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
Matt Jetton, Vice Chairman
E. L. Bing
John Paulk
Jan K. Platt

Norman W. Hickey,
County Administrator

August, 1984

Prepared by

Camp Dresser & McKee Inc.

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

NORMAN W. HICKEY, COUNTY ADMINISTRATOR

August 1, 1984

State of Florida
Department of Environmental Regulation
Division of Environmental Permitting
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301
Attn: Mr. Hamilton Oven, P.E.
Power Plant Siting Section

Re: Application for Power Plant Site Certification-Hillsborough County Solid Waste Energy Recovery Facility

Gentlemen:

Transmitted herewith is Hillsborough County's Application for an Electrical Power Plant Siting Certification which is submitted in accordance with Rules of the Florida Department of Environmental Regulation, Chapter 17-17 F.A.C.

Hillsborough County welcomes the opportunity to work with the Department of Environmental Regulation and other agencies involved in reviewing this application for site certification.

We anticipate that the information contained herein provides all that is necessary to permit a thorough evaluation of our application. However, if you find that additional data or clarification is required, please contact me at your earliest convenience.

Also enclosed is our check for $25,000.00 to cover the application fee.

Sincerely,

Warren N. Smith

Warren N. Smith, Director
Department of Solid Waste

WNS/pd
Enclosures

APPLICANT INFORMATION

Applicant's Official Name:	Hillsborough County
Address:	Hillsborough County Courthouse 419 Pierce Street Tampa, Florida 33602
Business Entity: Name and Title of Business Head:	County Government Rodney Colson, Chairman of Board of County Commissioners
Name, Title and Address of Representative Responsible for Obtaining Certification:	Warren N. Smith, Director Department of Solid Waste P.O. Box 1110 925 East Twiggs Street Tampa, Florida 33601 (813) 272-6674
Site Location:	County - Hillsborough Nearest Incorporated City - Tampa Latitude and Longitude: 27°57'14" N 82°40'22" W UTMs Northerly - 30/92/700m.N. Easterly - 03/68/220m.E. Township and Range: T29S, R20E; Sections 18 and 19
Location of Any Directly Associated Transmission Facilities:	Hillsborough County - Adjacent to the Site
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.

Hillsborough County, Florida
Solid Waste Energy Recovery Facility
Application for Power Plant
Site Certification

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ABBREVIATIONS AND ACRONYMS

AADT	-	Average annual daily traffic
AAQS	-	Ambient air quality standard
ADT	-	Average daily traffic
agl	-	Above grade level
AQCR	-	Air Quality Control Region
AQS	-	Air quality standards
BACT	-	Best available control technology
BOCC	-	Hillsborough County Board of County Commissioners
CDM	-	Camp Dresser & McKee Inc.
CEC	-	Cation exchange capacity
CUPS	-	Consumptive Use Permits
CY	-	Cubic yards
DAHRM	-	Division of Archives History and Records Management (Florida Department of State)
dBA	-	Decibel (A-weighted scale)
DER	-	Florida Department of Environmental Regulation
DO	-	Dissolved Oxygen
DRI	-	Development of Regional Impact
EPA	-	United States Environmental Protection Agency
EPC	-	Hillsborough County Environmental Protection Commission
ESP	-	Electrostatic precipitator
FAA	-	Federal Aviation Administration
FAAQS	-	Florida Ambient Air Quality Standards
FAC	-	Florida Administrative Code
FDER	-	Florida Department of Environmental Regulation
FEMA	-	Federal Emergency Management Agency
FIRM	-	Flood Insurance Rate Map
FLUCCS	-	Florida Land Use and Cover Classification System
gpd	-	Gallons per day
gpm	-	Gallons per minute
gr/dscf	-	Grains per dry standard cubic foot
HCBOCC	-	Hillsborough County Board of County Commissioners
HCCPC	-	Hillsborough County City-County Planning Commission
HCEPC	-	Hillsborough County Environmental Protection Commission
HSH	-	Highest Second Highest Concentration
Hz	-	Hertz
ISC	-	Industrial Source Complex Dispersion Model
JTU	-	Jackson Turbidity Units
kips	-	Kilopounds (1000 pounds)
km	-	Kilometers
kv	-	Kilovolt
kw	-	Kilowatt
LAER	-	Lowest Available Emission Rate
Ldn	-	Day-Night Energy Equivalent Noise Level
Leq	-	Energy Equivalent Noise Level
LOS	-	Level Of Service
M^3	-	Cubic meter
MCL	-	Maximum Contaminant Level
mgd	-	Million gallons per day

mps	-	Meters per second
MSL	-	Mean Sea Level
MSW	-	Municipal Solid Waste
mw	-	Megawatts
NAAQS	-	National Ambient Air Quality Standards
NGVD	-	National Geodetic Vertical Datum
NHPA	-	National Historic Preservation Act
NPDES	-	National Pollutant Discharge Elimination System
NSPS	-	New Source Performance Standards
NWI	-	National Wetlands Inventory
PFU	-	Plaque Forming Units
ppm	-	parts per million
PSD	-	Prevention of Significant Deterioration
psi	-	pounds per square inch
P.U.D.	-	Planned Unit Development
PURPA	-	Public Utility Regulatory Policies Act
RCRA	-	Resource Conservation & Recovery Act
RFP	-	Requests For Proposals
SCS	-	Soil Conservation Service
SHPO	-	State Historic Preservation Officer
SIA	-	Significant Impact Area
SIL	-	Significant Impact Level
SIP	-	State Implementation Plan
SR	-	State Road
SSR	-	Seaboard System Railroad
SWFWMD	-	Southwest Florida Water Management District
TECO	-	Tampa Electric Company
tpd	-	Tons per day
TSP	-	Total Suspended Particulates
USEPA	-	United States Environmental Protection Agency
USFWS	-	United States Fish and Wildlife Service
vpd	-	Vehicles per day
Vph	-	Vehicles per hour
WWTP	-	Wastewater Treatment Plant

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

INTRODUCTION

In Hillsborough County, there has been an increased interest in solid waste disposal with emphasis on the concept of resource recovery. This has been stimulated by a greater awareness of the environmental and siting problems associated with landfill disposal methods, and by the potential for recovering energy and recyclable materials from solid waste. Landfilling, while suitable in other locations, has become increasingly difficult as a primary disposal method in Hillsborough County. Areas which are environmentally and economically suitable for sanitary landfilling in this 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 mass-burn, resource recovery system.

The County's decision to build a solid waste energy recovery facility is the culmination of nearly seven years of dedicated solid waste management planning. Since 1977, the Hillsborough County Board of County Commissioners has been working to find a long-term alternative to sanitary landfilling. The County started its effort shortly after the State of Florida enacted legislation (Chapter 403.706 Florida Statutes) requiring heavily populated counties like Hillsborough to submit resource recovery and management plans. Numerous studies, commissioned by the County since 1977, have concluded that resource recovery is the prudent long-term solution to the County's refuse disposal needs. By using the energy obtainable from solid waste to generate electricity, resource recovery makes the most sense economically and environmentally.

SITE LOCATION

Pursuant to Section 403.505, Florida Statutes, Hillsborough County is applying for certification of a solid waste energy recovery facility at a 50.4 acre site west of Faulkenburg Road and approximately 0.6 miles north of U.S. Highway 60 on land owned by the County. The site is centrally located in the unincorporated County and adjacent to an existing 230KV Tampa Electric Company (TECO) transmission line.

PURPOSE OF THE PROPOSED FACILITY

The primary purpose of the facility is to dispose of the municipal solid waste generated within the unincorporated areas of the County. Non-combustibles and inert ash residue resulting from the plant's combustion process will be landfilled at the Southeast County Sanitary Landfill, currently under construction. The derived power from the combustion of the refuse is an additional benefit. Its sale to Tampa Electric Company will help offset the overall cost of operating the facility. The proposed project has previously received an affirmative determination of need from the Florida Public Service Commission.

Hillsborough County will contract with a full-service vendor to design, construct, and operate the plant for 20 years. The County will own the facility.

The proposed project is designed to help achieve the State's goal of enhancing environmental quality and preserving natural resources. To protect its groundwater and surface water resources, Hillsborough County is striving to limit sanitary landfilling of solid waste and wants to utilize the environmentally sound and economically advantageous method of solid waste disposal-resource recovery.

FACILITY DESCRIPTION

The proposed project will be a mass-burn resource recovery facility with an initial continuous design rated processing capacity of 1,200 tons per day of municipal solid waste and a gross electrical generating capacity of approximately 29 megawatts. In anticipation of future disposal needs, Hillsborough County is seeking certification for ultimate site electrical generating capacity of approximately 39 megawatts (gross), using 1,600 tons per day of municipal solid waste.

APPLICATION OVERVIEW

This application has been prepared in accordance with the State of Florida Department of Environmental Regulation (DER) Chapter 17-17 Rules and follows the format prescribed in DER Form 17-1.211(1), F.A.C. (Instruction Guide for Certification Applications: Electrical Power Plant Site, Associated Facilities, and Associateed Transmission Lines).

The application consists of three (3) volumes:

Volume I (Application) - contains the Applicant Information sheet, Chapters 1 through 9 as presented in the DER Instruction Guide, and the listing of references.

Volume II (Appendices) - contains the appendices of the application (Chapter 10). In addition to those appendices specifically required in the DER Instruction Guide, included are ten (10) additional appendices which are more appropriately included in Volume II than in the application text of Volume I.

Volume III (Air Quality) - contains DER Form 17-1.202(1) Application to Operate/Construct Air Pollution Sources; the specific requirements of the Prevention of Significant Deterioration (PSD) review; the New Source Review (NSR) for non-attainment areas; and a technical stack height analysis. The principal components of the PSD/NSR include: projecting facility emissions; performing a Best Available Control Technology (BACT) and Lowest Achievable Emission Rate (LAER) analysis; and an air quality impact analysis.

As required by Rule 17-17.121(3)(a), F.A.C. also submitted are three (3) copies of materials which show the procedures taken to accomplish

compliance of the site with existing land use plans and zoning ordinances. This compilation of information is referred to as the "Compliance Document".

PRINCIPAL FINDINGS

The proposed facility will be designed and operated to meet all applicable Federal, State and County Standards. As planned, the facility will have a minimal impact on the surrounding environment. The analysis presented in the application supports this conclusion:

- Air Quality - As discussed in Volume III - Air Quality, the combustion process for the facility will be environmentally sound. The results of the Prevention of Significant Deterioration (PSD) analysis indicate:

  - Best Available Control Technology/Lowest Achievable Emission Rate (BACT/LAER) for the proposed source is the use of emission controls inherent to the system design with an ESP designed to meet an outlet grain loading of 0.025 gr/dscf @12% CO_2;

  - The facility will operate in compliance with the Prevention of Significant Deterioration (PSD) increments, National Ambient Air Quality Standards (NAAQS), and Florida Ambient Air Quality Standards (FAAQS) for all criteria pollutants;

  - Fugitive dust created during construction of the facility is addressed in Section 4.5. With suggested standard mitigative measures, there will be no adverse effects due to fugitive emissions.

  - Total suspended particulates (TSP) are examined in Section 5.6.1 and Appendix 10.1.5. The proposed resource recovery facility emissions will result in an ambient impact equal to approximately 2.2 percent of the Florida Ambient Air Quality Standard for TSP;

  - As discussed in Chapter 3, the tipping area and refuse bunker will be enclosed and under negative air pressure. Thus, odors will not be able to leave the resource recovery building. Odors within the building will be drawn into the furnace and destroyed through the combustion process; and

  - The emissions from the facility will not have an adverse effect on surrounding soils, vegetation or visibility.

- Land Use and Zoning - A series of advertised formal public hearings have been conducted concerning site rezoning and a Land Use Plan Amendment. At those hearings, public input, testimony, and documents were entered into the record as land use and zoning issues were evaluated. As noted in Section 2.2.2, the Hillsborough County-City/County Planning Commission and its staff, the Hillsborough County Department of Development Coordination, the Zoning Hearing Master, and the Board of County Commissioners each concluded that the

proposed solid waste energy recovery project is consistent with all portions of the Hillsborough County Horizon 2000 Comprehensive Plan; and compatible with land use and zoning patterns in the area. Accordingly, the Board of County Commissioners amended the local Comprehensive Plan and rezoned the site.

- Noise - As discussed in Section 5.7, during operation of the resource recovery facility noise levels at the closest residence would increase by only 0.5 to 1.0 dBA above existing and modeled data. This increase is not perceptible to the human ear.

- Traffic - As discussed in Section 5.9.4, the solid waste energy recovery facility and Brandon Subregional Wastewater Treatment Plant (WWTP) will increase daily traffic by approximately 5 percent on Faulkenburg Road and less than 1 percent on State Road 60. The analysis shows that there will be no capacity problems with this additional traffic.

- Surface Water and Groundwater - As discussed in Section 4.2 and 4.3, all plant process water will be drawn from the co-located WWTP and all wastewater discharged from the solid waste energy recovery facility will go directly to this wastewater treatment plant. Potable water will be used in small quantities in the personnel areas of the plant. All plant water will be recycled, with no discharge to surface or groundwater. Runoff from vegetated areas, paved areas, and rooftops will be collected in onsite stormwater retention/detention basins. Refuse storage and ash/residue handling unit operations within the proposed facility will be covered and therefore, will not come into physical contact with precipitation or associated runoff. As discussed in Section 4.3, there will be no influence on groundwater quality as a result of the planned construction dewatering activity.

- Soil and Foundation Conditions - As discussed in Section 2.3.1, preliminary subsurface data indicate that certain surface conditions at the project will require specific site preparation and subsurface foundation design. These subsurface conditions are considered typical of those normally encountered in the immediate area and will be addressed by appropriate site preparation and foundation design.

- Plant and Animal Communities - No special plants, terrestrial/palustrine natural communities or aquatic natural communities are known or expected to occur within five miles of the project site. While the site and adjacent areas provide habitats for a variety of terrestrial and aquatic organisms, it is not anticipated that the proposed project will have any significant effects on area ecology.

- Aesthetics - As discussed in Section 3.2.2, there will be a visual height impact associated with the facility. The facility will be designed to be aesthetically pleasing and architecturally compatible with the surrounding area.

- Archaeological Sites and Historic Preservation Areas - As discussed in Section 5.10, there are no historic or prehistoric resources known

to be present within the project site boundaries as confirmed by field investigations. Projected use of the project site will not impact any historic or prehistoric cultural resources.

PROJECT STATUS

The Hillsborough County solid waste-energy recovery facility will be designed, constructed and operated by a full-service vendor under a 20-year contract to the County. The procurement process for the facility is currently underway with selection of the contractor expected by October, 1984. The selected contractor will have to guarantee compliance with the terms and all conditions of the site certification and rezoning conditions. As currently envisioned, construction of the facility will begin in the spring or summer of 1985 with startup expected in the spring of 1988.

The co-located WWTP is currently undergoing final design. The final design will be completed by January, 1985, at which time the contruction permit application will be submitted to DER. The WWTP should be operational by September, 1986.

CHAPTER 1

NEED FOR POWER AND THE PROPOSED FACILITIES

The primary objective of the proposed resource recovery facility is to dispose of solid waste generated within the unincorporated areas of Hillsborough County. 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 disposal problem in Hillsborough County. Generation of electricity from the combustion of solid waste represents the most feasible alternative to sanitary landfilling for the County, although the derived power is a secondary benefit.

In Chapter 84-198, Laws of Florida (1984), the Florida Legislature has declared that "it is critical to encourage energy conservation in order to protect the health, prosperity, and general welfare of this State and its citizens". The Legislature has further declared that the "combustion of solid waste by small power production facilities for the production of electricity not only represents conservation efforts well directed towards that goal, but also represents an environmentally preferred alternative to conventional solid waste disposal in this State".

Under Section 403.501, Florida Statutes, the Florida Electrical Power Plant Siting Act, the Legislature has charged the Florida Public Service Commission with the responsibility of determining whether construction of a proposed electrical generating facility is necessary to meet the present or expected need for electricity in peninsular Florida as a whole. Certification under the Act must be obtained for the construction of any generating facility greater than 50 MW, and may be obtained for a small facility under Section 403.503, Florida Statutes and Chapter 83-415, Laws of Florida ("The Hillsborough County Solid Waste Disposal and Resource Recovery Act").

Hillsborough County elected to seek certification of its proposed 39 MW small power production facility, by a petition filed with the Public Service Commission on August 30, 1983. A copy of the petition is included in Appendix 10.4.1. The Commission's report to the Florida Department of Environmental Regulation, as required by Section 403.507(1)(b) of the Florida Electrical Power Plant Siting Act, found in part, that the proposed facility will, "increase electrical system reliability and integrity and will maintain the supply of adequate electricity at a reasonable cost while reducing our dependence on fossil fuel". In addition, the report noted that the "construction of the plant is a conservation measure which we have encouraged precisely because it may mitigate the need for additional construction by electric utilities". This affirmative determination of need became effective and final on November 4, 1983 (Order No. 12610), through a Florida Public Service Commission Consumating Order No. 12678 on November 14, 1983. Copies of Florida Public Service Commission's final report and consummating order are included in Appendix 10.4.1.

On August 29, 1983, Hillsborough County filed an application with the Federal Energy Regulatory Commission (FERC) for certification of its proposed resource recovery facility as a qualifying small power production facility pursuant to Section 201 of the Public Utility Regulatory Policies Act of 1978 (PURPA) and rules promulgated by FERC. Notice of the application was published in the Federal Register on September 20, 1983. On November 16, 1983, the FERC granted the County's application for certification of its resource recovery project as a qualifying small power production facility. A copy of the final order is included in Appendix 10.1.7.

CHAPTER 2

SITE AND VICINITY CHARACTERIZATION

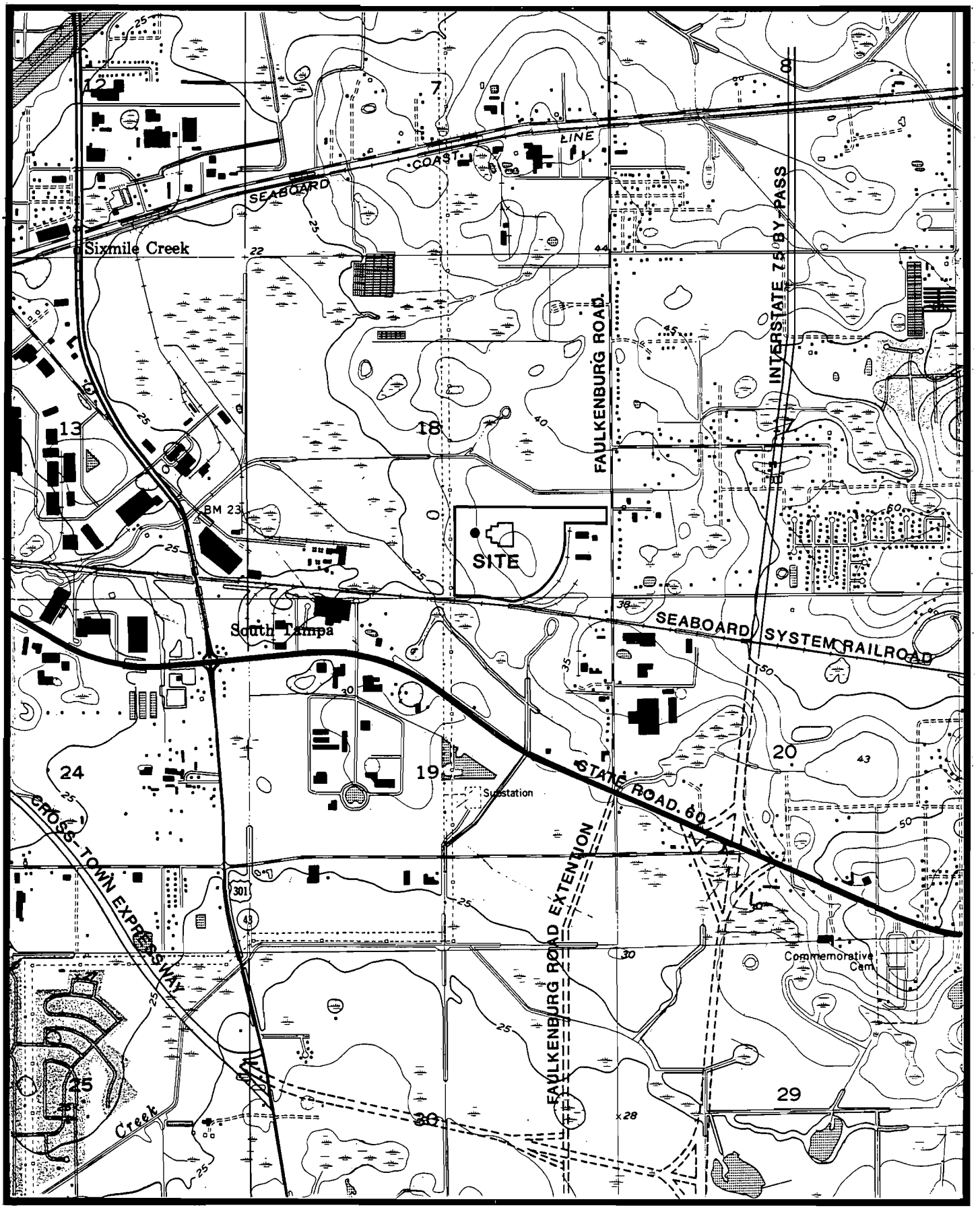
2.1 SITE AND ASSOCIATED FACILITIES DELINEATION

2.1.1 Site Delineation and Ownership

The 50.4-acre site is located in the southern portion of a 353-acre tract of land purchased by Hillsborough County, Florida from Seaboard System Railroad on June 1, 1984. The site is bounded on the south by the Seaboard System Railroad; on the west by a Tampa Electric Company (TECO) 230 kV transmission line easement; on the north by vacant improved pasture land owned by Hillsborough County; and on the east by Faulkenburg Road and the L.B. Foster Pipe Company (located on land leased from the County). Figure 2.1 shows the delineation of the site boundaries. The boundary survey and deed of the entire 353-acre tract is included in Appendix 10.6. A boundary survey, legal description, and topographic survey of the site boundaries are included as Figure 2.2.

Abutting and adjacent properties are delineated on Figure 2.3. All of the land abutting the site to the south is owned by the Seaboard System Railroad. North and east of the site is land currently owned by Hillsborough County. A 225 foot portion of the eastern boundary of the site abuts the Faulkenburg Road right-of-way. Abutting the site to the west is a 200-foot wide easement of the Tampa Electric Company. The southern boundary of the site abuts the right-of-way of the Seaboard System Railroad line.

