers with cooling water blowdown, thereby reducing raw water requirements. Blowdown can also be used for residue quench. It is recommended that the PCRRF employ such recycling of water.

Because the PCRRF will use wastewater ("water of the lowest acceptable quality for the purpose intended"--SCP) the project is found to be consistent with Water Resources policy No. 13 and the water reuse portion of policy No. 11. Because the facility will use water that has no other significant use, it is not inconsis-

The application states that 13 active burrows were located on-site; however, a site inspection by the GFC revealed 16 additional burrows (state of activity not noted). According to the GFC, the applicant has agreed to relocate the gopher tortoises and their commensals from the area that is to be developed to the 168 acres in the southwest part of the site that will be left undeveloped. The applicant has also agreed to manage this parcel for the benefit of this species of special concern. If the number of tortoises to be relocated exceeds the tortoise carrying capacity of the 168 acres, the additional animals must be relocated to other suitable habitat under the control of the county.

Because (1) the site is located in an area which may be considered to be of limited ecological significance, (2) the probability of threatened or endangered species occurring on the site is low, and (3) the applicant has agreed to relocate and manage the impacted gopher tortoise population, the proposed facility is found to be consistent with the Natural Systems and Recreational Lands policies Nos.1, 3, and 7.

Air Quality

Policy No.1--Improve air quality and maintain the improved level to safeguard human health and prevent damage to the natural environment.

Policy No.2--Ensure that developments and transportation systems are consistent with the maintenance of optimum air quality.

Policy No.3--Reduce sulfur dioxide and nitrogen oxide emissions and mitigate their effects on the natural and human environment.

Policy No.4--Encourage the use of alternative energy resources that do not degrade air quality.

The above policies encourage the maintenance or improvement of air quality. Generally, the resource recovery project will negatively impact air quality in Pasco County. Operation of the facility will increase sulfur dioxide and nitrogen oxide emissions, as well as carbon monoxide and other air pollutants.

The PCRRF will, however, be required to meet state and federal air quality standards, including Prevention of Significant Deterioration (PSD) increments, National Air Attainment Quality Standards (NAAQS), Florida Air Attainment Quality Standards (FAAQS), and New Source Performance Standards (NSPS). Negative impacts on air quality will be reduced because the proposed facility will employ whatever pollution control technology is determined to constitute the Best Available Control Technology (BACT) for the facility. In the site certification application, Pasco County has proposed the use of acid gas dry

tent with the water quantity and water conservation portions of policies Nos.5, 9, 10, and 11. If, however, the facility cannot use the wastewater for cooling and must withdraw groundwater for cooling, then it would not be consistent with these policies, because the cooling system proposed would require larger amounts of water for its cooling system than would an alternative system using dry cooling. Therefore, it is strongly encouraged that the PCRRF use the wastewater for cooling.

Natural Systems and Recreational Lands

Policy No.1--Conserve forests, wetlands, fish, marine life, and wildlife to maintain their environmental, economic, aesthetic, and recreational values.

Policy No.3--Prohibit the destruction of endangered species and protect their habitats.

Policy No.7--Protect and restore the ecological functions of wetlands systems to ensure their long-term environmental, economic and recreational value.

The proposed PCRRF is to be located in an area which is considered to be of limited ecological significance. Much of the site has been used for growing pine trees and has been clearcut several times, and the surrounding areas are characterized by agricultural, low-to-moderate-density residential, and vacant land uses. A Florida Power Corporation transmission line runs approximately north-south somewhat west of the center of the proposed site.

Onsite biological communities are coniferous planted forest, sand pine scrub, sandhill, clearcut-successional, freshwater marsh, and pond. Most of the site is occupied by plantations of slash pine and sand pine. Other species found in these plantations include wax-myrtle, turkey oak, myrtle oak, and saw-palmetto. According to the Florida Game and Fresh Water Fish Commission (GFC), there is a remnant sandhill community of some 80 acres in the northeast part of the site, which would be desirable for retention and management as a natural community. Noting (1) that the sandhill community is one that is disappearing from central Florida and (2) that only 40 percent of the site will be developed, the DCA supports this recommendation to the extent it is feasible. Characteristic species of this community include longleaf pine and turkey oak. Clearcut areas are occuppied by dog fennel, broomsedge, and other common successional species.

According to the site certification application, the species and habitats on this site are ubiquitous and typical of Pasco County and west central Florida. No threatened or endangered plant or animal species have been observed on the site or are known to occur there. The gopher tortoise, a species of special concern according to the GFC, has been identified on the site.

scrubbers and baghouse filters to control particulates generated by the burning of municipal solid waste.

Of additional concern to the DCA is the potential air quality impact from the chlorinated hydrocarbons which can be formed as a result of the incineration of municipal solid waste. Dioxin, a type of chlorinated hydrocarbon, has been shown to cause cancer, birth defects, liver and kidney failure, nervous disorders, and abortions in animals and is suspected of causing the same in humans. Neither the amount of chlorinated hydrocarbons which are produced and emitted from the incineration of municipal solid waste nor the associated risk to human health has been conclusively established by the EPA or the DER. Therefore regulations for permissible levels of chlorinated hydrocarbon emissions have not been adopted by either of these agencies. It has been established, however, that baghouse filters provide better control of sub-micron-sized particulates than do alternative technologies such as electrostatic precipators and that dioxins and heavy metals tend to be adsorbed onto these sub-micron-sized particulates. Therefore some control of dioxins should be provided by the baghouse filters.

Although elimination of emissions is technologically impossible, the employment by the PCRRF of acid gas dry scrubber and baghouse filter technology provides the best control of emissions of both hydrochloric acid mist and dioxins and contributes to minimization of air pollution impacts. Even with this pollution control technology, the proposed facility will still have a negative impact on air quality in Pasco County. It is therefore judged to be inconsistent with the above policies; however, it is recognized that the proposed employment of the dry scrubbers and baghouse filters will considerably reduce the inconsistency of the project with the above policies.

Energy

Goal--Florida shall reduce its energy requirements through enhanced conservation and efficiency measures in all end-use sectors, while at the same time promoting an increased use of renewable energy resources.

Policy No.5--Reduce the need for new power plants by encouraging end-use efficiency, reducing peak demand, and using cost-effective alternatives.

Policy No.9--Promote the use and development of renewable energy resources.

The main function of the resource recovery facility is to dispose of solid waste. The electrical power produced is an added benefit of the project, which can be considered a cost-effective alternative in reducing the need for new power plants. The energy produced by the PCRRF is equivalent to that produced by burning 352,000 barrels of oil or 113,000 tons of coal a year.

The fuel which will be used to generate this electrical energy is processable municipal solid waste, most of which--paper, cardboard, garden wastes, food wastes--can be regarded as a renewable energy resource. Therefore the proposed resource recovery facility is found to be consistent with the Energy goal and policies Nos. 5 and 9.

Hazardous and Nonhazardous Materials and Wastes

Goal--All solid waste, including hazardous waste, wastewater, and all hazardous materials, shall be properly managed, and the use of landfills shall be eventually eliminated.

Policy No.1--By 1995, reduce the volume of nonhazardous solid waste disposed of in landfills to 55 percent of the 1985 volume.

Policy No.7--Encourage the research, development, and implementation of recycling, resource recovery, energy recovery, and other methods of using garbage, trash, sewage, slime, sludge, hazardous waste, and other waste.

Policy No.9--Identify, develop, and encourage environmentally sound wastewater treatment and disposal methods.

The proposed resource recovery facility is designed to reduce solid waste to 30 percent of its original volume. The need for landfills will be reduced accordingly, and therefore the project is found to be consistent with policy No. 1 and the landfill use portion of the above goal.

Policy No. 7 encourages the implementation of recycling, resource recovery, energy recovery, and other methods of using waste materials. The Pasco County Comprehensive Plan lists as an objective the involvement of county residents in recycling efforts. The proposed resource recovery facility's recovery of resources, or recycling, will, however, apparently be limited to ferrous materials. It is possible to recover more resources than this from municipal solid waste; nevertheless, on balance, the PCRRF is considered to be consistent with policy No. 7.

Wastewater from the proposed PCRRF will be sent to the proposed Pasco County Hudson WWTP. According to the site certification application, the WWTP will provide advanced wastewater treatment to the wastewater it recieves and will meet all applicable state, federal, and treatment facility discharge regulations and water quality standards. Therefore, the proposed resource recovery facility is found to be consistent with the wastewater management portion of the above goal and policy No.9.

According to the PCRRF site certification application, little if any hazardous waste will enter or be accepted at the

facility. The procedures described in the application to prevent hazardous waste from entering the waste process stream include the following:

1.Users of the resource recovery facility will be informed that hazardous wastes will not be accepted.

2.Signs will be posted at the weigh station stating what kinds of wastes are accepted.

3.Weigh station personnel and bunker crane operators will routinely inspect the wastes received.

In addition to these proposed measures, the DCA recommends that (1) inspecting personnel at the resource recovery facility receive training on the identification of hazardous wastes and (2) operators of delivery vehicles be asked to identify the source of the solid waste delivered to the facility weigh station so that deliveries with a high probability for containing pathological wastes or hazardous wastes may be inspected by facility personnel.

One other issue treated by the certification application deserves consideration here: the loss of wastewater from the cooling tower to the atmosphere as "drift." The particular hazard posed is the possibility that bacteria and viruses present in the wastewater will be dispersed as drift over a wide area and thereby cause diseases in humans and livestock. The DCA believes that the possibility of this happening is remote. The Hudson WWTP will provide secondary wastewater treatment followed by filtration and chlorination, which has been shown to inactivate bacteria and viruses. The drift will be subject to great dilution in the atmosphere and will substantially settle out before reaching a residential area. The applicant has proposed a monitoring program consisting of daily testing of WWTP effluent for bacteria and viruses for one week during compliance testing. Afterwards, the cooling water will be tested monthly during the first year of resource recovery facility operation. A more frequent testing--weekly or biweekly--during the first year would provide a greater safeguard to public health and is recommended by the DCA.

Because Pasco County has developed what seem to be proper and effective procedures for managing hazardous wastes at the resource recovery facility, the proposed PCRRF is found to be consistent with the hazardous waste and materials portion of the above goal.

Land Use

Goal--In recognition of the importance of preserving the natural resources and enhancing the quality of life of the state, development shall be directed to those areas which have in place, or have agreements to provide, the land and water resources, fiscal abilities, and the service capacity to

accommodate growth in an environmentally acceptable manner.

Policy No. 6--Consider, in land use planning and regulation, the impact of land use on water quality and quantity, the availability of land, water, and other natural resources to meet demands, and the potential for flooding.

The current Pasco County comprehensive plan does not contain a land-use map and therefore does not identify a recommended land use for the site. According to the certification application, the new county comprehensive plan will contain a land-use map, which will identify the site for resource recovery. The zoning classification is Agricultural; any development by the county is expressly exempted from the county zoning ordinance. Therefore, the PCRRF is allowable at this site without changing the existing zoning.

The site is bordered on the north by low-density rural and vacant agricultural land uses. Land uses to the east are vacant agricultural and vegetated cover. South of the site are wetlands, vacant grazeland, and a low-density, single-family residential area. The nearest residence is 2000 feet from the resource recovery facility. To the west the land uses are low-density residential, some industrial and commercial, two "pockets" of high-density, multi-family housing, and vacant grazeland. The closest residences here are about 4000 feet northwest of the site. Five existing and proposed schools occur between 1 and 5 miles from the site. Shady Hills County Park is located about 500 feet north of the site and about 1 mile north of the emissions stack, and the proposed Concourse County Park will be located about 2.5 miles south of the site. The population within a 5-mile radius of the site is estimated at 18,600 (1985 estimate). Residential growth in the area is expected to be average for Pasco County, one of the faster-growing counties in Florida. Industrial and commercial growth is expected to continue to be slow. Although a recource recovery facility might not ordinarily be considered to be consistent with the agricultural and residential land uses in this area, the design and placement of the facility--on a large site allowing much buffer space--are such that it should not significantly degrade the character of the surrounding area.

In reference to policy No.6, the DCA notes that the PCRRF has been designed to have minimal impacts on water quality and quantity. See discussion under "Water Resources." The PCRRF will reduce the need for landfills, which require greater amounts of land than do resource recovery facilities and have a greater potential to pollute groundwater. The PCRRF should have an insignificant impact on flooding on or off the site. A portion of the 100-year floodplain extends into the southwest portion of the site, which will not be developed, whereas the resource recovery facility and the ashfill/landfill are located above the 100-year floodplain. The drainage system is designed to keep all stormwater runoff onsite.

The potential impacts of the PCRRF on air and water quality have been discussed previously, as have the county's plans for preventing or mitigating these impacts. Other potential impacts of the proposed PCRRF include noise, increased traffic during construction, and an aesthetic impact resulting from the 275-foot height of the emission stack.

According to the certification application, noise caused by construction of the proposed faciity will be of short duration and will have only a slight adverse impact on the surrounding area because of the site's rural setting and the moderating effect of the vegetation onsite. The incremental noise increase (beyond background noise) produced during operation of the facility is predicted to be below discernible levels and within county noise standards for industrial facilities.

The certification application states that by the year 2010, at the time of peak activity,the PCRRF will generate 462 vehicle trips a day. This will increase the traffic on local roads; however, this additional traffic is not great enough to be regarded by the DCA as a substantial impact. At the height of the construction period, an average of approximately 210 vehicles will be added to local roadways by commuting construction workers during peak traffic periods in the morning and afternoon. This is more of an impact than that which will be incurred during operation of the resource recovery facility, but it is temporary and is also not regarded as a substantial impact.

The emissions stack will be 275 feet high and the resource recovery facility building 110 feet high. The certification application states that the building will not be visible from most observation points around the site. The stack will be more visible. To diminish the visibility of these large structures, as well as to reduce any noise impacts, the DCA recommends that a buffer strip of trees be maintained or planted around the boundary of the site. If this is done, the proposed PCRRF would be consistent with the Land Use goal and policy No. 6.

Public Facilities

Goal--Florida shall protect the substantial investments in public facilities that already exist, and shall plan for and finance new facilities to serve residents in a timely, orderly, and efficient manner.

Policy No.1--Provide incentives for developing land in a way that maximizes the uses of existing public facilities.

The portion of this goal which encourages protection of investments of existing public facilities is not particularly relevant to the PCRRF because no other such facilities are currently in operation in Pasco County. The planning of the project may be considered timely because the county's present means of disposing of solid waste will no longer be adequate

within a few years. The planning of the facility may be considered efficient in that the electric power generated by the facility will replace the need for about 352,000 barrels of oil each year. The Florida Public Service Commission has determined that the production of electricity by the resource recovery facility will contribute to the reliability and integrity of the electrical system of peninsular Florida. As mentioned, the proposed PCRRF will use wastewater from the Pasco County Hudson WWTP as a source of cooling water. This use of wastewater may be said to maximize the use of an "existing" public facility (the Hudson WWTP should be operating before the PCRRF). Pasco County will pay for the eventual decommissioning of the resource recovery facility by means of a closure account funded through garbage tipping fees. All of the aforementioned aspects of the project contribute to its consistency with the above goal and with policy No.1.

Cultural and Historical Resources

Policy No.3--Ensure the identification, evaluation, and protection of archaeological folk heritage and historic resources properties of the state's diverse ethnic population.

Policy No.6--Ensure that historic resources are taken into consideration in the planning of all capital programs and projects at all levels of government, and that such programs and projects are carried out in a manner which recognizes the preservation of historic resources.

A review of the development site by the Florida Department of State, Division of Historical Resources, has indicated that no archaeological or historical sites are recorded for the project area and that it is highly unlikely any significant, unrecorded sites exist in the vicinity. Through the certification process, Pasco County has considered and sought to identify historic resources affected by the site development. Therefore, the proposed project is found to be consistent with policies No.3 and No.6.

CONCLUSION

The Power Plant Siting Act requires that DCA evaluate the compatibility of electrical power plants with the State Comprehensive Plan (SCP). The State Comprehensive Planning Act states that "the plan shall be construed and applied as a whole, and no specific goal or policy in the plan shall be construed or applied in isolation from the other goals or policies in the plan." Consequently, in this report, the compatibility of the project with the SCP is assessed in terms of its overall compatibility with the SCP rather than its compatibility with specific goals and policies.

In summation, the Department of Community Affairs finds that the proposed Pasco County Resource Recovery Facility would be

consistent with the following SCP policies and goals:

Water Resources: Policies Nos. 8 and 13 and the water reuse portion of policy No. 11.

Natural Systems and Recreational Lands: Policy Nos. 1, 3, and 7.

Energy: Goal, Policies Nos. 5 and 9.

Hazardous and Non-Hazardous Materials and Waste: Goal, Policies Nos. 1, 7, and 9.

Public Facilities: Goal, Policy No. 1.

Cultural and Historical Resources: Policy Nos. 3 and 6.

The DCA finds that the proposed project would be consistent with the following policies if the proposed conditions of certification were met:

Water Resources: Policies Nos. 1, 2, and 12 and the water quality portions of policies Nos. 5, 9, and 10.

Land Use: Goal, Policy No.6

The DCA finds that the proposed project would be inconsistent with the following policies:

Air Quality: Policies Nos. 1, 2,3, and 4.

The DCA considered the following issues important in determining overall compatibility with the SCP:

1. The proposed PCRRF is to be located over portions of the Floridan aquifer, the major potable water source for Pasco County. The site is said to be a recharge area for the Floridan aquifer. The aquifer is poorly confined in this area, having only a thin (5 to 15 feet) layer of clay above its limestones, and is therefore vulnerable to contamination from water-borne pollutants--for example, the leachate from a solid waste landfill. Once in the aquifer, a contaminated plume could spread into adjacent portions of the aquifer. Normally, such movement through the aquifer is very slow; however, the Floridan aquifer in this area has, according to the SWFWMD, high transmissivity, and therefore a contaminated plume could spread somewhat faster through this part of the aquifer (though still slow by surface-water standards). One region of the aquifer to which a hypothetical plume of contamination could spread is that which feeds the Spring Hill pumping center. Spring Hill is located within 5 miles of the site and,potentiometrically, is down-gradient from it--that is, water within the aquifer moves from the area of the PCRRF toward the area of the Spring Hill pumping center. Then, too, western Pasco County is subject to sinkhole development,

and, in fact, the area south and east of the site is dotted with wet sinkholes, ponds, and lakes. These geologic conditions increase the potential for impacts of the proposed PCRRF on the quality of groundwater resources.

On the other hand, the landfill of the PCRRF is designed to prevent leachate leakage and to detect it if it should occur. The resource recovery facility is a substitute for a sanitary landfill, which typically poses a greater threat to groundwater resources than does a resource recovery facility. The landfill of the PCRRF will receive ash from the burning process and unprocessible solid waste, neither of which is as likely to have a dangerous leachate as the processible solid waste found in a sanitary landfill.

2. Of particular concern to the DCA is the potential impact on human health from the chlorinated hydrocarbons which can be formed as a result of the incineration of municipal solid waste. Policy No. 1 within the Air Quality element of the SCP states: "Improve air quality and maintain the improved level to safeguard human health and prevent damage to the natural environment." Policy No.5 states:"Ensure, at a minimum, that power plant fuel comversion does not result in higher levels of air pollution." Neither the United States Environmental Protection Agency nor the DER have established standards for permissible levels of chlorinated hydrocarbon emissions. It is the opinion of the DCA that, until standards of permissible levels of chlorinated hydrocarbon emissions have been established for the State of Florida, mass-burn facilities such as the PCRRF should be required to install pollution control technology to minimize emissions of chlorinated hydrocarbons, in order to be consistent with the aforementioned SCP air quality policies. As noted under the "Air Quality" discussion, the PCRRF will have a suitable air pollution control technology.

3. In its analysis, the DCA considered the alternatives to the construction of a resource recovery facility in Pasco County. One such alternative would be to increase the number of landfills in Pasco County. Pasco County is increasingly becoming more urbanized and acceptable landfill sites are becoming increasingly difficult to locate and expensive to operate. Sanitary landfills require greater amounts of land than do resource recovery facilities, can be unsightly and noisome, and may lower the value of neighboring properties. Through combustion, the resource recovery facility will reduce the volume of solid waste disposed of in its landfill by approximately 70 percent, thus reducing the need for siting and developing new landfills. Another alternative to the resource recovery project's secondary function as a generator of electricity would be to (slightly) accelerate construction of a new base-load electrical generating station to serve central Florida. These large power plants are very expensive and often have significant environmental impacts. Certification and construction of the resource recovery facility will help postpone the date at which a new base-load power plant will be needed.

4. The development and use of resource and energy recovery facilities is a policy of the SCP. The reduction of the volume of solid wastes and the utilization of renewable energy sources are functions of the project which are clearly consistent with, and encouraged by, the policies and goals of the SCP.

In conclusion, the DCA considers that the Pasco County Resource Recovery Facility would be compatible overall with the State Comprehensive Plan if the following recommended conditions of certification were met:

Condition A--The certification holder shall develop plans for the monitoring of groundwater in the area of the PCRRF site to the approval and satisfaction of the DER and the SWFWMD, and these plans shall be implemented so as to minimize potential negative impacts to groundwater. The certification holder shall also develop a contingency plan for the mitigation of any leachate leakage that is detected. This condition of certification is intended to help make the proposed resource recovery project consistent with SCP Water Resources policies Nos. 1, 5, 9, 10, and 12.

Condition B--In order to minimize noise and aesthetic impacts from the facility, the certification holder shall maintain or install a buffer of trees along the boundaries of the site. The buffer shall be of a height and width suitable for these purposes. This condition of certification is intended to moderate the aesthetic and noise impacts of the facility.

APPENDIX C

Southwest Florida Water Management District

MICHAEL ZAGORAC, JR., Chairman, Belleair WALTER H. HARKALA, Vice Chairman, Plant City
ANNE M. BISHOPRIC, Secretary, Sarasota HORACE F. HERNDON, Treasurer, Lake Wales
ROY C. HARRELL, JR., St. Petersburg ROBERT L. BRAMSON, M.D., Tampa
WILLIAM H. WILCOX, Ph.D., Port Charlotte MARY ANN HOGAN, Brooksville CHARLES A. BLACK, Crystal River

GARY W. KUHL, Executive Director DANIEL P. FERNANDEZ, General Counsel
WILLIAM K. HENNESSY, PETER G. HUBBELL, JERRY L. SIMPSON, Deputy Executive Directors

February 25, 1988

Mr. Hamilton S. Oven, Jr., Administrator
Siting Coordination Section
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Subject: In Re: Application for Power Plant Site Certification of Pasco County Solid Waste Resource Recovery Facility
DOAH Case No. 87-5337

Dear Mr. Oven:

As you may know, the supplementary information requested by the Southwest Florida Water Management District for review of those matters within the District's jurisdiction on Pasco County's Solid Waste Resource Recovery Facility application was received on January 27, 1988.

Accordingly, enclosed are reports by the District on consumptive use of water and surface water management at the proposed facility required by Section 403.507(1)(c), Florida Statutes, and Rule 17-17.091(2)(e), Florida Administrative Code. Also enclosed is the District's report on the ashfill/landfill at the proposed facility required by Section 403.707(4), Florida Statutes, and Rule 17-7.07(4), Florida Administrative Code. These reports were approved by the District Governing Board on February 23, 1988, as agreed in the Joint Stipulation and Motion to Expedite in the above-referenced case and Kent Zaiser's letter to David S. Dee dated January 8, 1988.

Please advise us if you have any questions concerning the reports. Also, please provide us with a copy of the Department of Environmental Regulation's written analysis of Pasco County's

application, including analysis of the District's reports, when complete.

Sincerely,

Kent A. Zaiser
Deputy General Counsel

Edward B. Helvenston
Senior Attorney

KAZ:lc
Enclosures: 3
cc: David S. Dee (with enclosures)
Richard T. Donelan, Jr. (with enclosures)
James Benjamin Harrill (with enclosures)
C. Laurence Keesey (with enclosures)
Katie Nichols (with enclosures)

SOUTHWEST FLORIDA WATER
MANAGEMENT DISTRICT
BROOKSVILLE PERMITTING DIVISION

STAFF REPORT
CONSUMPTIVE USE PERMIT APPLICATION

Application No. 209087
Pasco County, Florida
Solid Waste Resource Recovery Facility

I. ABSTRACT

		Quantities Requested	Quantities Proposed
AVERAGE DAY	N/A	940,000 gpd	720,000 gpd
CONSUMPTIVE USE	N/A	N/A	703,000 gpd
MAXIMUM DAY	N/A	1,150,000 gpd	1,150,000 gpd

This is a proposed resource recovery and electrical power generation facility for Pasco County. Boiler make-up and potable water will be supplied by a proposed 4-inch well. Interim and/or emergency cooling water is to be supplied by a proposed 10-inch well. Permanent primary cooling water source supply is a proposed regional waste water treatment plant. All waste from this facility is to be returned to the proposed regional waste water treatment plant for disposal.

Special Conditions:

1. The facility operator attests that all statements made for this authorization are true and accurate and based upon the best information available, and that all conditions set forth in this authorization will be complied with. If any of the statements and or supporting data are found to be untrue and inaccurate, or if the facility operator fails to comply with all of the conditions set forth herein, then authorization for the facility may be revoked following notice and hearing.

2. Authorization is predicated upon the assertion by the applicant that the use of water applied for and granted is and continues to be reasonable and beneficial use as defined in Section 373.019(5), Florida Statutes (F.S.), is and continues to be consistent with the public interest, and will not interfere with any legal use of water existing on the date authorization is granted.

3. In granting authorization, the District has, by regulation, reserved from use by applicant, water in such locations and quantities, for such seasons of the year, as it determines may be required for the protection of fish and wildlife and the public health and safety. Such reservation are subject to periodic review and revision in light of changed conditions.

4. Authorization is for a combined average annual withdrawal of 720,000 gallons of water per day with a maximum combined withdrawal rate not to exceed 1,150,000 gallons during a single day. Withdrawals authorized are shown in the table below.

5.

USER I.D.	DISTRICT I.D.	WITHDRAWAL POINT LATITUDE	WITHDRAWAL POINT LONGITUDE	GALLONS PER DAY AVERAGE	GALLONS PER DAY MAXIMUM
1	1	282157	823430	677,000	1,010,000
2	2	282157	823429	43,000	60,000

6. In the event the District declares that a water shortage exists pursuant to Rule 40D-2.511, Florida Administrative Code (F.A.C.), the District may alter, modify or declare inactive all or parts of this authorization for water use.

7. The District reserves the right, at any reasonable time, to collect water samples from any withdrawal for this facility. The District may require the facility operator to submit samples in mailable containers provided by the District.

8. An authorized District representative may, at any reasonable time, enter the property, inspect the facility, and make environmental or hydrologic assessments. The facility operator shall either accompany District staff onto the property or make provision for access onto the property.

9. If the District, after consultation with the facility operator determines that significant water quantity or quality changes, or adverse environmental impacts are occurring, the District, upon notice and hearing, may reconsider the allowed withdrawal quantities.

10. The District may, at a future date, establish minimum water levels in aquifers and lakes, and minimum rates of flow in streams, which may require the facility operator to limit withdrawal from these sources at times when water levels or flows fall below the established minimums.

11. Water conservation shall be practiced by the facility operator to increase the efficiency of transport, application and use, to decrease waste and to minimize runoff from the property. At such time as the District adopts specific conservation criteria for the facility's water use classification, the facility operator will be subject to such criteria upon notice and after a reasonable period for compliance.

12. The following points, District Withdrawal No(s). 1,2 and supply from the regional waste water treatment plant, shall be equipped with totalizing flow meters or other flow measuring devices as approved in writing by the Director, Resource Regulation Department. Such devices shall have and maintain an accuracy within five percent (5%) of the actual flow. Those designated withdrawal points not equipped with such devices on the date the consumptive use is authorized shall be so equipped within one hundred twenty (120) days of the authorization date or upon completion of construction of

the withdrawal facility, unless an extension is approved in writing by District staff.

13. Total flow from each metered source shall be recorded on a monthly basis and reported to the District on District forms on or before the tenth (10th) day of the following month.

    Reports shall be addressed to:

    Permits Data Collection
    Processing and Records Section
    Southwest Florida Water Management District
    2379 Broad Street
    Brooksville, Florida 34609-6899

14. Water quality samples shall be collected and analyzed as indicated in the table below. Reports of the analyses shall be submitted to the District (on District forms) on or before the tenth (10th) day of the following month. The parameters and frequency of sampling and analysis may be modified by District staff as necessary to ensure the protection of the resource.

District W/D No(s).	Parameters	Sampling Frequency
1 and 2	Chloride	Monthly
1 and 2	Sulfate	Monthly
1 and 2	Total Dissolved Solids	Monthly

Analyses shall be performed according to procedures outlined in the current edition of Standard Methods for the Examination of Water and Wastewater by American Public Health Association-American Water Works Association-Water Pollution Control Federation or Methods for Chemical Analyses of Water and Wastes by the United States Environmental Protection Agency.

Reports shall be addressed to:

Permits Data Collection
Processing and Records Section
Southwest Florida Water Management District
2379 Broad Street
Brooksville, Florida 34609-6899

II. BACKGROUND

A.	Applicant:	Pasco County, Florida Solid Waste Resource Recovery Facility
B.	Application Received Date:	December 4, 1987
C.	Application Complete:	January 28, 1988
D.	Type of Water Use:	Power Generation

E. Location of Property: Pasco County, on Hayes road 2 miles north of State Road 52 approximately 11 miles northeast of New Port Richey (see location map).

F. Property Description: 750.6 Acres Owned

G. Sources:

Well(s)

District W/D No.	Diameter (inches)	Total Depth / Casing Depth (feet)	Use(s)**
1(P)	10	250 / UNK	IN
2(P)	4	100 / UNK	IN

(P) denotes a proposed source
**AG=Agricultural, PS=Public Supply, IN=Industrial, AUG=Augmentation

H. Consumptive Use/Acre Total: 936 gpd

III. EVALUATION

A. WATER USE

The requested average day withdrawal is 940,000 gpd. The evaluation is based upon the assumption that all water needs (cooling, process and potable) will be supplied by the two on-site wells without the use of waste water treatment plant effluent. The recommended average day withdrawal, 720,000 gpd, is derived from the total plant water balance of 500 gpm to which the applicant's engineer agrees. The recommended maximum day withdrawal, 1,150,000 gpd, is based upon a pump capacity of 800 gpm. The consumptive use is based upon the total plant water balance of 488 gpm consumptively used.

B. HYDROLOGY

The Floridan aquifer parameters for the area are:

Transmissivity = 40,000 Ft^2/day
Leakance = 0.0005 day^{-1}

Data Source: Leggette, Brashears and Graham, Inc., June, 1978.

C. MODELING

The Jacob/Hantush analytical model was used to predict drawdown in the potentiometric surface. Based on the proposed average quantity at steady-state conditions, predicted drawdown is less than two (2) feet at all property boundaries.

D. RULE CRITERIA

The facilities meet all permitting criteria of Rule 40D-2.301, F.A.C.

IV. REQUEST(S) FOR PROPOSED AGENCY ACTION

No request(s) for notice have been received at the District, to date, after the published notice of this application.

V. REFERENCES

Leggette, Brashears and Graham, Inc., June, 1978, Development and Testing Program - Phase I, Cross Bar Ranch Wellfield, Pasco County, Florida, Status Report (SWFWMD CUP No. 204290).

VI. VISUAL DISPLAYS

Location Map

VII. RECOMMENDATION

Forwarding of this report to the Florida Department of Environmental Regulation and approval by the Electrical Power Plant Siting Board of the consumptive use described subject to the proposed conditions herein.

VIII. PROPOSED PERMIT

A permit is not applicable as the proposed facility is covered under the Electrical Power Plant Siting Act, Sections 403.501 through 403.519, F.S., and Chapter 17-17, F.A.C.

Robert G. Perry 2/10/88

Prepared by Robert G. Perry

Surface Water Permitting Staff Report

Project Name:	Pasco County Resource Recovery Facility
File No.:	402861
Permitting Division:	Brooksville
Evaluator(s):	Michael J. Shostak/Dana L. West

I. BACKGROUND

A.	Applicant:	Ann Hildebrand, Chairman, Pasco County Board of County Commissioners
B.	Land Use:	Solid Waste Disposal
C.	Location:	Pasco County; Hays Road, 2.5 miles north of S.R. 52, Sections 24, 25 & 26, Township 24S, Range 17E
D.	Date Received:	December 4, 1987
E.	Date Completed:	January 27, 1988

II. SUMMARY

This application is for a power plant siting certification of a Surface Water Management System to serve a proposed 29 MW capacity, mass-burn resource recovery facility and a Class I Landfill for disposal of ash from this facility, as well as unprocessed Class I waste. The total land area owned by Pasco County for this project is 751 acres, 307.7 acres of which will be occupied by the resource recovery facility, the landfill/ashfill area, and surface water management facilities. The site is located in northwest Pasco County on Hays Road, approximately 2.5 miles north of State Highway 52.

The project will consist of the construction of the 52.1 acre resource recovery facility and the 207.8 acre landfill/ashfill area. Four (4) detention ponds with a total area of 47.8 acres have been designed to attenuate the post-development peak discharge rate of runoff from a total of 351.3 acres, which includes 43.6 acres of contributing off-site area. The project engineer used a 25 year-24 hour rainfall event of 9.3 inches to calculate both existing and post-development peak discharge rates. To satisfy water quality requirements of Chapter 17-25, F.A.C., the volume of stormwater runoff from the first one-inch of rainfall is retained in the ponds and infiltrated within 72 hours. Construction drawings, calculations, and other information have been submitted to show that the proposed development is in compliance with Chapters 40D-4 and 17-25, F.A.C. Approximately 16.25 acres of isolated wetlands exist within the project area. Project construction will incur no wetland impacts. No objections to this project have been received to date at the District office.

III. RECOMMENDATION

X Approval

____ Denial

STAFF REPORT
SURFACE WATER PERMITTING

File No. 402861
Power Plant Siting Certification
Pasco County Resource Recovery Facility

I. ABSTRACT

This application is for a power plant siting certification of a Surface Water Management System to serve a proposed 29 MW capacity, mass-burn resource recovery facility and a Class I Landfill for disposal of ash from this facility, as well as unprocessed Class I waste. The total land area owned by Pasco County for this project is 751 acres, 307.7 acres of which will be occupied by the resource recovery facility, the landfill/ashfill area, and surface water management facilities. The site is located in northwest Pasco County on Hays Road, approximately 2.5 miles north of State Highway 52.

The project will consist of the construction of the 52.1 acre resource recovery facility and the 207.8 acre landfill/ashfill area. Four (4) detention ponds with a total area of 47.8 acres have been designed to attenuate the post-development peak discharge rate of runoff from a total of 351.3 acres, which includes 43.6 acres of contributing off-site area. The project engineer used a 25 year-24 hour rainfall event of 9.3 inches to calculate both existing and post-development peak discharge rates. To satisfy water quality requirements of Chapter 17-25, F.A.C., the volume of stormwater runoff from the first one-inch of rainfall is retained in the ponds and infiltrated within 72 hours. Construction drawings, calculations, and other information have been submitted to show that the proposed development is in compliance with Chapters 40D-4 and 17-25, F.A.C. Approximately 16.25 acres of isolated wetlands exist within the project area. Project construction will incur no wetland impacts. No objections to this project have been received to date at the District office. Staff recommends approval of the Surface Water Management System for the resource recovery project site.

II. BACKGROUND

A.	Applicant:	Ann Hildebrand, Chairman, Pasco County Board of County Commissioners
B.	Date application received:	December 4, 1987
C.	Date application complete:	January 27, 1988
D.	Type of land use:	Solid Waste Disposal

E. Location of property: Pasco County; Hays Road, 2.5 miles north of S.R. 52, Sections 24, 25 & 26, Township 24S, Range 17E

III. EXISTING ADJACENT FACILITIES

The project site encompasses primarily a pine plantation with several isolated wetlands. There are no buildings on the site at the present time. Existing topography exhibits a drainage basin divide that generally runs east-west through the central portion of the site. Little surface runoff leaves the site due to the presence of very porous sandy soils and the location of the wetland depressional areas.

Adjoining properties east and west of the site consist primarily of vacant grassland and small cattle farms. A portion of the west boundary abuts the county-owned site for a proposed Class III landfill which is to be permitted separately. Adjoining properties to the north and south are rural areas containing pockets of low density, residential areas. Properties to the southeast were once pine plantations. Florida Power Corporation's Hudson Substation occupies 6.2 acres of land abutting the south property line and the power line transmission right-of-way which traverses the site.

IV. PROPOSED FACILITIES

The proposed development will occupy 307.7 of the total 751 acres, or about 41 percent of the total land area. For design purposes and proposed phasing of the project, the developed area was divided into four drainage basins (see Exhibit "B"). Basins 1, 2, and 3 consist of the landfill/ashfill area and the respective detention ponds only. Runoff from each of these three basins will flow through grassed swales beginning at the base of the landfill/ashfill slope, under a perimeter road through culverts, and to a detention pond for storage and treatment. Basin 4 consists of three sub-basins. Sub-basin 41 consists of the landfill/ashfill area only. Runoff from this sub-basin will also flow through a grassed swale, then under a perimeter road through culverts to detention pond 4. Sub-basin 42 consists of the resource recovery site itself and contributing off-site inflow from 43.6 acres. Runoff from this sub-basin will enter one of two grassed swales and flow through culverts to detention pond 4. The final design of the resource recovery facility itself is conceptual at this time and will be performed by the contractor or his engineer at a future date. As the exact amount of impervious surface is unknown at this time, it is not anticipated to be any greater than 80 percent. Therefore, a weighted SCS curve number of 63.81 has been calculated for sub-basin 42 to more closely approximate the actual post development condition. It is also assumed that an inlet and pipe collection system will be utilized in this area which should reduce the T_c value to an assumed approximation of 15 min. The proposed development will not alter existing runoff flow patterns in the area.

V. EVALUATION

A. Water Quantity

1. Allowable Discharge

Pre-development, allowable discharge rates were calculated for a 25-year, 24-hour storm event of 9.3 inches. The SCS Unit Hydrograph Package was used to model each basin area in both the pre- and post-development conditions. The Interconnected Pond Routing program was utilized to evaluate post-development flow patterns and rates of discharge (refer to Table 1 for details). Detention Ponds 1 and 2 provide enough capacity to hold the entire volume of runoff resulting from design storm event. Detention ponds 3 and 4 will discharge at a rate substantially lower than in the pre-developed condition, maintaining existing runoff patterns.

2. Flood Protection

The vast majority of the site lies in Zone C of the applicable Federal Flood Insurance Rate Map. A small portion of the southwest area of the site lies in Zone A. The design of Retention Pond 4 was modified to avoid an isolated wetland, which is part of the 100-year flood plain. Hence, no net encroachment due to construction occurs in the 100-year flood plain. This 100-year flood plain also encompassed some of the isolated wetlands within and west of the Florida Power Corporation easement. No construction activities will occur in this area either.

B. Water Quality

The Surface Water Management System has been designed to also meet the requirements of Chapter 17-25, F.A.C. Submitted calculations indicate that the runoff resulting from the first one inch of rainfall will infiltrate within 72 hours.

C. Environmental Considerations

Approximately 16.25 acres of isolated wetlands exist on the 751 acre project site. Project construction is confined to 307.7 acres of this area. Only one of the wetlands, approximately 2.40 acres in size, lies within this construction boundary. A wetland delineation line was verified by District staff. The design of the project has been modified to avoid wetland impacts. A fifteen foot buffer zone has been designated around the wetland and stacked hay bales will be located above this zone to minimize impacts of turbidity and erosion during construction. (See Table 2).

D. Land Use Information

The Pasco County Zoning Administration has determined that the selected site for the resource recovery facility and landfill/ashfill is exempt from the provisions of the county's zoning ordinance. The Pasco County Planning Director has determined that the proposed facility is consistent with the goals and objectives of the Pasco County Comprehensive Land Use Plan.

E. Utilities

All plant process cooling water will be drawn from the proposed Hudson Sub-regional Wastewater Treatment Plant which will be located about six (6) miles to the west. This plant is designed and will be constructed to Class 1 reliability standards. The County, in its agreement with the selected resource recovery vendor, will be responsible for providing wastewater disposal. Treated wastewater effluent will be used for plant cooling water, ash quench makeup water, the air pollution control system, and for dust control over the landfill/ashfill area. All site effluent will be returned to the wastewater treatment plant. A well system will be provided on site to provide boiler water makeup and site potable water. A thorough description of this system is provided in the consumptive use staff report.

F. Systems Operations

The maintenance and operation of the proposed Surface Water Management System will be by the Pasco County Utilities Division, as certified by Mr. George Ellsworth, Resource Recovery Manager.

VI. RECOMMENDATION

Staff recommends approval of this application subject to the attached special conditions.

VII. SPECIAL CONDITIONS

1. Except as authorized by this recommendation, any further land development, wetlands disturbance or other construction within the total land area of this site will require additional approval in accordance with Chapters 40D-4 and 17-25, F.A.C.

2. The applicant shall assure that erosion and sediment control measures required by Rule 17-25.025(7) shall be effectively implemented continuously from beginning of project construction until completion. Project detention/retention ponds and discharge control structures which are to be constructed as part of the project should be initially built and maintained continuously during project construction to avoid adverse impact to receiving waters or off site.

3. Any existing wells in the path of construction shall be properly plugged and abandoned by a licensed water well contractor in accordance with Chapter 40D-3 and Rule 17-21.10(4), F.A.C.

4. All retention/detention pond side slopes, shall be sodded, and staked as necessary, to prevent erosion.

5. By issuance of this recommendation, the District, its employees and representatives assume no responsibility and/or liability in regard to either the design, construction or performance of the proposed facilities.

6. Prior to initiating construction, the final resource recovery site plan is required to be submitted to the District for review of compliance with the conditions set forth in this recommendation and in accordance with Chapters 40D-4 and 17-25, F.A.C.

VIII. VISUAL DISPLAY(S)

1. Exhibit "A" - Location Map
2. Exhibit "B" - Drainage Basin Boundaries
3. Table 1 - Discharge Rates

Environmental Scientist: _____
Dana L. West

Application Reviewed By: _____
Michael J. Shostak, E.I.

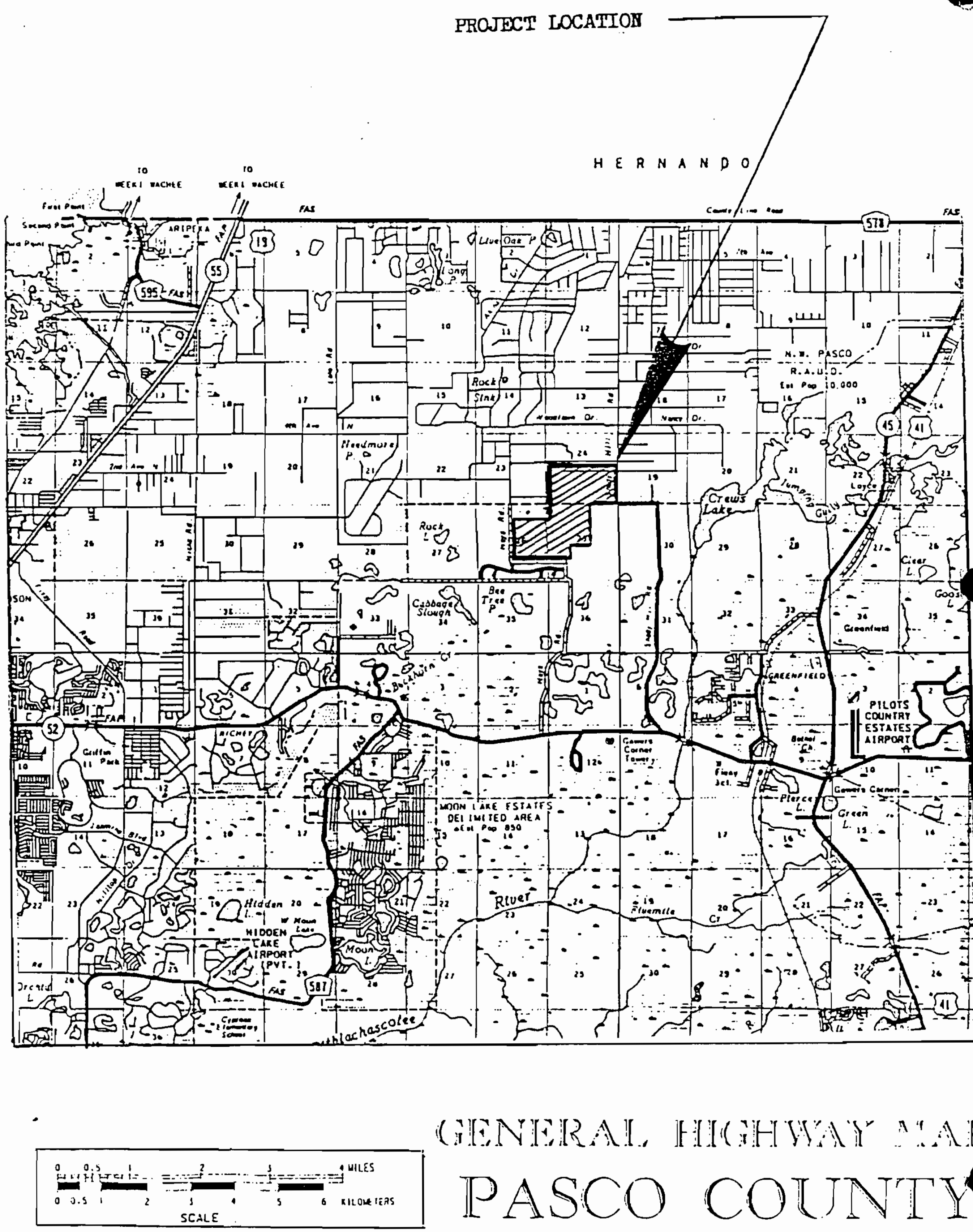
Report Received By: _____ Date: 2/3/93
WOJCIECH M. MROZ, Fla. P.E. No. 38749
Brooksville Permitting Division
Resource Regulation Department

TABLE No. 2 WETLANDS REPORT

Project Name:	Pasco County Resource Recovery Facility
File No.:	402861
County:	Pasco
Proposed Land Use:	Municipal
Total Project Acreage:	307.7
Total Wetland Acreage:	16.25
Wetland Acreage Preserved:	16.25
Wetland Acreage Temporarily Disturbed:	0.00
Wetland Acreage Permanently Destroyed:	0.00
Wetland Acreage Created (Mitigation):	0.00
Wetland Acreage Net Change:	0.00
Other Compensation Acreage:	0.00

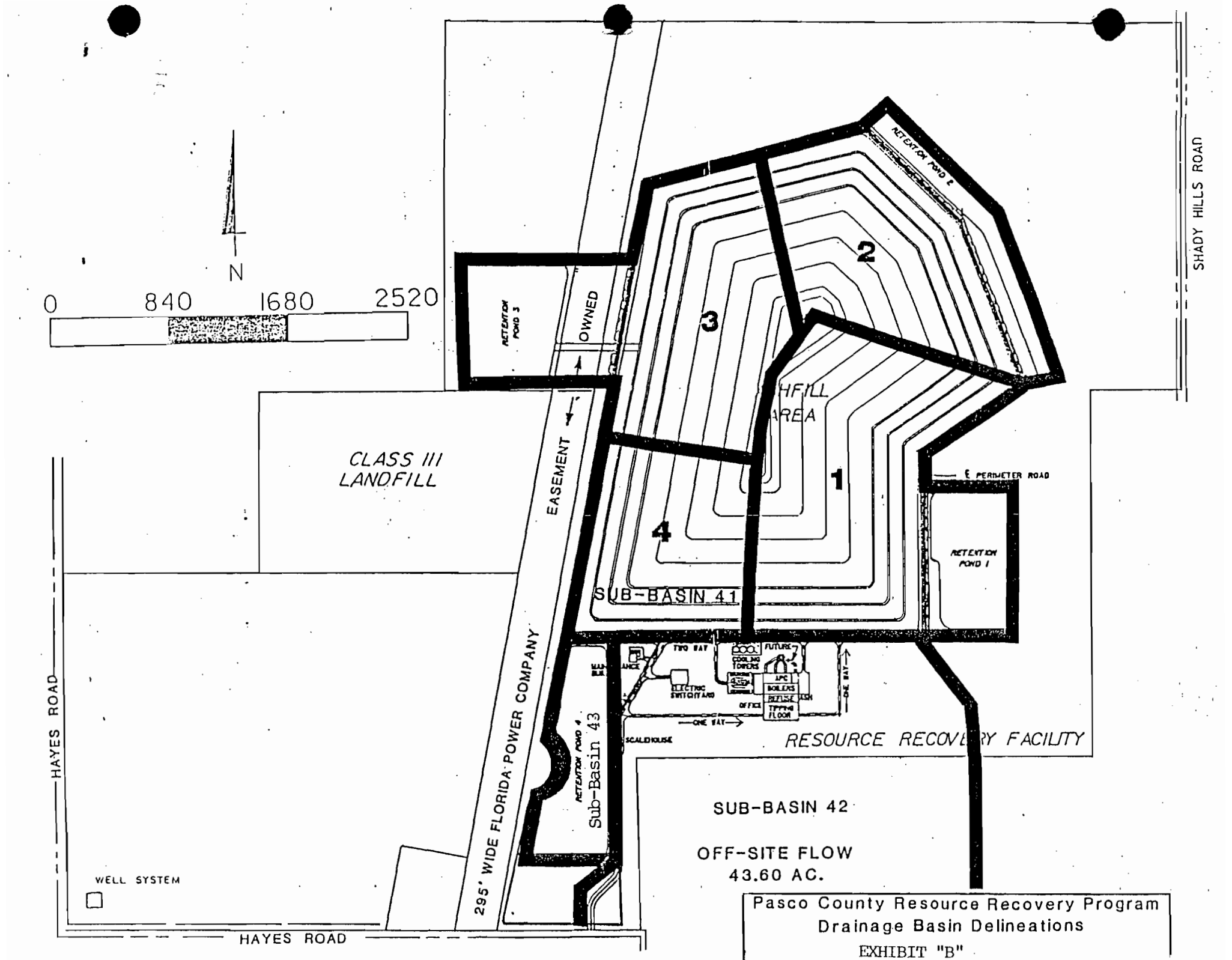
REMARKS: Isolated

Best Available Copy



GENERAL HIGHWAY MAP
PASCO COUNTY
FLORIDA

EXHIBIT "A"



Pasco County Resource Recovery Program
Drainage Basin Delineations
EXHIBIT "B"

PASCO COUNTY RESOURCE RECOVERY FACILITY

TABLE 1

Discharge Rates (25 Year-24 Hour Storm)

Basin Number	Basin Area	Peak Pre-Development Discharge (CFS)	Peak Post-Development Discharge (CFS)
1	66.0	69.8	0
2	46.6	59.4	0
3	53.0	56.1	7.1
4	138.0	135.3	2.0

TABLE No. 2 WETLANDS REPORT

Project Name:	Pasco County Resource Recovery Facility
File No.:	402861
County:	Pasco
Proposed Land Use:	Municipal
Total Project Acreage:	307.7
Total Wetland Acreage:	16.25
Wetland Acreage Preserved:	16.25
Wetland Acreage Temporarily Disturbed:	0.00
Wetland Acreage Permanently Destroyed:	0.00
Wetland Acreage Created (Mitigation):	0.00
Wetland Acreage Net Change:	0.00
Other Compensation Acreage:	0.00

REMARKS: Isolated

PASCO COUNTY RESOURCE RECOVERY FACILITY
AMENDED ASHFILL/LANDFILL EVALUATION
PASCO COUNTY, FLORIDA

As mandated by Section 403.707(4), Florida Statutes, when an application for a Class I or Class II solid waste disposal permit is made, the water management district within which the project is located shall prepare a report as to the impact on the water resources of the area. This report has been prepared to comply with 403.707(4), Florida Statutes.

BACKGROUND

The site selected for the Pasco County Resource Recovery Facility is located on Hays Road in northwestern Pasco County. The ashfill/landfill is an integral part of the resource recovery facility. The proposal is a solid waste disposal project consisting of facilities for disposing of processible (combustible) wastes, nonprocessible (noncombustible) wastes, by-passed waste (when the resource recovery plant has an outage or waste received is in excess of capacity), and ash residue from the mass-burn facility.

SITE CHARACTERISTICS

The proposed site is not an optimal area for the location of a sanitary landfill for the following reasons:

1. The Floridan Aquifer at the site is very poorly confined, so any contaminants which escape from a landfill would be able to move relatively quickly through the surface sediments to the limestone below. In western Pasco County, the only appreciable upper confinement of the Floridan Aquifer is provided by a thin (5 to 15 feet) drape of residual clay overlying the limestone. The clay is discontinuous, being broken by differential subsidence which occurs as the underlying limestone slowly dissolves, and perforated by sinkholes (which are continuing processes). The discontinuous nature of the clay confining unit accounts for the fact that a continuous water-table aquifer does not exist in west Pasco County.

2. The area is internally drained and has been recognized as a recharge area to the Floridan Aquifer, the major source of public and private water supply for the area.

3. The Floridan Aquifer beneath the area is of relatively high transmissivity, having conduit and fracture flow. These characteristics make recovery of contaminated water difficult once it has entered the aquifer.

