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Hillsborough County, Florida

Solid Waste Energy Recovery Facility — Application for Power Plant Site Certification

Volume I — Application

Submitted By
The Hillsborough County
Board of County Commissioners

Rodney Colson, Chairman
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County Administrator

August, 1984

Prepared by

Camp Dresser & McKee Inc.

It will be the responsibility of the Contractor to discharge wastewater to the County's adjacent wastewater treatment plant in accordance with County pretreatment standards, which have not been completed.

Solid Waste Disposal. Figure 2.14 shows the location of existing and proposed solid waste management facilities within the County. Currently, all of the solid waste generated in Hillsborough County, including that generated by the three cities, is disposed of at the County's Hillsborough Heights landfill. The monthly solid waste quantities received at the Hillsborough Heights Sanitary Landfill from May 1981 to April 1983 are shown in Table 2.21. Approximately 2,000 tons per day (six days per week) of solid waste are disposed of at this site, of which about 750 tons per day (six days per week) is delivered by the City of Tampa. Due to capacity limitations and legal restrictions, the Hillsborough Heights landfill is under state administrative order to close by October 31, 1984. The County has commenced construction on the new Southeast County Sanitary Landfill which will be in operation by November 1, 1984. The Southeast County Sanitary Landfill will be used initially for all solid waste disposal, and then as both a residue and emergency backup disposal site for the resource recovery facility, as well as for the disposal of solid waste which cannot be processed.

A 1,000 ton per day (rated capacity) solid waste resource recovery facility to serve the City of Tampa is presently under construction at McKay Bay in Tampa with operation scheduled for May 1986. The Southeast County Sanitary Landfill will be utilized by the City for the disposal of non-processible solid waste and for residue and emergency backup.

The solid waste collection system in the County consists of both city and private refuse collection, and solid waste transfer stations. The County franchises private collection services for the unincorporated areas of the County. There are five franchise districts. Each franchise is for a period of five years and requires each hauler to provide twice-weekly collection to all persons requesting service. For this service, each hauler is permitted to charge fees not to exceed those established annually by the County. The County owns and operates two solid waste transfer stations, the South County transfer station and the Northwest transfer station.

provide an efficient, environmentally-sound, long-range solution to the County's solid waste disposal problems. The facility will be part of a comprehensive County Solid Waste Disposal and Resource Recovery System which will include two transfer stations and the Southeast County Landfill. The wastewater treatment plant will treat wastewater that the County currently pays the City of Tampa to treat. The subregional wastewater facility is also expected to treat flows from several potential industrial concerns, including the proposed resource recovery facility. This plant will help to alleviate the area's sewage treatment problems and, at the same time, supply all of the cooling water needs of the proposed resource recovery facility. The layout of these facilities is presented in Figure 2.5 of Section 2.1.2.

Since the WWTP will be a discretely functioning, albeit interrelated, feature on the site, the components and processes of the WWTP are discussed in a separate section added to the end of this chapter (see Section 3.10).

Hillsborough County is currently seeking proposals fom qualified firms and organizations for the design, construction, startup, acceptance testing, operation and maintenance of a solid waste resource recovery facility to serve the unincorporated areas of the County. The Board of County Commissioners has officially stated that the County will own the project. The contractor will provide a full-service arrangement, including design, construction, acceptance testing, and 20 years of continuous operation, for a "mass-burn" type resource recovery facility with a continuous design rated capacity of 1,200 tons per day using three combustion/steam generation units each with a continuous design rated capacity of 400 tons per day. Additionally, the layout of the project will allow the addition of a fourth combustion/steam generation unit. Initial project construction will include a tipping area and refuse storage pit sized to handle 1,600 tons per day (continuous design rated capacity) and the stack shall have four (4) flues. The project will have one steam turbine-generator which shall generate electricity (about 450 Kwh/ton) to be delivered for sale to Tampa Electric Company (TECO). Power lines from the project's electrical switchyard will connect TECO's powerline right-of-way which abuts the

western boundary of the project site. Revenues from energy sales will be shared by the County and Contractor over the life of the operating contract.

Since the proposed facility will utilize mass-burn technology, there will be no preprocessing of wastes at the facility prior to combustion (except for some limited size reduction of oversized items). A schematic diagram of a typical resource recovery facility is presented in Figure 3.1. MSW will be truck-delivered to the facility and ash residue removed by the same mode of transport. Under a 1600 tpd configuration, four 400 tpd units would be used in the facility. MSW would be dumped into the refuse bunker directly from transfer trailers and packer trucks inside the building. All waste will be stored inside the building, so no waste will be visible from the outside. Two overhead cranes will mix the MSW in the bunker and load the charging hoppers as required.

Oversized items would be separated from the other refuse by the overhead crane. A rotor shear (shredder) may be utilized to reduce the size of material. After size reduction, this material would be charged into the furnace.

Each boiler will be equipped with an electrostatic precipitator (ESP) for particulate air emission control. An electrostatic precipitator is a pollution control device that removes small particles from exhaust gases. The gases pass through a strong electric field where the particles are charged and attracted to the opposite electrically charged collecting plates. The dust is then removed mechanically from these plates. The efficiency of the ESP has been established as achieving an emission limitation for particulate matter of 0.025 gr/dscf corrected to 12% CO_2. (A complete analysis, demonstrating the ESP as LAER for particulate matter and BACT for the other criteria pollutants is contained in Appendix 10.1.5 (see Volume III-Air Quality)). The flue gas will be drawn through the ESPs by an induced draft fan which would be located between the stack and the ESPs.

Bottom ash from the furnace and flyash from the precipitator will be mixed prior to removal from the facility. Ash resulting from the combustion of MSW will comprise 10 percent of the volume and 25 percent of the weight of the MSW processed by the facility. The ash will be quenched with water to about 30 percent moisture prior to transport to a landfill.

As noted above, while the proposed facility will have a maximum design rated capacity of 1600 tpd, its initial design rated capacity will be about 1200 tpd (comprised of three 400 tpd units). Each boiler unit operates independently from the others. It will, therefore, be possible to routinely shut down one unit for periods of maintenance and inspection.

3.2 SITE LAYOUT

3.2.1 Layout

The general site development plan (Figure 2.5), shows the conceptual building layout and plant perimeter on the site. All structures will be set back a minimum of 100 feet from all property lines and adjacent roadways. Although the resource recovery facility and wastewater treatment plant will remain separate with individual fencing and parking, the overall facility design and layout will be coordinated (i.e. roadways, fences, retention basins, buffers, signs, etc).

The wastewater treatment plant has been layed out to effectively utilize the existing sloping land within the plant hydraulic profile to minimize pumping. Shallow groundwater restricts construction below grade. Therefore, some portions of the facility which would normally be below grade will be constructed above grade.

The natural site drainage is to the west. Site grading will respect existing drainage patterns where possible. However, substantial site grading will be required to construct a resource recovery facility with multiple level venicle access. Maximum side slopes for site fill will be

3 x 1600 = 4800 TONS.

The facility shall include a totally enclosed tipping floor with twelve tipping bays each sixteen feet in width. Back up barriers will be provided at each tipping bay to prevent vehicles from entering the solid waste storage area. The storage of the delivered solid waste shall be in a completely enclosed storage pit with the floor elevation below the tipping floor. The pit shall be sized for a minimum storage capacity of three days of solid waste; i.e. 4,800 tons of solid waste at a density of 450 pounds per cubic yard. The storage and handling area will be under negative air pressure and shall supply the combustion air during facility operation which will minimize odors outside of the refuse storage area and refuse unloading building.

A solid waste size reduction system consisting of a rotary shear will be provided to reduce the size of the bulky waste which could block the charging hopper to the combustion/steam generating units.

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 Emissions Types and Sources

As noted previously, the proposed energy recovery facility is a new facility to be located in Hillsborough County. At ultimate size, the facility as planned would contain four boilers each with a rated capacity of 400 tpd of MSW for a total of 1600 tpd. The flue from each of the boilers will be encased in a single stack. The refuse bunker and the residue storage area will be enclosed and under negative pressure as combustion air will be taken from these areas. There will be no on-site storage of either refuse or residue except within these controlled areas. Loading and unloading of trucks will take place within these bunkers. Trucks entering and leaving the site will be covered and travel on paved

Hillsborough County, Florida

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Volume II — Appendices

Submitted By
The Hillsborough County
Board of County Commissioners

August, 1984

Prepared by
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DESCRIPTION OF THE PROJECT

Background Information

Hillsborough County is currently seeking proposals from qualified firms and organizations for the design, construction, startup, acceptance testing, operation and maintenance of a solid waste resource recovery and electrical generating facility to serve the unincorporated areas of the County. The Board of County Commissioners has officially stated that the County will own the project. The contractor will provide a full-service arrangement, including design, construction, acceptance testing, and 20 years of continuous operation, for a "mass-burn" type resource recovery facility with a continuous design rated capacity of 1,200 tons per day using three combustion/steam generation units each with a continuous design rated capacity of 400 tons per day. Additionally, the layout of the project will be such as to allow the addition of a fourth combustion/steam generation unit. Initial projection construction shall include a tipping area and refuse storage pit sized to handle 1,600 tons per day (continuous design rated capacity) and the stack shall have four (4) flues. The project will have one steam turbine-generator which shall generate electricity to be delivered for sale to Tampa Electric Company (TECO). Power lines from the project's electrical switchyard will connect TECO's powerline right-of-way which abuts the western boundary of the project site. Revenues from energy sales will be shared by the County and Contractor over the life of the operating contract.

The project will be located on a site (Faulkenburg Road Site) that has been selected by the County. The County has purchased the property from Seaboard System Railroad. At public hearings, after hearing presentations from both the County staff and the public, the Board of County Commissioners approved an amendment to the Land Use Plan Element of the Horizon 2000 Plan which designated the site as the location of Public/Semi-Public facilities and changed the site zoning from Restricted Industry District to Community Unit District.

Process Description

Since the proposed facility will utilize mass-burn technology, there will be no preprocessing of wastes at the facility prior to combustion (except for some limited size reduction of oversized items). A schematic diagram of a typical resource recovery facility is presented in Figure 1. MSW will be truck-delivered to the facility and ash residue removed by the same mode of transport. MSW would be dumped into the refuse bunker directly from packer trucks inside the building. All waste will be stored inside the building, so no waste will be visible from the outside.

Each boiler will be equipped with an electrostatic precipitator (ESP) for particulate air emission control. An electrostatic precipitator is a pollution control device that removes small particles form exhaust gases. The gases pass through a strong electric field where the particles are attracted to the electrically charged collecting plates. The dust is then removed mechanically from these plates. The efficiency of the ESPs would be established during the federal and state (such as PSD/NSR) air quality

permit process. The flue gases will be drawn through the ESPs by an induced draft fan which would be located between the stack and the ESPs.

A wastewater treatment plant is also planned at the site and is at the preliminary design phase. Treatment process trains are currently being developed. The wastewater treatment plant will treat wastewater that the County currently pays the City of Tampa to treat. The subregional facility is also expected to treat flows from several industrial concerns, including the proposed resource recovery facility. This plant will help to alleviate the area's effluent disposal problems and, at the same time, supply all of the cooling water needs (approximately 800,000 gallons per day maximum) of the proposed resource recovery facility. The proposed facility will be capable of providing an effluent treated to high levels to meet the mandated requirements of the Florida Department of Environmental Regulation (FDER).

Project Certification

Florida has adopted legislation, the Florida Electrical Power Plant Siting Act (Florida Statutes, Chapters 403.501 - 403.517), as amended, through Chapter 17-17 of the Florida Administrative Code (FAC) "to provide efficient, centralized review of the needs for increased electrical power generation and the effects of generator-related activities on human health and the environment and ecology of the lands and waters within the state." The Florida Department of Environmental Regulation (FDER) implements this Act.

This Act provides for a certification process which is a "one stop" centralized permitting procedure. Under the Act, the County may elect to obtain each required permit separately, or to file an application for certification which would expedite the review and coordinate the permit application process.

The County is pursuing Site Certification under the Florida Electrical Power Plant Siting Act. The County has submitted a "Plan of Study for Completion of the Application for Certification of Proposed Electrical Power Generating Plant Site" and will file the "Application for Certification" in July 1984.

Once the site is certified by the state, no other state permits will be required for the project. Although the rated continuous design capacity of the project will be 1,200 tons per day (generating about 29 megawatts), site certification is being sought for an ultimate continuous design rated capacity of 1,600 tons per day (generating about 39 megawatts) since it is anticipated that the County may expand the project in the future.

Hillsborough County, Florida

Solid Waste Energy Recovery Facility — Application for Power Plant Site Certification

Volume III — Air Quality

Submitted By
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Board of County Commissioners

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the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed _____

Louis Tortora, Jr. PE
Name (Please Type)

Camp Dresser & McKee, Inc.
Company Name (Please Type)

1321 U.S. 19South, Suite 601,Clearwater, Fl. 33546
Mailing Address (Please Type)

Florida Registration No. 32073 Date: 7/24/84 Telephone No. (813)530-9984

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

Project is a solid waste energy recovery facility which shall generate electrical power from combustion of municipal refuse. Pollution control device shall be an electrostatic precipitator with an outlet loading of 0.025 grains/dscf corrected to 12% CO_2. Project will be in full compliance with all existing state and federal standards, and the air pollution control device shall meet LAER/BACT for all applicable pollutants.

B. Schedule of project covered in this application (Construction Permit Application Only)
Start of Construction January 1985 Completion of Construction January 1988

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

Electrostatic Precipitators (4) $4,500,000 total

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

Not Applicable

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: _____ ft. Stack Diameter: _____ ft.

Gas Flow Rate: _____ ACFM _____ DSCFM Gas Exit Temperature: _____ °F.

Water Vapor Content: _____ % Velocity: _____ FPS

SECTION IV: INCINERATOR INFORMATION

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq.& Gas By-prod.)	Type VI (Solid By-prod.)
Actual lb/hr Incinerated	Vendor supplied information						
Uncontrolled (lbs/hr)	Vendor supplied information.						

CALCULATIONS 6/13/94 BY GPL

133333 / 4 UNITS = 33333 LBS/HR

33333 x 24 HRS/DAY ÷ 2000 LBS/TON = 400 TONS/DAY/UNIT

Description of Waste: Municipal solid waste

Total Weight Incinerated (lbs/hr): 133,333. Design Capacity (lbs/hr): 133,333. (name plate rating)

Approximate Number of Hours of Operation per day _____ day/wk _____ wks/yr. _____

Manufacturer: Vendor not selected yet

Date Constructed _____ Model No. _____

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel Type	Fuel BTU/hr	Temperature (°F)
Primary Chamber	Vendor specific information				
Secondary Chamber					

Stack Height: 220 ft. Stack Diameter: 4 values, each 5'-9" Diam. Stack Temp. 430°F

Gas Flow Rate: 342.000 ACFM 140,070 @ 50% Ex. Air DSCFM* Velocity: 55 FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air. 0.027 gr/dscf @ 50% Ex. Air

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) Electrostatic Precipitator

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION
Application To Operate/Construct Air Pollutant Sources
Supplemental Information

Section V: Supplemental Requirements

1. Total process input rate at design capacity (i.e. name-plate rating) is 1600 TPD, 4 units each at 400 TPD. Residue amount will be 29.000. lb/hr (dry basis) and is derived as follows:

$$\text{Inert Material} = \left(133{,}333 \frac{\text{wet lb feed}}{\text{hr}}\right)\left(0.7265 \frac{\text{dry lb}}{\text{wet lb}}\right)\left(0.289 \frac{\text{lb inert}}{\text{dry lb}}\right) = 28{,}100 \frac{\text{dry lb inert}}{\text{hr}}$$

$$\text{Unburned Carbon:} = \left(133{,}333. \frac{\text{wet lb feed}}{\text{hr}}\right)\left(0.7265 \frac{\text{dry lb}}{\text{wet lb}}\right)\left(0.3567 \frac{\text{lb. Carbon}}{\text{dry lb}}\right)$$

$$(.025) = 900. \frac{\text{dry lb carbon}}{\text{hr}}$$

$$29{,}000. \frac{\text{dry lb residue}}{\text{hr}}$$

2. Emission estimates are contained in the Prevention of Significant Deterioration (PSD) Permit Application.

3. Emission factors were derived from AP-42 and from data from recent large-scale, mass burn resource recovery facilities. See PSD Permit Applications.

4-8. These items are not available at this time since a system supplier has not been selected. Once these items have been provided by the vendor they will be transmitted to DER for inclusion in this application.

nameplate generating capacity of approximately 29 megawatts, using 1,200 tons per day (tpd) of solid waste as fuel. However, certification for an ultimate site capacity of about 39 megawatts, capable of processing 1,600 tons of solid waste per day, is being sought in anticipation of future solid waste disposal requirements. The energy produced would be used to satisfy internal power demands and the surplus would be sold directly to the Tampa Electric Company (TECO).

Since the proposed facility will utilize mass-burn technology, there will be no complex preprocessing of wastes at the facility prior to combustion. However, identifiable quantities of sludge from wastewater treatment plants, asbestos containing construction waste, or other hazardous waste will not be accepted at the facility. Oversized items would be separated from the incoming refuse by an overhead crane. A roto-shear (shredder) may be utilized to reduce the size of this material. After size reduction, this material would either be landfilled, sold as scrap, or charged into the furnace.

A conceptual schematic diagram of the recovery facility is presented in Figure 3-2. Truck transport will be used to deliver MSW to the facility and to remove ash residue from the facility. Under a 1600 tpd configuration, four 400-tpd units would be used in the facility. MSW would be dumped into the refuse bunker directly from packer trucks inside the building. All waste will be stored inside the building and kept under negative pressure, so no waste will be visible from the outside and odors and fugitive emission will be controlled. The overhead cranes mix MSW in the bunker and load the four charging hoppers as required.

Each boiler will be equipped with an electrostatic precipitator (ESP) for particulate air emission control. An electrostatic precipitator is a pollution control device that removes small particles from exhaust gases. The gases pass through a strong electric field where the particles are charged and attracted to the electrically charged collecting plates. The dust is then removed mechanically from these plates. The efficiency of the ESP has been established as achieving an emission limitation for particulate matter of 0.025 gr/dscf corrected to 12% CO_2. A complete analysis, demonstrating

the ESP as LAER for particulate matter and BACT for the other criteria pollutants is contained in Chapter 6.0. The flue gas will be drawn through the ESPs by an induced draft fan which would be located between the stack and the ESPs.

Bottom ash from the furnace and flyash from the precipitator will be mixed prior to removal from the facility. Ash will comprise 10 percent of the volume and 25 percent of the weight of the MSW processed by the facility. The ash will be quenched with water to about 30 percent moisture prior to transport to a landfill.

As noted above, while the proposed facility will have a maximum design rated capacity of 1600 tpd, its initial throughput will be about 1200 tpd (comprised of three 400 tpd units). Each boiler unit operates independently from the others. It would, therefore, be possible to routinely shut down one unit for periods of maintenance and inspection.

3.3 GOOD ENGINEERING PRACTICE STACK HEIGHT EVALUATION

The 1977 Clean Air Act Amendments sought to require that emission limitations used for control of any pollutant were not affected by the stack height which exceeds good engineering practice (GEP), or any other dispersion technique. The GEP stack height was that "height necessary to insure that emissions from the stack do not result in excessive concentrations of any air pollutant in the immediate vicinity of the source as a result of atmospheric downwash, eddies, and wakes which may be created by the source itself, nearby structures, or nearby terrain obstacles." The Act did not seek to restrict the actual height of any stack, only to limit the theoretical stack height used in determining a source's allowable emission rate. This section of the Clean Air Act does not apply to stacks in existence before December 31, 1970.

The EPA proposed regulations to implement Section 123 on January 12, 1979 (44 FR 2608). Based on the responses received during the extended period for public comments, the EPA issued a final rulemaking regarding stack

106.8m. Since the proposed stack height of 67m is less than the maximum GEP stack height, the effects of downwash must be considered in predicting ground level concentrations. For a further discussion regarding the proposed stack height, see Appendix 10.16 "Stack Height Analysis and Recommendations".

3.4 BOILER OPERATING CONDITIONS

The resource recovery facility will consist of four boilers each capable of firing 400 tpd of reference waste (see Section 3.3 of Volume I) at its maximum continuous rating (MCR). This firing rate will be adjusted as the waste quality changes, i.e. changes in the higher heating value (HHV). This is because one of the objectives of plant operation is to maintain the heat load to the boiler by maintaining the heat release on the grate. When the HHV is low (higher moisture and ash fractions, lower combustibles fraction) more waste will be processed, up to 440 tpd per boiler. Likewise, when the HHV is high, less waste will be processed.