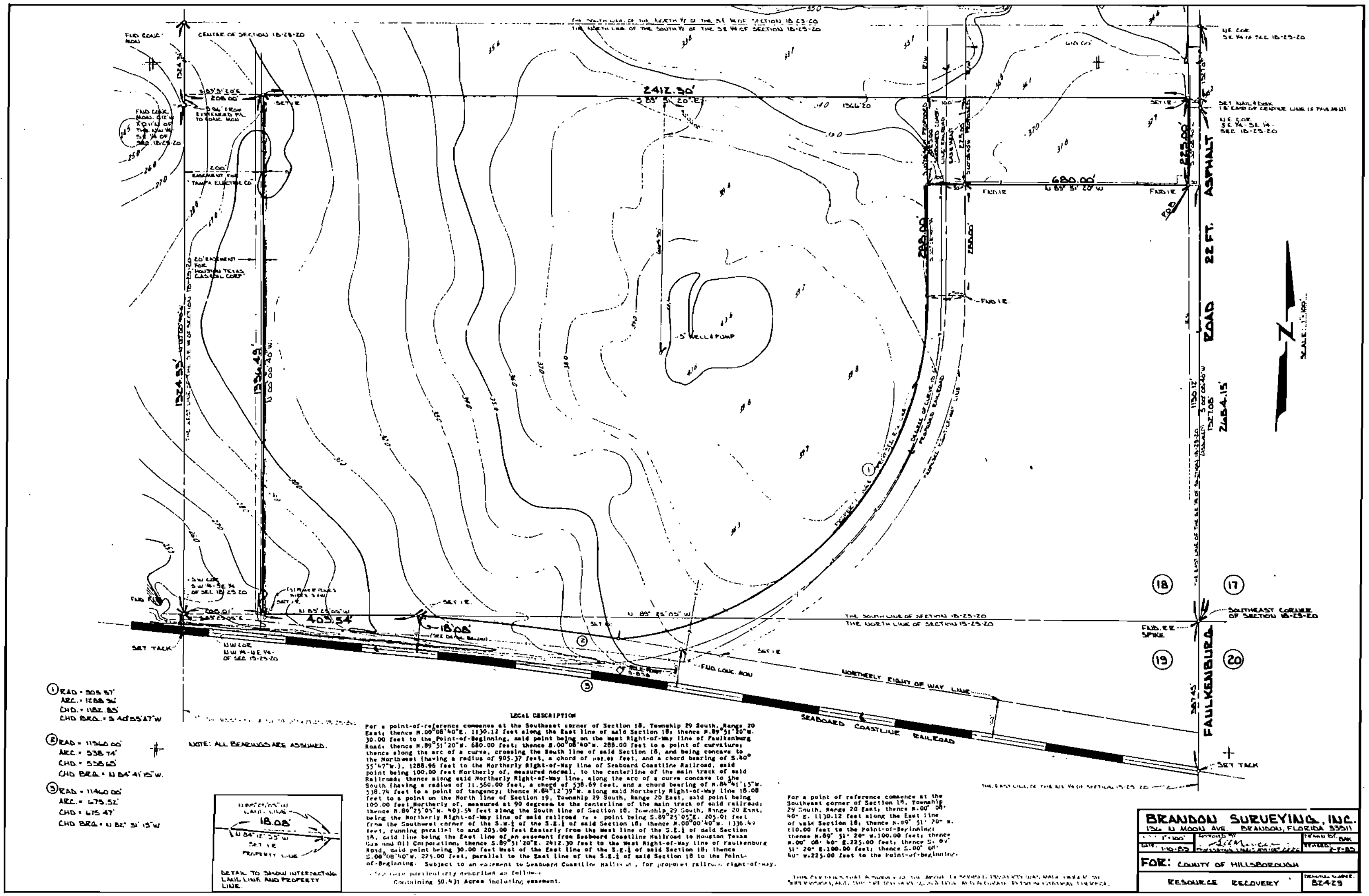
A complete list of property owners within 150 feet of the site and subdivisions within 250 feet of the site and the property assessment map are included in Appendix 10.6. The nearest private homes to the site are those located east of Faulkenburg Road near the access road to the site.



HILLSBOROUGH COUNTY
ENERGY RECOVERY PROJECT

FIGURE 2.1
SITE BOUNDARIES

1000 0 1000 2000 3000 FEET

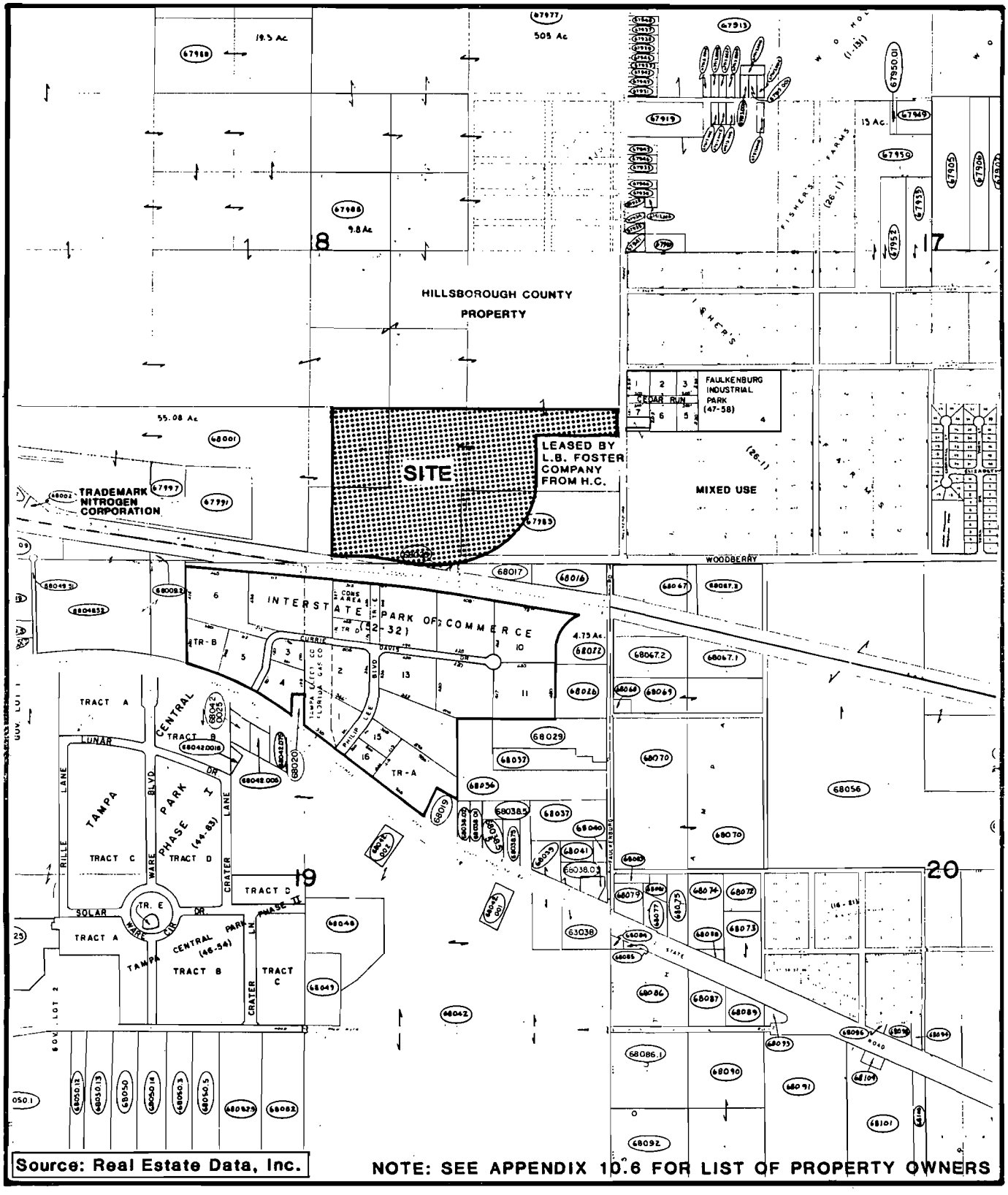


HILLSBOROUGH COUNTY
ENERGY RECOVERY PROJECT

FIGURE 2.2

BOUNDARY SURVEY AND LEGAL DISCRIPTION

200 0 200 400 600 FEET



HILLSBOROUGH COUNTY
ENERGY RECOVERY PROJECT

FIGURE 2.3

ABUTTING AND ADJACENT PROPERTIES

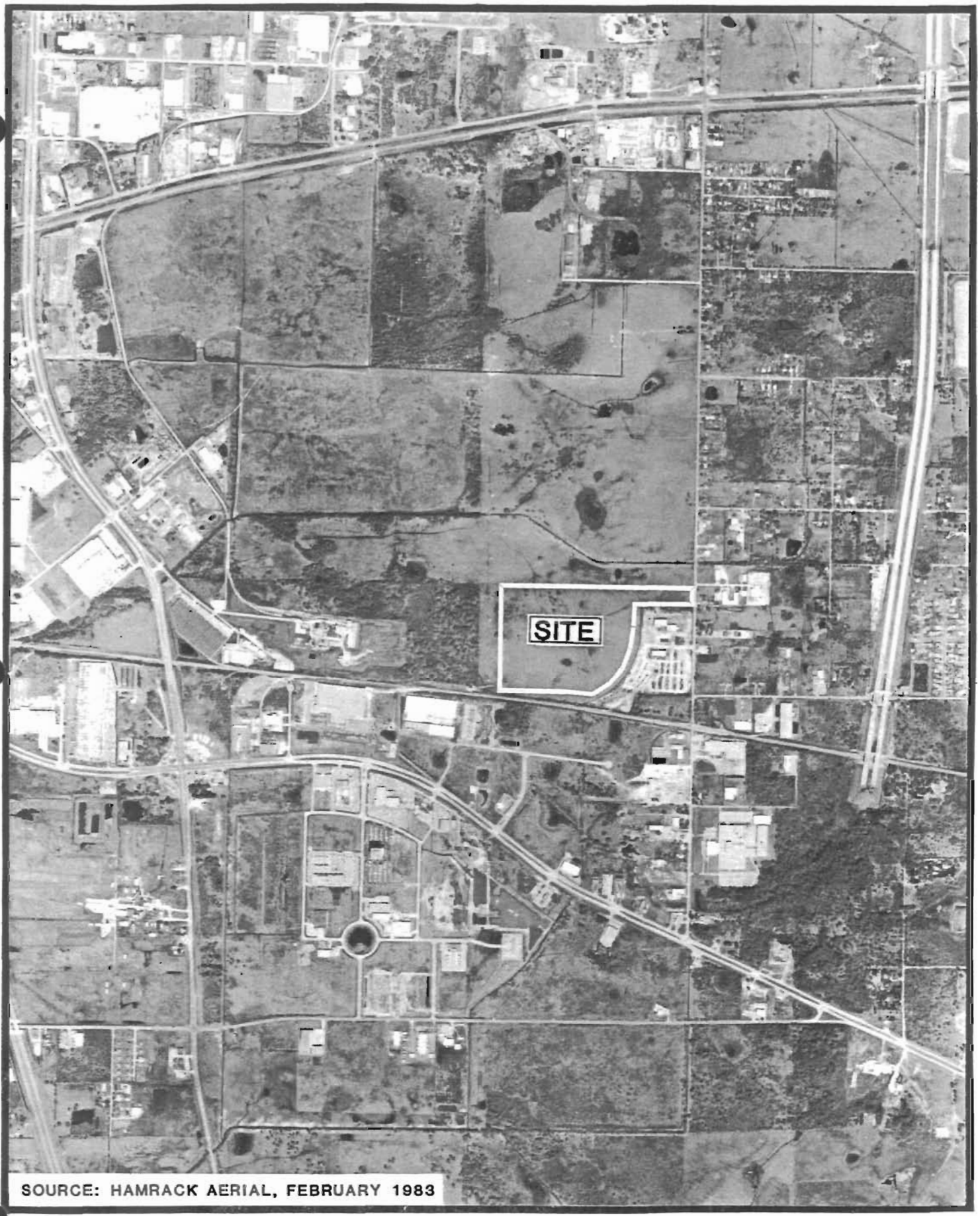
500 0 500 1000 1500 FEET

2.1.2 Existing and Proposed Site Uses

Existing land use at the site is improved pasture land. Much of the site is used for cattle grazing. The majority of the site consists of level grassy land with scattered live oaks and pines in the northwest portion of the site. Located in the south central portion of the tract is a small depression that contains standing water periodically but it is not a well-defined, viable wetland. One building, a small farm shed, is located on the property. There is also a small stockade and fencing onsite. These structures will be removed upon development of the site. The 3-inch well on site will be abandoned and permanently plugged in accordance with the rules of the Southwest Florida Water Management District. Figure 2.4 illustrates the existing land use of the site and surrounding area.

As presented in the General Site Development Plan, Figure 2.5, the resource recovery facility has been situated in the northwestern portion of the site allowing good traffic circulation within the site and providing open space between the facility and L.B. Foster Pipe Company. The layout of the facility on the site indicates that about 7 percent of the site will be occupied by resource recovery structures, and about 12 percent of the site will be occupied by roadways and parking. A complete summary of existing and proposed land uses as well as the acreage devoted to those uses is presented in Table 2.1.

Although the total site is 50.4 acres, about 28 percent of the area, 14.1 acres, is scheduled to be developed by the County for the Northwest Brandon Subregional Wastewater Treatment Plant. The wastewater treatment plant is expected to be operational (beneficial occupancy) by September 1986 while the resource recovery facility is being constructed. No portion of the site is located in the 100-year flood zone as defined by the Federal Emergency Management Agency (FEMA). The 100-year flood zone in the vicinity of the site is shown in Figure 2.6.



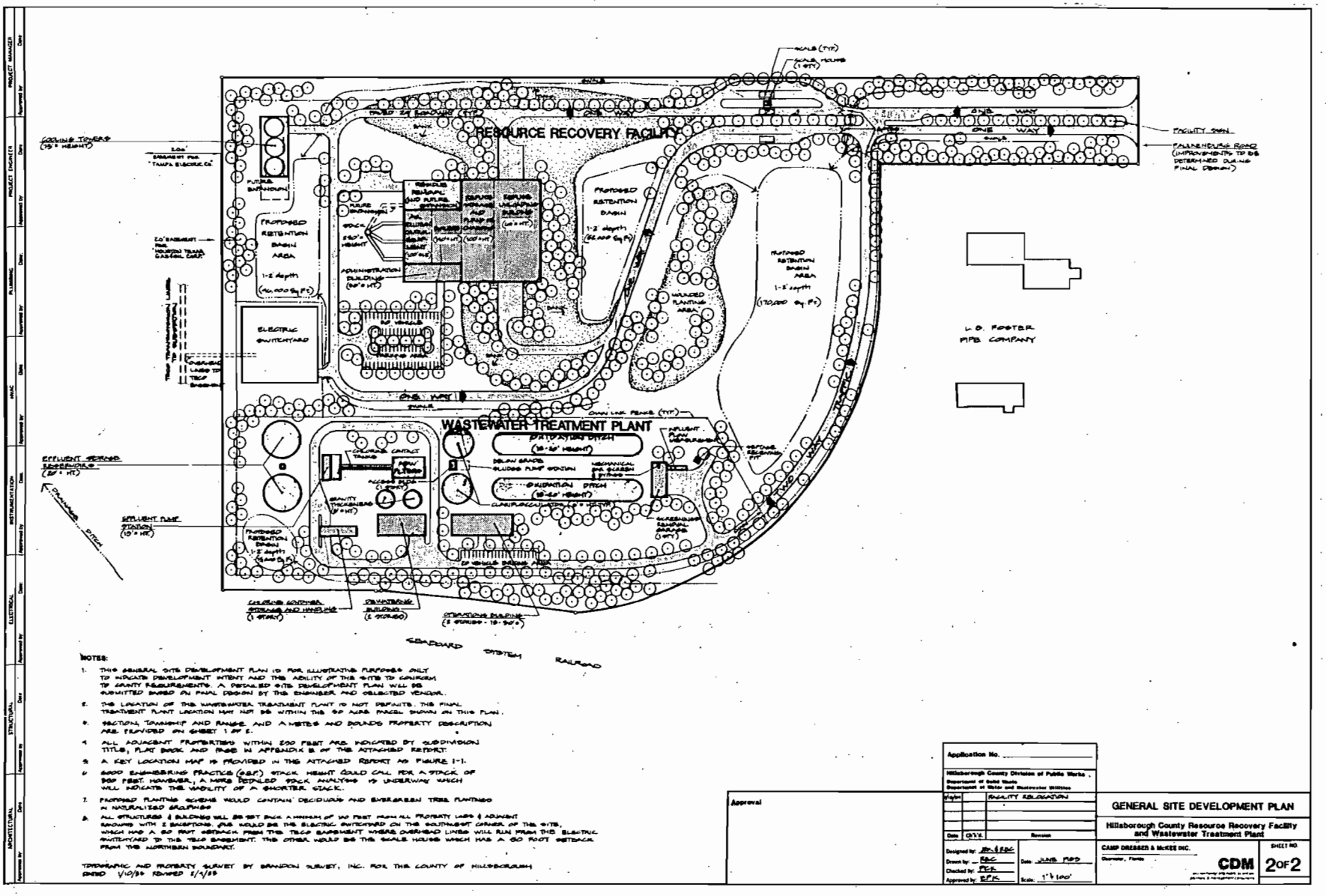
SOURCE: HAMRACK AERIAL, FEBRUARY 1983

HILLSBOROUGH COUNTY
ENERGY RECOVERY PROJECT

FIGURE 2.4

AERIAL PHOTOGRAPH OF SITE

1600 800 0 1600 FEET



HILLSBOROUGH COUNTY ENERGY RECOVERY PROJECT

Note: The map pocket that follows this figure contains a copy of the General Site Development Plan Certified by the Hillsborough County Board of County Commissioners.

FIGURE 2.5
GENERAL SITE DEVELOPMENT PLAN

200 0 200 400 600 FEET

2.3.7 Meteorology and Ambient Air Quality

2.3.7.1 Meteorology

The proposed resource recovery facility is situated in Hillsborough County which is located along the west coast of south central Florida. The climate of this region is influenced by the surrounding waters as no part of Florida is more than 70 miles from salt water. Topography is slight, interior ranges are 100 to 200 feet above mean sea level. Summers are long, warm and relatively humid. Summer temperatures are about the same throughout the state. Winters are mild, punctuated by periods of cool to cold air. Temperatures in the northern part of the state average 13 degrees (F) cooler than the south. The winds are influenced by the easterlies, particularly in the south. Elsewhere land/sea breeze effects and convectional forces inland make prevailing winds erratic. Rainfall is distributed throughout the year with the four month period from June to September receiving slightly more rain. Precipitation is usually in the form of local showers and thundershowers. Occasionally tropical storms will produce substantial amounts of rain over large areas.

Regional Climatology. There are five meteorological stations within 50 km of the site. The stations at Tarpon Springs Sewage Plant and St. Petersburg are along the coast. The Plant City and Lakeland stations are inland. The station at Tampa International Airport is several kilometers inland near Old Tampa Bay. Climatic summaries for the five stations are in Tables 2.31 and 2.32. Of these stations Tampa is the closest to the proposed site (21 km to the west-northwest) and has both surface and upper air meteorological data. The recorded upper air data has been used as input to the air quality modeling analysis. (See Volume III - Air Quality).

A comparison of the climatological parameters listed for each site shows annual mean temperatures at Tampa are nearly identical to the more inland stations and fall between the values of the coastal stations. Summer maximum temperatures, which are highest during July and August, are fairly

TABLE [illegible]1

NORMALS, MEANS, AND EXTREMES

FOR TAMPA AND LAKELAND

TAMPA, FL **INTERNATIONAL AIRPORT** **EASTERN** **27° 58′ N** **82° 32′ W** **19 FT** **1975**

Month	Temperatures °F: Normal: Daily maximum	Normal: Daily minimum	Normal: Monthly	Extremes: Record highest	Year	Record lowest	Year	Normal Degree days Base 65 °F: Heating	Cooling	Precipitation in inches: Water equivalent: Normal	Maximum monthly	Year	Minimum monthly	Year	Maximum in 24 hrs.	Year	Snow, Ice pellets: Maximum monthly	Year	Maximum in 24 hrs.	Year	Relative humidity pct.: Hour 01 (Local time)	Hour 07 (Local time)	Hour 13 (Local time)	Hour 19 (Local time)	Wind: Mean speed m.p.h.	Prevailing direction	Fastest mile: Speed m.p.h.	Direction	Year	Pct. of possible sunshine	Mean sky cover, tenths, sunrise to sunset	Mean number of days: Sunrise to sunset: Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, Ice pellets 1.0 inch or more	Thunderstorms	Heavy fog, visibility ¼ mile or less	Temperatures °F: Max. (b) 90° and above	Max. 32° and below	Min. 32° and below	Min. 0° and below	Average station pressure mb.: Elev. 11 feet m.s.l.
(a)				12		12					29		29		29		29		29		12	12	12	12	29	14	23	23		29	29	29	29	29	29	29	29	29	12	12	12	12	3
J	70.6	50.1	60.4	84	1975	23	1971	203	60	2.33	8.02	1948	T	1950	3.29	1953	7	1965	T	1969	85	87	80	74	8.9	N	35	29	1959	65	5.5	10	10	11	6	0	1	6	0	0	2	0	1020.8
F	71.9	51.7	61.8	88	1971	27	1967	176	90	2.86	7.95	1963	0.21	1950	3.25	1963	7	1951	T	1951	81	84	55	69	9.6	E	50	32	1954	67	5.4	9	9	10	7	0	1	3	0	0	1	0	1019.8
M	76.1	55.9	66.0	88	1974	35	1971	90	118	3.89	12.84	1959	0.06	1956	5.20	1960	0.0		0.0		81	83	54	66	9.9	S	43	29	1956	71	5.5	10	10	11	7	0	2	3	0	0	0	0	1017.4
A	82.4	61.6	72.0	93	1975	40	1971	9	219	2.10	6.59	1957	T	1967	3.70	1951	0.0		0.0		81	86	49	61	9.7	ENE	37	29	1961	74	5.0	11	11	8	5	0	3	2	1	0	0	0	1018.3
M	87.5	66.9	77.2	98	1975	49	1971	0	378	2.41	7.55	1959	0.17	1973	3.97	1971	0.0		0.0		80	84	50	60	9.2	E	46	36	1958	75	5.2	10	12	9	6	0	6	1	10	0	0	0	1018.4
J	89.9	72.0	81.0	97	1964	61	1972	0	480	6.49	13.75	1974	1.86	1951	5.93	1974	0.0		0.0		82	85	59	67	8.4	E	67	31	1964	66	6.3	5	14	11	12	0	14	•	16	0	0	0	1018.8
J	90.1	73.7	81.9	97	1964	63	1970	0	524	8.43	20.59	1960	2.31	1962	12.11	1960	0.0		0.0		84	87	62	72	7.6	E	58	32	1963	61	6.8	2	16	13	16	0	22	•	20	0	0	0	1017.0
A	90.4	74.0	82.2	98	1975	67	1973	0	583	8.00	18.59	1949	2.35	1952	5.37	1949	0.0		0.0		86	90	64	75	7.4	ENE	38	11	1961	59	6.7	3	16	12	17	0	21	•	20	0	0	0	1017.4
S	89.0	72.6	80.8	96	1972	64	1972	0	474	6.35	13.04	1947	1.28	1972	4.67	1950	0.0		0.0		85	89	60	74	8.4	ENE	36	34	1960	60	6.5	4	14	12	13	0	12	•	16	0	0	0	1018.1
O	83.9	65.5	74.7	93	1971	40	1964	0	301	2.54	7.36	1952	0.23	1974	2.54	1968	0.0		0.0		84	88	56	71	9.1	NNE	38	02	1953	64	5.2	11	11	9	7	0	3	1	2	0	0	0	1017.4
N	77.1	56.4	66.8	90	1971	23	1970	71	125	1.79	6.12	1963	T	1960	4.22	1963	0.0		0.0		84	87	54	73	8.8	NNE	40	29	1963	66	4.8	12	10	8	5	0	1	3	•	0	•	0	1019.5
D	72.0	51.2	61.6	86	1972	27	1968	169	64	2.19	6.66	1950	0.21	1956	3.28	1969	0.0		0.0		83	86	56	73	8.9	N	45	36	1953	63	5.3	11	9	11	6	0	1	5	0	0	1	0	1020.2
YR	81.7	62.6	72.2	98	AUG 1975	23	JAN 1971	718	3366	49.38	20.59	JUL 1960	T	APR 1967	12.11	JUL 1960	T	JAN 1965	T	JAN 1965	83	86	57	69	8.8	E	67	31	JUN 1964	66	5.7	98	142	125	107	0	88	24	85	0	4	0	1017.8

Means and extremes above are from existing and comparable exposures. Annual extremes have been exceeded at other sites in the locality as follows: Highest temperature 98 in June 1952+; lowest temperature 18 in December 1962; maximum monthly snowfall 0.1 in February 1889; fastest mile wind 84 in September 1935.