4. The site is four to five miles, at the closest point, south of the Spring Hill pumping center which is projected to double withdrawals in the next six years to 10,000,000 gallons per day (gpd). The potentiometric gradient in the area indicates that water recharged at the site flows to the northwest through west Pasco County, through the southwestern corner of Hernando County and beneath the United States Highway 19 corridor before discharging to the Gulf of Mexico.

5. The site is seven to eight miles, at the closest point, north of the Starkey Wellfield which is presently permitted to withdraw 8,000,000 gpd, and has applied for a permit to withdraw 15,000,000 gpd. However, the potentiometric gradient at the site is away from the Starkey Wellfield.

MITIGATING FACTORS

Two factors serve to mitigate the concerns about the suitability of the site:

1. The proposed ashfill/landfill is a state-of-the-art, above-ground landfill with a double system of underdrains and liners to collect leachate and prevent leachate migration. The waste is to be contained in sixteen segregated cells. The primary underdrain system is designed to collect leachate from the base of each waste cell for handling. The secondary underdrain system serves as backup to the primary system and is to be monitored to detect leakage from the primary liner of any waste cell. The landfill is designed to contain all leachate and not leak into the underlying aquifer.

2. The ashfill/landfill is intended to receive largely ash residue from the mass-burn facility and nonprocessible (noncombustible) wastes. These materials will contain greatly reduced quantities of volatile and organic materials compared to unprocessed solid waste. This will result in a leachate which is less likely to cause degradation and failure of liners and underdrains, and in turn, reduce the risk of contamination of the underlying aquifer.

These two aspects of the proposed facility are greatly appreciated and respected by District staff. The development of resource recovery facilities is welcomed as a replacement for the traditional landfill disposal of unprocessed solid wastes.

RECOMMENDATIONS

District staff does not share the confidence of the designers that a "leak-proof" landfill can be constructed in west Pasco County, given the geologic characteristics of the area. It is not known what effect the loading of the land surface beneath the landfill will have on the stability of potential or plugged sinkholes. It should be assumed that the development of sinkholes and differential subsidence will continue in the area of the landfill, and that these processes, along with potential imperfections of construction, may allow some leakage of leachate from the landfill. Therefore, staff recommendations focus on limiting the types of wastes disposed of in the proposed landfill to those types which pose the least threat to the ground-water resources of the region in the event of leakage of the landfill.

The disposal of ash residue from the mass burn facility is regarded as much less threatening to the water resources of the region than unprocessed solid waste. The following recommendations are made for the operation of the facility in such a way as to eliminate or limit the disposal of unprocessed solid waste and hazardous waste at the site, and to require advance development of contingency plans for dealing effectively with landfill leakage.

1. It is recommended that disposal of unprocessed waste at the ashfill/landfill site before the resource recovery facility is operational be minimized. Accordingly, it is recommended that disposal of unprocessed waste at the ashfill/landfill site be prohibited until the existing East Pasco County Sanitary Landfill site is filled to maximum capacity permittable by the Florida Department of Environmental Regulation, subject to the use limitations contained in the East Pasco County Sanitary Landfill site lease, or until the resource recovery facility is operational, whichever occurs first.

2. It is recommended that the disposal of by-passed unprocessed waste at the ashfill/landfill site be minimized when the resource recovery facility is not fully operational or when capacity of the facility is exceeded, in accordance with the County's plans for operation contained in the application. It is further recommended that the County be encouraged to initiate future construction of additional capacity of the resource recovery facility as early as possible in order to avoid processible waste received exceeding capacity of the facility and to avoid disposal of unprocessed waste in the ashfill/landfill.

3. It is recommended that segregation of ash residue in cells separate from unprocessed waste (as proposed) be encouraged to better insure that the ash remains in an alkaline state. An alkaline state is desirable for the ash, as the heavy metal ions are much less mobile under alkaline conditions.

4. It is recommended that the secondary underdrain system be monitored weekly for the presence of leachate which would indicate leakage from a primary liner. It is also recommended that a contingency plan be developed for actions to be taken in the event that failure of a liner or underdrain is detected. The plan should include:

   a. Methods for determining which cell is leaking,
   b. Plans for immediate expansion of the monitor well network downgradient of the problematic cell for early detection of leachate in the aquifer if the secondary liner fails,
   c. Plans for repair of a leaking waste cell, and
   d. Plans for restoration of the aquifer if aquifer contamination occurs.

5. It is recommended that the County be encouraged to collect and segregate appliances and machines containing or utilizing coolants, greases, or oils for recycling by a metals processor as proposed by the County in order to minimize their disposal in the ashfill/landfill.

It is recommended that these conditions be incorporated by the Department of Environmental Regulation and the Electrical Power Plant Siting Board in the site certification for operation of the facility.

REFERENCES

Camp, Dresser, and McKee, Inc., November 1987, Pasco County, Florida Resource Recovery Facility Application for Power Plant Site Certification, Volume IV - Landfill/Ashfill.

Cherry, R. N., J. W. Stewart, and J. A. Mann, 1970, General Hydrology of the Middle Gulf Area, Florida: Florida Geological Survey Report of Investigations 56.

Parker, Garald G., April 1982, Statement Regarding Use of Pasco County Site 5 as a Potential for a Landfill.

Sinclair, William C., J. W. Stewart, R. L. Knutilla, A. E. Gilboy, and R. L. Miller, 1985, Types, Features, and Occurrence of Sinkholes in the Karst of West-Central Florida: U. S. Geological Survey Water Resources Investigations Report 85-4126.

Thaggard, Mark, and Robert G. Perry, August 1987, Staff Evaluation of CUP 204290 (Cross Bar Wellfield), Southwest Florida Water Management District.

Wetterhall, W. S., 1964, Geohydrologic Reconnaissance of Pasco and Southern Hernando Counties, Florida: Florida Geological Survey Report of Investigations 34.

John W. Parker FEB 23, 1988

John W. Parker, Hydrologist
Consumptive Use Permitting Supervisor
Brooksville Permitting Division
Resource Regulation Department
Southwest Florida Water Management District

PM
3.31.88
Tallahassee, FL

file copy

CARLTON, FIELDS, WARD, EMMANUEL, SMITH & CUTLER, P. A.

ATTORNEYS AT LAW

ONE HARBOUR PLACE
P. O. BOX 3239
TAMPA, FLORIDA 33601
(813) 223-7000

FIRSTATE TOWER
P. O. BOX 1171
ORLANDO, FLORIDA 32802
(407) 849-0300

HARBOURVIEW BUILDING
P. O. BOX 12426
PENSACOLA, FLORIDA 32582
(904) 434-0142

FIRST FLORIDA BANK BUILDING
P. O. DRAWER 190
TALLAHASSEE, FLORIDA 32302
(904) 224-1585

PLEASE REPLY TO:

Tallahassee

MEMORANDUM

TO: Richard Donelan
Clair Fancy
Larry Keesey
Buck Oven
William Perry
Gardner Strasser
Kent Zaiser

FROM: David S. Dee D. Dee

DATE: March 31, 1988

RE: Pasco County Resource Recovery Facility

Enclosed for your review is a summary of my notes from the depositions of Bonnie Saylor, the Treasurer of the Shady Hills Civic Association and Ed Kooper, one of the Civic Association's witnesses. You should review this memorandum because it will identify the issues of concern for the Civic Association. These issues also will be the subject of cross-examination by the Civic Association and, accordingly, you should be prepared to answer questions lying within your area of expertise. Of course, Pasco County also will prepare a response for each of these issues.

DSD/vc:pasco-dep4

Copied: C HFancy

M E M O R A N D U M

TO: Pasco County Resource Recovery File

FROM: David S. Dee

DATE: March 31, 1988

RE: Pasco County Resource Recovery Facility
--local concerns

This memorandum summarizes my notes from the depositions of (a) Bonnie Saylor, the Treasurer of the Shady Hills Parks and Civic Association, Inc. (Civic Association), and (b) Ed Kooper. These depositions were taken in New Port Richey on March 29, 1988.

Bonnie Saylor

1. Saylor does not claim to be an expert concerning any relevant issues, but she expressed the following concerns on behalf of the Civic Association.

2. The Civic Association is extremely concerned about the potential health impacts of the proposed Pasco County resource recovery facility on children. A community park is located approximately 400 feet north of the County's north property line, which is approximately 4,600 feet north of the proposed resource recovery facility. There are several schools, day care centers, a Christian youth camp, and other recreational areas within several miles of the proposed facility.

3. The Civic Association hired Gerald Parker to evaluate the site's suitability for a landfill and he concluded that the site is not appropriate for hydrogeologic reasons. He will not be able to testify at the hearing. Parker's report will be used for cross-examination.

4. Two endangered species have been seen near the site, but to-date they have not been found on the site. Nonetheless, the Civic Association is still searching for burrowing owls and indigo snakes. They have not said what, if anything, should be done if these species are found on the site.

5. The Civic Association is very concerned about the cost of the proposed project and its financial impact on their low-income neighborhood. They believe the cost has been under-estimated.

6. The Civic Association wants to use source separation and recycling as a form of best available control technology (BACT) and thereby minimize emissions from the plant. By eliminating plastics and styrofoam from the waste stream, they believe they will improve the facility's fuel supply and implement BACT.

7. The Civic Association is concerned that the ambient air quality at the site was not adequately evaluated. The roads near the site are made of limerock and, consequently, there is a substantial amount of dust and particulate matter in the air. They believe this particulate matter was not adequately considered in the evaluation of ambient conditions. They also believe the air quality at Chassahowitzka was used to determine the conditions at the site.

8. The Civic Association is concerned about the toxicity of the fly ash. They also wonder whether adequate safeguards will be utilized when the ash is transported. They do not want fugitive particulate emissions or leaky trucks.

9. The Civic Association is concerned that hospital waste containing radioactive substances may be deposited at the landfill.

10. Sinkholes may form and rupture the landfill liner.

11. The liner is only guaranteed for two years.

12. The runoff from the fly ash may ruin the aquifer.

13. The drawdown from the County's wells will increase the number of sinkholes in the area.

14. The use of heavy equipment on the site will increase the number of sinkholes.

15. The pipelines from the Hudson Regional wastewater treatment plant may rupture and spill wastewater.

16. CDM's analysis is based on waste streams, projects, and other sites which may not be similar to the situation in Florida. Other communities may not use as much styrofoam and plastic as Pasco County. One of the resource recovery facilities sited in the CDM report was located at Braintree, Massachussetts and it has been closed.

17. The risk to children from pollution is six times greater than the risk to adults.

18. The site is a high recharge area for the Floridan aquifer. Covering the site with a synthetic liner will cause groundwater problems and reduce the site's value as a recharge area.

19. The wastewater used in the cooling towers will contain viruses and "solids."

20. The Civic Association wants Pasco County to utilize total recycling. 100% recycling is performed in Rome, Italy. 20% recycling has been achieved in Berkley, California.

21. A letter from the Florida Game and Fresh Water Fish Commission states that indigo snakes are on the site. See Volume II, Section 10.7.

Ed Kooper

Kooper is concerned about: dioxin; the cost of the facility; NOx emissions; and the toxicity of the dry ash.

1. Kooper believes an ammonia injection system should be used to remove NOx.

2. Tampa Bay is one of the 35 worst air pollution areas in the United States.

3. Kooper has a bachelor of science degree in mechanical engineering (1947) from Newark College. He took some graduate courses in management and metallurgy. He then worked at Gray Iron Research for five years with pollution control equipment, including baghouses and wet scrubbers. He went to Canada for one year and then worked on the Cummings staff in quality control for seven or eight years. He then operated the Anniston, Alabama foundry for Dresser Industries from 1965 to 1970. From 1970 to 1974, he operated his own plastics company. He then retired in 1974.

4. He claims to be an expert concerning the combustion and operation of a "burn unit" and somewhat of an expert concerning pollution control. He also claims to be somewhat of an expert concerning resource recovery as a result of his 1,000 hours of study, correspondence and investigation over the last 4 or 5 years.

5. He has visited the Pinellas and Hillsborough County resource recovery projects, but he has not visited any composting, source separation, or RDF facilities.

6. He spent 6 to 8 hours reviewing the County's application, but he has not read all of it.

7. He discussed dioxin studies in Europe which reportedly demonstrated that dioxin first appeared in the 1930's or 40's as a result of resource recovery facilities.

8. He has received and reviewed literature concerning an 11 year old plant in Ontario which uses composting for 900 tpd.

9. He has read about a plant in Delaware which processes 1,000 tpd of solid waste, 300 tpd of sludge. It is an RDF plant, approximately 4 or 5 years old.

10. He believes organic materials should be composted. Plastics should be separated. Until a process is developed for the use of plastics, he recognizes that they might have to be burned or landfilled.

11. Kooper claims that a Hamburg plant is successfully using source separation for plastics.

12. Kooper claims a study in Western Canada (Prince Edward Island?) found that dioxin withstood 1800 degree temperatures.

cc: Richard Donelan
Clair Fancy
Kent Zaiser
Larry Keesey
Buck Oven
William Perry

pasco-dep3

CARLTON, FIELDS, WARD, EMMANUEL, SMITH & CUTLER, P.A.
P.O. DRAWER 190
TALLAHASSEE, FLORIDA 32302

CLAIR FANCY
DEPARTMENT OF ENVIRONMENTAL
REGULATION
2600 BLAIR STONE ROAD, TWIN TOWERS OFFICE BLDG.
TALLAHASSEE, FLORIDA 32399

PM
3.25.88
Tallahassee FL

Jr. Copy

CARLTON, FIELDS, WARD, EMMANUEL, SMITH & CUTLER, P. A.

ATTORNEYS AT LAW

ONE HARBOUR PLACE
P. O. BOX 3239
TAMPA, FLORIDA 33601
(813) 223-7000

FIRSTATE TOWER
P. O. BOX 1171
ORLANDO, FLORIDA 32802
(407) 849-0300

HARBOURVIEW BUILDING
P. O. BOX 12426
PENSACOLA, FLORIDA 32582
(904) 434-0142

FIRST FLORIDA BANK BUILDING
P. O. DRAWER 190
TALLAHASSEE, FLORIDA 32302
(904) 224-1585

RECEIVED

MAR 28 1988

DER - BAQM

PLEASE REPLY TO: Tallahassee

March 25, 1988

Hamilton S. Oven, Jr.
Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399

Re: Pasco County Resource Recovery Facility

Dear Mr. Oven:

As you know, this firm represents Pasco County (Pasco) with regard to the environmental permitting of the Pasco resource recovery facility. We have been advised that Hernando County (Hernando) wants to dispose of some of its solid waste at the Pasco resource recovery facility. Pasco and Hernando currently are negotiating and it appears likely that an agreement concerning this issue will be ratified on March 29, 1988.

Under the terms of the proposed agreement, Hernando would be allowed to bring solid waste to Pasco's resource recovery facility after the facility has been built, passed its compliance tests, and started commercial operations. Hernando would bring 100 tons per day (monthly average) of solid waste. All of Hernando's waste must be processable (i.e., burnable) in the resource recovery facility. No hazardous waste would be accepted. The agreement would remain in existence for ten years.

To accommodate Hernando, Pasco would initially construct its resource recovery facility with three combustion units capable of handling 350 tons per day (tpd), rather than 300 tpd, as currently proposed. This change should not be significant, however, because the County's facility would have a capacity of 1,050 tpd, which is substantially less than the ultimate site capacity of 1,200 tpd that Pasco has requested for approval in this site certification proceeding.

The proposed change in capacity would not change the environmental impacts of the project. The County's application and environmental analysis of the resource recovery facility were based on the ultimate site capacity of 1,200 tpd. For example, the analysis of air quality, water supply, wastewater, and traffic were based on 1,200 tpd.

We are aware of only two conditions of certification that would be affected by the proposed increase in the initial size of the resource recovery facility. Page 11, ¶ ¶ 1.c. and 1.e. of the conditions refer to the capacity of the boilers. These numbers may need to be changed. If we identify any other potential changes in the conditions, we will notify you immediately.

We believe this proposed change will provide substantial benefits to the citizens of Pasco and Hernando Counties. Hernando currently disposes of its solid waste in a state forest. Hernando's new proposal would allow it to utilize a more appropriate method of and location for solid waste disposal. The citizens of Pasco will benefit from this proposal because the initial size of the Pasco County facility will be increased by 150 tpd and thus there will be an additional 50 tpd of excess capacity available to accommodate future growth in Pasco. After Pasco's ten year contract with Hernando expires, Pasco will have an additional 100 tpd of excess capacity available to accommodate growth.

We will notify you as soon as we learn whether if Pasco and Hernando have executed their agreement. In the interim, please call me if you have any questions or comments.

Sincerely,

David S. Dee

cc: Richard Donelan
Kent Zaiser
C. Larry Keesey
Ed Helvenston
M. Twomey
Paul Darst
Barry Andrews
Clair Fancy ✓

DSD/vc:oven-3
Copied: Pradeep Raval
Tom Rogers
CHF/BT
Barry Andrews
3-28-88

Hand Delivered File Copy

CARLTON, FIELDS, WARD, EMMANUEL, SMITH, CUTLER & KENT, P. A.
ATTORNEYS AT LAW

ONE HARBOUR PLACE
P. O. BOX 3239
TAMPA, FLORIDA 33601
(813) 223-7000

CNA BUILDING
P. O. BOX 1171
ORLANDO, FLORIDA 32802
(305) 849-0300

HARBOURVIEW BUILDING
P. O. BOX 12426
PENSACOLA, FLORIDA 32582
(904) 434-0142

FIRST FLORIDA BANK BUILDING
P. O. DRAWER 190
TALLAHASSEE, FLORIDA 32302
(904) 224-1585

FLORIDA NATIONAL BANK TOWER
P. O. BOX 4700
JACKSONVILLE, FLORIDA 32201
(904) 354-1600

PLEASE REPLY TO:
Tallahassee

March 22, 1988

HAND-DELIVER

RECEIVED
MAR 22 1988
DER - BAQM

Hamilton S. Oven, Jr.
Administrator
Siting Coordinating Section
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399

RE: Pasco County Resource Recovery Facility
Power Plant Siting Application
PA 87-23, DOAH Case No. 87-5337

Dear Mr. Oven:

As you know, this law firm represents Pasco County in its efforts to obtain site certification for the proposed Pasco County resource recovery facility. We have reviewed the report prepared by the Florida Department of Environmental Regulation (DER) concerning the proposed Pasco County facility and have discovered several issues that should be brought to your attention. The following preliminary comments address some of the most important issues, but they are not intended to be comprehensive. We hope to address these and other issues with you in the immediate future.

For the purposes of this letter, underlined words should be added to the text of the DER report and the conditions of site certification. Words that have been ~~stricken~~ should be deleted.

DER Report

Page 2, ¶ 1

The description of the proposed facilities should acknowledge that the County will build "an ash and solid waste disposal area, . . ."

Page 24, ¶ E

The last half of this paragraph has been inadvertently transposed to the top of page 25.

Page 26, ¶ 3

The County hired a zoologist to conduct an in-depth evaluation of the gopher tortoise populations at the site. She concluded that the northeastern portion of the site would not be an appropriate area for relocating the gopher tortoises. Accordingly, the County disagrees with the contrary statements in the report submitted by the Florida Game and Fresh Water Fish Commission and the County opposes any proposal which would utilize the northeastern portion of the site for the relocation and management of gopher tortoises.

Page 28, ¶ B(2)

The proposed facility will reduce the amount of imported fuel oil by more than 9,000,000 barrels over the life of the project, rather than 900,000 barrels.

Page 29, ¶ D

The facility's cooling system "will require approximately 420 gpm of make-up water."

Page 31, ¶E(5)(a)

The precise amount of water used at the resource recovery facility will depend upon a variety of factors. Accordingly, the text should note that the predicted "volumes of water are estimated **expected** to be produced by the resource recovery facility during normal daily operation. . . ."

Page 36

The table indicates that the maximum annual emission of

arsenic will be 0.191 tons per year. The appropriate number should be 0.019 tons per year.

The table inadvertently indicates that the PSD significant emission rate for arsenic is 0, but there is no significant emission rate for arsenic.

Page 41, ¶ 2

The BACT determination for lead (0.005 lbs/ton of refuse charged) is too restrictive. The appropriate emission rate should be 7.82 x E-4 at 12% CO_2. The attached table (Table 4-1) was previously submitted to the Department and it identifies the appropriate emission rates for this facility.

Page 42, ¶ 1

The BACT determination for mercury (0.0036 lbs/ton of refuse charged) is too restrictive. The appropriate emission rate should be 4.38 x E-6 gr/dscf at 12% CO_2. See the attached table.

Page 46, ¶ 3

Dry scrubbers have control efficiencies for SO2 in the range of 70 to 80%, but not 80 to 90%.

Page 48, ¶ 1

The Stanislaus facility is not located in an NO_2 nonattainment area.

Page 49, ¶ 3

The last two sentences in this paragraph should be deleted. The reference to the California South Coast Air Quality Management District guideline apparently is for LAER.

Page 51, ¶ 4

EPA's "good combustion practices" are only preliminary and should not be included as permit requirements. Pasco County does not want to use EPA's preliminary proposals as permit conditions.

Page 53, ¶ 1

The proposed CO emission limit of 50 ppm based on a 4 hour average is not appropriate. The limit should be 104 ppm at 7% O_2 based on an 8 hour average.

Page 53, ¶ 2

Thermal deNOx controls for NOx are not appropriate in this case and should not be required as BACT.

Page 54

The proposed emission limit for sulfur dioxide is too restrictive. The limit should be based on 100 ppmdv at 7% O_2 or 70% reduction by weight. As previously noted, the lead and mercury emission limits are too low.

Page 55, ¶ 2

It is unnecessary to have six continuous monitoring systems for each flue. The monitor for NOx seems especially inappropriate.

The requirement for combustion efficienty apparently is based on a New York requirement. However, the State of New York requires a combustion efficiency of 99.8% on a seven day average and 99.5% for an eight hour average.

Page 58, ¶ 2, line 10

The text indicates that the stack characteristics used in the refined modeling for the Pasco County facility are summarized in Table 1 on page 59, but Table 1 does not describe the stack characteristics.

Page 61

The maximum concentration of fluorides should be 0.0124, not 0.124 ug/m^3.

The de minimus monitoring level for lead is a quarterly value, not a 24 hour value.

Page 70, ¶ E. 7. a.

Construction equipment may temporarily increase noise levels above that of traffic and existing noises.

Page 70, ¶ E.8.

Construction debris will be landfilled in either a Class I or III site. However, we do not wish to imply that paper and plastic will be landfilled. Accordingly, the text should state that "construction debris such as ~~paper,~~ concrete, and ~~plastic~~ brick will be transported to the County's existing landfill for disposal. . . .

Page 71, ¶ 1, lines 3-6

The text should be modified as follows: "If one-half of the plant would remain out of operation beyond a week, incoming raw waste would be diverted to the associated landfill/ashfill ~~other county landfills~~ until processing operations resume."

Page 73, ¶ 2.a.

The resource recovery facility should not contribute to any violations of ambient air quality standards under any meteorological conditions that were modelled or considered pursuant to state or federal law.

Conditions of Certification

Page 1, § II, line 2

The text should be modified to refer to the Permittee "defined as the Applicant, ~~Vendor~~, or its successors and assigns".

Page 5, § XII, lines 8-9

The text should be modified to show that "Requests for modifications ~~of monitoring requirements~~ shall not be unreasonably withheld by the Department."

Page 6, § XIII

Pasco County intends to expedite the construction of this project. It will be extremely difficult for the County to maintain its expedited timetable if the County is required to seek and receive the Department's approval for all of the plans prior to the initiation of construction. Section XIII should be modified to require the County to submit "as-built" plans to the Department for a determination of consistency with the approved design.

It should be noted that there will not be any "hazardous, toxic, or pathological handling facilities" at the proposed Pasco County resource recovery facility and, therefore, there will be no plans for such facility. The reference to these facilities should be deleted from Section XIII.

Page 7, line 2.

Pasco County has already submitted the forms required by Chapters 17-25 and 40D-40 to the Southwest Florida Water Management District and they have been approved by the SWFWMD Governing Board. In addition, the references to a "a temporary berm" and the Fort Lauderdale compost plant appear to be inapplicable to this project. Consequently, the Department should delete all of the provisions in this paragraph that occur after line 2.

Page 8, ¶ 5.

This condition should be deleted. In the alternative, it should refer to the routine noises of operation and not include temporary construction noises.

Page 8, ¶ 6.

A fugitive particulate abatement plan should not be required because it will provide little or no significant benefit. If required, however, the fugitive particulate abatement plan should be submitted to the Department 30, not 120, days prior to start of construction.

Page 8, ¶ 8

This paragraph is unclear, inaccurate, and should be

modified. The County should be required to "minimize the removal of trees and maintain a vegetative buffer around the site to the greatest extent practicable."

Page 10, ¶ 1. a.

The emission rates for SO2, carbon monoxide, lead, mercury, and arsenic are too low. See the attached table for the appropriate emission rates.

Page 10, ¶ 1. a. (4)

The emission limitation for carbon monoxide should be 104 ppmdv at 7% O_2 for an 8 hour averaging time.

Page 10, ¶ 1. a. (10)

The emission limitation for arsenic should refer to E-6, not E-5, lb/MBtu heat input.

Page 11, ¶ E

The last sentence of this paragraph refers to the use of supplemental oil. The County does not intend to use supplemental oil. The County will only use natural gas.

Page 12, ¶ 2. a.

The maximum emission rate for particulates should be 0.015, not 0.15, grains per dscf.

Page 12, ¶ 2. b.

The Department should delete the requirement which would maintain an average temperature in the flue gas of less than 300 degrees fahrenheit (3 hour rolling average). This requirement is unnecessary. It would be difficult or impossible to determine if the County were in compliance.

Page 12, ¶ 2. c.

The selected emissions control system should be evaluated solely for consistency with the County's proposed design. The system must be reviewed promptly to enable the County to proceed with its expedited construction schedule. Accordingly, the last sentence of the paragraph should be modified to state that "the data shall be processed and approved or denied in accordance with ~~F.S. 120.60~~ Section XIII above."

Page 13, ¶ c, line 2

The County interprets the reference to "a commercial testing firm" to include a commercial testing company which is a branch or division of the company which builds and operates the facility.

Page 13, ¶ c, line 5

After the initial compliance testing, the facility should be tested annually for particulate matter only. The proposed condition implies that all substances must be tested annually.

Page 13, ¶ 4. a.

The emission tests should be submitted to the Southwest, not the Southeast, District office. The data should not be submitted to the Broward County Environmental Control Board. The references to the Southeast District Office in paragraphs 4. b. and 4. c. should be corrected.

Page 14, ¶C.

The plans should not be submitted to the Southwest Florida Water Management District because SWFWMD normally would not review the plans for the leachate and sewage facilities. To ensure an expedited timetable for construction, the last sentence in this paragraph should be modified to state that the plans and specifications shall be furnished "to the Southwest District Office for approval pursuant to Section XIII above ~~120 days prior to construction~~."

Page 15, ¶3. a.

The last sentence of this paragraph should be deleted. A specific monitoring program has already been proposed by Pasco County and approved by the Department. Most of the monitoring wells have already been installed. The groundwater monitoring program is shown on Figure 4-1 and Sheet No. 7 in Volume IV of the Pasco County application for power plant site certification. This requirement should be modified to state that the monitoring wells shall be installed in the locations identified in the County's application.

Page 17, ¶ 1

This provision should be modified to state that the plans of the final landfill design "shall be provided to the Department for review and approval pursuant to Section XIII, above, at least 60 ~~180~~ days prior to the the start of operation."

Page 19, ¶¶ 9 and 11

The County interprets these provisions to require appropriate testing of the ash residue and appropriate disposal practices. At this time, it is clear that the EP Toxicity Test is not a valid method for testing ash residue. It also is clear that the ash is not a hazardous waste. Of course, the County will comply with future testing and disposal requirements for ash.

Page 20, ¶ 17.

The paragraph does not identify the agency that should receive the construction schedule or chart. We assume that these materials should be sent to the Southwest District Office.

Page 21, ¶ 18.

DER Form 17-7.130(2) refers to a construction permit number. Paragraph 18 should state that the site certification number shall be used as the construction permit number in this DER form.

Page 28, ¶ A.

Paragraphs A, B, C, and D on page 28 do not indicate when the required activities are to be completed. Pasco County suggests that they should be completed 180 days after the start of commercial operations at the resource recovery facility.

Page 28, ¶ B.

This paragraph does not clearly describe what is required. If the plant breaks down, it will not be operated.

Page 28, ¶ D.

Pasco County will not accept hazardous waste at this site and, therefore, Pasco County will not submit any drawings showing any facilities for such substances.

Page 30, § XXI, ¶ A.

This paragraph should be deleted or modified. The County will utilize reclaimed water as its primary source of cooling water. The County has requested and received SWFWMD's approval to use a well as an alternative source of cooling water. The limitations on the use of the well are set forth at pages 24-27, above, in Section XVI, SWFWMD Consumptive Use Permitting.

Conclusion

The preceding comments have been terse because we do not have adequate time to fully describe our concerns in writing. However, we will be happy to discuss each of these issues with you in more detail.

Sincerely,

David S. Dee

David S. Dee

cc: Ben Harrill
Richard Donelan
Clair Fancy
Don Elias
Dan Strobridge

Copied: Pradeep Raval
Tom Rogers
Barry Andrews
CHF/BT
3.23.88

TABLE 4

POLLUTANT EMISSIONS RATES

Pollutant	Averaging Time	Controlled Concentrations at Stack Top[3]
Particulate Matter (TSP or PM_{10})	24-Hour	0.0156 gr/dscf at 12% CO_2
Carbon Monoxide	8-Hour	104 ppmdv at 7% O_2
Nitrogen Oxides	3-Hour	417 ppmdv at 7% O_2
Sulfur Dioxide	3-Hour	104 ppmdv at 7% O_2
Volatile Organic Compounds (as CH_4)	3-Hour	38.8 ppmdv at 7% O_2
Lead	24-Hour	7.82×10^{-4} gr/dscf at 12% CO_2
Beryllium	24-hour	6.56×10^{-8} gr/dscf at 12% CO_2
Mercury	24-Hour	4.38×10^{-6} gr/dscf at 12% CO_2
Inorganic Arsenic	24-Hour	7.09×10^{-4} gr/dscf at 12% CO_2
Fluorides	3-Hour	1.20 ppmdv at 7% O_2
Sulfuric Acid Mist	--	(1)
Hydrogen Chloride[2]	3-Hour	104 ppmdv at 7% O_2
Dioxin[2] (as 2,3,7,8-TCDD toxics equivalent)	24 Hour	3.92 ng/Nm^3 at 12% CO_2

(1) EPA Region IV has determined that there is no reliable testing method for this pollutant.

(2) Not a PSD regulated pollutant.

(3) Concentrations represent short-term operating release rates as modeled in the air quality analysis.

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL NUMBER 5717218953

42 [illegible] 5717218953

Date: 3/9/88

From (Your Name) Please Print: Daniel Strobridge
Your Phone Number (Very Important): (813) 221-2833
Company: [illegible]
Department/Floor No.:
Street Address: [illegible]
City: [illegible] **State:** FL **ZIP Required For Correct Invoicing:** [illegible]

To (Recipient's Name) Please Print: Mr. Barry Andrews
Recipient's Phone Number (Very Important): ( )
Company: Florida Department of Environmental Regulation
Department/Floor No.: Air Quality Section
Exact Street Address (Use of P.O. Boxes or P.O. ® Zip Codes Will Delay Delivery And Result in Extra Charge.): 2600 Blair Stone Road
City: TAllahassee, **State:** FL **ZIP Street Address Zip Required:** 32399-2400

3 YOUR BILLING REFERENCE INFORMATION (FIRST 24 CHARACTERS WILL APPEAR ON INVOICE.)
6104-3-LF-GEAD

PAYMENT [X] Bill Sender [ ] Bill Recipient's FedEx Acct. No. [ ] Bill 3rd Party FedEx Acct. No. [ ] Bill Credit Card [ ] Cash

4 SERVICES CHECK ONLY ONE BOX

1 [ ] **PRIORITY 1** Overnight Delivery Using Your Packaging
6 [X] **OVERNIGHT LETTER*** (Our Packaging) 9½"x 12"

OVERNIGHT DELIVERY USING OUR PACKAGING
2 [ ] Courier-Pak Overnight Envelope* 12"x 15½"
3 [ ] Overnight Box 12½"x 17½"x 3" A [ ]
4 [ ] Overnight Tube 38"x 6"x 6"x 6" B [ ]
*Declared Value Limit $100.

5 [ ] **STANDARD AIR** Delivery not later than second business day

SERVICE COMMITMENT
PRIORITY 1 - Delivery is scheduled early next business morning in most locations. It may take two or more business days if the destination is outside our primary service areas.
STANDARD AIR - Delivery is generally next business day or not later than second business day. It may take three or more business days if the destination is outside our primary service areas.

DELIVERY AND SPECIAL HANDLING CHECK SERVICES REQUIRED

1 [ ] **HOLD FOR PICK-UP** (Fill in Section H at right)
2 [X] **DELIVER WEEKDAY**
3 [ ] **DELIVER SATURDAY** (Extra charge)
4 [ ] **DANGEROUS GOODS** (P-1 and Standard Air Packages only Extra charge)
5 [ ] **CONSTANT SURVEILLANCE SERVICE (CSS)** (Extra charge) (Do Not Complete Section 5)
6 [ ] **DRY ICE** _____ Lbs.
7 [ ] **OTHER SPECIAL SERVICE** _____
8 [ ]
9 [ ] **SATURDAY PICK-UP** (Extra charge)
10 [ ]

	PACKAGES	WEIGHT	YOUR DECLARED VALUE	OVER SIZE
		[illegible]		
		[illegible]		
		[illegible]		
		[illegible]		
Total	Total	Total		

Received At: 1 [ ] Regular Stop 2 [ ] On-Call Stop 3 [ ] Drop Box 4 [ ] B.S.C. 5 [ ] Station

Federal Express Corp. Employee No.: [illegible]

Date/Time For Federal Express Use: [illegible]

5 Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold han
Release Signature: [illegible] 3/10/88

H HOLD FOR PICK-UP AT THIS FEDERAL EXPRESS LOCATION:
Street Address (See Service Guide or Call 800-238-5355)
City State
ZIP ® Zip Code of Street Address Required

Emp. No. Date
[ ] Cash Received
[ ] Return Shipment [ ] Third Party [ ] Chg. To Del. [ ] Chg. To Hold
Street Address
City State Zip
Received By: X
Date/Time Received FedEx Employee Number

Federal Express Use
Base Charges
Declared Value Charge
Origin Agent Charge
Other
Total Charges

PART #106001 REV. 5/87
PRINTED U.S.A. GBFE

007

RECIPIENT'S COPY

[illegible]

Federal Express
#771218953

PM
March 9, 1988
Tampa, FL

File Copy

CDM

environmental engineers, scientists, planners, & management consultants

CAMP DRESSER & McKEE INC.

One Tampa City Center, Suite 1750
Tampa, Florida 33602
813 221-2833

March 9, 1988

Mr. Barry Andrews
Florida Department of
Environmental Regulation
Air Quality Section
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Andrews:

This letter, with attachments, represents our formal response to your request for additional information concerning our BACT analysis with respect to NO_x control. Our preliminary analysis of the costs for Thermal $DeNO_x$, dated January 12, 1988, was based on an initial review of information provided by Exxon. As you will recall, it indicated that the Thermal $DeNO_x$ system would cost approximately $968 for each ton of NO_x removed at the Pasco County facility, and thus increase the facility tipping fee by $1.40 per ton of waste combusted. (These costs were based on a NO_x removal efficiency similar to that which is achieved at the Commerce, California facility [40 percent]; the only operating $DeNO_x$ installation at this time.)

CDM has discovered, however, that these figures obtained from Exxon are misleading, and in fact, contradict analyses recently conducted for the 3,000-tpd Fairfax County, Virginia refuse combustion facility. The Virginia Air Pollution Control Board issued a construction permit without Thermal $DeNO_x$ to the Full Service Company (FSC) whose analysis indicated a cost of $3 per ton of waste combusted and approximately $2,000 per ton of NO_x removed. The FSC's analysis was based on an optimistic NO_x removal efficiency of 50 percent. CDM's analysis has shown that use of Thermal $DeNo_x$ would increase the Pasco County Resource Recovery Facility's tipping fee by approximately $3 per ton. It also indicates a cost of approximately $2,478 per ton for NO_x removal (based on a 40 percent NO_x reduction).

As can be seen, the costs for controlling NO_x at the Fairfax facility is more than two times larger than those obtained from Exxon for Pasco County. This significant difference is attributed to the costs associated with the risks the FSC would encounter in using the Thermal $DeNO_x$ system. Some of these risks include:

- Boiler fouling and/or corrosion which could lead to facility downtime.

- Environmental opacity violations from the possible formation of a visible NH_4Cl stack plume.

- Environmental emission violations for the release of ammonia which has an acrid odor, or the formation of other pollutants such as cyanide.

Recent conversations with prospective FSCs have confirmed that costs associated with vendor risk would be passed on to and borne by the county.

Standard combustion controls, including proper distribution of overfire and underfire air and temperature controls, are proposed for controlling NO_x emissions at the Pasco County facility. The temperature within the furnace chamber will be below 2,100°F, thus inhibiting the formation of thermal NO_x. Also, O_2 analyzers will be installed on each combustion train to ensure that the proper quantity of excess air is added to the furnace. Additionally, cost estimates for NO_x removal are 248 percent of the $1,000/ton of NO_x removal cited by FDER. NO_x emissions from the facility are projected to be 6.17 pounds per ton of municipal solid waste. This equates to 1,351 tons per year based on 100 percent availability. At this rate, the maximum annual predicted NO_2 impact concentration is 1.03 ug/m^3, which is below the annual NO_2 NAAQS/FAAQS of 100 ug/m^3. Hence, additional NO_x controls would be of very little environmental benefit. Therefore, BACT for nitrogen oxides is proposed to be the combustion controls inherent in the system's design.

Based on CDM's analysis, therefore, additional NO_x control is not warranted since:

- Exxon's Thermal DeNO$_x$ system has very limited operating data on U.S. MSW facilities.

- The projected NO_2 environmental impacts from a Pasco County facility will be within compliance of the NAAQS/FAAQS.

- It is being used as an innovative technology in an NO_x non-attainment area as LEAR.

I have included, as an attachment to this letter, a package which discusses CDM's analysis in greater detail. If you have any questions, or require additional information, please feel free to contact me.

Sincerely,

CAMP DRESSER & McKEE INC.

Daniel E. Strobridge

DES:jlb

PC7T.10/21

cc: Mr. Clare Fancy | BT
Mr. Hamilton S. Oven, Jr.
Mr. Bruce Miller
Mr. Wayne Aronson
Pradeep Raval
Tom Rogers
Barry Andrews
} 3-10-88 my

PASCO COUNTY, FLORIDA
AIR PERMIT APPLICATION

4.6.1 BACT DETERMINATION FOR OXIDES OF NITROGEN (NO_x)

Introduction

NO_x emissions from the proposed Pasco County RRF will be inherently controlled by furnace design and operation. Thermal NO_x formation will be inhibited by controlling flame temperatures. Currently, NO_x control techniques other than standard refuse combustion control techniques (i.e., the proper distribution of combustion overfire and underfire air supply and temperature maintenance) are not normally applied to mass-burning systems. It is interesting that within the refuse combustion industry, state regulatory agencies have recently focused much attention toward the destruction of organic emissions such as dioxins and furans. The methods generally suggested include high furnace temperatures and retention times; however, these furnace operating techniques tend to increase thermal NO_x emissions. Thus, an emission trade-off exists between controlling organic emissions and NO_x. The cost for NO_x controls are projected to be unreasonable based upon recent FDER and U.S. EPA guidance. The following analysis is presented to support this statement.

Background

Oxides of nitrogen (NO_x) are products of combustion processes, including refuse combustion; nitric oxide (NO) is the predominant form produced. During the combustion process, a small amount of NO is further oxidized to form nitrogen dioxide (NO_2), a brown-red gas. NO_x which reacts with sunlight and hydrocarbons to form ozone (O_3) and other secondary pollutants.

NO_x emissions are generated during fuel combustion by two separate sources. NO_x is formed by the reduction and subsequent oxidation of the available organically-bound nitrogen in the fuel (fuel NO_x). NO_x formation also results from high temperature oxidation of atmospheric nitrogen which enters into the combustion process as part of the combustion air (thermal NO_x).

Though the precise mechanism by which fuel and combustion air nitrogen are converted to NO_x is not completely understood, the relative quantities of fuel NO_x and thermal NO_x are known to be related to furnace design factors, refuse composition and plant operating parameters. Reports generally support the theory that most NO_x emissions resulting from refuse firing are oxidized fuel nitrogen.

NO_x Controls

The prime factors which affect the formation of thermal NO_x are the quantity of oxygen present in the combustion zone and the flame temperature. The rate of nitrogen oxide formation tends to increase significantly when temperatures are above 2100°F, particularly if the oxygen concentration in the combustion zone is greater than approximately 2 percent by volume. Fuel NO_x formation is strongly affected by the mixing rate of the fuel and combustion air (flame intensity), the quantity of oxygen present in the primary combustion zone, and the nitrogen content of the fuel.

Other Methods of Controlling NOx Emissions

Besides reducing NO_x emissions through furnace design and operation, NO_x emissions may potentially be reduced at refuse-burning facilities by other methods: minimizing the quantity of NO_x generated during combustion (combustion modification), and by reducing the quantity of NO_x in the flue gas stream (flue gas controls).

Combustion modification techniques such as flue gas recirculation (FGR) and staged combustion can potentially be used to reduce NO_x emissions from refuse-fired incinerators. FGR, however, has been employed more than staged combustion on MSW facilities with applications in Japan, West Germany, and Denmark. These types of combustion modifications have not been employed on U.S. MSW facilities.

Staged Combustion. In staged combustion, fuel is burned under starved air conditions such that the combustion gas temperatures are significantly below the adiabatic flame temperature and until there is no available oxygen. Following some heat removal in the boiler, additional air is added downstream to allow complete combustion of the cooler flue gases. The initial step drives the fuel nitrogen into the gas-phase with the net-effect of lowering the amount oxidized during combustion to thermal NO_x levels at the reduced temperature.

Staged combustion has been applied successfully to fossil fuel fired boilers. Tests of its effects on a tangentially-fired pulverized coal boiler operating at 16 percent excess air indicated that a NO_x emission reduction of 33 percent was achievable. The direct application of these results to MSW combustion are not possible. The tangential burning of pulverized coal at 16 percent excess air is a completely different mechanism than the moving grate or travelling grate spreader stoker operating at much higher excess air levels in MSW combustion.

To some extent, a form of staged combustion can be attempted in today's MSW furnaces through the strategic use of underfire and overfire air injection. Informal testing at a North Andover, MA MSW facility on the effects of controlled and reduced combustion air levels on NO_x emissions showed approximately a 20 percent reduction. The test conditions, however, resulted in immediate boiler instability and slagging with the expectation of future boiler corrosion. It was concluded that this approach to staged combustion as a NO_x control method for MSW incinerators is not feasible due to boiler problems and associated reduction in availability. Thus, the

possible operational problems associated with staged combustion and its lack of application on U.S. MSW facilities does not warrant its implementation at the Pasco County RRF.

Flue Gas Recirculation. Flue gas recirculation (FGR) is a combustion modification which reduces NO_x emissions by extracting a portion of the flue gas and returning it to the furnace through the burner windbox. FGR operates by lowering peak flame temperatures by dilution thus, decreasing thermal NO_x formation. The system consists of an FGR fan assembly, air apportioning and mixing system, and ductwork necessary to connect the stack to the furnace or underfire or overfire air system. Because the recirculated flue gas is relatively cool, the bulk furnace temperature decreases, resulting in a reduction of thermal NO_x formation. FGR is commercially available and applicable to all gas and distillate oil-fired industrial boilers, since NO_x emissions due to firing of these low-nitrogen fuels are contributed mostly by thermal NO_x. FGR is not, however, as effective for residual oil- and coal-fired boilers, since much of the total NO_x emissions may be attributed to fuel-NO_x, the type of NO_x minimally controlled by FGR.

FGR has been applied at MSW facilities in Japan and Europe by ducting cool flue gas from a point after the air pollution control device back to the underfire air fan. Since MSW contains relatively high amounts of nitrogen, as with coal and residual oil, and since it is generally accepted that NO_x generated from refuse is primarily due to fuel nitrogen conversion and not oxidation of atmospheric nitrogen, flue gas recirculation is expected to achieve only limited NO_x reduction on refuse-fired facilities. Results from experimentation at a 660-TPD refractory wall furnace at the Kita refuse burning facility in Japan indicated that a 25-percent NO_x emission reduction was achievable.

Little data is available to support that FGR will improve NO_x control at the Pasco County RRF facility when used in conjunction with the proposed combustion controls. Thus, FGR would be expected to be only of limited

effectiveness in controlling NO_x and, therefore, does not warrant the installation expense and lower fuel efficiency caused by a decrease in optimum flame temperature.

Flue Gas Controls

Flue gas controls appear to offer the greatest potential for NO_x reduction, though their application on full-scale RRFs has been limited. The controls which have been applied to combustion processes are selective catalytic reduction (SCR) and selective non-catalytic reduction (SNCR). The SNCR (also referred to as Thermal $DeNO_x$) is a patented process of Exxon Research and Engineering and involves the intimate contact of ammonia and flue gas NO_x in the boiler through the use of injectors located in the boiler waterwalls. Like SNCR, the SCR technology also injects ammonia into the flue gas, however, its reaction with NO_x is at a lower temperature and enhanced by using a catalyst bed.

Selective Catalytic Reduction (SCR). In the SCR process, after the anhydrous ammonia is injected into the flue gas stream, the mixture passes through a catalyst bed, located between the boiler and the economizer, where NO is converted to N_2. The function of the catalyst is to effectively lower the activation energy of the NO decomposition reaction. The reaction is allowed to proceed in a cooler part of the flue gas stream, rather than in the furnace at high temperatures (1600-1800°F) as required with the SNCR. Optimum temperature for reduction using SCR is between 530 and 800°F. Lower temperatures yield slow reaction rates; higher temperatures result in a shortened catalyst life.

SCR systems have been experimented at facilities firing coal or oil; NO_x removal efficiencies in excess of 90 percent have been reported. In addition, high reductions have been achieved on full-scale operations with the catalyst located both upstream and downstream of the particulate control device. In contrast, refuse-fired boilers have encountered difficulties with the use of SCR for NO_x control, particularly because of catalyst fouling due to difficulties with particulate poisoning. In applications where the catalyst is upstream of the particulate removal

device, the relatively high particulate grain loading of the flue gas fouls the catalyst, rendering the bed ineffective for NO_x removal. The particulate may erode the catalyst and substrate material, or may poison or blind the catalyst.

SCR has been applied extensively on a experimental basis to oil, gas and coal fired boilers in Japan; has been tested on oil and gas fired boilers in the U.S.; and has been applied to coal-fired boilers in the U.S. on a limited basis. No refuse incinerator, however, in the United States has been equipped with SCR. In addition, no firm vendor guarantees have been offered. As a result, SCR cannot be considered as a viable control alternative under the guidelines established for determining BACT.

Selective Non-Catalytic Reduction (SNCR). The SNCR process is based on the gas phase homogeneous reaction between the NO_x in the flue gas and injected ammonia, NH_3, to produce gaseous nitrogen and water vapor. In general, NH_3 is injected into the hot flue gas by means of either air or steam as a carrier gas at a point in the boiler where the flue gases are at an optimum temperature. The following two reactions govern the success of the process:

(1) $NO + NH_3 + 1/4\ O_2 \rightarrow N_2 + 3/2\ H_2O$
(2) $NH_3 + 5/4\ O_2 \rightarrow NO + 3/2\ H_2O$

Flue gas temperature is critical to the success of the SNCR process and must be kept between 1600°F (871°C) and 1800°F (982°C), at the point where the NH_3 is injected. Above this temperature range the second reaction begins to dominate thus limiting the NO removal and possibly creating a counterproductive situation of generating more NO. If the flue gas temperature falls below 1600°F (871°C), the rate of both reactions slows down such that ammonia does not react but instead freely passes through the system (ammonia slippage) and into the ambient atmosphere. The ability of controlling the flue gas temperature within this range may be difficult since refuse composition varies and subsequently causes its heating value to fluctuate. Unexpected flue gas temperature shifts are possible in the boiler when fluctuations in the refuse heating value occurs and may even

require the use of supplemental fuel firing systems. Consequently, depending on the direction of the temperature shift, the Thermal $DeNO_x$ system could result in a NO_x emission control trade-off of either a slippage of unreacted acrid ammonia vapor and/or an ammonium chloride cloud into the atmosphere or an increase in the quantity of NO_x emitted.

Beyond the potential NH_3 reaction problems associated with not maintaining the flue gas temperature within this optimal range, several other technical difficulties may result from the SNCR technology. Residual NH_3 may react with SO_3 and HCl present in the flue gas to form various ammonium salts including: ammonium sulfate [$(NH_4)_2SO_4$]; ammonium bisulfate (NH_4HSO_4); and ammonium chloride. Depending on the type, these salts may be deposited in the boiler causing damage to boiler internals, removed in the air pollution control equipment, or exit the stack as a visible plume. Ammonium bisulfate salt has the potential to form in the boiler and, in the cooler sections, precipitate from the vapor phase as a very hygroscopic and sticky liquid. Since this salt has a relatively low melting point, it can contribute to significant fouling and corrosion in the lower temperature sections of the boiler (economizer). Ammonium sulfate also has the potential to form in the boiler, however, it is weakly acidic and does not appear to have boiler fouling characteristics. When formed, $(NH_4)_2SO_4$ precipitates from the gas phase as a dry solid powder with particle sizes in the range of 1 to 3 microns (Lyon, 1987). Consequently, $(NH_4)_2SO_4$ formation would result in a NO_x emission control trade-off of increased particulate emissions. At approximately 250°F the remaining ammonia slippage which eludes the pollution control equipment will begin to react with gaseous HCl to form ammonium chloride (NH_4Cl) which is a dry, white salt that can contribute to a visible plume. In addition, a potential for cyanide formation from the chemical reaction between ammonia and hydrocarbons poses potentially worse NO_x control trade-offs than those associated with ammonium salt formation (CARB, 1984).

Minimal operational experience exists on the potential effects of ammonia and its by-products on the boiler internals and the pollution control system of a refuse combustion facility. If formed, ammonium salts could corrode the scrubber and fabric filter internals and cause fouling or

increased fabric filter wear. An ammonium chloride plume has been reported on Japanese refuse combustion facilities and if formed, could violate state opacity regulations. A visible plume was photographed from the Kawasaki, Japan facility which combusts approximately 221 tpd of refuse from each of its three furnaces. At this facility the NO_x removal efficiency has been estimated to be between 40 and 60 percent.

Thermal DeNox Applications

The Thermal $DeNO_x$ system has primarily been applied to refuse combustion facilities in Japan where several systems exist--not in the U.S. The largest of the Japanese units features three Mitsubishi-Martin furnaces each rated at 300 tpd of refuse. Tests conducted on these units from 1976 to 1978 indicated that NO_x removal efficiencies of approximately 60 percent were possible but with ammonia breakthroughs of 30 ppmv (CARB, 1984). These efficiencies were accomplished by controlling furnace temperature and the ammonia to NO_x molar injection ratio.

In the U.S., California is the only state where Thermal DeNox has been tested and is operational. California's 300-tpd Commerce refuse combustion facility has been operating since February of 1987 with a Thermal $DeNO_x$ system that showed an average NO_x reduction in excess of 40 percent after compliance testing in June of 1987. The system, permitted as "Innovative Technology," appears to have had minimal operating problems with no reported NH_4Cl visible in the plume, even though some ammonia breakthrough does occur. Operation of the facility has been intermittent due to boiler problems but it is unknown as to whether they are attributable to operation of the $DeNO_x$ system. The facility appears to have minimal ammonia breakthrough which reduces the possibility of NH_4Cl formation but, this may be due to the fuel which consists exclusively of commercial waste. The waste stream at the Commerce facility has properties which are more homogeneous and probably have a lower nitrogen content than that found at other facilities which combust residential wastes. A more homogeneous fuel provides for stable combustion temperatures and enables the Thermal $DeNO_x$ system to operate within the specific operating temperature range or "window." The reaction of NO_x with NH_3 is maximized when the temperature

of the flue gas doesn't deviate from the specific range. Thus, NO_x removal is favored and NH_3 slippage is minimized. The facility is still operating under a temporary permit as of February 1988.

The two other California facilities which plan to incorporate the Thermal $DeNO_x$ system, Long Beach and Stanislaus County, will be the first in the U.S. to combust a more representative waste. These facilities will combust waste that is residential, commercial, and industrial. This less homogeneous waste stream, compared to the Commerce facility, will probably cause the furnace temperature to vary over a wider range resulting in a greater NH_3 breakthrough and less NO_x removal. Both of these facilities are located in only NO_2 non-attainment area in the U.S. and are permitted on the basis of meeting specific NO_x emission rates or concentrations and not NO_x removal efficiencies. Thus this level of control represents the lowest achievable emission rate (LAER) and not BACT. The Thermal $DeNo_x$ technology must always be operated, however, no performance guarantees were obtained from Exxon.

Summary

The City of Commerce, California is the only U.S. application where Thermal $DeNo_x$ has been tested and is operational. Two other systems have been permitted in California for facilities at Stanislaus County and Long Beach. Both facilities are presently being constructed and are expected to be operational in late 1988 or early in 1989. This technology has gained much attention in California due to the pressing need for NO_x control, since California has the only NO_2 non-attainment area in the U.S. Additionally a large fraction of California is not in attainment for ozone. Consequently, using this technology on California's present and future planned facilities may be considered as fulfilling EPA's requirement of implementing the lowest achievable emission rate (LAER) but not BACT.