A screening analysis was run to assess the potential air quality impact of various operating loads. A total of four different operating load extremes were selected for review. The boiler operating conditions selected for modeling were based on identifying minimum, maximum, and typical load conditions as well as identifying high and low values of the HHV. The boiler conditions associated with each case are listed in Table 3-2.

The maximum load condition with a heating value of 4,000 Btu/lb resulted in the highest pollutant impacts and therefore this condition is used throughout the modeling assessment (see Section 7.1). This provides for a conservative analysis as the facility is expected to operate, over the long-term, at its maximum continuous rating (MCR) of 400 TPD of reference solid waste subject to an availability of 85 percent. A detailed discussion of the modeling methodology and results of the screening analysis are described in Exhibit A.

TABLE 3-2

BOILER OPERATING CONDITIONS

Boiler Exit		Refuse Fired		Flue Exit (from all 4 boilers)		
°F	ACFM*	Heat Content Btu/lb	Rate* (TPD)	Temp. °F (°K)	Flow Rt ACFM	Exit Vel. fps (mps)**
450	87,840	4,000	440	430 (494)	343,600	55.2 (16.82)
475	89,675	4,500	400	455 (508)	351,000	56.4 (17.19)
450	39,925	4,000	200	430 (494)	156,200	25.1 (7.65)
450	79,855	4,000	400	430 (494)	312,400	50.3 (15.32)

* Per boiler (4 boilers total).
** Flue diameter = 5'9" (1.75 m) for an effective diameter of 3.5m.

TABLE 4-1

EMISSION FACTORS FOR FLORIDA RESOURCE RECOVERY FACILITIES
(pounds per ton of MSW)

Hydrocarbons	Hillsborough (proposed)	Pinellas 1 & 2[1]	Pinellas 3[2]	McKay Bay[3]
Particular matter	0.48*	1.6	0.5	0.67*
Sulfur dioxide	2.5	3.0	1.9	4.1
Nitrogen oxides	3.0	---	3.0	7.2
Carbon monoxide	1.8	---	1.5	0.4
Hydrocarbons	0.2	---	0.3	0.2
Lead	0.048	---	0.03	0.074
Mercury	0.0052	---	0.01	0.0996
Beryllium	13.1×10^{-6}	---	1.3×10^{-6}	6.2×10^{-6}
Fluorides	0.06	---	0.1	0.10
Sulfuric acid	7.68×10^{-2}	---	---	---
Hydrogen chloride	4.0	---	4.0	4.51

* Required LAER due to non-attainment area

Source: 1) HDR, 1978
2) HDR, 1983
3) Florida Permit AC 29-47277

CALCULATION BY GPL 6/13/94

TABLE 4-1 STATE PM-LIMIT OF .48 LBS/TON

= 0.48 x 1600 TONS/DAY x 365 DAYS ÷ 2000 LBS/TON

= 140 TPY

TABLE 5-1

SIGNIFICANT EMISSION RATES AND FACILITY POTENTIAL TO EMIT VALUES FOR PSD REGULATED POLLUTANTS

Pollutants	Significant[a] Emission Rates (tons/year)	Potential[b] to Emit (tons/year)
Particulate matter	25	140
Carbon monoxide	100	526
Nitrogen oxides	40	876
Sulfur dioxide	40	730
Ozone (VOCs)	40	58
Lead	0.6	14
Asbestos	0.007	---
Beryllium	0.0004	3.83×10^{-3}
Mercury	0.1	1.52
Vinyl chloride	1.0	---
Fluorides	3	17.5
Sulfuric acid mist	7	22.4
Total reduced sulfur (including H_2S)	10	---
Reduced sulfur (including H_2S)	10	---
Hydrogen sulfide	10	---
Hydrogen chloride	---	1168

SOURCE:

[a] FAC 17.2 Part V Table 500.2.

[b] Emission estimates at 100 percent system capacity for Baseline Control Alternative - ESP 0.025 gr/dscf @ 12 percent CO_2.

6.0 BEST AVAILABLE CONTROL TECHNOLOGY/LOWEST ACHIEVABLE EMISSION RATE ANALYSIS

The evaluation of the emission control technology proposed for a new source is to be contained within the Best Available Control Technology (BACT) and Lowest Achievable Emission Rate (LAER) analyses which are integral portions of the PSD and NSR processes. The BACT analysis is required under the PSD review process, and the LAER analysis is required under New Source Review (NSR) for Non-Attainment Areas, Florida Administrative Code 17-2.510. For purposes of consistency and continuity, both analyses have been incorporated into this section. The BACT/LAER analysis provides the rationale for selecting the control strategy to best satisfy the individual constraints of the area surrounding the site and to minimize the impacts on energy, economic and environmental issues.

A BACT/LAER analysis involves: the review of pollutant applicability, the identification of sensitive concerns, and the selection of control strategy alternatives. These elements are further evaluated using energy, economic and environmental criteria. It is assumed for this analysis that the facility will operate at 100% availability at the maximum firing rate of 110% of the nameplate rating (equal to 1760 TPD). This will provide for worst-case analysis in terms of emissions (both short- and long-term) and their environmental impacts, energy consumption, and economic (operations and maintenance) considerations. Finally, the BACT/LAER decision-making process culminates in a preferred control strategy for minimizing the emission of regulated pollutants from the proposed source within the above constraints. The control option finally selected as LAER for particulate matter is the electrostatic precipitator designed to limit particulate emissions to 0.025 gr/dscf corrected to 12% CO_2, and along with other design specifications is BACT for other regulated pollutants.

Potential sensitive concerns to be included in the BACT/LAER analysis can be addressed on the basis of energy, economic and environmental issues. Relative to energy supply, the project will have a positive effect. The facility is designed to produce steam and electricity during the combustion process. This generation will help satisfy an existing energy demand that

would otherwise be supplied by existing fossil-fuel combustion units. Furthermore, no direct energy is recovered from the landfilling of MSW, but fugitive emissions and odor are generated from that disposal method.

The economic impacts analysis of the alternative air pollutant control strategies is based on the following factors: capital cost (debt service), maintenance costs (including supplies and labor), and operations cost (cost of power, chemicals, water, waste disposal). Facility design features that affect air pollutant emissions but which are primarily related to the furnace design and operational parameters (i.e. grate design, excess air level, etc.) are not included in the economic analysis. With this data the total annual cost (economic impact) of each control strategy for each pollutant can be assessed and comparisons made in terms of cost effectiveness.

In general, the positive environmental impacts of the facility would include the reduction of landfilling activities and a resultant reduction in fugitive dust emissions, vehicular emissions (carbon monoxide, hydrocarbons, and nitrogen oxides), odor problems, potential groundwater pollution, and a reduction in the consumption of land resources for landfilling activities. However, the facility would directly impact air quality by releasing atmospheric pollutants as identified in Section 4.0. The level of degradation is assessed on a comparative basis for both the individual control technology considered and the relative impact on the environment.

The environmental impact analysis was performed by calculating incremental ground-level air pollutant impacts of the various control alternatives. The EPA-approved short-term version of the Industrial Source Complex Model (ISCST) model was chosen due to its capability to analyze the aerodynamic affects of the buildings comprising the facility on plume dispersion (downwash). This is required since the proposed stack height is less than the calculated GEP requirements. The modeling methodology and protocol that is followed to calculate facility impacts in Section 7.0 was also used in the BACT/LAER analysis. The stack parameters that were used in the modeling exercise simulated worst-case conditions. That is, recently cleaned boilers operating at maximum load conditions (1760 tpd or 110 percent of

the nameplate rating) and firing a waste with a low HHV (4000 BTU/lb). The boiler tubes, being recently cleaned, allow for maximum heat transfer which therefore reduces flue gas temperature; hence, reduces plume rise and pollutant dispersion. This particular condition will occur only briefly. As the units are operated, the boiler tubes become fouled, thereby reducing heat transfer and increasing the flue gas temperature which aids pollutant dispersion. Although worst-case conditions should be used to calculate maximum short-term pollutant concentrations, annual average conditions would be used to calculate maximum long-term concentrations. However, to minimize the computer time involved with the modeling activities, all impacts, both short and long-term were predicted based on worst-case stack gas exit conditions. This would therefore overpredict the long-term concentrations providing a degree of conservatism. Also, this assumption of worst-case conditions holds true even under conditions of changing waste throughput due to variations in waste quality (i.e. HHV). The operating characteristics of the system were discussed earlier in Sections 2 and 4. Worst-case conditions at maximum load corresponds to firing 1760 tpd of solid waste with an HHV of 4,000 BTU/lb and a stack gas exit temperature of 430 deg. F (ESP Case). The modeling data base and options used in the analysis are summarized in Section 7. Source operating data used as input to the model for all control alternatives are listed in Table 6-1. None of the control options studied resulted in pollutant impact projections in violation of the NAAQS or PSD increments (a detailed NAAQS analysis is contained in Section 7.0).

Although BACT determinations are made on a case-by-case basis, EPA pursues a program to disseminate information on control technology determinations. This is done in a nationally consistent manner through the BACT/LAER Clearinghouse (EPA, 1982 and EPA, 1983). The basic purposes of the BACT/LAER Clearinghouse are to: (1) provide state and local agencies with current control technology determinations, (2) summarize recent determinations for sources of similar size and nature, and (3) provide data on the emission limits imposed on new or modified sources.

Source Data

The resource recovery facility will consist of four boilers each capable of firing 400 tons per day (tpd) of reference solid waste. The boilers will typically not be run above 100% of the maximum continuous rate (MCR) but operation at 110% of the MCR caused the greatest air quality impacts and was, therefore, used throughout the air quality analysis (See Section 3.0). The stack parameters and flue gas conditions for the "worst-case" boiler operating condition are presented in Table 7-1. The flue gases from each boiler will be vented to a separate flue; the four flues will be encased in a common stack. Pollutant emission rates quantified in Section 4.0 were used to estimate projected pollutant impacts. Emissions data are based on using an electrostatic precipitator (ESP) designed to meet an outlet particulate loading of 0.025 gr/dscf, corrected to 12% CO_2.

A major consideration in the modeling analysis of an air pollution source is the potential for aerodynamic downwash to occur. Aerodynamic downwash results in enhanced ground-level concentrations caused by pollutants emitted from the stack being caught in air passing over and around building structures. The region of disturbed air flow is known as the cavity zone or turbulent wake. The size of the cavity/wake region depends on the geometry of the facility structures and the relative wind direction. Pollutants emitted from the facility's stack upwind of a building can be entrained into the cavity/wake region, if the stack height is low, relative to the building height, or the momentum of the flue gases is insufficient to escape the turbulent zone. When aerodynamic down wash occurs, the pollutants are rapidly mixed within the cavity/wake region and brought down to ground-level much quicker than without the influence of building downwash.

Based on the dimensions of this facility, the Good Engineering Practice (GEP) stack height is 106.8 m. Because the proposed stack height (67.0 m) is less than GEP, a downwash analysis was performed with the ISC model. As indicated by the modeling results, utilizing a stack height lower than GEP produces acceptable air quality impacts. A discussion of the GEP stack height analysis is contained in Section 3.3 and in Appendix 10.16.

TABLE 7-2

EMISSION RATES FOR THE PROPOSED FACILITY

Pollutant	Emission Rates* #/ton	g/s
Total Suspended Particulates	0.48	4.46
Sulfur Dioxide	2.5	23.1
Carbon Monoxide	1.8	16.6
Nitrogen Oxides	3.0	27.7
Lead	0.048	0.444
Mercurgy	5.2×10^{-3}	0.048
Sulfuric Acid Mist	7.68×10^{-2}	0.710
Beryllium	1.31×10^{-5}	1.21×10^{-4}
Fluorides	0.06	0.554
Non-Methane Hydrocarbons	0.2	1.85
Total Reduced Sulfur	neg.	neg.
Reduced Sulfur Compounds	neg.	neg.
Vinyl Chloride	neg.	neg.
Asbestos	neg.	neg.
Hydrogen Chloride	4.0	37.9

*Emission rates based on a throughput equal to 110% of design capacity.

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Solid Waste Energy Recovery Facility [X] New[1] [ ] Existing[1]

APPLICATION TYPE: [X] Construction [ ] Operation [ ] Modification

COMPANY NAME: County of Hillsborough, Florida COUNTY: Hillsborough

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) Solid Waste Energy Recovery Facility w/Electrostatic Precipitator

SOURCE LOCATION: Street Faulkenburg Rd. Nearest Incorporated City Tampa

UTM: East 03/68/220 M.E. North 30/92/700 M.N.

Latitude 27 ° 57 ' ___ "N Longitude 82 ° 40 ' 22 "W

APPLICANT NAME AND TITLE: Warren N. Smith, Director

APPLICANT ADDRESS: Dept. of Solid Waste, P.O. Box 1110, 925 East Twiggs Street, Tampa Florida 33601

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Hillsborough County

I certify that the statements made in this application for a construction permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: Warren N. Smith

Warren N. Smith, Director, Dept. of Solid Waste
Name and Title (Please Type)

Date: 7-23-84 Telephone No. (813)272-6674

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that

[1] See Florida Administrative Code Rule 17-2.100(57) and (104)

the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed _____

Louis Tortora, Jr. PE
Name (Please Type)

Camp Dresser & McKee, Inc.
Company Name (Please Type)

1321 U.S. 19South, Suite 601,Clearwater, Fl. 33546
Mailing Address (Please Type)

Florida Registration No. 32073 Date: 7/24/89 Telephone No. (813)530-9984

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

Project is a solid waste energy recovery facility which shall generate electrical power from combustion of municipal refuse. Pollution control device shall be an electrostatic precipitator with an outlet loading of 0.025 grains/dscf corrected to 12% CO_2. Project will be in full compliance with all existing state and federal standards, and the air pollution control device shall meet LAER/BACT for all applicable pollutants.

B. Schedule of project covered in this application (Construction Permit Application Only)
Start of Construction January 1985 Completion of Construction January 1988

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

Electrostatic Precipitators (4) $4,500,000 total
*Ash Bldg. Dust Suppression Bag House (1) $56,000 total

*Information added 6/12/87

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

Not Applicable

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ;

if power plant, hrs/yr _____ ; if seasonal, describe: _____

F. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? Yes

   a. If yes, has "offset" been applied? Will seek offsets

   b. If yes, has "Lowest Achievable Emission Rate" been applied? Yes

   c. If yes, list non-attainment pollutants. Ozone and particulate matter

2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. Yes

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this source? If yes, see Sections VI and VII. Yes

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? Yes

5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? No

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? No

   a. If yes, for what pollutants? _____

   b. If yes, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): _____

2. Product Weight (lbs/hr): _____

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/yr	T/yr	
* TSP	1.63		---	N/A	N/A		---

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

[3]Calculated from operating rate and applicable standard.

[4]Emission, if source operated without control (See Section V, Item 3).

* Information added for Ash Bldg. Dust Suppression Bag House 6/12/87

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
Ash Bldg. Dust Suppressor Bag House	TSP		Not applicable	

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	

*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.

Fuel Analysis:

Percent Sulfur: _____ Percent Ash: _____

Density: _____ lbs/gal Typical Percent Nitrogen: _____

Heat Capacity: _____ BTU/lb _____ BTU/gal

Other Fuel Contaminants (which may cause air pollution): _____

_____

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average _____ Maximum _____

G. Indicate liquid or solid wastes generated and method of disposal.

_____

_____

_____

_____

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: _____ ft. Stack Diameter: _____ ft.

Gas Flow Rate: _____ ACFM _____ DSCFM Gas Exit Temperature: _____ °F.

Water Vapor Content: _____ % Velocity: _____ FPS

SECTION IV: INCINERATOR INFORMATION

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq.& Gas By-prod.)	Type VI (Solid By-prod.)
Actual lb/hr Incinerated	Vendor supplied information						
Uncontrolled (lbs/hr)	Vendor supplied information.						

Description of Waste Municipal solid waste

Total Weight Incinerated (lbs/hr) 133,333. Design Capacity (lbs/hr) 133,333. (name plate rating)

Approximate Number of Hours of Operation per day _____ day/wk _____ wks/yr. _____

Manufacturer Vendor not selected yet.

Date Constructed _____ Model No. _____

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel Type	Fuel BTU/hr	Temperature (°F)
Primary Chamber	Vendor specific information				
Secondary Chamber					

Stack Height: 220 ft. Stack Diameter: 4 flues, each 5'-9" Diam. Stack Temp. 430°F

Gas Flow Rate: 342.000 ACFM 140,070 @ 50% Ex. Air DSCFM* Velocity: 55 FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air. 0.027 gr/dscf @ 50% Ex. Air

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) Electrostatic Precipitator

Brief description of operating characteristics of control devices: Electrostatic precipitator collects particulate matter in flue gas stream by producing an electrical charge on the particles and then attracting them to surfaces of opposite polarity.

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.):

Hillsborough County's co-located wastewater treatment plant will accept the cooling tower blowdown and ash will be disposed of at Hillsborough County's Southeast County Landfill.

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight -- show derivation [Rule 17-2.100(127)]

2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made.

3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).

4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, design pressure drop, etc.)

5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3 and 5 should be consistent: actual emissions = potential (1-efficiency).

6. An 8 1/2" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.

7. An 8 1/2" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map).

8. An 8 1/2" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?

[X] Yes [ ] No

Contaminant	Rate or Concentration
Particulate matter	0.08 gr/dscf (grains per dry standard cubic foot) corrected to 12% CO_2

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy)

[X] Yes [ ] No

Contaminant	Rate or Concentration
Various	See Table 6-2 in the PSD permit application

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration
Carbon monoxide, nitrogen oxides, sulfur dioxide, lead, beryllium, mercury, fluorides, and sulfuric acid mist	See PSD permit application Section 6.0

D. Describe the existing control and treatment technology (if any).

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:

*Explain method of determining

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant	Rate or Concentration

10. Stack Parameters

a. Height: ft. b. Diameter: ft.

c. Flow Rate: ACFM d. Temperature: °F.

e. Velocity: FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

a. Control Device: electrostatic precipitator (ESP)

b. Operating Principles: Dry collection of charged particles on oppositely charged surfaces.

c. Efficiency:[1] Outlet Loading 0.025 gr/dscf Corr. to 12% CO_2

d. Capital Cost: $4,500,000

e. Useful Life: 20 yrs.

f. Operating Cost: $556,999./yr

g. Energy:[2] 770 KW

h. Maintenance Cost: $90,000/yr

i. Availability of construction materials and process chemicals: Readily available

j. Applicability to manufacturing processes: Not applicable

k. Ability to construct with control device, install in available space, and operate within proposed levels: ESP has by far the longest history of operation within emission standards on solid waste resource recovery facilities (hundreds of units worldwide).

2.

a. Control Device: fabric filter

b. Operating Principles: Dry collection of particles by filtration through fabrics.

c. Efficiency:[1] Outlet loading 0.025 gr/dscf Corr. to 12% CO_2

d. Capital Cost: $3,694.000

e. Useful Life: 20 yrs. complete bag replacement every 2 years.

f. Operating Cost: $859,000./yr

g. Energy:[2] 218 KW

h. Maintenance Cost: $112,000./yr

i. Availability of construction materials and process chemicals: Readily available

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels: Limited operating experience with fabric filters on solid waste resource recovery facilities (only 3 units on large scale, mass-burn facilities

3.

a. Control Device: Dry Scrubber & ESP Outlet loading 0.025gr/dscf
b. Operating Principles: Alkaline spray neutralizes SO_2 & acid
c. Efficiency:[1] 65% removal eff. for SO_2 & 80% for acid gases
d. Capital Cost: $12,831.000
e. Useful Life: 20 Yr.
f. Operating Cost: $1,387,000/yr.
g. Energy:[2] 1397 KW
h. Maintenance Cost: $336,000/yr

i. Availability of construction materials and process chemicals: Readily available

j. Applicability to manufacturing processes: Not Applicable

k. Ability to construct with control device, install in available space, and operate within proposed levels: Very limited operating experience (only one unit in operation in USA on solid waste service).

4.

a. Control Device: ESP & Wet Scrubber Outlet loading 0.025 gr/dscf 75% removal eff. for SO_2 and 90% for acid gases
b. Operating Principles: ESP for dry collection of particulate and alkaline scrubbing for SO_2 & acid gas contr
c. Efficiency:[1]
d. Capital Costs: $7,810,000.
e. Useful Life: 20 yrs.
f. Operating Cost: $3,310,000/yr
g. Energy:[2]
h. Maintenance Cost: $189,000/yr

i. Availability of construction materials and process chemicals: Expensive corrosion-resistant metals required for quencher and scrubber.

j. Applicability to manufacturing processes: Not Applicable

k. Ability to construct with control device, install in available space, and operate within proposed levels: Very limited operating experience. Problem areas include necessity for stack gas reheat, corrosion of scrubber, and wastewater treatment.