LAKELAND, FL **CITY HALL** **EASTERN** **28° 02′ N** **81° 57′ W** **214 FT** **1975**

Month	Temperatures °F: Normal: Daily maximum	Normal: Daily minimum	Normal: Monthly	Extremes: Record highest	Year	Record lowest	Year	Normal Degree days Base 65 °F: Heating	Cooling	Precipitation in inches: Water equivalent: Normal	Maximum monthly	Year	Minimum monthly	Year	Maximum in 24 hrs.	Year	Snow, Ice pellets: Maximum monthly	Year	Maximum in 24 hrs.	Year	Relative humidity pct.: Hour (Local time)	Hour (Local time)	Hour (Local time)	Hour (Local time)	Wind: $ Mean speed m.p.h.	Prevailing direction	Fastest mile: Speed m.p.h.	Direction	Year	Pct. of possible sunshine	Mean sky cover, tenths, sunrise to sunset	Mean number of days: Sunrise to sunset: Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, Ice pellets 1.0 inch or more	Thunderstorms ¾	Heavy fog, visibility ¼ mile or less ¾	Temperatures °F: Max. (b) 90° and above	Max. 32° and below	Min. 32° and below	Min. 0° and below	Average station pressure mb.: Elev. feet m.s.l.
(a)				35		35					35		35		35		35		35						12	18				22	26	35	35	35	35	35	24	24	35	35	35	35	
J	70.5	51.0	60.8	85	1947	25	1970	188	58	2.32	8.74	1948	0.12	1950	3.88	1945	T	1958	T	1958					7.3	NE				62	5.2	10	12	9	6	0	1	4	0	0	1	0	
F	72.0	52.2	62.1	88	1962	28	1970	170	93	2.52	6.59	1963	0.17	1945	3.92	1971	T	1951	T	1951					7.8	NE				64	5.2	10	10	8	7	0	2	3	•	0	•	0	
M	76.2	56.3	66.3	91	1949	30	1943	83	119	4.02	12.94	1960	0.78	1949	6.96	1960	0.0		0.0						7.8	W				66	5.3	10	12	9	8	0	4	2	•	0	•	0	
A	81.8	62.1	72.0	95	1968	40	1950	9	219	2.57	8.48	1959	0.00	1967	4.41	1941	0.0		0.0						7.7	E				74	4.8	11	12	7	6	0	4	1	0	0	0	0	
M	86.4	67.1	77.0	99	1965	54	1971	0	372	3.44	9.08	1957	0.13	1953	4.36	1968	0.0		0.0						6.9	E				72	5.2	10	14	7	9	0	9	•	0	0	0	0	
J	89.7	71.3	80.5	100	1949	63	1949	0	465	6.70	14.86	1968	1.87	1948	10.12	1945	0.0		0.0						6.2	E				69	6.3	4	16	10	14	0	18	•	17	0	0	0	
J	90.4	72.7	81.6	101	1942	66	1947	0	515	8.09	15.67	1960	3.09	1961	6.66	1960	0.0		0.0						5.7	S				60	6.5	2	18	11	18	0	23	•	21	0	0	0	
A	90.4	73.3	81.9	98	1961	63	1957	0	524	7.18	15.57	1948	3.40	1962	6.20	1949	0.0		0.0						5.5	NE				61	6.3	3	18	10	18	0	22	•	21	0	0	0	
S	88.0	72.3	80.2	97	1964	61	1947	0	456	6.08	11.68	1947	0.81	1972	6.34	1960	0.0		0.0						6.6	NE				59	6.1	5	15	10	14	0	12	•	11	0	0	0	
O	82.4	66.1	74.3	94	1959	42	1957	0	288	2.84	6.72	1952	0.04	1974	4.99	1944	0.0		0.0						7.2	NE				65	5.0	12	11	8	8	0	3	1	2	0	0	0	
N	76.0	57.5	66.8	89	1946	28	1970	72	136	1.60	5.94	1941	T	1960	3.97	1963	0.0		0.0						6.9	NE				68	4.5	13	10	7	5	0	1	3	0	0	•	0	
D	71.5	52.5	62.0	85	1971	20	1962	156	63	2.09	5.33	1941	0.09	1944	4.88	1949	0.0		0.0						6.9	NE				64	4.9	11	11	9	6	0	1	5	0	0	•	0
YR	81.3	62.9	72.1	101	JUL 1942	20	DEC 1962	678	3298	49.43	15.67	JUL 1960	0.00	APR 1967	10.12	JUN 1945	T	JAN 1958	T	JAN 1958					6.9	NE				65	5.4	101	159	105	120	0	100	19	82	0	2	0	

(a) Length of record, years, through the current year unless otherwise noted, based on January data.
(b) 70° and above at Alaskan stations.
* Less than one half.
T Trace.

NORMALS - Based on record for the 1941-1970 period.
DATE OF AN EXTREME - The most recent in cases of multiple occurrence.
PREVAILING WIND DIRECTION - Record through 1963.
WIND DIRECTION - Numerals indicate tens of degrees clockwise from true north. 00 indicates calm.
FASTEST MILE WIND - Speed is fastest observed 1-minute value when the direction is in tens of degrees.

¾ Through 1964. The station did not operate 24 hours daily. Fog and thunderstorm data may be incomplete.

$ Through 1964.

Source: Gale Research Co., "Climate of the States"; 1980.

TABLE 2.32
CLIMATOLOGICAL SUMMARIES FOR
PLANT CITY, TARPON SPRINGS, and ST. PETERSBURG

PLANT CITY, FL 1951 - 1974 28° 01′ N 82° 08′ W 121 FT

MONTH	TEMPERATURE (°F) MEANS: DAILY MAXIMUM	DAILY MINIMUM	MONTHLY	EXTREMES: RECORD HIGHEST	YEAR	DAY	RECORD LOWEST	YEAR	DAY	MEAN NUMBER OF DAYS: MAX. 90° AND ABOVE	MAX. 32° AND BELOW	MIN. 32° AND BELOW	MIN. 0° AND BELOW	PRECIPITATION TOTALS (INCHES): MEAN	GREATEST MONTHLY	YEAR	GREATEST DAILY	YEAR	DAY	SNOW, SLEET: MEAN	MAXIMUM MONTHLY	YEAR	GREATEST DEPTH	YEAR	DAY	MEAN NUMBER OF DAYS: .10 or MORE	.50 or MORE	1.00 or MORE
JAN	74.2	49.1	61.7	87	76	21	23•	71	21	0	0	2	0	2.55	6.39	64	3.82	64	12	.0						4	2	1
FEB	75.2	49.7	62.5	91	62	29	25	67	26	0	0	2	0	3.42	7.96	63	4.46	71	8	.0						5	2	1
MAR	79.5	54.2	66.9	91•	74	26	32•	68	24	1	0	0	0	4.07	15.68	60	4.91	60	16	.0						5	2	1
APR	84.6	58.8	71.7	99	68	22	36	71	8	5	0	0	0	2.29	7.13	57	3.55	51	7	.0						4	2	1
MAY	89.2	64.1	76.7	101	67	14	46•	71	5	16	0	0	0	3.68	10.14	57	3.86	70	29	.0						5	2	1
JUN	90.8	69.3	80.1	99	67	1	57•	55	3	22	0	0	0	7.40	17.08	68	4.57	68	4	.0						9	5	2
JULY	91.6	71.3	81.5	98•	69	8	61•	65	2	26	0	0	0	8.01	21.74	60	8.56	60	29	.0						12	5	2
AUG	91.8	71.7	81.8	98	61	1	63	73	22	26	0	0	0	8.76	17.48	53	5.31	53	3	.0						13	6	2
SEPT	90.5	70.5	80.5	98	63	1	57	56	27	21	0	0	0	6.69	15.12	60	5.01	60	10	.0						10	5	2
OCT	85.5	63.2	74.4	95•	68	8	40•	68	30	6	0	0	0	3.03	10.43	59	2.97	72	3	.0						5	2	1
NOV	79.5	54.9	67.2	92	72	4	21	70	25	0	0	0	0	2.12	7.88	53	4.53	63	10	.0						3	1	0
DEC	75.1	49.7	62.4	88•	72	9	18	62	13	0	0	2	0	2.25	6.14	69	3.13	61	19	.0						4	1	1
YEAR	84.0	60.5	72.3	101	67	MAY 14	18	62	DEC 13	123	0	0	0	54.27	21.74	JUL 60	8.56	JUL 60	29	.0	.0	00	.0	00		79	35	15

ST. PETERSBURG, FL 1951 - 1974 27° 46′ N 82° 38′ W 8 FT

MONTH	TEMPERATURE (°F) MEANS: DAILY MAXIMUM	DAILY MINIMUM	MONTHLY	EXTREMES: RECORD HIGHEST	YEAR	DAY	RECORD LOWEST	YEAR	DAY	MEAN NUMBER OF DAYS: MAX. 90° AND ABOVE	MAX. 32° AND BELOW	MIN. 32° AND BELOW	MIN. 0° AND BELOW	PRECIPITATION TOTALS (INCHES): MEAN	GREATEST MONTHLY	YEAR	GREATEST DAILY	YEAR	DAY	SNOW, SLEET: MEAN	MAXIMUM MONTHLY	YEAR	GREATEST DEPTH	YEAR	DAY	MEAN NUMBER OF DAYS: .10 or MORE	.50 or MORE	1.00 or MORE
JAN	70.3	54.1	62.2	85	62	22	29	66	31	0	0	0	0	2.41	5.91	73	3.60	53	9	.0						4	2	1
FEB	71.4	55.1	63.2	86•	61	21	32	55	13	0	0	0	0	3.35	8.26	65	4.10	58	26	.0						5	2	1
MAR	75.6	59.5	67.6	88	61	6	39•	60	6	0	0	0	0	4.15	11.53	59	3.40	52	26	.0						5	3	2
APR	81.3	65.0	73.2	91•	58	26	49•	71	8	0	0	0	0	2.58	8.45	51	5.05	51	7	.0						4	2	1
MAY	86.6	70.2	78.4	96	56	25	56•	60	14	7	0	0	0	2.92	10.64	59	3.75	74	17	.0						4	2	1
JUN	89.1	74.3	81.7	98	64	15	61	72	7	14	0	0	0	6.65	23.00	74	9.14	74	26	.0						8	4	2
JULY	89.9	75.8	82.9	97•	73	7	66	54	4	20	0	0	0	8.45	16.46	60	6.72	60	29	.0						11	6	3
AUG	89.9	75.8	82.9	97	70	4	66	57	24	19	0	0	0	8.94	17.93	67	5.30	55	20	.0						13	6	3
SEPT	88.6	74.6	81.6	99•	72	17	62	56	27	13	0	0	0	7.70	18.60	53	5.40	68	13	.0						10	5	2
OCT	83.3	68.5	75.9	96	54	5	47	57	28	2	0	0	0	3.35	14.12	52	3.39	58	31	.0						5	2	1
NOV	76.7	60.7	68.7	89	72	5	35•	70	24	0	0	0	0	2.26	6.85	53	4.40	63	10	.0						3	2	1
DEC	71.5	55.3	63.4	84•	72	10	22	62	13	0	0	0	0	2.51	6.77	73	3.30	69	10	.0						4	2	1
YEAR	81.2	65.7	73.5	98	64	JUN 15	22	62	DEC 13	75	0	0	0	55.25	23.00	JUN 74	9.14	JUN 74	26	.0	.0	00	.0	00		76	38	19

TARPON SPGS SEWAGE PL, FL 1951 - 1974 28° 09′ N 82° 45′ W 8 FT

MONTH	TEMPERATURE (°F) MEANS: DAILY MAXIMUM	DAILY MINIMUM	MONTHLY	EXTREMES: RECORD HIGHEST	YEAR	DAY	RECORD LOWEST	YEAR	DAY	MEAN NUMBER OF DAYS: MAX. 90° AND ABOVE	MAX. 32° AND BELOW	MIN. 32° AND BELOW	MIN. 0° AND BELOW	PRECIPITATION TOTALS (INCHES): MEAN	GREATEST MONTHLY	YEAR	GREATEST DAILY	YEAR	DAY	SNOW, SLEET: MEAN	MAXIMUM MONTHLY	YEAR	GREATEST DEPTH	YEAR	DAY	MEAN NUMBER OF DAYS: .10 or MORE	.50 or MORE	1.00 or MORE
JAN	69.8	49.4	59.6	84	64	28	24	66	31	0	0	2	0	2.43	6.17	58	2.30	58	22	.0						5	2	1
FEB	70.8	50.6	60.7	89•	61	19	28•	67	26	0	0	1	0	3.42	7.36	71	6.26	71	8	.0						5	2	1
MAR	75.1	55.2	65.2	92	61	19	34•	60	6	0	0	0	0	4.31	13.72	60	6.20	60	17	.0						6	2	1
APR	80.3	60.8	70.6	91•	70	30	40•	71	8	0	0	0	0	2.34	6.31	53	3.11	53	13	.0						3	2	1
MAY	85.5	66.5	76.1	96	59	28	49	70	6	4	0	0	0	2.60	7.70	69	4.08	69	17	.0						4	2	1
JUN	88.7	71.3	80.0	96	69	27	60•	72	2	12	0	0	0	5.47	18.29	74	5.40	74	25	.0						7	3	2
JULY	90.0	73.0	81.5	97	60	23	64	70	1	19	0	0	0	8.25	20.76	60	8.70	60	29	.0						11	5	2
AUG	90.0	73.1	81.6	98	57	2	64	74	4	20	0	0	0	8.68	18.52	69	4.59	69	11	.0						12	6	3
SEPT	89.1	71.6	80.4	96•	61	3	60•	67	29	16	0	0	0	7.16	15.34	71	5.96	71	10	.0						9	4	2
OCT	83.6	64.4	74.0	94	60	18	43•	57	28	3	0	0	0	2.43	6.38	68	4.24	68	19	.0						4	2	1
NOV	76.4	55.8	66.1	90	71	1	28	70	25	0	0	0	0	2.18	5.80	63	3.56	55	10	.0						4	1	0
DEC	71.4	50.3	60.8	85•	72	13	19•	62	14	0	0	1	0	2.97	7.79	69	3.25	69	10	.0						4	2	1
YEAR	80.9	61.8	71.4	98	57	AUG 2	19•	62	DEC 14	74	0	4	0	52.24	20.76	JUL 60	8.70	JUL 60	29	.0	.0	00	.0	00		74	33	16

Source: Gale Research Co., "Climate of the States"; 1980

similar between the stations. Only 2 degrees Fahrenheit separates the August maximum temperature at the highest inland station from the lowest coastal station. Tampa's summer temperatures fall in between the relatively cooler coastal values and the warmer inland values. Winter temperatures are lowest during December and January and are more variable across the region. The summer record extremes are nearly identical for each of the stations. Winter record temperatures are again more variable with coastal stations slightly warmer. Tampa is among the cooler stations.

Rainfall totals are typically variable as precipitation is usually in the form of local showers and thundershowers. Coastal stations received slightly more rain (52 to 55 inches) but Plant City also received a substantial rainfall of 54.27 inches. Tampa rates comparatively dry with 49.38 inches. During July 1960, maximum monthly rainfall amounts reached record levels. Tampa received a monthly record amount of 20.59 inches.

Information on wind speed and direction is only available for Tampa and Lakeland. A comparison of annual and monthly mean wind speeds show Tampa consistently higher by about 2 mph. Prevailing wind directions have a strong easterly component throughout much of the year and a northerly component during the winter months.

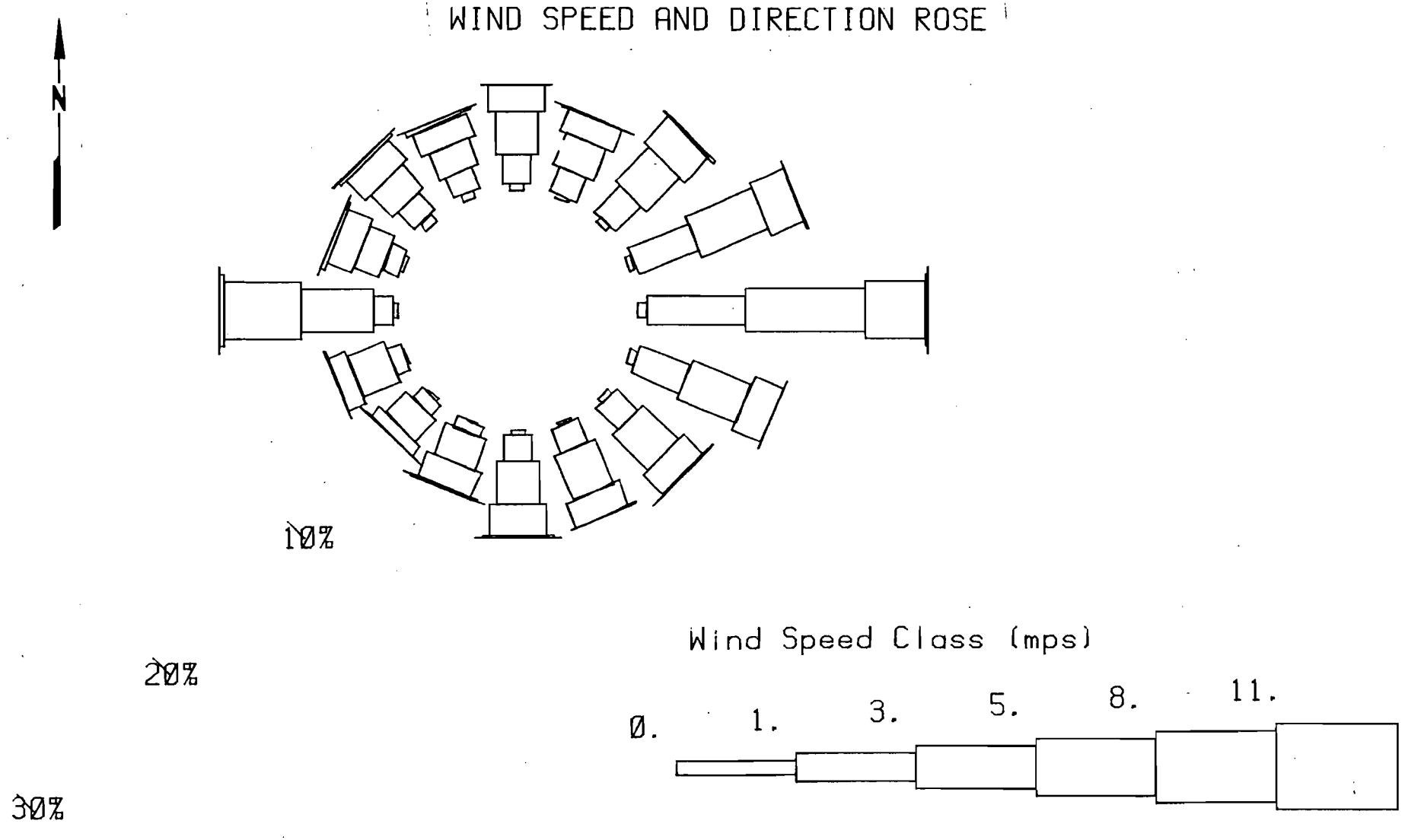
On the basis of this climatological comparison, Tampa International Airport appears to be representative of the bay area. It compares favorably to other inland stations but also is influenced by the bay in a manner more typical of coastal stations. Tampa compares favorably to Plant City which is the next closest station to the proposed site.

Atmospheric Dispersion. Atmospheric factors which aggravate pollution do not often occur at any one place anywhere in Florida. Air is usually sufficiently unstable to disperse pollutants as demonstrated by the frequent convective development. The easterlies sweep across the peninsula, particularly in the south. Five years of sequential meteorological data were used as input to the air quality model used in the analysis presented in Appendix 10.1.5 "Prevention of Significant Deterioration" (see Volume

III-Air Quality). The parameters which describe the dispersion characteristics are wind speed, wind direction, atmospheric stability, and mixing heights.