Pasco County, Florida RRF - Risk and Cost Allocation

Pasco County is currently involved in a competitive selection process to contract with a full service company (FSC) to design, build and operate its proposed resource recovery facility. Such a contract between the County and the FSC would contain provisions for liquidated damages to the County should the facility not meet certain performance guarantees (e.g., annual waste processed, environmental emission limits, electrical generation, ash residue quality). In this type of procurement--if the Thermal $DeNo_x$ system was required--the FSC would include the cost of the Exxon system in its scope of work. The County would not contract directly with Exxon. All guarantees for facility performance, including NO_x emissions, would then become responsibility of the FSC.

The FSC would subsequently be required to accept all of the risks associated with Thermal $DeNo_x$ system operation which could affect the facility's performance. Some of these risks include:

- Boiler fouling and/or corrosion which could consequently lead to facility downtime for tube cleaning, repair or replacement.

- Environmental opacity violations from the possible formation of a visible NH_4Cl stack plume. This would lead to facility fines and/or downtime.

- Environmental emission violations for the release of ammonia which has an acrid odor or the formation of other pollutants such as cyanide. If the emissions are excessive, the facility could be fined or required to be shutdown for a certain period.

- Downtime of the Thermal $DeNO_x$ system would require the facility to be shutdown until it was repaired. This technology does not have long term operating experience and, it is anticipated that breakdowns will occur.

All of these risks could result in facility downtime which could result in the FSC's failure to meet performance guarantees. If a Thermal $DeNO_x$ system was required as part of the FSC's scope of work, these risks would be evaluated and reflected in the cost of the system to the County.

To accurately represent the cost analysis conducted for the Thermal $DeNO_x$ system, additional contingencies have been added to the information provided by Exxon. These contingencies cover various operating parameters and costs associated with risk of failing to meet performance guarantees. These adjusted costs represent those which would be passed onto the County by the FSC, and include:

Item	Cost Adjustment
Ammonia consumption.	Based on a molar injection stoichiometry of 2.75 (NH_3 to NO_x).
Capital costs.	Increase Exxon capital cost by 10 percent.

Item	Cost Adjustment
Facility downtime associated with possible opacity and environmental emission violations, and equipment breakdowns.	Facility availability is decreased by a 10 day shutdown per year. Cost of this item is calculated as lost energy revenues.
Power consumption.	Cost of electricity to power air compressors and miscellaneous motors.
Increased maintenance on the boiler and possibly for the dry scrubber and baghouse.	Labor and material cost of $50,000 per year.
Labor and material for maintenance associated with the $DeNO_x$ system.	Approximately 2 percent of the capital cost per year.

The industry standard for facility availability, 85 percent, was used in the cost analysis for the dry scrubber and the baghouse. However, to analyze the Thermal DeNO$_x$ system, a reduced facility availability was used because it is believed that 10 additional days of unscheduled downtime will occur. The 10-day downtime represents approximately 2.5 percent of the annual operating period. Therefore, the reduced facility availability is 82.5 percent.

Table 4-15 illustrates the various annual operating costs for the Thermal DeNO$_x$ system. Table 4-16 shows the cost per ton of NO$_x$ removed. Table 4-17 shows the maximum annual ground level concentrations (GLCs) for the NO$_x$ control alternatives. The table indicates that the proposed control alternatives (i.e., proper furnace design and operation vs. Thermal DeNO$_x$) have GLCs of 1.03 and 0.62 ug/m^3, respectively. These are both below the FAAQS for NO$_x$ at 100 ug/m^3.

Therefore, because the reduction in the GLC emissions associated with Thermal DeNO$_x$ does not result in a significant air quality benefit, its implementation offers minimal environmental benefit. Economically, the use of Thermal DeNO$_x$ would increase the facility's tipping fee by approximately $3/ton and cost an estimated $2,478/ton of NO$_x$ removed (based on a 40 percent NO$_x$ reduction). This economic impact is 248 percent greater than the $1,000/ton removed guideline given by DER for use in evaluating the cost benefits for BACT. Thus, the application of the Thermal DeNO$_x$ system does not seem warranted and proper furnace design and operation is proposed as BACT for the Pasco County RRF.

TABLE 4-15

CAPITAL AND OPERATION/MAINTENANCE COSTS PER
NO_x ALTERNATIVE CONTROL STRATEGIES

	CAPITAL COSTS (IN 1000's $)			POWER REQUIREMENTS AND ANNUAL COSTS (IN 1000's $)				
Alternative Control Strategy	Capital[1] Cost	Annualized[2] Capital Cost	Power[3] Cost	Maintenance[4] & Labor Material Cost	System[5] Operating Labor	Ammonia[6] Cost	Lost[8] Energy Revenue	Total
Furnace Design & Proper Operation	0	0	0	0	0	0	0	0
Selective[7] Non-Catalytic Reduction (SNCR)	2,655	271	102	103	20	354	254	1,104

(1) Includes Bond Burden.
(2) Annualized capital cost assume 20 year plant life and interest rate equals 8% (capital recovery factor = 0.1019).
(3) Power costs assume plant operation for an entire year with 82.5% availability. Power cost = $0.04/KWh.
(4) Maintenance assumed to be 2.0 percent of capital cost plus $50,000/yr for increased boiler maintenance.
(5) System operating labor based on 1/2 man-year required at $20,000/yr (includes benefits).
(6) Included cost of ammonia based on $450/ton NH_3 (Delivered).
(7) SNCR system used in this analysis is Exxon Thermal $DeNO_x$.
(8) Downtime assumed as 10 days per year. Calculated as (10 days/yr x 120 tons waste/day x 530 KWh/ton x $0.04/KWh.

TABLE 4-16

COST COMPARISON OF NO_x ALTERNATIVE CONTROL STRATEGIES

Alternative Control Strategy	NO_x Emission Rate, TPY [4]	NO_x Removal Efficiency, %	Incremental Controlled NO_x Emissions, TPY [4]	Annual Control Costs 1000's $/yr [1]	Control Costs $/ton NO_x Controlled [1]	Tipping Fee Increase $/ton [2]
Furnace Design and Proper Operation	1,351	0	-	0	0	0
Selective [3] Non-Catalytic Reduction (SNCR)	811	40	540	1,104	2,478	3.01

(1) Control Costs ($/ton of NO_x Controlled) equals the Annual Control Costs (1000's $/yr) divided by the Controlled NO_x Emissions (TPY), i.e., 1,104 x 10^3 /(540 tons x 0.825) = 2,478/ton NO_x controlled.

(2) Tipping Fee Increase ($/ton) equals the Annual Control Costs (1000's $/yr) divided by the Tons of Waste Processed per year with 82.5% availability (1,200 TPD x 365 days/yr x 0.825 = 367,350 TPY).

(3) SNCR System used in this analysis is the Exxon Thermal DeNO$_x$ System.

(4) Potential to emit during an entire 365 day-year.

TABLE 4-17

COMPARISONS OF NO_x CONCENTRATIONS FOR
ALTERNATIVE NO_x CONTROL TECHNOLOGIES TO FAAQS

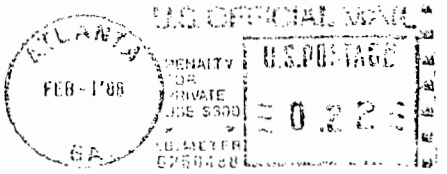
Control Alternative	Estimated Maximum Annual Impact (ug/m^3)	Percent of FAAQS %
Furnace Design and Proper Operation	1.03	1.03
Selective Non-Catalytic Reduction (SNCR)[1]	0.62	0.62
Regulated Concentrations		
Annual		
FAAQS = 100 ug/m^3		
PSD Significance Level = 1 ug/m^3		

[1] SNCR System used in this analysis is the Exxon Thermal $DeNO_x$ System.

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

AIR-4



Ms. Margaret V. Janes
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

PN
2-1-88

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

FEB - 1 1988

4APT-AP/gn

DER
FEB 4 1988
BAQM

Ms. Margaret V. Janes
Bureau of Air Quality
Management
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: Pasco County Resource Recovery Facility (PSD-FL-127)

Dear Ms. Janes:

This is to acknowledge receipt of the above-mentioned applicant's responses to the Florida Department of Environmental Regulation (DER). After reviewing the documents, we would like to comment on the applicant's response regarding the possible installation of NO_x controls.

In the submitted documents, the applicant rules out the option of installing the mentioned Exxon deNO_x system. The first reason given is that the system's incremental cost of $1,302 per ton of NO_x removed exceeds the DER's econonmic guideline for BACT cost benefits of $1,000 per ton of removal. The other reason given is that the slight improvemnt of modeled NO_x incremental consumption as a result of installing the system does not justify the additional capital expenditures. In order to comment more thoroughly on these statements, we consulted with EPA Headquarters on this matter.

Regarding the incremental cost, it was made known to us that Headquarters is preparing a study document on the subject of establishing NO_x increments and NO_x reduction controls. From the study's preliminary surveys on the general incremental costs associated with the installation of these controls, the applicant's $1,302 appears to be reasonable and further consideration is warranted.

CDM
environmental engineers, scientists, planners, & management consultants

CAMP DRESSER & McKEE INC.
One Center Plaza
Boston, Massachusetts 02108
617 742-5151

January 12, 1988

DER
JAN 18, 1988
BAQM

Mr. Hamilton S. Oven, Jr.
Administrator, Siting Coordination Section
FLorida Department of Environmental Regulation
Twin Towers Office Building
2500 Blair Stone Road
Tallahassee, FL 32399-2400

RE: Responses to Comments from DER on the Power Plant Siting Application for the Pasco County Resource Recovery Facility

Dear Mr. Oven:

Attached are the responses to the comments made by the Florida Department of Environmental Regulation (DER) in the letter dated December 22, 1987 (also attached). The responses follow the order in which the comments were made. These responses are clarifications to Volume III of the Power Plant Siting Application (dated November 6, 1987) for Pasco County Resource Recovery Facility. Camp Dresser & McKee Inc. is the environmental and engineering consultant for the Pasco County, Florida Solid Waste Resource Recovery Project and has prepared the responses on behalf of Pasco County and Mr. George Ellsworth.

It is our understanding that these comments reflect the current guidance given by EPA Region IV as stated in their letter dated December 18, 1987 and a letter from EPA in Washington, D.C. dated December 1, 1987. For purposes of PSD review, the application is deemed complete as of December 1, 1987 in accordance with 40 CFR 52.21(b)(22). All other aspects of the application are understood to be deemed sufficient in accordance with Section 17-17.081 of the Florida Administrative Code.

It is our intent to satisfy the requirements of DER. If any further clarifications are required, please let us know.

Sincerely,

CAMP DRESSER & McKEE INC.

Raymond C. Porter /for

Daniel E. Strobridge
Project Manager

Attachments

cc: Barry Andrews, DER Bureau of Air Quality Management
Margaret V. Janes, DER Bureau of Air Quality Management
Bruce Miller, EPA Region IV, Air Programs Branch
Wayne J. Aronson, EPA Region IV, Air Programs Branch
George Ellsworth, Pasco County, Resource Recovery Manager

Copied: Pradeep Raval

ATTACHMENT

RESPONSES TO COMMENTS FROM THE DER ON THE POWER PLANT SITING APPLICATION FOR THE PASCO COUNTY RESOURCE RECOVERY FACILITY

1. Tables 1 and 2, attached, include the costs for the selective non-catalytic reduction (SNCR) alternative for the control of NOx. This is the only control technology other than furnace design and proper operation that has been applied to resource recovery facilities. The SNCR system included is the Thermal DeNOx System designed by Exxon which utilizes ammonia (NH_3) as the reactive reagent. The reactions and system are discussed in Volume III of the permit application on pages 4-57 to 4-59. The Thermal DeNOx System is estimated to have a capital cost of $2,414,000 and an annual operating cost of $703,000/year. The ammonia can be injected into the boiler with a carrier gas of either steam or compressed air, with the compressed air system being the most economical. The Thermal DeNOx System is designed to reduce NOx emissions by forty percent, but the removal efficiency has not been guaranteed by Exxon on refuse fired facilities.

   These costs are based only on a single vendor's quotation. Exxon is not an operator of resource recovery facilities. The Thermal DeNox System has been operating at only one facility for a relatively short period of time. Therefore, capital, operation and maintenance cost may not be fully quantified. Although no additional costs for controlling NOx emissions by furnace design and proper operation are included in Table 1, designing an efficient furnace and operating the combustion controllers, grate or combustor system, temperature monitors and auxilary burners do have associated costs which will be included in the total cost of the facility. It is not possible to differentiate what portion of these costs are associated with the control of NOx, CO or VOC emissions.

TABLE 1

COST COMPARISON OF NOx ALTERNATIVE CONTROL STRATEGIES

Alternative Control Strategy	NOx Emission Rate, TPY	NOx Removal Efficiency, %	Incremental Controlled NOx Emissions, TPY	Annual Control Costs 1000's $/yr[1]	Control Costs $/ton NOx Controlled[1]	Tipping Fee Increase $/ton[2]
Furnace Design and Proper Operation	1352	0	---	0	0	0
Selective Non-Catalytic Reduction (SNCR)[3]	811	40	540	703	1302	1.89

(1) Control Costs ($/ton of NOx Controlled) equals the Annual Control Costs (1000's $/yr) divided by the Controlled NOx Emissions (TPY), i.e. $703 x 10^3 / 540 tons = $1302/ton NOx controlled.

(2) Tipping Fee Increase ($/ton) equals the Annual Control Costs (1000's $/yr) divided by the Tons of Waste Processed per year with 85% availability (1200 TPD x 365 days/yr c 0.85 = 372,300 TPY).

(3) SNCR System used in this analysis is the Exxon Thermal DeNox System.

TABLE 2

CAPITAL AND OPERATORS/MAINTENANCE COSTS FOR NOx ALTERNATIVE CONTROL STRATEGIES

	CAPITAL COSTS (IN 1000'S $)		POWER REQUIREMENTS AND ANNUAL O&M COSTS (IN 1000'S $)					
Alternative Control Strategy	Capital[1] Cost	Annualized[2] Capital Cost	Power (KW)	Power[3] Cost	Labor[4] Cost	Maintenance Materials & Supplies[5]	Special Costs	Total Annual Cost
Furnace Design and Proper Operation	0	0	0	0	0	0	0	0
Selective Non-Catalytic Reduction (SNCR)[7]	2,414	246	180	54	30	169[6]	24	$703

(1) Includes Bond Burden.

(2) Annualized capital costs assume 20 year plant life and interest rate equals 8% (capital recovery factor = 0.1019).

(3) Power costs assume plant operation for an entire year with 85% availability. Power cost = $0.04/KWh.

(4) Labor costs assume base 1 man-year required at $30,000/yr.

(5) Maintenance assumed to be 1.0 percent of capital cost.

(6) Includes cost of ammonia based on $250/ton NH_3.

(7) SNCR System used in this analysis is the Exxon Thermal DeNox System.

The implementation of SNCR in the U.S. has occurred only in California where the ambient air is not in attainment of the National Ambient Air Quality Standards (NAAQS) for NO_2. The only operating Thermal DeNOx System, installed at the Commerce RRF, was permitted as "Innovative Technology" and has been operating for less than a year. The requirement for SNCR at the Stanislaus facility, which is still under construction, represents LAER and not BACT. Thus, the long-term operation of a SNCR on resource recovery facilities has not been demonstrated in the U.S.

Table 3 contains the maximum annual ground level concentrations for the NOx alternatives. Table 1 shows that the two alternatives, (1) furnace design and proper operation and (2) SNCR, represent 1.1 percent and 0.66 percent, respectively of the FAAQS for NOx (100 ug/m^3). Because the reduction in emissions does not result in a significant air quality benefit, implementation of SNCR is not warranted. The economic impact ($1,302 per ton of NOx removed) is greater than the $1,000/ton removed guideline, as stated in conversations with DER, for evaluating the cost benefits for BACT. Thus, furnace design and proper operation is selected as BACT for the Pasco County RRF.

2. Emissions of cadmium, chromium, copper, manganese, nickel and polycyclic organic matter are not PSD regulated pollutants. However, the environmental portion of the BACT analysis for PSD regulated pollutants may consider potential reductions in nonregulated pollutants.

The trace metals, cadmium, chromium, copper, manganese and nickel are associated with the particulate portion of emissions from a resource recovery facility. The proposed air pollution control includes a dry scrubber and a baghouse designed to achieve 0.015 grains per dry standard cubic foot corrected to 12 percent CO_2. The dry scrubber, through the process of evaporating the water in the lime slurry, cools the flue gas, facilitating the condensation of vaporous metal emissions to the particulate phase. The baghouse effectively reduces total and fine particulate emissions such that particulate borne trace metal emissions would also be minimized.

TABLE 3

COMPARISON OF NOx CONCENTRATIONS FOR ALTERNATIVE NOx CONTROL TECHNOLOGIES TO FAAQS

Control Alternative	Estimated Maximum Annual Impact (ug/m^3)	Percent of FAAQS (%)
Furnace Design and Proper Operation	1.1	1.1
Selective Non-Catalytic Reduction (SNCR)(1)	0.66	0.66
Regulated Concentrations		
Annual		
FAAQS = 100 ug/m^3		
PSD Significance Level = 1 ug/m^3		

(1) SNCR System used in this analysis is the Exxon Thermal DeNox System.

Polycyclic organic matter (POM) is a class of compounds characterized by carbon atoms arranged in multiple ringed structures. These compounds are a trace component of the volatile organic compound (VOC) emissions from a resource recovery facility. To minimize emissions of VOC, dioxins and furans and POM, the facility will employ automatic combustion controls, overfire and underfire air systems and auxiliary burners. Thus, the emission limit for VOC emissions effectively reduces trace organic emissions.

3. Each grate (or combustor), furnace and boiler system will be designed to combust 300 tons per day of reference waste with an average higher heating value (HHV) of 4,800 Btu per pound for a heat release rate of 120 million Btu per hour per unit (480 million Btu per hour for the facility). The boiler system works most efficiently when the heat release within the furnace is kept within 80 to 100 percent of the design heat release rate. To maintain efficient boiler operation, a balance must be made between waste throughput and heat content. If the heat content of the waste is greater than 4,800 Btu per pound the waste is processed at a slower rate. If the heat content is lower than 4,800 Btu per pound the waste is processed at a faster rate. For short periods of time (less than three hours), the maximum heat release is not expected to exceed the design heat release rate by more than 10 percent or 132 million Btu per hour per unit (528 million Btu per hour for the facility). This would be equivalent to firing 330 tons per day of waste with a heat content of 4,800 Btu per pound or 300 tons per day of waste with a heat content of 5,280 Btu per pound.

4. Once the facility is constructed, compliance testing will be conducted in accordance with FAC 17-2.700 and 40 CFR 60. The sampling procedures will be submitted for Florida DER review and approval prior to conducting the tests. The pollutants for which compliance with emission limitations must be demonstrated are listed on Table 4. The emissions reflect the short term operating release rates used in the air quality dispersion analysis. The operating condition of 1,200 tpd of 5,000 Btu/lb waste has a pollutant

TABLE 4

POLLUTANT EMISSIONS RATES

Pollutant	Averaging Time	Controlled Concentrations at Stack Top[3]
Particulate Matter (TSP or PM_{10})	24-Hour	0.0156 gr/dscf at 12% CO_2
Carbon Monoxide	8-Hour	104 ppmdv at 7% O_2
Nitrogen Oxides	3-Hour	417 ppmdv at 7% O_2
Sulfur Dioxide	3-Hour	104 ppmdv at 7% O_2
Volatile Organic Compounds (as CH_4)	3-Hour	38.8 ppmdv at 7% O_2
Lead	24-Hour	7.82×10^{-4} gr/dscf at 12% CO_2
Beryllium	24-hour	6.56×10^{-8} gr/dscf at 12% CO_2
Mercury	24-Hour	4.38×10^{-6} gr/dscf at 12% CO_2
Inorganic Arsenic	24-Hour	7.09×10^{-4} gr/dscf at 12% CO_2
Fluorides	3-Hour	1.20 ppmdv at 7% O_2
Sulfuric Acid Mist	--	(1)
Hydrogen Chloride[2]	3-Hour	104 ppmdv at 7% O_2
Dioxin[2] (as 2,3,7,8-TCDD toxics equivalent)	24 Hour	3.92 ng/Nm^3 at 12% CO_2

(1) EPA Region IV has determined that there is no reliable testing method for this pollutant.

(2) Not a PSD regulated pollutant.

(3) Concentrations represent short-term operating release rates as modeled in the air quality analysis.

emission rate 1.042 times that of the design operating condition. Gaseous pollutants are expressed in units of parts per million on a dry volume basis corrected to 7 percent oxygen. Particulate borne pollutants are expressed in units of grains per dry standard cubic foot corrected to 12 percent carbon dioxide.

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

December 22, 1987

George Ellsworth
Resource Recovery Manager
7536 State Street
New Port Richey, Florida 33553

Dear Mr. Ellsworth:

The Florida Department of Environmental Regulation has reviewed the power plant siting application for sufficiency in accordance with section 17-17.081, Florida Administrative Code. The following areas need to be addressed either in Section 3.4.3 or Volume III of the application:

1. It will be necessary to establish BACT for nitrogen oxides using the top down approach. (According to EPA directives, BACT is now being evaluated from a top down approach. In using this approach, BACT is initiated using LAER as a starting point. BACT is then determined based on the economic, environmental, and energy impacts of each technology associated with LAER. If the control/emission rate associated with LAER is not justified by these constraints, a lesser degree of control is selected and the analysis is repeated until the level of control that is justified is reached.)

2. All toxic air pollutants need to be addressed with respect to the proposed control technology. For municipal waste combustors the toxic air pollutants are identified in the publications entitled, "Compiling Air Toxic Emission Inventories," EPA-450/4-86-010 and "Control Technologies for Hazardous Air Pollutants," EPA-625/6-86-014. In accordance with these publications, the pollutants cadmium, chromium, copper, manganese, nickel and polycyclic organic matter need to be addressed.

3. Will the heat release from the project at its maximum capacity exceed 500 MMBtu/hr (e.g. 1320 tons/day refuse having a heat content of 5000 Btu/lb)?

4. How does the County propose to show compliance with emission limitations for all the pollutants emitted in greater than significant quantities (re: Table 2-1)? What will be the emission concentrations for the above mentioned pollutants on a dry basis and corrected to 7% O_2 or 12% CO_2 (apart from the ones already submitted in the application).

If you have any questions concerning these requirements you may wish to contact Barry Andrews in the Bureau of Air Quality Management at (904) 488-1344.

Sincerely yours

Hamilton S. Oven, Jr.

Hamilton S. Oven, Jr. P.E.
Administrator, Siting
Coordination Section

HSO

cc: Diane Tremor
Richard Donelan
All parties

On the point raised by the applicant on the modeled NO_x incremental consumption, the applicant should know that a BACT determination is done separately from the air quality modeling. Air quality modeling is used only to ensure that a determined BACT will not violate any ambient quality standards. It does not in any way play a part in justifying the economic feasibility of relaxing a higher level BACT. Therefore, unless the applicant can demonstrate that it is economically and/or technologically impossible to implement a higher level of control, the higher level control should be given further consideration.

Thank you for the opportunity for providing our input. If you have additional information or comments, please contact me or Gary Ng of my staff at (404) 347-2864.

Sincerely yours,

Bruce P. Miller

Bruce P. Miller, Chief
Air Programs Branch
Air, Pesticides, and Toxics
Management Division

Copied: Pradeep Raval
Tom Rogers
CHF/BT
Barry Andraus
2-4-88 mr

Pasco File

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

For Routing To Other Than The Addressee	
To:	Location:
To:	Location:
To:	Location:
From:	Date:

TO: Hamilton Oven

FROM: Clair Fancy

DATE: December 22, 1987

SUBJ: Pasco County SWRRF, Sufficiency Review

In accordance with recent EPA policy developments regarding Best Available Control Technology (BACT) determinations and municipal waste combustors, the following areas need to be addressed:

1) Top down BACT: BACT is now being evaluated from a top down approach. In using this approach, BACT is initiated using LAER as a starting point. BACT is then determined based on the economic, environmental, and energy impacts of each control alternative beginning with the emission level/control technology associated with LAER. If the control/emission rate associated with LAER is not justified by these constraints, a lesser degree of control is selected and the analysis is repeated until the level of control that is justified is reached.

   It has been determined that the level of control proposed for particulate and acid gas control (dry scrubber - baghouse) is consistent with the level of control that would be justified using the top down approach. However, it will be necessary to establish BACT for nitrogen oxides, using the top down approach.

2) All toxic air pollutants need to be addressed with respect to the proposed control technology. For municipal waste combustors the toxic air pollutants are identified in the publications entitled, "Compiling Air Toxics Emission Inventories," EPA-450/4-86-010 and "Control Technologies for Hazardous Air Pollutants," EPA-625/6-86-014. In accordance with these publications, the pollutants cadmium, chromium, copper, manganese, nickel and polycyclic organic matter need to be addressed.

3) Will the heat release from the project at it's maximum capacity, exceed 500 MMBtu/hr (e.g. 1320 tons/day refuse having heat content of 5000 Btu/lb)?

4) How does the County propose to show compliance with emission limitations for all the pollutants emitted in greater than significant quantities (re: Table 2-1)? What will be the emission concentrations for the above mentioned pollutants on dry basis and corrected to 7% O_2 or 12% CO_2 (apart from ones already submitted in the application).

CHF/PR/s

cc: T. Rogers
B. Andrews
P. Raval

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

12·23·87

~~CHF~~
~~BT~~ > FYI

U.S. OFFICIAL MAIL
ATLANTA GA DEC 18 '87
U.S. POSTAGE 0.39

First Class

EPA
United States
Environmental Protection
Agency
Region IV
345 Courtland Street, N.E.
Atlanta, GA 30365

Official Business
Penalty for Private Use
$300

AIR=4

Ms. Margaret V. Janes, Planner
Bureau of Air Quality Management
Florida DER
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

PM
Dec. 18, 1987
Atlanta, GA

File Copy

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

DEC 18 1987

4APT/APB-am

Ms. Margaret V. Janes, Planner
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

DER
DEC 22 1987
BAQM

Re: Pasco County Resource Recovery Facility (PSD-FL-127)

Dear Ms. Janes:

This is to acknowledge receipt of your December 2, 1987, PSD application from the above-mentioned source. After reviewing the application, I would like to offer the following comments with regard to the applicant's BACT determination.

With regard to the BACT determination, we concur with the applicant's proposed usage of a dry scrubber/baghouse control system that will limit the TSP emission concentration to 0.015 gr/dscf and at the same time provide a 70% control on the SO_2 emissions (i.e., 74.8 ppmv at the most) and 90% control on acid gases and dioxins. However, the applicant did not perform a cost analysis for the control of NO_x. A qualitative description of the BACT determination was all that was given. A more appropriate BACT determination would include a cost analysis on several control options in a "top-down" fashion. For your information, this "top-down" BACT procedure became effective as of December 1, 1987, with the publication of the EPA Potter memorandum entitled, "Improving New Source Review (NSR) Implementation" (copy enclosed). Efforts are now being made here at Region IV to inform all of our State/local agencies concerning this memorandum. Meanwhile, please inform Pasco County and other future applicants with regard to the "top-down" policy.

Thank you for the opportunity to provide our comments. If you have any questions, please call me or Gary Ng of my staff at (404) 347-2864.

Sincerely yours,

Wayne J. Aronson / Acting for

Bruce P. Miller, Chief
Air Programs Branch
Air, Pesticides, and Toxics
Management Division

Enclosure

Copied: CHF/BT
Bradley Roberts
[illegible]
Tom Rogers
} 12-23-87

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

DEC 1 1987

MEMORANDUM

SUBJECT: Improving New Source Review (NSR) Implementation

FROM: J. Craig Potter
Assistant Administrator
for Air and Radiation (ANR-443)

TO: Regional Administrator
Regions I-X

On June 27, 1986, I established a special task force to address growing concerns about the consistency and certainty of permits issued under the Clean Air Act's prevention of significant deterioration and nonattainment area NSR programs. Based on the findings and recommendations of the task force, I am today establishing certain program initiatives designed to improve the timeliness, certainty, and effectiveness of these programs.

A great deal of effort will be required to overcome the problems which have developed, but it is my belief that these problems, with your full cooperation and assistance, can be resolved so that these essential air management programs can fulfill their intended roles. Therefore, I urge each of you to provide the maximum priority and resource commitments available to the task.

The outstanding concern we now face in these programs is inadequate implementation. The Office of Air and Radiation intends to apply its resource commitments so as to enhance its ability to provide technical support and guidance, training, workshops, auditing, and enforcement support to the Regions and delegated programs. The Regional Offices must make a corresponding resource commitment for these efforts to succeed. Accordingly, I am requesting that you initiate a self-evaluation of current NSR activities and, to the extent necessary, refocus Regional attention on these programs in an effort to improve and enhance NSR program implementation.

To ensure that we maintain the flexibility to make this effort a dynamic one, capable of sensing and adjusting to the needs of the program, I intend to establish an informal group of our colleagues to report to me on progress in implementing the initiatives discussed below. The mission of the group is to provide the feedback necessary to maximize the effectiveness of NSR implementation and to make NSR reflective of air program needs.

The following is a list of the specific program initiatives I am hereby instituting to bring about improvements in NSR implementation:

Tracking Permit Actions--Initially and until such time as permit quality can be assured, I am requiring that each Regional Office establish (if not already in place) a program to ensure a timely and comprehensive review of all State and local agency-issued major source permits and certain minor source permits. Implementation of the program will be made part of the Regional Office Management System and will require the "real time" exchange and review of information between the Regional Office and the State and local agencies when a key milestone is reached during the permitting process.

Effective communication between the permitting agency and the Regional Office is essential to improving program implementation. Therefore, the Regional Offices will need to ensure that State and local permitting agencies follow certain notification procedures such as:

- Notify the Regional Office and other affected parties (e.g., the Federal land manager if Class I areas are impacted), within a reasonable time, of the receipt of a new major source permit application. This can take the form of a complete copy of the application itself or a brief description of the proposed project. Notification can be made as each application is received or the information may be submitted to the Regional Office in a periodic report.

- Submit to the Regional Office a complete public notification package at the beginning of the public notice period. The package must contain the public notice language, the proposed permit, and a technical analysis demonstrating how the proposed project complies with the technical review requirements of the regulations [e.g., best available control technology (BACT) or lowest achievable emission rate (LAER), air quality impacts or offsets].

- Submit to the Regional Office a copy of the final preconstruction permit when issued, including a response to any appropriate comments submitted during the public comment period.

- Submit to the Regional Office a copy of the operating permit when issued.

Likewise, when informed of a permit action, the Regional Office is responsible for the timely review of the information, specifically:

- Screen incoming information on permit applications for potential issues or concerns and, if warranted, communicate them to the permitting agency.

- Perform a timely and comprehensive review of the public notice package and, if warranted, provide comment during the public comment period. To aid in this task, I have directed the Office of Air Quality

Planning and Standards (OAQPS) to start work on the development of a permit review checklist for use by the Regional Office during the public comment period. The checklist will also be useful to State and local agencies as a tool for self-audit and to understand what the Environmental Protection Agency (EPA) emphasizes when reviewing a proposed permit.

- Review any response to comments and the final permit to ensure that any outstanding concerns have been resolved satisfactorily.

- Review the permit to operate to ensure that it is consistent with the preconstruction permit.

- Take prompt and appropriate action to deter the issuance or use of permits which fail to meet minimal Federal requirements. I have directed OAQPS to work with the Office of General Counsel and the Office of Enforcement and Compliance Monitoring to develop guidance for the Regional Offices on the appropriate legal mechanisms and procedures for handling deficient permit actions.

- To the extent practicable, prior to permit issuance, review potential minor permit actions which exempt an otherwise major source or modification from a major review (e.g.,"synthetic" minor sources, major sources netting out of review, and 99.9 or 249.9 tons per year sources).

The most critical element of these initiatives is the Regional Office review of proposed permit actions during the public comment period. The FY 1985 national air audit showed widespread serious permit deficiencies, many of which could have been corrected without interfering with State and local agency processing if dealt with by EPA during the public comment period. By uniformly reviewing all major source permit actions during the comment period, EPA is able to address deficient reviews or permits before the final permit is issued. This not only promotes more consistency in the permitting process among the States, but also provides the highest degree of certainty to the applicant that the permit will not be challenged by EPA at a later date. Moreover, if the permit is not reviewed and commented on prior to issuance, the possibility of successfully challenging the action is greatly diminished, as is the opportunity to improve the enforceability of the permit.

BACT Determinations--Of all the NSR processes, BACT (and LAER) determinations are perhaps the most misunderstood and the least correctly applied. The BACT alternatives, if presented by the applicant at all, are often poorly documented or biased to achieve the decision the applicant desires.

To bring consistency to the BACT process, I have authorized OAQPS to proceed with developing specific guidance on the use of the "top-down" approach to BACT. The first step in this approach is to determine, for the emission source in question, the most stringent control available for a similar or identical source or source category. If it can be shown that this level of control is technically or economically infeasible for

the source in question, then the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental, or economic objections. Thus, the "top-down" approach shifts the burden of proof to the applicant to justify why the proposed source is unable to apply the best technology available. It also differs from other processes in that it requires the applicant to analyze a control technology only if the applicant opposes that level of control; the other processes required a full analysis of all possible types and levels of control above the baseline case.

The "top-down" approach is essentially already required for municipal waste combustors pursuant to the June 22, 1987, Administrator's remand to Region IX of the H-Power BACT decision and the OAQPS June 26, 1987, "Operational Guidance on Control Technology for New and Modified Municipal Waste Combustors (MWC's)." It is also currently being successfully implemented by many permitting agencies and some of the Regional Offices for all sources. I have therefore determined that it should be adopted across the board.

In the interim, while OAQPS develops specific guidance on the "top-down" process, I am requesting the Regional Office to apply it to their BACT determinations and to strongly encourage State and local agencies to do likewise. Moreover, when a State agency proposes as BACT a level of control that appears to be inconsistent with the "top-down" concept, such as failure to adequately consider the more stringent control options, the Regional Office is to provide comment to that agency. A final BACT determination which still fails to reflect adequate consideration of the factors that would have been relevant using a "top-down" type of analysis shall be considered deficient by EPA.

Training--No formal training workshops specific to NSR have been held since 1980. Many State and local agencies, as well as the Regional Offices, have experienced a high rate of NSR personnel turnover since then. Many of the basic problems that are occurring in NSR implementation can be traced to the lack of comprehensive, continuing training for new Regional Office and State agency personnel.

To rectify this situation, in FY 1988, OAQPS will work on developing materials for a comprehensive training program in the form of Regional workshops to be conducted in FY 1989.

Commencing in FY 1989, biannual Headquarters-sponsored NSR workshops will be conducted at each Regional Office with State and local agencies attendance encouraged. Workshop topics will cover the NSR rules and policy, BACT and LAER determinations, effective permit writing, how to review a proposed permit and audit a permit file, and other program areas as needed. Appropriately trained Regional staff are to then hold these workshops at their respective State agencies. The NSR experts from Headquarters or NSR experts from other Regions will be available to assist.

In addition, Regional Offices should reserve the funds necessary to send at least one EPA staff representative to the NSR workshops (for EPA only) held semiannually at Denver, Colorado (February), and Southern Pines, North Carolina (July). Attendance at these workshops plays a vital role in keeping the Regions up to date on program implementation and new and emerging policy.

Policy and Guidance--Continuous litigation and regulatory changes have combined with the complexity of NSR rules to create a log jam of the policy and guidance needed to help interpret and effectively apply these rules. Therefore, I am directing that in FY 1989 OAQPS dedicate at least one staff person to ensuring a timely response to policy and guidance requests. In the interim, I intend to continue OAQPS's efforts to compile and organize NSR reference and guidance materials, such as the NSR electronic bulletin board.

I realize that the initiatives discussed above constitute only the first steps of a continuing process to address concerns and needs relating to NSR program implementation. In recognition of the possible need to maintain flexibility in managing and improving the NSR process I will, as indicated earlier, establish a group to monitor our progress under this new policy. The group will be comprised of representatives from EPA Headquarters and Regional Offices and we will consult with State and local agency officials as part of our effort to obtain timely feedback as we implement these initiatives.

Additional specific guidance on improvements in the program areas discussed above will be issued in the near future. In the meantime, each Regional Office is directed to work closely with its State and local agencies to ensure that all aspects of the NSR permit programs comply with all applicable State and Federal program requirements.

Your comments and suggestions are welcome. Please direct them to Gary McCutchen, Chief, New Source Review Section, MD-15, Research Triangle Park, North Carolina 27711 (FTS 629-5592).

cc: Air Division Directors, Regions I-X

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

FOR ROUTING TO OTHER THAN THE ADDRESSEE

To: _____ Locth: _____
To: _____ Locth: _____
To: _____ Locth: _____
From: _____ Date: _____

TO: Power Plant Siting Review Committee

FROM: Hamilton S. Oven HSO

DATE: November 24, 1987

SUBJECT: Pasco County Resource Recovery Facility PA 87-23

Attached please find a revision to the Pasco County Resource Recovery Facility power plant siting application.

HSO/mkr
cc: All parties
cc: Pradeep Raval
Barry Andrews
Jon Rogus
CHF/BT
} 11/25/87

LOT7C.4/75
11/19/87

PASCO COUNTY, FLORIDA
SOLID WASTE RESOURCE RECOVERY FACILITY
APPLICATION FOR
POWER PLANT SITE CERTIFICATION
VOLUME III - AIR QUALITY

ERRATA

Page 6-42, Table 6-15, Footnote a: Sixty-six should be sixty-five.

Page 6-43, Table 6-16, for 1972, 3-hour, Total Impact: 13.12 should be 13.42.

file copy

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

For Routing To Other Than The Addressee
To: Clair Fancy Location: BAQM
To: _____ Location: _____
To: _____ Location: _____
From: _____ Date: _____

DER
NOV 19 1987
BAQM

TO: Power Plant Siting Review Committee

FROM: Buck Oven HSO

DATE: November 18, 1987

SUBJECT: Pasco County Resource Recovery Facility
PA 87-23

Pasco County has requested that their power plant siting application be processed in an expedited fashion. A copy of their request is attached. If we agree to the attached schedule, the Department must arrive at its final recommendations by February 10, 1988. Will your Unit's work schedule allow you to complete your portion of the review, forward to me your assessment, recommendations and conditions of certification by early February? If not, when could you finish your portion of the review?

HSOjr/jb
Attachment
cc: Rick Garrity
Richard Donelan
Clair Fancy
Larry Olsen
Jim McNeal
John Reese

Copied: CHF/BT
Pradeep Raval
Barry Andrews
Jon Rogers
} 11/24/87 mp

11/24/87

~~CRF~~
~~BE~~ } FYI

(hi)

M E M O R A N D U M

TO: Buck Oven

FROM: Daniel E. Strobridge, CDM
David S. Dee, Carlton, Fields, et al.

SUBJECT: Proposed Review Schedule for the Pasco County County Resource Recovery Facility

DATE: November 17, 1987

Pasco County wants to enter into an agreement with DER and the other agencies that will review Pasco County's application for site certification for a resource recovery facility. Specifically, Pasco County wants to obtain site certification by July 31, 1988. To meet this deadline, the review process under the Power Plant Siting Act (PPSA) must be expedited.

There are several reasons for expediting the review process, including: (1) a shortage of existing landfill disposal capacity in the County; (2) the increased consumption of disposal capacity which would result from delaying implementation of the resource recovery facility; and (3) the County's schedule for selecting a full-service contractor and commencing construction of the proposed solid waste facility. Each of these issues is more fully discussed below.

Shortage of Landfill Disposal Capacity

Pasco County, with the recent expansion of the existing East Pasco Landfill (EPLF), has only an estimated 2.5 years of remaining disposal capacity. Delays in permitting the resource recovery facility and associated landfill/ashfill will exacerbate the problem. The County will be forced to purchase additional land adjacent to the EPLF to provide disposal capacity until the resource recovery facility is completed.

Increased Consumption of Disposal Capacity

Pasco County currently generates about 660 tons of solid waste per day. Nearly 500 tpd are delivered to the landfill and this consumes 1,500 cubic yards of landfill capacity daily. With resource recovery, only 375 cubic yards of capacity will be used per day--a savings of some 1,125 cubic yards per day.

A delay of only six (6) months in implementation of resource recovery will cost Pasco County over 200,000 cubic yards of

valuable landfill capacity at today's solid waste generation volumes. Since the continued landfilling will occur in the future (1991), the lost (consumed) disposal capacity will be approximately 250,000 cubic yards.

Resource Recovery Implementation Schedule

Pasco County has already prequalified 7 vendors through an RFQ process that was completed in September, 1987.

The following is the remainder of the implementation schedule:

January 7, 1988	RFP released to vendors.
March 30, 1988	Proposals received from vendors.
April 29, 1988	Proposal evaluation complete. Vendor recommended to Pasco BOCC.
May 3, 1988	Negotiations authorized by BOCC.
June 22, 1988	Vendor contract negotiations complete.
August 1, 1988	Bonds are issued.

To finanace the facility, the site certification must be secured prior to the issuance of the bonds. Accordingly, Pasco County wants to coordinate the PPSA review schedule with the County's implementation schedule.

Proposed Review Schedule for PPSA Application

Pasco County would like to enter into a stipulation with the other parties to the PPSA process. This stipulation would establish the following timetable for the review of Pasco County's application.

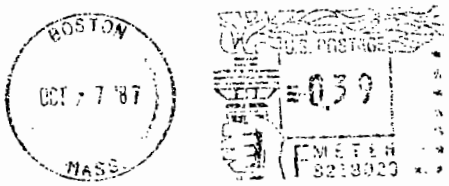
1. Pasco County files PPSA application --On or before November 17, 1987

2. Agencies finish completeness review --On or before December 1, 1987 (10 working days)

3.	Agencies finish sufficiency review	--On or before December 22, 1987 (35 days)
4.	DER publishes notice of land use hearing	--Before January 15, 1988 (45 days before hearing)
5.	DCA and SWFWMD submit preliminary reports to DER	--January 17, 1988 (60 days)
6.	Agencies submit final reports to DER	--February 17, 1988 (90 days)
7.	DER issues consolidated agency report	--March 2, 1988
8.	Land use hearing	--March 10, 1988
9.	DER publishes notice of site certification hearing	--Before March 10, 1988 (30 days before hearing)
10.	File Proposed Order with Hearing Officer concerning Land Use Hearing	--March 31, 1988
11.	Site Certification Hearing	--April 11-15, 1988
12.	Hearing Officer issues Recommended Order concerning Land Use Hearing	--April 28, 1988
13.	File proposed Order with Hearing Officer concerning site certification	--May 20, 1988
14.	Siting Board considers land use issues	--June 1, 1988
15.	Hearing Officer issues recommended order for site certification	--June 20, 1988
16.	Siting Board considers site certification	--July 26, 1988

Of course, Pasco County recognizes that this timetable may change if Pasco County fails to promptly supply the additional information requested by the agencies during the sufficiency review process.

DSD/vc:Pasco-10



First Class Mail

CDM

Raymond C. Porter
CAMP DRESSER & McKEE INC.

One Center Plaza
Boston, Massachusetts 02108

6104-2-PT-AIRP # 50

Mr. Bill Thomas
Department of Environmental Regulations
Bureau of Air Quality Management
2600 Blair Stone Road
Twin Towers Office Building
Tallahassee, FL 32301

PSD PL-127

Pasco County Utilities Division
7536 State Street
New Port Richey, Florida 33553
(813) 847-8145

November 6, 1987

State of Florida
Department of Environmental Regulation
Division of Environmental Permitting
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

ATTN: Mr. Hamilton Oven, P.E.
Power Plant Siting Section

RE: Application for Power Plant Site Certification
Pasco County Resource Recovery Facility

Dear Mr. Oven:

Enclosed is Pasco County's application for an Electrical Power Plant Siting Certification submitted pursuant to Florida Department of Environmental Regulation Chapter 17-17 FAC and FDER Form 17-1.211(1).

Pasco County and its engineering consultant, Camp Dresser & McKee Inc., look forward to working with you, your staff, and other agencies with review responsibility.

We anticipate that the information contained herein provides all that is necessary to allow a thorough evaluation of our application. However, if you find that additional data or clarification is required, do not hesitate to contact us at your earliest convenience.

Also enclosed is our check for $25,000.00 to cover the application fee.

Sincerely,

George Ellsworth

George Ellsworth
Resource Recovery Manager

dmc
PAS7C.6/18

PASCO COUNTY, FLORIDA

SOLID WASTE RESOURCE RECOVERY FACILITY

APPLICATION FOR

POWER PLANT SITE CERTIFICATION

VOLUME I - APPLICATION

SUBMITTED BY
THE PASCO COUNTY
BOARD OF COUNTY COMMISSIONERS

NOVEMBER 1987

PREPARED BY
CAMP DRESSER & McKEE INC.

ENGINEER SUBMITTING APPLICATION: Louis R. Tortora

FLORIDA REGISTRATION NUMBER: 0032073

LOUIS RICHARD TORTORA · CERTIFICATE No. 32073 · STATE OF FLORIDA · REGISTERED ENGINEER

WARRANT PAYABLE AT
First Union National Bank of Florida
Dade City, Florida

BOARD OF COUNTY COMMISSIONERS
PASCO COUNTY DADE CITY, FLORIDA
PAYING ACCOUNT

63-579
631

CHECK NO.
00160627
160627

VOID IF NOT CASHED
WITHIN 90 DAYS

TWENTY-FIVE THOUSAND DOLLARS NO CENTS

PAY TO THE ORDER OF
FLORIDA DEPARTMENT OF
ENVIRONMENTAL REGULATION
3900 COMMONWEALTH BLVD
TALLAHASSEE, FL 32303

DATE 11-10-87

CHECK AMOUNT ****25,000.00

CLERK CIRCUIT COURT EX-OFFICIO CLERK
OF THE BOARD OF COUNTY COMMISSIONERS

CHAIRMAN OF THE BOARD OF COUNTY COMMISSIONERS

⑈160627⑈ ⑆063105793⑆ 18001900104⑈

APPLICANT INFORMATION

Applicant's Official Name:	Pasco County
Address:	Pasco County Government Center 7530 Little Road New Port Richey, Florida 33553
Business Entity: Name and Title of Business Head:	County Government Ann Hildebrand, Chairman Pasco County Board of County Commissioners
Name, Title and Address of Representative Responsible for Obtaining Certification:	George Ellsworth, Manager Resource Recovery Project
Site Location:	County - Pasco Nearest Incorporated City - Port Richey Latitude and Longitude: 28°22'05"N 82°33'30"W Township and Range: T24S, R17E; Sections 24, 25, and 26
Nameplate Generating Capacity of Proposed Facility:	22 megawatts initially 29 megawatts ultimate

REMARKS: The sole purpose of the proposed resource recovery facility is to dispose of solid waste and recover energy and possibly materials. This proposed facility will afford Pasco County a method of solid waste disposal which will substitute for the present landfilling operations. Pasco County does not operate, maintain or construct facilities for the purpose of electric generation; and does not distribute electrical energy generated at facilities operated by others.

Key: Sections kept for Air Permit files

TABLE OF CONTENTS

TABLE OF CONTENTS
(Continued)

TABLE OF CONTENTS
(Continued)

TABLE OF CONTENTS
(Continued)

LIST OF TABLES

LIST OF TABLES
(Continued)

LIST OF FIGURES

ABBREVIATIONS

AADT	Average Annual Daily Traffic
ADT	Average Daily Traffic
BOD	Biological Oxygen Demand
CEC	Cation Exchange Capacity
CLU	Critical Level Volume
COD	Chemical Oxygen Demand
cy	Cubic Yards
dBA	Decibels (A-Weighted Scale)
FGD	Flue Gas Desulfurization
GPD	Gallons Per Day
GPM	Gallons Per Minute
KWH	Kilowatt Hour
LOS	Level of Service
MGD	Million Gallons Per Day
MSL	Mean Sea Level
MSW	Municipal Solid Waste
PFU	Plaque Forming Units
PPM	Parts Per Million
PVC	Polyvinyl Chloride
SPT	Standard Penetration Test Boring
TPD	Tons Per Day
VPD	Vehicles Per Day
WWTP	Wastewater Treatment Plant
BEBR	Bureau of Economic and Business Research
CUP	Consumptive Use Permit
DER	Department of Environmental Regulation
DRI	Development of Regional Impact
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FAC	Florida Administration Code
FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
FGFWFC	Florida Game and Freshwater Fish Commission

ABBREVIATIONS
(Continued)

FNAI	Florida National Areas Inventory
FPC	Florida Power Corporation
FWS	U.S. Fish and Wildlife Services
NPDES	National Pollution Discharge Elimination System
PCBOCC	Pasco County Board of County Commissioners
PSD	Prevention of Significant Deterioration
SCS	Soil Conservation Service
SR	State Road
SWFMWD	Southwest Florida Water Management District
USDA	United States Department of Agriculture
USGS	United States Geological Survey

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

For nearly seven years, Pasco County has been investigating alternative methods for long-term solid waste disposal. The county began its investigation in 1980, after the State of Florida enacted legislation (Chapter 403.706 Florida Statutes) requiring the county to submit resource recovery and management plans. The current solid waste disposal method—sanitary landfilling—is becoming inadequate as a primary disposal method, due to environmental and siting constraints. Land areas in the county which are environmentally and economically suitable for sanitary landfilling are quickly diminishing, and ground and surface water resources are threatened by sanitary landfilling of solid waste. There has been much interest in the resource recovery concept of solid waste disposal, because this method can: (1) reduce the volume of solid waste which must be landfilled, (2) reduce the threat of contamination of water resources, and (3) allow the recovery of energy and recyclable materials. Studies commissioned by the county since 1980 have concluded that a mass-burn, resource recovery system is the most prudent long-term primary solid waste disposal method for Pasco County.

SITE LOCATION

Site selection was made by the county in the fall of 1985, after review of a detailed study prepared by the county's consulting engineers. The site is located in northwest Pasco County, near the county's waste generation centroid. The site consists of 751 acres on Hays Road, approximately 2.5 miles north of SR 52, on land owned by the county. Existing Florida Power Corporation transmission lines cross the site.

PURPOSE OF THE PROPOSED FACILITY

The primary purpose of the facility is to dispose of the municipal solid waste generated within Pasco County. Noncombustibles and inert ash residue from the plant's combustion process will be disposed of at a co-located sanitary landfill/ashfill. The power derived from the combustion of refuse

will be sold to Florida Power Corporation. The revenues from the sale of energy will help offset the operating costs of the facility. The proposed project has received an affirmative determination of need from the Florida Public Service Commission.

FACILITY DESCRIPTION

The proposed project will be a mass-burn resource recovery facility with an initial continuous design rated processing capacity of 900 tons per day of municipal solid waste. In anticipation of future disposal needs, Pasco County is seeking certification for an ultimate site electrical generating capacity of approximately 29 megawatts (gross), fueled by 1,200 tons per day of municipal solid waste. Pasco County will contract with a full-service vendor to design, construct, and operate the plant for 20 years.

APPLICATION OVERVIEW

Pursuant to Section 403.505, Florida Statutes, Pasco County is applying for certification of a solid waste energy recovery facility. This application has been prepared in accordance with the Florida Department of Environmental Regulation (FDER) Chapter 17-17 Rules and follows the format prescribed in FDER Form 17-1.211(1), FAC (Instruction Guide for Certification Application: Electrical Power Plant Site, Associated Facilities, and Associated Transmission Lines).

The application encompasses four volumes:

Volume I (Application) - contains the Applicant Information sheet, Sections 1.0 through 9.0 of the application, and the list of references.

Volume II (Appendices) - contains Section 10.0, the appendices of the application. In addition to the appendices required by the FDER Instruction Guide, seven other appendices are included to supplement Volume I.

Volume III (Air Quality) - contains information concerning the Prevention of Significant Deterioration (PSD) determination and the Best Available Control Technology (BACT) determination.

Volume IV (Landfill/Ashfill) - contains information concerning the construction/operations of the landfill/ashfill, and the geotechnical investigation report.

PRINCIPAL FINDINGS

The proposed facility will be designed and operated to meet all applicable federal, state and county standards. As planned, the facility will have a minimal impact on the surrounding environment. The analyses in this application support the following conclusions:

- Air Quality - As discussed in Volume III - Air Quality, the combustion process for the facility will be environmentally sound. As required by the PSD permitting process, an air pollution control technology evaluation and air quality impact assessment were conducted. The control technology evaluation considered energy, environmental and economic criteria and proposed a dry scrubber and baghouse as the Best Available Control Technology for the Pasco County resource recovery facility. The air quality impacts assessment compared the predicted air quality impacts from the proposed facility to the Florida and National Ambient Air Quality Standards and the PSD Class I and Class II increments. These analyses demonstrated that the predicted impacts of the proposed facility are at less than significant levels and will not cause or contribute to an excedance of the air quality standards or increments.