F. Describe the control technology selected:

1. Control Device: ESP
2. Efficiency:[1] Outlet loading controlled to 0.025 gr/dscf corr. to 12% CO_2
3. Capital Cost: $4,500.000
4. Useful Life: 20 yrs.
5. Operating Cost: $556,000/yr
6. Energy:[2] 770 KW
7. Maintenance Cost: $90,000/yr
8. Manufacturer: Not selected yet.
9. Other locations where employed on similar processes: Braintree, MA; Harrisburg, PA; Chicago, NW, IL; Nashville, TN; Norfolk, VA; Saugus, MA; Montreal (Des Carriers), Quebec, and Pinellas County, FL.

a. (1) Company: Not selected yet.
(2) Mailing Address:
(3) City:
(4) State:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

2. Instrumentation, Field and Laboratory

a. Was instrumentation EPA referenced or its equivalent? [ ] Yes [ ] No

b. Was instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling

1. 5 Year(s) of data from 1 / 1 / 70 (month / day / year) to 12 / 3 / 74 (month / day / year)

2. Surface data obtained from (location) Tampa International Airport

3. Upper air (mixing height) data obtained from (location) Tampa International

4. Stability wind rose (STAR) data obtained from (location) Not Used

C. Computer Models Used

1. Industrial Source Complex (ISC), Short-term Modified? If yes, attach description.

2. _____ Modified? If yes, attach description.

3. _____ Modified? If yes, attach description.

4. _____ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate	
TSP	(4.46 Incinerator) (*0.2)	grams/sec
SO_2	(23.1 Incinerator) (*Not applicable)	grams/sec

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

* Information added for Ash Bldg. Dust Suppression Bag House 6/12/87.

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION
Application To Operate/Construct Air Pollutant Sources
Supplemental Information

Section V: Supplemental Requirements

1. Total process input rate at design capacity (i.e. name-plate rating) is 1600 TPD, 4 units each at 400 TPD. Residue amount will be 29.000. lb/hr (dry basis) and is derived as follows:

$$\text{Inert Material} = \left(133{,}333 \frac{\text{wet lb feed}}{\text{hr}}\right)\left(0.7265 \frac{\text{dry lb}}{\text{wet lb}}\right)\left(0.289 \frac{\text{lb inert}}{\text{dry lb}}\right) = 28{,}100 \frac{\text{dry lb inert}}{\text{hr}}$$

$$\text{Unburned Carbon:} = \left(133{,}333. \frac{\text{wet lb feed}}{\text{hr}}\right)\left(0.7265 \frac{\text{dry lb}}{\text{wet lb}}\right)\left(0.3567 \frac{\text{lb. Carbon}}{\text{dry lb}}\right)$$

$$(.025) = 900. \frac{\text{dry lb carbon}}{\text{hr}}$$

$$29{,}000. \frac{\text{dry lb residue}}{\text{hr}}$$

2. Emission estimates are contained in the Prevention of Significant Deterioration (PSD) Permit Application.

3. Emission factors were derived from AP-42 and from data from recent large-scale, mass burn resource recovery facilities. See PSD Permit Applications.

4-8. These items are not available at this time since a system supplier has not been selected. Once these items have been provided by the vendor they will be transmitted to DER for inclusion in this application.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration
Various	See Table 6-2 in PSD permit application

(8) Process Rate:[1]

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. Reason for selection and description of systems: See Section 6.0 of PSD Permit Application

[1]Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

A. Company Monitored Data

1. _____ no. sites _____ TSP _____ ( ) SO^2* _____ Wind spd/dir

Period of Monitoring ____/____/____ to ____/____/____
month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.

Specify bubbler (B) or continuous (C).

COUNTY OF HILLSBOROUGH

P.O. BOX 1110 TAMPA, FLORIDA 33601

NORMAN W. HICKEY, COUNTY ADMINISTRATOR

Dept. of Solid Waste
(813) 272-6674

4/26 Bill T. for permit File

April 25, 1984

Clair Fancy
Bureau of Air Quality Monitoring
2600 Blair Stone Road
Tallahassee, Florida 32301

Dear Ms. Fancy:

Hillsborough County announces that it is soliciting proposals from qualified contractors for the design, construction, start-up, acceptance testing, operation, and long-term management of a 1,200 ton per day mass-burn, Solid Waste Energy Recovery Facility. Attached is a copy of a news release for your information.

If you have any questions or require additional information regarding our project, please feel free to contact me at (813) 272-6674.

Sincerely,

Marc J. Rogoff

Marc J. Rogoff, Ph.D
Resource Recovery Program
Coordinator

MJR/pd
Attachments

DER
APR 27 1984
BAQM

COUNTY OF HILLSBOROUGH
P.O. BOX 1110 TAMPA, FLORIDA 33601

NORMAN W. HICKEY, COUNTY ADMINISTRATOR

* * * * * **NEWS RELEASE** * * * * *

April 25, 1984

FOR MORE INFORMATION CONTACT:

Dr. Marc J. Rogoff
Resource Recovery Program Coordinator
(813) 272-6674

The Board of County Commissioners of Hillsborough County, Florida, is seeking proposals for the design, construction, start-up, acceptance testing, operation and long-term management of a mass-burn, solid waste energy recovery facility.

Hillsborough County will retain ownership of this facility with the selected contractor operating it under a full-service, 20 year contract to the County. This 1,200 ton per day mass-burn, resource recovery facility will dispose of all processible municipal solid waste from the County's unincorporated areas.

The Board of County Commissioners has endorsed resource recovery as the long-term solution to Hillsborough County's solid waste disposal problems. After evaluating several technologies, the County found that the proposed resource recovery facility incorporating a mass-burn technology operated under contract by a full-service vendor can best fit its needs. This plant will employ a system called mass-burning, by which solid waste is combusted with virtually no pre-processing and regulated very precisely to control air pollution. The plant will meet all state and federal environmental standards. Electricity generated will be sold to the Tampa Electric Company.

The Board of County Commissioners has designated a 50-acre site north of State Road 60 and west of Faulkenburg Road for Hillsborough's mass-burn facility. The site is near the center of waste collection for the County, thereby minimizing transportation costs. Ash residue will be disposed of at the County's new Southwest landfill, now under construction.

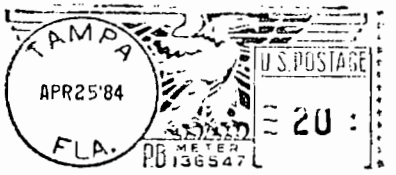
(813) 272-6674

MARC J. ROGOFF
RESOURCE RECOVERY PROGRAM ADMINISTRATOR
DEPARTMENT OF SOLID WASTE

DIVISION OF
PUBLIC WORKS AND SAFETY
HILLSBOROUGH COUNTY

POST OFFICE BOX 1110
TAMPA, FLORIDA 33601

HILLSBOROUGH COUNTY
DEPARTMENT OF SOLID WASTE
P.O. BOX 1110
TAMPA, FLORIDA 33601



Clair Fancy
Department of Environmental Regulatior
Bureau of Air Quality Monitoring
2600 Blair Stone Road
Tallahassee, Florida 32301

destroy any odors in the combustion chamber. This enclosed plant design will also keep noise below specified industrial levels.

WILL RESOURCE RECOVERY AFFECT THE WAY REFUSE IS COLLECTED?

Most of us only think about our garbage when we put it out by the curb for collection. We rely on Hillsborough County to face the far greater problem: How to dispose of it economically and in an environmentally sound manner. When Hillsborough County constructs the resource recovery facility, there will be a major change in the way it disposes of its waste. But there won't be much change in what we as citizens have to do. No special receptacles will be needed. The garbage will be collected and carried in covered trucks, as it currently is. Litter will not be a problem at the plant site since all activities connected with the process will take place inside the building.

WILL LANDFILLING STILL BE NECESSARY AFTER THE PLANT IS IN OPERATION?

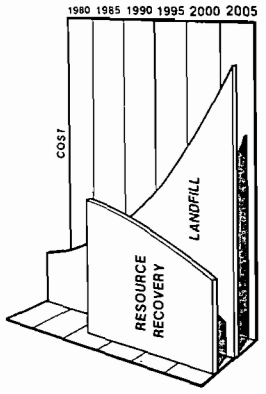
Every resource recovery system needs a backup landfill to dispose of material left after processing and for any unprocessable debris. However, only about 15 percent or less of the original tonnage supplied to the facility will be sent to the new Southeast County landfill for final disposal. The combustion process in the resource recovery plant will leave an inert ash that will be much easier to dispose of in a landfill. With resource recovery, the County can greatly extend the life of its Southeast County landfill well past the end of this century.

HOW WILL THE FACILITY BE FINANCED AND PAID FOR?

To pay for the facility, construction revenue bonds (bonds whose repayment is entirely from the revenues generated by the facility) will be issued. The money earned from the sale of electricity to a local electric utility; payments for materials recovered from the refuse; and user charges for every load of garbage brought to the plant, will repay the cost of funds used for financing its construction. At the time of construction, the cost for this bond issue is expected to total between $150 and $200 million. Included in the cost are transfer stations, access roads, weighing facilities, and landfill improvements. Lead underwriters for the bond issue are: William R. Hough and Company; Kidder Peabody and Company; Bache Halsey Stuart Shields, Inc.; Merrill Lynch White Weld; and E.F. Hutton and Company. Bond counsel for the County project is Bryant, Miller and Olive; its financial advisor is Jerry Williams, Inc.

WILL RESOURCE RECOVERY BE MORE EXPENSIVE THAN THE CURRENT SYSTEM?

Initially, the cost to dispose of solid waste in the energy recovery facility will be higher than the cost of landfill disposal. However, this situation will change as the cost of landfilling increases over time, due to higher operating costs and more stringent environmental regulations. Revenues from the sale of electricity will increase as the price paid for the electricity rises, eventually bringing the cost of energy recovery below the cost of landfilling. The increased income from energy generated by the plant will result in net savings over time for the County and its residents.



For more information about Hillsborough County's Resource Recovery Program, write or call the Department of Solid Waste, P.O. Box 1110, Tampa, Florida 33601, Telephone (813)272-6677.

This brochure is printed on recycled paper.

6/83

Hillsborough County's Solid Waste Problem

Hillsborough County's residents currently generate almost 600,000 tons of garbage and refuse annually. Every day, each person throws away over four pounds of refuse, an average family a little over two tons per year — roughly enough to cover the football field at Tampa Stadium with a daily two-foot deep layer of garbage and refuse, over 700 feet high by year's end. How to dispose of the cans, cereal boxes, newspapers, tires, bottles, and other castoffs of our rapidly growing county has become a problem of critical proportions.

Hillsborough County and its three incorporated cities of Tampa, Plant City and Temple Terrace presently dispose of their municipal solid waste at the Hillsborough Heights Sanitary Landfill. Approximately 2,000 tons of refuse (energy equivalent to 2,000 barrels of oil) are disposed of at this landfill daily, with the unincorporated areas contributing about half the total. In previous years, other city and county landfills were used, but are now closed. We have progressed in Hillsborough County from open dumps to the present modern method of sanitary landfilling.

However, due to strict federal and state laws governing landfill operations, areas which are environmentally and economically suitable for landfills in our rapidly urbanizing county are quickly diminishing. Hillsborough County can no longer rely on conventional landfilling as its only method of solid waste disposal and is, therefore, developing an alternative primary disposal method — a modern resource recovery system.

The City of Tampa has contracted for the design, construction and operation of a resource recovery facility at the site of the non-operative Tampa incinerator at McKay Bay. This facility will be designed to burn only 1,000 tons per day of municipal solid waste generated primarily within the incorporated boundaries of Tampa. Hillsborough County is, therefore, pursuing the implementation of its own resource recovery facility to service the solid waste needs of its growing unincorporated areas.

The County's decision to build a resource recovery facility comes after several years of investigation by the Board of County Commissioners into alternative methods of resolving the growing solid waste problem in Hillsborough County. These methods included shredding refuse for landfilling, composting, and energy recovery. By using the energy obtainable from solid waste to generate electricity, resource recovery makes the most sense economically and environmentally, and provides a long-range solution to Hillsborough County's refuse disposal problem. Resource recovery plants, such as that planned for Hillsborough County, have been operating in Europe for the past 30 years, and more than 250 such plants are in operation worldwide. More and more communities in the United States are building similar resource recovery facilities; the technology is tested and proven.

. . . Some often-asked questions about resource recovery are:

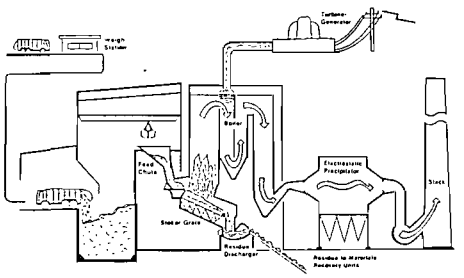
WHAT KIND OF DISPOSAL SYSTEM IS IT?

In general, resource recovery is defined as the process of obtaining energy and useful materials from municipal refuse. Energy can be extracted by burning the refuse and recovering the heat energy either in the form of steam or electricity. Materials also may be recovered, including ferrous and nonferrous metals, glass, and paper, among others.

After evaluating several resource recovery technologies, the County selected one that is technically proven, environmentally sound, and economically feasible. Called "mass burning", this system uses heat from burning unprocessed refuse to produce steam in a specially designed boiler. The steam is used to drive an electrical generator. Electricity generated in Hillsborough's plant will be enough to provide the needs of more than 10,000 homes.

As shown in the diagram below, refuse collection trucks and transfer trailers place their loads into a large receiving pit inside the plant. An overhead crane picks up this waste and drops it into a chute that feeds a furnace, where it is burned. Ashes and materials that won't burn fall off the end of the grate into a water tank. Metals and other materials may be recovered from the ash residue and sold as scrap.

Schematic of Resource Recovery Facility



WHAT ABOUT THE PLANT?

Hillsborough County's plant will be sized to take all the burnable garbage generated in the rapidly growing unincorporated areas of the County for the foreseeable future. A single contractor will be chosen by the County to plan and construct the facility.

WHERE WILL THE PLANT BE LOCATED?

The Board of County Commissioners has designated a 50-acre site north of State Road 60 and west of Faulkenburg Road for Hillsborough's mass burn facility. A site selection study prepared by the County's engineering consultant, Camp, Dresser and McKee, Inc., recommended this location west of I-75 between Brandon and Tampa. The site is near the center of waste collection for the County, so transportation times (due to the proximity to I-75, I-4 and the Crosstown Expressway) and overall costs can be minimized for the County's ratepayers. Additionally, the area adjoining the site is zoned for light and heavy industry with a growing number of commercial interests nearby. Someday, there is the possibility that steam generated by the plant's combustion process could be used as an energy source by one or more of these nearby businesses or by new business attracted by the availability of this energy.

WILL THE FACILITY HAVE ANY EFFECT ON THE ENVIRONMENT?

We are all concerned about protection of our Florida environment. These concerns will be especially taken into account in planning the resource recovery facility. Since Hillsborough County has been designated by the United States Environmental Protection Agency and Florida Department of Environmental Regulation as a "non-attainment" area for suspended dusts and ozone, the resource recovery facility, like that of any industrial development in the County, will require the lowest achievable emission air pollution control equipment. Computer modelling and on-site investigations of resource recovery plants now operating have found that emissions from the County facility will be well within federal, state, and county air standards.

Odors will not be a nuisance since the refuse storage pits will be completely enclosed. Air will be continuously drawn down from outside the plant to provide oxygen for combustion. This type of air intake will produce a constant negative air pressure within the plant so that any potential odors will not escape. Temperatures maintained in excess of 1,400 degrees F. will

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

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To: _____	Loctn.: _____	
From: _____	Date: _____	
Reply Optional [ ]	Reply Required [ ]	Info. Only [ ]
Date Due: _____	Date Due: _____	

TO: Hamilton S. Oven

THRU: Clair Fancy CTF

FROM: Bob King BK

DATE: September 15, 1983

SUBJ: Hillsborough County Resource Recovery Project - Plan of Study

Please note that the information and data listed in Section 3.7 Air Emissions on the subject Plan of Study are insufficient. The required information and data such as a full description of types and sources of air emissions, the methods for compliance with applicable regulations and the methods of discharge, and a completed form entitled Best Available Control Technology Data are not included. The applicant indicates in the Plan of Study that he will give the information and data later.

BK/ks

State of Florida
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Date Due: _____	Date Due: _____	

TO: Hamilton S. Oven

THRU: Clair Fancy

FROM: Tom Rogers

DATE: September 15, 1983

SUBJ: Pinellas County Resource Recovery Project PA 83-18; Completeness and Sufficiency Review

Please have the consultant for this project provide me a list of the sources used in the modeling. These sources should be identified by name and include the following information for each emission point: (1) emission rate for each applicable pollutant; (2) UTM coordinate; (3) stack parameters; and (4) indication of whether the emission point consumes PSD increment.

TR/ks

9/6 Larry, Bill
~~Tom~~ TR

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

thru me

For Routing To District Offices
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To: _____ Loctn.: _____
From: _____ Date: _____

Reply Optional [ ] Reply Required [ ] Info. Only [ ]
Date Due: _____ Date Due: _____

DER
AUG 30 1983
BAQM

TO: Power Plant Siting Review Committee

FROM: Hamilton S. Oven HSO

DATE: August 30, 1983

SUBJECT: Hillsborough County Resource Recovery Project - Plan of Study

Please review and comment on the adequacy of the attached Plan of Study for Hillsborough County's proposed power plant siting application. Please give me your comments by September 15, 1987.

cc: Frank Andrews
Clair Fancy
Bob McVety
Rodney De Han
Larry Olsen
Dennis Wile
Don Schiesswhol
Bill Brett
Bill Hennessey

HILLSBOROUGH COUNTY SOLID WASTE ENERGY RECOVERY PROGRAM

PLAN OF STUDY FOR COMPLETION OF THE APPLICATION FOR CERTIFICATION OF PROPOSED ELECTRICAL POWER GENERATING PLANT SITE

AUGUST 1983

Prepared for the

Florida Department of Environmental Regulation,
Other Official Parties Under the Florida
Electrical Power Plant Siting Act, and
Concerned Agencies

by

Hillsborough County
Board of County Commissioners
Division of Public Works
Department of Solid Waste

HILLSBOROUGH COUNTY SOLID WASTE ENERGY RECOVERY PROGRAM

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TO PLAN OF STUDY

PLAN OF STUDY

Purpose

The purpose of this plan of study is to provide the Florida Department of Environmental Regulation (DER), Florida Public Service Commission (PSC), Department of Community Affairs (DCA), Southwest Florida Water Management District and any other state or local concerned agency, with Hillsborough County's intended level of detail for completing DER Form 17-1.122(72), Application for Certification of Proposed Electrical Power Generating Plant Site. The County does not intend to seek a binding written agreement with the concerned agencies. However, this plan of study is offered in good faith that DER and any other concerned agency will comment on and seek agreement with the proposed data sources, procedures and level of effort.