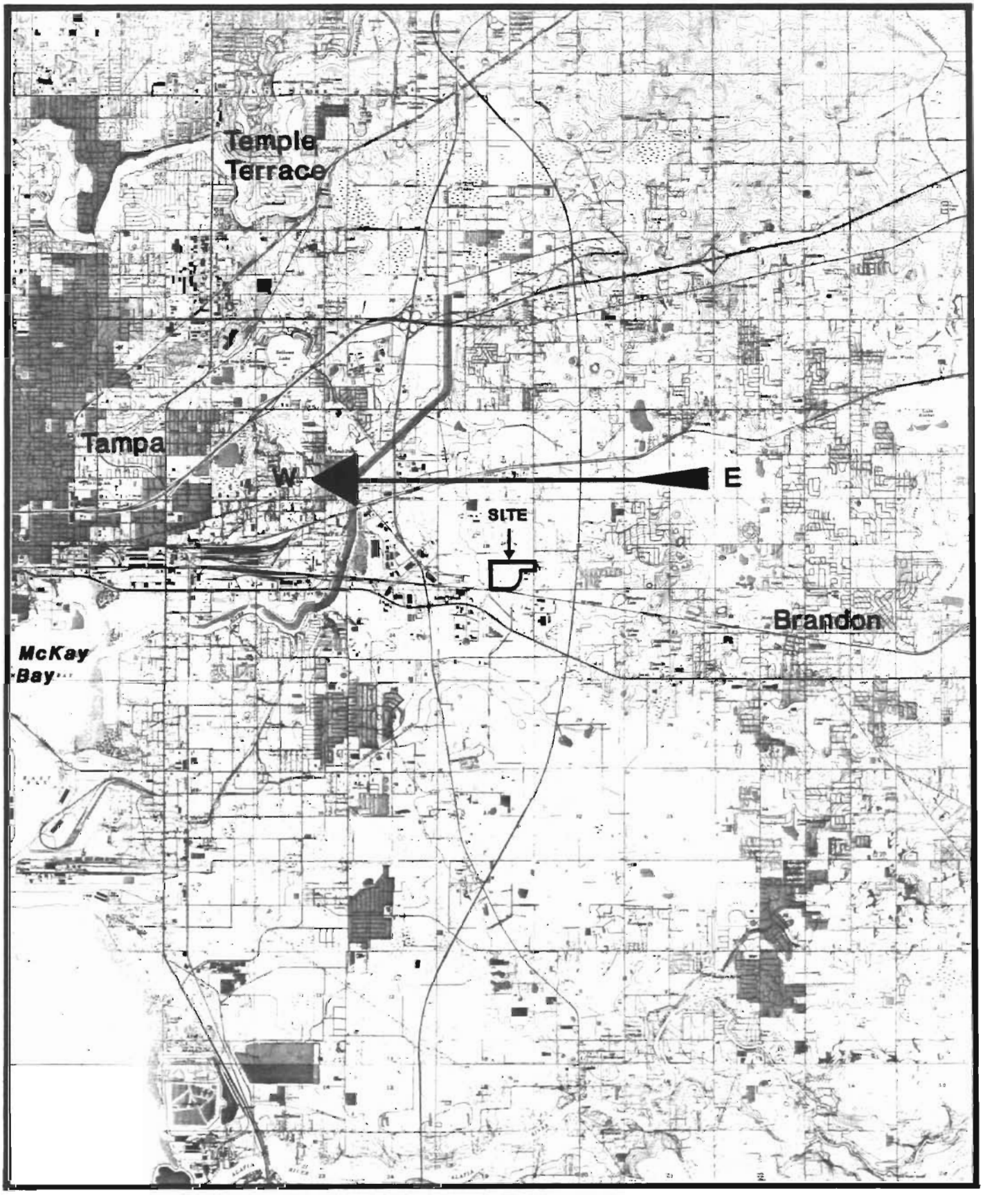
Wind speed data for five years has been organized into six wind speed categories, distributed over the 16 wind direction sectors, and displayed in a wind rose plot showing average, seasonal, and diurnal variations. The frequency of occurrence of a particular wind speed class in a particular wind direction as plotted on the wind rose is proportional to the size of the telescope segment. The prevailing wind direction as displayed in Figure 2.25 is from the east. Wind speeds of 1 to 5 meters per second (mps) occur most frequently from this direction. Other wind direction maxima are the east-northeast and the west. Wind speeds in the 5 to 8 mps class most frequently come from the west. Figure 2.26 shows the location of the site and prevailing wind direction relative to surrounding communities. Seasonal wind patterns are displayed in Figure 2.27. Spring and summer seasons are strongly influenced by winds from the east and west, with lighter winds more likely from the east and stronger winds more likely from the west. During the summer, winds are more likely to come from the southeastern quadrant than any other quadrant. During the fall and winter seasons, westerly winds diminish significantly. Winds from the northeastern quadrant dominate in the fall. The distribution of wind speeds in the winter is more uniform but a strong easterly component in the wind direction is apparent.

Diurnal wind direction roses are presented in Exhibit B of Appendix 10.1.5. In the combined diurnal wind direction distribution, the west direction as well as the south-southwest through west-southwest directions show a diurnal pattern which shows a maximum frequency of occurrence during the early afternoon and a minimum during the early morning hours. The sectors to the south-southwest to west-southwest are due to Old Tampa Bay located near the airport. The western sector shows the influence of the Gulf of Mexico even though the airport is several kilometers inland. Since the magnitude of the western sector is much larger than the southwestern sectors, the Gulf influence has a greater effect than the Bay area on the regional wind pattern even though the Bay is much closer.



HILLSBOROUGH COUNTY
ENERGY RECOVERY PROJECT

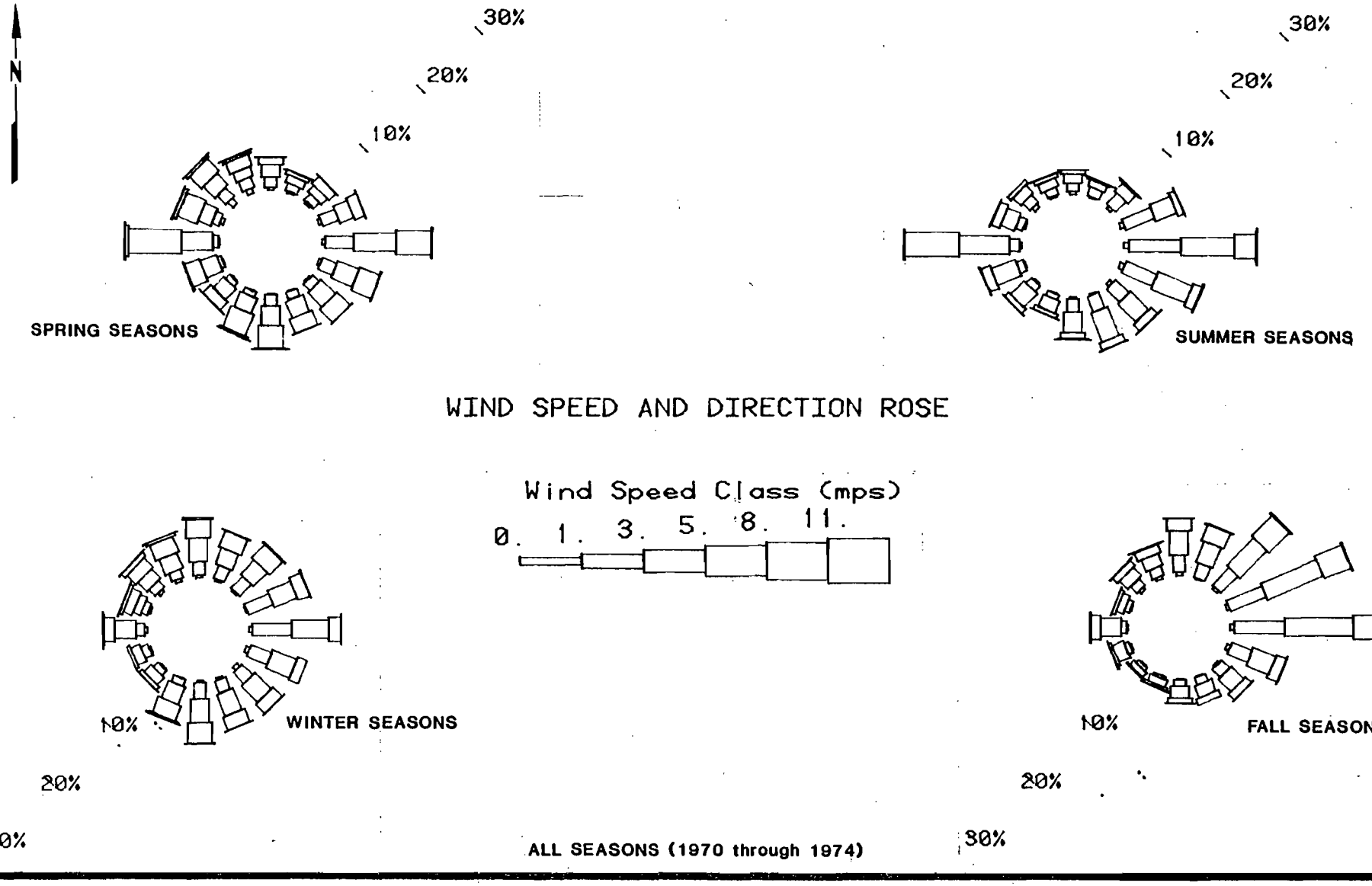
FIGURE 2.25
ANNUAL WIND ROSE (1970-1974)



HILLSBOROUGH COUNTY
ENERGY RECOVERY PROJECT

FIGURE 2.26
AREA MAP WITH PREVAILING
WIND DIRECTION (1970-1974)

1 0 1 2 MILES



HILLSBOROUGH COUNTY
ENERGY RECOVERY PROJECT

FIGURE 2.27
ANNUAL WIND ROSE

The spring and summer diurnal wind roses show not only the land/sea breeze effects as seen on a daily basis but also shows seasonal variation as the westerly direction exceeds 30 percent during the summer. The fairly strong east-southeast to south sectors show the movement of warmer air northward across the state.

Virtually no land/sea breeze pattern is evident during the fall and winter. The fall is strongly influenced by winds coming from the northeast, as cool air begins to move southward. During the winter, again no clear diurnal pattern is evident but an easterly component to the general seasonal pattern is shown.

The wind speeds and directions for the 5 years of meteorological data are stratified by the stability classes A through F in Exhibit B of Appendix 10.1.5 where Class A stability is unstable and Class F is stable. Classes A and B represent the most unstable stability categories. Each of these cases only occur about 5 percent of the time in that their very nature promotes mixing which in turn promotes a more stable atmopshere. Class A stability occurs during the day when skies are clear and the incoming solar radiation is strong, conditions which are more likely found during the summer. Tampa meteorological data show that Class A stability is strongly associated with light easterly winds. Class B stability occurs during the day when the incoming solar radiation is moderate, conditions typical of partly cloudy days or during the fall when sunlight is less direct. Class B conditions are more frequently associated with moderate westerly winds. During the day when the cloud cover is more complete or the incoming solar radiation is slight, Class C, slightly unstable conditions occur. Winds associated with this case are most likely moderate to strong westerly winds. Neutral stability Class D occurs during overcast conditions day or night or when wind speeds are strong and is the stability category most likely to occur. These conditions are most frequently associated with easterly and westerly winds. Classes E and F represent the slightly stable and stable conditions. These conditions occur at night when the sky is partly cloudy or clear. The slightly unstable case is associated with moderate easterly winds. The stable case is associated with light easterly winds.

Mixing height is the height above the surface through which vigorous vertical mixing occurs. Although the mixing height varies throughout the day the morning and afternoon values presented in Table 2.33 represent the average minimum and maximum heights, respectively. Certain atmospheric conditions make the calculation of mixing height difficult, these include periods of marked cold air advection, significant precipitation, and missing wind speed or temperature data. These periods were not included in the calculation of the average mixing heights presented.

Tampa International Airport meteorological data is representative of conditions found in the Bay area. Climatological data show Tampa to compare very favorably with Plant City, the next closest meteorological station to the proposed site. Good agreement is also seen between the coastal stations at St. Petersburg and Tarpon Springs as well as the inland station at Lakeland. The Tampa meteorological data for the years 1970 to 1974 is therefore representative of the area within 50 km of the proposed site for air quality modeling purposes. The parameters which characterize atmospheric dispersion are well defined for the Tampa area. Local wind patterns associated with the land/bay interactions as well as the larger land/gulf and prevailing easterlies patterns. Thus, one year of onsite meteorological monitoring would not provide any additional information which is not already well defined by the five years of Tampa International Airport data.

2.3.7.2 Ambient Air Quality

Pollutants subject to New Source Review (NSR), and emitted at "significant levels" are subject to ambient air quality monitoring (17-2.500(5)(f)F.A.C.), in order to define background concentrations. These ambient levels are then used as a basis for establishing whether the proposed emissions contribute to the violation of ambient air quality standards. The pollutants subject to this monitoring provision are the criteria pollutants for which ambient standards have been set by the Florida DER and other non-criteria pollutants subject to Prevention of Significant Deterioration (PSD) review. The significant emission levels and proposed emission levels for these pollutants are listed in Table 2.34.

TABLE 2.33

HOLTZWORTH MIXING HEIGHTS FOR THE TAMPA AREA

Period	Morning (m)	Afternoon (m)
Annual	493	1359
Spring	503	1523
Summer	656	1460
Fall	419	1401
Winter	394	1052

SOURCE: Holtzworth, GC; Mixing Heights, Wind Speeds, and Potential for Urban Air Pollution Throughout the Contiguous United States; USEPA AP-101; January 1972.

TABLE 2.34

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	141
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	1.75
Sulfuric acid mist	7	22.4
Total reduced sulfur (including H_2S)	10	--
Reduced sulfur (including H_2S)	10	--
Hydrogen sulfide	10	--
Hydrogen chloride	--	--

SOURCE:

[a]Chapter 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.

Total Suspended Particulates (TSP) and Ozone (O_3) is not subject to monitoring since the source is located in a non-attainment area for these pollutants and therefore is not subject to an NSR under the PSD provisions. The emission rates for TSP and O_3 will be controlled by the adoption of Lowest Achievable Emission Rate (LAER). Pollutants emitted in negligible or less than significant amounts are non-methane hydrocarbons, asbestos, reduced and total reduced sulfur, and vinyl chloride.

Sources may be exempt from air quality monitoring if the impact of a given pollutant falls below the de minimus concentration (17-2.500(3)(e)F.A.C.). A screening analysis was done to identify those conditions and pollutants subject to additional review. This analysis showed a less than de minimus concentration for CO and a potential for significant impact for SO_2. Lead and fluorides were not a part of the screening analysis. NO_x was not evaluated either because it is evaluated on an annually averaged basis and no scaling factor has been adopted to relate one-hour concentrations to annual concentrations. Subsequently, a refined analysis was done using sequential meteorological data. From this analysis the maximum second high concentrations were compared to the appropriate de minimus concentration level (Table 2.35). Less than de minimus levels were found for NO_x. SO_2, Pb, and HF have emissions and impacts sufficient to establish a background level to which source impacts must be added to evaluate the air quality in the significant impact area relative to the ambient air quality standards.

The baseline date for SO_2 was established in December 1977 when the TECO Big Bend Power Plant established baseline concentrations for SO_2.

Florida DER requires that the air quality analysis for this project includes the use of current ambient monitoring data to establish background levels. This approach leads to overestimating the combined air quality impact in that sources established after December 1977 would not only be included in the modeling but also contribute to the existing background.

The Hillsborough County Environmental Protection Commission currently has ambient air monitors within 12 km of the site for all criteria pollutants (Table 2.36). Three SO_2 monitors are within 10 km of the site and lie

TABLE 2.35

De MINIMUS MONITORING GUIDELINE

Pollutant	Averaging Time	Highest 2nd Highest Concentration (ug/m^3)	De Minimus Monitoring Guideline (ug/m^3)
Total Suspended Particulates	24-hour	3.26	10
Sulfur Dioxide	24-hour	16.9**	13
Carbon Monoxide	8-hour	16.3	575
Nitrogen Oxides	Annual*	1.04	14
Lead	24-hour	0.32**	0.1
Mercury	24-hour	0.035	0.25
Berryllium	24-hour	8.8×10^{-5}	5.0×10^{-4}
Fluorides	24-hour	0.405**	0.25
Vinyl Chloride	24-hour	Negligible	15
Total Reduced Sulfur	1-hour	"	10
Reduced Sulfur Compounds	1-hour	"	10
Hydrogen Sulfide	1-hour	"	0.04

*The annual concentration is based on the highest annually average concentration.
**Concentration exceeds the de minimus monitoring guideline.

TABLE 2.36

AMBIENT AIR MONITORING DATA FOR HILLSBOROUGH COUNTY

SITE ID State	CO.	SITE NAME	TOTAL SUSPENDED PARTICULATES (ug/m^3) Annual (GM) 1982	1983	24-Hour 1982 High	1982 2nd High	1983 High	1983 2nd High
1800 082	82	Orient Road	53	54	149	126	132	115
			54	53	166	117	138	115
4360 024	86	311 S. 22nd St.	53	55	133	91	92	83
0370 001	7	Brandon (Rainbow Tr.)	31	--	98	65	--	--
0370 002	7	Brandon	--	33	--	--	86	86
1800 083	93	Highway 41	38	43	96	85	174	113
4360 051	115	Hooker's Point (Lehman)	56	--	169	135	--	--
4360 062	115	Hooker's Point (Maritime)	--	58	--	--	141	90
4360 002	1	Health Dept.	53	56	116	104	90	85
4360 035	63	Davis Island	52	54	110	96	91	78
4360 060	122	Seminole H&E School	45	52	74	63	81	78
4440 001	5	Temple Terrace	35	48	361	151	232	196

TABLE 2.36 (CONT'D)

AMBIENT AIR MONITORING DATA FOR HILLSBOROUGH COUNTY

SITE State	ID CO.	SITE NAME	SULFUR DIOXIDE (ug/m^3) Annual 1982	Annual 1983	24-Hour 1982 1	24-Hour 1982 2	24-Hour 1983 1	24-Hour 1983 2	3-Hour 1982 1	3-Hour 1982 2	3-Hour 1983 1	3-Hour 1983 2
0870 001	7	Brandon	6	3	37	24	10	8	--	--	--	--
1800 083	93	Highway 41	8	8	52	31	76	31			--	--
			9	8	55	39	76	31			--	--
4360 052	120	HCEPC (5135)	21		116	105			545	461		
		(170)	25	16	60	38	108	86	147	144	527	493
4360 051	115	Hooker's Point (Lehman)	24	--	117	97	--	--	452	327	--	--
4360 021	81	906 Jackson Street	24	--	113	113	--	--	517	453	--	--
4360 035	63	Davis Island	25	21	103	88	85	77	376	334	327	291

			NITROGEN OXIDES Annual 1982	Annual 1983
0370 001	7	Brandon	22	23
4360 052	120	HCEPC	40	35
4360 051	115	Hooker's Point (Lechman)	30	--
4360 055	119	Beach Park	25	29

TABLE 2.36 (CONT'D)

AMBIENT AIR MONITORING DATA FOR HILLSBOROUGH COUNTY

SITE State	ID CO.	SITE NAME	OZONE (ppm) 1-Hour 1982 High	1982 2nd High	1983 High	1983 2nd High	Exceedences High	Exceedences 2nd High
4360 035	63	Davis Island	.102	.095	.145	.143	0	3
4360 055	119	Beach Park	.115	.110	.128	.118	0	1

			CARBON MONOXIDE (mg/m^3) 1-Hour 1982 High	1982 2nd High	1983 High	1983 2nd High	8-Hour 1982 High	1982 2nd High	1983 High	1983 2nd High
4360 052	120	NCEPC	11	10	12	11	6	6	7	5
4360 035	63	Davis Island	7	4	7	7	3	3	3	3
4360 056	121	Hillsborough Building	14	11	12	11	7	6	7	7
4360 060	122	Seminole High School	11	11	13	10	9	8	8	6

			LEAD (ug/m^3) Calendar Quarter 1982	1983
1800 082	82	Orient Road	0.3	0.8
4360 051	115	Hooker's Point (Lehman)	0.2	-
4360 062	115	Hooker's Point (Maritime)	-	0.6
4360 002	1	Health Department	0.4	0.4
4360 035	63	Davis Island	0.2	0.3
4360 060	122	Seminole Heights School	1.1	1.1

within or very near the impact area for SO_2. Two of these sites, Brandon and Highway 41, have bubblers which sample for 24 hours every sixth day. The monitor at the HCEPC office is a continuous monitor and concentrations are at least equal to or greater than those that would be expected at the proposed site. These monitors are sufficient to establish the baseline concentration within the significant impact area for SO_2 and establish whether the proposed emissions would violate any ambient air quality standards.

A discrepancy in reporting the de minimus monitoring guidelines for lead has resulted in the EPA's adopting a 3 month averaging period, to be consistent with the air quality standard, as opposed to the 24-hour averaging period adopted by Florida for the same pollutant concentration. If the monitoring guideline was based on the 3-month averaging period, the proposed impact would be 0.031 ug/m^3, one third of the de minimus guideline. HCEPC monitors for lead at the Orient Road site. This monitor is one third of the distance from the site than the SO_2 monitor and should also be considered representative of the site.

There are no major fluoride sources in the vicinity of the proposed facility. HCEPC does monitor for fluorides in grass samples, but has not established ambient air concentrations. It is assumed that background levels are low.

Adequate monitoring data exists for the Hillsborough County area. For the pollutants which exceed Florida de minimis monitoring guidelines, ambient concentrations monitored by HCEPC near the proposed site are at least as high as those expected at the site, or in the case of fluorides, background levels are presumed small. Thus, onsite independent air quality monitoring would yield little, if any additional useful ambient air quality data.

2.3.7.3 Measurement Programs

Among other activities, the HCEPC is responsible for monitoring air quality data within the County. HCEPC runs 65 monitoring stations and receives information from other private monitors totaling an air quality network of

83 stations, many of which monitor for more than one pollutant. A complete set of Standard Operating Procedures which provides all aspects of the monitoring activities including installation, calibration, collection, and validation is available from HCEPC. A quality assurance program which governs the network operation is contained in HCEPC's "Air Monitoring Quality Assurance Plan" and published in Environmental Quality the agency's environmental analysis book for Hillsborough County. This plan is summarized below.

Sampler location is determined by the monitoring objectives and siting criteria contained in 40 CFR 58 Appendix D "Network Design for State and Local Air Monitoring Stations." Continuous samplers run 24 hours a day. Manual samplers are run for 24 hours every sixth day. Missing values are carefully documented and makeup days may be required in manual networks to ensure reporting requirements are met. The measurement method for each pollutant is listed in Table 2.37. Each sampler is calibrated on a regular basis. Calibration standards are referenced to the National Bureau of Standards - Standard Reference Materials (NBS-SRM). Calibrations are done at least once a quarter to test the instrument over its full operating range. Final unadjusted calibrations are done prior to maintenance, before instrument shutdown, when biweekly span checks exceed $\pm$15 percent error, and after an air quality exceedance. Confidence limits of precision and accuracy are assigned to all measurements with Federally approved reference of equivalent methods/monitors. HCEPC participates in EPA's national performance audit program. EPA's audit covers facilities, equipment, procedures, documentation, and personnel.