- Surface Water and Groundwater - As discussed in Sections 4.2 and 5.1.4, all plant process water will be drawn from the Hudson Subregional Wastewater Treatment Plant, and all

wastewater discharged from the solid waste resource recovery facility will go directly to this wastewater treatment plant. Potable water will be used in small quantities in the personnel areas of the plant and for boiler make-up purposes. All plant water will be recycled, with no discharge to surface or groundwater. Runoff from vegetated areas, paved areas, and rooftops will be collected in onsite stormwater retention/detention basins. Refuse storage and ash/residue handling operations will be covered, to protect them from precipitation and runoff. As discussed in Section 4.3, there will be no influence on groundwater quality as a result of the planned construction dewatering activity.

- Noise - As discussed in Section 5.7, noise levels at the closest residence will increase by only 1.0 to 3.0 dBA above existing and modeled noise levels during operation of the resource recovery facility. This increase is not perceptible to the human ear.

- Plant and Animal Communities - During more than 50 observer hours of site surveying, there were no direct observations or other evidence of species listed as threatened or endangered by the U.S. Fish and Wildlife Service (FWS) or the Florida Game and Fresh Water Fish Commission (FGFWFC). There are no National Wildlife Refuges or critical habitats located within 5 miles of the project site, according to the FWS. The Florida Natural Areas Inventory stated that currently there are no occurrences of special elements (i.e., plants and animals) for this site. A population of Gopher Tortoises has been found on the site. As a Species of Special Concern with FGFWFC, the welfare and future survival of Gopher Tortoises on this property will be given careful attention. See Section 4.4.1 for more information on this issue.

- Archaeological Sites and Historic Preservation Areas - As discussed in Section 5.10, there are no known historic or

prehistoric resources within the project site boundaries, according to the Division of Historical Resources. As it is planned, the project will not impact any historic or prehistoric cultural resources.

- Soil and Foundation Conditions - As discussed in Section 2.3.1, preliminary subsurface data indicate that certain surface conditions at the project will require specific site preparation and subsurface foundation design. These subsurface conditions are considered typical of those normally encountered in the immediate area, and the appropriate preparation and design will performed.

- Traffic - As discussed in Section 5.9.4, the solid waste resource recovery facility will increase daily traffic by approximately 1 percent on SR 52 and 24 percent on Hays Road. The high percentage increase on Hays Road is a result of the very low current traffic volumes on Hays Road. The traffic analysis shows that no capacity problems will be caused by this additional traffic. Current levels of service on these roads will not change as a result of expected traffic increases.

- Land Use and Zoning - On December 19, 1986, the Pasco County Zoning Administration determined that the selected site for the resource recovery facility and landfill/ashfill is exempt from the provisions of the county's zoning ordinance, Ordinance No. 75-21, as amended. The project is considered an acceptable development, undertaken for the promotion of the public health, safety, and general welfare, and is therefore exempt. After reviewing the goals and objectives of the Solid Waste and Resource Recovery Element, the Pasco County Planning Director has determined that the proposed resource recovery facility is consistent with the goals and objectives of the Pasco County Comprehensive Land Use Plan.

- Aesthetics - As discussed in Section 3.2, there will be some visual impact associated with the facility. The design of the facility will be aesthetically pleasing and architecturally compatible with the surrounding area. Due to the natural buffer surrounding the site, the major portion of the facility will be obscured from view from most offsite vantage points.

1.0 NEED FOR POWER AND THE PROPOSED FACILITIES

1.0 NEED FOR POWER AND THE PROPOSED FACILITIES

1.1 LOCAL/REGIONAL BENEFITS

The purpose of the proposed resource recovery facility is to dispose of the solid waste generated within Pasco County. The decision to build a resource recovery facility was made after several years of investigation by the county of alternatives to landfilling of solid waste. Landfilling of municipal solid waste in Pasco County is inadequate for two primary reasons: (1) there is a shortage of land which is suitable for landfilling, and (2) the landfilling of putrescible garbage poses a potential long-term threat to the quality of the area's groundwater. Water quality is a significant concern, since three major well fields in Pasco County (Cross Bar Ranch, Cypress Creek, and Starkey) supply water to major metropolitan areas in Pinellas County, Hillsborough County, and Pasco County.

After evaluating the alternatives, the county determined that the best alternative for disposal of municipal solid waste in Pasco County is combustion of the waste in a resource recovery facility, followed by landfilling of the ash residue. Combustion of municipal solid waste in Pasco County will reduce the volume of waste which must be landfilled by up to 70 percent. This reduced volume will extend the life of the co-located landfill/ashfill by 3 times. The ash from the combustion process will require less landfill space than noncombusted waste, and will generate no methane gas. Thus, by disposing of its solid waste through combustion and landfilling, Pasco County will conserve land, preserve the natural environment, and protect water quality.

Combustion of solid waste has the secondary benefit of electricity generation. The electric power which may be derived from combustion of Pasco County's solid waste can stabilize, or possibly reduce the rapidly escalating cost of solid waste disposal. The electricity generated by combustion of 900 tons per day of municipal solid waste—the initial

capacity of the proposed facility—can eliminate the need for 352,000 barrels of oil per year for electric energy generation.

1.2 BENEFITS TO THE STATE

In Chapter 84-198, Laws of Florida (1984), the Florida Legislature has declared that "It is critical to encourage energy conservation in order to protect the health, prosperity, and general welfare of this State and its citizens." The Legislature has further declared that the "combustion of solid waste by small power production facilities for the production of electricity not only represents conservation efforts well-directed towards that goal, but also represents an environmentally preferred alternative to conventional solid waste disposal in this State." In Section 403.702 of the Florida Statutes, the Florida Resource Recovery and Management Act declares that "the purpose of this act is to promote the application of resource recovery systems which preserve and enhance the quality of air, water and land resources."

In a letter inviting local officials to attend a workshop on the topic of resource recovery in Florida (1985), former Governor and current U.S. Senator Bob Graham wrote: "Programs which result in the substitution of resource recovery alternatives to direct landfilling are vital to the protection of Florida's fragile environment. The utilization of municipal solid waste as a safe and abundant renewable energy resource represents a positive economic opportunity for many Florida communities.... Recent technological advances have made resource recovery a viable option for small, growing populations as well as large urban areas. Experience in Florida indicates that resource recovery can reduce landfill area requirements by up to 70 percent, and at the same time produce valuable electricity and thermal energy for use or sale."

Pasco County's proposed solid waste disposal program pursues the state's policy of resource recovery as a long-term solid waste disposal solution. The proven mass-burn technology will provide a reliable and economical solution for Pasco County's long-term solid waste disposal needs.

The county's proposed system is also consistent with the Florida State Comprehensive Plan (FS, 1985). The plan states the following goals and policies regarding energy and waste:

Energy Goal:

> #12 Florida shall reduce its energy requirements through enhanced conservation and efficiency measures in all end-use sectors, while at the same time promoting an increased use of renewable energy resources.

Policies (Objectives):

> #5 Reduce the need for new power plants by encouraging end-use efficiency, reducing peak demand, and using cost-effective alternatives.
>
> #9 Promote the use and development of renewable energy resources.

Waste Management Goal:

> All solid waste, including hazardous waste, wastewater and all hazardous materials, shall be properly managed, and the use of landfills shall be eventually eliminated.

Policies (Objectives):

> #1 By 1995, reduce the volume of nonhazardous solid waste disposed of in landfills to 55 percent of the 1985 volume.
>
> #7 Encourage the research, development, and implementation of recycling, resource recovery, energy recovery, and other methods of using garbage, trash, sewage, slime, sludge, hazardous waste, and other waste.

1.3 FEDERAL ENERGY REGULATORY COMMISSION ORDER

On September 26, 1986, the Pasco County Board of County Commissioners filed an application with the Federal Energy Regulatory Commission (FERC) for certification of its proposed resource recovery facility as a small power production facility pursuant to Section 292.207 of the commission's regulations and Section 201 of the Public Utility Regulatory Policy Act of 1978 (PURPA). Notice of the application was published in the Federal Register on October 16, 1986. On December 4, 1986, FERC granted the county's application for certification of its resource recovery project as a qualifying small power production facility. A copy of the final order is included in Appendix 10.1.7.

1.4 PUBLIC SERVICE COMMISSION ORDER

On February 24, 1987, the Pasco County Board of County Commissioners filed a petition with the Florida Public Service Commission (PSC) for a determination of need for a 29-megawatt solid waste fired cogeneration power plant. The PSC determined that Pasco County's proposed facility meets the relevant criteria for a determination of need under Section 403.519, Florida Statutes. Although it is a small facility, the Public Service Commission concluded that the 29-megawatt plant will contribute to the electric system reliability and integrity in peninsular Florida. A copy of the final order is included in Appendix 10.1.7.

2.0 SITE AND VICINITY CHARACTERIZATION

2.0 SITE AND VICINITY CHARACTERIZATION

2.1 SITE AND ASSOCIATED FACILITIES DELINEATION

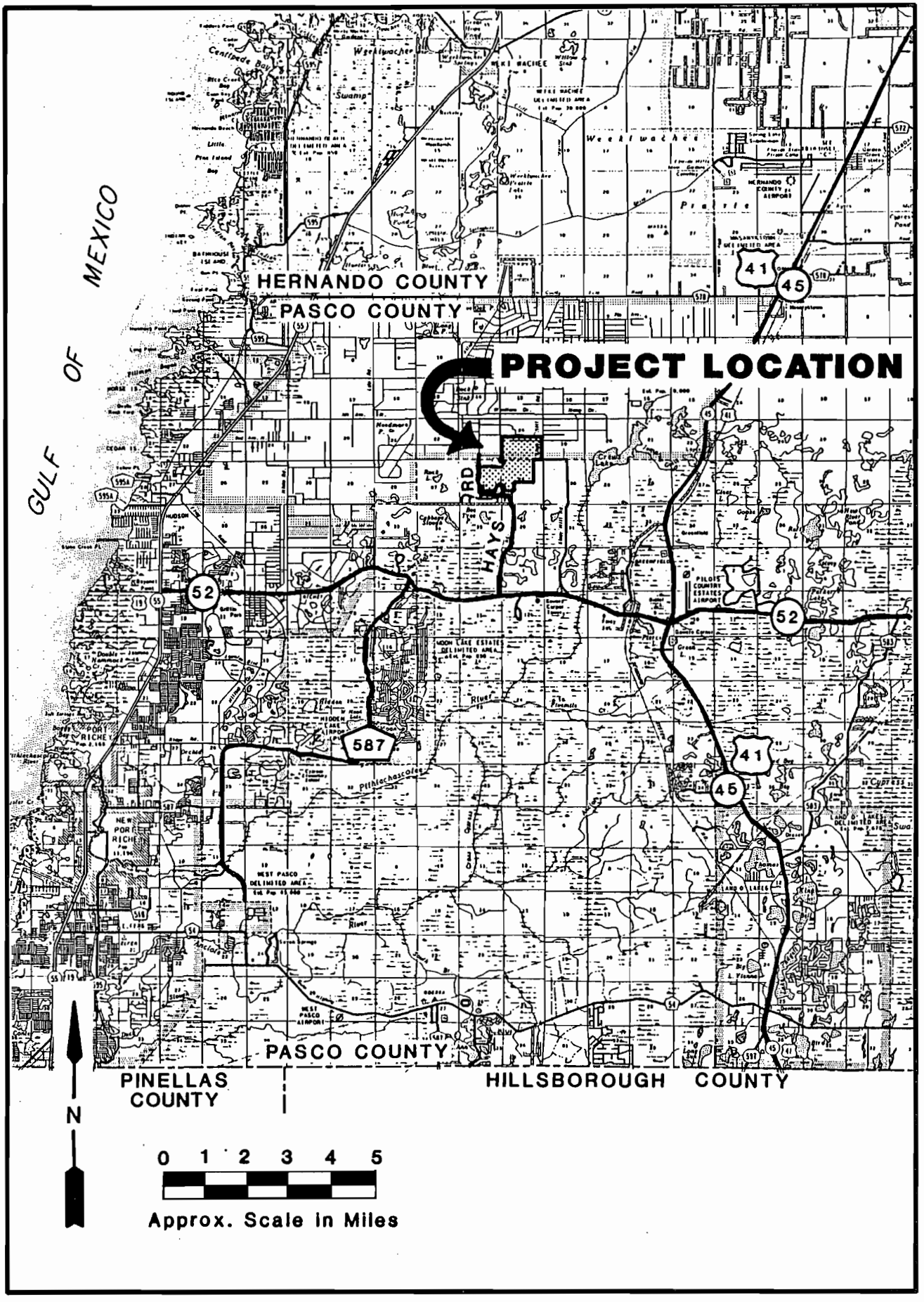
2.1.1 SITE LOCATION

The project site is located on a 751-acre tract owned by Pasco County, Florida, in the northwestern portion of the county (see Figure 2-1). The site, shown on Figure 2-2, is bounded on the west and south by Hays Road, on the east by Shady Hills Road, and on the north by Bluebird Lane. The property is bisected by a 295-foot wide Florida Power Corporation transmission line easement and right-of-way which runs roughly north/south through the site. The boundary survey is shown on Figure 2-3, and the legal description, deed and condemnation notice are provided in Appendix 10.6.

2.1.2 EXISTING USES

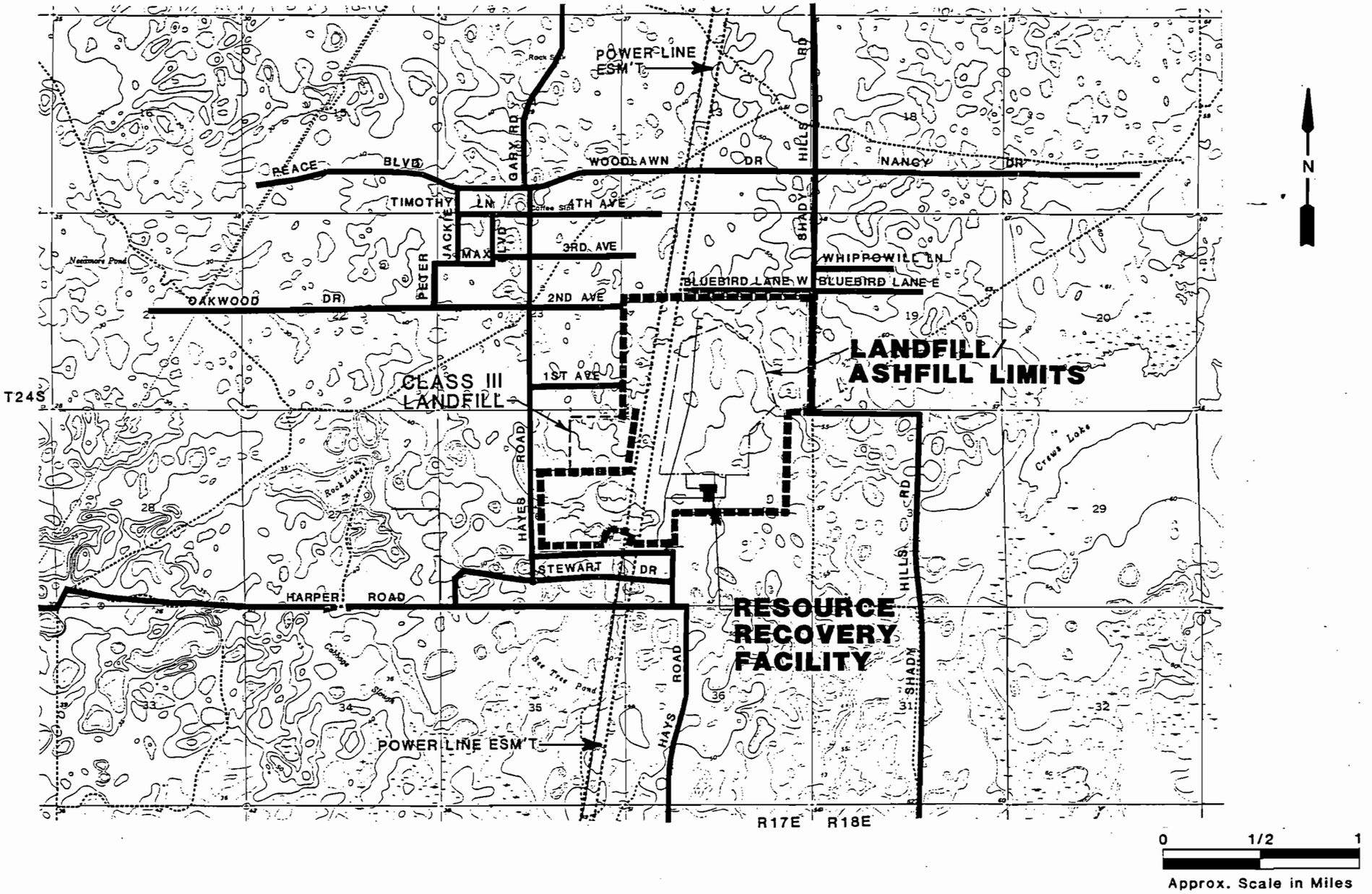
Abutting and adjacent properties are shown in Figure 2-4. All land abutting the site is under private ownership. Abutting properties east and west of the site consist primarily of vacant grassland and small cattle farms. A portion of the west boundary abutts the county-owned site for a proposed Class III landfill. To the north and south, abutting properties are rural areas containing pockets of low density, residential areas. Properties abutting to the southeast were once tree farms, but are no longer managed. Florida Power Corporation's Hudson substation occupies 6.24 acres of land abutting the south property line and the Florida Power Corporation easement. A complete list of landowners with property abutting the project site may be found in Appendix 10.6.

The project site encompasses unimproved grassland, planted pine areas, and isolated ponds. Wooded areas are scattered throughout the site, while wetland areas are found mainly in the southwest section of the property. There are no buildings on the property. Figure 2-5 illustrates the existing condition of the site and surrounding area.



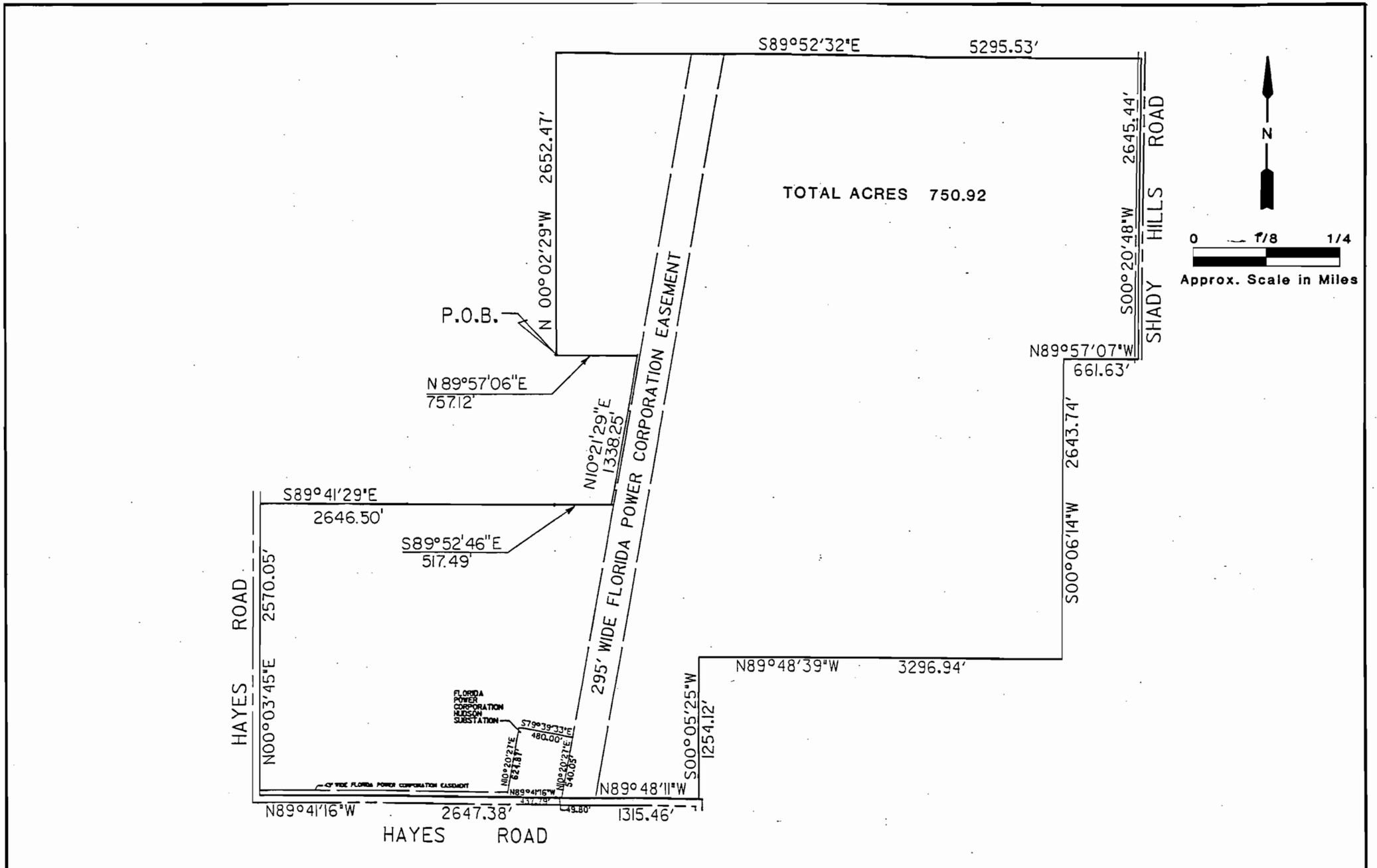
Pasco County Resource Recovery Program
General Location Map

FIGURE 2-1



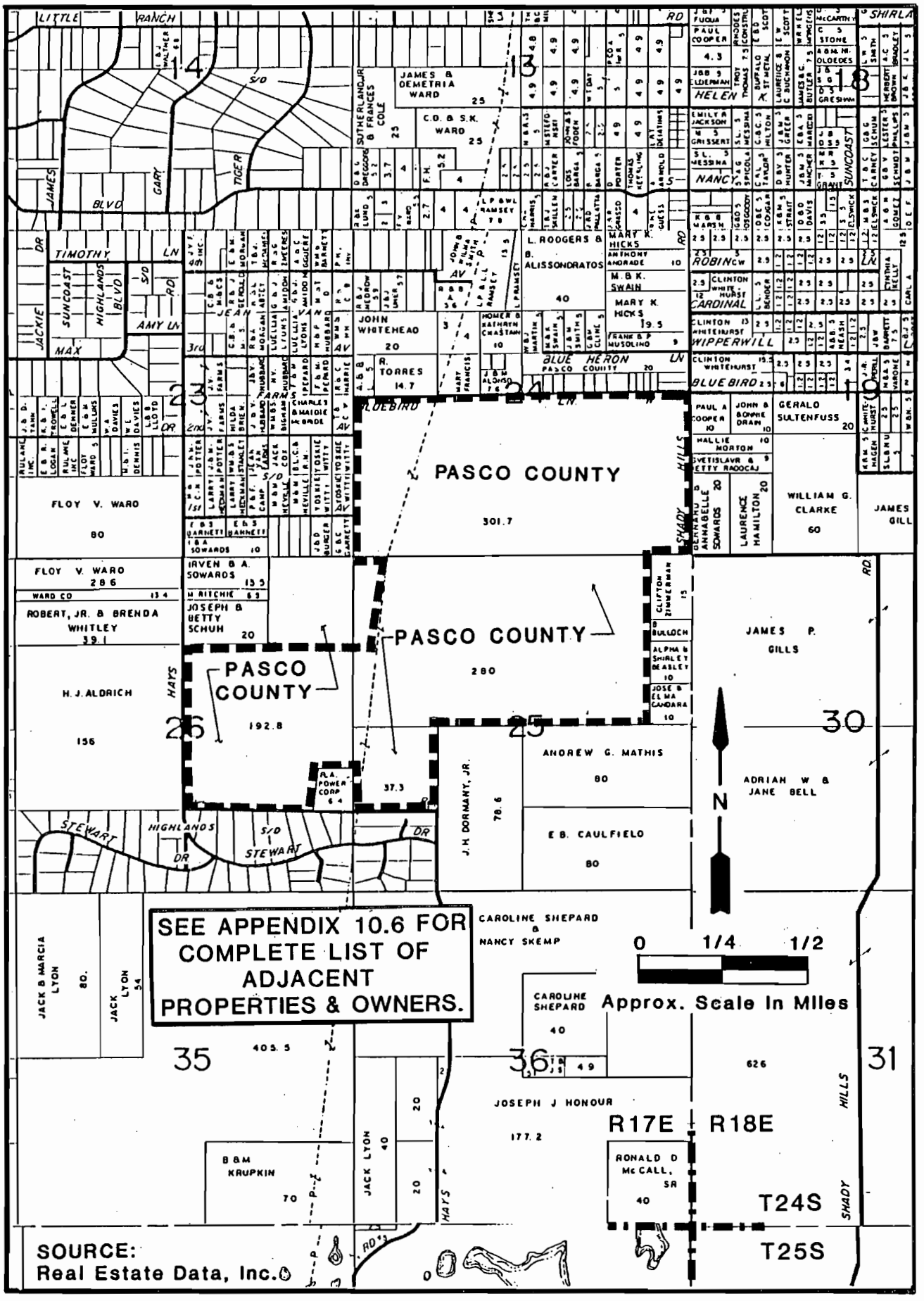
Pasco County Resource Recovery Program
Site Location

FIGURE 2-2



Pasco County Resource Recovery Program
Boundary Survey

FIGURE 2-3



Pasco County Resource Recovery Program
Abutting & Adjacent Properties

FIGURE 2-4

2.1.3 SITE MODIFICATION

As presented in the General Site Development Plan (Figure 2-6), the resource recovery facility has been situated in the southeast corner of the site. The site layout provides a short entrance from Hays Road, but a sufficient vegetation buffer zone to block the view of the facility from the road.

The facility structures will account for less than 0.5 percent of the site acreage. The ashfill/landfill will use 26 percent of the site. Over 60 percent of the site will remain unused. Table 2-1 summarizes the proposed land uses.

2.1.4 100-YEAR FLOOD ZONE

A very small portion of the project site is within the flood zone, however, no portion of the site to be used as a landfill/ashfill or resource recovery facility is located in the 100-year flood zone as defined by the Federal Emergency Management Agency. The 100-year flood zone in the vicinity of the project site is shown on Figure 2-7.

2.2 SOCIO-POLITICAL ENVIRONMENT

2.2.1 GOVERNMENTAL JURISDICTIONS

Within a 5-mile radius of the proposed facility, the area is unincorporated. The nearest incorporated areas, Port Richey and Weeki Wachee, are located 10 miles from the site.

In order to identify local, regional, state and federal areas of concern, the agencies listed in Table 2-2 were contacted. Information provided by each agency is summarized in the table.

The Florida Natural Areas Inventory provided a list of special plants and animals. A special element is any component of the natural environment, such as an animal or plant species, that is limited in abundance, range or habitat. Known occurrences of special elements have been recorded in the

Measurement Programs

Plant species were surveyed using aerial photographs and a series of onsite visits. These surveys were conducted from October 1986 to March 1987. For each plant community type identified, an onsite visit was made. Random walking surveys were taken, specimens collected, and a species list compiled. Dominance was estimated visually. Total observer hours for this survey exceeded 50 hours. The manuals used as ecological and taxonomic guides are listed in the reference section at the end of this permit application.

Wildlife surveys were also conducted between October 1986 and March 1987. Observations were made on foot and from vehicles. Random walkover surveys were made of all habitat types on the site. Species were identified by direct observation, song or call, scats, tracks, burrows or nest sites, and skeletal remains. More than 50 observer hours were spent completing this study. The manuals used as ecological and taxonomic guides are listed in the reference section at the end of this permit application.

2.3.7 METEOROLOGY AND AMBIENT AIR QUALITY

Meteorology

The Pasco County resource recovery facility will be located in Pasco County, on the west coast of south central Florida. The climate of this region is influenced by the surrounding waters, since no part of Florida is more than 70 miles from salt water. Interior topography ranges from 100 to 200 feet above msl. Summers are long, warm and relatively humid. Summer temperatures are similar throughout the state. Winters are mild, punctuated by periods of cool to cold air. Temperatures in the northern part of the state average 13°F cooler than in the south. The winds are influenced by the easterly winds, particularly in the south. Elsewhere land/sea breeze effects and convectional forces inland make prevailing winds erratic. Rainfall is distributed throughout the year with the 4-month period from June to September receiving slightly more rain. Precipitation is usually in the form of local showers and thundershowers.

Occasionally, tropical storms produce substantial amounts of rain over large areas. Climatological data from the Tampa International Airport is presented in Table 2-21.

Atmospheric Dispersion

Atmospheric factors which aggravate pollution rarely occur at any specific location in Florida. Air is usually sufficiently unstable to disperse pollutants, as demonstrated by the frequent convective development. The easterly winds sweep across the peninsula, particularly in the south. Five years of sequential meteorological data were used (1970 to 1974) for the air quality model analysis contained in the PSD permit application (see Volume III - Air Quality). The parameters which describe the dispersion characteristics are wind speed, wind direction, atmospheric stability, and mixing heights.

Wind speed data for the 5-year period have been organized into 6 wind speed categories, distributed over the 16 wind direction sectors, and displayed in a wind rose plot showing average, seasonal, and diurnal variations. The frequency of occurrence of a particular wind speed class in a particular wind direction as plotted on the wind rose is proportional to the size of the telescope segment. As shown in Figure 2-26, the prevailing wind direction is from the east. Wind speeds of 1 to 5 miles per second (2 to 11 miles per hour) occur most frequently from this direction. Other wind direction maxima are the east/northeast and the west. Wind speeds in the 5 to 8 miles per second (11 to 18 miles per hour) class most frequently come from the west. Figure 2-27 shows the location of the site and prevailing wind direction relative to surrounding communities. Seasonal wind patterns are displayed on Figure 2-28. Spring and summer seasons are strongly influenced by winds from the east and west, with lighter winds more likely from the east, and stronger winds more likely from the west. During the summer, winds are more likely to come from the southeastern quadrant than any other quadrant. During the fall and winter seasons, westerly winds diminish significantly. Winds from the northeastern quadrant dominate in the fall. The distribution of wind speeds in the winter is more uniform, but a strong easterly component in the wind direction is apparent.

TABLE 2-21

NORMALS MEANS AND EXTREMES
TAMPA INTERNATIONAL AIRPORT

TAMPA, FL **INTERNATIONAL AIRPORT** **EASTERN** **27° 58′ N** **82° 32′ W** **19 FT**

Month	Temperatures °F: Normal: Daily maximum	Daily minimum	Monthly	Extremes: Record highest	Year	Record lowest	Year	Normal Degree days Base 65 °F: Heating	Cooling	Precipitation in inches: Water equivalent: Normal	Maximum monthly	Year	Minimum monthly	Year	Maximum in 24 hrs.	Year	Snow, ice pellets: Maximum monthly	Year	Maximum in 24 hrs.	Year	Relative humidity pct: Hour 01 (Local time)	Hour 07	Hour 13	Hour 19	Wind: Mean speed m.p.h.	Prevailing direction	Fastest mile: Speed m.p.h.	Direction	Year	Pct of possible sunshine	Mean sky cover, tenths: sunrise to sunset	Mean number of days: Sunrise to sunset: Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, ice pellets 1.0 inch or more	Thunderstorms	Heavy fog, visibility ¼ mile or less	Temperatures °F: Max. (b) 90° and above	32° and below	Min 32° and below	0° and below	Average station pressure mb: Elev. 11 feet m.s.l.
(a)				37		37					37		37		37		37		37		20	23	20	20	37	14	31	31		36	37	37	37	37	37	37	37	37	20	20	20	20	
J	70.0	49.5	59.8	84	1975	22	1981	228	66	2.17	8.02	1948	1	1950	3.29	1953	0.2	1977	0.2	1977	85	86	59	73	8.8	N	35	29	1959	65	5.6	10	10	11	6	0	1	6	0	0	2	0	1019.9
F	71.0	50.4	60.6	86	1971	24	1958	186	68	3.04	7.95	1943	0.21	1950	3.68	1981	1	1951	1	1951	83	86	56	69	9.4	E	50	32	1954	66	5.5	9	9	10	7	0	2	3	0	0	1	0	1019.1
M	76.2	56.1	66.2	91	1949	29	1980	87	124	3.46	12.64	1959	0.06	1956	5.20	1960	1	1980	1	1980	83	86	55	67	9.7	S	43	29	1956	71	5.5	10	10	11	7	0	3	3	0	0	*	0	1017.5
A	81.6	61.1	71.6	93	1975	40	1971	0	202	1.82	6.59	1957	T	1981	3.75	1951	0.0		0.0		82	87	51	61	9.5	ENE	37	29	1961	75	5.0	11	11	8	5	0	3	1	1	0	0	0	1017.2
M	87.1	67.2	77.1	98	1975	49	1971	0	375	3.38	17.64	1979	0.17	1973	11.64	1979	0.0		0.0		82	86	53	62	8.9	E	46	36	1958	75	5.2	10	12	9	6	0	6	1	7	0	0	0	1015.5
J	89.5	72.3	80.9	98	1977	61	1972	0	477	5.29	13.75	1974	1.86	1951	5.53	1974	0.0		0.0		84	87	60	69	8.2	E	47	31	1964	67	6.2	5	10	11	12	0	14	*	15	0	0	0	1016.1
J	90.0	74.2	82.2	97	1964	63	1970	0	533	7.35	20.59	1960	1.65	1981	12.11	1963	0.0		0.0		85	88	63	73	7.4	E	58	32	1963	62	6.7	2	16	13	16	0	21	*	20	0	0	0	1017.6
A	90.3	74.2	82.2	98	1975	67	1973	0	533	7.64	16.59	1949	2.35	1952	5.37	1949	0.0		0.0		87	91	65	76	7.2	ENE	38	11	1961	60	6.7	3	16	12	17	0	21	*	20	0	0	0	1017.3
S	88.5	72.8	80.9	96	1972	57	1981	0	477	6.23	13.98	1979	1.28	1972	4.67	1950	0.0		0.0		86	91	62	75	8.0	ENE	56	34	1960	60	6.5	4	14	12	13	0	12	*	14	0	0	0	1015.3
O	83.7	65.1	74.5	94	1959	40	1964	0	295	2.34	7.36	1952	0.16	1979	2.54	1968	0.0		0.0		85	88	57	71	8.7	NNE	38	02	1953	64	5.2	11	11	9	7	0	3	1	2	0	0	0	1016.6
N	76.9	56.4	66.7	90	1971	23	1970	65	116	1.87	6.12	1963	1	1960	4.22	1963	0.0		0.0		86	88	57	74	8.5	NNE	40	29	1963	65	5.0	12	9	9	5	0	1	3	*	0	0	0	1018.6
D	71.6	50.9	61.3	86	1978	18	1962	173	58	2.14	6.66	1950	0.21	1956	3.28	1969	0.0		0.0		85	88	59	74	8.7	N	45	36	1953	62	5.6	10	9	12	7	0	1	4	0	0	1	0	1019.8
YR	81.4	62.5	72.0	98	JUN 1977	18	DEC 1962	739	3324	46.73	20.59	JUL 1960	T	APR 1981	12.11	JUL 1960	0.2	JAN 1977	0.2	JAN 1977	84	88	58	70	8.6	E	47	31	JUN 1964	66	5.7	97	141	127	107	0	87	23	77	0	4	0	1017.5

NOTE: NORMAL COOLING DEGREE DATA PUBLISHED IN THE 1982 ANNUAL WERE FOR THE 1951-1980 PERIOD.

(a) Length of record, years, through the current year unless otherwise noted, based on January data.
(b) 70° and above at Alaskan stations.
* Less than one half.
T Trace.
BLANK entries denote missing or unreported data.

NORMALS - Based on record for the 1951-1980 period.
MEANS - Length of record in (a) is for complete data years.
EXTREMES - Length of record in (a) may be for other than complete or consecutive data years. Date is the most recent in cases of multiple occurrence.
WIND DIRECTION - Numerals indicate tens of degrees clockwise from true north. 00 indicates calm.
FASTEST MILE WIND - Speed is fastest observed 1-minute value when direction is in tens of degrees.

NORMALS, MEANS, AND EXTREMES TABLE NOTE(S):

Means and extremes above are from existing and comparable exposures. Annual extremes have been exceeded at other sites in the locality as follows:

Wind
Fastest Mile: 84 in Sep. 1935.

SOURCE: GALE Research Co., 1985, "Climate of the States", Detroit, MI

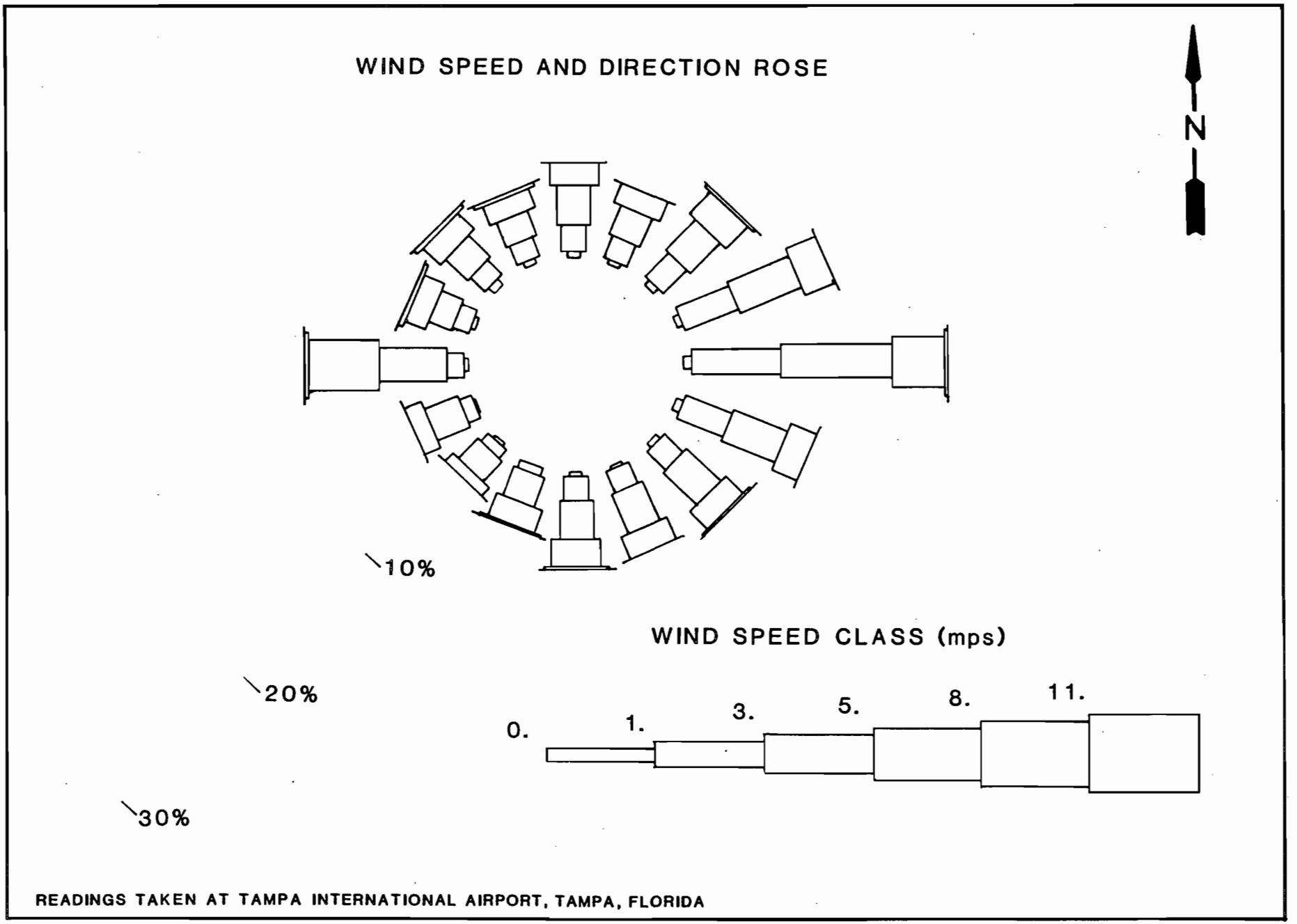
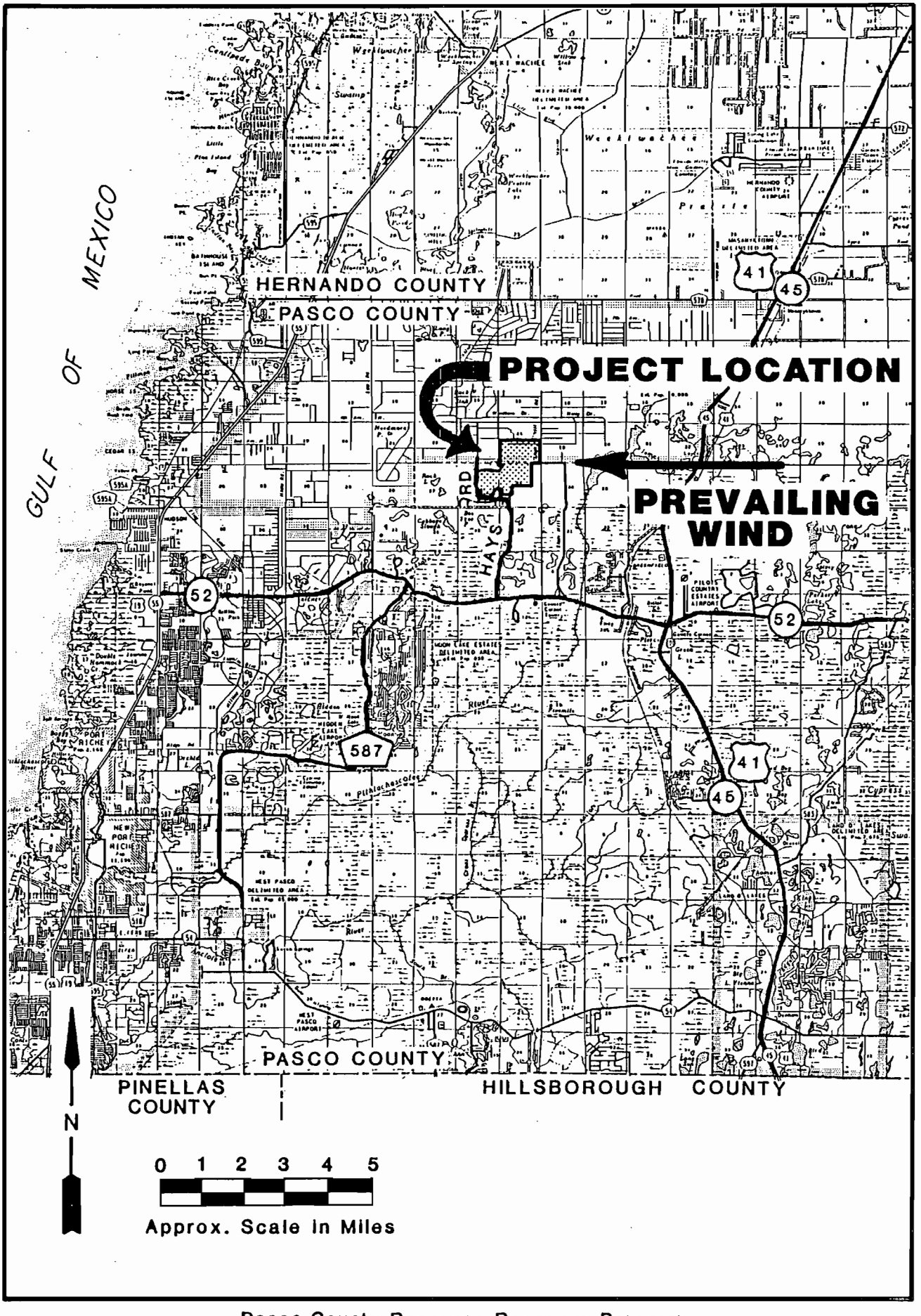


FIGURE 2-26

Pasco County Resource Recovery Program
Annual Wind Rose (1970-1974)



Pasco County Resource Recovery Program
Area Map With Prevailing Wind Direction
(1970-1974)

FIGURE 2-27

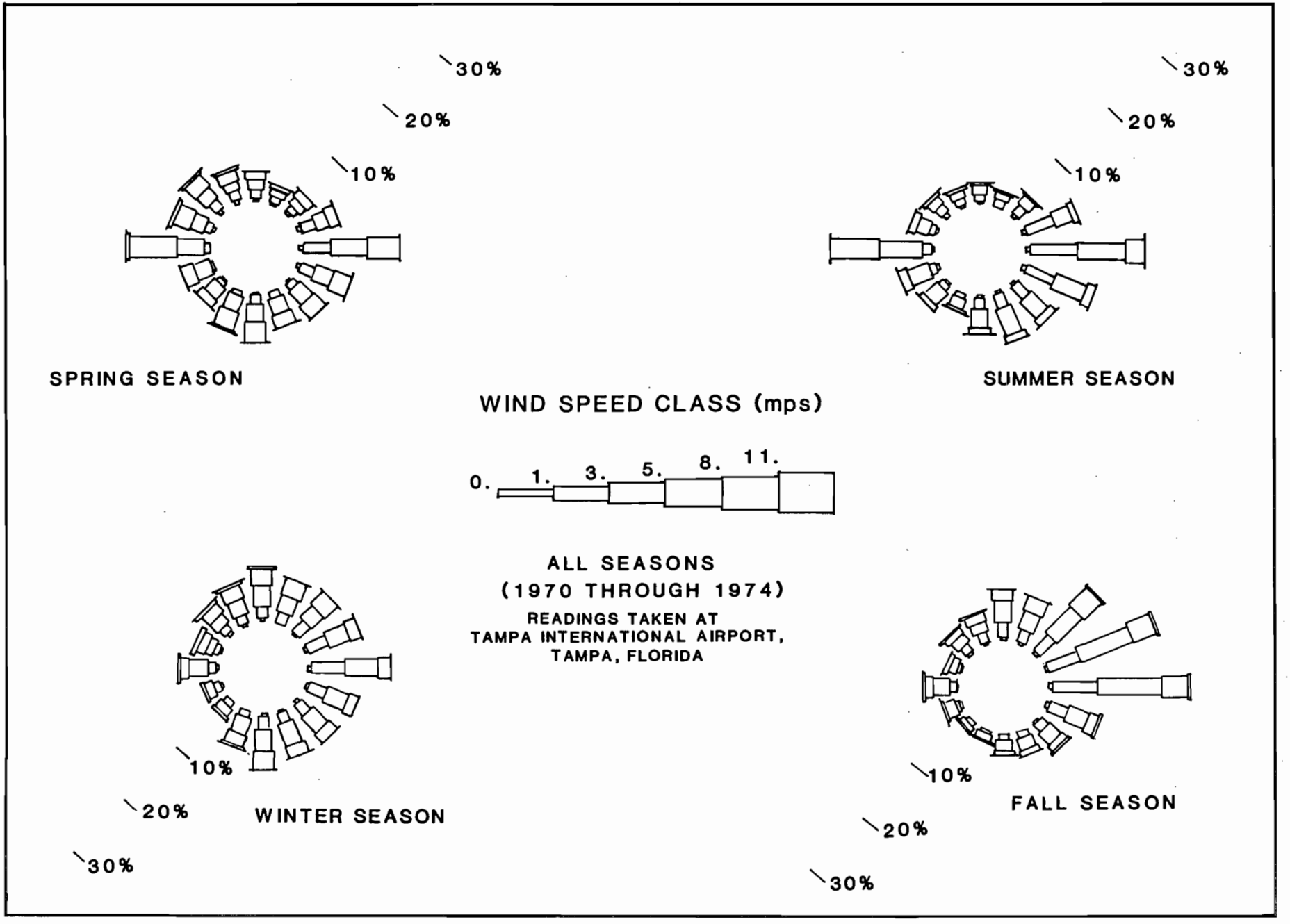


FIGURE 2-28

Pasco County Resource Recovery Program
Annual Wind Rose

Diurnal wind direction roses are presented in Attachment B of Volume III - Air Quality. In the combined diurnal wind direction distribution, the west direction and the south/southwest through west/southwest directions show a diurnal pattern. This pattern shows a maximum frequency of occurrence during the early afternoon and a minimum frequency during the early morning hours. The sectors to the south/southwest to west/southwest are influenced by Old Tampa Bay, located near the airport. The western sector shows the influence of the Gulf of Mexico, although the airport is several kilometers inland. Since the magnitude of the western sector is much larger than the southwestern sectors, the Gulf of Mexico influence has a greater effect than the Old Tampa Bay area on the regional wind pattern, although the bay is much closer.

The spring and summer diurnal wind roses show not only the daily land/sea breeze effects, but also the seasonal variation as the westerly direction exceeds 30 percent during the summer. The strong east/southeast to south sectors show the movement of warmer air northward across the state.

Virtually no land/sea breeze pattern is evident during the fall and winter. The fall is strongly influenced by winds coming from the northeast, as cool air begins to move southward. During the winter, no clear diurnal pattern is evident, but an easterly component to the general seasonal pattern is shown.

The wind speeds and directions for the 5 years of meteorological data are stratified by the stability Classes A through F in Attachment B of Volume III - Air Quality, where Class A stability is unstable, and Class F is stable. Classes A and B represent the most unstable categories. Each of these cases occurs approximately 5 percent of the time, since mixing is promoted which, in turn, promotes a more stable atmosphere. Class A stability occurs during the day when skies are clear and the incoming solar radiation is strong—conditions which are more likely during the summer. Tampa meteorological data show that Class A stability is strongly associated with light easterly winds. Class B stability occurs during the day when the incoming solar radiation is moderate, conditions typical of partly cloudy days, or during the fall when sunlight is less direct. Class

B conditions are more frequently associated with moderate westerly winds. During the day when the cloud cover is more complete or the incoming solar radiation is slight, Class C—slightly unstable—conditions occur. Winds associated with this case are most likely moderate to strong westerly winds. Neutral stability Class D occurs during overcast conditions during the day or night, or when speeds are strong and the stability category is most likely to occur. These conditions are most frequently associated with easterly and westerly winds. Classes E and F represent the slightly stable and stable conditions. These conditions occur at night when the sky is partly cloudly or clear. The slightly unstable case is associated with moderate easterly winds. The stable case is associated with light easterly winds.

Mixing height is the height above the surface through which vigorous vertical mixing occurs. Although the mixing height varies throughout the day, the morning and afternoon values presented in Table 2-22 represent the average minimum and maximum heights, respectively. Certain atmospheric conditions make the calculation of mixing height difficult. These conditions include periods of marked cold air advection, significant precipitation, and missing wind speed or temperature data. These periods were not included in the calculation of the average mixing heights presented.

Ambient Air Quality

Pollutants subject to Prevention of Significant Deterioration review (PSD), and emitted at "significant levels" are subject to ambient air quality monitoring [FAC 17-2.500(5)(f)], to define background concentrations. These ambient levels are then used as a basis for establishing whether the proposed emissions contribute to the violation of ambient air quality standards. The pollutants subject to this monitoring provision are the criteria pollutants for which ambient standards have been set by the Florida Department of Environmental Regulation, and other noncriteria pollutants subject to PSD. The significant emission levels and proposed emission levels for these pollutants are listed in Table 2-23.

TABLE 2-22

HOLTZWORTH MIXING HEIGHTS FOR THE TAMPA AREA

Period	Morning (meters)	Afternoon (meters)
Annual	493	1359
Spring	503	1523
Summer	656	1460
Fall	419	1401
Winter	394	1052

SOURCE: Holtzworth, G.C. January 1972. Mixing Heights, Wind Speeds, and Potential for Urban Air Pollution Throughout the Contiguous United States. U.S. Environmental Protection Agency AP-101.

TABLE 2-23

COMPARISON OF SIGNIFICANT EMISSION RATES
AND FACILITY POTENTIAL EMISSIONS

Pollutants	Significant[a] Emission Rates (tons/year)	Potential[b] to Emit (tons/year)
Particulate matter		
(Total suspended particulate)	25	68
(Inhalable particulate, PM_{10})	15	68
Carbon monoxide (Annual)	100	103
Nitrogen oxides	40	1,351
Sulfur dioxide	40	471
Ozone (VOCs)	40	44
Lead	0.6	3.4
Beryllium	0.0004	0.000285
Mercury	0.1	3.07
Inorganic Arsenic	—	1.91×10^{-2}
Fluorides	3	17
Sulfuric acid mist	7	75
Vinyl chloride	1	—[c]
Asbestos	0.007	—[c]
Total reduced sulfur (including H_2S)	10	—[c]
Reduced sulfur (including H_2S)	10	—[c]
Hydrogen sulfide	10	—[c]
Hydrogen chloride[d]	—	267
Dioxin (as 2,3,7,8 TCDD toxic equiv.)[d]	—	7.45×10^{-6}

[a] FAC 17.2 Part V Table 500.2 or 40 CFR 52.21 (b)(23)(i).

[b] Emission estimates at 100 percent system capacity and availability.

[c] Emissions of these pollutants are negligible.

[d] Not a PSD regulated pollutant.

Sources may be exempt from air quality monitoring if the impact of a given pollutant falls below the de minimis monitoring concentration [FAC 17-2.500(3)(e)]. The air quality impact analysis was done using sequential meteorological data. From this analysis, the highest, second-highest concentrations were compared to the appropriate de minimis concentration (Table 2-24). Less than de minimis levels were predicted for each of the PSD regulated pollutants emitted from the facility.

There are numerous State and Local Air Monitoring Stations (SLAMS) and National Air Monitoring Stations (NAMS) operating in counties abutting Pasco County. A majority of the monitors used to develop criteria pollutant background concentrations for the Pasco County site are located in Hillsborough and Pinellas Counties, toward the south and southeast. Background concentrations display an inherent conservatism due to urban emissions influencing these monitoring sites, but not the proposed site.