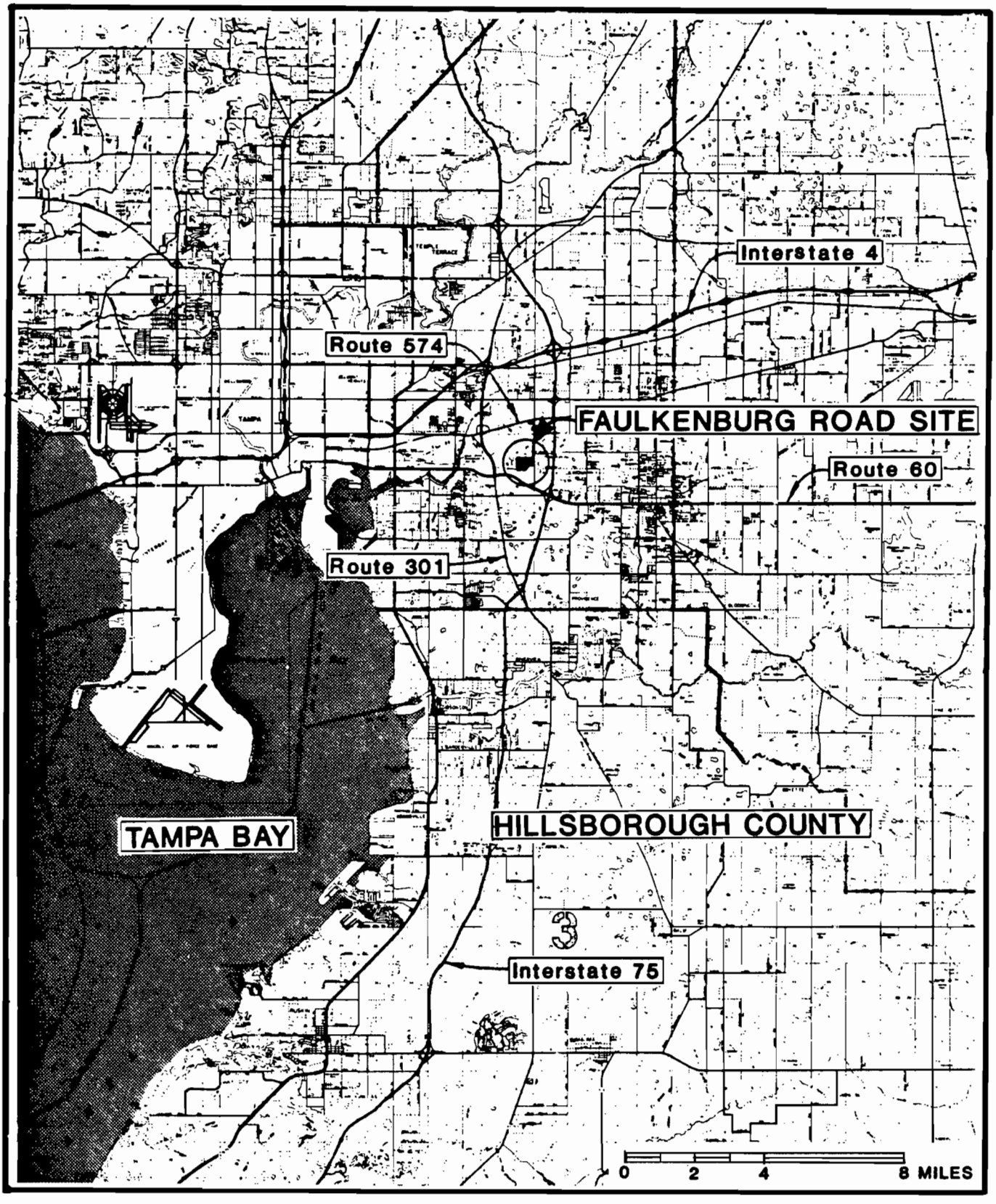
Background

The proposed 50.4 acre resource recovery facility site is located in Township 29S, Range 20E, approximately 1.7 miles east of the Tampa, Florida municipal limits. Figure 1, General Site Location Map, shows the location of the site in Hillsborough County. As shown on Figure 2, Site Characteristics, the site has a 225 foot frontage on Faulkenburg Road about 4,200 feet north of State Road 60. The site is currently undeveloped. Abutting the site to the west is an existing Tampa Electric Company (TECO) transmission line within a 200 foot TECO easement. The transmission line directly associated with the energy recovery facility will use this easement.

The County is in the process of amending the Hillsborough County Horizon 2000 Land Use Plan Map to change the site designation from Light Industrial to Major Public/Semi-Public. On June 27, 1983, the Hillsborough County City-County Planning Commission unanimously adopted the resolution for the plan amendment. Concurrently, an application for rezoning the site from Restricted Industry (M-1A) to Community Unit (C-U) is being reviewed by the Hillsborough County Office of Development Coordination. The Board of County Commissioners is scheduled to act on the land use amendment and rezoning on October 6, 1983.

On July 11, 1983, Hillsborough County notified the Florida Department of Environmental Regulation of their intent to seek certification which will authorize construction and operation of an energy recovery facility. The energy recovery facility is anticipated to have a nameplate generating capacity of approximately 29 megawatts, using 1,200 tons per day of solid waste as fuel. However, certification for an ultimate site capacity of about 39 megawatts, capable of processing 1,600 tons of solid waste per day, will be sought in anticipation of future solid waste disposal requirements. It is expected at this time that the application will be filed in November 1983. No state environmental licenses are currently held for preapplication work at the site.

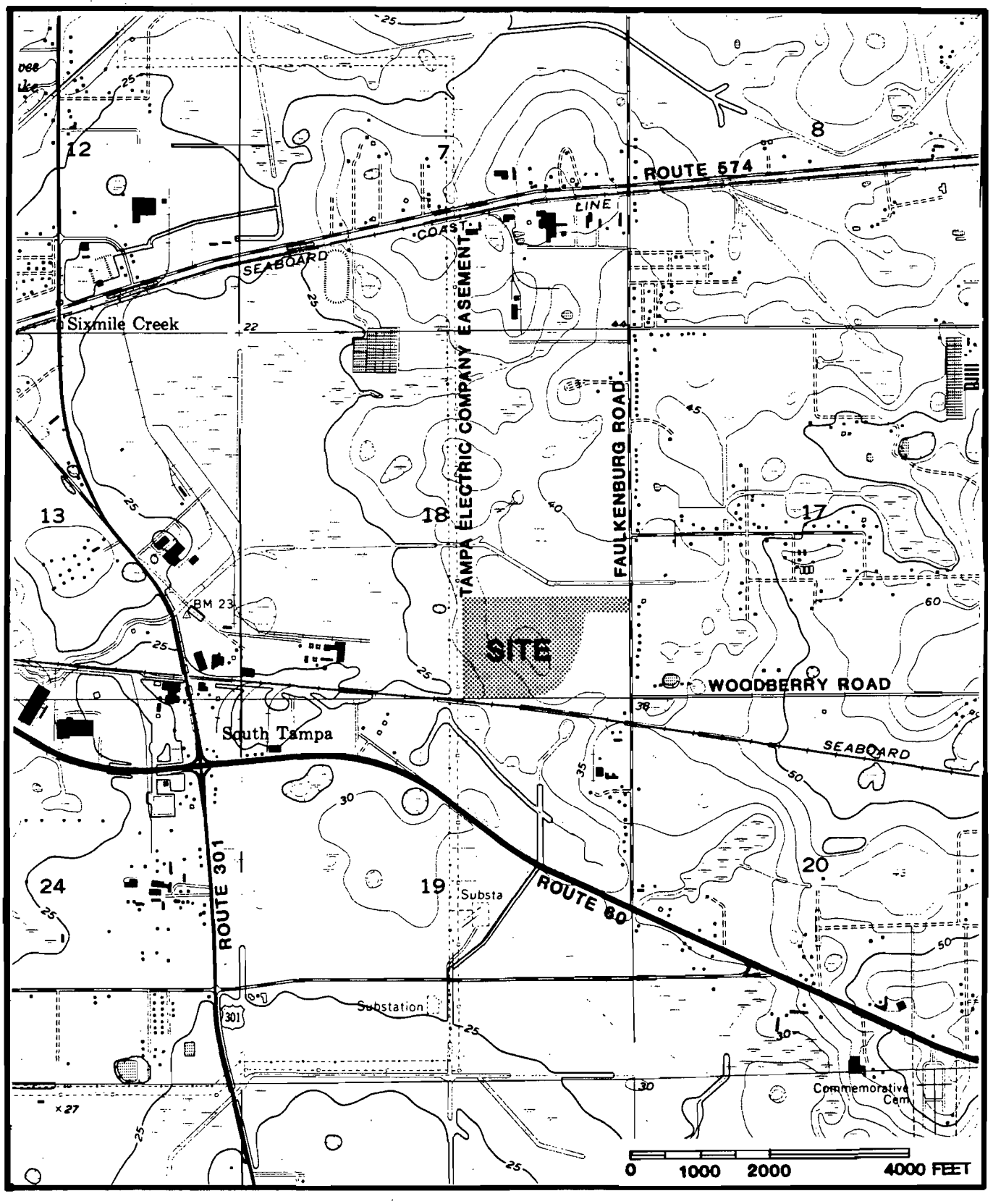
The sole purpose of the proposed facility is to dispose of solid waste and recover energy and possibly materials. This proposed facility will afford



Hillsborough County Resource Recovery Facility

Hillsborough County Division of Public Works
Department of Solid Waste

FIGURE 1
GENERAL SITE LOCATION MAP



Hillsborough County Resource Recovery Facility

Hillsborough County Division of Public Works

Department of Solid Waste

FIGURE 2
SITE CHARACTERISTICS

Hillsborough County a method of solid waste disposal which will substitute for the present landfilling operations.

The Northwest Brandon Subregional Wastewater Treatment Plant will be co-located on the site. The energy recovery facility will utilize treated wastewater effluent for cooling water and boiler feed water. Cooling tower blowdown and boiler blowdown not used to quench the combustion residue, along with sanitary waste from the energy recovery facility, will go to the same wastewater treatment plant.

Approach

Hillsborough County shall complete the application for site certification using the format of the application in DER Form 17-1.122(72) dated January 10, 1979. Forty-five (45) copies of the certification application shall be submitted by the County to the Department of Environmental Regulation. An application fee of $25,000 shall accompany the application ($2,500 of which was submitted as a Notice of Intent Fee) and shall be used, disbursed and refunded in accordance with DER regulations Chapter 17-17.051. The following sections present the County's Plan of Study for completing the application for site certification. Where appropriate, the material presented in DER Form 17-1.122(12) is incorporated by reference. A copy of the form is included in this plan of study in Appendix A.

PREPARATION OF THE APPLICATION FORM

The County intends to abide by all conditions discussed under this heading in the application. However, as mentioned previously, a binding written agreement is not being sought.

On July 12, 1983, the County and their Engineering Consultant, Camp Dresser & McKee Inc., met with representatives of the Department of Environmental Regulation, Public Service Commission, and the Florida Game and Fresh Water Fish Commission. The purpose of the meeting was to determine the scope, quantity and level of information to be included in the application. The issues and concerns raised at the meeting are reflected in this Plan of Study.

In anticipation of future solid waste disposal requirements, Hillsborough County is seeking certification for an ultimate site capacity of about 39 megawatts with the facility capable of processing approximately 1,600 tons per day of municipal solid waste. The initial energy recovery facility to be constructed and operated is anticipated to have a nameplate generating capacity of approximately 29 megawatts using 1,200 tons per day of solid waste. The facility description, air quality modeling, and analysis of construction and operation impacts however, will be based on the 39 megawatt, 1,600 tpd facility. It is the County's understanding that once the site is certified for a 39 megawatt facility and a 29 megawatt facility is under operation, a supplemental application for the additional 10 megawatts will be required when and if the County decides to increase the size of the energy recovery facility from 1,200 tpd to 1,600 tpd (29 megawatts to 39 megawatts, respectively).

DEPARTMENT ACTION ON SUBMITTED APPLICATIONS

The County concurs in full with this section.

PERTINENT APPLICANT INFORMATION

The Pertinent Applicant Information Form has been slightly modified, completed and submitted herein as Appendix B. This form will accompany the completed application for certification.

CHAPTER 1

PURPOSE OF THE PROPOSED FACILITY AND ASSOCIATED TRANSMISSION

1.1 System Demand and Reliability

In that the proposed electrical power generating plant is a resource recovery facility, the following will be submitted in lieu of this section:

a. Purpose of the proposed facility
b. Petition from Hillsborough County to PSC for determination of need
c. PSC response to the petition

1.2 Other Objectives

This section will be included emphasizing that the sole purpose of the facility is to dispose of solid waste and recover energy.

1.3 Consequences of Delay

This section will be included. However, rather than discussing the consequential effect on power supply, the consequences of delay in terms of solid waste disposal and project implementation will be discussed.

CHAPTER 2

THE SITE

2.1 Site Location and Layout

2.1.1 Maps

No changes to the requirements of the application. U.S. Geological Survey Quadrangle Maps and County real property assessment maps will be used.

2.1.2 Site Modifications

No changes to the requirements of the application. This will be completed by using a layout plan of the facility on the site.

2.1.3 Existing and Proposed Uses

No changes in the requirements of the application. A county-owned wastewater treatment plant will be co-located on the site.

2.2 Regional Demography, Land and Water Use

No changes to the requirements of the application.

2.2.1 Demography

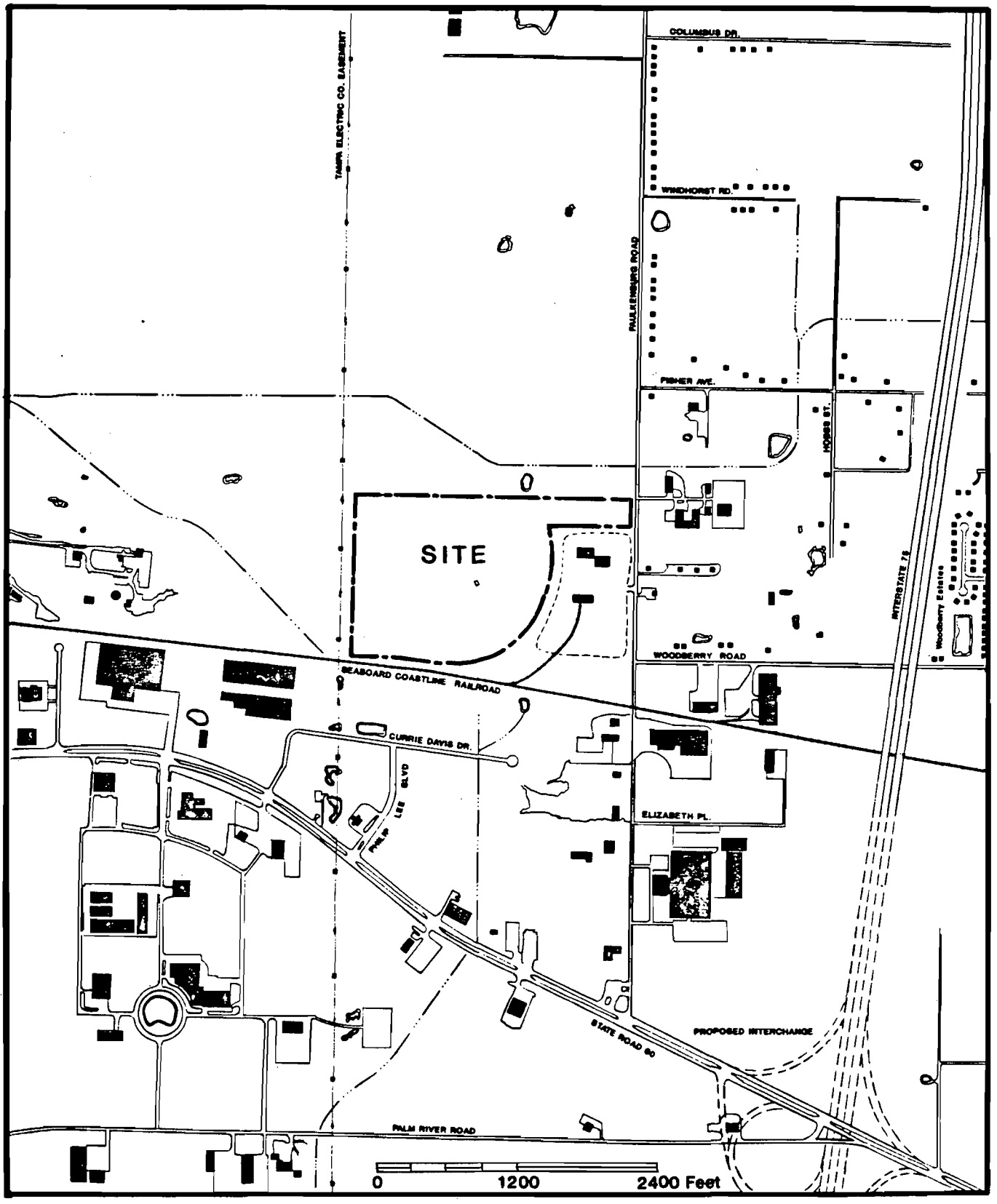
Existing populations of the towns and cities will be indicated on the map provided under 2.2 or separate tabulation utilizing the most recent governmental data available. Populations for the unincorporated areas within the 5 miles radius will be presented by census tract.

2.2.2 Land Use

A general discussion of existing and projected land uses will be described for the 5-mile radius area. Recent trends will also be noted. Land use and zoning will be shown for the site and area around the site within the areal limits shown in Figure 3. Land use and zoning will not be shown for the proposed transmission line corridor (the existing TECO right-of-way) except for that which appears on Figure 3. It will be noted that no changes to land use plans or zoning will be necessary to allow the construction of the transmission of the facilities. Changes already made to the zoning and land use plan maps will be indicated.

2.2.3 Water Use

The sources and amounts of major water uses for community water supplies, private use and agricultural irrigation near the site will be discussed. An inventory of permitted wells as reported by the Southwest Florida Water Management District will be presented. In that the energy recovery facility will use small amounts of potable water from the existing force



Hillsborough County Resource Recovery Facility

Hillsborough County Division of Public Works

Department of Solid Waste

FIGURE 3

PRIMARY STUDY AREA FOR LOCALIZED IMPACTS

main in Faulkenburg Road for only sanitary purposes (the boiler feed water makeup and cooling water will be supplied by the wastewater treatment plant), potable water use is not considered a major issue of concern for this particular facility.

2.3 Regional historic, scenic, cultural and natural landmarks

2.3.1 Sensitive Areas

No changes to the requirements of the application are being considered.

2.3.2 Archeological sites

No changes to the requirements of the application are being considered.

2.3.3 Associated facilities

This section will be indicated as not applicable. For the purposes of the application there are no associated facilities to the energy recovery facility.

2.4 Geology

A description of the major geological aspects of the site will be provided. The proper level of detail will be provided to assess potential sinkhole development, the requirement for pilings, effectiveness of stormwater retention basins, and the procedures for dewatering if necessary for the refuse bunker construction. The general characteristics of the site in terms of topography, stratigraphy, soils and rock types will be discussed. On site soil borings and information from the U.S. Geological Survey will be the major sources of data for this section.

2.5 Hydrology

The data collection and analysis procedures noted below will be coordinated with the Southwest Florida Water Management District.

2.5.1 Affected waters

This section will contain information essential for determining the effect on groundwater and surface water during construction of the proposed facility (specifically, any dewatering operations associated with excavation for the refuse storage bunker). Plant effluent will be discharged to the wastewater treatment plant and stormwater runoff will be retained onsite. It will be stated that there are no impacts to surface water bodies or groundwater during the operation of the facility.

2.5.2 Water withdrawls

This section will specifically address any proposed dewatering operations during construction. There will be no ground or surface water withdrawls during operation of the facility. It will be noted that there will be no new wells required for the operation of the facility.

2.5.3 Affected tributaries

Stormwater runoff will be retained on-site, therefore, no tributaries adjacent to the site are expected to be affected. However, the patterns and gradients of drainage in the area will be described based on a topographic survey of the site and U.S. Geological Survey Quadrangle Maps. Based on the present design and plan of construction and operation there should be no discharge to surface water bodies. If it is found after additional analysis that any construction dewatering activities may necessitate a surface water discharge, groundwater characteristics and characteristics of affected nearby tributaries will be discussed. Maxima, averages, and minima of flow rate, velocity, levels, chemical characteristics, and mixing characteristics will be presented.

2.5.4 Surface Water

Surface water bodies will not be impacted by the proposed facility. This section will be indicated as not applicable. Reference will be made to section 2.5.3 for characteristics of the affected nearby tributaries, if any.

2.5.5 Natural variation of surface waters

This section will be indicated as not applicable. Section 2.5.3 will be referenced for information pertaining to seasonal and other water level fluctuations for affected tributaries, if any.

2.5.6 Groundwater

No changes to the requirements of the application are being considered.

2.6 Meteorology

A description of the local climatology/meteorology will be presented to characterize the project area. Data recorded at the Tampa National Weather Service (NWS) station will be used to describe local climatology along with any other pertinent nearby monitoring data that may be available.

Diurnal and monthly averages and extremes of temperature and relative humidity along with monthly averages and extremes of precipitation will be included. Frequency of occurrence of precipitation, fog, thunderstorms and atypical weather phenomena necessary to describe the site area will be discussed. Data on wind characteristics representing the site area will also be presented.

In order to predict air quality impacts from the proposed system, meteorological data (both surface and upper air) recorded at the Tampa International Airport from the 5-year period of 1970-1974 will be used. A tabular summary of the joint-frequency distribution will be presented and a map indicating prevailing wind patterns and wind roses will be included.

2.7 Ecology

2.7.1 Important species

The U.S. Fish and Wildlife Service, the Florida Department of Natural Resources, and the Florida Game and Fresh Water Fish Commission will be contacted to determine which species in the vicinity of the site are considered "important" as defined in this section of the application. If "important" species are believed to be onsite or in the adjacent tributary, the requirements of section 2.7.1 of the application for discussing species-environmental relationships will be included. If no important species are found onsite or in the adjacent tributary, these conclusions will be documented and the requirements of 2.7.1 will be considered not applicable.