2.3.8 Noise

A complete technical analysis of baseline ambient noise conditions was completed for this application and is contained in its entirety in Appendix 10.12. This study includes detailed methodologies which were utilized in order to estimate operational impacts associated with the facility. Appendix 10.12 also includes the correspondence relative to this issue.

TABLE 2.37

AIR POLLUTION MEASUREMENT METHODS

Parameter	Method or Reference
Carbon Monoxide	Title 40 Code of Federal Regulations (40 CFR), Part 50, Appendix C Beckman Model 866; EPA No. RFCA-0876-12
Dust (Microscopy)	EPC - Nikon Polarization Microscope
Dustfall	Journal of Air Pollution Control Association July 66, Vol. 16, No. 7
Nitrogen Dioxide:	
Bubbler	EPA No. EON-1277-026 page 62971 Federal Registry Vol. 42
Continuous	40 CFR, Part 50, Appendix F 1. Monitor Labs Model 8440; EPA No. RFNA-0677-021 2. Bendix Model 8101-B Analyzer
Ozone	40 CFR, Part 50 Appendix D 1. Bendix Model 30002; EPA No. RFOA-0176-007 2. Dasibi Model 1003 AH; EPA No. EQOA-0577-019
Sulfur Dioxide:	
Bubbler	40 CFR, Part 50, Appendix A
Continuous	1. Thermo Electron Model 43; EPA No. QSA-0276-009 2. Philips Model PW9755; EPA No. EQSA-0676-010
Suspended Particulate:	
Total	40 CFR, Part 50, Appendix B
Sulfates	EPC - Turbidimetric Method
Lead	40 CFR, Part 50, Appendix G

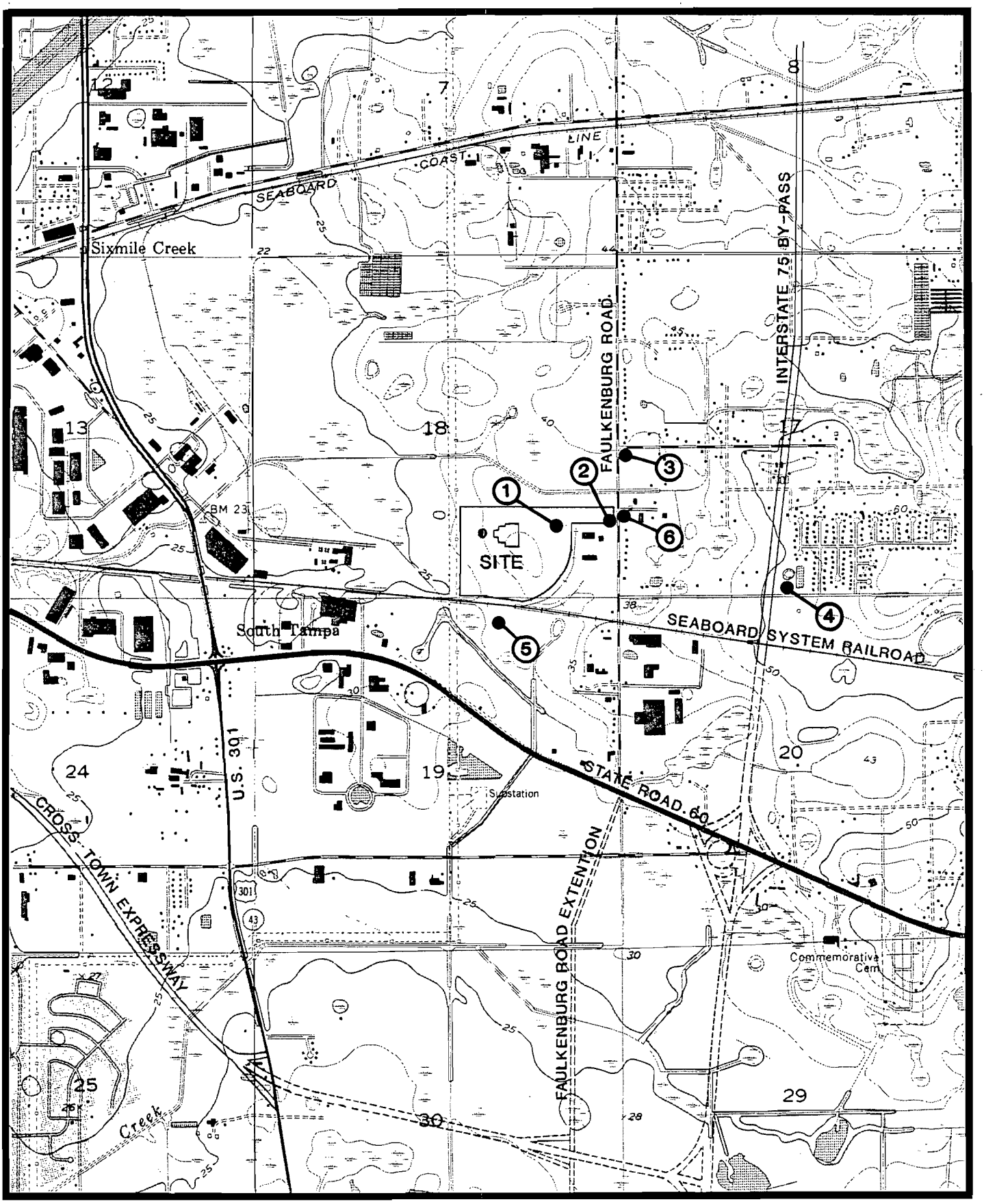
Source: Hillsborough County Environmental Protection Commission; Environmental Quality; 1981.

Raw data results of 24-hour continuous monitoring performed by the Hillsborough County EPC is presented in Appendix 10.12, as are the results of monitoring completed using a hand-held sound pressure level meter. These measurements were made at predetermined locations that were coordinated with the Florida DER and Hillsborough County EPC.

Existing ambient sound levels were measured at six different locations in the site vicinity in order to establish baseline conditions during day and night-time periods. These baseline conditions monitoring sites are shown as circled numbers on Figure 2.28. Site 1 was selected to collect existing ambient noise levels at the boundary of that portion of the site where development would occur. Site 2 is near the closest residence while remaining on site property. Site 3 is in the vicinity of the closest main residential area to the site and Faulkenburg Road. Monitoring site 4 is within the closest established neighborhood and is in an area zoned R-1 (single family residential). Site 5 is in the Interstate Park of Commerce, on land which is currently undeveloped but which is planned for development (warehousing/light industry). Site 6 was selected because it is at the closest residence to the proposed facility site and site access road.

The noise levels recorded at each of the six sites are presented in Table 2.38. These levels are in decibels (dB). The higher the decibel level, the louder the sound. A change of ten times the energy level of the sound is represented as a 10-dB change in the sound level scale.

The Hillsborough County EPC has criteria for ambient noise levels based on the receiving land use and time of day. Residential, public space and open space areas are assigned the most stringent sound level limits followed by commercial or business areas and manufacturing or industrial areas. Monitoring sites 1 and 5 are within manufacturing/industrial areas, therefore, the sound level limits at these sites are higher than at the other four sites. All other monitoring sites fit the residential, public space and open space category for sound level limits. Limits for this category as shown in Table 2.38 are lower than the limits for manufacturing/industrial areas. A comparison of the measured sound level limits



HILLSBOROUGH COUNTY
ENERGY RECOVERY PROJECT

FIGURE 2.28

NOISE MONITORING SITE LOCATIONS

1000 0 1000 2000 3000 FEET

TABLE 2-38

NOISE BASELINE DATA SUMMARY
2-3 NOVEMBER 1983

Site	Time	Measured (Leq)	Hillsborough County Noise Criteria Sound Level Limit (Leq)
1 (CDM)	8:00 AM	56	75
	6:00 PM	53	75
	10:00 PM	49	75
2 (CDM)	8:00 AM	60	60
	6:00 PM	56	60
	10:00 PM	56	55
3 (CDM)	8:00 AM	66[a]	60
	6:00 PM	66[a]	60
	10:00 PM	50	55
4 (CDM)	8:00 AM	52	60
	6:00 PM	55	60
	10:00 PM	49	55
5 (CDM)	8:00 AM	59	75
	6:00 PM	51	75
	10:00 PM	44	75
6 (HCEPC)[c]	8:00 AM	63[a,b]	60
	6:00 PM	61[a,b]	60
	10:00 PM	55[b]	55

[a] Currently exceeds Hillsborough County EPC noise criteria.

[b] 1-hour Leq.

[c] Hillsborough County Environmental Protection Commission.

SOURCE: HCEPC (1983a), CDM.

with the County sound level limits shows that limits are currently exceeded at monitoring sites 3 and 6, both categorized as residential, public space, or open space land uses.

2.3.9 Other Environmental Features

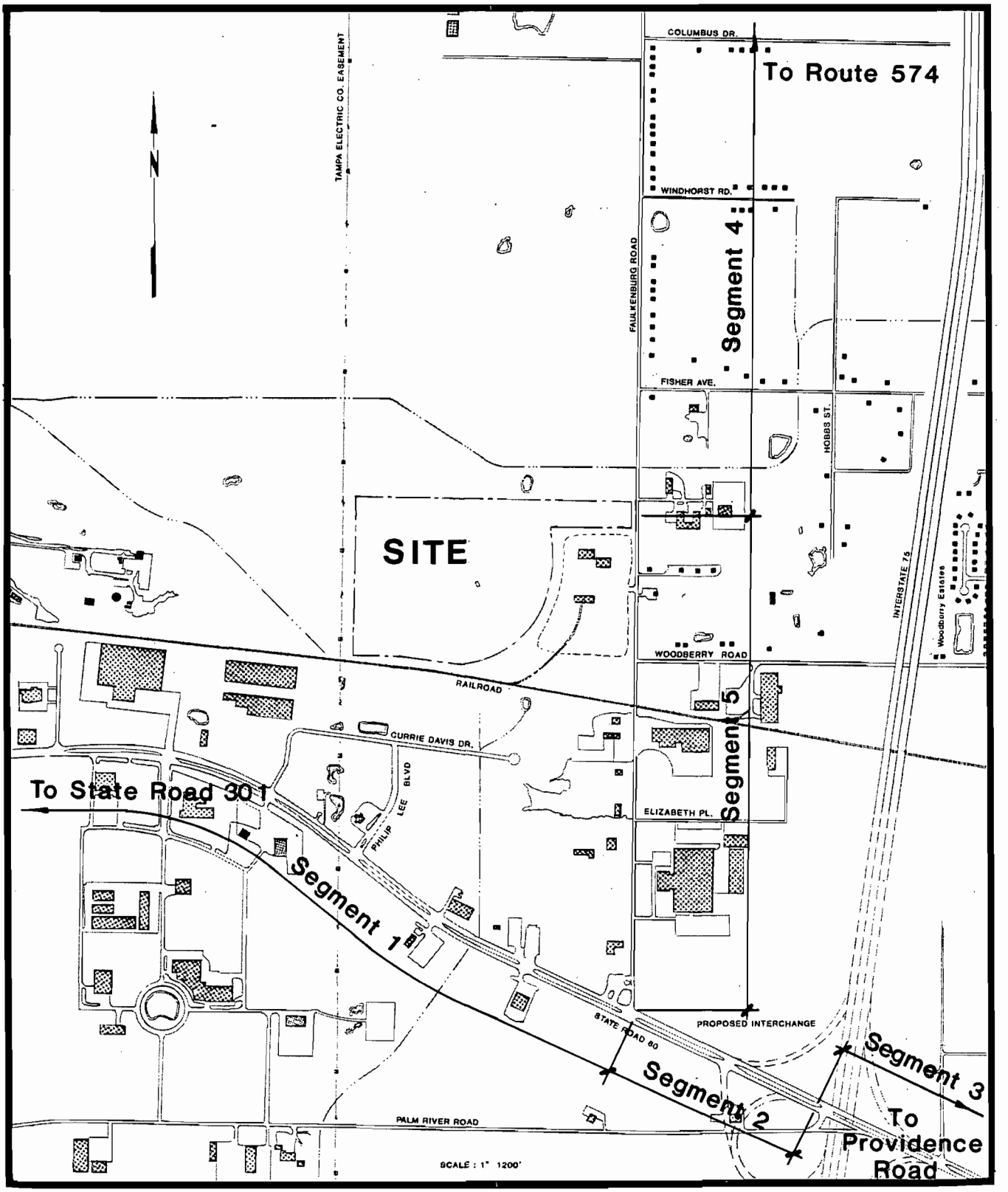
Baseline conditions concerning the existing transportation situation near the site are described below and in Appendix 10.13 "Transportation Analysis."

Existing Traffic Conditions. For the purpose of discussion and analysis, the proposed project impact area was divided into five (5) segments as shown on Figure 2.29. This section addresses the existing traffic conditions and roadway features in these segments.

- Segment One - This segment includes that portion of State Road (SR) 60 from its intersection with SR 301 to the intersection of Faulkenburg Road. The present average daily traffic (ADT) volume of this roadway segment is 44,540 vehicles per day (vpd) as reported on the Traffic Count Map prepared by Hillsborough County. SR 60 is a major east-west roadway servicing this area. Through this section it is a four-lane divided roadway with medium openings and turning lanes at most intersections. Lateral restrictions are minimal and no roadway parking is permitted. While there are no breakdown lanes, there is sufficient room for a disabled vehicle to pull off the travelway. The speed limit along SR 60 is posted at 55 mph.

- Segment Two - This segment includes that portion of SR 60 from its intersection with Faulkenburg Road to that area where the future interchange with Interstate 75 is planned. The present ADT for this segment is 48,900 vpd. The physical features of SR 60 in this segment are the same as described for Segment One.

- Segment Three - This segment includes that portion of SR 60 from the area of the future interchange with Interstate 75 to the intersection with Providence Road (approximately three-quarters of a



HILLSBOROUGH COUNTY
ENERGY RECOVERY PROJECT

FIGURE 2.29
ROADWAY SEGMENTS
FOR TRANSPORTATION ANALYSIS

mile east of the interchange). The present ADT is similar to Segment Two (48,900 vpd) and the roadway's physical features are the same as described for Segment One.

- Segment Four - This segment includes that portion of Faulkenburg Road from its future intersection with the proposed site entrance north to the intersection with US Route 574. Recent traffic count data from the Hillsborough County Traffic Engineering Department show that the present estimated ADT is 6,060 vpd. Faulkenburg Road is a two-lane roadway with a full 12-foot travel lane in each direction. There are some lateral obstructions within six feet of the pavement suface, e.g., mailboxes, fence posts, ditches, shrubs, and telephone poles. There is room, however, for a disabled vehicle to maneuver off of the travelway along most of the roadway. There are no turning lanes along this segment of roadway. The speed limit along Faulkenburg Road is posted at 45 mph.

- Segment Five - This segment includes that portion of Faulkenburg Road from its future intersection with the proposed site entrance south to the intersection with SR 60. The present ADT from the Traffic Count Map is 5,090 vpd. The physical features of this portion of Faulkenburg Road are similar to those described for Segment Four. An at grade railroad crossing located about one-quarter of a mile south of the proposed site entrance significantly disrupts the carrying capacity of the roadway for short periods of time.

- Critical Intersection - The intersection which has the greatest potential for impact by this project is the intersection of SR 60 and Faulkenburg Road.

The effects on these road segments from the proposed resource recovery project are described in Section 5.9 and Appendix 10.13.

CHAPTER 3

THE PLANT AND DIRECTLY ASSOCIATED FACILITIES

3.1 BACKGROUND

In Hillsborough County there has been an increased interest in solid waste disposal and the concept of resource recovery. This has been stimulated by an increased awareness of the environmental and siting problems associated with landfill disposal methods, and by the shortages and increased prices of energy and recyclable materials.

The decision to build a resource recovery facility comes after several years of investigation by the County into other methods of resolving this growing problem. These included examination of shredding refuse for landfilling, composting, and resource recovery. Preliminary studies have shown that the concept of resource recovery is feasible for the County and is a key to a positive, successful long-term solid waste management system.

Currently, the Cities of Tampa, Plant City, and Temple Terrace each maintain a solid waste collection system within their respective boundaries. The County controls the collection system in the unincorporated areas utilizing franchise collectors. Residential waste is usually collected twice a week, with more frequent collection, as necessary, for commercial waste.

As discussed in Section 2.2.7.2, the solid waste generated in Hillsborough County is currently disposed of at the Hillsborough Heights Landfill. Approximately two thousand tons of solid waste are deposited at this site daily (equivalent in energy value of 2,000 barrels of oil), six days a week. In previous years, other city and County landfills were used, but are now closed. The Hillsborough Heights Landfill replaced the adjacent Taylor Road Landfill in February 1980. The City of Tampa operated an incinerator until December 31, 1979, when it was closed because of air and water pollution problems. When the City facility ceased operation, those

wastes were diverted to the Taylor Road Landfill. In April 1981, the County's Northwest Landfill was closed and its wastes were diverted to the Hillsborough Heights Sanitary Landfill.

Because of capacity limitations and legal restrictions concerning the Hillsborough Heights Landfill, which is mandated by DER to close by October 31, 1984, the County initiated actions to site, design, and permit a new sanitary landfill by February 1984. The new Southeast County Landfill, which is presently under construction, will be used initially for raw waste disposal and then as both an ash residue disposal site for the proposed resource recovery system and for the disposal of non-processible waste, which must bypass the proposed resource recovery facility.

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 1,000 tons per day of 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 disposal needs of its growing unincorporated areas. The Hillsborough County Board of County Commissioners has endorsed resource recovery as the long-term solution to Hillsborough County's solid waste disposal problems. There have been many alternatives evaluated for various components of this project. The site and design alternatives are discussed in Chapter 8.

The Hillsborough County Resource Recovery Project is based on the engineering concept of combusting municipal solid waste using mass-burn technology, recovering the heat energy in the form of steam, and converting that steam energy to electricity for sale. After evaluating several technologies, the County has found that the proposed resource recovery facility incorporating a mass-burn technology operated by a full-service vendor under contract to the County (the owner of the plant would be the County) would best fit its present and foreseeable needs. A contractor will be selected through a Request for Proposal (RFP) procurement process, currently underway.

Commercial-scale resource recovery first began in the United States in the late 1960s, but European countries have been recovering energy from solid waste by this means for over 30 years. Denmark converts 70 percent of its solid waste to energy, Switzerland 40 percent, and Sweden 30 percent. Right now the United States is converting less than 2 percent, but this figure is expected to increase to 10 percent by the mid-1980s. More and more communities in the United States are building resource recovery facilities; the technology is tested and proven. In terms of the energy it can produce, a ton of solid waste equals approximately one barrel of oil.

On April 15, 1982, the Hillsborough County Board of County Commissioners authorized establishment of the County's Resource Recovery Program, and on April 28, 1982, the Commissioners entered into a contract with Camp Dresser & McKee Inc. (CDM) for the planning and implementation of a Resource Recovery Facility serving the unincorporated areas of the County. At that time, the Board approved the management team that would guide this long-term (5 year) project to completion. This management team includes the consultant team (engineers, investment bankers, bond counsel and financial advisor) and Hillsborough County project management staff and decision-makers. A Resource Recovery Project Oversight Committee was also established to help guide the project through key decision points, and to provide policy recommendations to the Board of County Commissioners through the County Administrator. The Committee, which consists of senior County staff members, reviews and makes recommendations on key issues such as site selection, facility size, financing approach, vendor selection, and final contracts. A member of the governments from the Cities of Temple Terrace and Plant City participate as non-voting members on the Oversight Committee.

On October 27, 1982, the Board of County Commissioners approved the selection of this site recommended by both the County's consulting engineers, Camp Dresser & McKee and the Resource Recovery Project Oversight Committee. The site embodies a central location; good road access; a compatible land use; and favorable environmental conditions. By selecting a site near the County's waste generation center, transportation times and costs are minimized.

Site selection by Hillsborough County came after many months of detailed study by Camp Dresser & McKee Inc. and County staff. Air, traffic, noise, water, and aesthetic issues were examined in detail. A specific siting methodology was developed to evaluate the suitability of candidate sites for a resource recovery facility. The basic approach used consisted of a progression of data collection and reviews in increasingly greater detail. In the early phase of the study, a total of 35 potential sites were identified representing all areas within Hillsborough County. Following field investigation, this list of potential sites was narrowed to 23 for further screening. These twelve sites were eliminated because their actual field conditions were unsuited for construction of a resource recovery facility.

The remaining 23 candidate sites received a detailed evaluation and rating through the use of specific siting criteria developed by the consulting engineers. These criteria included engineering, zoning, and environmental considerations. Based on this analysis, four candidate sites were selected for additional evaluation. On September 29, 1982, the Board of County Commissioners instructed Camp Dresser & McKee to perform additional detailed studies on these sites and expressed a preference at that time for a site near Faulkenburg Road and another near the Tampa Electric Company Gannon Station generating plant off Port Sutton Road.

After completing these studies, Camp Dresser & McKee recommended that Hillsborough County select the Faulkenburg Road site for construction of its Resource Recovery Facility. While each of the four candidate sites could have been developed for the facility, the consultant's studies indicated that the Faulkenburg Road site could be developed with the least relative cost compared to the other three sites and also with the fewest negative impacts. The area adjoining the site is zoned light industrial, M-1A and heavy industrial, M-1 with a growing number of commmercial and industrial interests nearby.

Two facilities are proposed for the 50.4 acre Faulkenburg Road site - a resource recovery facility and an advanced secondary wastewater treatment plant (Northwest Brandon Subregional). The resource recovery facility will

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).