There are no ambient air monitoring stations within 10 kilometers of the Pasco County resource recovery facility site. The proposed site is an area generally free from impacts of other major point and area sources. The low density of industry within 25 kilometers of the proposed site suggests that there is an associated low probability of impact on air quality by such sources near the Pasco County site. Regional background concentrations for several pollutants were developed from available monitoring data from the surrounding counties (see Table 2-25). Most of the monitors for total suspended particulates and sulfur dioxide are sited near major electric utilities. Monitors for nitrogen dioxide, lead, and carbon monoxide are located in congested urban areas. Therefore, the estimates of background concentrations for the proposed site, as shown in Table 2-26, are conservative because they are based on monitors that are influenced by major point and area pollution sources. Additional information about the development of the background concentrations is presented in Section 5.0 of the PSD permit application (see Volume III - Air Quality).

TABLE 2-24

COMPARISON OF PREDICTED CONCENTRATIONS TO SIGNIFICANT IMPACT AND DE MINIMIS MONITORING LEVELS

(ug/m^3)

Pollutant Level	Averaging Time	Rank[b]	Maximum Predicted Concentration	Significant Impact Level	De Minimis Monitoring
Sulfur Dioxide	Annual	H	0.36	1	—
	24-hour	HSH	2.99	5	13
	3-hour	HSH	11.43	25	—
Particulate Matter	Annual	H	0.10	1	—
	24-hour	HSH	0.87	5	10
Nitrogen Dioxide	Annual	H	1.03	1	14
Carbon Monoxide	8-hour	HSH	7.75	500	575
	1-hour	HSH	20.0	2,000	—
Lead[a]	24-hour	HSH	0.09	—	0.1[a]
Mercury	24-hour	HSH	0.0225	—	0.25
Beryllium	24-hour	HSH	$2.9X10^{-6}$	—	$5.0X10^{-4}$
Fluoride	24-hour	HSH	0.0124	—	0.25

[a] The de minimis monitoring level for lead is a quarterly averaged value. The 24-hour average concentration was substituted as a conservative estimate of the quarterly value.

[b] Abbreviations: H = Highest concentration
HSH = Highest, second-highest concentration

TABLE 2-25

AMBIENT SULFUR DIOXIDE MONITORING DATA USED TO DERIVE BACKGROUND CONCENTRATIONS FOR PROPOSED PASCO COUNTY RESOURCE RECOVERY FACILITY DISPERSION MODELING STUDY

1984, 1985, 1986 Monitored Concentrations (ug/m^3)

County	Address	SAROAD No.	Monitor Reference Letter	3-Hour Avg. HSH	24-Hour Avg. HSH	Annual+ H	Monitoring Location Relative to Pasco RRF Site++ Distance (km)	Azimuth (degrees)
Hillsborough	Apollo Beach/Apollo Beach	1800084G02*	A	548,521,397	97,85,91	13,13,13	69.3	167.7
	5012 Causeway, Tampa	1800095G02	B	(456),376,360	(103),83,84	15,21,22	52.2	163.3
	Coast Grd. Sta., Davis Is.	4360035G02	C	393,287,350	82,67,77	19,14,20	50.3	168.8
	Ballast. Pt. Prk, Interbay Blvd.	4360053G02	D	383,265,340	69,69,84	16,15,20	54.3	172.5
	HCEPC OFC., Ybor City	4360052G01*	E	474,303,467	127,82,133	16,14,(26)	47.1	166.0
	Big Bend Road, Hillsb.	1800021G02*	F	437,637,475	82,134,99	13,15,16	67.2	163.5
Citrus	Crystal Rvr./Curtis Tool Co.	0580002F02	G	261,212,x	59,48,x	12,x,x	64.2	355.2
	Crystal Rvr./Twin Rvr. Marina	0580003J02	H	114,144,104	23,36,17	5,4,3	58.2	357.9
	East of FPC Plt./Crystal River	0580005J02	I	310,323,176	59,77,36	7,6,6	73.7	354.4
Pinellas	Pinellas Prk./11500 43rd Av.	3620002G05	J	266,258,202	71,61,75	10,10,11	57.5	193.7
	Derby Lane 10100 San Mar., St. Petersburg	3980023G02*	K	406,362,497	95,85,121	16,16,19	56.7	187.0
	303A Anclotte Rd., Tarpon Springs	4380001G02	L	96,92,122	28,30,28	5,6,6	31.2	223.6
	Brooker Creek Prk., Tarpon Springs	4380002G03	M	196,135,211	44,29,50	8,7,8	34.2	204.6

Data Source: Florida air quality statistical reports for 1984, 1985, and 1986 (Florida BAQM, Air Monitoring and Analysis Section)

Abbreviations:
H = Highest
HSH = Highest, Second-Highest

Symbols:
+ = Arithmetic mean
* = Monitor impacted by local industry/utilities; not representative of general air quality
x = Less than 75% annual data collection efficiency
( ) = Selected ambient background SO_2 concentration (for given averaging period) proposed for Pasco Site
++ = Pasco Site stack coordinates are approximately 347.12 UTM-East, 3139.23 UTM-North

TABLE 2-26

PROPOSED BACKGROUND CONCENTRATIONS OF CRITERIA POLLUTANTS
FOR THE PASCO COUNTY RESOURCE RECOVERY FACILITY SITE*
(ug/m^3)

Pollutant	Averaging Periods					
	1-Hour	3-Hour	8-Hour	24-Hour	Quarterly	Annual
SO_2	—	456[a] (35%)	—	103[a] (28%)	—	26[b] (43%)
TSP	—	—	—	87[c] (58%)	—	43[c] (73%)
PM_{10}	—	—	—	87[g] (58%)	—	45[g] (90%)
NO_2	—	—	—	—	—	39[h] (39%)
Pb	—	—	—	—	0.4[e] (27%)	—
CO	5,153[f] (13%)	—	1,145[f] (11%)	—	—	—
O_3	222[h] (94%)	—	—	—	—	—

Symbols:

H = Highest concentration
HSH = Highest, second-highest concentration
( ) = Number in parentheses denotes percentage of FAAQS consumed. PM_{10} is compared to the NAAQS.

Superscripts:

*Selection based on 1984-1986 ambient monitoring data.

[a] HSH, SAROAD No. 1800-095-G02, 1984; 5012 Causeway, Tampa, Hillsborough County.

[b] Highest Arithmetic Mean, SAROAD No. 4360-052-G01, 1986; HCEPC OFC, Ybor City, Hillsborough County.

[c] See Table 5-6 in PSD permit application (Volume III - Air Quality).

[d] SAROAD No. 4360-052-G01 1986; HCEPC OFC, Ybor City, Hillsborough County; Highest annual arithmetic mean for a continuous monitor with >75% data capture for 1986.

[e] SAROAD No. 1800-082-G02, 1986; County Maintenance Barn #82, Orient Road, Hillsborough County; Highest 3-month average concentration for 1986.

[f] Assumed 4.5 ppm (1-hour) and 1 ppm (8-hour) backgrounds based on data from the Florida Indirect Source Modeling Interim Guideline.

[g] Assumed that the TSP background concentrations are entirely PM_{10}.

[h] SAROAD No. 4360-035-G02, 1986; Coast Guard Station, Davis Island, Tampa, Hillsborough County.

Measurement Programs

Florida has been monitoring air quality since 1962 when the Department of Health began monitoring particulate matter at Miami International Airport. In January 1972, Florida submitted a plan to the U.S. Environmental Protection Agency (EPA) for establishing an air quality surveillance system in accordance with EPA regulations published in Section 420.17 of 42 CFR Part 420. The surveillance system established as a result of that plan consists of 204 stations.

Sampler location is determined by the monitoring objectives and siting criteria contained in 40 CFR 58 Appendix D, Network Design for State and Local Air Monitoring Stations. Continuous samplers run 24 hours per day. Manual samplers run for 24 hours every 6th day. Missing values are carefully documented and makeup days may be required in manual networks to ensure that reporting requirements are met. The measurement method for each pollutant is listed in Table 2-27. Each sampler is calibrated on a regular basis. Calibration standards are referenced to the National Bureau of Standards - Standard Reference Materials (NBS-SRM). Calibrations are performed at least once each quarter to test the instrument over its full operating range. Final unadjusted calibrations are performed prior to maintenance, before instrument shutdown, when biweekly span checks exceed $\pm$15 percent error, and after an air quality exceedance. Confidence limits of precision and accuracy are assigned to all measurements with federally approved reference or equivalent methods/monitors. EPA's audit covers facilities, equipment, procedures, documentation, and personnel.

2.3.8 NOISE

A technical noise analysis was performed for the proposed resource recovery facility. The noise study and related correspondence are contained in Appendix 10.12 (see Volume II). The study explains the methodologies used in estimating the operational impacts of the facility and the results of the analysis. Ambient noise levels were measured at four locations in the

TABLE 2-27

AIR POLLUTION MEASUREMENT METHODS

Parameter	Method or Reference
Carbon Monoxide	Title 40 Code of Federal Regulations (40 CFR), Part 50, Appendix C Beckman Model 866; EPA No. RFCA-0876-12
Dust (Microscopy)	EPC - Nikon Polarization Microscope
Dustfall	Journal of Air Pollution Control Association July 66, Vol. 16, No. 7
Nitrogen Dioxide:	
Bubbler	EPA No. EON-1277-026 page 62971 Federal Registry Vol. 42
Continuous	40 CFR, Part 50, Appendix F 1. Monitor Labs Model 8440; EPA No. RFNA-0677-021 2. Bendix Model 8101-B Analyzer
Ozone	40 CFR, Part 50 Appendix D 1. Bendix Model 30002; EPA No. RFOA-0176-007 2. Dasibi Model 1003 AH; EPA No. EQOA-0577-019
Sulfur Dioxide:	
Bubbler	40 CFR, Part 50, Appendix A
Continuous	1. Thermo Electron Model 43; EPA No. QSA-0276-009 2. Philips Model PW9755; EPA No. EQSA-0676-010
Suspended Particulate:	
Total	40 CFR, Part 50, Appendix B
Sulfates	EPC - Turbidimetric Method
Lead	40 CFR, Part 50, Appendix G

SOURCE: Florida Department of Environmental Regulation. 1984. Florida National Air Monitoring Stations and State and Local Air Monitoring Station Network Description.

site vicinity to establish baseline conditions during day and night periods. The selection of the monitoring locations was based on the following criteria:

- Land use or zoning—specifically, an area with a significant residential population or commercial use;
- Local noise ordinances—governmental agencies have established local noise levels which may not be exceeded; and
- Sensitive receptors—concentrations of individuals who may be sensitive to an increase in noise level (i.e., hospitals, schools, nursing homes).

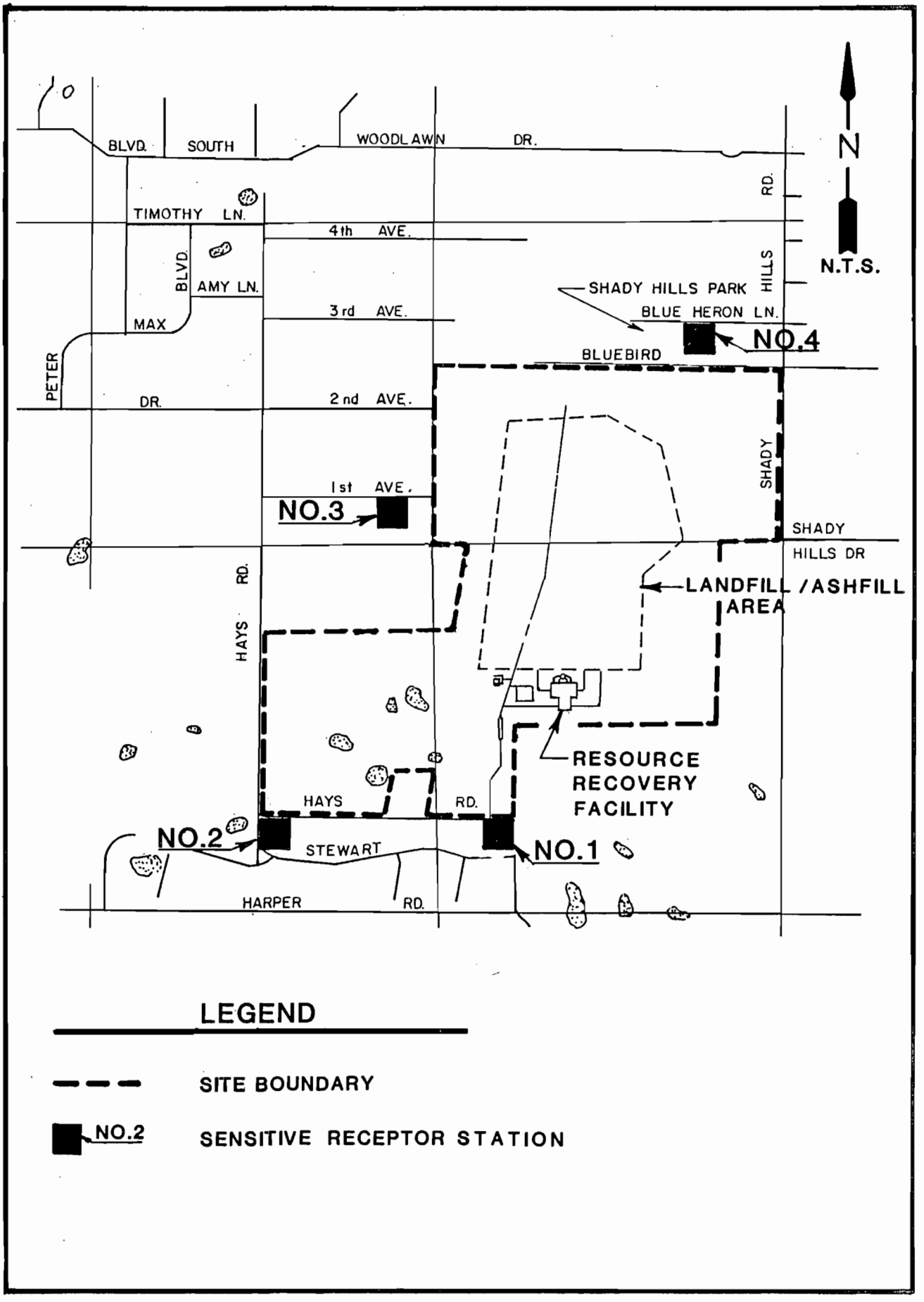
Based on the criteria detailed above, monitoring stations were placed around the site as shown in Figure 2-29. In some cases, a monitoring station was used to assess ambient sound levels at more than one sensitive receptor. Table 2-28 lists the sensitive receptors selected.

Noise levels were measured every two hours, on one day, for a 20-minute period at each site. Noise levels were measured with a Type 2 sound level meter at a height of approximately 5 feet. During each 20-minute period, 40 readings were taken from which a 1-hour equivalent continuous sound level in decibels was calculated (L_{eq}). Hourly values for these readings are presented in Table 2-29.

Noise impacts for the proposed facility were estimated using typical sound levels from other resource recovery facility operations and truck traffic. These predicted impacts were combined with existing noise levels to estimate total cumulative impact.

Pasco County has a noise ordinance which is contained in Section 16-3/4-29 of the Pasco County Code. According to this ordinance:

> No noise shall be created in an industrial zone which exceeds those levels given below, as measured on the adjacent property line.



Pasco County Resource Recovery Program
Sensitive Receptor Locations

FIGURE 2-29

TABLE 2-28

SENSITIVE RECEPTORS
NOISE MONITORING PROGRAM

Monitoring Station Number	Sensitive Receptor	Comments
1	Residence	Assess impacts to resident closest to site entrance
2	Residence	Assess impacts to residents southwest of the site
3	Residence	Assess impacts to residents northwest of the site
4	County Park	Assess impacts to participants of park activities

TABLE 2-29

HOURLY L_{eq} VALUES BY STATION

Hour	Station			
	MS-1	MS-2	MS-3	MS-4
0	42	54	47	30
3	33	41	32	43
5	40	42	36	46
7	51	52	46	54
9	45	46	48	51
10	49	50	50	47
12	50	48	48	52
13	54	54	49	48
15	55	45	51	50
18	51	50	58	58
20	53	54	50	55
22	55	50	36	44

MAXIMUM NOISE LEVELS PERMITTED IN
INDUSTRIAL ZONE

Adjoining Commercial District (No Time Limit)	Adjoining Residential District	
	7:00 am–6:00 pm Monday - Saturday	6:00 pm–7:00 am Monday - Saturday and all hours of Sunday
72 dBA	66 dBA	55 dBA

In cases of impulsive noises, the noise levels mentioned above shall be increased by ten (10) dBA (as measured on a sound level meter) during the hours of 7:00 am to 6:00 pm, Monday through Saturday, but shall not exceed the levels mentioned above during the period from 6:00 pm to 7:00 am, Monday through Saturday and all day Sunday.

This ordinance applies to both adjoining commercial districts as well as adjoining residential districts. Table 2-30 compares predicted resource recovery facility noise impacts and existing background noise to county standards.

The predicted noise impacts are small in comparison to existing background noise. The resource recovery facility is expected to have a minimal impact on existing noise levels throughout the study area. A more detailed discussion of the noise monitoring program, and calculations of predicted impacts are contained in Appendix 10.12.

2.3.9 OTHER ENVIRONMENTAL FEATURES

Existing Traffic Condition

The traffic generated by the resource recovery facility will travel primarily on Hays Road and SR 52. Hays Road is a 24-foot wide, 2-lane roadway with limited shoulder room for emergency parking. It is owned and maintained by Pasco County. Hays Road runs in a north/south direction and links the project site with SR 52. In January of 1986, Hays Road was

TABLE 2-30

RESOURCE RECOVERY FACILITY NOISE IMPACTS

Station	Background Level (dBA) 24-hour	Night Only[a]	Expected Facility Level (dBA)	Combined Level (dBA)	County Standard[b]	dBA Change
1	51	—	48	53	55	2
	—	51	48	53	55	2
2	51	—	40	51	55	0
	—	51	40	51	55	0
3	50	—	43	51	55	1
	—	51	43	52	55	1
4	52	—	39	52	55	0
	—	53	39	53	55	0

[a] 6 pm - 7 am per Pasco County Code.

[b] The most restrictive standard for Sundays and nighttime was used for comparison.

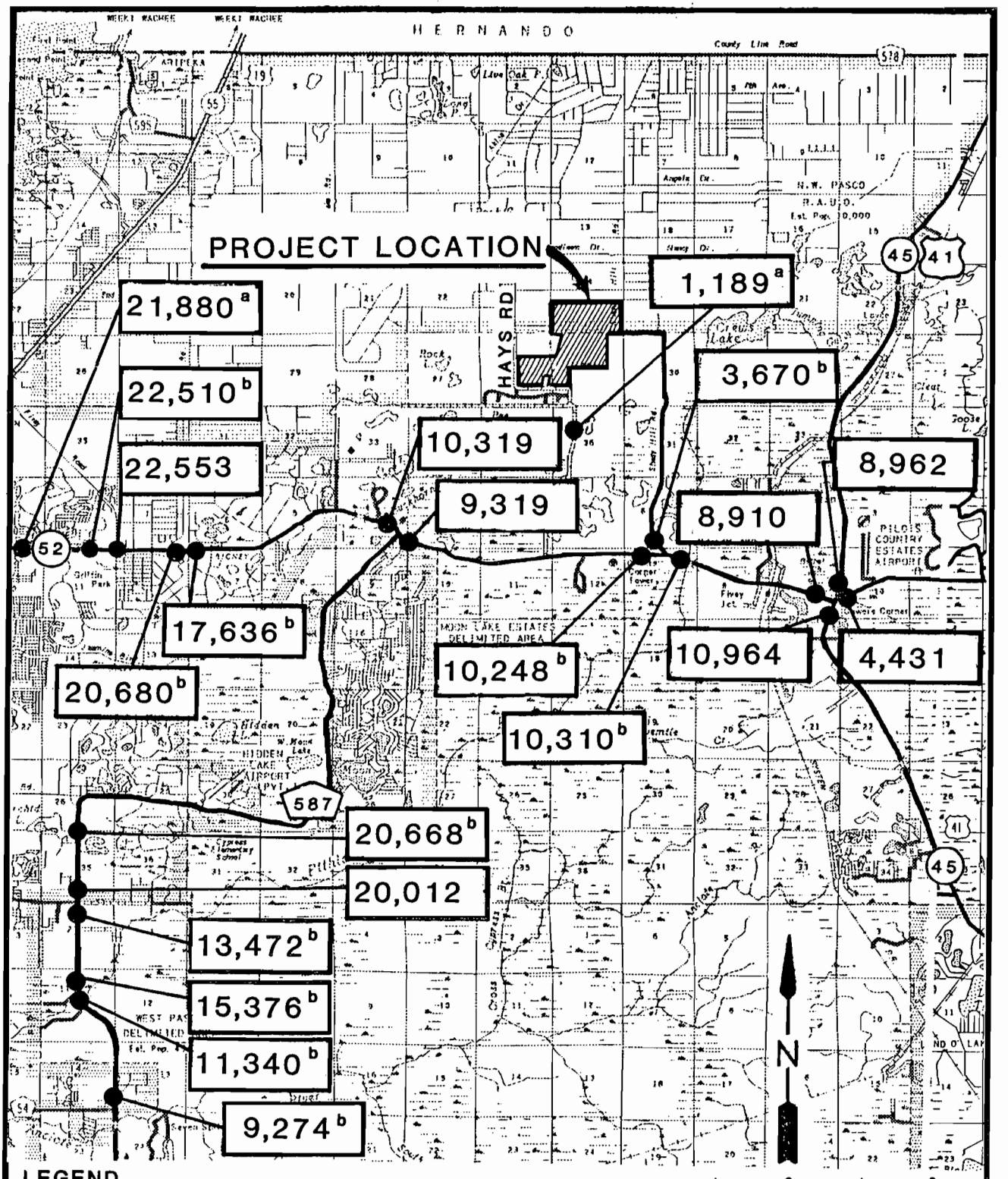
resurfaced from the intersection of Hays Road and SR 52, to the intersection of Hays Road and Harper Road (1,000 feet south of the site).

SR 52 is a major east/west roadway which traverses Pasco County from US 19 to Dade City. It is a 24-foot wide, 2-lane road with 8-foot unpaved shoulders. Major intersecting roads along SR 52 that will be impacted by the project are Moon Lake Road (587), Shady Hills Road, and US 41. Figure 2-30 shows the road network for the project area and the existing traffic flows. At the major intersections, the average annual daily traffic count is given. As shown on the figure, traffic counts increase considerably traveling west on SR 52.

Future Road Construction

Plans are underway to renovate SR 52. Beginning at US 19 and continuing to Moon Lake Road (587), SR 52 will be widened to 6 lanes, with curb and gutters. Commencing at Moon Lake Road and concluding at I-75, SR 52 will become 4 lanes. Preliminary design calls for a 52-foot median, 12-foot lanes, and 10-foot shoulders (4 feet paved). Construction will be performed in phases. The first phase, US 19 to Moon Lake Road, is to be completed by 1995. No completion dates have been set for the remaining phases, but the estimated project completion date is the year 2000.

Preliminary planning has begun for a north/south freeway crossing Pasco County. Two of the three proposed alternative corridors run adjacent to the Florida Power Corporation easement which crosses the site boundaries. The proposed freeway is known as the North Suncoast Corridor. It will be 4 lanes wide, and is expected to carry heavy traffic volumes. At present, it is likely that an interchange will be used to cross SR 52. The project completion date is estimated to be in the year 2010. The corridor alternatives are still being evaluated and no selection has been made.



LEGEND

55,737 FLORIDA DOT AVERAGE ANNUAL DAILY TRAFFIC COUNT

11,888a PASCO COUNTY 24-HOUR COUNT

9,648b PASCO COUNTY SINGLE DIRECTION 24-HOUR COUNT

SOURCES:
Florida Department of Transportation,
Pasco County Traffic Operations,
Pasco County Planning Department January, 1986

Pasco County Resource Recovery Program
Pasco County 1985 Traffic Counts FIGURE 2-30

3.0 THE PLANT AND DIRECTLY ASSOCIATED FACILITIES

3.0 THE PLANT AND DIRECTLY ASSOCIATED FACILITIES

3.1 BACKGROUND

Pasco County wishes to implement its own resource recovery facility to serve the solid waste disposal needs of its growing incorporated and unincorporated areas. Interest in the concept of resource recovery has been stimulated in the county by an increased awareness of the environmental and siting problems associated with landfill disposal methods.

The decision to build a resource recovery facility in Pasco County was made after six years of investigation by the county. Preliminary planning began in 1980 when dwindling suitable land space and tightening regulations caused the county to consider alternative solid waste disposal methods. Also at this time, the Florida Department of Environmental Regulation (FDER) required 17 counties, including Pasco County, to investigate the feasibility of a resource recovery program.

In the 1984 election for the Pasco County Board of County Commissioners, the public voted on the resource recovery issue. The stated issue of the vote was: "Shall the Board of County Commissioners issue a nontax-supported revenue bond for the purpose of financing a resource recovery system to dispose of solid waste instead of developing long-term sanitary landfills?" The public was overwhelmingly in favor of resource recovery. The official count was 68,485 "yes" votes and 21,416 "no" votes.

3.1.1 SOLID WASTE COLLECTION

Under the current system, the county does not have full control of solid waste collection in its unincorporated areas. Residential waste is collected twice each week, with more frequent collection as necessary for commercial waste. According to occupational license data, the current collection system serves 68 percent of the county's population. The existing East Pasco County Landfill receives about 65 percent of the solid waste generated in the county, or approximately 460 tons of solid waste

daily, six days per week. The balance of the county's solid waste is either disposed of illegally, onsite, or transferred to facilities outside Pasco County. Pasco County is developing a solid waste flow control program to guarantee that future solid waste quantities will be directed to the resource recovery facility. Extensions to the East Pasco County Landfill will be constructed to keep the landfill operating until the resource recovery facility goes on-line.

Site selection by Pasco County came after review of a detailed study prepared by the county's consulting engineers (CDM, October 1985). In the study, a specific siting methodology was used to evaluate the suitability of candidate sites. A five-step process was used for selection. The first two steps eliminated areas that were either unacceptable or marginal. This elimination was accomplished by applying negative siting criteria such as flood potential, well field impacts, airport proximity, urban development and presence of water bodies. Environmentally sensitive areas were avoided, such as cypress forests, wildlife management areas, and high water table areas. Preliminary sites were identified in the third step by comparing land availability and ownership characteristics. Sites were selected for further consideration if they offered sufficient land space to accommodate both a resource recovery facility and a sanitary landfill. The sites were compared using positive siting criteria to determine which of the final four potential sites was best. Each site was evaluated for propensity to sinkhole formation, hydrologic conditions, and relative cost. The preferred site was selected based on these criteria and additional information received during two Board of County Commissioners meetings and four public meetings.

In the fall of 1985, the Board of County Commissioners approved the landfill site recommended by the county's consulting engineers. The site is located in northwest Pasco County, near the county's waste generation centroid. The site offers a good access road, generous land space and a buffer zone.

On February 12, 1985, the Pasco County Board of County Commissioners executed a contract with Camp Dresser & McKee Inc. for development of a resource recovery program. The stated objective of that contract is:

> Development and implementation of a county-wide resource recovery program, ancillary facilities and a landfill/ashfill.

Shortly after the contract was approved, a management team was organized to guide this project to completion. The management team includes the consultant team (engineers, legal and financial advisors), and Pasco County staff and decision-makers.

Commercial-scale resource recovery began in the United States in the late 1960s, but European countries have been recovering energy from solid waste for more than 30 years. Denmark converts 70 percent of its solid waste to energy, Switzerland converts 40 percent, and Sweden converts 30 percent. Currently, the United States converts less than 2 percent of its solid waste to energy, but this quantity is expected to increase to 10 percent during the early 1990s. More and more communities in the United States are building resource recovery facilities; the technology is tested and proven effective.

3.1.2 PROPOSED FACILITIES

After evaluating several technologies, the county has found that its current and foreseeable needs would be best served by a facility which uses the mass-burn technology for combustion of solid waste. This process recovers heat energy in the form of steam, and converts that steam energy into electricity which can be sold. The primary facilities proposed for the 751-acre Pasco County site include a mass-burn resource recovery facility and a sanitary landfill/ashfill. Ancillary facilities will include truck scales and a scale house for weighing incoming refuse, an ash handling building, cooling tower, switchyard, and maintenance facility for landfill equipment.

The facility will most likely be owned by the county, and operated by a full-service contractor under contract to the county. This full-service

contractor would provide design, construction, start-up, acceptance testing, and 20 years of continuous operation and maintenance. Pasco County will identify an appropriate contractor through the Request for Proposal (RFP) procurement process.

Resource Recovery Facility

The proposed resource recovery facility will have a maximum design rated capacity of 1,200 tons per day (tpd). However, its initial continuous design rated capacity will be 900 tpd, using 3 combustion/steam generation units with a continuous design rated capacity of 300 tpd each. Each boiler unit will operate independently. Therefore, it will be possible to shut down one unit at a time for maintenance and inspection. The addition of a fourth boiler unit is contingent on the demand placed on the facility.

Initial project construction will include a tipping area and refuse storage pit sized to handle 1,200 tpd (continuous design rated capacity). The emissions stack will be equipped with four flues. The project will have one steam turbine generator which will generate electricity (approximately 22 megawatts). Power lines from the project's electrical switchyard will connect with the Florida Power Corporation (FPC) Hudson substation via the powerline easement which crosses the project site. Revenues from energy sales may be shared by the county and contractor during the life of the operating contract.

Since the proposed facility will use mass-burn technology, there will be no preprocessing of wastes at the facility prior to combustion. A schematic diagram of a typical resource recovery facility is presented in Figure 3-1. Municipal solid waste will be truck-delivered to the facility and ash residue will be removed by the same mode of transport. The solid waste will be placed in the refuse bunker directly from transfer trailers and packer trucks inside the building. All waste will be stored inside the building, so that no waste is visible from the outside. Two overhead cranes will mix the waste in the bunker and load the charging hoppers as required.

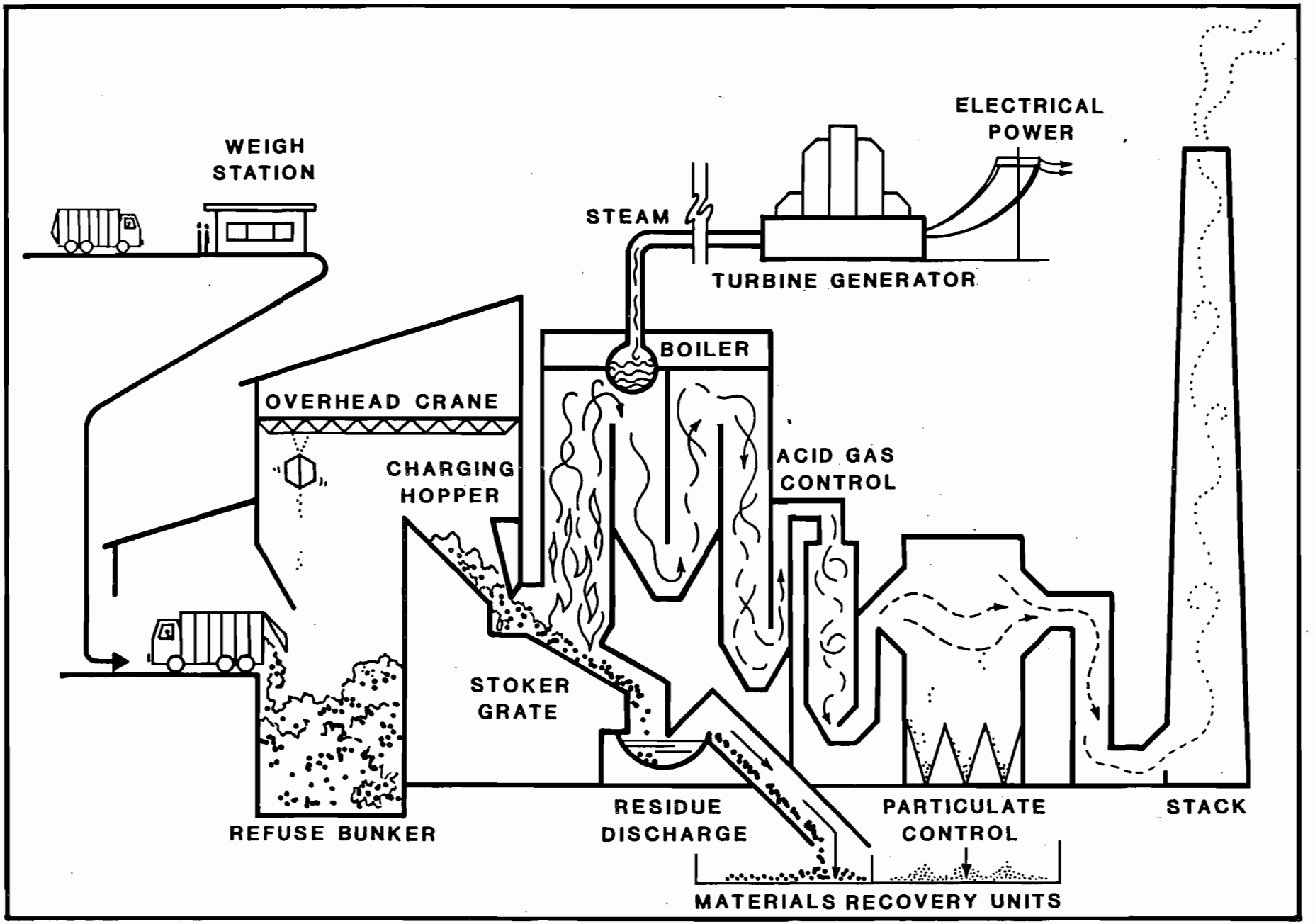


FIGURE 3-1

Pasco County Resource Recovery Program
Schematic of Typical Resource Recovery Facility

The facility will be equipped with baghouses for particulate removal. Acid gas dry scrubbers will also be used. A dry scrubber and a fabric filter (baghouse) will be furnished for each combustion train. Bottom ash from the furnace and flyash from the emission control system will be mixed before removal from the facility. Ash from the combustion of solid waste will comprise 10 percent of the volume, and 25 percent of the weight of the municipal solid waste processed by the facility. The ash will be quenched with water to approximately 20 to 30 percent moisture before transport to the landfill/ashfill.

3.2 SITE LAYOUT

The general site development plan (Figure 2-6) shows the conceptual building layout and landfill/ashfill perimeter on the site. The landfill/ashfill boundary and all structures will be set back a minimum of 100 feet from all property lines and adjacent roadways. The resource recovery facility and the landfill/ashfill will share a common entrance and scale house. A one-way loop used to access the resource recovery facility will provide organized routing of all truck traffic. An access road through the landfill/ashfill area will be used to transport the ash.

Due to shallow groundwater conditions, the landfill/ashfill will be constructed at grade. All structures will be constructed at grade, except the refuse bunker, which will be built 5 to 7 feet below grade. The natural site drainage is toward the southwest. Site grading will repeat existing drainage patterns wherever possible. The retention basins for landfill/ashfill drainage are positioned to make use of natural drainage, so that extensive grading for drainage channels will be minimized. However, substantial site grading will be required to construct a resource recovery facility with raised level vehicle access. The maximum height for site fill will occur at the elevated tipping floor (28 feet). The slopes will be 4:1 (or 14°). Revegetation will be used to minimize erosion and siltation.

Roadway grades on facility access roads will not exceed 4 percent, to minimize gear shifting by trucks and its associated noise. Maximum roadway

grades of 5 percent are suggested for facility egress. Grading for the landfill/ashfill will consist of 4:1 side slopes for the perimeter and 3 percent grading (or 2°) slope for the final cover.

The roadways will be designed with a minimum turning radius of 50 feet to accommodate truck traffic. The entrance road will be divided and the remainder of the road system will be one-way. A 12-foot lane width will be used for 2-lane roads, and an 18-foot width will be used for one-way roads.

Parking spaces have been provided to accommodate the work force, potential visitors, and shift overlaps. Automobile parking will be separated from truck circulation to minimize potential conflicts. The roadway design speed will be 30 miles per hour; however, posted speeds will be lower.

In the area surrounding the resource recovery facility, extensive landscaping is not necessary. The area is surrounded by planted trees, and the site has a dense, 1,500-foot buffer zone along Hays Road and Shady Hills Road.

3.2.1 BUILDING DIMENSIONS

The proposed resource recovery facility consists of two contiguous buildings, the administration building and the processing building (see Figure 2-6). The administration building is approximately 30 feet high, 110 feet long and 30 feet wide. Offices will be located along the west side of the processing building. The processing building is rectangular, measuring approximately 310 feet by 260 feet. It varies in height depending on the processing function housed in each portion of the building. On the tipping floor side, the building is about 60 feet high to accommodate refuse unloading activities. North of the tipping floor, the building height increases to about 100 feet to house refuse storage and furnace charging accoutrements. Continuing northward across the building, the height increases to 110 feet over the boilers. The air pollution control system will not be enclosed. The facility profile is shown on Figure 3-2. The dimensions provided on Figure 3-2 are approximations. The exact facility dimensions will be designed by the selected contractor.

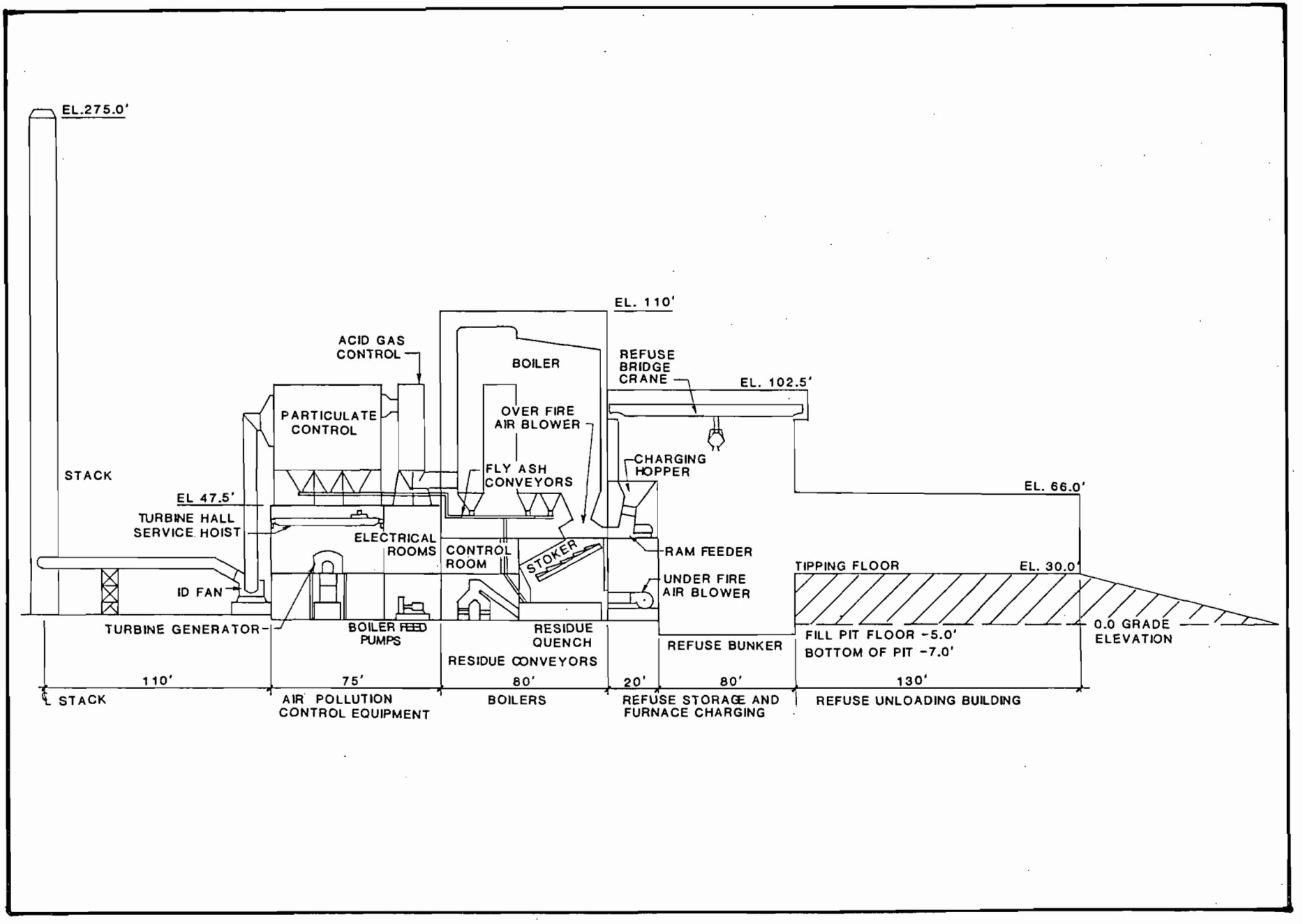


FIGURE 3-2

Pasco County Resource Recovery Program
Facility Profile

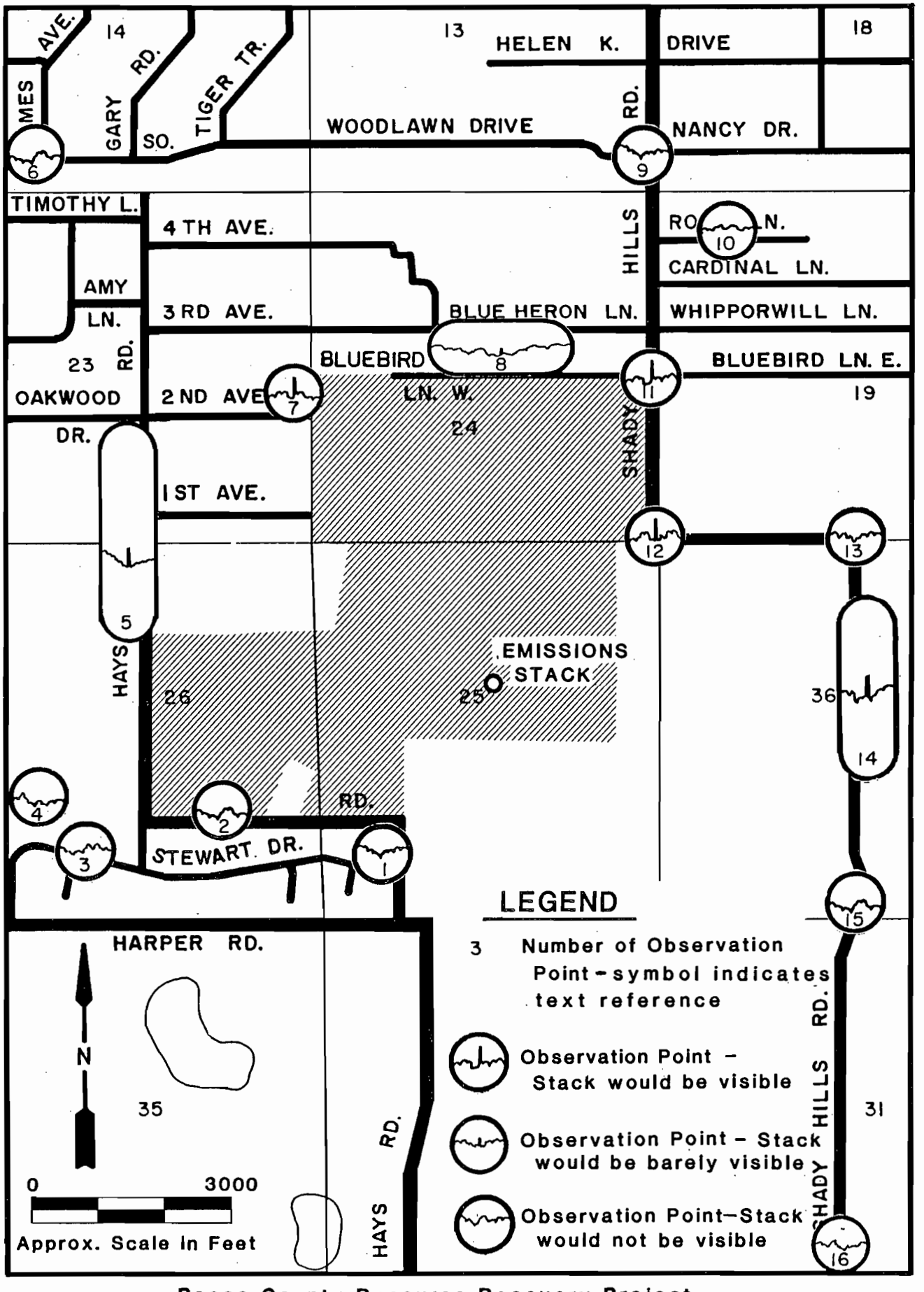
This building configuration provides a stepped appearance which helps reduce the visual impact of the structure by modifying its mass. This will be most apparent when the structure is viewed from the east and west.

3.2.2 VISUAL IMPACT

A preliminary study was performed to determine the visual impact of the facility on residences in the area. Since the emissions stack is the tallest structure of the facility, its height of 275 feet was chosen for study purposes.

To simulate the emissions stack, three weather balloons were elevated 275 feet above the proposed location of the stack. Observations were made in residential areas at varying distances and directions from the facility location. Figure 3-3 shows the observation points and the degree of visibility at each point. The visibility of the balloons was dependent upon the distance of the observation point from the balloons, and the proximity of obstructions such as trees, poles and buildings. The combination of three weather balloons, each having a 5-foot diameter, is approximately the width of the proposed emission stack. Thus, it was assumed that observations made during the study could be applied to the proposed structure.

Visibility at observation points 1 through 4 south and southwest of the facility site was completely obstructed by trees. At observation point 7, northwest of the facility site, the open fields allowed a clear view of the balloons. There was a range of visibility along Hays Road (observation point 5. At distances of more than two miles (e.g., at point 6), the balloons were not visible, even in areas with few obstructions. At observation point 8, located in Shady Hills Park, the view of the balloons was partially obstructed. From point 8, the top of the proposed emissions stack will be slightly below the tree line, and will be visible from certain angles through the trees. Points 9 and 10, located north of the facility site, afforded no view of the balloons. East of the facility, six observations were made along Shady Hills Road. Two of the six observation



Pasco County Resource Recovery Project
Visual Impact Study

FIGURE 3-3

points (11 and 12) provided a view of the balloons. In addition, a 1/2-mile portion of Shady Hills Road (point 14) allowed a view of the balloons.

The tallest portion of the resource recovery building will be 165 feet below the top of the emission stack. The building will not be visible from most observation points. At observation point 7 (Figure 3-3) the building may be partially visible.

3.3 FUEL

3.3.1 FUEL FEED STREAM

The resource recovery facility will obtain its fuel feed stream from municipal solid waste collected in Pasco County. The term "municipal solid waste" applies to all of the solid waste generated within Pasco County, except hazardous and pathogenic wastes and sludges. Since this waste is heterogeneous, characteristics such as heating value, moisture content and ash content of the waste will vary. However, Pasco County's solid waste may be classified according to the following general characteristics and sources of generation:

- Residential Wastes. Mixed domestic household wastes (including yard wastes) generated by individuals or families in single or multiple family dwellings.

- Commercial Wastes. Wastes generated by the commercial and retail sector of the county. The physical characteristics of these wastes are similar to residential wastes, consisting primarily of combustible materials in the form of paper and food wastes from offices, restaurants and retail establishments.

- Institutional Wastes. Wastes generated by hospitals, schools, and churches. These wastes have characteristics similar to residential and commercial wastes. Any wastes

classified as infectious by federal and state regulations will be excluded.

- Industrial Wastes. Wastes generated by industrial process and manufacturing operations, excluding any wastes classified as hazardous or infectious by federal and state regulations. These wastes also include general housekeeping and support activity wastes associated with industry.

All calculations, analyses and performance data for the resource recovery facility have been based on the as-fired solid waste higher heat value of 4,800 Btu per pound, with a 21 percent moisture content by weight. Table 3-1 presents the as-received reference solid waste composition, and Table 3-2 lists the reference waste ultimate analysis to be used.

3.3.2 FUEL STORAGE

The resource recovery facility will be equipped with an automatic weighing station to weigh and record the quantity of solid waste delivered. The waste will be delivered in standard, municipal type, packer vehicles, open-bodied dump trucks, and transfer trailers with capacities up to 110 cubic yards. The facility will receive solid waste deliveries 6 days per week, 52 weeks per year.

The Pasco County resource recovery facility will include a totally enclosed tipping floor with 12 tipping bays, each 15 feet wide. Backup barriers will be provided at each tipping bay to prevent vehicles from backing into the solid waste storage pit. The storage of the delivered solid waste will be in a completely enclosed storage pit with the floor elevation below the tipping floor. The pit will be sized for a minimum storage capacity of three days (i.e., 3,600 tons of solid waste at a density of 450 pounds per cubic yard).

During design of the refuse pit capacity, scheduled maintenance and unscheduled breakdowns were considered. The projected annual processing time, considering downtime, is 85 percent. This estimate is based on

TABLE 3-1

REFERENCE SOLID WASTE COMPOSITION

Waste Category	Nominal Percentage By Weight
Combustibles	60
Moisture	21
Non-combustibles	19
TOTAL	100

TABLE 3-2

REFERENCE SOLID WASTE ULTIMATE ANALYSIS

Component	Nominal Percentage By Weight
Moisture	20.70
Total Inert	19.22
Carbon	27.40
Hydrogen	3.88
Oxygen	27.50
Nitrogen	0.70
Chlorine	0.46
Sulfur	0.13
TOTAL	100.00
Higher Heating Value (HHV)	4,800 Btu/lb

operating experience at similar facilities. Two alternative processing configurations were considered for the facility to achieve a maximum design rated capacity of 1,200 tpd: three 400-tpd capacity units, or four 300-tpd capacity units. Pasco County selected the four unit alternative for several reasons. Since the initial design rated capacity will be approximately 900 tpd, the county may defer some capital expenditure by using only three 300-tpd units until a fourth processing unit is needed during a future expansion period. The flexibility of the four unit configuration is more practical for matching yearly waste volume increases, and with four units, less processing capacity is lost during breakdowns.

The primary purpose of three-day pit capacity is to assure adequate onsite storage for refuse over a three-day weekend. However, the excess pit capacity could be used to store incoming refuse when the facility is down for scheduled or unscheduled maintenance. In this manner, the need to bypass waste directly to the landfill is minimized.

Three examples have been prepared to illustrate the waste processing capabilities of the plant with one or more units out of operation. The examples are based on the following assumptions.

- The plant operates 24 hours per day, 7 days per week.
- The plant will ultimately receive approximately 8,400 tons of waste per week (1,530 tpd, Monday through Friday, and 763 tons on Saturday).
- The plant will have four units ultimately; each unit will have a design capacity of 300 tpd.
- The refuse pit will have a waterline storage capacity of approximately 16,000 cubic yards. An additional 8,000 cubic yards of storage above the waterline storage is available when waste is stored against the pit sidewalls. The ultimate capacity of the pit is 24,000 cubic yards. (Based on a density of 450 pounds per cubic yard, the pit will store 3,600 to 5,400 tons of waste).

Example One - Three Unit Operation

One unit shuts down due to mechanical failure at 6:00 a.m. on Monday. The remaining two units are capable of operating at 100 percent of their capacity. At the time of breakdown, the pit contains 600 tons (normal minimum 1/2 day storage reserve).

Time/Day	Received (tons)	Processed (tons)	Waste in Pit (tons)
6:00 a.m. Mon. (Week 1)	1,530	900	600
			+630
6:00 a.m. Tues.	1,530	900	1,230
			+630
6:00 a.m. Wed.	1,530	900	1,860
			+630
6:00 a.m. Thurs.	1,530	900	2,490
			+630
6:00 a.m. Fri.	1,530	900	3,120
			+630
6:00 a.m. Sat.	765	900	3,750
			-135
6:00 a.m. Sun.	0	900	3,615
			-900
6:00 a.m. Mon. (Week 2)	1,530	900	2,715
			+630
6:00 a.m. Tues.	1,530	900	3,345
			+630
6:00 a.m. Wed.	1,530	900	3,975
			+630
6:00 a.m. Thurs.	1,530	900	4,605
			+630
6:00 a.m. Fri.	1,530	900	5,235
			+630
6:00 a.m. Sat.			5,865

The pit will be filled to capacity in the midafternoon of the second Friday. The total reserve time for this situation is 12 days.

Example Two - Two Unit Operation

At 6:00 a.m. on Monday, two units shut down due to mechanical failure. The remaining units continue to process waste at 100 percent of their capacity.

Time/Day	Received (tons)	Processed (tons)	Waste in Pit (tons)
6:00 a.m. Mon	1,530	600	600
			+930
6:00 a.m. Tues.	1,530	600	1,530
			+930
6:00 a.m. Wed.	1,530	600	2,460
			+930
6:00 a.m. Thurs.	1,530	600	3,390
			+930
6:00 a.m. Fri.	1,530	600	4,320
			+930
6:00 a.m. Sat.	765	600	5,250
			+165
6:00 a.m. Sun.	0	600	5,415

The pit will be filled to capacity at some time during the late afternoon on Saturday. Since no waste is delivered on Sunday, the total reserve time in this example is 7 days.

Example Three - Alternative to Example One

At 6:00 a.m. on Saturday of week 1 in example one, a second unit shuts down due to mechanical failure. The remaining units continue to process waste at 100 percent of their nameplate capacity.