2.7.2 Abundance of organisms

a. Aquatic organisms within the adjacent tributary will be documented if any dewatering scheme requires discharging groundwater to the offsite tributary. The method by which this information is gathered will, where applicable, be according to U.S. EPA's manual entitled "Biological Field and Laboratory Methods for Measuring the Quality of Surface Waters and Effluents" or other techniques acceptable to the DER. A general description of onsite terrestrial flora and fauna will also be included. A map that shows the distribution of the principal plants onsite will be provided.

b. The discussion of species-environmental relationships will include descriptions of area usage (e.g. habitat, breeding, etc.). Descriptions of the regional biota will be included as required to predict or evaluate the impact of the facility on the regional biota.

2.7.3 Pre-existing stresses

No changes to the requirements of the application are being considered.

2.8 Ambient Air

2.8.1 Baseline data for PSD review

Ambient air quality data recorded at existing monitoring locations as presented in the annual Environmental Quality reports of the Hillsborough County Environmental Protection Commission will be used to define the baseline of all monitored pollutants concentrations. The most recent year of data considered to be representative of the site and impacted area that meets data sufficency requirements will be used. EPA ambient monitoring guidelines will be used to determine acceptable monitoring methodologies. Additional information on baseline monitoring requirments is described in Section 6.2.6.

2.8.2 Source of data

A full description of the monitoring program will be supplied. It will identify monitoring locations, parameters monitored, instrumentation used, frequency and duration of observations and quality assurance methods employed.

2.9 Other environmental features

No changes to the requirements of the application are being considered.

CHAPTER 3

THE PLANT

The resource recovery facility and directly associated transmission lines will be described in this chapter. The best estimate of character and magnitude of facility discharges and emissions along with a description of facility systems will be provided in as much detail as possible.

Since this project is not a utility sponsored program there is no need to provide an update of any Ten-year Site Plan.

3.1 External Appearance

No changes to the requirements of the application are being considered.

3.2 Fuel

The resource recovery facility will utilize municipal solid waste (MSW) as its fuel. The quality and quantity features of the MSW will be described along with the materials handling features of the facility with regard to MSW delivery, storage and processing prior to combustion.

3.3 Plant Water Use

A quantitative water-use diagram for normal and peak load operating conditions will be presented for the heat dissipation system, sanitary system, chemical waste system and process water system. Effluent from the wastewater treatment plant to be located adjacent to the facility will be the source of water for the heat dissipation system and internal process requirements. Potable water for routine sanitary requirements will be provided by the public supply system.

The quality of the water from the WWTP will be described.

Total consumptive use of water by the facility will be presented in terms of a comparison to preconstruction use. Since most of the water demand of the facility will be satisfied with WWTP effluent, this discussion will focus on the limited potable demand of the facility.

3.4 Heat Dissipation System

3.4.1 Intake and Outfall

The pipeline from the WWTP will be described along with any holding facilities designed to balance required flows. No outfall is associated with this proposed facility.

3.4.2 Source of Cooling Water

The expected characteristics of the effluent from the WWTP will be described.

3.4.3 System Design

The following features of the proposed heat dissipation system will be described.

- quantity of heat dissipated
- consumptive water use and characteristics
- design size and location of cooling system
- blowdown volume and physical characteristics
- temperature changes across condenser
- rate of evaporation of water from tower

Since the proposed facility will use wastewater treatment plant effluent, the minimum water quality characteristics will be discussed in terms relative to this concept. There will be no need for a discussion of using water of a lower quality.

3.4.4 Dilution System

This section will be indicated as not applicable.

3.4.5 Blowdown and Trash Removal

The procedures for handling and disposing of blowdown will be described. There is no need to describe disposal of trash from intake structures (no intake structures are included in design).

3.4.6 Injection Wells

This section will be indicated as not applicable.

3.5 Chemical and Biocide Waste

No changes to the requirements of the application are being considered.

3.6 Sanitary and other wastes systems.

3.6.1 Volumes and Quality

No changes to the requirements of the application are being considered.

3.6.2 Treatment and Disposal

No changes to the requirements of the application are being considered.

3.6.3 Solid Wastes

No changes to the requirements of the application are being considered. Ash from the resource recovery facility will be transported to an existing, permitted landfill.

3.7 Air Emissions

A description of emission sources characterizing the facility will be given. A compilation of representative emission factors for pertinent pollutants expected to be emitted from the proposed resource recovery facility (see Table 1) will be supplied based on:

- Federal, state and local emission limitations to determine maximum allowable emission rates including FAC 17-2, NSPS (40 CFR 60), NESHAPS (40 CFR 61);
- Review of recent applicable Best Available Control Technology (BACT) and Lowest Achievable Emission Rate (LAER) determinations;
- A BACT analysis (where required by FAC 17-2);
- A LAER evaluation of emitted nonattainment pollutants (in accordance with FAC 17-2);
- Emission factors suggested by the DER, as well as those contained in the EPA document entitled "Compilation of Air Pollution Emissions Factors" (AP-42).
- Current available literature on emissions from comparable sources;
- Previous experience with similar facilities;
- Previous emission factors developed and accepted by regulatory agencies for similar facilities.

Pollutant emissions will be quantified both during the use and in the absence of control devices (control equipment failure).

The form entitled Best Available Control Technology data included in the Application for Certification of Proposed Electrical Power Generating Plant Site (DER FORM 17-1.22(72)) dated 1/10/79 will also be completed.

3.8 Directly associated transmission lines

Overhead lines will run from the electric switchyard on the site to the abutting TECO easement. It is not certain at this time whether lines will use existing towers or require new structures within the easement. In any event, the transmission system will be within an existing, maintained TECO easement. The transmission lines will run to an existing substation about one mile from the site. The impacts of the directly associated transmission line are not anticipated to be a major issue.

3.8.1 Route and Size

The existing TECO easement and substation will be shown on an aerial photograph and U.S.G.S. Quadrangle Map. The length, width and general maintenance condition will be specified.

TABLE 1

Data on the following pollutants will be reviewed and emission rates quantified where possible.

PSD and Criteria Pollutants	Non PSD Pollutants
Total Suspended Particulates	Hydrochloric Acid
Sulfur Dioxide	
Nitrogen Dioxide	
Carbon Monoxide	
Volatile Organic Compounds	
Lead	
Asbestos	
Beryllium	
Mercury	
Vinyl Chloride	
Flourides	
Sulfuric Acid Mist	
Total Reduced Sulfur	
Reduced Sulfur	
Hydrogen Sulfide	

3.8.2 Land Use Impacts

No changes to the requirements of the application are being considered.

3.8.3 Beneficial Uses

No changes to the requirements of the application are being considered.

3.8.4 Visibility

No changes to the requirements of the application are being considered.

3.8.5 Associated Transmission Structures

Since the transmission lines from the energy recovery facility will go to an existing substation, this section will be indicated as not applicable.

3.9 Associated Facilities

There are no associated facilities. This section, including sections 3.9.1, 3.9.2 and 3.9.3, will be indicated as not applicable, for the purposes of this application.

3.10 On-Site drainage system

No changes to the requirements of the application are being considered for this section.

3.11 Design Alternatives

Various design alternatives will be discussed in this section. Previous studies that led to the proposed facility will be referenced. However, alternative sites will be discussed in Chapter 8. Some alternatives that will be mentioned include:

a. Solid waste disposal alternatives
b. Size and redundancy
c. BACT analysis
d. Co-disposal
e. Water sources
f. Stack height

The stack height analysis is being conducted in conjunction with the air quality analysis. The construction of a stack to service the proposed facility must be based on a design that will ensure the effective dilution of combustion exhaust gases prior to intersecting the surface or sensitive areas while considering cost and visual impacts. Several aspects of plant operations and receptor locations must be included in the analysis of an acceptable stack height. Once an acceptable design is determined, the DER and the Hillsborough County Enviromental Protection Commission (EPC) will review the proposed design stack height and make recommendations on

acceptability. It is because of this acceptability review that the following general approach to designing an acceptable stack height will be followed:

Task 1: An analysis will be prepared of the proposed facility that includes:

- o A complete description of source emission characteristics for a range of plant operating conditions, waste characteristics, and building configuration.
- o Source emission characteristics; including the range of pollutant emission rates for various plant load conditions, exit volumes, exit velocities, exit temperatures and exit flue diameters.
- o Preparation of a series of dispersion calculations that include the effects of structures, local dispersion climatology and standard diffusion analysis for determining ground-level impacts.

Task 2: Perform the stack height design analysis presented below as determined in discussions with regulatory agencies.

Task 3: Select and evaluate an acceptable stack height based upon the results of the design analysis.

Task 4: Submit stack height analysis for review by regulatory agencies prior to including the analysis within the application for certification. It may be necessary to modify the initial work plan. No accounting of such modifications is made in this plan of study.

It is anticipated that this proposed analysis will define the height of the stack and appropriate diameters and exit velocity conditions for each flue servicing a combustion unit. The approach to determining the stack height will include an analysis of the wake effects of proposed on-site structures. These effects will be evaluated based on work by Hosker (1978) and others who have prepared methodologies for defining the wake cavity boundary and the effects of turbulence, speed reductions and transport mechanisms within the cavity.

Initially the stack height will be set so that it is outside of the immediate wake effects of on-site structures. Modeling as described in Section 5.5 of this Plan of Study will be performed to define dispersion of the plume from the facility. This modeling will also provide concentration patterns of various air pollutants from comparison with standards and increments. Such comparisons may dictate that the initial stack height be modified to prevent excessive concentrations and will define the GEP stack height for the facility.

CHAPTER 4

ENVIRONMENTAL EFFECTS OF SITE PREPARATION, PLANT AND ASSOCIATED TRANSMISSION FACILITIES CONSTRUCTION

4.1 Site Preparation and Plant Construction

4.1.(a) Land use

Consideration will be given to land use impacts onsite and on affected properties during the construction period.

(b) Water use

No changes to the requirements of the application are being considered.

(c) Water Quality

No changes to the requirements of the application are being considered.

(d) Air Quality

This air quality analysis will predict the impact of emissions during construction. The following series of tasks will be performed:

- Projections of construction impacts will be made based on the mobile source emission rates from onsite and offsite vehicle exhausts as well as fugitive emissions from onsite construction equipment.
- Construction impacts will be added to background air quality and will be compared to state and federal ambient air quality standards to determine compatibility.
- Mitigation measures will be proposed and their effectiveness assessed if unacceptable impacts are predicted.

(e) Solid Waste Generation and Disposal

No changes to the requirements of the application are being considered.

(f) Ambient Noise Levels

Analytical techniques outlined within EPA's Technical Report "Direct Environmental Factors at Municipal Wastewater Treatment Works" (EPA-430/9-76-003) and similar documents prepared by HUD. EPA, and the Transportation Research Board will be used to analyze potential noise impacts from construction activities.

Ambient dBA levels will be measured utilizing hand held meters. Approximate average day time and night time ambient levels will be determined by averaging multiple short term measurements. This average ambient noise will serve as the basis for determining the potential significance of possible construction noise impacts.

4.1.1 Construction Areas

No changes to the requirements of the application are being considered.

4.1.2 Land impact

No changes to the requirements of the application are being considered.

4.1.3 Impact on human populations

This section will indicate the proximity of nearest human population and identify undesirable impacts on their environment arising from noise and from inconveniences due to the movement of men, material, and machines. Particular attention will be paid to construction - related transportation impacts.

4.1.4 Work Force

No changes to the requirements of the application are being considered.

4.1.5 Impact on landmarks and sensitive areas

No changes to the requirements of the application are being considered.

4.1.6 Mitigating measures

No changes to the requirements of the application are being considered.

4.1.7 Benefits from construction

No changes to the requirements of the application are being considered. Benefits to be described include the economic impacts and creation of jobs through construction of the facility.

4.1.8 Impact on water bodies and uses.

The impact of site preparation and construction activities on affected waters will be described. These activities will include site clearing and grading and any dewatering during construction of the refuse bunker. The effects of these activities on water quality, aesthetics, and fish and wildlife resources will be discussed.

4.2 Special features

No changes to the requirements of the application are being considered.

4.3 Construction of directly associated transmission facilities

In that the transmission lines will use an existing TECO easement, Sections 4.3.1, 4.3.2, 4.3.3, 4.3.4, 4.3.5, and 4.3.6, will be indicated as not applicable.

4.4 Resources committed

No changes to the requirements of the application are being considered

4.5 Construction of other associated facilities

For the purposes of the application, There are no associated facilities to this project, therefore, this section will be indicated as not applicable.

CHAPTER 5

ENVIRONMENTAL EFFECTS OF PLANT OPERATION

5.1 Effects of the operation of the heat dissipation system

5.1.1 Temperature effect on receiving body of water

This section will be indicated as not applicable.

5.1.2 Thermal Limits

This section will be indicated as not applicable.

5.1.3 Effects on aquatic life

This section will be indicated as not applicable.

5.1.4 Biological effects of modified circulation

This section will be indicated as not applicable.

5.1.5 Effects of offstream cooling.

This section will describe the expected effects of heat dissipating facilities, including cooling towers, on the local environment and on agricultural, housing, highway safety, airports, and similar installations with respect to meteorological phenomena, including fog and cooling tower blowdown and drift. If fog or other visible atmospheric emission is to occur the estimated hours per year, distances, and directions will be determined with emphasis upon effects associated with any decreased visibility, the distance or length of effect, and frequency of occurrence. This analysis will include potential effects upon roadways and other transportation references. The analysis will include measures to mitigate such identified transportation arteries. In addition, the possible synergistic effects that might result from mixing of fog or drift with other plant emissions in the atmosphere will be considered.

5.2 Effects of Chemical and Biocide discharges

5.2.1 Industrial wastewater discharges

The quality and quantity of the wastewater discharged from the resource recovery facility will be characterized and the need for any pretreatment prior to discharge to the sewer system will be assessed.

5.2.2 Leachate

This section will be indicated as not applicable.

5.2.3 Cooling Tower Blowdown

Any effects of cooling tower blowdown will be discussed under Section 5.2.1, as the cooling tower blowdown will be discharged along with other plant effluent to the sanitary sewer system.

5.3 Impacts on water supplies

It is not anticipated that surface or groundwater supplies or uses beyond the "Five Mile Radius Area" will be affected. Therefore Sections 5.3.1, 5.3.2, and 5.3.3 will be indicated as not applicable.

5.4 Sanitary and other waste discharges

No changes to the requirements of the application are being considered.

5.5 Air quality impacts

Air quality impacts resulting from operation of the proposed plant will be predicted. Incremental pollutant concentrations will be quantified based on diffusion modeling of those pollutants listed in Section 3.7. The air quality modeling approach to be used in the analysis will conform with FAC 17-2.260 approved by DER and specified in the Guideline on Air Quality Models (QAQPS 1.2-080 U.S. EPA, April 1978).

As noted in Section 3.11, stack height analysis will be conducted and used in the air quality impact analysis to identify an appropriate stack height that will optimize pollutant dispersion while considering cost and visual impacts. The height of the stack could be somewhere between 2.0 times the building height and GEP height. Consequently, both short-term and long-term time dependent facility impacts would be quantified using the CRSTER single source dispersion model with rural diffusion coefficients (as determined by methods developed by Auer, 1978). Incremental pollutant impacts predicted from the modeling analysis will be added to representative background levels to determine compliance with national and state ambient air quality standards. Non-criteria pollutants included in Table 1 of this Plan of Study will also be quantified and predicted. Incremental levels will be compared with acceptable public health levels.

If it is determined that the stack height would be below 2 times the building height, a modified ISCST model will be used that includes an algorithm for areas less than 100 meters from the stack, and the standard ISCST model will be used for determining impacts greater than 100 meters from the stack.

Pollutant impacts will also be used where applicable in the sulfur dioxide increment analysis. If further modeling to include other sources is necessary to define increment consumption, the MPTER or ISCST model will be used to perform multiple source modeling.

A receptor grid necessary to describe the extent of the source impact will be developed. The grid will be of sufficient size to cover the area of significant impact concentrating on areas of maximum impact and sensitive receptors. Receptor locations will also be placed at existing monitor locations.

Impacts due to the failure of control devices will be estimated when the potential for emission of uncontrolled pollutants can be discharged.

New source review requirements including emission offsets will also be addressed.

Impacts associated with the potential fog formation and drift due to operation of the cooling towers will also be addressed. Due to the fact that the proposed cooling media will be treated effluent from the nearby wastewater treatment facility, emission of contaminants in the effluent (both chemical and biological) will also be addressed.

5.6 Effects of operation and maintenance of the directly associated transmission system.

5.6.1 Effects of Operation and Maintenance

It will be indicated that the existing TECO easement will be used. The existing O&M of the easement will be presented.

5.6.2 Effects of public access

This section will be indicated as not applicable.

5.7 Associated facilities and other effects

There are no associated facilities for the purposes of this application. Therefore sections 5.7.1, and 5.7.2 will be indicated as not applicable.

5.8 Resources committed

5.8.1 Lost Resources

No changes to the requirements of the application are being considered.

5.8.2 Changes in species populations

No changes to the requirements of the application are being considered.

5.9 Variances

No changes to the requirements of the application are being considered.

CHAPTER 6

ENVIRONMENTAL MEASUREMENTS AND MONITORING PROGRAMS

6.1 General

This section addresses the procedures to be used to collect baseline data necessary to conduct an effective environmental analysis of the proposed project.

6.2 Pre-application monitoring

No changes to the requirements of the application are being considered. As monitoring programs are developed for this project they will be described and submitted to the DER for approval.

6.2.1 Sampling techniques

No changes to the requirements of the application are being considered.

6.2.3 Use of reports developed by the applicant

No changes to the requirements of the application are being considered.

6.2.4 Surface waters

Based upon the present design and plan of construction and operation there should be no need to conduct ambient water and related ecology monitoring programs. If it is found after additional analyses that any construction dewatering activities may necessitate a surface water discharge the requirements of this section will be satisfied as applicable.

6.2.4.1 Physical and chemical parameters

See discussion under 6.2.4.

6.2.4.2 Ecological Parameters

See discussion under 6.2.4.

6.2.5 Groundwater

No changes to the requirements of the application are being considered.

6.2.6 Air (Pre-application Monitoring)

A description of the monitoring program used for obtaining existing background ambient air quality data representative of the project/impact area will be provided.

Ambient air quality data recorded at existing monitoring locations will be used to define background air quality. Monitors within Hillsborough County are maintained by the Hillsborough County Environmental Protection

Commission. Also, the applicability of establishing pre-construction monitoring in the project area will be explored. Preconstruction Air Quality Monitoring and Analysis Guidelines listed in FAC 17-2.500(5)(f) and the General Ambient Monitoring Exemption provision in FAC 17-2.500(3)(e) will be followed. Projected ambient impacts and ambient concentrations will be compared to Table 500-3 DeMinimus Ambient Impacts to determine if an exemption from performing additional ambient monitoring can be obtained.

In any event regardless of the source of monitoring data, a full description of the monitoring program used to obtain that data will be supplied. It will identify monitoring locations, parameter monitored, instrumentation used, frequency and duration of observations and quality assurance measures employed.

Included will be data describing location, instrumentation, frequency and duration of meteorological measurements at the Tampa National Weather Service (NWS).

Also as required in this section, a description of the air quality models used in the air quality analysis to predict impacts will be provided. A discussion on model validity and accuracy will be included as well as identifying any validation studies used to assess model accuracy.

A detailed discussion of the methods used to project facility emissions will be explained and presented in Section 3.7. A discussion of the available emissions data used in projecting emission factors from resource recovery facilities will be detailed.

6.2.7 Geology

No basic changes to the requirements of the application are being considered. A subsurface investigation for the selected site was completed during the early planning phases of this project. The results of this investigation and U.S. Geological Survey information will be used for this application.

6.2.8 Archaeology

No changes to the requirements of the application are being considered. (See discussion in Section 6.3.9).

6.2.9 Noise

No changes to the requirements of the application are being considered.

6.2.10 Terrestrial Biota

No changes to the requirements of the application are being considered.

6.3 Construction and operation monitoring

This section addresses the procedures to be used to monitor/evaluate the environmental effects of facility construction and operation.

6.3.1 Sampling techniques

No changes to the requirements of the application are being considered.

6.3.2 Modifications

No changes to the requirements of the application are being considered.

6.3.3 Surface waters

(See Section 6.2.4)

6.3.4 Physical and chemical parameters

(See Section 6.2.4)

6.3.5 Ecological parameters

(See Section 6.2.4)

6.3.6 Groundwater

No changes to the requirements of the application are being considered.

6.3.7 Air (Construction-Operational Monitoring)

This section requires the applicant to describe the construction/operation monitoring program to determine the effect that facility emissions are having on air quality. The necessity of such a program will be determined by the DER upon review of the site certification application as described in FAC 17-2.500(5)(g). Therefore due to this and the fact that an option is available in the Site Certification regulations that allows the post construction monitoring program for the plant operation period to be submitted to the DER 6 months to a year before plant startup date, a monitoring program, if required, will not be submitted until that time.