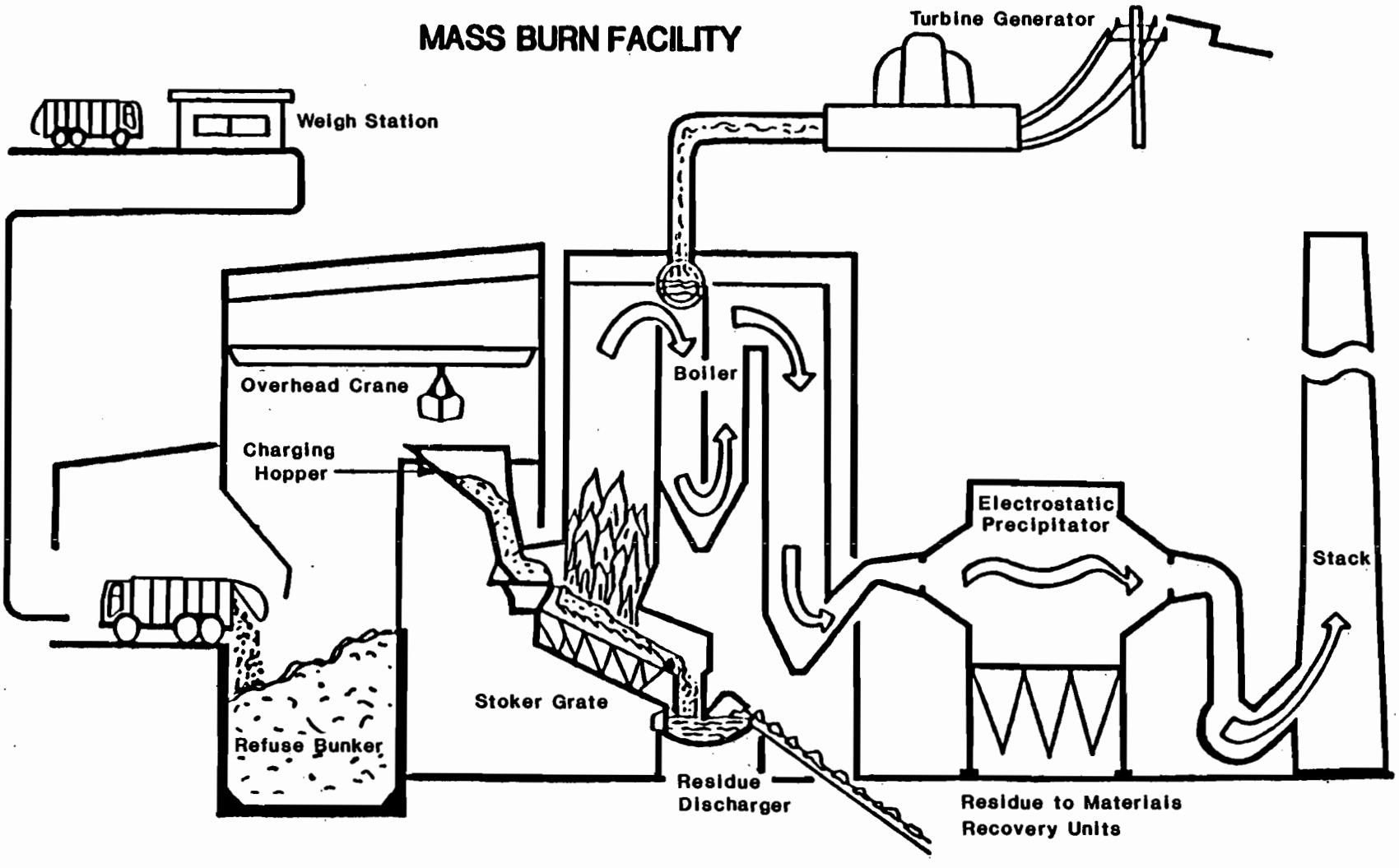
Hillsborough County is currently seeking proposals fom qualified firms and organizations for the design, construction, startup, acceptance testing, operation and maintenance of a solid waste resource recovery facility to serve the unincorporated areas of the County. The Board of County Commissioners 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.



HILLSBOROUGH COUNTY
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FIGURE 3.1
SCHEMATIC OF TYPICAL RESOURCE RECOVERY FACILITY

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 vehicle access. Maximum side slopes for site fill will be

three horizontal to one vertical (3:1) and special revegetation techniques will be required to minimize erosion and siltation.

Maximum roadway grades of 3 percent for site access will be used to reduce required truck shifting and associated noise. Maximum roadway grades of 6 percent are suggested for site egress.

The setback allows adequate space for stormwater collection through the use of surface swales along roadways. Additional infiltration of stormwater will be encouraged through use of these swales. A more complete description of the on-site drainage system is provided in Section 3.8.

The roadways will be designed with minimum turning radii of 35 feet to accommodate truck traffic, a divided entrance road/one-way system for safety, a 14 foot lane width for two lane roads, and a 20 foot roadway width for one-way/divided roads.

The present 22 foot road width of Faulkenburg Road will be modified near the site by the construction of roadway turning lanes and other improvements to handle the anticipated truck traffic.

Parking spaces have been provided for the facility beyond those required by the zoning regulations due to the site's location (not readily accessible by mass transit), and to accommodate potential visitors and shift overlaps. Automobile parking will be separated from truck circulation and parking to minimize potential conflicts. The roadway design speed will be 30 mph. Truck scales will be placed to reduce the potential for excessive truck speeds.

The entire site will be graded and landscaped. A planted buffer (minimum 50 foot width) will be developed along the site property lines along with earthen mounds to provide screening of the facility. The proposed fencing has been set back from the property line to be incorporated into the buffer planting. Planting materials will be limited to large evergreen and deciduous trees within the buffer planting. Buffer plantings will be developed in naturalized groupings, not in straight lines, creating an

irregular edge rather than a formal straight line so that the adjacent open lands can blend with the open lands of the proposed facilities as illustrated on the General Site Development Plan (Figure 2.5). This provides an informal, natural appearance to the open lands surrounding the facility.

Substantial mass planting of large trees on the banks close to the resource recovery facility is desirable to reduce the overall visual impact of the structure. However, due to facility height, no planting can effectively screen all of the site structures. The control of building facade configuration and texture in the form of large blank panels or horizontal lines to mask sense of scale would be desirable. The site layout, grading, and plantings are shown on the General Site Development Plan.

3.2.2 External Appearance

The proposed resource recovery facility consists of two contiguous buildings, the administration building and the processing building (see Figure 2.5). The administration building is about 30 feet high, 110 feet long and 30 feet wide. It will contain offices and is located into the southeast corner of the processing building. The processing building is rectangular measuring approximately 360 feet by 260 feet. It varies in height depending on the processing function housed in that portion of the building. At the eastern side, it is about 60 feet high for refuse unloading activities. Immediately to the west of this portion the building height increases to about 100 feet where it houses refuse storage and furnace charging. Continuing westward across the building, the height increases to 140 feet over the boilers and finally decreases to about 48 feet for the generators and electrical rooms. Above this section of the building, however, are three large electrostatic precipitators for air pollution control which effectively raise the height of this area to about 100 feet. The facility profile is shown on Figure 3.2. The width of the building is reduced from 178 feet (refuse unloading, refuse storage and furnace charging) to 129 feet for the boilers, generators and electrical rooms.

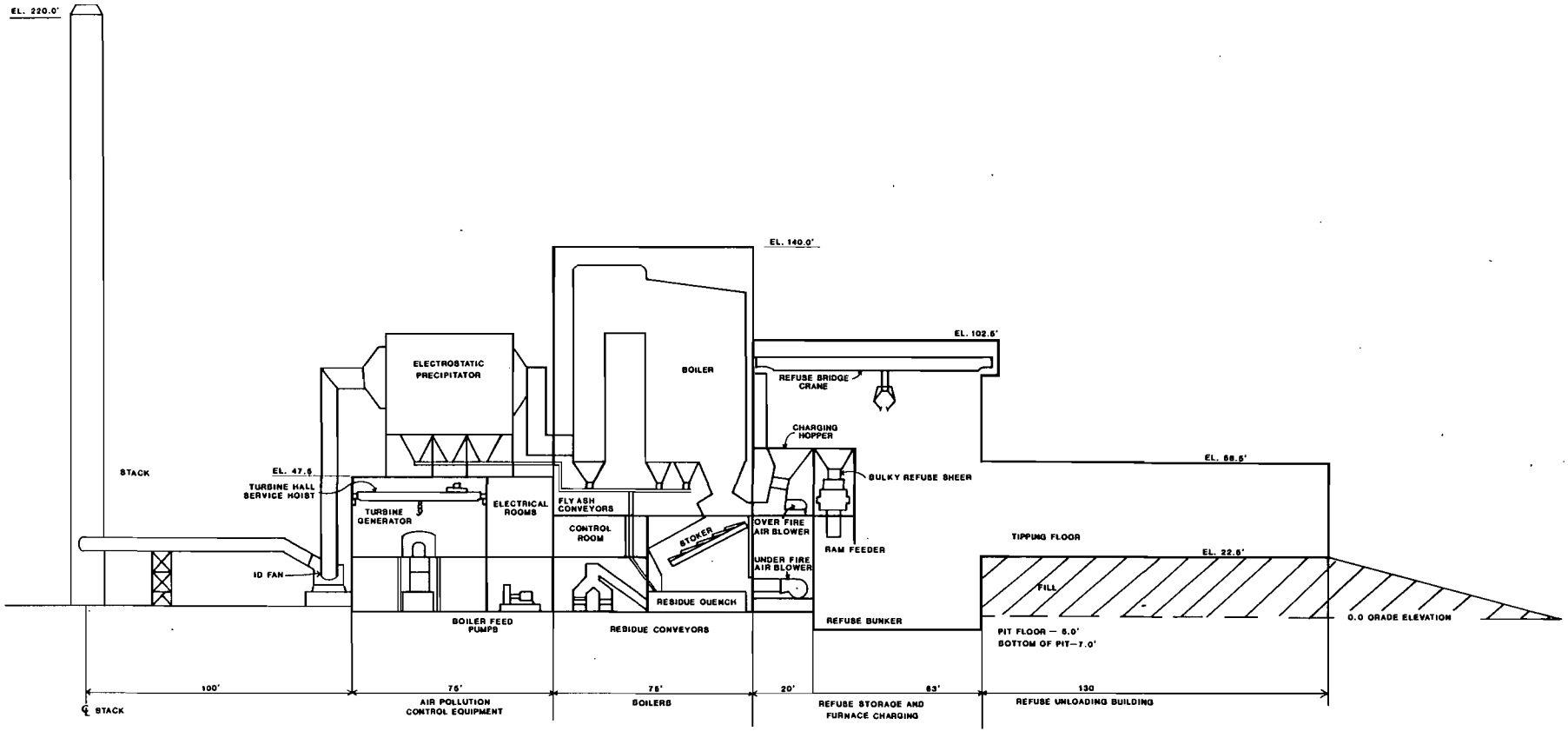

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FIGURE 3.2

FACILITY PROFILE

FEET

25 0 25 50 75

The net effect of these conditions is a stepped appearance which helps to reduce the visual impact of the structure by modifying the massing. This will be most apparent in views from the north and south where the profile will be visible. From the east along Faulkenburg Road, the attempt at reducing the mass is perceivable as the building steps up away from the street.

The visual appearance of the proposed facility is an important criterion which will be taken under consideration in the selection of a vendor. As stipulated in the Request for Proposals for a Solid Waste Energy Recovery Facility (Hillsborough County, April 1984)," The Project shall be aesthetically pleasing and architecturally compatible with the surrounding area..." The vendors are encouraged"... to give the facility an office building appearance."

As presented in Appendix 10.2.4, one of the conditions that has been put on the rezoning by the Hillsborough County Board of County Commissioners includes:

> "The resource recovery plant shall be completely enclosed and shall be of a color which blends well with its natural background. The stack shall be of a color which blends with the sky unless prohibited by aircraft operational safety requirements."

3.3 FUEL

The Resource Recovery Facility will utilize municipal solid waste collected from the unincorporated areas of Hillsborough County, as the fuel feed stream. Being heterogeneous by nature, generalizations can be made as to its heating value, moisture content and ash content of the municipal solid waste. However, these factors vary continually.

The term, "municipal solid waste" applies to all of the solid wastes generated within Hillsborough County. Solid wastes to be disposed of and

processed at the facility are divided into the following classifications which indicate their general characteristics and their source of generation:

1. Residential Wastes. Mixed domestic household wastes (including yard wastes) generated by individuals or families in single or multiple family dwellings.

2. Commercial Wastes. Wastes generated by the commercial and retail sector of the County. The physical characteristics of these wastes are similar to residential wastes, consisting primarily of combustible materials in the form of paper and food wastes from offices, restaurants and retail establishments.

3. Institutional Wastes. Wastes generated by hospitals, schools, and churches. These wastes have characteristics similar to residential and commercial wastes.

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

All calculations, analyses and performance data for the facility have been based on the as-fired solid waste higher heat value of 4500 BTU per pound with a 28 percent moisture content by weight. Table 3.1 and Table 3.2 present, respectively, the as-received reference solid waste composition and reference waste ultimate analysis to be utilized.

The facility shall be equipped with an automatic weighing station to weigh and record the quantity of solid waste delivered to the facility. The solid waste will be delivered in standard, municipal type, packer vehicles, open-bodied dump trucks, and transfer trailers with capacities up to 75 cubic yards. The facility will be open to receive delivered solid waste six days per week, 52 weeks per year.

TABLE 3.1

REFERENCE SOLID WASTE COMPOSITION

Waste Category	Nonimal Percentage By Weight
Combustibles	51
Moisture	28
Non-Combustibles	21
TOTAL	100

TABLE 3.2

REFERENCE SOLID WASTE ULTIMATE ANALYSIS

Component	Nominal Percentage By Weight
Moisture	28.2
Total Inert	20.8
Carbon	25.6
Hydrogen	3.4
Oxygen	21.3
Nitrogen	0.6
Sulfur	0.1
TOTAL	100

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

roads. Evaporative emissions from the cooling tower will be equivalent in quality to water from advanced secondary treatment. A discussion of biological emissions from the cooling tower is contained in Section 5.1.4 of this application. Thus, the only source of emissions from the facility will be through the stack.

A complete description of the development of the stack emissions is contained in Section 4.0 of Appendix 10.1.5 "Prevention of Significant Deterioration" (See Volume III-Air Ouality). An emission inventory for the proposed facility is contained in Table 3.3. A complete DER Form 17-1.202 (1), "Application to Operate/Construct Air Pollution Sources," can be found in front of Volume III-Air Ouality.

3.4.2 Air Emission Controls

Air pollution control technologies proposed to control particulate matter and trace metals are: electrostatic precipitator (ESP), fabric filtration system (baghouse), and wet venturi scrubber. The technologies proposed to control SO_2 and acid gases (H_2SO_4, HCl, and HF) include: dry scrubber/ESP, ESP/wet scrubber, and dry scrubber/fabric filter. These systems and their operating characteristics are fully described in the BACT/LAER analysis in Section 6 of the PSD appendix (See Volume III-Air Ouality).

3.4.3 Best Available Control Technology (BACT)

The BACT analysis, presented in the PSD Permit Application, Section 6.0, evaluates the environmental, economic, and energy aspects of alternative control techniques and methods. All of the criteria pollutants except particulate matter and ozone are attainment (or unclassified) and hence subject to BACT. Particulate matter is non-attainment in the source area and hence subject to LAER, Lowest Achievable Emission Rate. The control device, which meets the requirements of LAER for particulate and BACT for the other criteria pollutants, is the electrostatic precipitator at 0.025 grains per dry standard cubic feet (gr/dscf) corrected to 12 percent CO_2. The complete discussion of the BACT and LAER selection process is presented in the PSD, Appendix 10.1.5 (Volume III-Air Quality).

TABLE 3.3

EMISSION RATES FOR THE PROPOSED FACILITY

Pollutant	Emission Rates* #/ton	g/s
Total Suspended Particulates	0.483	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
Mercury	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	4.1	37.9

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

3.4.4 Design Data for Control Equipment

Design data for control equipment are not available at this time, because a furnace/boiler supplier has not been selected yet. Typical design parameters for mass burn resource recovery facilities were utilized in the BACT/LAER analysis and are presented in Section 6.0 of the PSD appendix.

3.4.5 Design Philosophy

The proposed control technology, electrostatic precipitator at 0.025 gr/dscf corrected to 12 percent CO_2, is designed to capture particulate matter entrained in the flue gas from the furnace/boiler. The particulate matter is collected in a dry form to avoid wastewater disposal, corrosion, and stack gas reheat problems. The ESP is also a fully automated system with very low operations and maintenance requirements in comparison with other air pollution control devices.

3.5 PLANT WATER USE

During normal operation of the resource recovery facility, all plant water would be drawn from the co-located Northwest Brandon Subregional Wastewater Treatment Plant (WWTP) and all wastewater discharge would go directly to the WWTP. Potable water would be used in small quantities in the personnel areas of the plant, washrooms, etc. No plant water would be drawn from or discharged directly to any surface or groundwater body. The quantities of water used and discharged as presented in this section are approximate amounts and subject to change pending the specific features of the selected vendor. Alternative sources of water are discussed in Chapter 8.

3.5.1 Heat Dissipation System

3.5.1.1 System Design

Cooling water will be utilized in a closed loop system which employs water cooled condensers to condense the low pressure steam discharged from the turbine. Cooling water will circulate through the condensers and waste

heat will be dissipated from the condenser cooling water by passage through a wet mechanical draft cooling tower.

The cooling tower system has adequate design capacity to provide heat rejection capability required to condense the low pressure steam exhausted from the turbine when all plant boilers are operating at full, rated design capacity. Should the steam turbine generator be not in service at any time in which the boilers are producing high pressure steam, a separate, by-pass condenser will be provided to accept the full, rated design capacity of high pressure steam from the plant boilers and condense the steam. The cooling tower system will also provide for heat rejection in the event that full condensing of high pressure steam is required. Through the use of the by-pass condenser system, plant refuse processing capacity would not be diminished during periods of full or partial turbine generator outage.

Consumptive water use will be limited to losses from the cooling tower system in the form of evaporation and drift. Any other water discharged from the plant will be discharged by pipeline directly to the co-located Northwest Brandon Subregional Wastewater Treatment Plant.

The location of the cooling tower system is shown on the Site Development Plan (Figure 2.5). The cooling tower blowdown will be directed along with boiler blowdown and the boiler demineralization backflush water to the residue quench tank. During normal operation, water would only be discharged from the residue quench tank in such quantity as is removed in the wet ash. Any water discharged from the residue remover during shutdown or cleanout would be piped directly to the co-located WWTP.

The cooling water from the condenser is pumped to the cooling tower system where it is cooled by evaporation. Heat removed from the cooling water is transferred to the atmosphere due to evaporation. Loss of water from cooling ponds will not occur since cooling ponds will not be utilized in the system.

No water intake structure, in the conventional sense will exist in the resource recovery plant system, since all water will be taken by pipeline

from the WWTP. Similarly, no water will be discharged from the resource recovery plant system, except by pipeline to the onsite WWTP, where it will be treated for reuse.

3.5.1.2 Source of Cooling Water

All cooling tower make-up water will be obtained through a direct pipeline link with the Northwest Brandon Subregional Wastewater Treatment Plant. Cooling water will be about 800,000 gallons per day of treated effluent from the WWTP treated to that quality required by standards for water used in spray irrigation of areas accessible to the public. The WWTP will produce a more than adequate supply of treated effluent to be used by the resource recovery facility. Table 3.4 presents the projected quality of water available from the WWTP.

3.5.1.3 Dilution System

Since all cooling water intake and discharge will be part of a closed loop cooling water circulation system between the resource recovery plant and the co-located WWTP, no dilution of the cooling water will occur, other than mixing with incoming WWTP flows. The WWTP will treat all water prior to discharge. No plant outfall will be utilized.

3.5.1.4 Blowdown and Trash Disposal

Liquid flows from blowdown systems will occur at three locations; 1) blowdown from the boiler drums, 2) blowdown from the cooling towers, and 3) blowdown from the boiler feedwater demineralizers. All blowdown flows will be collected in the blowdown tank and discharged to the residue quencher/discharger to be eventually disposed of with the residue.

Since no intake structures are required, no intake structure trash disposal will be required.

TABLE 3.4

PROJECTED TREATED WASTEWATER TREATMENT PLANT EFFLUENT ANALYSIS

Parameter	Anticipated Average Concentration (mg/l)
BOD	20
Total Suspended Solids	5
Fecal Coliform	Not Detectable
Chlorine Residual (ppm)	1.0
pH (pH units)	6.5 - 8.5
Calcium Hardness	150
Magnesium Hardness	150
Sulfates	150

3.5.1.5 Injection Wells

No injection wells are included in the overall design of the facility.

3.5.2 Domestic/Sanitary Wastewater

Sanitary waste flows will be generated within the plant only in the personnel service areas, i.e. washrooms, etc.

The plant will employ about 58 people in the course of normal operation, with fluctuating staff increases from time to time as contractors and other "specialty" staff are retained for work in the plant on a "task specific" basis. Visitors are expected at the plant, but an accurate estimate of the number of persons has not been made at this time.

The liquid (sanitary) waste stream produced (estimated to be about 2,000 to 4,000 gallons per day) by personnel within the facility will be an insignificant amount when compared to the total facility water consumption. This flow is made more insignificant by the fact that it is piped directly to the co-located Northwest Brandon Subregional Wastewater Treatment Plant which is treating a much greater sanitary flow. This facility plan will provide for adequate treatment of the sanitary flow from the resource recovery facility.

3.5.3 Potable Water Systems

The existing potable water service to the site is a twelve (12) inch City of Tampa water main that runs along Faulkenburg Road. The existing twelve (12) inch main provides water at a static pressure of 40-45 psi. According to the County Department of Water and Wastewater Utilities this water main has sufficient capacity to supply the potable water needs of the facility which are estimated to be about 2,000 to 4,000 gallons per day.

3.5.4 Process Water Systems

The process water source will be 800,000 gallons per day of effluent from the co-located wastewater treatment plant. Table 3.4 shows the projected quality of the WWTP effluent. The energy recovery facility will use the effluent for both cooling tower and boiler water makeup and discharge about 5,000 gallons per day back to the WWTP. The WWTP will treat the effluent to boiler water standards, and blowdown from the energy recovery facility will be sent to the co-located wastewater treatment plant.

3.6 CHEMICAL AND BIOCIDE WASTE

Both anti-corrosion and anti-fouling agents will be used at the facility in the boilers and in the cooling tower. Blowdown will be treated at the co-located wastewater treatment plant. The exact flow diagram of the chemical waste system will be developed by a yet to be selected vendor. There are no discharges from chemical processing, water treatment or waste piles that may enter the local environment as a result of plant operation.

3.7 SOLID AND HAZARDOUS WASTES

3.7.1 Wastes (Including Ash)

The residues of combustion shall consist of noncombustible by-products, fly ash and siftings. The residue removal system will be designed to remove these materials from the combustion system for disposal. The bottom ash and siftings from the combustible units shall be water quenched and dewatered. Redundant capacity for the main residue conveyors will be provided.

Fly ash removal conveyors will be supplied to convey fly ash from the boilers and electrostatic precipitators to the residue water quenches. Provisions will be made for separate removal of fly ash if required in the future.

The residue removal system will consist of totally enclosed truck loading areas with two (2) loading bays. The system will incorporate a bifurcated chute to serve the two loading bays. Residue will be hauled from the facility by truck to the Southeast County Landfill. The residue to be delivered to and disposed of at the designated landfill will meet all local, state and federal regulations which govern such disposal. The residue will contain no more than 4% combustible material by dry weight content and no more than 0.75% putrescible material by dry weight content.