Time/Day	Received (tons)	Processed (tons)	Waste in Pit (tons)
6:00 a.m. Sat. (Week 1)	765	600	3,750
			+135
6:00 a.m. Sun.	0	600	3,885
			-600
6:00 a.m. Mon. (Week 2)	1,530	600	3,285
			+930
6:00 a.m. Tues.	1,530	600	4,215
			+930
6:00 a.m. Wed.	1,530	600	5,145
			+930
6:00 a.m. Thurs.	1,530	600	6,075

The pit will be filled to capacity at some time during Wednesday of week 2. The total reserve time in this situation is 10 days.

These three scenarios show that the plant will continue to receive the entire waste stream without any bypass to the landfill or other facility for 12 days in Example One); for 7 days when two units fail simultaneously (Example Two); or for 10 days when two units fail in a staggered manner (Example Three). Incoming refuse will never be delivered or stored outside the enclosed pit area or diverted to the adjacent landfill during these periods.

As discussed above, the facility will consist of four independent process trains. Common elements such as waste feed cranes, ash conveyors, and boiler feedwater systems will have redundant capabilities. The facility will have a condenser capable of wasting all of the facility's steam if the turbine generator is being serviced or is inoperable.

The refuse bunker and tipping floor area will use a negative air pressure ventilation system. The underfire and overfire fans which provide the incinerator with the air supply will draw all the necessary air from the

refuse bunker and tipping floor area. Vents installed on the walls opposite the fans will induce a cross flow ventilation. The dust particles and fumes generated in the area will be directed to the incinerator, thus odors outside the refuse bunker and tipping floor area will be eliminated.

Two overhead solid waste handling cranes will be installed to charge the combustion units and the rotary shear, and maintain the solid waste storage area. The cranes will be of the travelling bridge type, employing a polyp type grapple. Each crane will be capable of meeting the solid waste handling requirements of the entire facility.

3.4 AIR EMISSIONS AND CONTROLS

3.4.1 AIR EMISSION TYPES AND SOURCES

As noted previously, the proposed resource recovery facility is a new facility that will be located in Pasco County. At ultimate size, the facility will contain four boilers, each with a rated capacity of 300 tpd of municipal solid waste for a total of 1,200 tpd. The flue from each of the boilers will be encased in a single stack. The refuse bunker will be enclosed and under negative pressure, since combustion air will be taken from this area. There will be no onsite storage of either refuse or residue except within controlled areas. Loading and unloading of trucks will take place within the residue storage building. Trucks entering and leaving the site will be covered and will travel on paved roads. Minor sources of particulate emission include the ash handling area and the lime silo. Air vented from these areas will be minimized by a particulate control device. Thus, the stack will be the only major source of emissions from the facility.

A complete description of stack emissions is contained in Section 3.0 of the Prevention of Significant Deterioration (PSD) permit application (See Volume III - Air Quality). An emission inventory for the proposed facility is contained in Table 3-3 of the PSD. A complete FDER Form 17-1.202 (1), "Application to Operate/Construct Air Pollution Sources" may be found in the front of Volume III - Air Quality.

3.4.2 AIR EMISSION CONTROLS

Air pollution control technologies proposed to control particulate matter and trace metals are: electrostatic precipitator (ESP), fabric filtration system (baghouse), and wet Venturi scrubber. The technologies proposed to control SO_2 and acid gases (H_2SO_4, HCl, and HF) include: dry scrubber/ESP and dry scrubber/fabric filter. These systems and their operating characteristics are fully described in the Best Available Control Technology/Lowest Achievable Emission Rate analysis in Section 4.0 of the PSD permit application (see Volume III - Air Quality).

3.4.3 BEST AVAILABLE CONTROL TECHNOLOGY (BACT)

The BACT analysis is presented in Section 4.0 of the Prevention of Significant Deterioration permit application. The analysis evaluates the environmental, economic, and energy aspects of alternative control techniques and methods. For all of the criteria pollutants, Pasco County is designated as being in attainment of the National Ambient Air Quality Standards (or unclassified), and hence subject to BACT. Based on a review of various air pollution control alternatives, a dry scrubber and baghouse are proposed as BACT for the Pasco County resource recovery facility for all pollutants subject to PSD review. The dry scrubber will be designed to achieve an emission limit of 100 parts per million on a dry volume basis (ppmdv) at 7 percent 0_2 or 90 percent reduction for SO_2; and 100 ppmdv at 7 percent 0_2 or 90 percent reduction for HCl. The baghouse will be designed to achieve an outlet grain loading of 0.015 grains per dry standard cubic foot corrected to 12 percent CO_2 (gr/dscf @ 12% CO_2). A complete discussion of the BACT selection process is presented in Section 4.0 of the Prevention of Significant Deterioration permit application (contained in Volume III - Air Quality).

3.4.4 DESIGN DATA FOR CONTROL EQUIPMENT

Design data for control equipment are not available because a furnace/boiler supplier has not been selected yet. Typical design

parameters for mass-burn resource recovery facilities were used in the BACT analysis and are presented in Section 4.0 of Volume III - Air Quality.

3.4.5 DESIGN PHILOSOPHY

The proposed control technologies--dry scrubber and baghouse--are designed to neutralize acid gas emissions and capture particulate matter entrained in the flue gas from the furnace/boiler. The particulate matter is collected in a dry form to avoid wastewater disposal, corrosion, and stack gas reheat problems.

3.5 PLANT WATER USE

During normal operation of the resource recovery facility, all plant process cooling water will be drawn from the future Hudson Subregional Wastewater Treatment Plant (WWTP) and all wastewater discharge will go directly to the WWTP. The Hudson plant will be located 6 miles west of the site. Potable water provided by an onsite well will be used in small quantities for boiler makeup, equipment cleaning, and the personnel areas of the plant (e.g., washrooms, locker room). No plant water will be discharged directly to surface or groundwater bodies. The quantities of water used and discharged as presented in this section are approximate and subject to change pending selection of a specific contractor. Alternative sources of water are discussed in Section 8.0.

A quantitive water use diagram is provided in Figure 3-4. The figure shows estimated quantities of water flow to and from the various plant water systems, including the heat dissipation system, sanitary wastewater system, potable water systems, air pollution control system and steam generation system. The estimates shown in Figure 3-4 are conservative. For example, it is possible to supplement water demands for the dry scrubbers with cooling water blowdown, thereby reducing "raw" water requirements. This has been performed in several other facilities. Also, cooling water blowdown can be used for residue quench. Overall, the maximum water use for the facility when processing 900 tpd is estimated at 720,000 gallons per day.

3.10 ASSOCIATED FACILITIES

The 751-acre site to be occupied by the resource recovery facility will also be occupied by a sanitary landfill/ashfill. The landfill/ashfill will cover 195 acres in the center portion of the site (see Figure 2-6). The volume capacity of the landfill/ashfill is approximately 19.5 million cubic yards, and it is expected to have a service life of more than 30 years.

The landfill/ashfill will incorporate a double liner leachate collection system. The system consists of two layers of sand divided by two impermeable liners made of high density polyethylene. The two layers will contain leachate collection pipes spaced 100 feet apart and set at a slope of 0.5 percent. Each collection pipe will be placed in a trench with 2 percent side slopes. The drainlines will be surrounded with a layer of crushed stone and wrapped in a geotextile fabric to prevent clogging. The drainlines will feed into a leachate header system located along the perimeter of the landfill/ashfill. The leachate header will also have a slope of 0.5 percent and will guide the leachate to storage tanks. Figure 3-7 shows a cross-sectional detail of the leachate collection system.

The landfill/ashfill will be divided into 15 cells. Each cell will be approximately 400 feet wide and 1,100 feet long. Municipal solid waste and ash will be placed separately. The north half of the landfill/ashfill will receive municipal solid waste, and the south half will receive ash. An above ground high-density polyethylene liner will be used to separate the two materials at the boundary line between the two areas.

Initially, the landfill/ashfill will receive approximately 190 tpd of ash and 135 tpd of nonprocessible solids. Ash and municipal solid waste will be distributed in 10-foot layers and covered daily with a 0.5-foot layer of sand. Since each cell covers a small area of the landfill/ashfill, the leachate system will be installed in phases as new cells are opened. During the early stages of landfill/ashfill operation, this will prevent unnecessary collection of runoff that has not contacted the ash and solid waste material.

Construction of the landfill/ashfill will begin with a 24-foot wide road and 48-foot wide swale that will follow the perimeter of the landfill/ashfill. The bottom of the landfill/ashfill will remain above 48 feet msl to maintain the landfill/ashfill 5 to 20 feet above the groundwater level. The outer berm of the landfill/ashfill will have a 4:1 horizontal/vertical slope and will use three 10-foot wide terraces spaced 20 to 30 feet apart in elevation. These terraces will be designed to reduce runoff velocity and prevent excessive erosion. Above the third terrace the slope will reduce to 3 percent. The total height of the landfill/ashfill is expected to be 100 feet.

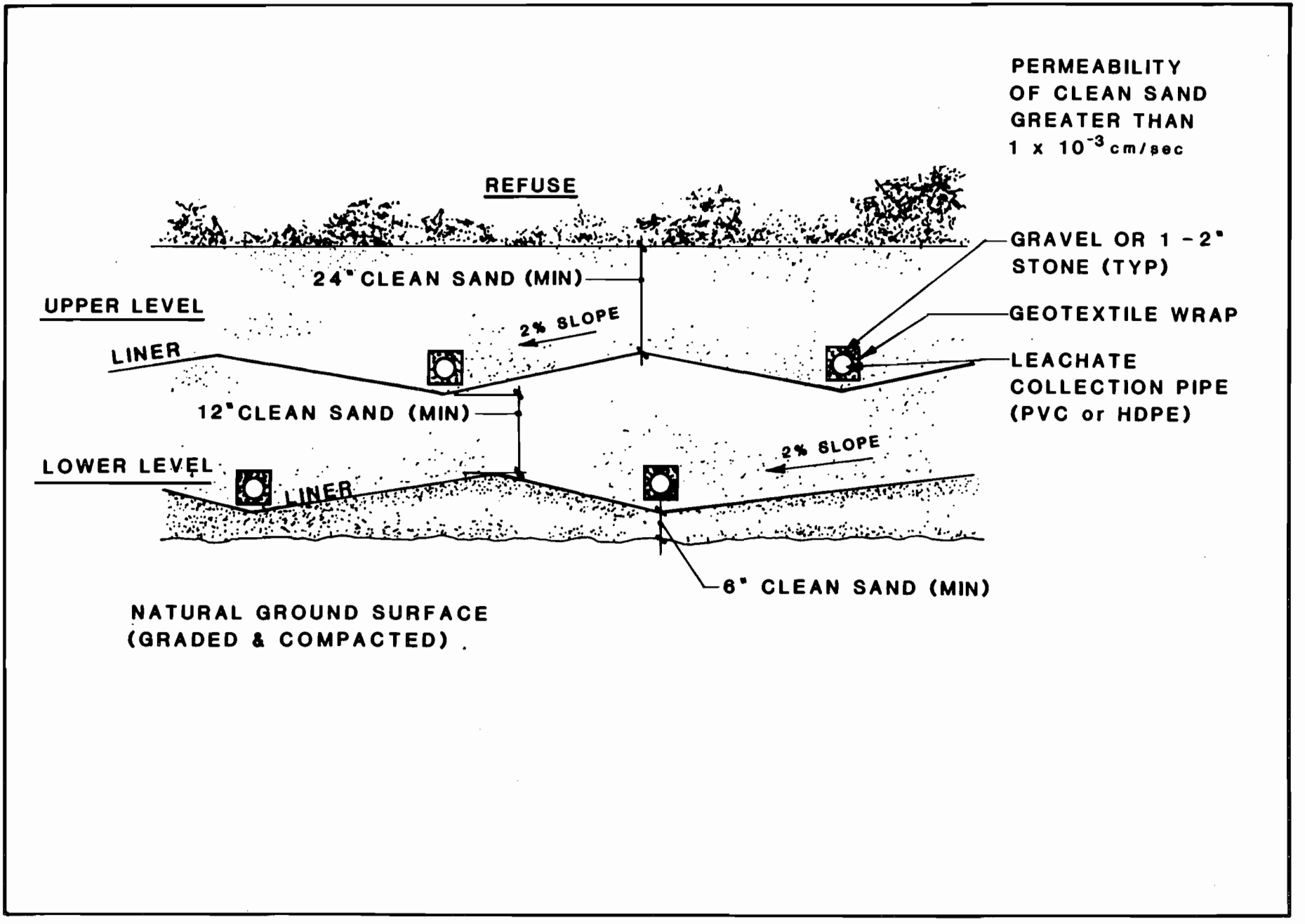


FIGURE 3-7

Pasco County Resource Recovery Program
Leachate Control System Double Liner

moved with care to a site of similar habitat value which will be suited to their continued survival. Within the approximate 500 acres of the property that will not be developed, there are comparable habitats into which the displaced Gopher Tortoises may be relocated.

4.4.2 MEASURING AND MONITORING PROGRAMS

The monitoring program for ecological conditions is discussed in Section 2.3.6.

4.5 AIR IMPACT

4.5.1 EMISSION RATES

Construction activities may cause localized, short-term, adverse air quality impacts. Potential impacts include:

- Fugitive dust emissions from land clearing and site preparation activities, and
- Mobile source emissions from construction equipment at the construction site.

Although emissions will continue throughout all phases of construction, the greatest impact from fugitive dust emissions will occur during the site preparation phase when the largest amount of soil surface will be exposed. The greatest impact from the mobile sources will occur during the facility construction phase when most of the equipment will be onsite.

Trucks carrying fill and concrete will travel on the site access road during construction. This road is currently unpaved, and may be a source of particulate emission. Several mitigating measures may be used to reduce these particulate emissions. Routine watering of the roadway would reduce roadway emissions by approximately 50 percent. A watering truck is usually onsite for various other activities. This truck could be partially dedicated to roadway watering, or an additional truck could be provided for

this purpose. Surface treatment with penetrating chemicals could provide up to a 50 percent reduction in particulate emissions, depending on the frequency of application. The application of penetrating chemicals is more costly than routine watering, but fewer applications are required when chemicals are used. The costs of reducing roadway particulate emissions using these methods would include the expenses of purchasing and mixing chemicals, and the expense of using a watering truck or other vehicle. Soil stabilization may also be used to reduce roadway particulate emissions. Soil stabilization is performed when the roadway is developed, and can achieve a 50 percent emission reduction by binding up surface soil. Emissions can be reduced further by spreading oil or penetrating chemicals over the stabilized area. The advantage of soil stabilization is that the roadway becomes more drivable.

Paving can reduce roadway particulate emissions by nearly 85 percent. Road paving can be accomplished by soil compaction and addition of base coarse material, or by soil stabilization with an asphalt cap.

Good construction practice requires a developed access road when extensive truck traffic is necessary. Because the access road must be able to handle heavy trucks eventually on this site, it should be built at least to base coarse level, or it will require improvement during construction. Thus, paving of this roadway would be cost-effective and is the recommended method for reducing particulate emissions.

General site emissions—particulate emissions across open and active construction areas—are best controlled by a comprehensive watering program which can reduce emissions by 50 percent. Other methods used to control emissions are not practical because soil is usually in a state of transition during construction. An excessive amount of penetrating chemicals would be required, and binding agents would be continually broken up. Since a watering truck is available onsite for other construction activities, use of this truck for site watering should not impose a significant cost.

Particulate emissions in completed cut and fill areas can be reduced by 65 to 80 percent using vegetation or chemical binders. Since these areas are not active and would not receive traffic, vegetation can grow undisturbed and chemical binders need only infrequent applications. Embankments brought up to grade and no longer subject to construction activity should be immediately landscaped or vegetated. Till piles or embankments requiring future activity should be treated with a binder.

Good site maintenance should be practiced. Most site maintenance practices are not costly, and the extra effort they require is usually outweighed by the benefits they offer.

4.6 IMPACT ON HUMAN POPULATIONS

The construction of this project will result in both positive and negative effects on the local and regional population. Positive effects will result from the creation of jobs, and the generation of tax revenues from the purchase of construction materials (see Section 7.0). Negative effects will result principally from construction activities.

4.6.1 SENSITIVE RECEPTORS

Sensitive receptors are individuals or organizations/institutions located close enough to the project site to be potentially affected by construction impacts. A comprehensive review of the land use and demographic features of the area surrounding the site is presented in Section 2.2. As indicated in Section 2.2, major land uses adjacent to the site include vacant grazeland and low-to-medium density residential areas.

The closest sensitive receptor to the project site is a single-family residence located on Hays Road near the proposed site entrance. The residence is about 200 to 250 feet south of the site, and almost directly across from the entrance road to the facility. The residence is located approximately 2,000 feet from the proposed resource recovery facility.

remain at LOS-A. Shady Hill Park is located one mile north of the construction area. Construction noise will not be discernable at the park, and traffic flow will not be affected.

4.8 IMPACT ON ARCHAEOLOGICAL AND HISTORIC SITES

None of the prehistoric sites discussed in Section 2.5 and shown on Figure 2-8 will be impacted by the construction of the project. An archaeological and historical review of the site was conducted by the State Division of Historical Resources in July of 1986. The review concluded that no significant sites are recorded for the project area. The review also explained that the nature of the proposed project will not affect any of the recorded sites in the area.

Based on the historical survey and the Division of Historical Resources (DHR) correspondence, no impacts on archaeological or historic sites are expected due to construction activities. If a possible archaeological site is unearthed during construction, officials of DHR will be contacted to determine the significance of the discovery.

4.9 SPECIAL FEATURES

This section discusses all special features associated with site preparation and plant and associated facilities construction that may influence the environment and ecological systems of the site and adjacent areas. These features may include site dewatering for landfill/ashfill construction, as well as the generation of solid and liquid waste as a result of construction activities.

During construction, solid and liquid wastes will be generated. This waste may consist of discarded packaging materials, refuse produced by construction workers, earth spoils, sanitary wastes, or waste oils. Earth spoils will be transferred to the adjacent Class III landfill. Sanitary wastes and waste oils will be handled by the appropriate licensed haulers. The aesthetic and ecological integrity of the site will be maintained.

4.10 BENEFITS FROM CONSTRUCTION

Two important benefits from construction of the proposed resource recovery facility are employment of construction workers in the area, and personal income generated by work force revenues. For the duration of construction, the benefits of a $120 million construction project will be felt in the local economy and labor market as construction-related materials and services are purchased, and jobs are created. Approximately 300 construction workers will be employed during the peak of activity. The services of more than 50 local subcontractors will be required to complete the project. Throughout the course of the project, a total of approximately 1,000 workers will be employed. A significant amount of materials and hardware supplies such as concrete, steel, piping, grass, etc., will be purchased from companies in the area. In addition, positive indirect impacts will be felt by industries and retail establishments which supply goods and services to the project work force. Long-term benefits include the safe disposal of municipal solid waste which will ensure protection of the county's groundwater supply, and continued employment opportunities for the area. Section 7.0, Economic and Social Effects of Plant Construction and Operation, provides further analysis of social and economic benefits arising from plant construction.

4.11 VARIANCES

No variances from any standards or guidelines are anticipated.

5.5 SANITARY AND OTHER WASTE DISCHARGES

Solid waste generated by plant operations (employee refuse, packing material, etc.) will be collected from receptacles located throughout the plant and fed into the main solid waste stream for processing. Materials not suitable for incorporation in the solid waste stream will be separated for offsite disposal at an appropriate facility. All sanitary wastewater will be collected and discharged to the Hudson Subregional WWTP. Therefore, no impacts associated with sanitary and other waste discharges are anticipated during plant operations.

5.6 AIR QUALITY IMPACTS

5.6.1 IMPACT ASSESSMENT

The air quality modeling analysis was conducted in three phases:

1. Screening analysis—This analysis identified the boiler operating condition which has the greatest air quality impact and defined the pollutants and downwind locations which have potential for concentrations greater than the significant impact limits. The screening model runs were made using the Industrial Source Complex-Short Term (ISCST) dispersion model and 48 worst case meteorological conditions.

2. Refined modeling analysis--The refined modeling analysis was conducted using the worst case furnace/boiler operating condition and receptor grid defined in the screening analysis. The refined modeling analysis identified the maximum ground level impacts for the pollutants emitted from the facility. The refined modeling was completed using ISCST and five years (1970 to 1974) of Tampa International Airport surface and upper air meteorological data.

3. Additional Class I area impact analysis—This analysis was performed for only sulfur dioxide and total suspended particulates. The emission inventory used in this analysis consisted of the sources in the Florida Crushed Stone permit application. Each phase of the modeling analysis was discussed with and approved by FDER. A detailed discussion of the air impacts is contained in Section 6.0, Prevention of Significant Deterioration (PSD) (see Volume III - Air Quality).

The air quality standards are not violated until a receptor exceeds the standard twice in any given year. The highest value of the second highest concentrations (HSH) is chosen from the potential impacts, additional source impacts, and the monitoring data to allow for a single short-term violation (24 hours or less). Naturally, a single annual average is calculated for each receptor, so the highest annual concentrations were used for comparison.

A comparison of the predicted SO_2 impacts to the PSD increment is shown in Table 5-5. The impacts for SO_2 and TSP did not exceed the significant impact limits. Therefore, the increment for these periods did not have to include other PSD sources. As shown on Table 5-5, the proposed source will consume less than 4 percent of the total increment.

A comparison of the potential impacts to the Florida Ambient Air Quality Standards (FAAQS) is made in Table 5-6 and Figure 5-2. As with the increment evaluation, 3-hour and 24-hour SO_2 were evaluated along with other major SO_2 sources, including the PSD sources. The HSH concentrations from the additional sources were added to the HSH monitored background concentration. This approach is used to estimate the maximum possible impact. Ozone is not directly emitted from the facility, but is formed in the atmosphere as a secondary pollutant. Non-methane hydrocarbons are considered a precursor to ozone formation.

TABLE 5-5

COMPARISON OF PREDICTED IMPACTS
TO PSD CLASS II INCREMENTS
PASCO COUNTY RESOURCE RECOVERY FACILITY

Pollutant	Averaging Time	Rank	Ground-Level Concentration (ug/m^3)	PSD Class II Increment	Impacts as % of Increment
SO_2	Annual	H	0.36	20	1.8
	24-Hour	HSH	2.99	91	3.3
	3-Hour	HSH	11.53	512	2.3
TSP	Annual	H	0.05	19	0.3
	24-Hour	HSH	0.43	37	1.2

Abbreviations:

H = highest
HSH = highest, second-highest
PSD = Prevention of Significant Deterioration

TABLE 5-6

SUMMARY OF THE ISCST PREDICTED CRITERIA POLLUTANT CONCENTRATIONS FROM PROPOSED PASCO COUNTY RESOURCE RECOVERY FACILITY EMISSIONS FOR MODELING PERIOD 1970 - 1974

Pollutant	Averaging Period	Rank	Period (Year/Date/End Hour)	Location Dist (km)	Location Dir (deg)	Facility Impact (ug/m³)	Ambient Background (ug/m³)	Total Impact (ug/m³)	FAAQS/NAAQS (ug/m³)	Total as Percent of FAAQS
Sulfur Dioxide	3-hour	H	1970/119/12	1.2	70	13.2	456	469.2	1300	36.1
		HSH	1970/99/15	1.17	75	11.5	456	467.5	1300	36.0
	24-hour	H	1972/242/24	1.7	90	3.44	103	106.4	260	40.9
		HSH	1972/180/24	2.0	90	2.98	103	106.0	260	40.8
	Annual	H	1971/NA/NA	2.0	90	0.356	26	25.4	60	44.0
Particulate Matter[c]	24-hour	H	1972/242/24	1.7	90	0.497	87 (87)	87.5 (87.5)	150[a](150[b])	58.3 (58.3)
		HSH	1972/180/24	2.0	90	0.431	87 (87)	87.4 (87.4)	150 (150)	58.3 (58.3)
	Annual	H	1971/NA/NA	2.0	90	0.0515	43 (45)	43.1 (45.1)	60[a](50[b])	71.8 (90.8)
Nitrogen Dioxide	Annual	H	1971/NA/NA	2.0	90	1.03	39	40.0	100	40.0
Carbon Monoxide	1-hour	H	171/237/11	0.7	70	57.6	5153	5210.6	40,000	13.0
		HSH	172/222/11	0.7	90	35.2	5153	5188.2	40,000	13.0
	8-hour	H	141/129/16	1.6	90	3.77	1145	1148.8	10,000	11.5
		HSH	171/220/16	1.4	90	3.42	1145	1148.4	10,000	11.5
Lead[d]	3-month	H	1972/242/24	1.7	90	0.248	0.4	0.65	1.5	43.3

(a) FAAQS for particulate matter expressed as total suspended particulate (TSP).

(b) NAAQS primary and secondary standard for particulate expressed as PM_{10}.

(c) Facility impact for particulate matter equals impact for PM_{10}. Numbers in parentheses denote PM_{10} concentrations. Numbers without parentheses denote total particulate concentrations.

(d) The 24-hour average concentration was substituted for the quarterly average concentration.

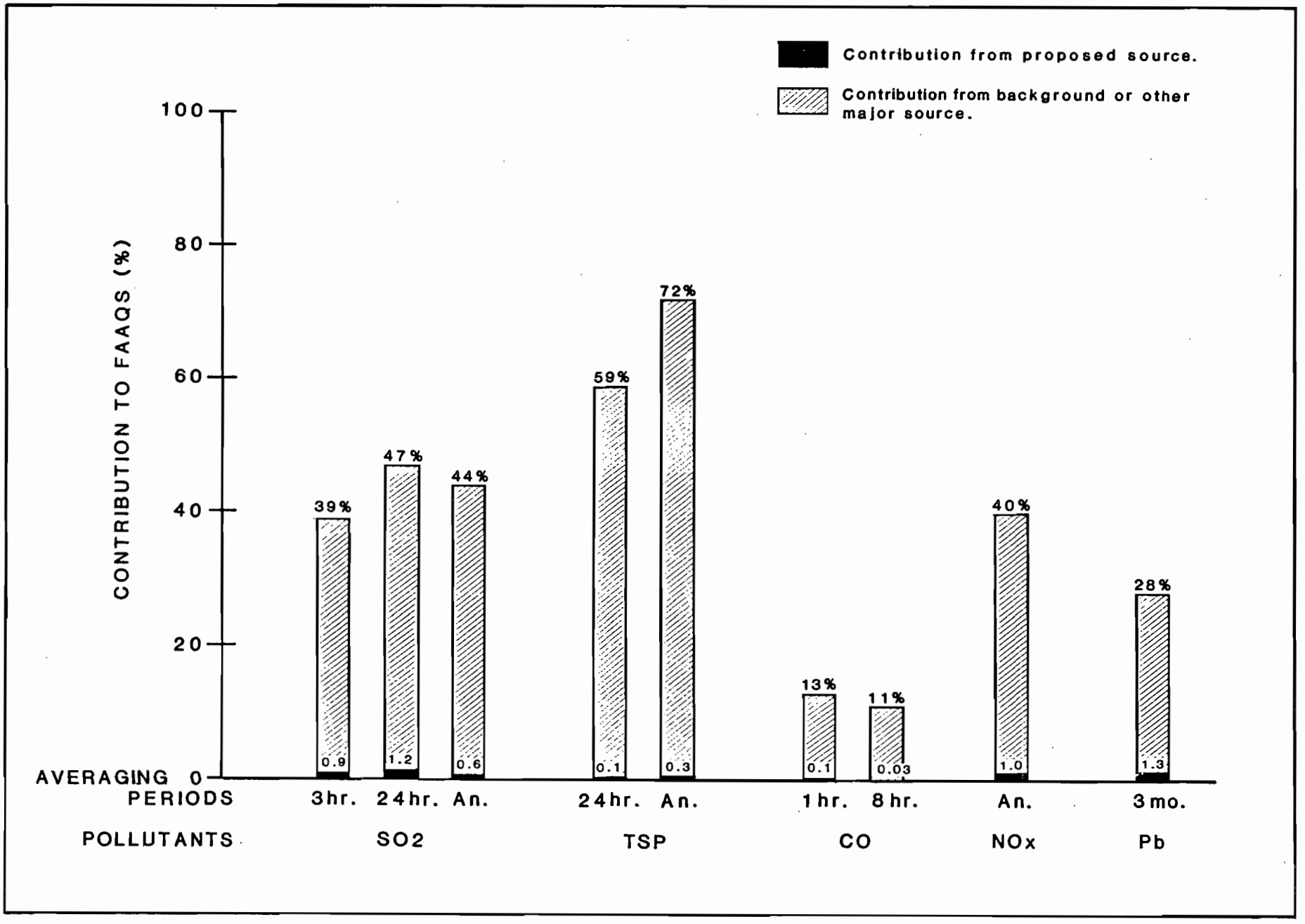


FIGURE 5-2

Pasco County Resource Recovery Program
Air Quality Impact Compared to FAAQS

As Figure 5-2 shows, the impact of the facility is small compared to the existing background concentrations. The 24-hour SO_2 concentration has the greatest impact, contributing 1.2 percent of the standard. The 24-hour average concentration for lead was used for a conservative estimate of the 3-month average lead concentration. All other pollutants contribute less than 1.0 percent.

The impact of the facility was also evaluated regarding visibility, soils, and vegetation. The visibility of the plume was examined with respect to the Chassahowitzka, Cedar Key and Anclote National Wilderness Areas, and the Withlacoochee State Forest. Using a worst case screening analysis defined by Latimer, et al (1980), no visibility degradation is predicted. The predicted maximum annual concentration is well below the thresholds which are injurious to soils and plants. For a detailed analysis of those air quality issues, see Section 7.0 of the PSD (Volume III - Air Quality).

5.6.2 MONITORING PROGRAM

No post-construction ambient air monitoring plan is proposed for the Pasco County resource recovery facility. The monitoring network operated by FDER is sufficient to monitor ambient air quality levels in the vicinity of the site. However, a continuous in-stack monitoring program will be operated for opacity, and oxygen or carbon dioxide concentrations. The equipment will be installed, calibrated and maintained in accordance with FAC 17-2.710 and 40 CFR 51, Appendix P. Compliance testing will also be conducted for pollutants with emission limiting standards in accordance with FAC 17-2.700 and 40 CFR 60. This testing will include, but will not be limited to, testing for particulate emissions.

5.7 NOISE

A technical noise analysis was performed for the proposed resource recovery facility. This noise study is contained in Appendix 10.12. The study explains the methodologies used in estimating the operational impacts of the facility and the results of the analysis. Ambient noise levels were measured at four locations in the site vicinity to establish baseline conditions during day and night periods.

The combustion process chemically alters many of the compounds within the waste stream. Many of the heat releasing reactions, practically speaking, are irreversible. Therefore, the materials consumed in the combustion process are permanently lost. This, however, is considered a positive reuse of a material for the generation of energy which otherwise would have been buried in a landfill. The facility will generate 3.7 billion kilowatt hours of electricity during a 20-year life. In addition to the revenue earned on the electricity sold to the power company, the energy production translates into a $127 million reduction on oil expenditures over 20 years. The processing of 1,200 tons per day of municipal solid waste in a resource recovery facility could also conserve approximately 113,000 tons per year of coal, and offer the potential for recovery of reusable materials.

5.12 VARIANCES

It is not anticipated that variances from applicable standards will be sought as part of the site certification process.

8.0 SITE AND PLANT DESIGN ALTERNATIVES

8.0 SITE AND PLANT DESIGN ALTERNATIVES

Many factors were evaluated during the planning of the Pasco County resource recovery project. These factors include alternative sites, solid waste management methods, ownership and financing, and facility size and boiler configuration. This section discusses the factors of site selection and alternative sources of water.

8.1 SITE ALTERNATIVES

In the fall of 1985, the Pasco County Board of County Commissioners approved the site recommended by the county's consulting engineers. The site is located in northwest Pasco County, near the county's waste generation centroid. The site offers a good access road, a large area of land, and buffer zone.

Site selection by Pasco County was made after preparation of the Pasco County Sanitary Landfill Resource Recovery Study by Camp Dresser & McKee, in October of 1985. For this study, a specific siting methodology was developed to evaluate the suitability of candidate sites. A five-step process was used for selection. The first two steps eliminated areas that were either unacceptable or marginal. This elimination was accomplished by applying negative siting criteria such as flood potential, well field impacts, airport proximity, urban development, and presence of water bodies. Environmentally sensitive areas such as wetlands, state parks, and wilderness refuges were eliminated, as well as areas with shallow groundwater tables (less than 5 feet from the surface). Over 90 percent of the land in Pasco County was eliminated from further consideration during the first two steps.

Using this method of elimination, nine preliminary sites were selected. During the third step, alternative site selections were narrowed further by comparing land availability and ownership restrictions. Land ownership by a small number of individuals was desirable. Land costs are typically lower on large parcels and such parcels are easier to obtain. Sites with sufficient land space to accommodate both the resource recovery facility

and the sanitary landfill/ashfill were selected for futher consideration. Therefore, a minimum area of 400 acres was used to qualify the remaining alternative sites. The sites were then compared using detailed siting criteria to determine which of the final four potential sites was best.

An evaluation of each site was made on the basis of possible sinkhole formation. Conditions which could cause contamination of major potable water supplies were reviewed. Finally, the relative costs of the sites were compared. Cost considerations included proximity to waste generation centroids and utilities, site access, and mitigation of aesthetic impacts.

Although each of the four candidate sites could have been developed for the facility, the study indicated that the Hays Road site could be developed with the lowest relative cost and the fewest negative impacts.

8.2 ALTERNATIVE WATER SOURCE

The county is committed to build the Hudson Subregional Wastewater Treatment Plant (WWTP) at a location 6 miles west of the resource recovery facility. This plant will satisfy all of the process water needs of the resource recovery facility. If for any reason this need cannot be met (i.e., the wastewater treatment plant is not constructed or the pipeline construction is delayed), the county will provide an alternative source of process water. The supply would be provided by an onsite well capable of pumping 1.0 million gallons per day (mgd).

Potable water will be supplied by a second water well that is also onsite. It will have a capacity of 0.05 mgd. A pneumatic storage tank connected to a chlorination system will be used for the potable water supply. If this supply were discontinued due to contamination or depletion, the county would construct a pipeline from an existing water main.

PASCO COUNTY, FLORIDA

SOLID WASTE RESOURCE RECOVERY FACILITY

APPLICATION FOR

POWER PLANT SITE CERTIFICATION

VOLUME II - APPENDICES

SUBMITTED BY
THE PASCO COUNTY
BOARD OF COUNTY COMMISSIONERS

NOVEMBER 1987

PREPARED BY
CAMP DRESSER & McKEE INC.

PASCO COUNTY, FLORIDA

SOLID WASTE RESOURCE RECOVERY FACILITY
APPLICATION FOR POWER PLANT SITE CERTIFICATION

VOLUME II - APPENDICES

SECTION 10.0 APPENDICES

APPENDIX 10.1.5

PSD APPLICATION/PERMITS

The Prevention of Significant Deterioration (PSD) determination pursuant to the Clean Air Act is included in the Air Quality section of this Application for Power Plant Site Certification (Volume III - Air Quality).

REFERENCES

Adams, A.P.; Garbett, M.; and Rees, H.B. 1980 Bacterial Aerosols Produced from a Cooling Tower Using Wastewater Effluent as Makeup Water. In: Journal WPCF. Vol. 52. No. 3.

Allen, D.L. 1982. North American Wildlife. Reader's Digest Ltd. 559 pp.

American Public Health Association (APHA). 1982. Standard Methods for the Examination of Water and Wastewater. Washington, D.C.

Brockman, F.C. 1968. Trees of North America. Golden Press. 280 pp.

Brown, M.T.; and Starnes, E.M. 1983. A Wetland Study of Seminole County. University of Florida Technical Report 41. 284 pp.

Bull, J.; and Farrand, J., Jr. 1984. Field Guide to North American Birds. Chanticleer Press. 784 pp.

Burt, W.H.; and Grossenheider, R.P. 1976. Field Guide to Mammals. Houghton Mifflin Company. 289 pp.

Camp Dresser & McKee Inc. October 1985. Sanitary Landfill Site Selection as an Element of the Pasco County Resource Recovery Study. Clearwater, Florida.

Camp Dresser & McKee Inc. November 1985. Pasco County Resource Recovery Study. Clearwater, Florida.

Conant, R. 1975. Reptiles and Amphibians of Eastern and Central North America. Houghton Mifflin Company. 429 pp.

Dryden, F.D.; Chen, C.; and Selna, M.W. 1979. Virus Removal in Advanced Wastewater Treatment Systems. In: Journal WPCF 51, 2098.

Federal Highway Administration (FHWA). March 1982. STAMINA 2.0/BCR, Traffic Noise Prediction Model. Developed under contract by Bolt, Beranek & Newman. National Technical Information Service, U.S. Department of Commerce. FHWA-DP-58.1; FHWA-DP-58-2. Springfield, Virginia.

Fetter, C.W., Jr. 1980. Applied Hydrogeology. Charles E. Merrill Publishing Co. Columbus, Ohio.

Florida Department of Administration. 1976. The Florida Land Use and Cover Classification System: A Technical Report. 50 pp.

Florida Department of Environmental Regulation. 1985. State Comprehensive Plan. Florida Statutes, Chapter 187. Tallahassee, Florida.

Florida Department of Transportation. February 1986. General Highway Capacities. Level of Service table. First District Office of Planning and Programs. Tallahassee, Florida.

Florida Game and Fresh Water Fish Commission. 1983. Laws and Regulations Affecting Endangered and Potentially Endangered Species in Florida. 16 pp.

Florida Game and Fresh Water Fish Commission. 1985. Official List of Endangered and Potentially Endangered Fauna and Flora in Florida. 21 pp.

Florida Game and Fresh Water Fish Commission. 1978. Rare and Endangered Biota of Florida. Volumes I-V.

Florida Department of Labor and Employment Security. 1986. Monthly Releases for Florida Counties. Labor Force Summary, 1980 to 1885 Annual Averages, and Average Through August 1986. Bureau of Labor Market Information. Tallahassee, Florida.

Florida Department of Labor and Employment Security. 10/23/85; 1/23/86; 4/19/86; 7/19/86; 9/6/86. Quarterly County Report[s] on Employment and Wages Covered Under the Florida Unemployment Compensation Law. Pasco County, Florida. Edited ES-202. Bureau of Research and Information. Tallahassee, Florida.

Florida Department of Natural Resources. 1972. Division of Interior Resources. Bureau of Geology. Bulletin No. 54. Part I, Suwannee Limestone in Hernando and Pasco Counties, Florida. Part II, Petrography of the Suwannee Limestone. Tallahassee, Florida.

Florida Department of Natural Resources. August 1986. The Nature Conservancy. Florida Natural Areas Inventory. Data Request Reply for Pasco County Landfill Site, Pasco County. T24S R17E Secs 24S2, 25N2, 26E2. USGS 7.5 minute quad Port Richey NE, Fivay Junction. Tallahassee, Florida.

Florida Department of Labor and Employment Security. April 1986. Personal Income by Major Source and Earnings by Major Industry. Pasco County, Florida. Regional Economic Information System. Bureau of Economic Analysis. Tallahassee, Florida.

Freeze, R.A. and Cherry J.A. 1979. Groundwater. Prentice-Hall, Inc. New Jersey.

Furlong, D. 1974. The Cooling Tower Business Today. In: Environmental Science and Technology. 8(8), pp. 712-716.

Godfrey, R.K.; and Wooten, J.W. 1979. Aquatic and Wetland Plants of the Southeastern United States. University of Florida Press. 712 pp.

Hernando County Planning Department. May 1986. Preliminary Population Projections. Brooksville, Florida.

Hutchinson, C.B. 1985. Hydrogeology of the Cross Bar Ranch Well-Field Area and Projected Impact of Pumping, Pasco County, Florida. U.S. Geological Survey, Water-Resources Investigations Report 85-4001. Tallahassee, Florida.

Jammal & Associates, Inc. August 17, 1985. Results of Preliminary Site-specific Evaluations, Four (4) Potential Sanitary Landfill Sites, Pasco County. Tampa, Florida.

Jammal & Associates, Inc. August 22, 1986. Phase 1 Geotechnical/ Hydrogeologic Summary Report, Proposed Pasco County Landfill - Hays Road Site, Pasco County, Florida. Tampa, Florida.

Jammal & Associates, Inc. April 17, 1987a. Summary Report, Geotechnical/Hydrogeologic Study, Proposed Class I Sanitary/Ash Landfill Site--Hays Road, Pasco County, Florida.

Jammal & Associates, Inc. May 29, 1987b. Preliminary Foundation and Soil Study. Proposed Resource Recovery Plant Facility--Hays Road Site, Pasco County, Florida.

Latimer, D.A.; Ireson, R.G. 1980. Workbook for Estimating Visibility Impairment. U.S. Environmental Protection Agency. Prepared by Systems Application in EPA-450/4-90-031. San Rafael, California.

Leggette, Brashears & Graham, Inc. 1979. Development and Testing Program, Cross Bar Ranch Well Field, Pasco County, Florida. Quarterly Status Report, July, August, September 1979. Tampa, Florida.

Leggette, Brashears & Graham, Inc. 1980. Development and Testing Program, Cross Bar Ranch Well Field, Pasco County, Florida. Quarterly Status Report, April, May, June 1980. Tampa, Florida.

Little, E.L. 1984. Field Guide to North American Trees. Chanticleer Press. 714 pp.

Martin, A.C. 1972. Weeds. Golden Press. 160 pp.

Mycyk, R.T.; Fayard, L.D.; Fletcher, W.L.; and Ogle, J.K. Water Resources Data, Florida Water Year 1983. Volume 3B. Southwest Florida Ground Water. U.S. Geological Survey Water-Data Report FL-83-3B. Tallahassee, Florida.

Niering, W.A. 1979. Field Guide to North American Wildflowers. Chanticleer Press. 887 pp.

Niering, W.A. 1980. Wetlands. Chanticleer Press. 638 pp.

Pasco County Building Department. Calendar Year 1985. Analysis of Building Permits. Central Permitting. Land O' Lakes, New Port Richey, Dade City. New Port Richey, Florida.

Pasco County Planning Department. June 12, 1981. 1980 Census Tracts, Pasco County. New Port Richey, Florida.

Pasco County Planning Department. 1985. Existing Land Use Map. New Port Richey, Florida.

Peterson, R.T. 1980. A Field Guide to Birds East of the Rockies. Houghton Mifflin Company. 384 pp.

Rogozen, M.B. 1981. Emissions Characteristics of Cooling Towers Using Reclaimed Wastewater in California. Prepared for State of California Air Resources Board. Sacramento, California.

Ryder, Paul D. 1985. Hydrology of the Floridan Aquifer System in West-Central Florida. U.S. Geological Survey. Open File Report 84-611.

St. Petersburg Times and Evening Independent. April 11, 1983. Research Department Computer Report. Florida Housing Occupancy and Type, 1980 Census Tape; and Average Value housing tables. St. Petersburg, Florida.

United States Water Resources Council. January 1977. Guideline 5, Regional Multipliers. Washington, D.C.

University of Florida. April 1, 1985. Bureau of Economic and Business Research. Florida Estimates of Population. Gainesville, Florida.

University of Florida. 1986. Drawdown in a Leaky Confined Aquifer Under Steady-State Conditions (SWSTLKY). Course Notes, Dr. Lou H. Motz, Department of Geology. Gainesville, Florida.

University of Florida. February 1986. Bureau of Economic and Business Research. Population Studies Bulletin No. 75. Gainesville, Florida.

University of Florida. April 1986. Population Studies Bulletin No. 76. Projections of Florida Population by County, 1985-2020. Bureau of Economic and Business Research. Gainesville, Florida.

University of Florida. June 1986. Population Studies Bulletin No. 77. April 1, 1986 population estimates. Population Program, Bureau of Economic and Business Research. Gainesville, Florida.

United States Department of Agriculture, Soil Conservation Service. 1979 Conditions. Soil Survey of Pasco County. Brooksville, Florida.

Wetterhall, W.S. 1961. Geohydrologic Reconnaissance of Pasco and Southern Hernando Counties, Florida. Florida Geological Survey Report of Investigations No. 34.

Wellings, F.M. 1983a. ABW Filter Virological Test, Sand Lake Road Wastewater Treatment Facility, Orange County Public Utilities Division. State of Florida, Department of Health and Rehabilitative Services. Epidemiology Research Center. Tampa, Florida.

Wellings, F.M. 1983b. Virological Testing at the McCleod Road Wastewater Treatment Facility. State of Florida, Department of Health and Rehabilitative Services, Epidemiology Research Center. Tampa, Florida.

Zim, H.S.; and Smith, H.M. 1956. Reptiles and Amphibians. Golden Press. 160 pp.

PM
10/7/87
Boston, Mass

Full Copy

CDM
environmental engineers, scientists,
planners, & management consultants

CAMP DRESSER & McKEE INC.
One Center Plaza
Boston, Massachusetts 02108
617 742-5151

October 6, 1987

DER
OCT 12 1987
BAQM

Mr. Tom Rogers
Meteorologist
State of Florida
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Twin Towers Office Building
Tallahassee, FL 32301

Dear Mr. Rogers:

Camp Dresser and McKee Inc. (CDM) has been retained by Pasco County, Florida to assist in the preparation of a PSD permit application for the proposed Pasco County Resource Recovery Facility (RRF). At the request of DER, and to aid the Federal Land Manager, CDM has modeled PSD Class I increment consumption at the Chassahowitzka National Wildlife Refuge (NWR) located 27 km north-northwest of the proposed site. The purpose of this letter is to confirm that the modeling methodology used in this analysis is acceptable to DER. The modeling protocol was discussed with DER before conducting the analysis.

CDM used the source inventory from the Florida Crushed Stone Corporation PSD Permit Application (1982) as a basis for identifying PSD increment consuming sources. Sources in existence before December 27, 1977 are not increment consuming sources and do not need to be included in the Class I Increment analysis for the Pasco County RRF. As a result of our telephone conversations with you and Mr. Bill Thomas of DER-Tallahassee, the following sources were identified as pre-existing sources:

- Gannon Generating Station Units 1 through 6,
- Hookers Point Generating Station Units 1 through 3,
- Bartow Generating Station Units 1 through 3,
- Anclote Generating Station Units 1 and 2,
- Big Ben Generating Station Units 1 through 3,
- Evans Packing Company, and
- Lykes-Pasco Company.

Other pre-existing sources may also be included in the fourteen SO_2 and sixty-six TSP sources listed in Table 1, however no sources other than those listed above were excluded from the PSD Class I increment analysis.

The PSD Class I increment modeling was conducted in a manner that allowed for the use of previously compiled source data and ISCST input files. The modeling at Chassahowitzka NWR included the following elements:

1. Ten model receptors were positioned along the southernmost border of the Chassahowitzka NWR at 1 km intervals or the equivalent of two degrees of azimuth resolution.

2. All modeling analyses were conducted with allowable emission rates.

3. ISCST (UNAMAP Version 6) was employed for all modeling tasks.

4. Modeling was performed for the five-year (1970-74) meteorological data set.

5. Short-term PSD increment consumption by background sources at Chassahowitzka was modeled for all days of the five-year period on which the proposed source consumed at least five percent of the 3-hour and/or 24-hour SO_2 Class I increments.

6. Annual average PSD increment consumption modeling was performed with the full five years of hourly meteorological data.

The short-term increment consumption analysis was limited to days that the proposed source emissions consumed at least five percent of any Class I PSD increment for SO_2. Big Ben Unit 4, which accounts for 85 percent of the SO_2 emissions from all modeled sources, is nearly in direct alignment with the Pasco County RRF and the Chassahowitzka NWR. Thus, the days of maximum impacts for the Pasco County RRF should correspond to the days of maximum combined impacts for the other increment consuming sources. The results of the Class I SO_2 and TSP increment analysis are presented in Table 2 and Table 3, respectively. They demonstrate that Pasco County RRF will not contribute to an exceedance of the PSD Class I increment at the Chassahowitzka NWR.

CDM is close to submitting the PSD Permit Application for the Pasco County RRF. To that end, we would appreciate your review of, and formal response to, the Class I Increment modeling methodology.

Please contact me at (617) 742-5151 as soon as possible with questions or for clarifications of the modeling procedure.

Sincerely,

CAMP DRESSER & McKEE INC.

Raymond C. Porter
Air Quality Meteorologist

cc: David Dee, CFWES C&K, P.A.
Don Elias, RTP Env. Assoc.
Bob Hauser, CDM
Dan Strobridge, CDM
Ray Porter, CDM
Bill Thomas, DER-Tallahassee

Copied: Tom Rogers } 10/12/87 mp
Bill Thomas }

TABLE 1

LOCAL TSP AND SO_2 SOURCES INCLUDED IN THE PSD CLASS I INCREMENT CONSUMPTION ANALYSIS

Source	Emission Rates PM (Lb/Hr)	SO2 (Lb/Hr)	Stack Height (Ft)	Stack Diam. (Ft)	Stack Velocity (FPS)	Gas Temp. (Deg F)	X Coord. (km)	Y Coord. (km)
FFC II #3	667.7540		603.570	22.770	90.420	257.00	334.400	3204.510
DLS 6 Kiln 2	7.9400	10.3220	70.290	4.620	41.580	244.40	397.200	3182.600
DLS 6 Lime Dry	7.9400	59.5500	30.360	3.960	42.570	132.80	397.200	3182.600
DLS 6 Lime Cool	5.0816	0.0000	95.700	4.620	32.670	240.80	397.200	3182.600
DLS 6 CaCO3	1.5830	0.0000	55.110	1.650	47.520	105.80	397.200	3182.600
DLS 6 Misc	5.5590	0.0000	21.120	1.650	76.560	105.80	397.200	3182.600
DLS 6 Coal Handling	0.1588	0.0000	23.100	0.990	12.870	105.80	397.200	3182.600
DLS 6 Kiln 1	5.6374	10.3220	69.300	3.960	44.880	244.40	397.200	3182.600
DLS 6 Kiln 1 Dust	0.4764	0.0000	23.100	1.320	37.290	105.80	397.200	3182.600
TEC 15 Bin Bend 4	130.0572	5198.3180	493.020	24.156	66.000	156.20	361.600	3075.000
FMM 8 Raw Material Storage	37.3180	0.0000	80.520	2.970	35.640	105.80	356.200	3169.900
FMM 8 Raw Material Grinding	37.3180	0.0000	80.520	2.970	35.640	105.80	356.200	3169.900
FMM 8 Kiln 1	37.3180	5.5580	75.570	9.900	35.640	260.60	356.200	3169.900
FMM 8 Cooler 1	34.1420	0.0000	80.520	7.590	31.680	217.40	356.200	3169.900
FMM 8 Clinker Grinding	35.7300	0.0000	82.500	2.970	52.140	105.80	356.200	3169.900
FMM 8 Clinker Silo 1	34.1420	0.0000	145.860	1.980	16.170	105.80	356.200	3169.900
FMM 8 Clay Crush 1	26.2020	16.6740	24.090	1.980	45.540	269.60	356.200	3169.900
FMM 8 Btm Blend	37.3180	0.0000	206.250	2.640	61.710	199.40	356.200	3169.900
FMM 8 Product Storage	34.1420	0.0000	135.960	2.970	34.650	105.80	356.200	3169.900
FMM 8 Masonry Silo (3)	2.3820	0.0000	211.200	2.310	50.160	145.40	356.200	3169.900
FMM 8 Kiln 2	21.5968	3.1760	90.420	16.170	25.080	386.60	356.200	3169.900
FMM 8 Cooler 2	7.1460	0.0000	50.160	7.590	72.270	399.20	356.200	3169.900
FMM 8 Clinker Silo (L07)	1.7468	0.0000	150.810	2.970	53.460	185.00	356.200	3169.900
FMM 8 Finish Mill 1 & 2	4.7640	0.0000	75.570	4.620	50.160	199.40	356.200	3169.900
FMM 8 Clay Crush 2	7.9400	0.0000	20.130	4.950	50.160	269.60	356.200	3169.900
FMM 8 Kiln Feed	0.7940	0.0000	90.420	1.650	44.550	129.20	356.200	3169.900
FCS 1 Clay Crush	1.0322	0.0000	25.080	2.310	40.260	105.80	360.044	3162.648
FCS 1 Limestone Conv	0.4764	0.0000	55.440	1.650	47.520	105.80	360.123	3162.379
FCS 1 Limestone Transfer	0.7940	0.0000	15.180	1.980	42.570	105.80	359.950	3162.477
FCS 1 Premix Bin	1.0322	0.0000	125.730	2.310	42.240	105.80	360.005	3162.337
FCS 1 Fly Ash Bin	1.0322	0.0000	125.730	2.310	42.240	105.80	360.017	3162.337
FCS 1 Kiln	94.3272	638.0584	201.300	14.190	43.230	244.40	360.008	3162.392
FCS 1 Raw Mat'ls Transfer	0.6352	0.0000	25.080	1.650	47.520	150.80	360.030	3162.335
FCS 1 Blend Silo	2.9378	0.0000	206.250	3.630	40.260	150.80	360.037	3162.312
FCS 1 Kiln Feed	1.2704	0.0000	50.160	2.640	34.320	150.80	360.044	3162.306
FCS 1 Cooler Discharge	0.6352	0.0000	9.900	1.650	47.520	150.80	360.086	3162.200
FCS 1 Clinker Silo L12	1.2704	0.0000	201.300	2.640	34.320	150.80	360.114	3162.137
FCS 1 Clinker Silo L13	1.2704	0.0000	201.300	2.640	34.320	150.80	360.108	3162.125
FCS 1 Clinker Silo Discharge	0.6352	0.0000	25.080	1.650	47.520	150.80	360.105	3162.125
FCS 1 Limestone Silo	0.3970	0.0000	25.080	1.320	40.920	105.80	360.105	3162.143
FCS 1 Cement Silo	1.0322	0.0000	25.080	1.980	42.570	150.80	360.123	3162.133
FCS 1 Finish Mill	5.5580	0.0000	100.650	4.950	39.270	199.40	360.111	3162.157
FCS 1 Cement Silo Discharge (4)	4.1288	0.0000	25.080	1.980	42.570	150.80	360.125	3162.100
FCS 1 Cement Silos (5)	7.7018	0.0000	201.300	2.640	40.920	150.80	360.125	3162.110
FCS 1 Packing Plant	1.2704	0.0000	55.440	2.640	34.320	105.80	360.155	3162.032
FCS 1 Masonry Silos (3)	3.8906	0.0000	80.520	2.640	34.320	150.80	360.147	3162.047
FCS 1 Raw Coal Bin	0.3970	0.0000	100.650	1.320	40.920	105.80	360.102	3162.210
FCS 1 Power Plant Coal Bin	0.3970	0.0000	100.650	1.320	40.920	105.80	360.080	3162.010
FCS 1 Gypsum 5.10	3.9700	0.0000	25.080	1.320	40.920	105.80	360.080	3162.010

EVN	7	20493	0.0794	1.5880	40.260	1.320	30.030	379.40	383.300	3135.800
FPC	11	Fly Ash 1, 2, 5	88.1340	0.0000	7.920	0.990	24.420	199.40	334.400	3204.510
FPC	11	Fly Ash 3	36.5240	0.0000	93.720	1.650	153.120	150.80	334.400	3204.510
FPC	11	Fly Ash 4	35.7300	0.0000	35.310	1.980	1.650	150.80	334.400	3204.510
FMM	8	Blend Silo	2.3820	0.0000	221.430	2.640	61.710	199.40	356.200	3169.900
FMM	8	Raw Materials Feed	0.8734	0.0000	10.230	3.300	50.160	105.80	356.200	3169.900
	2	Adams Construction	9.5280	58.7560	28.050	3.960	56.100	199.40	361.400	3168.400
	4	Dairy Service Boiler	2.6996	37.3180	30.360	1.980	34.650	399.20	364.200	3158.300
	4	Dairy Service Dryer	10.6396	37.3180	60.390	2.640	40.920	145.40	364.200	3158.300
	5	Deltona	37.3180	11.1160	25.080	5.940	16.500	165.20	359.800	3164.000
	13	Hernando Conc..	12.7040	0.0000	50.160	1.980	16.170	105.80	365.300	3153.300
	18	West Coast Conc.	3.1760	0.0000	55.110	1.980	16.170	105.80	352.000	3157.000
	3	Chem Lime Calc.	21.6762	0.0000	90.420	3.960	15.510	114.80	359.400	3162.300
	3	Chem Lime Hyd.	14.0538	0.0000	20.130	3.960	14.520	105.80	359.400	3162.300
	3	Chem Lime Dryer	33.3480	0.0000	30.360	3.630	61.050	249.80	359.400	3162.300
	3	Chem Lime Boiler 1 & 2	0.0794	1.5880	35.310	0.660	48.180	300.20	359.400	3162.300
	3	Chem Lime Bagging	11.9894	0.0000	62.370	1.650	36.960	105.80	359.400	3162.300

Source: Florida DER (from the Florida Crushed Stone Corporation PSD Permit Application, 9/9/82).