Meteorological monitoring from the Tampa NWS Station will be used in the construction phase to define existing baseline conditions as described in 6.2.6.

Stack monitoring requirements will be determined by DER upon review of the site certification application. Therefore stack monitoring provisions will be described upon review of DER's requirements issued in the site certification approval and submitted to DER along with the construction operational monitoring program description.

6.3.8 Geology

No changes to the requirements of the application are being considered.

6.3.9 Archaeology

An archaeological and historic site location survey of the site was conducted and the findings published in a May 1983 report. The Florida Department of State Division of Archives reviewed the results of the survey and determined that the site did not constitute a significant archaeological site. Additionally, they indicated that the project may proceed without further involvement with that agency.

These events will be documented within the application and the results of the survey included as an appendix to the application.

CHAPTER 7

ECONOMIC AND SOCIAL EFFECTS OF PLANT CONSTRUCTION AND OPERATION

7.1 Socio-Economic Benefits

Potential Socio-Economic benefits associated with the construction and operation of the resource recovery facility will be discussed. The various social and economic benefits which may affect local government agencies will include discussions of:

- o Tax Revenues to be received by local and state governments
- o Temporary and permanent new jobs created and payroll amounts
- o Improvements of local and state roadways and transportation facilities or corridors.
- o Increased knowledge of the environment as a consequence of ecological research and environmental monitoring activities associated with plant operation.
- o Financial benefits of increased availability of landfill capacity coupled with increased energy output associated with the resource recovery facility.

7.2 Socio-Economic Costs

7.2.1 Plant Costs

This section will be indicated as not applicable, except for a description of the estimated costs of the resource recovery facility.

7.2.2 External costs

7.2.2.1 Temporary External Costs

The effects of temporary external costs on the interests of people will be examined. The estimated social impact and any special measures designed to alleviate adverse impacts will be detailed for the following temporary external costs:

- o Congestion of local streets and highways
- o Noise
- o Temporary aesthetic disturbances

Costs will be allocated between continuing and temporary construction period costs.

7.2.2.2 Long-term external costs

The effects of long term external costs on the interests of people will be examined. The estimated social impact and any special measures designed to alleviate adverse impacts will be detailed for the following long term external costs:

- o aesthetic and scenic values
- o restrictions on access to areas of scenic, historic, cultural, or archaeological value
- o removal of land from present or contemplated alternative uses
- o creation of locally adverse meteorological conditions and noise
- o a generic discussion of the impact upon real estate values

CHAPTER 8

ALTERNATIVE ENERGY SOURCES AND SITES

8.1 Assessment of alternative sites.

The siting study that was completed in conjunction with the project will be referenced.

8.2 Alternative Fuels Analysis

The potential for burning relatively small quantities of sludge with the solid waste will be discussed.

APPENDIX A

APPLICATION FOR CERTIFICATION OF PROPOSED ELECTRICAL POWER GENERATING PLANT SITE

DER Form 17-1.122(72)

FLORIDA DEPARTMENT OF

ENVIRONMENTAL REGULATION

APPLICATION FOR CERTIFICATION OF PROPOSED

ELECTRICAL POWER GENERATING PLANT SITE

DER Form 17-1.122 (72)

1/10/79

TABLE OF CONTENTS

APPLICATION FOR CERTIFICATION OF A PROPOSED ELECTRICAL POWER GENERATING PLANT SITE

INTRODUCTION

This application form has been prepared by the Department of Environmental Regulation to guide utilities in the preparation of an application for power plant site certification and to aid affected state agencies and local governments and interested persons in the review of an application. This form is intended as the prescribed format for the submission of complete and sufficient applications.

Prior to the issuance of a site certification the Department of Environmental Regulation is required to assess the potential effects upon the environment, ecology and society by the proposed plant in order to insure that the construction and operation of the plant will be consistent with the public policy and legislative intent, as set forth in Chapter 403, Part II, of the Florida Statutes.

PREPARATION OF THE APPLICATION FORM

The format of the application is intended to minimize the efforts of the applicant, the Department of Environmental Regulation, Department of Administration, Public Service Commission, and others in the preparation and review of the application. It is designed to reduce duplication of information.

It is intended that the information presented discuss the conditions of the plant site prior to construction, the anticipated changes to these conditions resulting from construction, and the anticipated effects of the plants operation. The form will be modified from time to time to further achieve these purposes.

Existing information obtained from state, federal, local and regional governmental agencies, educational institutions, and qualified consultants may be utilized when completing the application. All published documents utilized as supporting data should be referenced. If the applicant and/or his consultant gathers additional information regarding air and water quality, noise conditions, solid wastes, or other environmental impacts, the methods and procedures for developing such data shall be those duly adopted published, and numbered or otherwise approved by the Department of Environmental Regulation. Otherwise, data collection procedures should be discussed with the appropriate Department of Environmental Regulation staff to obtain mutual understanding and approval.

Concise descriptive and/or narrative text, as well as, tables, charts, graphs, etc., should be used where possible. Each subject should be documented and treated in sufficient depth to permit the reviewer to evaluate readily the extent of the environmental impact. Line drawings, photographs, and architectural concepts should be used wherever they contribute to the clarity and brevity of the application.

Prior to filing of a certification application, an applicant may request a meeting with the department and all statutory parties to review the applicant's plans and information requirements for the certification. The purpose of the meeting shall be to determine the scope, quantity, and level of information to be included in the application and to reach agreement, in writing, on the methods to be used in providing such information and the nature of supporting documents to be included in the application. It is not contemplated that all sections of this form need be extensively discussed in all applications. In some instances "not applicable" may be sufficient. It is suggested that preparation of the application be coordinated with the department, Division of State Planning, EPA, Public

Service Commission, appropriate water management district as defined by Chapter 373, Florida Statutes, and any other state or federal agency that might be required to prepare an environmental impact statement. Applicants should coordinate preparation of that portion of the application that is within the jurisdiction of the appropriate water management district. The department shall give notice of such meetings to all statutory parties and to the public and to any persons who have indicated an intention to become a party. As dictated by the nature of the applicant's proposed facility, the department, the applicant and other statutory parties may agree, in writing, that certain portions of the information requirements may not be applicable to the applicant's submittal. Unless agreed to in writing, an agreement by the applicant and statutory parties shall not be binding on any other parties to the subsequent certification proceedings.

The department may certify a site for an ultimate megawattage generating capacity to be obtained by incremental additions of generating units until the ultimate is reached. The conditions upon which such a certification may be issued will be made part of the certification.

Commonly available information and materials may be incorporated in the application by reference without impeding agency and public review. The incorporated material shall be cited in the application and its content briefly described. The applicant shall indicate where the referenced material may be obtained. Upon a written request by any party such materials shall be furnished by the applicant.

DEPARTMENT ACTION ON SUBMITTED APPLICATIONS

The submitted application, together with related information, will

be given a cursory review by the department to determine its completeness. Should the application be found incomplete, the applicant will be notified and given reasons for arriving at such a conclusion.

If the submittal is found to be complete, it will then be distributed to the Department of Administration, Public Service Commission, the appropriate water management district, and other state, federal and regional agencies that may have some jurisdiction, responsibility, or interest. The availability of the material will be made known to the general public.

Numerous conferences, consultations, and hearings may be held with the applicant, other state and federal agencies, and interested parties, in order to establish the reliablity, accuracy, and source of the data and information submitted.

PERTINENT APPLICANT INFORMATION

In this application the following information should be supplied:

Applicant's Official Name_____

_____

Address_____

Address of Official Headquarters_____

_____

Business entity (corporation, partnership, co-operative, name(s), owner(s), etc., _____

Name and Title of Chief Executive officer(s)_____

_____

Name, title, address and phone number of official representative responsible for obtaining certification_____

_____

Professional Engineer Submitting Application Name_____

Florida Registration No._____ Seal_____

Site Location: County_____

Nearest Incorporated City_____

Latitude and Longitude_____

UTMs Northerly_____

Easterly_____

Name plate Generating Capacity; Currenty Existing on site _____

_____

Capacity of Proposed Additions and Ultimate Site Capacity (where applicable)_____

_____

Remarks: (Additional information that will help identify the applicant)

CHAPTER 1
PURPOSE OF THE PROPOSED FACILITY AND ASSOCIATED TRANSMISSION

In Chapter 1 of its application, the applicant should discuss the need for the facility with respect to the requirements for generating and transmission facility capacity to be satisfied, the system reliability to be achieved, or any other primary objectives of the facility and how these objectives would be affected by variations in the scheduled operation of the facility. The latest forms and reports filed with the Division of State Planning in the applicant's Ten-Year Site Plan shall be updated, and the latest Florida Electric Power Coordinating Group Composite Ten Year Site Plan will be filed with the application or appropriately referenced to answer the following sections where appropriate.

When an applicant proposes to construct a resource recovery facility they shall discuss the need for the facility. However, the rest of this chapter shall not apply.

1.1 System Demand and Reliability

The section should discuss the requirements for the proposed unit(s) in the applicant's system and in the state, considering the overall power supply situation, past load and projected load, and reserve margins. In addition, the applicant should consider the impact of applicable energy conservation and other potential load-affecting programs on its planning effort.

A full and clear description of the applicant's system should be provided including, for each generating unit or group of units, the

extent of ownership by the applicant and the commitments involved. Where an entire planning area, or coordinating agreement, is involved, indentification of such area should be clear and reasonably available data should be presented.

1.1.1 Load Characteristics

In order to portray the relationship of the proposed generating facility to the applicant's system and related systems, data should be provided on: (a) the applicant's system, and (b) the power pool or area in which the applicant's planning studies are based, as follows:

1.1.1.1 Load Analysis

The past annual net summer and winter peak load demands and the annual energy requirements for a period beginning at least 10 years prior to the filing of the application should be reported. In addition, the future projected annual net summer and winter peak demand and annual energy requirement should be reported from the year of filing of the application for a minimum period of ten years.

1.1.1.2 Demand Projections

This section should provide detailed explanation of the forecasting method used for determining future demand for electric power. It should explicitly identify any economic and demographic projections utilized in the methodology. Where regression equations or elasticity demand models

are used to estimate projections, all statistical measures of correlation should be provided.

1.1.1.3 Capacity Exchanges

Past and expected future net capacity exchanges applicable at the time of the annual peak demands presented above should be shown as they relate to demand estimates supporting the station capacity under review.

1.1.2 System Capacity

The applicant should briefly discuss power planning programs and criteria used as they apply (a) to the applicant's system, (b) to the power pool or planning area, which ever is applicable, within which the applicant's planning studies are based.

1.1.3 Reserve Margins

The applicant's method of determining system generating capacity requirements and reserve margins should be described including:

1. The method and criterion employed to determine the minimum system reserve requirement, such as single largest unit, probability method, or historical data and judgement. If probabilistic studies are used as a planning tool, a general description of the assumptions and methodology employed, and the significant results attained should be presented.

2. The method employed for the scheduling of outages of individual generating units within the applicant's system.

3. The effect of operation of the proposed unit(s) (a) on the applicant's system, and (b) on the power pool or planning area within which the applicant's planning studies are based. In addition, the effects of present and planned interconnections on the capacity requirements should be discussed.

1.2 Other Objectives

If other objectives are to be met by the operation of the proposed facility, such as producing process steam for sale or desalting water, a description of these should be given, an analysis of the effect of other objectives on the station capacity factor or availability of individual units should be given.

1.3 Consequences of Delay

The effects of delay in the proposed project on the reserve margin of the power supply for the applicant's system should be discussed for increments of delay of 1, 2 and 3 years. The effect of no action to increase capacity should also be illustrated. Appraise the likely social and economic impacts of any such power supply shortages, including the benefits to be accrued in averting potential adverse impacts. Where applicable, direct experiences with brownouts and emergency load-shedding should be related. The applicant's plans or procedures for meeting such emergencies should also be discussed.

CHAPTER 2
THE SITE

This Chapter should present the basic, relevant information concerning those physical, biological, and sociological characteristics of the area environment that might be affected by the construction and operation of a power plant on the designated site. To the extent possible, the information presented should reflect observations and measurements made over a period of time. In general, one year's data will suffice, but where information is readily available, greater length of time may be utilized. Data may be summarized by giving maximums, minimums and averages.

2.1 Site location and layout

2.1.1 Maps

On topographical maps show the location of the plant perimeter and the site; include abutting and adjacent properties.

2.1.2 Site Modifications

Indicate total site acreage owned by the applicant and that part to be occupied or modified by the plant and associated facilities.

2.1.3 Existing and proposed uses

Indicate other existing and proposed uses, if known, of applicant's property both before and after construction of the new plant and the acreage devoted to these uses.

2.2 Regional demography, land and water use

Provide a map indicating the boundaries of towns and cities within an area of 5-mile radius centered at the proposed plant location. The 5-mile map should have circles centered at the stack location for 1, 2, 3, 4 and 5 miles radii.

2.2.1 Demography

The existing populations (utilizing appropriate governmental projections) of the towns and cities shown on the map should be indicated either on the map or in a separate tabulation.

2.2.2 Land Use

Indicate (for the 5-mile radius area) the nature and extent of present and projected land uses and any recent trends such as abnormal changes (sudden increases or decreases) in population or industrial patterns. Nearby activities that may be affected by plant construction and operation should be described in greater detail than more distant activities. The applicant should indicate the zoning restrictions both at the site and within 5 miles of the stack. Also indicate the land use and zoning within the proposed transmission line corridors and adjacent to associated facilities and indicate whether changes in land use plans or zoning will be necessary to allow construction of such facilities.

2.2.3 Water use

Discuss the nature and amounts of present major water uses such as: community water supplies, agricultural irrigation, reservoirs, recreation, transportation; also the source (surface water or aquifer), within the 5-mile radius area, and show the major impacted sources on a map.

2.3 Regional historic, scenic, cultural and natural landmarks

2.3.1 Sensitive areas

Known areas valued as natural landmarks or for either their historic, scenic, or cultural significance that may be affected should be described. The application should include a brief discussion of the historic, scenic, cultural, and natural or ecological significance, if any, of the plant site and nearby areas. Specific attention should be given to the sites and areas listed in the National Register of Historic Places and the National Registry of Natural Landmarks, and areas specially designated under state programs (e.g. environmentally endangered lands, aquatic preserves, state parks and recreation areas, and wilderness areas).

2.3.2 Archaelogical sites

Indicate whether or not the site has any archaeologically significant sites, above or below water, and explain how conclusions were reached.

2.3.3 Associated facilitites

State whether proposed associated facilities and the directly

associated transmission lines will impact or pass through or be contiguous to known historic, cultural, scenic, natural, ecological or archaeologically significant areas.

2.4 Geology

A description of the major geological aspects of the site should be provided. The level of detail presented should be appropriate to the proposed plant design. For example, if holding or cooling ponds are to be created, a detailed description of soil and bedrock types, etc., should be provided, including information on seepage and its effects. Except for those specific features that are relevant to the certification, the discussion may be limited to noting the broad features and general characteristics of the site (topography, stratigraphy, soil and rock types).

2.5 Hydrology

Discuss the effects of plant construction and operation on any adjacent surface or subsurface bodies of water.

2.5.1 Affected waters

Describe the physical, chemical, and hydrological characteristics (and their seasonal variations) of those waters that will be affected by plant effluents or that will be affected by the construction or operation of the proposed plant. The description should include the water classification

designated in Chapter 17-3, F.A.C.

2.5.2 Water withdrawals

Discuss the proposed ground and surface water withdrawals, define consumptive use discharges, and consumptive use (rates) in relation to other existing and proposed consumptive uses, the hydrologic interactions of each and the degree of competition for water supply for all uses.

2.5.3 Affected tributaries

Include a description of significant tributaries (those shown on USGS 7.5 and 15 minute Quadrangle Maps) affected by the site and the pattern and gradients of drainage in the area. Note that information relating to both surface and ground water characteristics should include measurements, to the extent possible, made on or in close proximity to the site.

2.5.4 Surface water

Discuss the relevant maxima, averages and minima of important parameters of those surface waters which may be affected by construction or operation of the plant. The parameters should include, where applicable: flow rate, velocity, water table altitude above mean sea level and chemical characteristics, temperature circulation patterns, mixing characteristics, river and lake levels, tides, floods, currents, wave action and flushing times, and volumes of flows in and out of lake systems.

2.5.5 Natural variation of surface waters

Indicate the manner in which volumes and areas of surface waters change with expected seasonal and other water level fluctuations. When a stream or other water body is to be used by the plant, the available mean, low, and high flow values should be provided. Vertical and areal variations should be established for the area affected by the site. When using historical data, it should cover a ten-year period of normal, high and low flow hydrological condition, if available.

2.5.6 Ground water

Data on ground water (including seasonal variations) aquifer transmissivity, storage coefficient, aquiclude permeability or leakance, areal water table, chemical characteristics and potentiometric surface contours, (for the aquifers affected by the site of the plant) should be presented. (Note that water use at the site is discussed in Section 2.2). Groundwater contours to the nearest foot shall be illustrated.

Aquifer testing procedures may be used to determine the hydraulic characteristics of the affected aquifer(s), using one or more observation wells, when average daily ground water withdrawals in excess of 5 mgd are planned, or if expected drawdowns on property not owned or leased or otherwise controlled by the applicant equals or exceeds 1 foot.

2.6 Meteorology

Current data on site meteorology is preferred (representative meteorology may be used as approved by the Department). Such data

should consist of: (1) diurnal and monthly averages and extremes of temperature, and relative humidity; (2) monthly data on wind characteristics which are applicable or have been measured, including speeds, directions stability category, and average mixing heights from the most representative NOAA* station; (3) data on precipitation; (In the second item, the joint wind speed-stability-direction frequencies should be presented in tabular form, giving the frequencies as fractions when using only one or two years of onsite data. The data should be presented for each of the 36 sectors utilized by NOAA, and the stability categories should be established to conform as closely as possible with those approved by the Department.) Also, indicate on a map the prevailing wind patterns, especially with reference to urban areas within 15 miles.

2.7 Ecology

The applicant should identify the important flora and fauna in the region of the site (which may reasonably be expected to be affected by the proposed plant), their habitats, and distribution, as well as, the relationship between species and their breeding grounds territorial boundaries and their environments. The methods by which this information is gathered should, where applicable, be according to U.S. EPA's manual entitled "Biological Field and Laboratory Methods for Measuring the Quality of Surface Waters and Effluents," as revised, or other techniques acceptible to the Department. Sources of information should be identified. Lists of published material dealing with the area should be provided. Studies in progress should be noted and described.

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*National Oceanographic and Atmospheric Administration

2.7.1 Important species

A species, whether animal or plant, is "important" (1) if it is commercially or recreationally valuable; (2) if it is rare, endangered, threatened, or protected; or (3) if it has unique ecological value. Items 1 through 3 above, will vary significantly from site to site, therefore, the applicant should establish with Department of Environmental Regulation staff the species to be studied. A "rare, endangered, threatened or protected" species is any species officially designated as such by the U.S. Fish and Wildlife Service or Florida State agencies such as the Department of Natural Resources, Game and Fresh Water Fish Commission, etc.

The discussion of species-environmental relationships should include (1) descriptions of area usage (e.g., habitat, breeding, etc.); (2) it should include life histories of important regional animals and aquatic organisms, their normal seasonal population fluctuations and their habitat requirements (e.g., thermal tolerances); (3) and it should include identification of food chains and other inter-species relationships when these contribute to predictions or evaluations of the impact of the plant on the regional biota.

2.7.2 Abundance of organisms

a. In cataloging the local organisms, the applicant should identify major families of terrestrial and aquatic organisms and discuss the abundance of the important organisms. This discussion should include species that migrate through the area or use it for breeding grounds. A

map that shows the distribution of the principal plant communities should be provided.

b. The discussion of species-environmental relationships should include (1) descriptions of area usage (e.g., habitat, breeding, etc.); (2) it should include life histories of important regional animals and aquatic organisms, their normal seasonal population fluctuations and their habitat requirements (e.g., thermal tolerances); (3) and it should include identification of food chains and other inter-species relationships when these contribute to predictions or evaluations of the impact of the plant on the regional biota.

2.7.3 Pre-existing stresses

It may be appropriate to identify known, pre-existing environmental stresses from sources such as (1) pollutants, as well as (2) any ecological conditions suggestive of such stresses; (3) the status of ecological succession; (4) the histories of any infestations, epidemics, or catastrophes (caused by natural or man induced phenomena) that have had a significant impact on regional biota.