No other solid wastes will be produced under normal facility operating conditions except for minute amounts of solid waste, primarily office trash. Since the plant is a facility for the processing of solid waste, the facility will dispose of its own office trash.

It is not anticipated that recovery of any materials from the residue will be practiced, but the equipment supply contractor has the option of providing recovery equipment at a later date.

3.7.2 Hazardous Wastes

No hazardous waste will be generated on-site, nor will any be accepted for processing with the solid waste, therefore there are no hazardous wastes requiring disposal. The identification of any apparently hazardous materials by the crane operators and scale house personnel is addressed in Section 5.4.2.

3.8 ON-SITE DRAINAGE SYSTEM

The conceptual grading plan for the site is shown on Figure 3.3. The primary tool for management of on-site drainage is a set of five retention/detention basins and two discharge points located as shown on Figure 3.4. The drainage areas and detention basins sizes are shown in Table 3.5. The details of the basin design are available in Appendix 10.14. The area draining to each basin has also been delineated on Figure 3.4.

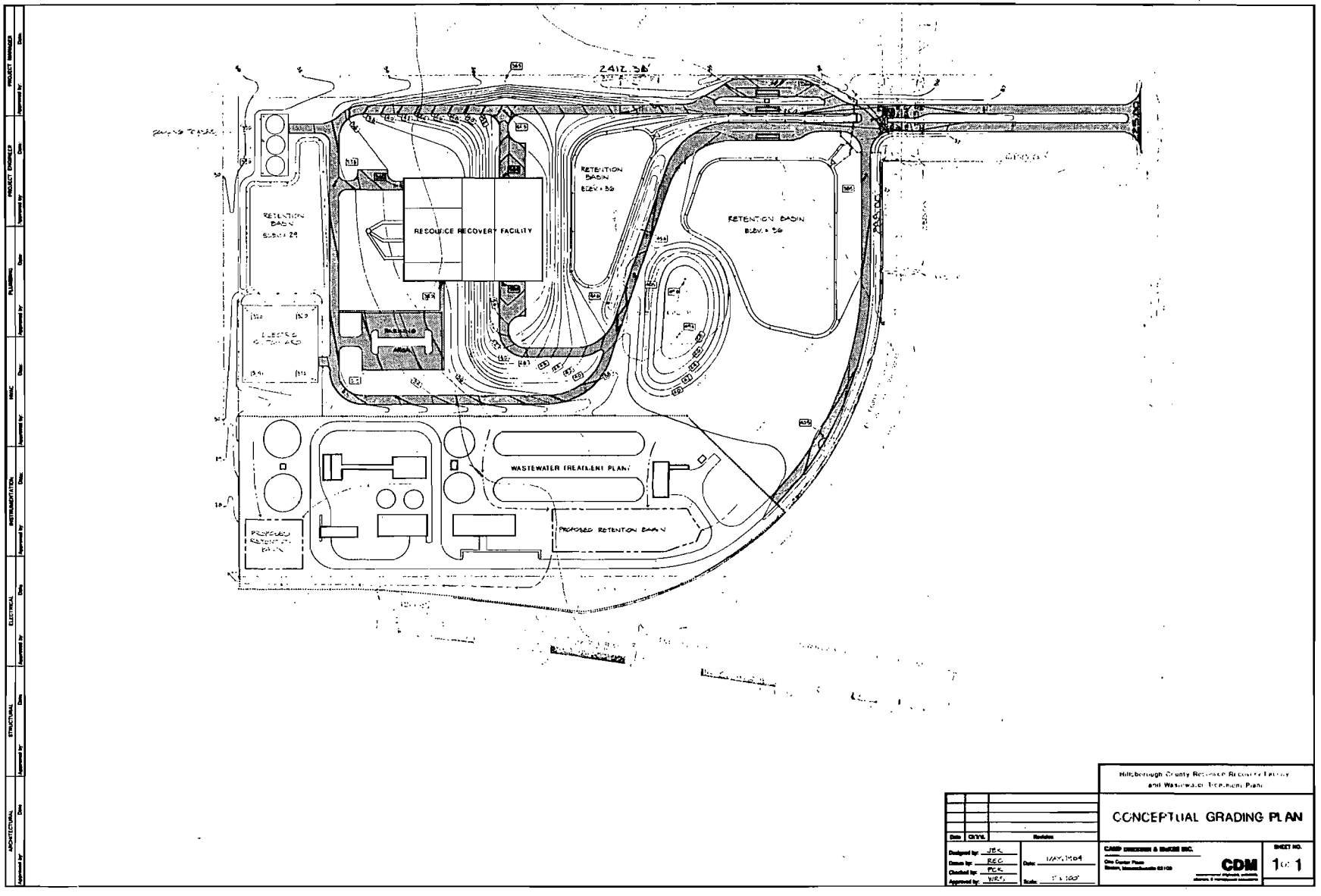

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FIGURE 3.3

CONCEPTUAL GRADING PLAN

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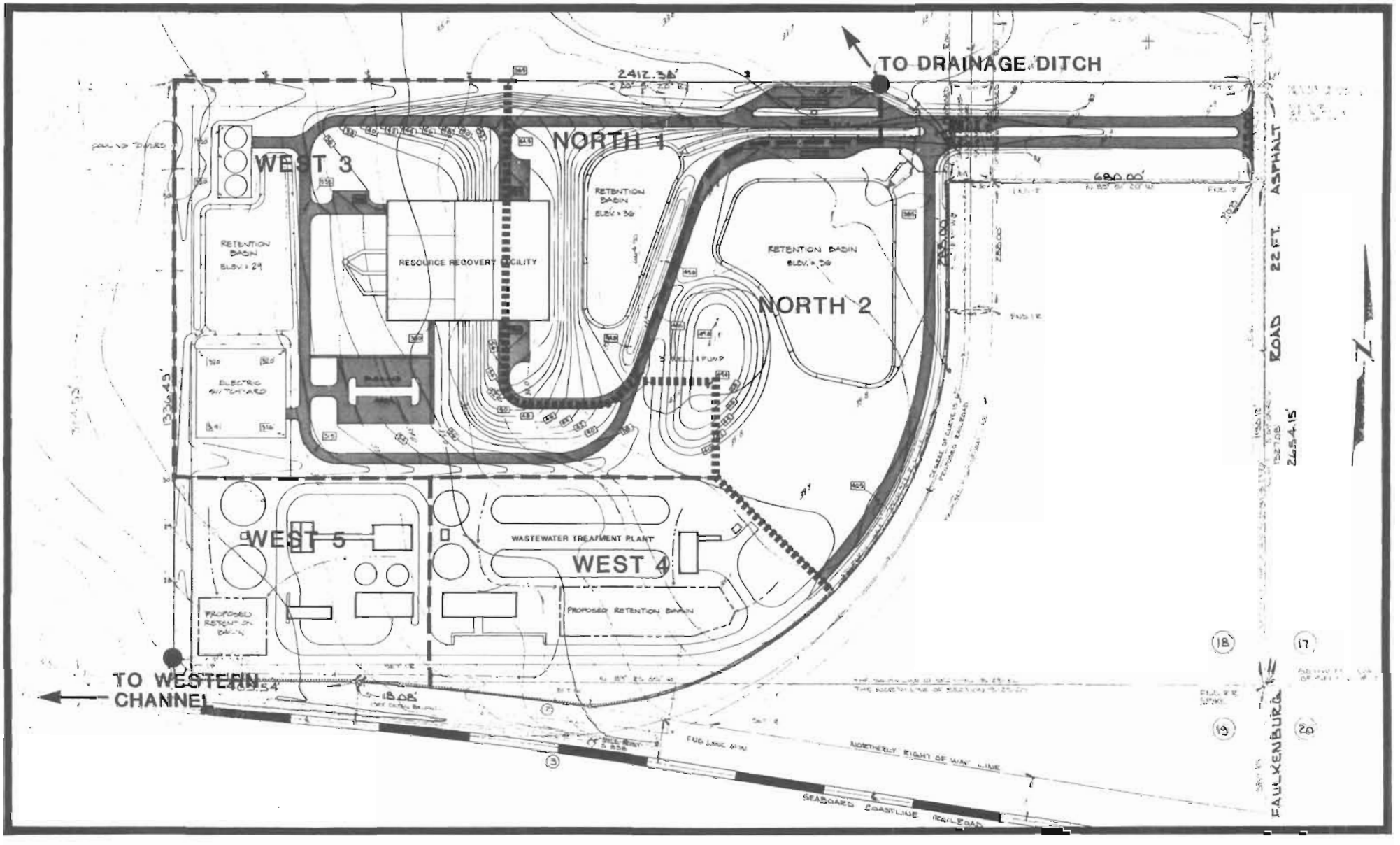

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FIGURE 3.4
POST-DEVELOPMENT
DRAINAGE AREAS

200 0 200 400 FEET

TABLE 3.5

DRAINAGE AREAS AND DETENTION BASIN SIZES

Subbasin	Subbasin Drainage Area (acres)	Detention Area (ft^2)	Storage Volume (acre-feet)
North 1	8.3	25,000	1.43
North 2	13.9	120,000	5.51
West 3	13.8	50,000	2.87
West 4	8.3	28,000	1.28
West 5	6.1	25,000	1.15

Source: CDM

During the initial construction phase, West 3 Basin will be much larger than as shown on Figure 3.3 in order to provide treatment capacity prior to discharge for the volume of water to be removed from the site during the dewatering operation (See also Appendix 10.15). This basin will be operated to assure that the discharge from the basin is less than 50 Jackson turbidity units (JTU) above background.

In a letter dated September 26, 1983 from Gary W. Kuhl, P.E. Executive Director of the Southwest Florida Water Management District (SWFWMD) to Mr. Hamilton Oven of the Power Plant Siting Section of DER, Mr. Kuhl noted that, "A permit for temporary discharge into the ditch that leads to the Bypass Canal will not be required. This was discussed in an earlier meeting with the consultant." The full text of the letter is included as Exhibit B to Appendix 10.14.

On-site transport of stormwater to the discharge points will take place in stabilized grassed drainage swales. The site discharges to receiving waters:

(1) a drainage ditch running east-west about 250 feet north of the boundary of the site; and

(2) a channel flowing in a northwesterly direction from an area about 250 feet west of the boundary of the site.

The design criteria for the basins includes a stipulation that the post development peak flow rate from the site in a 25-year storm of critical duration must not exceed the pre-development peak flow rate in a 10-year storm of critical duration. The analysis described in Appendix 10.14 assigns a limiting discharge of 25 cfs to the area draining to the northern ditch and 35 cfs to the area draining to the western channel.

The capacity of both receiving channels is estimated to be more than adequate to handle the planned peak discharge rates of 25 cfs and 35 cfs. The northern drainage ditch is a fairly large channel, estimated during site inspection to be about ten feet deep and six to seven feet wide.

Appendix 10.14 contains a summary table of ditch capacity for various flow depths. A flow of 25 cfs is well within the range that can be accommodated in the ditch.

The channel running along the western boundary of the site is shallower and wider than the northern ditch. Site inspection revealed that portions of the western channel were obstructed by heavy vegetation which may limit channel capacity. Channel capacity was estimated at 65 cfs based on the combined capacity of twin 30-inch diameter culverts located just to the north of the Seaboard System Railroad.

Eventually the ditch and the channel intersect and flow southwestward toward the Tampa Bypass Canal. The canal functions to provide flood control.

Although minimal information was available on the quality of water in the two receiving channels, CDM performed some analyses. The existing data base is presented and discussed in Section 2.3.4.1 of this document. In general, water quality in both streams is degraded as compared to water quality in the Tampa Bypass Canal. Levels of nitrogen compounds are higher in the streams than in the canal, with the exception of nitrate-nitrogen. High turbidity and suspended solids levels were seen in the ditch bordering the northern boundary of the site.

Table 2.26 in Section 2.3.2.1 summarizes the results of analysis for selected water quality parameters for wells in the vicinity of the site. For all wells, the levels measured for each parameter are clearly within established state and federal primary and secondary standards.

Groundwater in the vicinity of the project site is used for potable water supply. The majority of the wells draw from the Floridan aquifer and a much smaller percentage utilizes the surficial aquifer. The Brandon well field removes the greatest amount of groundwater for potable supply.

Water retained in the basins either percolates to the underlying groundwaters or evaporates. In most areas, the surficial aquifer is

underlain by clay that acts as a confining unit separating the surficial aquifer from the Floridan aquifer.

The designs for the stormwater retention/detention basins are based upon criteria and rules developed by Hillsborough County and the Florida Department of Environmental Regulation. The requirements of these criteria are that: (1) the post-development peak flow rate from the project site in a 25-year storm of critical duration must not exceed the pre-development peak flow rate in a 10-year storm of critical duration; (2) the post-development runoff volume discharged during a 25-year 24-hour rainfall will not be increased beyond the pre-developed volume naturally running off during that same rainfall; and (3) the facility must retain and discharge by percolation through soil, evaporation, or evapotranspiration a volume equivalent to the first one-half inch of runoff, so that the capacity to store an additional one-half inch is again provided within 72 hours following a storm event (F.A.C. Rule 17-25).

3.9 Materials Handling

No heavy equipment such as large cranes, plant components such as boilers, or other voluminous materials such as limestone for an FGD system will be transported to the site, unloaded, stored, or moved around the site during normal operation or maintenance of the facility. All equipment will be inside a building, and all maintenance will be carried out within the building. The room where the steam turbogenerator is housed will have an overhead crane for maintenance of the turbogenerator. The solid waste and residue will be hauled in trucks. Sections 2.3.9 and 5.9 and Appendix 10.13 describe and analyze the impact of the truck traffic.

3.10 ASSOCIATED FACILITIES

The 50.4 acre site to be occupied by the energy recovery facility will also be occupied by the Northwest Brandon Subregional Wastewater Treatment Plant (WWTP).

The wastewater treatment plant is planned to be operational by September 1986. As currently scheduled, the WWTP, therefore, would be operational about 16 months prior to the start-up date of the energy recovery facility. As noted previously in Section 3.1 of this Chapter, the WWTP can and will operate effectively regardless of the status of the energy recovery facility. The WWTP will not have to rely on the energy recovery facility for disposal of its effluent. Other methods such as land application will be available for effluent disposal/discharge.

Final design of the WWTP is planned for December 1984. At that time, the Hillsborough County Water and Wastewater Department would apply for its construction permits. As permits for the construction and operation of the WWTP are applied for or received they will be forwarded to the Power Plant Siting Section for insertion into Appendix 10.4.3 (Volume II) of this Application for Power Plant Site Certification.

The WWTP is illustrated on Figure 2.5 General Site Development Plan in Section 2.1.2. The WWTP is currently in the final design phase. During this phase, a specific treatment facility will be recommended. The proposed facility will be capable of providing an effluent treated to meet the mandated discharge requirements of Florida Department of Environmental Regulation (FDER).

At the present time, the County purchases an average of 2.0 million gallons per day (mgd) of treatment plant capacity from the City of Tampa. This flow would be treated by the new WWTP along with that from several industrial concerns and the proposed resource recovery facility. This would remove the industrial waste from other County facilities avoiding some undesirable mixing of municipal and industrial waste.

In light of the above considerations, an initial capacity of 3.0 mgd is proposed for the WWTP. Effluent quality would be responsive to needs for cooling water at the proposed resource recovery facility and to meet DER requirements for land application by spray irrigation of areas accessible to the public.

More specifically, the treatment facility as shown on the General Site Development Plan may contain the following processes or unit operations in the sequence of flow through the total treatment works:

Screening	-	Removes coarse material such as boards, and plastic bottles. These are collected as a waste product for incineration or burial.
Grit Removal	-	Vortex-type degritters which offer efficient grit removal over a wide range of effluent flows will be employed. This prevents excessive wear on downstream equipment.
Odor Control	-	A wet scrubber system will be used to remove hydrogen sulfide and other odors.
Extended Aeration Secondary Treatment	-	The wastewater is mixed and provided with ample oxygen so that bacterial decomposition of the waste takes place in an oxygen-rich environment. Wastes are organically broken down into simpler compounds.
Final Clarifiers	-	The wastewater passes slowly through a tank. This allows the solid material, including the bacterial mass and other microorganisms to settle to the bottom of the tanks for withdrawal. Excess solid material (waste sludge) must then be processed and disposed of.
ABW Filters	-	The wastewater is filtered through automatic backwash (ABW) filters so that finer and lighter solid material not removed in the clarifier is captured.
Chlorination	-	High level disinfection. Chlorine is applied to destroy bacterial and other potentially harmful organisms that may have passed through the filter.

Effluent Pump Station and Storage - Chlorinated, treated wastewater, (plant effluent) can then be pumped (lifted) into a storage tank prior to disposal or reuse.

Thickeners - Waste sludge from the clarifiers is thickened. This is to remove more water and reduce the volume.

Dewatering - Dewatering will be provided to remove liquid from the thickened sludge to form a semi-solid cake suitable for further processing or utilization/disposal.

After these processes, there are two products for disposal - the highly treated wastewater and the dewatered waste sludge. The sludge can be landfilled, land applied or composted and used as a soil amendment. The wastewater may be used at the resource recovery facility, land applied, or reused by other local industries. In land application, various land areas would be needed, depending on soil conditions. Effluent disposal is being investigated as part of the preliminary design of the WWTP.

Chapter 5 fully describes the operational impacts of the WWTP as they relate to the energy recovery facility. The impacts of the energy recovery facility on the WWTP are also discussed.

TABLE 4.2

CONSTRUCTION ACTIVITIES IMPACTING NOISE AND EMISSIONS
FROM CONSTRUCTION EQUIPMENT

Construction Phase	Activities Occuring Simultaneously	Anticipated Operating On Site	Relative Location of Equipment On Site[1]
SITE PREPARATION	Sheet Pile Driving for Refuse Bunker	1 Pile Driver 1 Front End Loader	Localized
	Dewatering of Refuse Bunker Excavation	6 Pumps	
	Refuse Bunker Excavation	2 Backhoes 7 Trucks	
	Placement & Compaction of Fill for Tipping Floor	2 Dozers	
		3 Trucks	Spaced 500 Ft. Along Acess Road
FACILITY CONSTRUCTION	Concrete Placement[1]	1 Pump 2 Saws 3 Vibrators	Localized
		3 Trucks	Spaced 500 Ft Along Access Road
	Structural Steel Erection	2 Cranes 1 Derick 4 Pneumatic Tools 2 Welders 1 Compressor	Localized Within A 200' Radius
	Major Equipment Installation	2 Cranes 1 Fork Lift 2 Generators 6 Pneumatic Tools 1 Compressor 2 Welders	
FINALIZATION	Scale Installation	1 Crane 2 Pneumatic Tools 1 Compressor 1 Welder & 1 Generator	Localized
	Paving of Access Road	1 Paver 2 Trucks	Mobile Along Paved Roadway
	Landscaping and Final	1 Dozer 1 Grader	Transit Over Entire Site

1/ Assumes daytime pour. A 24 hour a day pour would shorten the duration.

TABLE 4.3

CONSTRUCTION ACTIVITIES IMPACTING FUGITIVE DUST

Construction Phase	Anticipated Areas to be Exposed Simultaneously	Estimated area of Land Cleared (Acres)
SITE PREPARATION	Two Large Eastern Retention Basins	4.8
	Backfill Embankment	5.7
	Access Roadway Stripped to Subgrade	4.6
	Miscellaneous (Staging Area, Employee Parking, Materials, Lay Down Area, Etc.)	4.0
FACILITY CONSTRUCTION	Backfill Embankment	5.7
	Access Roadway Stripped to Subgrade	4.6
	Miscellaneous (Staging Area, Employee Parking, Materials, Lay Down Area, Etc.)	4.0
FINALIZATION	Estimated Area to be Exposed at One Time Due to Landscaping and Final Grading	6
	Miscellanous (Staging Area, Employee Parking, Etc.)	4.0

As part of the landscaping effort, certain conditions of the rezoning approval have been imposed on the developer by Hillsborough County. These conditions are presented in detail in Section 3.2 "Site Layout". In terms of required plantings, the boundary areas will include buffering consisting of trees, such as silk oaks and live oaks on 25-foot centers, and long-leaf pines or slash pines on 10-foot centers. All trees will be a minimum of three-inch caliper at the time of planting. The resource recovery buildings will be screened by plantings such as crepe myrtle, southern wax myrtle, weeping elm, viburnum, or evergreens, which will be a minimum of four feet tall at the time of planting. Plants for buffering shall equal the standards for Florida No. 1 as given in "Grades and Standards for Nursery Plants" Part I, 1963 and Part II, State of Florida Department of Agriculture.

4.4.2 Measuring and Monitoring Programs

No monitoring programs are required based upon the data presented in Section 2.3.6 and conclusions presented in Section 4.4.1.

4.5 AIR IMPACT

4.5.1 Emission Rates

Construction activities have the potential for causing localized, short-term adverse air quality impacts. Possible impacts include:

- o fugitive dust emissions from land clearing and site preparation activities, and
- o mobile source emissions from construction equipment at the construction site.

Using the estimated equipment utilization given in Table 4.2 and the estimated area of stripped land in Table 4.3, maximum emission rates were calculated for each phase of the construction activity for total suspended particulates (TSP), sulfur dioxide (SO_2), nitrogen oxides (NO_x), and carbon

monoxide (CO). Although emissions will continue throughout all phases of construction, the greatest impact from fugitive dust emissions will occur during the site preparation phase when approximately 13.5 acres of the site will be exposed. The greatest impact from the mobile sources will occur during the facility construction phase when the amount of equipment on site is the greatest.

Emissions were developed by employing average emission estimates presented in Table 4.6. This table contains the emissions of the criteria pollutants for standard equipment employed in the construction of such a facility. The methodology consists of:

- o Determining the maximum construction area during the activity
- o Considering all equipment necessary to perform the maximum construction activity.
- o Estimating the total emissions produced by the equipment needed to perform the activity.

Emissions of fugitive particulate matter were also determined for the construction activity.

The emission rate for fugitive particulate matter produced from the construction area, was obtained from the The Compilation of Air Pollutant Emission Factors; AP-42 (USEPA, 1977) for fugitive dust sources. The emission estimates for the mobile sources were obtained from the emission rates contained in Table 4.6 and are listed in Table 4.7.