TABLE 3

PASCO COUNTY RRF TSP MODELED IMPACTS AT THE CHASSAHOWITZKA NWR CLASS I AREA

Year	Averaging Period	Paired Maximum Impacts[b] Julian Date	Receptor Reference Letter	Pasco Co. Impact (ug/m³)	Background Sources Impact[a] (ug/m³)	Total Impact (ug/m³)	Total as Percent of PSD Increment
1970	annual[c]	NA	A	0.003	2.66	2.66	53
	24-hour	33	A	0.00	3.53	3.53	35
1971	annual	NA	A	0.004	2.44	2.44	49
	24-hour	234	D	0.02	3.61	3.63	36
1972	annual	NA	B	0.002	2.82	2.82	56
	24-hour	315	D	0.01	3.57	3.58	36
1973	annual	NA	A	0.003	2.46	2.46	49
	24-hour	183	I	0.02	5.25	5.27	53
1974	annual	NA	A	0.003	2.66	2.66	53
	24-hour	182	A	0.02	6.57	6.59	66

(%) = Percent of PSD Class I increment consumed; 24-hour and annual TSP increments are 10- and 5-ug/m³, respectively.

(a) Sixty-two TSP background sources were modeled.

(b) Maximum paired-in-space-and-time impacts. (See page 2 of letter.)

(c) Annual average concentrations were computed for the full 365- or 366-day duration.

NA = Not Applicable.






Ogden Waste Treatment Services
An Overview

OGDEN PROJECTS, INC.

AN OGDEN COMPANY

Ogden Waste Treatment Services
An Overview

Welcome...

INTRODUCTION

Ogden Corporation (Ogden), through its subsidiary, Ogden Projects, Inc. (OPI), is the unparalleled leader in developing and operating large-scale waste-to-energy facilities in North America, operating 28 projects across the United States. At these facilities, Ogden safely and efficiently disposes of more than 5% of the nation's municipal solid waste. The volume of waste remaining after combustion is reduced by up to 90%. The remaining ash residue is inert and can be safely landfilled or recycled. Collectively, the Ogden waste-to-energy facilities produce over 800 megawatts of electricity daily utilizing only waste materials as fuel.

The service Ogden offers in processing waste materials through its waste-to-energy facilities is multi-faceted. This waste disposal option offers an environmentally safe alternative for those materials which would otherwise be landfilled. Because the combustion process also recovers the energy value from the materials, waste-to-energy provides the ultimate recycling option. Waste-to-energy also assures complete destruction of the waste materials, eliminating future risk or liability from diversion, unintended reuse or exposure arising from environmental degradation.

HISTORY

Ogden's Supplemental Waste Program, managed through Ogden Waste Treatment Services USA, Inc. (OWTS) was a natural outgrowth of service to our client communities. The program began as a means to provide an environmentally safe and efficient alternative for managing nonhazardous, non-RCRA/non-TSCA-regulated, commercial and industrial wastes. These waste streams often require special handling to ensure safe and proper disposal. OWTS refers to these waste streams as "supplemental waste". These are waste streams brought to the waste-to-energy facility in addition -- as a supplement -- to the community's normal waste stream. This designation is also indicative of the special handling required due to the waste generator's need for confidentiality, assured destruction and environmental safety. The waste generator also pays a higher price for this disposal service. Fourteen Ogden waste-to-energy facilities currently participate in the Supplemental Waste Program and in the near future, there will be a total of 16 facilities accepting supplemental waste.

ADVANTAGES

The community benefits from the Supplemental Waste Program in two ways. First, the community is assured that these types of waste streams are handled safely, efficiently and with no adverse impacts to the community or the local environment. Second, the community receives additional revenue from wastes handled in the Supplemental Waste Program.

For the waste generator, waste-to-energy offers several important advantages over other disposal methods for these waste streams:

- recycling of the waste product through energy recovery
- assured destruction
- strict environmental compliance at all levels
- confidentiality and security

At each of our facilities, Ogden has consistently demonstrated its commitment to superior environmental performance, quality long-term operations and exceptional service to its clients and client communities.

THE APPROVAL PROCESS

When OWTS receives a request for supplemental waste disposal, the waste material is put through a stringent review process to properly assess the appropriate method for managing and processing the waste stream. Based on information provided by the waste generator on the Material Characterization Forms, Ogden profiles and characterizes the waste material to make sure that it can be safely received, handled and combusted in compliance with all applicable state, local and plant specific regulatory and operational guidelines.

THE ENVIRONMENTAL REVIEW

During the environmental review process, the waste is evaluated in regard to the specific permit conditions of the facilities intended to receive the waste. The waste characterization is reviewed to ensure the materials are nonhazardous. Then the specific chemical characteristics are assessed to confirm that the combustion and air pollution control systems at the selected facility can effectively manage those elements to keep the facility within its permitted operating parameters and without impacting the allowable facility emission levels.

THE HEALTH AND SAFETY REVIEW

Once the environmental review process has been successfully completed, a Health and Safety review is conducted. This review focuses on work exposures and the impacts to the health and/or safety of any staff handling the material prior to disposal. This review includes possible effects from direct exposure to the material as well as fugitive dust or emission problems which might be encountered. In most cases, any potential risks associated with a specific waste material can be greatly minimized or eliminated through proper handling of the material.

The last step in the approval process is review by the manager of the facility designated to receive the waste. The facility manager reviews the application to assess any special handling or logistical concerns. It is important for the waste material to be handled safely and without adverse impact on the facility operations.

GUARANTEES

OWTS, through Ogden, guarantees that all waste materials managed in the Supplemental Waste Program will be totally combusted and the energy value recovered into steam or electricity. OWTS, through Ogden, also guarantees that the waste will be handled safely and in compliance with all environmental regulations. These facilities operate under stringent environmental requirements and emissions are continuously monitored. The waste-to-energy disposal process provides safe, secure, confidential and assured destruction of your waste materials.

SUMMARY

Since its inception over six years ago, the Supplemental Waste Program has become a successful part of Ogden's strategy to expand our services to clients. Our reputation for service and performance continues to grow through the efforts of our dedicated personnel. Likewise, the Supplemental Waste Program advances in scope with the demand for superior, environmentally responsible nonhazardous waste disposal services.

An Overview of Procedures and Policies...

PREFACE

This document summarizes the procedures for disposal of nonhazardous, non-RCRA/non-TSCA-regulated wastes in Ogden's Supplemental Waste Program managed by Ogden Waste Treatment Services USA, Inc. (OWTS). The following is an overview of the entire process from the waste disposal request and profile through confirmation of destruction.

Ogden, through OWTS, provides this information to clients considering our waste management and assured destruction services. A full staff of sales managers, customer and technical service representatives, transportation personnel and disposal facility personnel stand ready to assist you in understanding and implementing these procedures. If you have any questions or require additional information, please contact your Regional Sales Manager or the Customer and Technical Services Department in Fairfield, New Jersey (201-882-7088).

PROFILING THE WASTE STREAM

1. Written Request

The process begins when you or your authorized representative submit a written request to dispose of waste at one of our facilities. The request should include:

- The waste-to-energy (WTE) facility requested for delivery;
- The origin and type of waste to be presented for disposal;
- The amount of waste to be delivered over what period of time;
- How the waste will be packaged (container type) and delivery method;
- OWTS' waste classification, if known;
- Detailed description of the generator and the process which created the waste;
- Contact name and telephone number.

A brief description of the waste is also helpful in characterizing the waste stream. For example:

Material Safety Data Sheets are for original contents of empty container and represent residual amounts.

Clean-up materials from a product spill including virgin product and absorbent (described).

Pharmaceutical product returns, expired or short dated.

Production waste product in finished form and QC samples.

Finally, the request must be signed by the generator or an authorized representative with knowledge of the waste to be processed.

2. Itemized List

If your request involves more than one type of waste, a list should be provided showing all waste materials to be presented for disposal. For consumer packaged deliveries, a listing of the material names is sufficient. For all other requests, the listing must include the name of the material and the OWTS classification. This list will provide a summary for those evaluating the waste stream(s) for disposal. It will also be used for visual inspections during delivery of the waste and eliminate the need for samples, except on special request.

3. *OWTS Material Characterization Form (MCF)*

A Material Characterization Form (MCF) must be completed for each component of the waste stream. Because these forms are an essential tool in characterizing waste streams, accuracy and attention to detail are very important. Percent active and inactive ingredients must be provided. Packaging and pallets should not be listed as inactive ingredients. The MCF must be signed by the generator or an authorized representative with knowledge of the waste. Incomplete forms cannot be evaluated and delay the approval process.

4. *Supporting Documents*

Each waste material to be delivered for disposal should be accompanied by a Material Safety Data Sheet (MSDS) or product insert. If an MSDS or product insert is not available, a written analysis of the material from an approved laboratory will be required. In some cases, a written laboratory analysis may be required even though an MSDS and/or product insert is available. This is determined on a case by case basis by OWTS staff. All supporting paperwork must be legible, complete and current.

OWTS SUPPLEMENTAL WASTE CLASSIFICATIONS

Ogden, through OWTS has developed a standard waste classification system to assist in characterizing waste delivered for disposal as part of the Supplemental Waste Program. Understanding these classifications is important to facilitate waste stream review, approval, handling, labeling, inspection and processing. These classifications are as follows:

CLASS A **CONSUMER PACKAGED PRODUCTS:** Over the counter and prescription pharmaceuticals, health care products and consumer products in original consumer packaging over packed in boxes or fiber drums, palletized and shrink-wrapped.

CLASS B **BULK POWDERS AND DUSTY SOLIDS**

- **CLASS B1** **BULK POWDER:** Powders that are purely 100% active or 100% inactive ingredients.
- **CLASS B2** **BULK POWDER PRODUCTS:** Powders, dusts, and granules in bulk form which are a formula or mixture of materials. Typically these are in the form of materials found prior to final pressing, encapsulation or other packaging processes. These may include off spec, rejected or expired formulations.
- **CLASS B3** **BULK POWDER INTERMEDIATE WASTE:** Powders, dusts and granules which consist of a combination of active and inactive ingredients, class B2 materials, rejected pressed pills and capsules and clean-up materials (tyvek, rags, etc.) used in the clean up of the manufacturing process or from a dust collection system.

CLASS C **BULK PRESSED TABLETS AND CAPSULES:** Completed products not in consumer package (no dust).

CLASS D **BULK CREAMS, LIQUIDS, PASTES AND SOLIDS IN DRUMS, TOTES AND BULK TANK TRUCKS:** These materials are flowable, non-dusting bulk products, ingredients and raw materials (no consumer packaging).

CLASS E **PRODUCTION, INDUSTRIAL AND OILY DEBRIS:** Manufacturing scraps contaminated with less than 1% Class B1, B2, B3 and D. Material may include plastic containers, paper bags, cardboard, tyvec, etc. Debris may include, filter media, filter cakes, absorbents, containers, oil filters and general trash.

CLASS F **NONHAZARDOUS REPACKED MATERIALS:** Small quantities of reagent grade, off spec, unused or discarded nonhazardous laboratory chemicals and QA/QC samples of products that have been designated as nonhazardous waste for disposal. These materials will be in laboratory type containers of five gallon size or smaller as specified by the approval. These five gallon and smaller packages will be over packed in 55 gallon and smaller fiber/poly/steel drums and gaylord boxes.

WASTE APPROVAL AND CONTRACTING

Once a waste stream is approved for disposal at an Ogden facility, an OWTS Supplemental Waste Request Response Form is issued confirming approval. The form also indicates the facility designated for disposal, the staff contact, instructions for delivering the waste material and any other pertinent information. An OWTS Waste Disposal Agreement (Contract) is also provided. Once this form is completed by both parties and on file, you may schedule waste disposal.

WASTE LABELING

Accurate labeling of supplemental waste in preparation for delivery to an Ogden WTE facility is key to our on-going quality assurance program. Proper processing, as determined by the Supplemental Waste Review, often depends on accurate labeling and segregation of a load. For example, an OWTS approval may stipulate specific handling for certain materials based on health and safety concerns, environmental issues, OSHA requirements, etc. To ensure proper handling and processing, those materials must be clearly labeled and segregated from other materials in the delivery vehicle.

Each movable unit must be labeled and may consist of the following:

- A box, drum, cubic yard (gaylord) box or bag (supersac)
- A palletized and shrink wrapped set of boxes or drums
- A dumpster, roll-off or dump trailer

Labeling must include the following on each unit:

- A Nonhazardous or Non-RCRA regulated label
- The name of the waste(s) contained within the individual unit
- The corresponding OWTS approval number(s)
- The corresponding OWTS classification marked in six (6) inch letters

If the packaging container has any additional markings or labeling from previous use which are not applicable to the waste, these markings/labels must be completely covered or removed.

The Supplemental Waste approval process will, from time to time, specify a packaging size or weight which is necessary for managing the feed rate of the material, and/or when manual feeding is involved, to meet OSHA requirements. The OWTS Supplemental Waste Request Response Form or the attached Supplemental Waste Tracking Form will detail any need to limit packaging size or weight.

ASSURED DESTRUCTION - SECURITY PROCEDURES

The Ogden Supplemental Waste Program, managed by OWTS, provides guaranteed destruction for our clients by utilizing the complete combustion systems available within Ogden's Waste-to-Energy facilities. The following options are available to address your additional security needs.

1. Witness Destruction

Disposal of OWTS-approved nonhazardous materials can be personally witnessed by the waste generator's personnel. Witness destruction typically provides direct feeding of the materials into the combustion hopper. Disposal can also be witnessed by a contracted third party security firm. The third party witnesses the delivery and disposal of materials on your behalf. Third party witnessing can include direct feeding of the materials to the combustor or a pit delivery and feed to the combustor. Third party witnessing can be arranged directly with a security firm or OWTS can coordinate this witness. Disposal rate is determined by the type of feed requested.

2. Standard Assured Destruction Deliveries

All deliveries of OWTS-approved supplemental wastes which are identified for assured destruction are managed for secure disposal at the point of disposal. It is recommended that minimally a "coded seal" be placed on the door of the trailer. Upon request, OWTS will provide as a portion of a standard delivery:

1. Confirmation of seal number
2. Return of seal for verification

If special seals are to be provided - locks, bolts, etc. - which require either special equipment or combinations for removal, please notify the scheduling coordinator of your individual security needs. Execution of confirming paper work will be returned per any specific instructions on the Preshipment Notification Form.

SCHEDULING DELIVERY / TRANSPORTATION

When delivering approved waste materials to an Ogden facility, you have the option of arranging your own transportation or allowing OWTS to coordinate transportation services on your behalf.

1. Scheduling Delivery Using Your Own Transportation

To schedule a delivery, an OWTS Preshipment Notification Form should be forwarded to the Facility Supplemental Waste Coordinator. The coordinator will review and confirm with the requestor a schedule for acceptance of the waste. Receipt of the Preshipment Request must be acknowledged by OWTS and the delivery schedule confirmed prior to dispatching any waste materials to an Ogden facility.

It is recommended that you schedule with OWTS prior to confirming a date with your transporter. This will avoid potential scheduling conflicts.

Upon receipt of the Preshipment Notification, the Supplemental Waste Coordinator compares the Notification to the Supplemental Waste Request Response Form and the original package reviewed through the OWTS approvals process. If additional equipment, manpower or any other special requirements are noted, adequate time exists to make those arrangements. The Notification includes the following information regarding the waste(s) to be delivered:

- Identification of all waste(s)
- Approximate amount of each waste
- The OWTS Classification of each waste
- Approval number for each waste
- Special handling or feed requirements

2. Scheduling Delivery Using OWTS to Coordinate Transportation

To schedule a waste pick up from your site, a Transportation Request Form (TRF) must be completed and faxed to the appropriate Technical Service Representative in Fairfield. The TRF must be received by the Technical Service Representative a minimum of 72 hours prior to the requested pick up time. (Not including weekends or holidays). The TRF must specify:

- Pick-up Dates (minimum of 2 dates)
- Pick-up Time (provide a range of hours)
- Address(es) (provide billing and warehouse locations)
- Directions to Pick-up location (specific detail for transporter)
- Waste Stream Details (same as required for deliveries)
- Miscellaneous information to assist in successful pick up and delivery of waste

Upon receipt of a completed TRF, the Technical Service Representative will schedule the waste pick up and delivery to the designated Ogden facility and provide written confirmation of the arrangements to the requestor.

OWTS will make available Nonhazardous Waste Transportation Manifests to our clients who request them as a part of the Transportation Service. If requested, the Transportation Coordinator will forward a Transportation Manifest to the client's location for use with the shipment. The client will be responsible for completion and signature as "waste generator".

OWTS will provide guidance to clients to complete manifests or bills of lading up to and including the preparation of such forms on the client's behalf, if requested by the client, provided that in all cases the forms are reviewed and signed by the client, attesting to their accuracy.

All shipments must conform to all applicable federal and state regulations as well as the conditions specified in the OWTS Waste Disposal Agreement and the Supplemental Waste Request Response Form.

WASTE RECEIVING

1. Supplemental Waste Deliveries

OWTS Supplemental Waste Coordinators schedule specific delivery times to minimize delays and accommodate QA/QC of the materials. Facility scale house hours vary and availability of dedicated manpower and equipment require that all deliveries arrive during scheduled times.

After weighing in at the scale house, the vehicle proceeds to a location designated by the receiving person at the facility for review of the Bill of Lading, the Preshipment Notification and any other documentation accompanying the loads. Once paperwork has been received and verified, the truck will be directed to an unloading location. This will be out of the way of normal traffic and provide adequate area for movement of materials and personnel. The Ogden facility will provide a pallet jack, fork lift and an equipment operator to assist with off-loading. Some locations also have a truck height dock. Upon request and at additional cost, Ogden will provide additional labor for off-loading and conveyors or other equipment which may be required for unloading.

In addition to the requirements set forth in the Supplemental Waste Disposal Agreement, when a truck height dock is not available, it is the responsibility of the transporter to deliver the materials to the tail of the truck for off-loading and inspection by Ogden personnel. Facility personnel will follow their Standard Operating Procedures and all Supplemental Waste Safety Procedures in the inspection of incoming materials. All materials are to be inspected after being removed from the vehicle. Palletized materials delivered in self-unloading (walking-floor) vehicles must be manually removed to minimize breakage and to facilitate reloading in the event unacceptable materials are present.

2. Processing Of Waste Materials

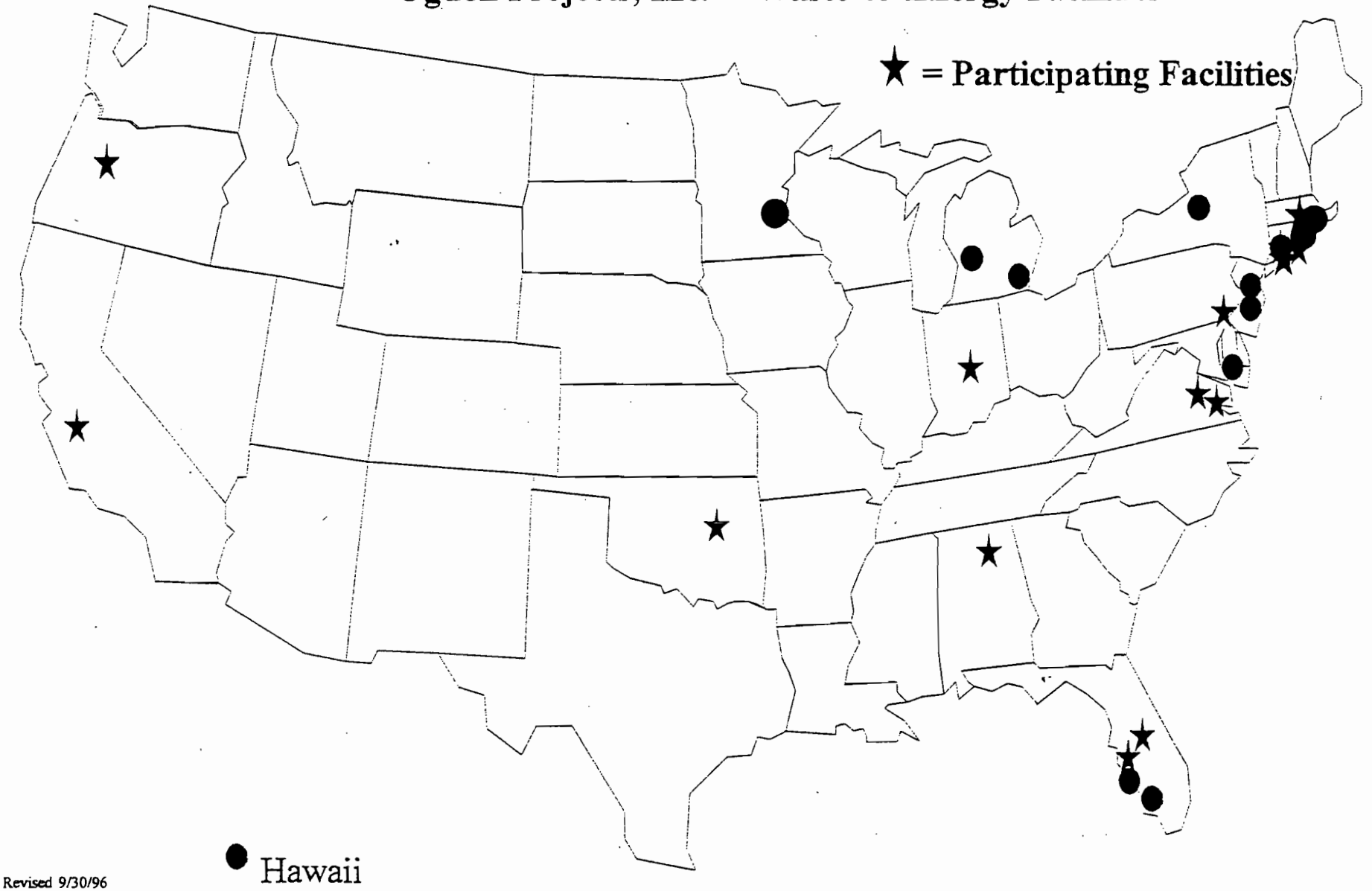
All materials are managed at the Ogden WTE facility site according to the specifications and instructions in the Supplemental Waste Approval Package. This includes selected feed rates and method of feed (hopper feeding, pit feeding, etc.). This will ensure the safest handling and management of each waste. During a witness disposal, this also includes opening containers to verify their contents. As presented in the Security Procedures section, the OWTS Supplemental Waste Coordinator will verify the integrity of seals upon arrival, open them, and, if requested, return security seals to the client.

For those wastes designated for direct hopper feeding, the wastes will be destroyed within 24 hours of receipt. For those being witnessed, wastes will be fed as quickly as possible, based on the Ogden and OWTS processing requirements. For wastes designated for pit delivery, they will be pushed into the pit immediately after QC is conducted confirming their approval.

3. Certificate of Destruction

Certificates of Destruction will be provided when requested by the client on the 24 Hour Preshipment Notification.

Ogden Projects, Inc. -- Waste-to-Energy Facilities



Revised 9/30/96

Facilities Currently Participating in the Ogden Supplemental Waste Program

Ogden Martin Systems of Alexandria/Arlington, Inc.
5301 Eisenhower Ave.
Alexandria, VA 22304
Contact Person: Pat Canniff
(703) 690-6860

Ogden Martin Systems of Babylon, Inc.
125 Gleam Street
West Babylon, NY 11704
Contact Person: Gary Billingham
(516) 491-1976

Ogden Martin Systems of Fairfax, Inc.
9896 Furnace Rd.
Lorton, VA 22079
Contact Person: Pat Canniff (at Alexandria)
(703) 690-6860

Ogden Martin Systems of Haverhill, Inc.
100 Recovery Way
Haverhill, MA 01835
Contact Person: Ron Godbout
(508) 372-6288

Ogden Martin Systems of Huntington, LP
99 Town Line Rd.
East Northport, NY 11731
Contact Person: Gary Billingham (at Babylon)
(516) 491-1976

Ogden Martin Systems of Huntsville
5251 Triana Blvd.
Huntsville, AL 35805
Contact Person: Oscar Allen
(205) 882-1019

Ogden Martin Systems of Indianapolis, Inc.
2320 So. Harding St.
Indianapolis, IN 46221
Contact Person: Brian Foster
(317) 634-7367

Ogden Martin Systems of Lake, Inc.
3830 Rogers Industrial Park Rd.
Okahumpka, FL 34762
Contact Person: Cheri Coniglio
(904) 365-1611

Ogden Martin Systems of Marion, Inc.
4850 Brooklake Rd. NE
P.O. Box 9126
Brooks, OR 97305
Contact Person: Darby Randklev
(503) 393-0890

Ogden Martin Systems of Pasco, Inc.
14230 Hays Road
Spring Hills, FL 34610
Contact Person: Mark Ervin
(813) 856-2917

Ogden Martin Systems of Stanislaus, Inc.
4040 Fink Road, P O Box 278
Crows Landing, CA 95313
Contact Person: Karen Henry
(209) 837-4423

Ogden Projects of Tulsa, Inc.
2121 S. Yukon Ave.
Tulsa, OK 74107
Contact Person: Steve DiLiberto
(918) 583-3925

Ogden Martin Systems of Wallingford,LP
530 South Cherry St.
Wallingford, CT 06492
Contact Person: Jim Klemes
(203) 294-1649

THE WALLINGFORD RESOURCE RECOVERY FACILITY

THE WALLINGFORD RESOURCE RECOVERY FACILITY

The Wallingford Resource Recovery Facility converts up to 420 tons of solid waste into saleable energy each day. The facility is capable of producing power in the form of electricity or steam or both. While the facility runs on a portion of the power it generates, electricity is sold to Connecticut Light & Power Company.

Ogden Projects, Inc. acquired the facility when the project was in financial distress. In order to raise operations performance to Ogden's operating standards and ensure compliance with service agreement requirements, Ogden redesigned mechanical and boiler systems; the facility entered commercial operation in May, 1989. Ogden Projects of Wallingford, LP owns and operates the plant which, under a twenty-year agreement, processes waste from Cheshire, Hamden, Meriden, North Haven and Wallingford. The Connecticut Resource Recovery Authority receives approximately 90% of electricity revenues while Ogden receives a portion based on plant performance and efficiency.

RECYCLING WASTE INTO ENERGY

The facility utilizes Enercon technology to combust waste at furnace temperatures exceeding 1,800 degrees Fahrenheit, reducing it to an inert ash residue. Before leaving the facility, combustion air is directed through technologically advanced air pollution control equipment including dry flue gas scrubbers and fabric filter baghouses. Facility emissions are strictly regulated by state and federal agencies, as are handling and disposal of combustion ash.

AN ENVIRONMENTALLY SOUND SOLUTION

The Wallingford Resource Recovery Facility provides a cleaner alternative to traditional means of generating energy and offsets the burning of non-renewable fuels. In addition, plant operations reduce the volume of delivered waste by 90%, thus preserving rapidly diminishing landfill capacity.

The facility provides the cornerstone for the service area's integrated solid waste management plan. Individual recycling programs in communities throughout the service area employ a combination of curbside collection and drop-off centers and process a host of materials; these include aluminum cans, bimetal cans, glass, plastic, newspaper, office paper, mixed paper, corrugated cardboard, yard waste, motor oil and white goods and other scrap metals. In addition, citizens are encouraged to dispose of household hazardous waste at a regional drop-off center.

The Wallingford Resource Recovery Facility is located approximately 25 miles south of Hartford. For information or to arrange a tour, please call 203-294-1649.

FACILITY SPECIFICATIONS

Rated Refuse Combustion Capacity
420 tons per day

Unit Design
Three 140 ton-per-day furnaces

Guaranteed Throughput
125,000 tons per year

Guaranteed Waste Delivery
125,000 tons per year

Energy Generation at Rated Capacity
Up to 11 MW, sold to Connecticut Light and Power Company or up to 35,741 lbs steam per hour per refuse boiler

OGDEN PROJECTS OF WALLINGFORD, L.P.
530 South Cherry Street
Wallingford, Connecticut 06492

AN OGDEN PROJECTS COMPANY

OGDEN PROJECTS OF WALLINGFORD, L.P.

The Wallingford
Resource Recovery
Facility

OGDEN PROJECTS OF WALLINGFORD, L.P.

OGDEN PROJECTS COMPANY

OGDEN MARTIN SYSTEMS OF TULSA, INC.

The Walter B. Hall
Resource Recovery
Facility

**OGDEN MARTIN SYSTEMS
OF TULSA, INC.**

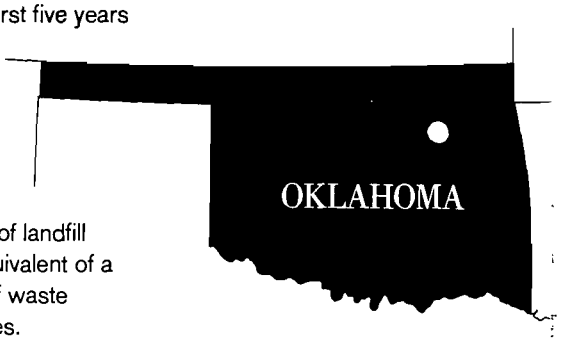
An OGDEN PROJECTS COMPANY

THE WALTER B. HALL RESOURCE RECOVERY FACILITY

THE WALTER B. HALL RESOURCE RECOVERY FACILITY

The Walter B. Hall Resource Recovery Facility, which began commercial operation in October, 1987, processes up to 1,125 tons of solid waste each day. In addition, it is equipped to produce energy in the form of steam or electricity or both. At maximum output, the plant produces up to 16.5 megawatts of electricity or 240,000 pounds per-hour of export steam.

While offsetting oil and coal consumption, resource recovery operations also reduce waste volume by 90%, thereby helping to reduce dependence on landfill space. In fact, in its first five years of operation, the facility processed more than one-and-a-half million tons of solid waste, saving over 1,800 acre-feet of landfill space – that's the equivalent of a ten-foot deep layer of waste spread over 180 acres.



Ogden Martin Systems of Tulsa, Inc. (OMST) designed and built the facility and operates it under a twenty-year agreement with the Tulsa Authority for Recovery of Energy. In addition, the Authority receives 90% of energy sales revenues which helps offset construction and operating expenses.

RECYCLING WASTE INTO ENERGY

The facility's mass burn combustion system incorporates the technology of German-based Martin GmbH. Waste is combusted at furnace temperatures exceeding 1,800 degrees Fahrenheit and reduced to an inert ash residue. Before leaving the facility, combustion air is directed through technologically advanced air pollution control equipment including electrostatic precipitators. Facility emissions are strictly regulated by state and federal agencies, as are handling and disposal of combustion ash.

A COMMUNITY PARTNERSHIP

Tulsa's integrated solid waste management program is anchored by the resource recovery facility. In addition, the City of Tulsa encourages residents to use recycling drop-off bins located at area retail outlets and to participate in quarterly hazardous waste weekends during which items such as motor oil and automotive batteries are collected for recycling. Ferrous metal recovered from combustion ash is also a major contributor to Tulsa's recycling efforts.

For additional information on the Walter B. Hall Resource Recovery Facility or to arrange a tour, please call 918-583-3925.

FACILITY SPECIFICATIONS

Rated Refuse Burning Capacity
1,125 tons per day

Unit Design
Three 375 ton per day waterwall furnaces

Guaranteed Throughput
350,000 tons per year

Guaranteed Waste Delivery
292,000 tons per year

Energy Generation at Rated Capacity
up to 16.5 MW electricity, sold to Public Service Company of Oklahoma; or up to 240,000 lbs per hour export steam, sold to Sun Refining and Marketing Company

OGDEN MARTIN SYSTEMS OF TULSA, INC.
2122 South Yukon Avenue
Tulsa, Oklahoma 74107

AN OGDEN PROJECTS COMPANY

OGDEN MARTIN SYSTEMS OF STANISLAUS, INC.

The Stanislaus
County Resource
Recovery Facility

OGDEN MARTIN SYSTEMS
OF STANISLAUS, INC.

AN OGDEN PROJECTS COMPANY

THE STANISLAUS COUNTY RESOURCE RECOVERY FACILITY

THE STANISLAUS COUNTY RESOURCE RECOVERY FACILITY

The Stanislaus County Resource Recovery Facility, which began commercial operation in January, 1989, processes up to 800 tons of solid waste each day, generating up to 22.5 megawatts of electricity. The facility runs entirely on the power it generates, requiring less than three megawatts. Remaining electricity is sold to the local utility and used to power area homes and businesses. In order to offset facility construction and operating expenses, Stanislaus County and the City of Modesto receive 90% of electricity sales revenues.

Designed, built, owned and operated by Ogden Martin Systems of Stanislaus, Inc., the facility provides environmentally safe, effective solid waste management services under a twenty-year service agreement with Stanislaus County and the City of Modesto.

RECYCLING WASTE INTO ENERGY

The facility's mass burn combustion system incorporates the technology of German-based Martin GmbH. Waste is combusted at furnace temperatures exceeding 1,800 degrees Fahrenheit and reduced to an inert ash residue. Before leaving the facility, combustion air is directed through technologically advanced air pollution control equipment including dry flue gas scrubbers and fabric filter baghouses. The plant also features a thermal DeNO$_x$ system to remove nitrogen oxides from combustion gas; it is the first commercially operational system of its kind in a privately-owned facility in the State of California.

Facility emissions are strictly regulated by state and federal agencies, as are handling and disposal of combustion ash. In addition, the facility is a zero-discharge plant; that is, all process wastewater is collected, treated on-site and reused.

AN ENVIRONMENTALLY SOUND SOLUTION

In its first two years of operation alone, energy production at the resource recovery facility offset the burning of the equivalent of well over a million barrels of crude oil, and protected the environment from related emissions. In addition, its highly efficient combustion process achieves a 90% reduction in waste volume, thus helping to preserve rapidly diminishing landfill space. This factor is of particular interest in the State of California where diminishing landfill space and a growing environmental awareness make waste management increasingly more challenging.

The resource recovery facility is the cornerstone of an integrated solid waste management system which includes County- and City-supported recycling of glass containers, aluminum cans and newspaper. In addition, ferrous metal recovered from combustion ash is a major contributor to the County's recycling efforts. Other activities include the City's battery drop-off network and the County's household hazardous waste collection program.

The Stanislaus County Resource Recovery Facility is located in Crows Landing, about 25 miles from Modesto. For additional information or to arrange a tour, please call 209-837-4423.

FACILITY SPECIFICATIONS

Rated Refuse Burning Capacity
800 tons per day

Unit Design
Two 400 ton per day waterwall furnaces

Guaranteed Throughput
243,300 tons per year

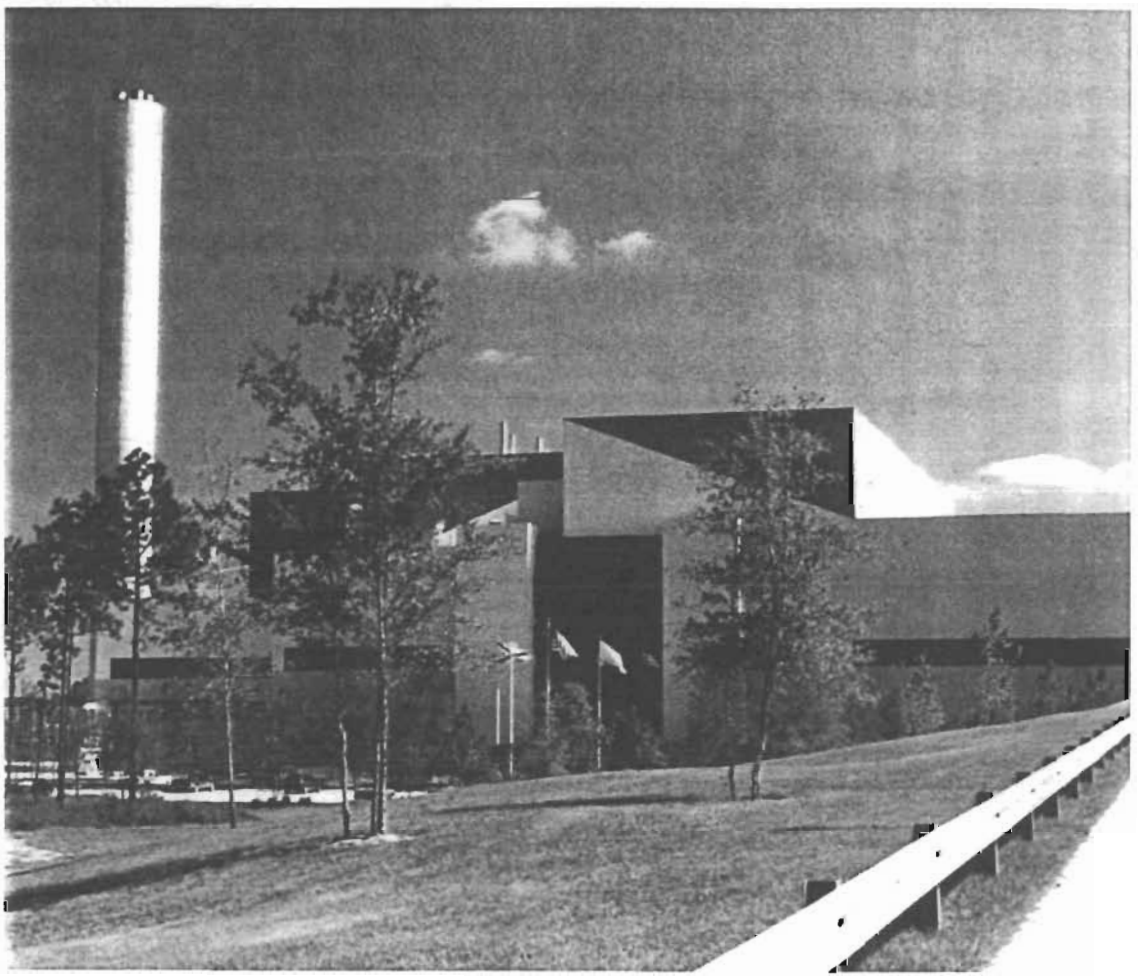
Guaranteed Waste Delivery
243,300 tons per year

Energy Generation at Rated Capacity
up to 22.5 MW, sold to Pacific Gas & Electric Company

OGDEN MARTIN SYSTEMS OF STANISLAUS, INC.
4040 Fink Road
P O Box 278
Crows Landing, California 95313

AN OGDEN PROJECTS COMPANY

OGDEN MARTIN SYSTEMS OF PASCO, INC.



The Pasco County
Solid Waste
Resource Recovery
Facility

**OGDEN MARTIN SYSTEMS
OF PASCO, INC.**

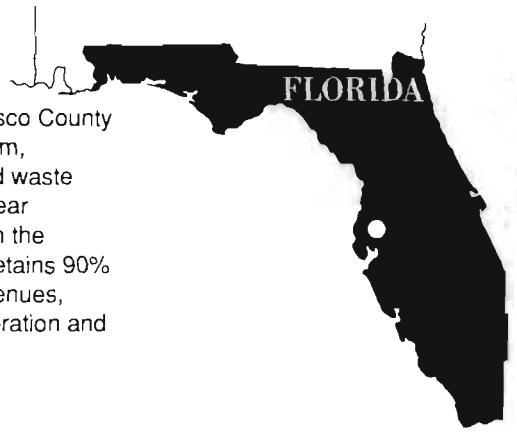
AN OGDEN PROJECTS
COMPANY

THE PASCO COUNTY SOLID WASTE RESOURCE RECOVERY FACILITY

THE PASCO COUNTY SOLID WASTE RESOURCE RECOVERY FACILITY

The Pasco County Solid Waste Resource Recovery Facility, which began commercial operation in May, 1991, converts up to 1,050 tons per day of non-recycled solid waste into saleable energy. Producing up to 31.2 megawatts of electricity daily, the facility consumes less than four megawatts of the power it generates and sells the remainder to the local utility.Designed, built and operated by Ogden Martin Systems of Pasco, Inc. (OMSP), the facility is owned by Pasco County.

OMSP provides Pasco County residents with long-term, environmentally sound waste disposal under a 20-year operating contract with the County. The County retains 90% of electricity sales revenues, which helps offset operation and construction costs.



RECYCLING WASTE INTO ENERGY

The facility's mass burn combustion system incorporates the technology of German-based Martin GmbH. Waste is combusted at furnace temperatures exceeding 1,800 degrees Fahrenheit and reduced to an inert ash residue that is approximately 10% of the original volume; the ash is disposed at an adjacent County ash monofill. Before leaving the facility, combustion air is directed through technologically advanced air pollution control equipment, including dry flue gas scrubbers and fabric filter baghouses. Facility emissions are strictly regulated by state and federal agencies, as are handling and disposal of combustion ash.

AN INTEGRATED SYSTEM

Anchored by the resource recovery facility, Pasco County's integrated solid waste management plan is part of a statewide initiative to reduce reliance on landfilling by implementing integrated solutions on the county level. Plant operations not only conserve landfill space, but offset fossil fuel consumption, as well.

Other elements of the County's integrated system include curbside recycling of paper goods, aluminum cans, glass and plastic containers. White goods and other metals are also recycled. The County also runs special disposal programs for household hazardous waste, used motor oil, tires and construction and demolition debris. In an effort to reduce the amount of mercury in the waste stream, the County places battery collection buckets in public buildings and retail stores to provide citizens with a safe means of disposing of household batteries. In addition, ferrous metal recovered from combustion ash is a major contributor to the County's recycling efforts.

The Pasco County Solid Waste Resource Recovery Facility is located in Spring Hill. For morel information or to arrange a tour, please call 813-856-2917.

FACILITY SPECIFICATIONS

Rated Refuse Combustion Capacity
1,050 tons per day

Unit Design
Three 350 ton per day waterwall furnaces

Guaranteed Throughput
326,000 tons per year

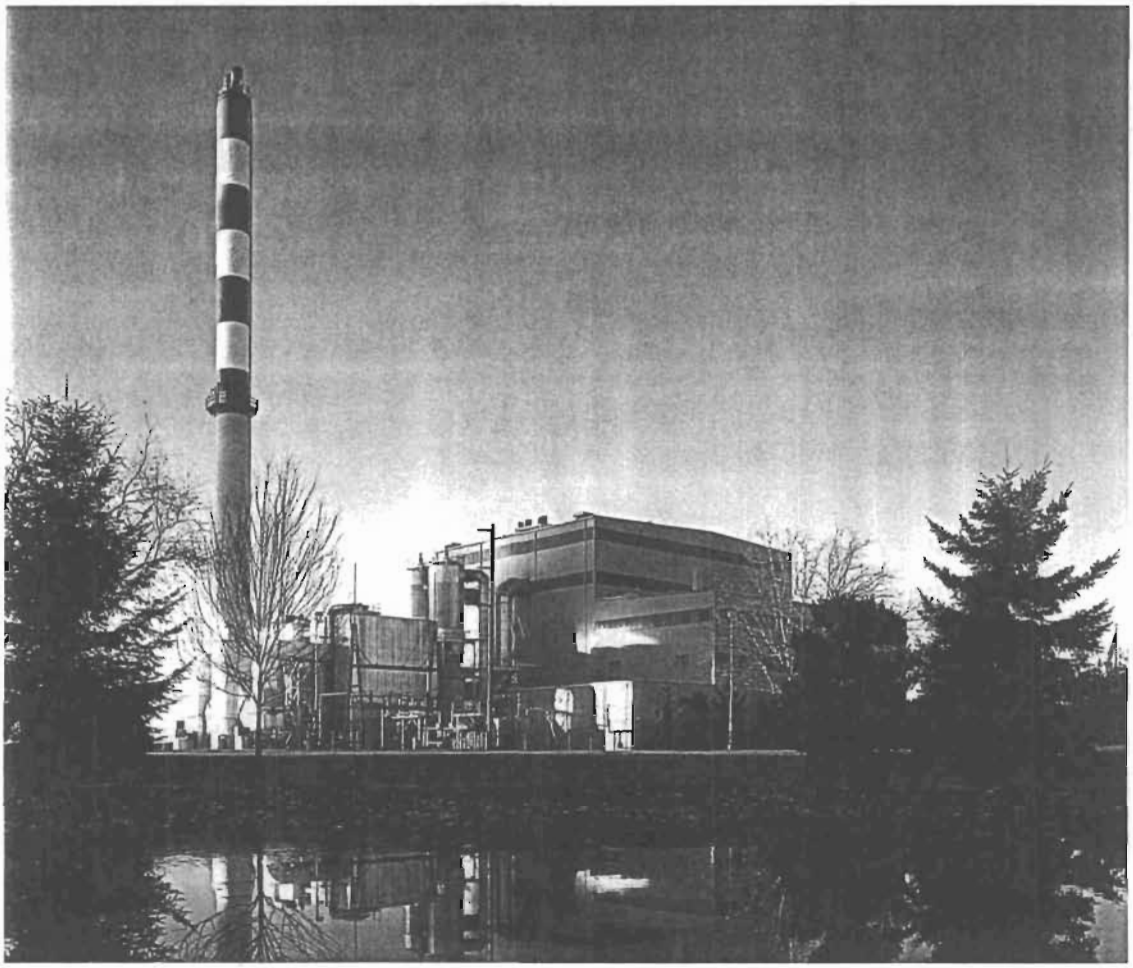
Guaranteed Waste Delivery
316,500 tons per year

Energy Generation at Rated Capacity
Up to 31.2 MW, sold to Florida Power Corporation

OGDEN MARTIN SYSTEMS OF PASCO, INC.
14230 Hayes road
Spring Hill, Florida 34610

AN OGDEN PROJECTS COMPANY

OGDEN MARTIN SYSTEMS OF MARION, INC.



OGDEN

THE MARION COUNTY SOLID WASTE-TO-ENERGY FACILITY

THE MARION COUNTY SOLID WASTE-TO-ENERGY FACILITY

The Marion County Solid Waste-to-Energy Facility began commercial operation in March, 1987 and converts up to 550 tons per day of non-recycled solid waste into saleable energy. The facility is capable of generating 13.1 megawatts of electricity and runs on the energy it produces, consuming about two megawatts; the remainder is sold to the local utility and used to power area homes and businesses. Marion County retains 90% of energy sales revenues which helps offset construction and operation expenses.

The facility was designed, built and is owned and operated by Ogden Martin Systems of Marion, Inc. (OMSM). Under a 20-year agreement, OMSM will provide environmentally safe, effective solid waste management to Marion County residents well into the future.

RECYCLING WASTE INTO ENERGY

The facility's mass burn combustion system incorporates the technology of German-based Martin GmbH. Waste is combusted at furnace temperatures exceeding 1,800 degrees Fahrenheit and reduced to an inert ash residue which is approximately 10% of the original volume; combustion ash is disposed of in a specially lined ash monofill which is owned and operated by the County and located about 10 miles north of the facility. Before leaving the facility, combustion air is directed through technologically advanced air pollution control equipment, including dry flue gas scrubbers and fabric filter baghouses.

AN INTEGRATED SYSTEM

The Marion County Solid Waste-to-Energy Facility is the cornerstone of the County's integrated waste management system. In addition to converting waste into energy, the County provides curbside pick-up of recyclable materials such as metals, glass and newspapers. The County also runs a drop-off program for collection of yard waste; these organic materials are then composted and used in agricultural applications. Ferrous metal recovered from combustion ash is also a major contributor to the County's recycling efforts. A unique feature of the County's integrated system is its state-of-the-art ash monofill and leachate irrigation system–one of the first in the nation. Leachate from the ash monofill is mixed with well water and used to irrigate grass seed crops grown on adjacent County-owned land.

The Marion County Solid Waste-to-Energy Facility is located in Brooks, about 4 miles north of Salem. For information or to arrange a tour, please call 503-393-0890.

FACILITY SPECIFICATIONS

Rated Refuse Burning Capacity
550 tons per day

Unit Design
Two 275 ton per day waterwall furnaces

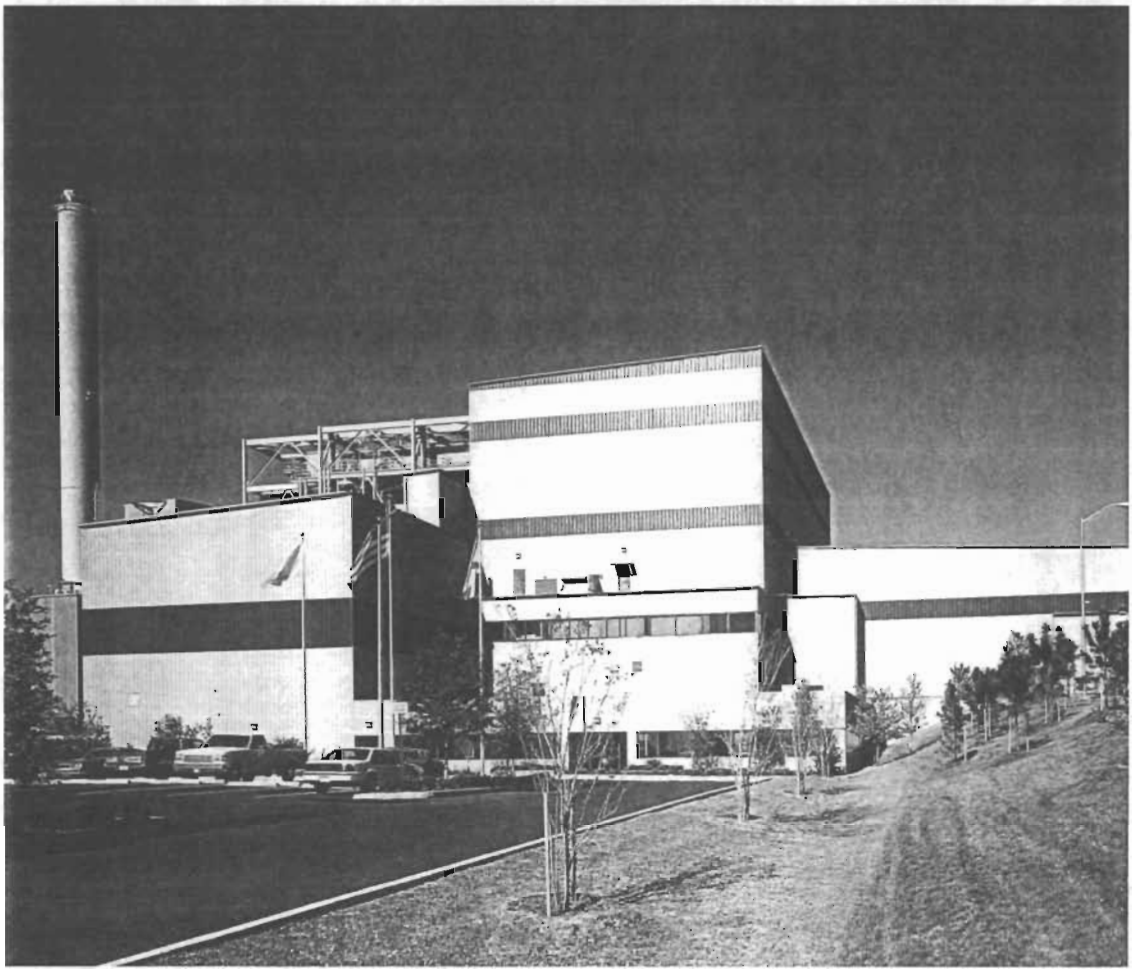
Guaranteed Throughput
170,000 tons per year

Guaranteed Waste Delivery
145,000 tons per year

Energy Generation at Rated Capacity
Up to 13.1 MW, sold to Portland General Electric Company

OGDEN MARTIN SYSTEMS OF MARION, INC.
4850 Brooklake Road, NE
PO Box 9126
Brooks, Oregon 97305

OGDEN MARTIN SYSTEMS OF LAKE, INC.