2.8 Ambient Air

Determination of ambient air quality as it exists prior to site preparation and plant construction is an important step in determining site suitability.

2.8.1 Baseline data for PSD Review

At least one year's baseline data and information must normally be gathered and presented on the current ambient air quality and/or predicted air quality levels for the base year for pollutants that will or can be reasonably expected to be emitted and have a state or federal ambient or emission limitations applicable to the facility. Such data should be analyzed using Larsens statistical procedure. Under some circumstances less than one year of air quality data may be acceptable. The EPA ambient monitoring guidelines may be used to determine acceptable monitoring methods.

2.8.2 Source of data

If existing data is used, provide the source and the method of collection. One year shall constitute a minimum time span for useful data, if there were more than 24 samples collected and the frequency of sample collection was distributed in a representative fashion through out the twelve month period.

2.9 Other environmental features

For certain sites, some relevant information on the plant environs may not clearly fall within the scope of the preceding topics such as downstream and estuarine effects. Additional information which may be required in order to reflect the value of the site and site environs should be included here.

CHAPTER 3
THE PLANT

The operating plant and directly associated transmission lines and associated facilities are to be described in this chapter. The best estimate of the character and magnitude of the plant discharges and plant-related systems should be described in as much detail as possible.

Accompany the information presented in this chapter with an updated version of related information required by the Department of Administration's "Forms and Instructions for Preparation of Ten-Year Site Plans for Electrical Generating Facilities and Associated Transmission Lines."

3.1 External appearance

The actual or conceptual building layout and plant perimeter should be illustrated and related to the site map presented in Section 2.1. The proposed plant profile should be shown in proportion to the surroundings by line drawings or other illustrative techniques. The location and elevation of release points for liquid and gaseous wastes should be clearly indicated.

3.2 Fuel

Discuss the proposed fuel use characteristics of the plant, including (1) the types of fuel to be used, (2) quantities, (3) transportation, (4) storage, and (5) fuel quality. Included should be the potential for use of alternative fuel types.

3.3 Plant water use

A quantitative water-use diagram for normal and peak load operation of the plant should be presented, showing estimated quantities of water flows to and from the various plant water systems (1) heat dissipation system, (2) sanitary system, (3) chemical waste system, and (4) process water system.

The sources and quality of the water for each input should be indicated.

Show total consumptive use of water by the plant, including a comparison of preconstruction to post construction evaporation, diversion, blow-down and seepage quantities from the plant, for maximum power operation and average anticipated power operation. Flows occuring during a plant shutdown should be described separately.

3.4 Heat dissipation system

Describe the type of heat dissipation system to be used in the proposed plant, and the quality and source of water the applicant proposes to use in the system.

3.4.1 Intake and outfall

Simplified flow diagrams and sketches showing the location and design of the intake and outfall structures should be submitted.

3.4.2 Source of cooling water

Identify the source and quality of the cooling water. The temperature range of the cooling water supply (including monthly changes and stratification, should be described in Section 2.5).

3.4.3 System design

Topics to be covered, where applicable, should include estimates of: (1) quantity of heat dissipated, (2) quantity of water withdrawn, (3) consumptive use, (4) design size and location of cooling system, (5) blowdown volume and physical characteristics, (6) rate of discharge, (7) physical and chemical characteristics for towers and ponds, (8) temperature changes across condenser, (9) rate of changes and hold-up times in cooling ponds, (10) rate of evaporation of water from towers or ponds, (11) information on dams or dikes where a cooling reservoir is created, (12) conceptual design and location of water intake structures, including water depth, flow and velocity, screens, number and capacity of pumps at intake structures, (13) maximum predicted discharge temperature at POD water, (14) travel time from condenser inlet to POD, and (15) seepage rate from cooling ponds or reservoirs. Describe the minimum water quality characteristics the cooling water source must possess in order to operate the proposed heat dissipation system. If water of a lower quality could be used without significant cost penalty in a different heat dissipation system which the applicant has the ability to use, describe the physical characteristics of such water and of such system.

3.4.4 Dilution system

Describe where applicable any dilution system including: (1) proposed point of addition and flow rate of any dilutent added to the cooling water stream; (2) details of outfall design, including discharge flow and velocity and the depth and location of the discharge structure in the receiving water, (3) seasonal variation in operation should be noted, (4) intake design details, if a separate intake for dilution water is used.

3.4.5 Blowdown and trash disposal

Describe proposed systems and procedures for removal and disposal of blowdown from the heat dissipation system and of trash collected at the intake structures.

3.4.6 Injection wells

If injection wells are to be used for disposal of cooling system and/or boiler blowdown or any other type of waste, provide a detailed geological description of the disposal site together with information about aquifer, its quality, quantity, predicted effects, etc. Include well construction diagrams, such as, casing depths, well bore diameters, grouting, etc., for the injection well and monitoring wells. Show the location of the monitoring wells and describe the drilling and testing programs. List the materials or chemicals and the estimated quantities of each to be injected.

3.5 Chemical and biocide waste

The applicant should describe chemical additives (including corrosion inhibitors, chemical and biological anti-fouling agents), and waste streams or discharges from chemical processing and water treatment that may enter the local environment as a result of plant operation. The discussion should include description of procedures by which effluents will be treated, controlled and discharged.

3.6 Sanitary and other wastes systems

3.6.1 Volumes and quality

Describe any other liquid waste materials, such as sanitary or chemical laboratory wastes, that may be created and may enter the local environment during plant operation. The description should include the types, volumes and concentrations of pollutants discharged.

3.6.2 Treatment and disposal

Decribe the manner in which the sanitary and other liquid wastes will be treated and controlled and procedures for disposal.

3.6.3 Solid wastes

Describe the anticipated quantities and types of solid waste, including ash, that will result from plant operation and the methods of disposal.

3.7 Air emissions

The applicant should fully describe types and sources of air emissions, the methods for compliance with applicable regulations and the methods of discharge. Include a discussion of compliance with the provisions of Sections 17-2.03 Best Available Control Technology and complete the following form entitled Best Available Control Technology Data. In addition, estimates of air emission levels both during the use of and in the absence of control technology should be specified.

If the applicant proposes to construct a source impacting a non-attainment area, it shall submit sufficient information to comply with the provisions of Chapter 17-2, FAC, relating to Non-Attainment Areas.

BEST AVAILABLE CONTROL TECHNOLOGY DATA

A. Emission Limitations For Any Pollutants Emitted From The Source Pursuant To 17-2, F.A.C.?

Yes ( ) No ( )

POLLUTANT	RATE OF CONCENTRATION

B. Are Standards of Performance For New Stationary Sources Pursuant To 40 C.F.R. Part 60 Applicable To The Source?

Yes ( ) No ( )

POLLUTANT	RATE OF CONCENTRATION

C. Has EPA Declared The Best Available Control Technology For This Class Of Sources? (If Yes Attach Copy)

Yes ( ) No ( )

POLLUTANT	RATE OF CONCENTRATION

D. What Emission Levels Do You Propose As Best Available Control Technology?

POLLUTANT	RATE OF CONCENTRATION
_____	_____
_____	_____
_____	_____
_____	_____

E. Describe the Control Technology Proposed (If not available explain the reasons fully):

1. Control Device: (Generic)
2. Efficiency: (Estimate)
3. Capital Cost: (Estimate)
4. Life: (Estimate)
5. Operating Cost: (Estimate)
6. Energy: (Estimate)
7. Maintenance Cost: (Estimate)

8. Stack Parameters:

a. Height: Ft.
b. Diameter: Ft.
b. Flow Rate: CFM
d. Temperature: oF
e. Velocity: FPS

9. Fuels:

TYPE	HOURLY USE*		HOURLY HEAT INPUT MILLION BTU/HR.	
	AVG.	MAX.	AVG.	MAX.
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

TYPE	DENSITY	%S	%N	%ASH
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

*Gaseous CU. Ft./Hr. Liquid & Solid: Lbs./Hr.

10. Wastes Generated, Disposal Method, Cost of Disposal:

F. Show Derivation of Efficiency Estimation.

G. An 8½" x 11" Flow Diagram Which Will, Identify the Individual Operations and/or Processes. Indicate Where Raw Materials Enter, Where Solid and Liquid Waste Exist, Where Gaseous Emissions and/or Airborne Particles Are Evolved.

3.8 Directly associated transmission lines

The application shall contain sufficient information to permit evaluation of directly associated transmission lines and related facilities that are to be constructed from the proposed installation to an interconnecting point or points on the existing high-voltage transmission system. The applicant should look to USNRC Regulatory Guide 4.2, Revision 2, Section 3.9 for guidance in their description.

3.8.1 Route and size

The applicant shall supply contour maps and/or aerial photographs showing the proposed right-of-way and identifying any existing associated high-voltage transmission system. (1) the lengths and widths of the proposed rights-of-way should be specified; (2) any access roads, maintenance roads and new facilities located on or near the right-of-way should be shown.

3.8.2 Land use impacts

The applicant should describe the land and water to be crossed by the associated transmission line and indicate (1) whether the land adjacent to the right-of-way has residential, agricultural, industrial or recreational uses; (2) any area where construction of the associated transmission line(s) will require permanent clearing of trees and vegetation, changes in topography, or removal of manmade structures; (3) areas where transmission lines will be placed underground; on, under or over water or wetlands. Any impact on landmarks or sensitive areas not previously

discussed under 2.3 should be included here.

3.8.3 Beneficial uses

Any beneficial or multiple uses planned for the right-of-way should be discussed.

3.8.4 Visibility

Indicate the degree to which the above-ground lines will be visible from frequently traveled public roads, federal or state wilderness areas, parks and preserves.

3.8.5 Associated transmission structures

Include adequate descriptions of proposed line-related facilities such as substations. This portion of the application should provide sufficient information on the external appearance of the associated transmission structures and their relationship to the surrounding environment to permit an assessment of their aesthetic impact.

3.9 Associated facilities

The application should contain sufficient information on the location and characteristics of associated facilities that are to be constructed in association with the power plant to allow assessment of their environmental impacts.

3.9.1 Purpose, location, and characteristics

The applicant shall describe the purpose, location, and pertinent characteristics such as size or type of the associated facilities.

3.9.2 Maps

Supply contour maps and/or aerial photographs showing the property to be developed, and outline the major dimensions of the associated facilities, access roads, ports, docks, parking lots, sources of pollutants, etc.

3.9.3 Land type and uses

The applicant should describe the land being utilized for the associated facility and indicate (1) whether the land adjacent to facility is used for residential, agricultural, industrial or recreational purposes; (2) and whether the associated facilities might impact on landmarks or sensitive areas not previously discussed.

3.10 On-Site drainage system

The applicant shall describe the proposed on-site drainage system indicating the location of storage ponds, potential spoil areas and potential discharge points for stormwater runoff from construction and operation, as well as the receiving ground and surface waters. Identify the design storm for which the drainage system has been designed.

3.11 Design alternatives

The applicant may discuss alternative designs for the plant or pollution control facilities in this section.

CHAPTER 4

ENVIRONMENTAL EFFECTS OF SITE PREPARATION, PLANT AND ASSOCIATED TRANSMISSION FACILITIES CONSTRUCTION

This chapter of the application should discuss the expected environmental effects of site preparation and construction of the plant, associated facilities and directly associated transmission facilities. The effects should be presented in terms of their physical impact on the resources and populations described in Chapter 2.

In the applicant's discussion of environmental effects, it should be made clear which of these are considered unavoidable and irreversible. Those effects which represent an irretrievable commitment of resources should receive detailed consideration in Section 4.4. In the context of this discussion, "irretrievable commitment of resources" alludes to natural resources and means a permanent impairment of these resources, (e.g. loss of wildlife habitat; impairment of nesting, breeding or nursery areas, interference with migratory routes) loss of valuable or aesthetically treasured natural areas; as well as the expenditure of directly utilized resources.

4.1 Site preparation and plant construction

The applicant should organize the discussion in terms of the effects of site preparation and plant construction on:

(a) land use

(b) water use

(c) water quality

(d) air quality

(e) solid waste generation and disposal

(f) ambient noise levels

The measures for mitigating the adverse impacts of the above should be discussed. The applicant should consider consequences to both human and wildlife populations and indicate which are unavoidable, reversible, etc., according to the categorization set forth earlier in this chapter. Provide a description of how construction activities may disturb the existing terrain and wildlife habitat.

4.1.1 Construction areas

Consider the effects of such activities as creating building material laydown areas; building temporary or permanent roads, bridges and service lines; disposing of trash and chemical wastes (including oil); and clearing, excavating or filling of land.

4.1.2 Land impact

Provide information concerning the following:

(a) how much land will be disrupted?

(b) what quantity of solid waste (trees and other vegetation) will be disposed of and how?

(c) will there be construction related dust or smoke problems? For how long?

(d) what explosives will be used? Where and how often?

(e) where applicable, submit the Joint Application, Department of Army/Florida Department of Environmental Regulation for Activities in Waters of the State of Florida, SAJ Form 983 (July 21, 1977), or as subsequently amended, to facilitate coordination of Federal and State permits.

4.1.3 Impact on human populations

Indicate proximity of human populations and identify undesirable impacts on their environment arising from noise and from inconveniences due to the movement of men, material, machines. Include activities impacting on housing, transportation, and educational facilities for local residents, workers and their families.

4.1.4. Work Force

Provide a schedule of the estimated work force to be involved in site preparation and plant construction.

4.1.5 Impact on landmarks and sensitive areas.

Describe any expected construction related environmental impact on those areas identified in 2.3, including changes in accessibility.

4.1.6 Mitigating measures

Discuss measures designed to mitigate or reverse undesirable effects,

such as erosion control, dust stabilization, landscape restoration, control of truck traffic, restoration of affected animal habitat, and protection or preservation of archaeological sites.

4.1.7 Benefits from construction

The discussion should also include any effects of site preparation and plant construction activities which may be beneficial to the region.

4.1.8 Impact on water bodies and uses

Describe the impact of site preparation and construction activities on affected waters (lakes, streams, oceans, ground water, etc.). Discuss the overall plan for use (recreation, reservoir, etc.) of water bodies that may be affected by plant construction. Activities that might affect water use, include the construction of cofferdams, and/or storm sewers, dredging operations, placement of fill material in the water, and the creation of shoreside facilities involving bulkheads, piers, jetties, basins or other structures enabling ingress or egress from the plant by water. Examples of other pertinent activities are construction of intake and discharge structures for cooling water or other purposes, straightening or deepening a water channel and operations affecting water levels (flooding), construction, dewatering effects on nearby ground water users, etc. The applicant should describe the effects of these activities on navigation, fish and wildlife resources, water quality, water supply, and aesthetics. Where it is proposed to create a

cooling water lake, describe the effects on the local ecology, including the loss of flora and local migration or loss of fauna from the area the lake will occupy. Where applicable, any program for the establishment, development or control of aquatic plant and animal life should be described. This discussion may reference any available data based on studies of similarily sited artifical lakes. If excavations are made for cooling ponds or canals, describe type and volume of material removed and the method and site of its ultimate disposal.

4.2 Special features

Describe and discuss all special features such as unusual products, raw materials, garbage disposal services, incinerator effluents and residues produced during construction, that may have an influence on the environment and ecology of the plant site and the adjacent area.

4.3 Construction of directly associated transmission facilities

Discuss the effects of construction and installation of directly associated transmission line towers and facilities on the land, adjoining landowners and traffic.

4.3.1 Permanent changes to vegetation, wildlife and aquatic life

Discuss any permanent changes that will be induced in the physical and biological processes of plants, aquatic life or wildlife through the changes in the hydrology, topography, or ground cover or through the use of growth retardants, chemicals, biocides, sprays, etc., during construction

of the associated transmission lines. Indicate where construction will necessitate the permanent clearing of trees or other vegetation.

4.3.2 Extent of impact on sensitive areas

Indicate total length of new lines through and in various categories of visually sensitive land (that is, sensitive to presence of transmission lines and towers) such as natural shorelines, marshland, wildlife refuges, parks, national forest and/or heavily timbered areas, shelter belts steep slopes, wilderness areas.

4.3.3 New roads

Indicate number, length, and width of new access and service roads required. Indicate whether each new road will have a permeable or impermeable surface and how each will change present patterns of water flow.

4.3.4 Erosion

Discuss potential erosion problem caused by construction activities.

4.3.5 Impact on land use

Discuss changes in land use such as changes in agricultural productivity along the transmission line right-of-way due to construction of the transmission facilities. Also discuss any impacts of construction on

historic, cultural or archaeologically significant areas as defined in Section 2.3.

4.3.6 Mitigative measures

Discuss mitigative measures such as plans for protection of aquatic life or wildlife, for disposal or trash and unmarketable timber, and for cleanup and restoration of area affected by clearing and construction activities.

Also discuss the effects of construction on any identified rare or endangered species (as defined in Section 2.7), landmarks or sensitive areas (as defined in Section 2.3) and what action will be taken to mitigate or avoid any adverse effects.

4.4 Resources committed

Discuss any irreversible and irretrievable commitments of resources (loss of land, destruction of biota, etc.) which are expected should site preparation and facilities construction proceed. Such losses should be evaluated in terms of their relative and long-term net, as well as absolute, impacts, (see Section 5.8 of this Form for more detailed consideration). Relative impacts may mean destruction of X% of something in a given area. Long-term net impacts might be a loss of population due to habitat destruction.

4.5 Construction of other associated facilities

Discuss the impacts of constructing associated facilities on vegetation, wildlife, aquatic life, sensitive areas, historic, cultural, or archaeologically significant areas, and the mitigative measures planned.

CHAPTER 5
ENVIRONMENTAL EFFECTS OF PLANT OPERATION

This chapter should describe the operational interaction of the plant and associated facilities with the environment. The applicant is not required to repeat the material presented in Chapters 2 and 3, but such previously presented material should be cross-referenced.

a. Effects of plant operation (including the transmission and associated facilities) on the environment should be described in detail.

b. In the discussion of environmental effects, effects that are considered unavoidable but are either temporary or subject to later amelioration should be clearly distinguished from those regarded as unavoidable and irreversible.

The impacts of operation of the facility should be, to the extent practicable, quantified and systematically presented. In the discussion of each impact, the applicant should make clear whether the supporting evidence is based on theoretical, laboratory, on-site, or field studies undertaken on this or on previous occasions. The source of each impact [- the plant subsystem (type and size), waste effluent -] and the population or resource affected should be made clear in each case. The impacts should be distinguished in terms of their effects on surface water bodies, groundwater, air and land. Impacts due to failure of control devices should be estimated. The applicant should discuss the relationship between local "short term" and "long term" effects. ("Short term" effects may be taken to refer to the operation life of the proposed facility and "long-term" to refer to time periods extending beyond this

life). The applicant should also discuss the reasons for and effects of any requested variances to regulations.

5.1 Effects of the operation of the heat dissipation system

5.1.1 Temperature effect on Receiving Body of Water

If applicable, (a) describe the effect that the heated effluent will have on the temperature of the receiving body of water with respect to space and time; and (b) describe changes in temperature caused by drawing water from one depth and discharging it at another. Cover seasonal effects and the predicted temperature changes in the receiving body of water as a whole. Details of calculational methods used in predicting thermal plume configurations should be given in an appendix to the application. Models used should be discussed in Chapter 6.

5.1.2 Thermal limits

If applicable, describe the thermal standards or limitations applicable to the receiving body of water including maximum permissible temperature, maximum permissible temperature increase above ambient, and the size and location of the mixing zone, if any.

5.1.3 Effects on aquatic life

If applicable, describe the effects of released heat on marine or fresh water life. Give the basis for any prediction of effects. In this discussion, appropriate references should be made to the baseline

ecological data presented in Section 2.7. (1) Expected thermal effects should be related to the optimum and tolerance temperature ranges for important (as defined in Section 2.7) aquatic species and the food base which supports them. (2) The evaluation should consider aquatic habitat potentially affected by operation of the plant, especially by decreased freshwater quantities. (3) Probable hazards of the cooling water intake and discharge structures to fish species and food base organisms should be identified and steps planned to minimize the hazards of impingement and entrainment should be discussed. (4) Indicate whether any of the species affected are, or known to be, in the foodchain of "important" species as defined in 2.7.1.

If applicable, discuss diversion techniques in light of information obtained from ecological studies on fish population, size, and habitats.

If applicable, the applicant should also discuss the possible impacts of unit shutdown on aquatic life with special attention given to the dependance of the season on the potential effect. Describe procedures, for mitigating thermal shock to organisms.

If applicable, discuss the possible effects on plankton populations due to passage through the condensor and the resultant implications for the important species and functional groups.