Factors not incorporated into the development of the emission rate for fugitive dust are soil moisture, soil particle grain size, ground water level, and mitigating measures. These factors, if included, would contribute to lower emission estimates since the study area has a greater precipitation - evaporation index than the area used to develop the emission factors, and the soil is a medium to fine grained sand with a

TABLE 4.6

COMPARISON OF EXHAUST EMISSIONS FOR HEAVY-DUTY GASOLINE AND DIESEL-POWERED CONSTRUCTION EQUIPMENT AND VEHICLES AND LIGHT-DUTY VEHICLES

	Wheeled Tractor	Motor Grader	Wheeled Loader	Roller	Wheeled Dozer	Scraper	Off-Highway Truck	Miscellaneous	Emissions from an average heavy-duty vehicle operating in 1985	Emissions from an average light-duty vehicle operating in 1985
Diesel-Powered Construction Equipment:										
Carbon Monoxide (g/hr)	973	97.7	251	83.5	335	660	610	188	23.7	34
Exhaust Hydrocarbons (g/hr)	67.2	24.7	84.7	24.7	106	284	198	71.4	3.48	9.2
Nitrogen Oxides (g/hr)	451	478	1090	474	2290	2820	3460	1030	398	32
Particulates (g/hr)	61.5	27.7	77.9	22.7	75	184	116	63.2	32	14.6
Sulfur Dioxide (g/hr)	40.9	39.0	82.5	30.5	158	210	206	64.7	56.1	10.8
Gasoline-Powered Construction Equipment:										
Carbon Monoxide (g/hr)	4320	5490	7060	6080	(1)	(1)	(1)	7720	200.7	23.7
Exhaust Hydrocarbons (g/hr)	164	186	241	277	(1)	(1)	(1)	254	13.9	2.03
Nitrogen Oxides (g/hr)	195	145	235	164	(1)	(1)	(1)	187	9.3	1.72
Particulates (g/hr)	10.9	9.4	13.5	11.8	(1)	(1)	(1)	11.7	24.2	12.8
Sulfur Dioxide (g/hr)	7.03	7.59	10.6	8.4	(1)	(1)	(1)	10.6	7.2	2.6

(1) Exhaust emissions produced from gasoline models not given

SOURCE: USEPA, AP-42, Third Edition (1977)

TABLE 4.7

EMISSION RATES FOR CRITERIA POLLUTANTS
DURING CONSTRUCTION

	Fugitive Dust		Mobile Sources	
	Short Term (lb/day)	Annual (tons/yr)	Short Term (lb/day)	Annual (ton/yr)
TSP	101.	60.6	4.95	5.15
SO_2	-	-	5.73	5.96
CO	-	-	16.5	17.2
NO_x	-	-	90.9	94.5

Source: CDM

very low silt content. Additionally, the ground water level is about one foot from the surface contributing to the amount of moisture in the soil. Except for installing a comprehensive watering program, no credit was taken for those certain things noted above that would reduce predicted particulate emission rate.

4.5.2 Mitigating Measures for Particulate Emissions

The construction site is located in a TSP nonattainment area. Although the ambient air monitors located near the site show no violations of standards, the background concentrations are still high. Thus even a small impact of particulate matter could cause an adverse air quality impact. Based on the emission estimates in Table 4.7 the potential for a short term impact exists. Since these emissions are typical of those found with other construction activities and particulate emissions in this area are of concern, DER suggested developing emission reduction measures.

Construction requirements for fill and concrete will result in truck traffic along the site access road. This makes the currently unpaved road a source of particulate matter. Several mitigating measures are available to reduce these emissions. Routine watering of the roadway would provide a reduction of roadway emissions of about 50 percent. A watering truck is usually on site for various other activities. Partial dedication of this truck or the addition of a second truck could be accomplished. Surface treatment with penetrating chemicals would provide a 50 percent reduction depending on the frequency of application. The application of penetrating chemicals is more costly than a routine watering but fewer applications are required. The purchase of chemicals, time to mix the chemicals, and the partial use of a watering truck or some other vehicle would contribute to the costs. Soil stabilization alone can achieve a 50 percent emission reduction by binding up surface soil. The advantage to soil stabilization is that the roadway becomes more drivable. Soil stabilization is done once, as soon as the roadway is developed. Additional emission reductions could be obtained if oil or penetrating chemicals were spread over the stabilized area. Paving achieves the greatest reduction in emissions, 85 percent, and represents the most stringent emission limitation. Road

paving can be done either by soil compaction and adding base coarse material or by soil stabilization with an asphalt cap, whichever is most appropriate for the site.

Good construction practice requires a developed access road for the number of trucks hauling fill. Since a road capable of handling heavy trucks must eventually be built, any dust control measure less than building the access road up to base coarse level, would have to be torn up. Thus the development of the access road is not an excess cost but part of good construction, its early construction is cost effective, and is the recommended method for reducing particulate emissions.

General site emissions, particulate emissions across open and active construction areas, are best controlled by a comprehensive watering program. This method can reduce emissions by 50 percent. Other methods used to control emissions are not practical because soil is usually in a state of transition. An excess amount of penetrating chemicals would be required. Binding agents would continually be broken up. Since a watering truck is available onsite for other construction activities, its added utilization should not represent a significant cost.

Completed cut and fill areas which are vegetated or covered with chemical binders can reduce particulate emissions by 65 to 80 percent. Since these areas are not active and would not receive traffic, vegetation can grow undisturbed and chemical binders need only infrequent applications. Embankments brought up to grade and no longer subject to construction activity should be immediately landscaped or vegetated. Till piles or embankments requiring future activity should be treated with a readily available binder.

Good site maintenance practice should be observed. Although not quantifiable, covering trucks carrying fill or loose material and watering down the access road can greatly reduce dust problems. The practices are not costly and what extra effort may be required usually is greatly outweighed by the benefit.

waste in the bunker while he is mixing. This would allow the detection of large potentially hazardous materials such as drums or gas cylinders to prevent charging into the furnace.

A chemical and EP toxicity analysis of the combined ash residue will be conducted after commencement of operation to determine toxicity or hazard (includes both combustion residue and APC device residues).

It will be the responsibility of the facility operator to determine if the ash residue is classified as hazardous according to EPA and DER regulations. Experience at other similar facilities has shown that the mixed bottom and fly ash can pass the EP toxicity test; i.e., considered a non-hazardous waste material. This waste material would be suitable for disposal in a permitted Class I sanitary landfill.

A chemical analysis of the combustion residue will be conducted after commencement of operation to ensure compatibility for disposal in a sanitary landfill.

5.5 SANITARY AND OTHER WASTE DISCHARGES

Solid waste generated by plant operations (employee refuse, packing material, etc.) will be collected from receptacles located throughout the plant and fed into the main solid waste stream for processing. Materials not suitable for incorporation into the solid waste stream will be separated for offsite disposal to a proper facility. All sanitary wastewaters will be collected and discharged to the headworks of the co-located wastewater treatment plant. Therefore, no impacts associated with sanitary and other waste discharges are anticipated during plant operations.

5.6 AIR QUALITY IMPACTS

5.6.1 Impact Assessment

The air quality modeling analysis was conducted in three phases. The screening analysis identified the boiler operating condition which has the

greatest air quality impact and defined the pollutants and downwind locations which have the potential for concentrations greater than the significant impact limits. The screening model runs were made using the Industrial Source Complex (ISC) dispersion model and 26 worst case meteorological conditions. The refined modeling analysis was conducted using the source impacts and receptor grid defined in the screening analysis. The refined modeling analysis identified the pollutants which had a greater than significant impact, and defined the significant impact areas (SIA) for those pollutants. The refined modeling was done using ISC and five years (1970-1974) of Tampa International Airport surface and upper air meteorological data. The additional impact analysis was done for only those pollutants and averaging periods which had a greater than significant impact and for only those grid receptors located in the SIA. The emission inventory used in this analysis consisted of 1) sources permitted under Prevention of Significant Deterioration provisions and 2) other major SO_2 sources located within 30 km of the site, or sources located within 50 km of the site having significant impact within the SIA. Each phase of the modeling analysis was discussed with and approved by Florida DER. A detailed discussion of the proposed air impacts is contained in Section 7.0 of Appendix 10.1.5 "Prevention of Significant Deterioration" (see Volume III-Air Quality).

The air quality standards are not violated until a receptor exceeds the standard twice in any given year. The highest value of the second highest concentrations (HSH) is chosen from the proposed impacts, additional source impacts, and the monitoring data to allow for a single short-term (24 hours or less) violation. Naturally, a single annual average is calculated for each receptor, so the highest annual concentrations were used for comparison.

A comparison of the proposed SO_2 impacts to the PSD increment is shown in Figure 5.1. No comparison is made for TSP since the site is located in a particulate non-attainment area and is evaluated under the New Source Review requirements, not PSD. The 3-hour and 24-hour SO_2 averaging periods exceeded the significant impact limits. Therefore, the increment for these periods had to include other PSD sources. As shown on Figure 5.1, the proposed source will consume less than 19 percent of the total increment.

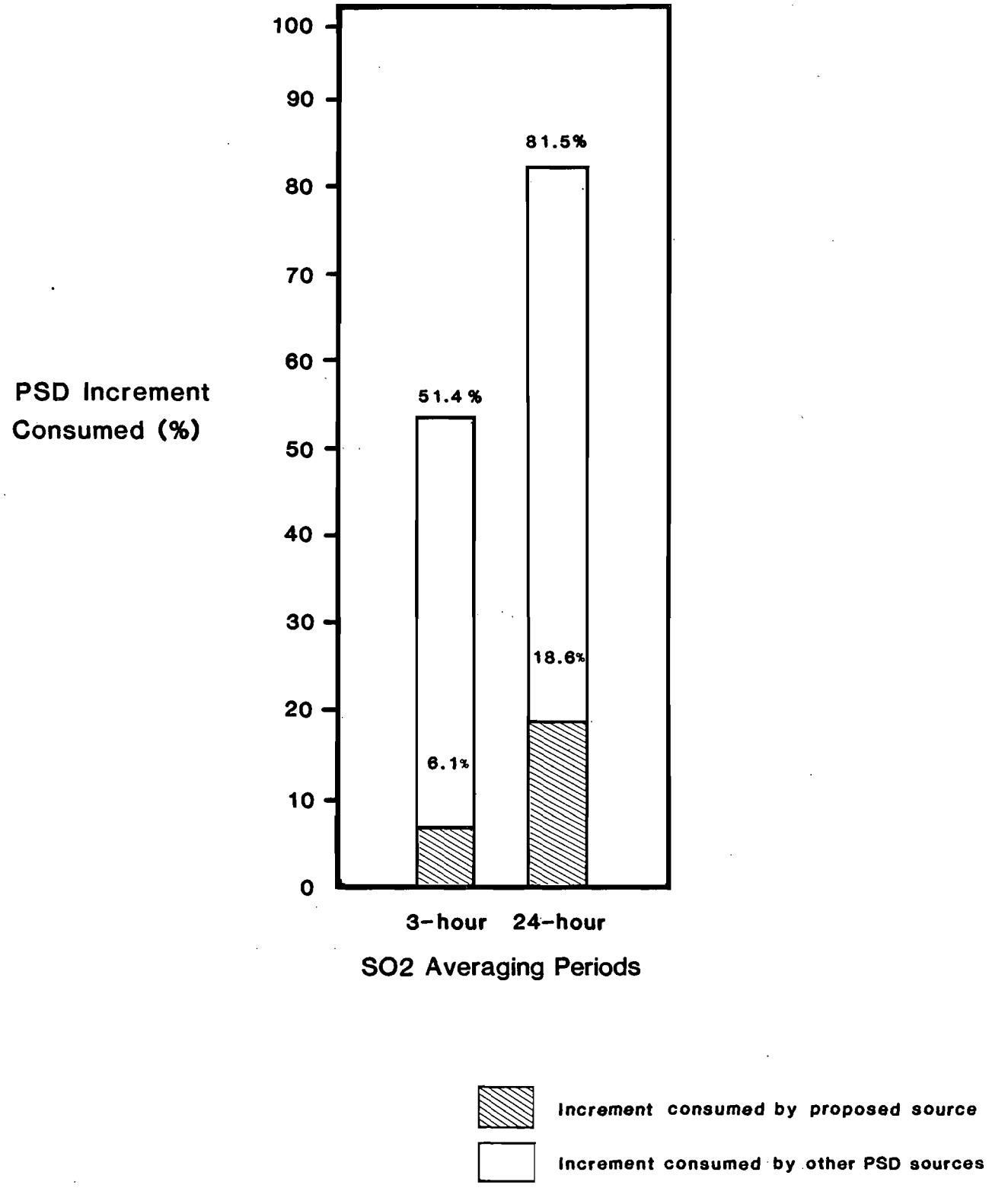

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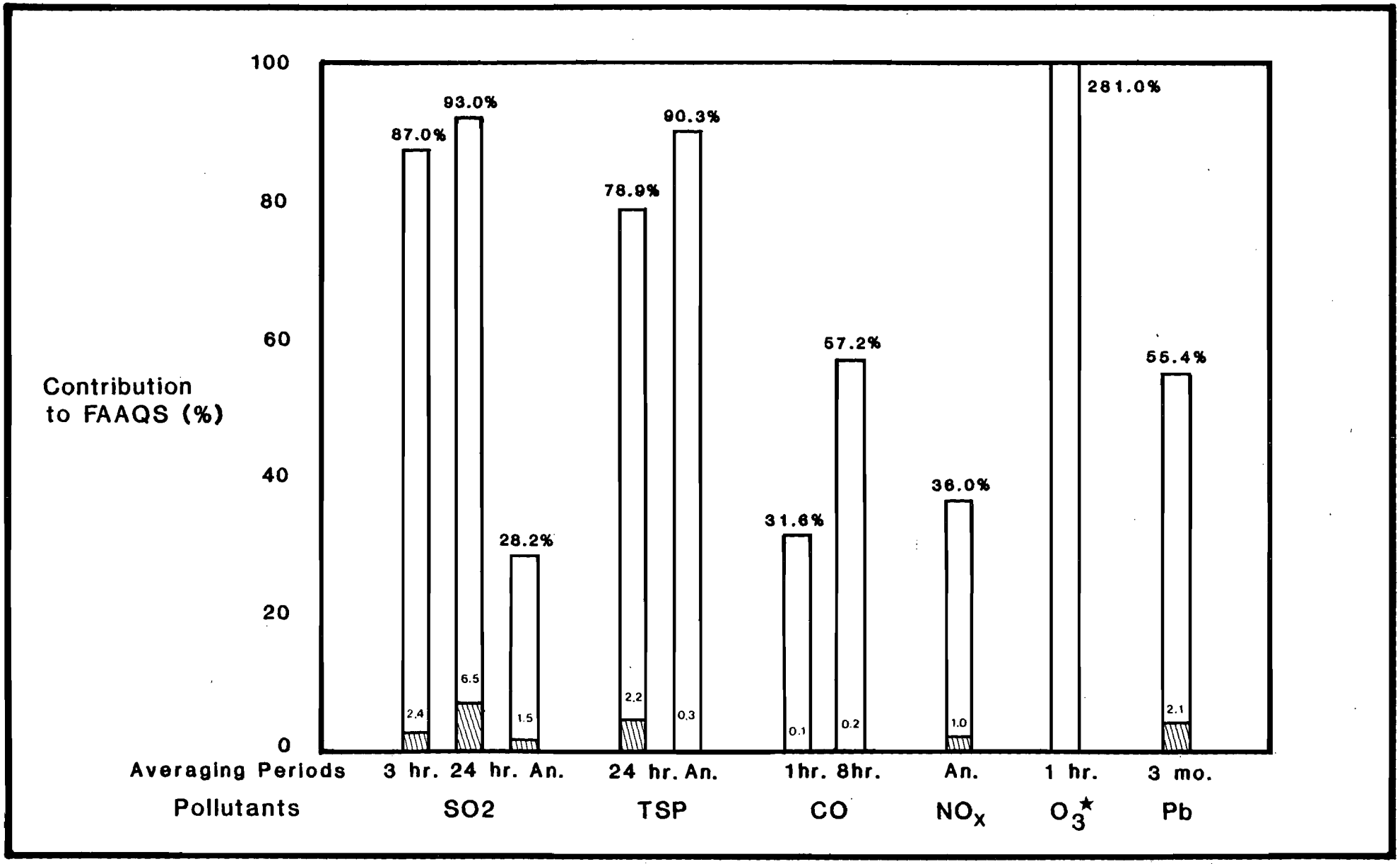
FIGURE 5.1
PSD INCREMENT CONSUMPTION
FOR SULFUR DIOXIDE

A comparison of the proposed impacts to the Florida Ambient Air Quality Standards (FAAQS) is made in Figure 5.2. As with the increment evaluation, 3-hour and 24-hour SO_2 were evaluated along with other major SO_2 sources which included the PSD sources. The HSH concentrations from the additional sources were added to the HSH monitored background concentration. This approach is used to estimate the maximum possible impact. Ozone is not directly emitted from the facility but is formed in the atmosphere as a secondary pollutant. Non-methane hydrocarbons are considered a precursor to ozone formation.

As is shown on Figure 5.2, the impact of the facility is small compared to the existing background concentrations. The 24-hour SO_2 concentration has the greatest impact contributing 6.5 percent of the standard. All other pollutants contribute less than 2.5 percent.

As previously stated, the site is designated non-attainment for particulates, however, Figure 5.2 shows a combined concentration less than the standard. This is due to the need for two years of monitoring without recording any violation of standards before an area can be redesignated as attainment. Also, there are several other monitors in the area at which violations have been recorded. The TSP data from the Orient Road monitor is believed to be representative of the proposed site. The site is also classified as non-attainment for ozone. Figure 5.2 clearly shows excessive background ozone concentrations.

The impact of the facility was also evaluated with regard to visibility, soils, and vegetation. The visibility of the plume was examined with respect to Chassahowitzka National Wilderness Area. Using a worst case screening analysis defined by Latimer, et al, (1980), no degradation in visibility is predicted. The predicted maximum annual concentrations are well below the thresholds injurious to soils and plants. For a detailed analysis of those air quality related issues, see Section 8.0 in the PSD, Appendix 10.1.5 (Volume III-Air Quality).



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Contribution from proposed source

Contribution from background or other major sources

★ Ozone is a secondary pollutant and not directly emitted from the facility

FIGURE 5.2
AIR QUALITY IMPACT COMPARED TO FAAQS

5.6.2 Monitoring Program

No post-construction ambient monitoring plan is proposed for this facility. The monitoring network operated by the Hillsborough County Environmental Protection Commission is sufficient to monitor ambient air quality levels in the vicinity of the site. However, a continuous in-stack monitoring program will be operated for opacity, and oxygen or carbon dioxide concentrations. The equipment will be installed, calibrated and maintained in accordance with FAC 17-2.710 and 40 CFR 51, Appendix P. Compliance testing will also be conducted for pollutants with emission limiting standards in accordance with FAC 17-2.700 and 40 CFR 60. This testing shall include, but not be limited to, testing for particulate emissions.

5.7 NOISE

Noise baseline conditions are discussed in Section 2.3.8. Monitoring sites are illustrated in Figure 2.28 within that section. Baseline sound levels are shown in Table 2.29 in the same section.

Sound levels expected to be generated by both truck traffic and by the operating facility were superimposed on the existing sound levels actually measured. Construction noise impacts at the facility were also determined.

From the analysis, presented in detail in Appendix 10.12, it can be seen that daytime operations of the proposed facility would not result in any perceived noise impacts at the closest sensitive receptors. Nighttime ambient noise monitoring conducted by Hillsborough County EPC at the closest residence indicate nighttime sound levels of 55 dBA. With the expected facility sound levels at the location of the sensitive receptors to be in the vicinity of 44 to 46 dBA, no significant impact is anticipated.

Efforts will be made during the design phases of this project to include appropriate mitigative measures for reducing expected noise levels. Mitigative measures presently being considered include:

- o locating major noise producing components, such as ID (induced draft) fans on the far side of the structure from sensitive receptors;

- o locating individual components which can be separated from the structure; i.e., condensors at remote locations on the site;

- o use of structural noise screens and, where appropriate, planting of vegetative buffers; and

- o requiring the use of higher performance standards for noise producing equipment.

It should be noted that while an additional effort will be made to minimize noise levels, the expected sound levels at the receiving receptors will be well below Hillsborough County EPC noise criteria. The rules of the Hillsborough County Environmental Protection Commission (Rule 1-10) allow a dBA sound level limit of 55 and 60 for a receiving residential land use category between the nighttime hours of 10:00 PM and 7:00 AM and daytime hours of 7:00 AM to 10:00 PM, respectively. The predicted noise levels of the proposed facility will be well below these limits.

The operation of the proposed facility will increase daytime truck traffic levels along roadways in the vicinity of the site. Truck traffic will be restricted to daytime hours, more specifically, starting at 7:00-8:00 AM to 5:00 PM. As a result of the truck traffic, noise levels can be expected to increase somewhat in the vicinity of the site's access road, Faulkenburg Road, and State Road 60.

The maximum hourly truck volume expected to be added to Faulkenburg Road from the proposed project is 106 vehicle trips. At this volume, the median sound level expected from the trucks along with the current existing trucks traveling along Faulkenburg at 100 feet from the roadway is between 58 to 59 dBA with or without the facility. The closest residence along Faulkenburg Road is about 100 feet from the roadway. Truck traffic could be expected to slightly increase ambient noise levels by 0.5 to 1 dBA during

this maximum truck volume period along Faulkenburg Road south of the site's entrance. In comparison, an increase of 3 dBA is barely perceptible in the natural environment. The Hillsborough County EPC noise criteria allows a sound level limit of 75 dBA at manufacturing or industrial receiving land uses, a level of 65 dBA at commercial or business receiving land uses, and a sound level limit of 60 dBA at residential land uses between the hours of 7:00 AM and 10:00 PM The peak hourly traffic with the facility traffic is not expected to exceed the County criteria at any of the receptors except at Site 6 (See Figure 1 in Appendix 10.12). Based on the one 24-hour measurement made by HCEPC at this site, the noise criteria are currently being exceeded (see Table 3 in Appendix 10.12).

Monitoring by the County at Site 6, which is at the closest residence along the east side of Faulkenburg Road indicate the existing daytime equivalent noise levels (Leqs) range between 61-64 dBA and nighttime Leqs range from 55-58 dBA. Modeling of the existing traffic levels at all of the monitoring sites predicts an insignificant increase of only 0.5 to 1.0 dBA above existing monitored and modeled data.

5.8 CHANGES IN NON-AQUATIC SPECIES POPULATIONS

5.8.1 Impacts

Long-term impacts to non-aquatic species populations resulting from plant operation are anticipated to be insignificant. There would be no anticipated changes in diversity, relative abundance, species composition, distribution, dominance, or gradient distribution of important non-aquatic species.

5.8.2 Monitoring

No significant impacts to non-aquatic species populations are expected. Therefore, long-term monitoring programs are not proposed.

CHAPTER 10

APPENDICES

The appendices to this application are included in Volume II. Air quality related appendices - Appendix 10.1.5 Prevention of Significant Deterioration and Appendix 10.16 Stack Height Analysis and Recommendations, are included in Volume III.