The Lake County
Resource Recovery
Facility

**OGDEN MARTIN SYSTEMS
OF LAKE, INC.**

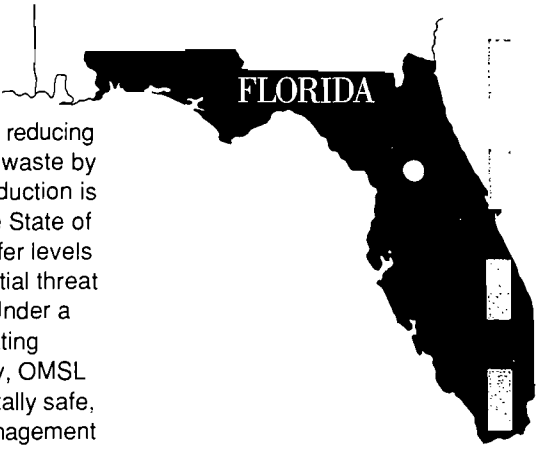
AN OGDEN PROJECTS COMPANY

THE LAKE COUNTY RESOURCE RECOVERY FACILITY

THE LAKE COUNTY RESOURCE RECOVERY FACILITY

The Lake County Resource Recovery Facility, which began commercial operation in March, 1991, processes up to 528 tons of solid waste each day, generating up to 14.5 megawatts of electricity. The facility runs on approximately two megawatts of the energy it produces; the remainder is sold to a local utility and used to power area homes and businesses. Energy production reduces the amount of coal and oil burned by the power company, thus protecting the environment from related emissions. In addition, the County retains 90% of energy sales revenues which helps offset project costs.

Designed, built, owned and operated by Ogden Martin Systems of Lake, Inc. (OMSL), the facility helps save valuable landfill space by reducing the volume of delivered waste by 90%. This significant reduction is of particular value in the State of Florida where high aquifer levels make landfilling a potential threat to groundwater purity. Under a twenty-three year operating contract with the County, OMSL will provide environmentally safe, effective solid waste management services to County residents well into the future.



RECYCLING WASTE INTO ENERGY

The facility's mass burn combustion system incorporates the technology of German-based Martin GmbH. Waste is combusted at furnace temperatures exceeding 1,800 degrees Fahrenheit and reduced to an inert ash residue which is approximately 10% of the original volume of delivered waste. Before leaving the facility, combustion air is directed through technologically advanced air pollution control equipment consisting of dry flue gas scrubbers and fabric filter baghouses. Facility emissions are strictly regulated by state and federal agencies, as are handling and disposal of combustion ash.

AN INTEGRATED SOLUTION

The resource recovery facility anchors an integrated solid waste management system which includes recycling via City-and County-sponsored curbside collection programs, private buy-back centers and County-run drop-off centers. Materials recycled include plastic and glass containers, aluminum cans and newspapers. In addition, the County encourages citizens to deposit batteries in collection buckets placed at retail outlets and public buildings and operates a permanent household hazardous waste collection center–one of the first in Florida. In addition, ferrous metal recovered from combustion ash is a major contributor to local recycling efforts.

The Lake County Resource Recovery Facility is located in Okahumpka, about 55 miles northwest of Orlando. For information or to arrange a tour, please call 904-365-1611.

FACILITY SPECIFICATIONS

Rated Refuse Combustion Capacity
528 tons per day

Unit Design
Two 264 ton per day waterwall furnaces

Guaranteed Throughput
163,000 tons per year

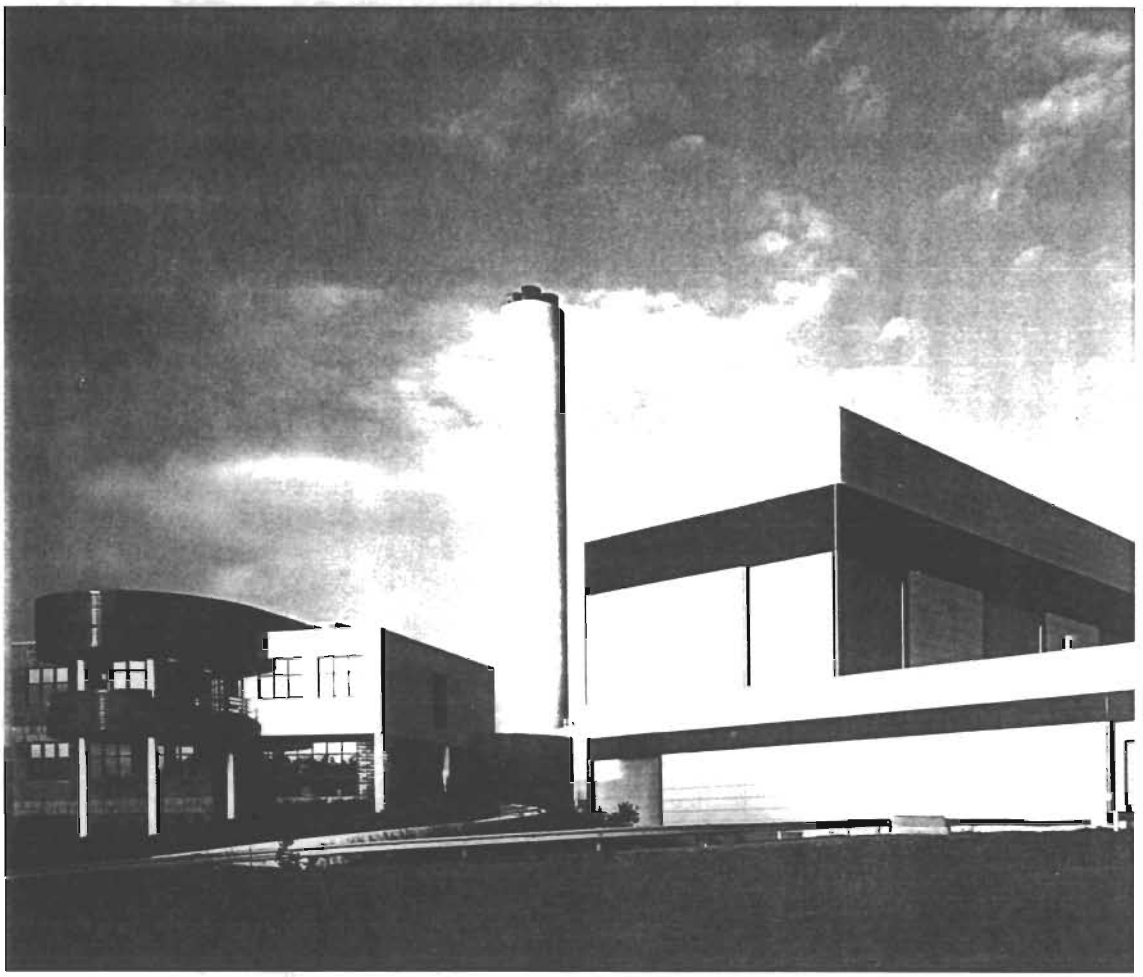
Guaranteed Waste Delivery
130,000 tons per year

Energy Generation at Rated Capacity
Up to 14.5 MW, sold to Florida Power Corporation

OGDEN MARTIN SYSTEMS OF LAKE, INC.
3830 Rogers Industrial Park Road
PO Box 189
Okahumpka, Florida 34762

AN OGDEN PROJECTS COMPANY

OGDEN MARTIN SYSTEMS OF INDIANAPOLIS, INC.



The Indianapolis Resource Recovery Facility

OGDEN MARTIN SYSTEMS OF INDIANAPOLIS, INC.

AN OGDEN PROJECTS COMPANY

THE INDIANAPOLIS RESOURCE RECOVERY FACILITY

THE INDIANAPOLIS RESOURCE RECOVERY FACILITY

The Indianapolis Resource Recovery Facility, which began commercial operation in December, 1988, is capable of processing 2,362 tons of solid waste each day. For each ton of solid waste combusted, the facility produces 4,500 pounds of steam, which is purchased by Indianapolis Power & Light Company and used to heat nearly all of the downtown business district, as well as the Indiana University, Purdue University Indianapolis campus. To help offset operating and construction expenses, the City receives 90% of steam sales revenues.

Plant operations also reduce the volume of solid waste by 90%, thus conserving rapidly diminishing landfill capacity. In fact, in its first five and a half years of operation, over 11.5 million cubic yards of landfill space were preserved. With a twenty-year operating contract in place, this statistic represents only a fraction of the environmental savings the facility will achieve over its lifespan. Designed, built, owned and operated by Ogden Martin Systems of Indianapolis, Inc., the facility serves over 750,000 residents.

CLEANING UP THE ENVIRONMENT

The Indianapolis Resource Recovery Facility provides a cleaner alternative to traditional means of generating energy; and by reducing the utility's need to burn coal, plant operations eliminate substantial quantities of atmospheric emissions. In fact, an Indianapolis Department of Public Works study concluded that ambient levels of five air pollutants monitored by the United States Environmental Protection Agency (EPA) were significantly reduced after the facility's first year of operation.

RECYCLING WASTE INTO ENERGY

The facility's mass burn combustion system incorporates the technology of German-based Martin GmbH. Waste is combusted at furnace temperatures exceeding 1,800 degrees Fahrenheit and reduced to an inert ash residue. Before leaving the facility, combustion air is directed through technologically advanced air pollution control equipment including dry flue gas scrubbers and fabric filter baghouses. Facility emissions are strictly regulated by state and federal agencies, as are handling and disposal of combustion ash.

Anchored by the resource recovery facility, Indianapolis' integrated waste management plan includes recycling of aluminum cans, glass bottles, newspaper, used motor oil and other materials; in addition, the City-County Building recycles office paper. The City's "Indianapolis Recycles" program increases public awareness of solid waste management issues and has boosted participation in City-run recycling and special disposal programs. In addition, ferrous metal recovered from combustion ash is a major contributor to the City's recycling efforts.

For additional information on the Indianapolis Resource Recovery Facility or to arrange a tour, please call 317-634-7367.

FACILITY SPECIFICATIONS

Rated Refuse Combustion Capacity
2,362 tons per day municipal solid waste

Unit Design
Three 787.3 ton per day waterwall furnaces

Guaranteed Throughput
718,300 tons per year

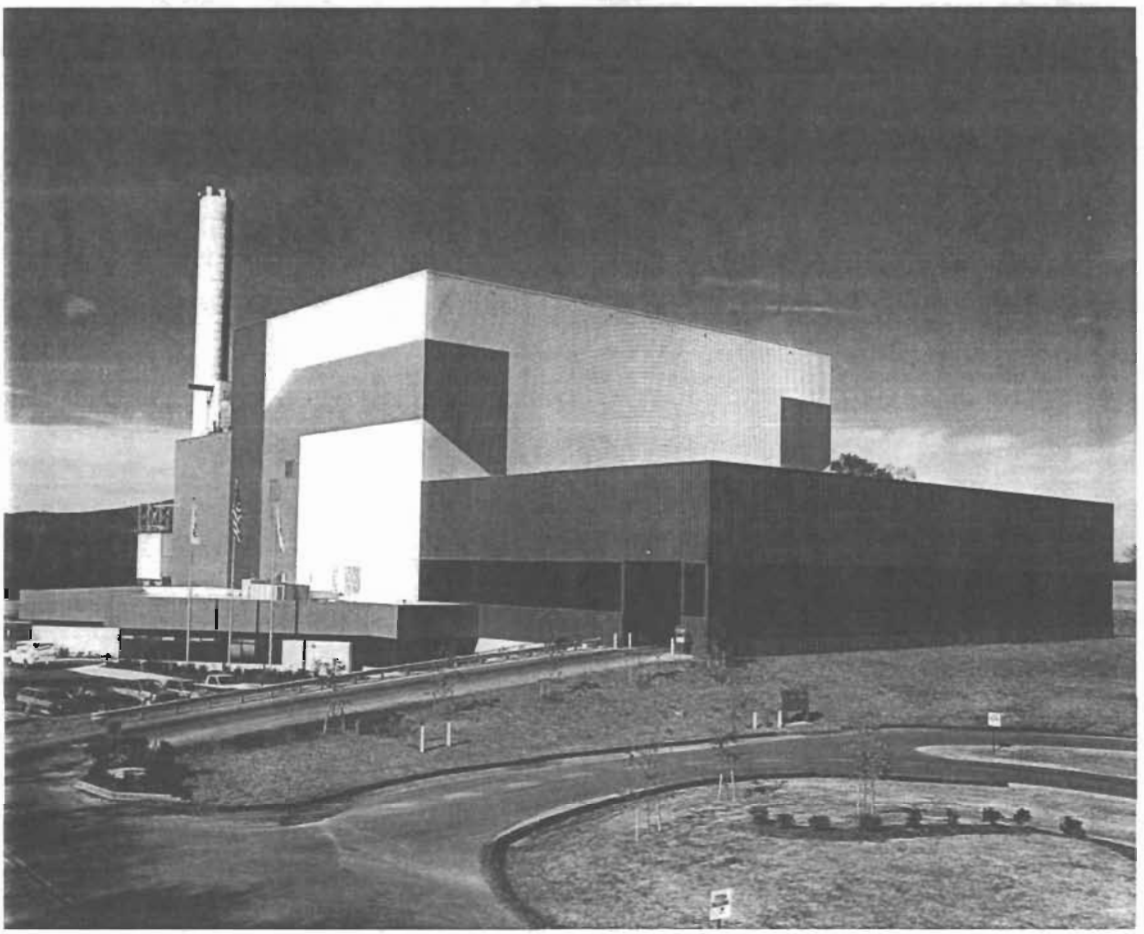
Guaranteed Waste Delivery
525,600 tons per year

Energy Generation at Rated Capacity
4,500 lbs of steam per ton of municipal solid waste, sold to Indianapolis Power & Light Company

OGDEN MARTIN SYSTEMS OF INDIANAPOLIS, INC.
2320 South Harding Street
Indianapolis, Indiana 46221

AN OGDEN PROJECTS COMPANY

OGDEN MARTIN SYSTEMS OF HUNTSVILLE, INC.



The Huntsville
Refuse Fired Steam
Facility

**OGDEN MARTIN SYSTEMS
OF HUNTSVILLE, INC.**

An Ogden Projects Company

THE HUNTSVILLE REFUSE FIRED STEAM FACILITY

THE HUNTSVILLE REFUSE FIRED STEAM FACILITY

The Huntsville Refuse Fired Steam Facility, which began commercial operation in July,1990, is the cornerstone of an integrated waste management system developed and implemented by The Solid Waste Disposal Authority of the City of Huntsville. The facility was designed, built and is operated by Ogden Martin Systems of Huntsville, Inc. Across the nation, Ogden Martin Systems operating resource recovery facilities provide effective, reliable waste management services to over 13 million Americans.

AN INTEGRATED SOLUTION

Designed to complement a city-wide recycling program, the Huntsville Refuse Fired Steam Facility meets four key objectives: (1) the plant burns 690 tons per day of municipal solid waste, significantly reducing the volume of garbage to be landfilled; (2) it supplies energy in the form of steam to the nearby U.S. Army Redstone Arsenal, virtually eliminating the Arsenal's dependence on its own steam plants; (3) its combustion process destroys odorous methane gases extracted from the Authority's landfill; and (4) the plant burns sewage sludge from Huntsville's wastewater treatment plant as fuel, thus providing a practical means of sludge disposal. In addition to the environmental benefits derived from this alternative energy source, the Authority receives 100% of all energy sales revenues earned by the facility to help offset plant construction and operation costs.

RECYCLING WASTE INTO ENERGY

The facility's mass burn combustion system incorporates the technology of German-based Martin GmbH. Waste is combusted at furnace temperatures exceeding 1,800 degrees Fahrenheit and reduced to an inert ash residue that is approximately 10% of the original volume. Before leaving the facility, combustion air is directed through technologically advanced air pollution control equipment including dry flue gas scrubbers and fabric filter baghouses. Facility emissions are strictly regulated by state and federal agencies as are handling and disposal of combustion ash.

The Huntsville Refuse Fired Steam Facility is the key component of the Authority's integrated waste management system which also includes curbside and white goods recycling and a household hazardous waste disposal program. In addition, ferrous metal recovered from combustion ash is a major contributor to Huntsville's recycling efforts.

For additional information about the Huntsville Refuse Fired Steam Facility or to arrange a tour, please call 205-882-1019.

FACILITY SPECIFICATIONS

Rated Refuse Burning Capacity
690 tons per day

Unit Design
Two 345 ton per day waterwall furnaces

Guaranteed Throughput
214,000 tons per year (212,570 tons municipal solid waste, plus 10% sewage sludge)

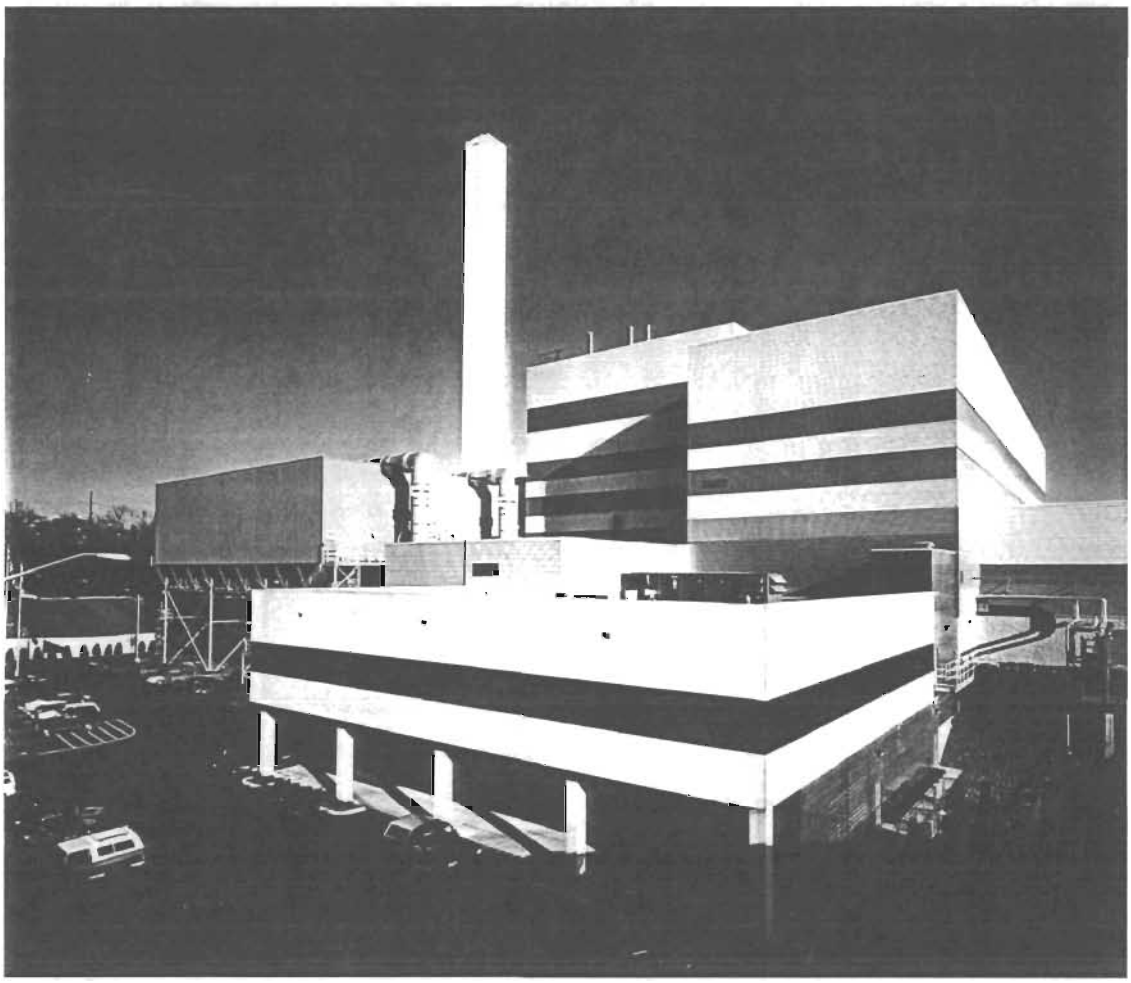
Guaranteed Waste Delivery
195,000 tons per year

Energy Generation at Rated Capacity
89,310 lbs of steam per hour per refuse boiler, sold to the U.S. Army's Redstone Arsenal for heating and air conditioning

OGDEN MARTIN SYSTEMS OF HUNTSVILLE, INC.
5251 Triana Boulevard
Huntsville, Alabama 35805

AN OGDEN PROJECTS COMPANY

OGDEN MARTIN SYSTEMS OF HUNTINGTON, L.P.



The Huntington Resource Recovery Facility

OGDEN MARTIN SYSTEMS OF HUNTINGTON, L.P.

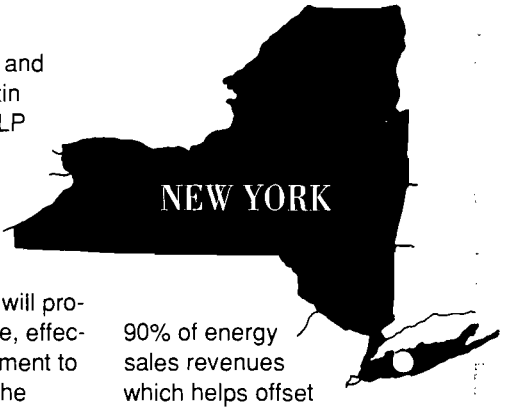
AN OGDEN PROJECTS COMPANY

THE HUNTINGTON RESOURCE RECOVERY FACILITY

THE HUNTINGTON RESOURCE RECOVERY FACILITY

The Huntington Resource Recovery Facility, which began commercial operation in December, 1991, converts up to 750 tons per day of non-recycled solid waste into saleable energy. Generating up to 25 megawatts of electricity, the facility runs on the energy it produces, consuming about two-and-a-half megawatts. The remainder is sold to the local utility and used to power approximately 12,000 area homes and businesses.

Designed, built, owned and operated by Ogden Martin Systems of Huntington, LP (OMSH), the facility accepts waste from the Town of Huntington, as well as neighboring Smithtown. Under a 20-year agreement, OMSH will provide environmentally safe, effective solid waste management to area residents well into the future. In addition, the Towns of Huntington and Smithtown retain 90% of energy sales revenues which helps offset construction and operation expenses.



RECYCLING WASTE INTO ENERGY

The facility's mass burn combustion system incorporates the technology of German-based Martin GmbH. Waste is combusted at furnace temperatures exceeding 1,800 degrees Fahrenheit and reduced to an inert ash residue which is approximately 10% of the original volume. Before leaving the facility, combustion air is directed through technologically advanced air pollution control equipment including dry flue gas scrubbers and fabric filter baghouses. In addition, state-of-the-art NO_x controls remove nitrogen oxides. The facility also features a zero-water discharge system meaning that all process water is re-used on-site.

AN INTEGRATED SOLUTION

The Huntington Resource Recovery Facility is the cornerstone of Huntington's integrated solid waste management system. Its substantial waste volume reduction is particularly significant given a New York State law prohibiting landfilling on Long Island. In addition, the Town provides curbside collection of recyclable materials such as aluminum, glass, plastic and newspapers. Huntington operates a successful yard waste reuse program and a household hazardous waste drop-off facility. Ferrous metal recovered from combustion ash is also a major contributor to the Town's recycling efforts.

For information on the Huntington Resource Recovery Facility or to arrange a tour, please call 516-754-1100.

FACILITY SPECIFICATIONS

Rated Refuse Combustion Capacity
750 tons per day

Unit Design
Three 250 ton-per-day waterwall furnaces

Guaranteed Throughput
252,000 tons per year

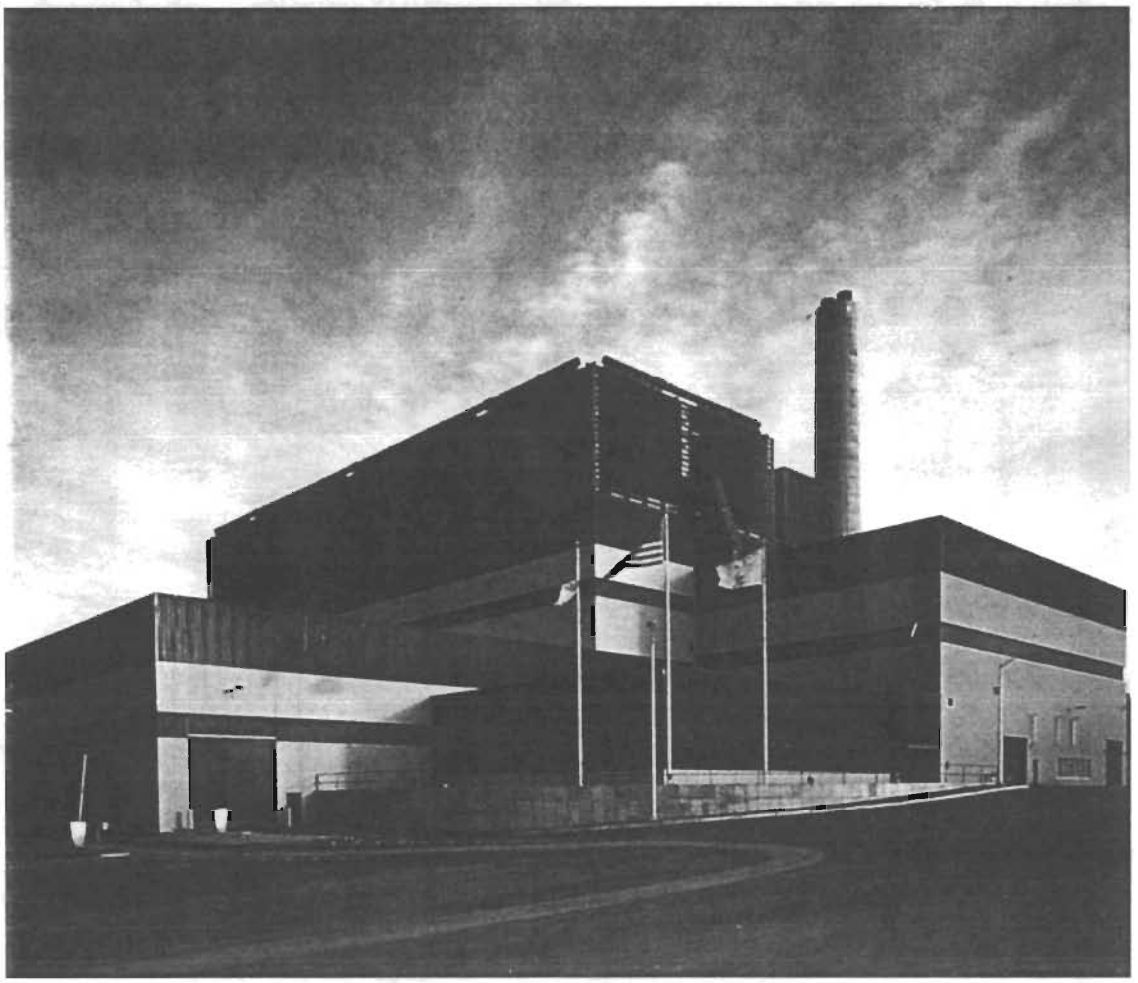
Guaranteed Waste Delivery
140,000 tons per year

Energy Generation at Rated Capacity
Up to 25 MW, sold to Long Island Lighting Company

OGDEN MARTIN SYSTEMS OF HUNTINGTON, L.P.
99 Town Line Road
East Northport, New York 11731

AN OGDEN PROJECTS COMPANY

OGDEN MARTIN SYSTEMS OF HAVERHILL, INC.



The Haverhill
Resource Recovery
Facility

OGDEN MARTIN SYSTEMS OF HAVERHILL, INC.

AN OGDEN PROJECTS COMPANY

THE HAVERHILL RESOURCE RECOVERY FACILITY

THE HAVERHILL RESOURCE RECOVERY FACILITY

The Haverhill Resource Recovery Facility, which began commercial operation in June, 1989, converts up to 1,650 tons of non-recycled solid waste into saleable energy each day. Producing up to 46 megawatts of electricity, the facility consumes approximately five megawatts of the power it generates and sells the remainder to the local utility. Owned and operated by Ogden Martin Systems of Haverhill, Inc. (OMSH), the facility provides long-term, environmentally sound waste management services.

RECYCLING WASTE INTO ENERGY

The facility's mass burn combustion system incorporates the technology of German-based Martin GmbH and features two 825 ton-per-day waterwall furnaces – the largest high-pressure, high-temperature Ogden Martin combustion units in use in North America. Waste is combusted at furnace temperatures exceeding 1,800 degrees Fahrenheit and reduced to an inert ash residue. The ash is disposed of at an adjacent ash monofill which is operated by Ogden. Before leaving the facility, combustion air is directed through technologically advanced air pollution control equipment, including dry flue gas scrubbers and electrostatic precipitators. In addition, the facility is the first of its kind to use rooftop mounted, air-cooled condensers to minimize process water consumption. Facility emissions are strictly regulated by both state and federal agencies, as are handling and disposal of combustion ash.

AN ENVIRONMENTALLY SOUND SOLUTION

The Haverhill Resource Recovery Facility provides a cleaner alternative to traditional means of generating energy and offsets the burning of non-renewable fuels. In addition, plant operations achieve a 90% volume reduction, thus preserving rapidly diminishing landfill capacity. In fact, in its first two years of operations, the facility saved more than one million cubic yards of landfill space. While the State of Massachusetts has set a recycling goal of 25% by 1995, ferrous metal recovered from combustion ash is a major contributor to the area's recycling efforts. The Haverhill Resource Recovery Facility is located approximately 35 miles north of Boston. For more information or to arrange a tour, please call 508-372-6288.

FACILITY SPECIFICATIONS

Rated Refuse Combustion Capacity
1,650 tons per day

Unit Design
Two 825 ton-per-day waterwall furnaces

Guaranteed Throughput
550,000 tons per year

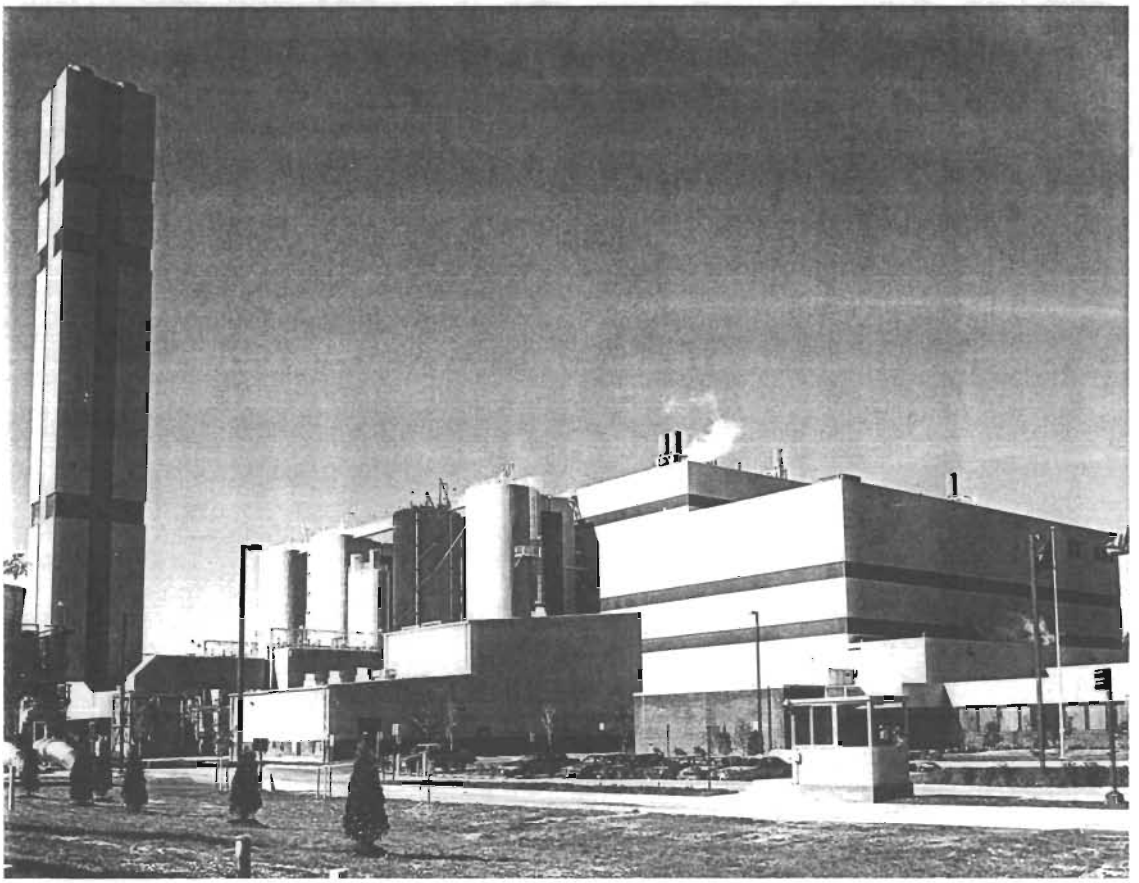
Guaranteed Waste Delivery
550,000 tons per year

Energy Generation at Rated Capacity
Up to 46MW, sold to New England Power Company

OGDEN MARTIN SYSTEMS OF HAVERHILL, INC.
100 Recovery Way
Haverhill, Massachusetts 01835

AN OGDEN PROJECTS COMPANY

OGDEN MARTIN SYSTEMS OF FAIRFAX, INC.



The I-66
Energy/Resource
Recovery Facility

OGDEN MARTIN SYSTEMS OF FAIRFAX, INC.

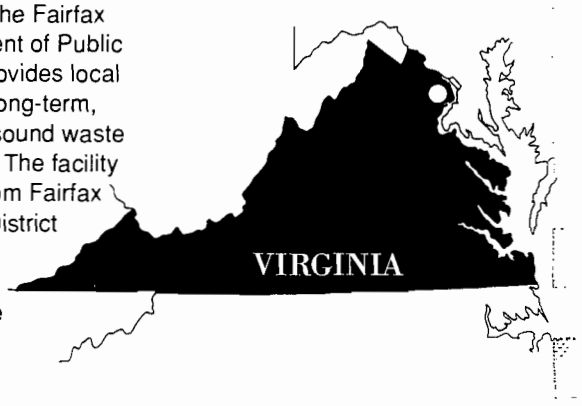
AN OGDEN PROJECTS COMPANY

THE I-95 ENERGY/RESOURCE RECOVERY FACILITY

THE I-95 ENERGY/RESOURCE RECOVERY FACILITY

The I-95 Energy/Resource Recovery Facility, which began commercial operation in June, 1990, is the nation's largest publicly-bid mass burn waste-to-energy facility. Designed, built, owned and operated by Ogden Martin Systems of Fairfax, Inc. (OMSF), the facility converts up to 3,000 tons per day of non-recycled solid waste into 79 megawatts of saleable electricity–enough to power up to 75,000 homes. In addition, the facility is completely self-sufficient, consuming about 10 megawatts of the electricity it generates, and selling the remainder to the local utility.

Together with the Fairfax County Department of Public Works, OMSF provides local residents with a long-term, environmentally sound waste disposal method. The facility accepts waste from Fairfax County and the District of Columbia after recyclables are removed from the waste stream.



RECYCLING WASTE INTO ENERGY

The facility's mass burn combustion system incorporates the technology of German-based Martin GmbH. Waste is combusted at furnace temperatures exceeding 1,800 degrees Fahrenheit, and reduced to an inert ash residue that is approximately 10% of the original volume; the ash is disposed at the adjacent County-operated landfill. Before leaving the facility, combustion air is directed through technologically advanced air pollution control equipment, including dry flue gas scrubbers and fabric filter baghouses. Facility emissions are strictly regulated by state and federal agencies, as are handling and disposal of combustion ash.

A COMMUNITY PARTNERSHIP

Throughout the I-95 Energy/Resource Recovery Facility's life span, it will convert millions of tons of non-recycled waste into valuable energy and reduce the volume of waste to be landfilled, thus preserving precious land for more productive uses. In addition to benefitting from this additional energy source which helps conserve fossil fuel, Fairfax County will continue to receive 90% of the facility's electricity sales revenue to offset financing costs.

The facility is the key component of the County's integrated waste management system, which also includes waste reduction, recycling and household hazardous waste disposal programs. In addition, ferrous metal recovered from combustion ash is a major contributor the the County's recycling efforts.

The I-95 Energy/Resource Recovery Facility is located in Lorton, Virginia, 25 miles from our nation's capital. For additional information or to arrange a tour, please call 703-690-6860.

FACILITY SPECIFICATIONS

Rated Refuse Combustion Capacity
3,000 tons per day

Unit Design
Four 750 ton per day waterwall furnaces

Guaranteed Throughput
930,750 tons per year

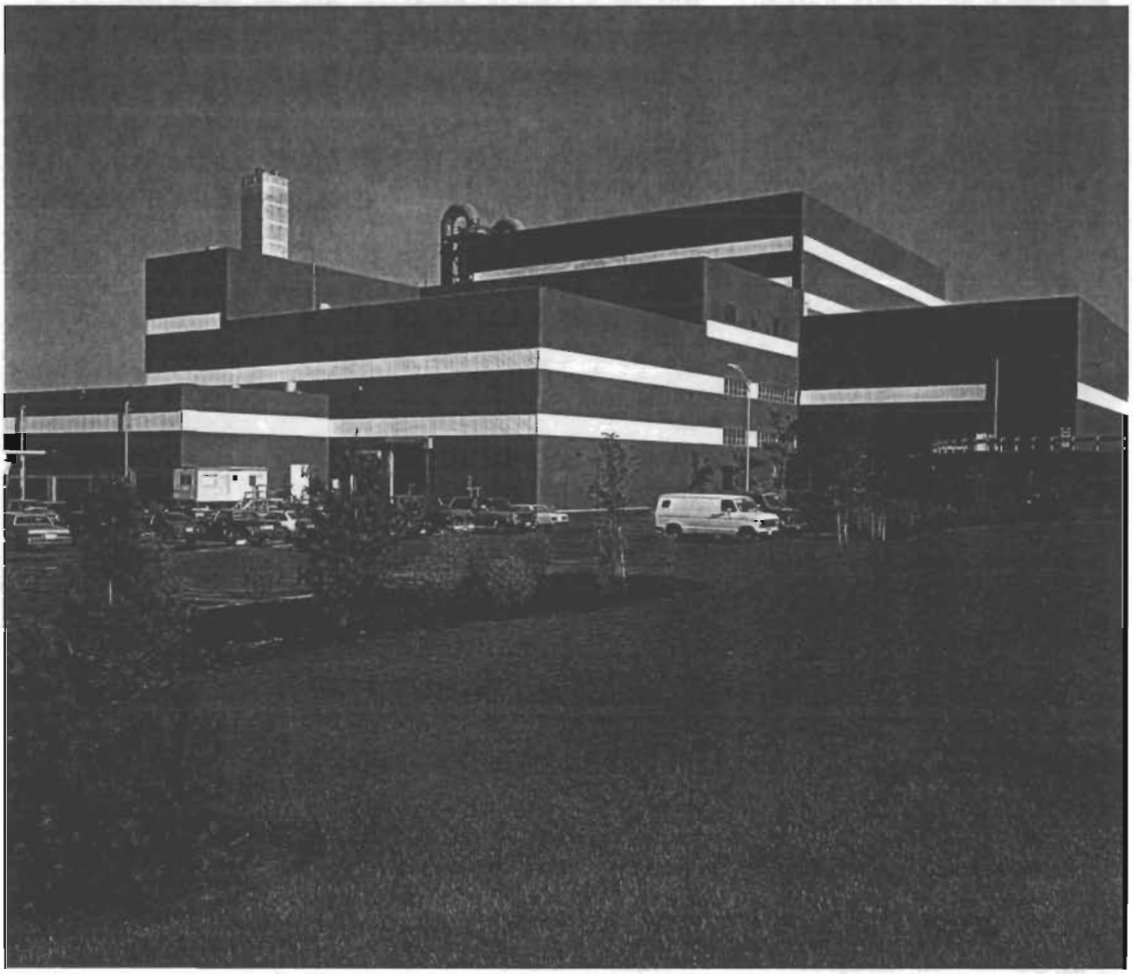
Guaranteed Waste Delivery
930,750 tons per year

Energy Generation at Rated Capacity
Up to 79 MW, sold to Virginia Power Company

OGDEN MARTIN SYSTEMS OF FAIRFAX, INC.
9898 Furnace Road
Lorton, Virginia 22079

AN OGDEN PROJECTS COMPANY

OGDEN MARTIN SYSTEMS OF BABYLON, INC.



The Babylon Resource Recovery Facility

OGDEN MARTIN SYSTEMS OF BABYLON, INC.

An Ogden Projects Company

THE BABYLON RESOURCE RECOVERY FACILITY

THE BABYLON RESOURCE RECOVERY FACILITY

The Babylon Resource Recovery Facility, which began commercial operation in April, 1989, converts up to 750 tons per day of non-recycled solid waste into saleable energy. Of the 17 megawatts of electricity the facility is capable of generating, plant operations consume less than three; the remainder is sold to the local utility and used to power area homes and businesses. The Town of Babylon retains 90% of energy sales revenues which helps offset construction and operation expenses.

The facility was designed and built and is owned and operated by Ogden Martin Systems of Babylon, Inc. (OMSB). Under a 20-year operating agreement with the Town, OMSB will provide area residents with long-term, environmentally sound waste management services well into the twenty-first century.

RECYCLING WASTE INTO ENERGY

The facility's mass burn combustion system incorporates the technology of German-based Martin GmbH. Waste is combusted at furnace temperatures exceeding 1,800 degrees Fahrenheit, and reduced to an inert ash residue that is approximately 10% of the original volume. Before leaving the facility, combustion air is directed through technologically advanced air pollution control equipment, including dry flue gas scrubbers and fabric filter baghouses.

AN EARTH-SAVING SOLUTION

With a moratorium on landfilling on Long Island, the Babylon Resource Recovery Facility provides an environmentally safe way for the Town to dispose of its waste. In addition, by generating electricity, facility operations offset the burning of fossil fuels by the local utility. Enhancing the facility's positive effect on the environment is a water purification process in which polluted leachate from the adjacent landfill, originally used by the Town, is treated and utilized in waste-to-energy operations. It is the first resource recovery facility in the United States to perform this function. In addition, it is this country's first zero-water discharge waste-to-energy facility, meaning that all wastewater from facility operations is treated on-site and recycled through the system.

Anchored by the resource recovery facility, Babylon's integrated solid waste management system includes curbside collection of such recyclables as aluminum cans, newspapers, glass and plastics; the Town also provides a white goods collection program. In addition, ferrous metal recovered from combustion ash is a major contributor to the Town's recycling efforts.

For information about the Babylon Resource Recovery Facility or to arrange a tour, please call 516-491-1976.

FACILITY SPECIFICATIONS

Rated Refuse Combustion Capacity
750 tons per day

Unit Design
Two 375 ton per day waterwall furnaces

Guaranteed Throughput
225,000 tons per year

Guaranteed Waste Delivery
225,000 tons per year

Energy Generation at Rated Capacity
Up to 17 MW, sold to Long Island Lighting Company

OGDEN MARTIN SYSTEMS OF BABYLON, INC.
125 Gleam Street
West Babylon, New York 11704

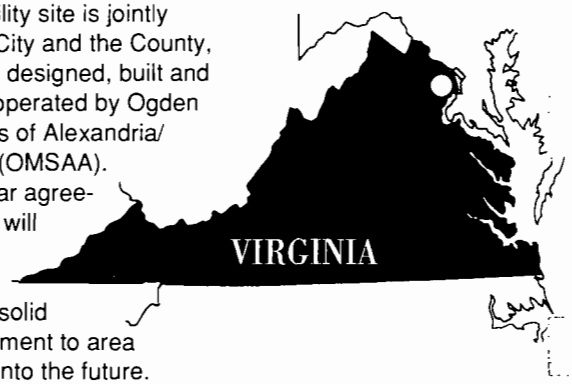
AN OGDEN PROJECTS COMPANY

THE ALEXANDRIA/ARLINGTON RESOURCE RECOVERY FACILITY

THE ALEXANDRIA/ ARLINGTON RESOURCE RECOVERY FACILITY

The Alexandria/Arlington Resource Recovery Facility, which began commercial operation in February, 1988, converts up to 975 tons-per-day of non-recycled solid waste into saleable energy. The facility's two turbine generators produce up to 22 megawatts of electricity. The plant runs on the energy it produces, consuming about three megawatts; the remainder is sold to the local utility and used to power area homes and businesses.

While the facility site is jointly owned by the City and the County, the facility was designed, built and is owned and operated by Ogden Martin Systems of Alexandria/ Arlington, Inc. (OMSAA). Under a 20-year agreement, OMSAA will provide environmentally safe, effective solid waste management to area residents well into the future.



RECYCLING WASTE INTO ENERGY

The facility's mass burn combustion system incorporates the technology of German-based Martin GmbH. Waste is combusted at furnace temperatures exceeding 1,800 degrees Fahrenheit and reduced to an inert ash residue which is approximately 10% of the original volume. Technologically advanced air pollution control equipment includes a dry lime injection system in which dry lime is introduced into each furnace to neutralize acid gases as they are formed. Electrostatic precipitators are used to further cleanse combustion gases.

A COMMUNITY PARTNERSHIP

The Alexandria/Arlington Resource Recovery Facility anchors a coordinated integrated solid waste management system in which newspaper, as well as aluminum, glass and plastic containers are gathered for recycling through a combination of curbside collection and citizen drop-off centers. In addition, area residents are encouraged to deposit household batteries at special drop-off sites located at fire stations throughout Arlington County.

The Alexandria/Arlington Resource Recovery Facility is located in Alexandria, about 8 miles from our nation's capital. For information or to arrange a tour, please call 703-370-7722.

FACILITY SPECIFICATIONS

Rated Refuse Combustion Capacity
975 tons per day

Unit Design
Three 375 ton-per-day waterwall furnaces

Guaranteed Waste Delivery
226,000 tons per year

Energy Generation at Rated Capacity
Up to 22 MW, sold to Virginia Power Company

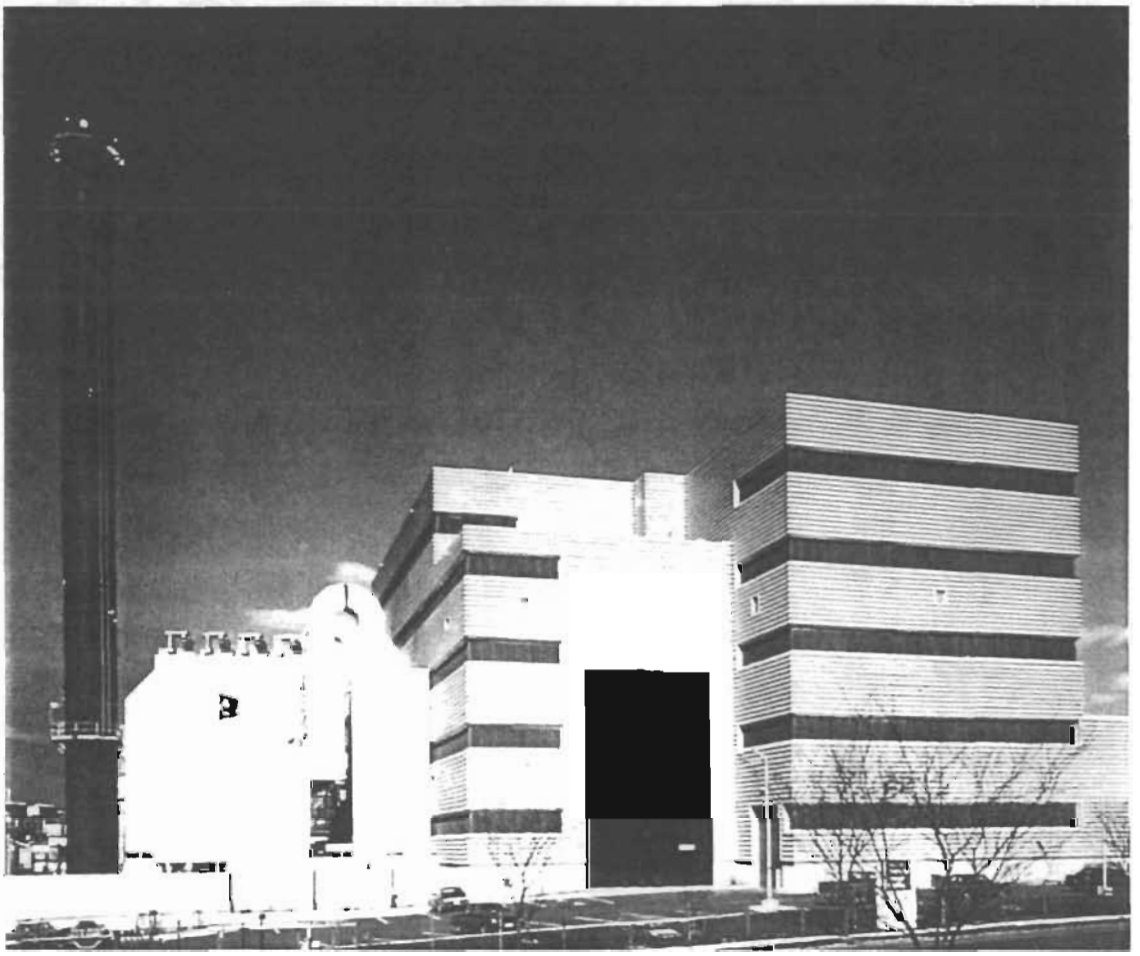
OGDEN MARTIN SYSTEMS OF ALEXANDRIA/ARLINGTON, INC.

5301 Eisenhower Avenue
Alexandria, Virginia 22304

AN OGDEN PROJECTS COMPANY

Printed on Recycled Paper

OGDEN MARTIN SYSTEMS OF ALEXANDRIA/ ARLINGTON, INC.



The Alexandria/
Arlington
Resource Recovery
Facility

OGDEN MARTIN SYSTEMS OF ALEXANDRIA/ARLINGTON, INC.

AN OGDEN PROJECTS COMPANY

TABLE 2

PASCO COUNTY RRF SO_2 IMPACTS AT THE CHASSAHOWITZKA PSD CLASS I AREA

Year	Averaging Period	Paired Maximum Impacts[b] Julian Date	Receptor Reference Letter	Pasco Co. RRF Impact (ug/m³)	Background Sources Impact[a] (ug/m³)	Total Impact (ug/m³)	Total as Percent of PSD Increment
1970	annual[c]	NA	A	0.021	1.422	1.44	72
	24-hour	85	D	0.27	2.33	2.60	52
	3-hour	85/2, hr 6	A	0.38	15.05	15.43	62
1971	annual	NA	A	0.026	1.251	1.28	64
	24-hour	252	F	0.28	2.79	3.07	61
	3-hour	252/1, hr 3	F	1.60	16.50	18.10	72
1972	annual	NA	F	0.013	1.485	1.50	75
	24-hour	237	H	0.34	4.04	4.38	88
	3-hour	316/21, hr 21	A	0.65	12.46	13.11	52
1973	annual	NA	A	0.022	1.328	1.35	68
	24-hour	39	A	0.30	4.61	4.91	98
	3-hour	39/1, hr 3	A	0.84	20.27	21.11	84
1974	annual	NA	A	0.021	1.378	1.40	70
	24-hour	182	H	0.16	2.64	2.78	56
	3-hour	187/3, hr 9	B	0.70	14.37	15.07	60

(%) = Percent of PSD Class I increment consumed; the 3-hour, 24-hour and annual SO_2 increments are 25-, 5- and 2-ug/m³, respectively.

(a) Fifteen SO_2 background sources were modeled.

(b) Maximum paired-in-space-and-time impacts. (See page 2 of letter.)

(c) Annual average concentrations were computed for the full 365- or 366-day duration.

NA = Not Applicable.