5.1.4 Biological effects of modified circulation

If applicable, the applicant should discuss the potential biological effects of modifying the natural circulation of a water body, especially

where water is withdrawn from one region or zone and discharged into another. This discussion should consider such factors as the alteration of the dissolved oxygen and nutrient content and distribution in the receiving water, as well as, the anticipated effects of scouring, erosion, and deposition of suspended sediments. Discuss effects of any increased or decreased volumes of water in the receiving body of water.

5.1.5 Effects of offstream cooling

If applicable, discuss the expected effects, if any, of heat dissipation facilities such as cooling towers, lakes, spray ponds, or diffusers on the local environment and on agriculture, housing, highway safety, airports, or other installations with respect to meteorological phenomena, including fog, and cooling tower blowdown and drift. (1) If fog occurs, the estimated hours per year, distances, directions, and transportation arteries (including navigable waters) potentially affected should be presented and measures, if any, to mitigate such effects should be discussed. (2) Consider possible synergistic effects that might result from mixing of fog or drift with other plant emissions in the atmosphere. (Environmental effects of chemicals discharged in cooling tower drift should be discussed in Section 5.2 rather than in this section).

5.2 Effects of chemical and biocide discharges

5.2.1 Industrial waste water discharges

Show how the applicant proposes to comply with applicable state and federal discharge regulations and water quality standards for industrial

type wastewater including chemical and biocidal wastes. The concentrations of these wastes at the points of discharge should be compared with natural ambient concentrations without the discharge and also compared with applicable water quality standards. The projected effects of the effluents for both acute and chronic exposure of the biota (including any long-term buildup in sediments and in the biota) should be discussed and identified. Dilution and mixing of discharges into the receiving water should be discussed in detail and estimates of concentrations at various distances from the point of discharge should be provided. Include a detailed description of the method of calculation. The estimated area enclosed by contour lines of equal concentration and a contour line corresponding to water-quality-standard values in the receiving body of water should be described and displayed on a map.

Discuss variations of the estimated waste discharges showing predicted changes in conditions of the receiving body of water (e.g. stream flow), and use contour maps showing concentrations and areas affected to display the effect of the variations.

The effects on terrestrial and aquatic environments from oil and grease or chemical wastes which may contaminate surface or ground water due to leaching of such wastes should be included.

5.2.2 Leachate

Assess the effects of leachate from coal piles, ash ponds, flue gas desulphurization ponds and chemical waste holding or treatment ponds on ground or surface water quality.

5.2.3 Cooling tower blowdown

The effects of chemicals in cooling tower blowdown on the environment should be discussed in this section. (1) Estimates of concentrations at various distances should be provided. (2) Any anticipated chemical or biocide contamination of domestic water supplies should be identified and discussed.

5.3 Impacts on water supplies

In the event the applicant anticipates that surface or groundwater supplies or uses beyond the "5-mile radius area" will be affected by the proposed plant, discuss the anticipated effects.

5.3.1 Drinking Water

The quality, quantity and hydrological changes due to the plant water use, either by withdrawal or discharge on a drinking water source, either surface or ground, should be identified and their impacts discussed. In water short areas water reuse and recycling systems should be discussed. The effects of discharges into drinking water sources not previously discussed should be covered in this section.

5.3.2 Surface Water

Discuss plant caused changes in hydrologic or water quality characteristics due to diversion, interception, or additions to surface water drainage and flow.

5.3.3 Groundwater

Assess as in 5.3.2 above

5.4 Sanitary and other waste discharges

The expected effects of sanitary wastes or any other discharge system should be discussed in the same manner as in Section 5.2.

5.5 Air quality impacts

Discuss effects upon ambient air quality in the vicinity of the plant site due to plant operation in accordance with Chapter 17-2, FAC, including incremental impacts of particulates and sulfur dioxide for 3 hour, 24 hour and annual averages, as appropriate. Diffusion modeling must be used to assess changes in existing air quality as a result of plant operation. Compare predicted air quality levels and the Florida air quality standards including PSD increments as contained in Chapter 17-2, FAC. Predictions of visible emissions (opacity) should also be discussed.

The secondary air quality impacts as defined by the 1977 Amendments to the Clean Air Act should be discussed, if applicable.

5.6 Effects of operation and maintenance of the directly associated transmission system

5.6.1 Effects of operation and maintenance

The environmental effects of the operation and maintenance of the directly associated transmission lines should be evaluated. (1) The evaluation of effects should make clear the applicant's plans for maintenance of the right-of-way and required access roads. (2) Discuss plans for use of herbicides, and pesticides indicating the types, volume, concentrations, manner and frequency of use. Evaluate their effects on plant life and wildlife habitat. The impacts of the operation and maintenance of the transmission lines on land resources, and scenic values should also be evaluated. This section should also discuss noise, induced currents, or ozone production of potential environmental significance.

5.6.2 Effects of public access

If access roads increase the exposure of directly associated transmission line corridors to the public, the applicant should discuss the potential effect of this increased exposure on resident wildlife.

5.7 Associated facilities and other effects

Discuss in this section the operational effects of associated facilities not covered elsewhere.

5.7.1 Effects of associated facilities

The applicant should discuss the effects of the operation of associated facilities with respect to the topics covered by Sections 5.1 to 5.5.

In addition, discuss items not previously covered such as changes in adjacent land and water use, additional roads, interaction of the associated facilities' effluents or emissions with neighboring plants, effects on ground water from withdrawals and disposal of solid and liquid wastes. Anticipated noise levels should also be described with reference to the DBA scale, where applicable, at the facility perimeter.

5.7.2 Other plant operation effects

The applicant should discuss any effects of plant operation that do not clearly fall under any single topic of Section 5.1 to 5.5. As an example, these may include changes in land and water use at the plant site, additional vehicular traffic, additional roads and highways, interaction of the plant with other existing or projected neighboring plants, effect of ground water withdrawal on ground water resources in the vicinity of the plant, and disposal of solid and liquid wastes other than those discussed in Sections 5.2 and 5.3. Also discuss anticipated noise impacts and abatement features and plans where applicable.

5.8 Resources committed

Discuss any irreversible and irretrievable commitments of state or local resources due to plant operation.

5.8.1 Lost resources

In this section consider lost state, regional or local resources from the viewpoints of both relative impacts and long-term net effects.

5.8.2 Changes in species populations

Examine changes in population of important species caused by, or expected to be caused by, the operation of the plant with the view of determining whether they represent long-term net loss or long-term net gains.

5.9 Variances

If known at the time of application, list each known variance from applicable standards which will be sought as part of the state certification proceedings. Cite the standard's code section number from which the variance is sought. Also list any variances sought from federal standards or guidelines. State the nature of the variance, the reasons for seeking a variance, and the length of time for which it is sought, including anticipated renewal periods, and the facts that show a variance should be granted.

CHAPTER 6

ENVIRONMENTAL MEASUREMENTS AND MONITORING PROGRAMS

6.1 General

The purpose of this chapter is to describe the programs by which the applicant collects the baseline data presented in other chapters and to describe the applicant's plans and programs for monitoring the environmental impacts resulting from site preparation and plant construction. As an option, the monitoring program for the plant operational period may be submitted to the department no later than six months and preferably one year before the plant start up target date. This option may be exercised on the part of the applicant if the target start up date is more than two years beyond the anticipated date of receiving site certification from the department. The background data gathering program should have established, at least in part, a reference framework for assessing subsequent environmental effects attributable to the activity.

In some instances this form indicates the specific environmental effects which are to be evaluated, especially during site preparation and plant construction; consequently, the parameters to be measured will be apparent. In some cases it may be necessary to establish a monitoring program to identify other potential or possible effects.

Duplication of information may be avoided by cross-referencing.

6.2 Pre-application monitoring

It is strongly suggested that the applicant discuss and agree to in writing any monitoring or data gathering program with the Department prior to implementation.

6.2.1 Sampling techniques

Sample station location, sampling frequency, methodology, (including calibration and checks with standards) and instrumentation for both collection and analysis should be thoroughly discussed. Information should be provided on instrument accuracy, sensitivity and especially for high automated systems, reliability. Standard analytical or other techniques as used by the Department of Environmental Regulation should be used or permission to vary the method must be obtained.

6.2.2 Use of published data

Where information from published data has been used by the applicant, it should be concisely summarized and documented by reference to the original data sources. Where the availability of original sources that support important conclusions is limited, the applicant should provide either extensive quotations or reference to accessible secondary sources. In all cases, information derived from the applicant's field measurements should be clearly identified, when used to verify the applicability of similar studies found in the literature.

6.2.3 Use of reports developed by the applicant

Any reports of work (e.g. ecological surveys) supported by the applicant that are of significant value in assessing the environmental impact of the facility, should be included as appendices or supplements to the application for certification if requested. Any deviation from departmental standard procedures used by the authors of the above mentioned reports should be well documented and discussed.

6.2.4 Surface waters

Describe the programs by which the background condition of the water and related ecology were determined and reported in Chapter 2.

6.2.4.1 Physical and chemical parameters

a. The programs and methods for measuring background physical and chemical parameters of surface water which will be affected during construction and/or operation of the facility should be described. The sampling program should be presented in sufficient detail to demonstrate its adequacy with respect both to spatial coverage (surface area and depth) and to temporal coverage (durations and sampling frequency), and to give due consideration to seasonal effect.

b. In addition to describing the programs for obtaining the data, also describe any computational models used in predicting effects. The applicant should indicate how models were verified and calibrated.

6.2.4.2 Ecological parameters

The applicant should describe the program used to determine the ecological characteristics presented in Section 2.7.

a. Those portions of the program concerned with determining the presence and abundance of important aquatic and amphibious species (identified in Section 2.7) should be detailed in terms of frequency, pattern and duration of observation. (1) The applicant should describe how taxonomic determinations were made and validated. (2) In this connection, the applicant should discuss its reference collection of voucher specimens or other means whereby consistent identification is assured.

b. A description should be provided of the methods used and to be used for observing natural variations of ecological parameters. If these methods will involve indicator organisms, the criteria for their selection should be presented.

6.2.5 Ground water

In those cases in which the facility or a practicable design alternative will probably affect the chemical and/or physical condition of local ground water during the site preparation and construction, the program leading to the assessment of the existing conditions should be described.

6.2.6 Air

a. The applicant should describe the program that was used for obtaining background information on local air quality, if relevant, and local meteorology.

b. The applicant should identify sources of air quality and meteorological data reported in Section 2.6. Locations and elevations of observation stations, instrumentation, and frequency and duration of measurements should be specified both for the applicant's measuring activities and for activities of governmental agencies or other organizations on whose information the applicant intends to rely.

c. Any models used by the applicant either to derive estimates of baseline air quality and/or meteorological information or to estimate the effects of emissions from existing sources should be described and their validity and accuracy discussed.

d. Methods for determining emissions should be explained. Quality assurance procedures should be discussed.

6.2.7 Geology

Those geological and soil studies designed to determine the suitability of the site should be described. The description should include identification of the sampling pattern and the justification for its selection, the sampling method, pre-analysis treatment, and analytic techniques. When

used, previously published geological and soil studies should be briefly summarized.

6.2.8 Archaeology

The methods used in making archaeological and historical studies made of the site should be described. Methods acceptable to the Department of State, Division of Archives, History and Records Management are preferred.

6.2.9 Noise

The methods use in making noise surveys should be described. EPA noise guidelines in EPA-400/9-75-003T "Direct Environmental Factors at Municipal Wastewater Treatment Works" may be utilized.

6.2.10 Terrestrial Biota

Discuss the program used to document the terrestrial biota discussed in Section 2.7

6.3 Construction and Operational monitoring

In this section indicate the specific environmental effects which are to be evaluated for plant construction and operation. The format and material used to address the appropriate subsection of section 6.2 may be referenced. Where post application monitoring is the same as pre-application monitoring a statement referring to the appropriate

subsection of section 6.2 will be acceptable. Changes from pre application monitoring should be addressed.

6.3.1 Sampling techniques

Sample station, location, sampling frequency, methodology, (including calibration and checks with standards) and instrumentation for both collection and analysis should be thoroughly discussed. Information should be provided on instrument accuracy, sensitivity and especially for high automated systems, reliability. Standard analytical or other techniques as used by the Department of Environmental Regulation should be used or permission to modify the techniques must be obtained.

6.3.2 Modifications

Where site preparation and/or facility construction may alter a previously measured or observed environmental condition, the program for monitoring the modified condition should be described.

6.3.3 Surface waters

Describe the programs by which the condition of the water and related ecology will be monitored during site preparation, plant construction, and plant operation.

6.3.4 Physical and chemical parameters

a. The programs and methods for measuring physical and chemical parameters of waters which will be affected during construction and/or

operation of the facility should be described. The sampling program should be presented in sufficient detail to demonstrate its adequacy with respect both to spatial coverage (surface area and depth) and to temporal coverage (durations and sampling frequency), and giving due consideration to seasonal effects.

b. In addition to describing the programs for obtaining the data, the applicant should also describe any computational models used in predicting effects. The applicant should indicate how models will be verified and calibrated.

6.3.5 Ecological parameters

The applicant should describe the construction and operational program used to monitor the ecological characteristics presented in Section 2.7. Any variation from the pre-constructional program to be used during the construction or operational phases of the project as outlined in 6.2.4.2 should be described. Any variation from the pre-constructional program to be used during the construction phase program should be fully explained.

The applicant should fully describe any anticipated changes in the program for assessing effects on the terrestrial biota resulting from site preparation and plant construction. If possible at the time of application, the application should submit the anticipated program or changes in the background program that would cover the plant operational period.

6.3.6 Ground water

In those cases in which the proposed facility or a practicable design alternative may potentially affect the chemical and/or physical condition of local ground water during the site preparation and construction, the program leading to the assessment of effects, including use of models, should be described.

6.3.7 Air

a. The applicant should describe the program that will be used to monitor ambient air quality and local meteorology, if relevant. If significant changes in the program previously used for gathering background data are anticpated when determining the effects of plant construction and site preparation, those changes should be well explained.

b. The applicant should identify sources of meteorological data. Locations and elevations of observation stations, instrumentation, and frequency and duration of measurements should be specified both for the applicant's measuring activities and for activities of governmental agencies or other organizations on whose information the applicant intends to rely.

c. The applicant should describe stack monitoring provisions, such as continuous monitors for SO_2, NO_x, Oxygen, visible emissions or opacity and the calibration and calculation procedures to be used for each.

6.3.8 Geology

Those geological and soil studies designed to determine the environmental impact of the construction and/or operation of the facility should be described. The description should include identification of the sampling pattern and the justification for its selection, the sampling method, pre-analysis treatment, and analytic techniques. Other geological and soil studies should be briefly summarized if relevant.

6.3.9 Archaeology

The procedure for monitoring construction activities to identify, cataloque, or preserve any unforeseen discoveries of archaeological significance should be described.

CHAPTER 7

ECONOMIC AND SOCIAL EFFECTS OF PLANT CONSTRUCTION AND OPERATION

The purpose of this chapter is to present the applicant's assessment of the economic and social effects of the proposed facility. Projections of cost and benefits should include the assumptions upon which they are based.

7.1 Socio-Economic Benefits

Potential benefits of the plant, if any, should be discussed such as the sale of steam or other products or services. If claimed, estimate the likelihood of achieving such benefits.

Discuss social and economic benefits which may affect various local governmental agencies within whose jurisdiction the plant is to be located.

Examples may include:

1. Tax revenues to be received by local and State governments.
2. Temporary and permanent new jobs created and payroll amounts.
3. Enhancement of recreational or environmental values by making available for public use any parks, artificially created cooling lakes, marinas, wildlife management areas, etc.
4. Creation and improvement of local roads, waterways, or other local transportation facilities.

5. Increased knowledge of the environment as a consequence of ecological research and environmental monitoring activities associated with plant operation, and technological improvements from the applicant's research program.
6. Creation of a source of heated discharge which may be used for beneficial purposed (e.g., in aquaculture, in improving commercial and sport fishing, or in industrial, residential, or commercial heating).
7. Provision of public education or meeting facilities (e.g., a visitors' center).

In each instance where a particular benefit is discussed, the applicant should indicate, to the extent practical, who is likely to be affected and for how long. In the case of aesthetic impacts that are difficult to quantify, the applicant should provide its best estimate of the benefits.

7.2 Socio-Economic Costs

This section should include a detailed assessment of the anticipated economic and social costs resulting from the proposed power plant and its operation and any special measures to be taken to alleviate adverse impacts.

7.2.1 Plant costs

Information on plant costs as included in the applicant's latest Ten Year Site Plan should be provided.

7.2.2. External Costs

The effects of external co[illegible] interests of people should be examined. The applica[illegible] should [illegible] as applicable, an evaluation, supporting data and rationale re[illegible] external social and economic costs as noted below. The appli[illegible] uld describe the estimated economic and social impact, and a[illegible]ial measures to be taken to alleviate adverse impacts.

7.2.2.1 Temporary External Costs

Temporary external costs may include: Shortages of housing; inflationary rental or prices; congestion of local streets and highways; noise; temporary aesthetic disturbances; overloading of water supply and sewage treatment facilities; crowding of local schools, hospitals or other public facilities; overtaxing of community services; and the disruption of peoples' lives or the local community caused by acquistion of land for the proposed site. Allocate the costs between continuing and temporary construction period costs.

7.2.2.2 Long-term external costs

There may be long term external costs of the facility which should be discussed. A list of examples are: impairment of recreational values (e.g., reduced availability of desired species of wildlife and sport fish, restrictions of access to land or water areas preferred for recreational use); deterioration of aesthetic and scenic values; restrictions on access to areas of scenic values; restrictions on access to areas of

scenic, historic, cultural, natural, or archeological value; removal of land from present or contemplated alternative uses; creation of locally adverse meteorlogical conditions and noise, reduction of regional products due to displacement of persons from the land proposed for the site; lost income from reductions in recreation, tourism, commercial fishing, and real estate values in areas adjacent to the proposed facility; increased costs to local government for services required by the permanently employed workers and their families.

CHAPTER 8

ALTERNATIVE ENERGY SOURCES AND SITES

The intent of this chapter is to present the basis for the applicant's proposed choice of site and fuel. The applicant should describe its site-plant selection process and indicate how and why a particular site and a particular energy source was chosen, including discussion of the range of practicable alternatives. Material from the most current Ten Year Site Plan and the latest Florida Electric Power Generating Group Composite Ten Year Site Plan may be utilized and updated to fulfull the requirements of this chapter. The purpose of this chapter is to assist state and federal agencies in determining that the applicant has made the most cost effective choice in providing new capacity in keeping with the legislature intent to provide abundant, low cost electrical energy.

8.1 Assessment of alternative sites

The applicant should discuss the practical alternative sites considered in Chapter 4 of the latest ten year site plan.

8.2 Alternative Fuels analysis

The applicant should briefly discuss the availability of fuel or other energy sources at the chosen site including any limitations on the use of specific fuels. Included in this section should be a condensed description of the major considerations which led to selection of the proposed fuel. The applicant should discuss the short and long-term availability of the chosen fuel(s) and of alternative fuels or other

energy sources available at the proposed site. Limitations on the use of specific fuels at the proposed site should be identified; for example, limitations on: maximum allowable fuel sulfur content, required fuel transport networks, availability of large volumes of refuse, sources of hydroelectric power, etc.

APPENDIX B

PERTINENT APPLICANT INFORMATION

PERTINENT APPLICANT INFORMATION

Applicants Official Name:	Hillsborough County
Address:	Hillsborough County Courthouse Tampa, Florida 33602
Name and Title of Business Head:	_____, Chairman of Board of County Commissioners
Name, Title and Address of Representative Responsible for Obtaining Certification:	Warren N. Smith, Director Department of Solid Waste 925 East Twiggs Street Tampa, FL 33601
Site Location:	County-Hillsborough Nearest Incorporated City - Tampa Township and Range: T29S, R20E
	Latitude and Longitude: 27°57'14" N 82°40'22" W
	UTMs Northerly - 30/92/700m.N. Easterly - 3/68/220m.E.
Nameplate Generating Capacity of Proposed Facility:	29 megawatts
Ultimate Site Capacity for Certification:	39 megawatts

REMARKS: The sole purpose of the proposed energy recovery facility is to dispose of solid waste and recover energy and possibly materials. This proposed facility will afford Hillsborough County a method of solid waste disposal which will substitute for the present landfilling operations. Hillsborough County does not operate, maintain or construct facilities for the purpose of electric generation. Neither does Hillsborough County distribute electrical energy generated at facilities operated by others.

PROFESSIONAL ENGINEER SUBMITTING APPLICATION

Name:	Thomas D. Furman, Jr.
Florida Registration No.:	12473
Date:	_____
Signature:	_____
Address and Phone Number:	Camp Dresser & McKee Inc. 2280 U.S. Highway 19 North, Suite 202 Clearwater, FL 33515 (813) 796-1903

(SEAL)