LEE COUNTY, FLORIDA
SOLID WASTE ENERGY RECOVERY FACILITY

SUPPLEMENTAL APPLICATION FOR POWER PLANT SITE CERTIFICATION

VOLUME I – APPLICATION

SUBMITTED BY:
THE LEE COUNTY BOARD OF COUNTY COMMISSIONERS

NOVEMBER 7, 2002

PREPARED BY:
MALCOLM PIRNIE

MALCOLM PIRNIE

MALCOLM PIRNIE, INC.
INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS & CONSULTANTS

November 7, 2002

Hamilton S. Oven, Jr., P.E.
Administrator, Office of Siting Coordination
Department Of Environmental Protection
2600 Blair Stone Road, MS:48
Tallahassee, FL 32399

Re: Lee County Solid Waste Energy Recovery Facility
Supplemental Application for Power Plant Site Certification PA-90-30C

Dear Mr. Oven,

Please find enclosed Lee County's Supplemental Application for Power Plant Site Certification (Application), which addresses the construction and operation of an additional 600 tons per day (nominal) municipal waste combustion unit (Unit 3) at the County's existing Solid Waste Energy Recovery Facility (Facility). The County has prepared this Application to satisfy the requirements set forth in the Florida Electrical Power Plant Siting Act (PPSA), Sections 403.501-.518, F.S., and the PPSA rules adopted by the Florida Department of Environmental Protection (DEP) in Chapter 62-17, F.A.C.

The Facility, which has been in commercial operation since 1994, is owned by Lee County and operated by Covanta Lee, Inc. The Facility will continue to provide Lee and Hendry counties with solid waste disposal capacity. The Facility is in compliance with its current Conditions of Certification and its environmental permits and continues to be one of the most efficiently operated facilities in North America. The expansion of the Facility will result in a beneficial environmental and economic impact on solid waste disposal in Lee and Hendry Counties.

As part of the Application process, the County completed an environmental justice audit that found no environmental justice impacts as defined by Executive Order 12898. Additionally:

- The air quality analysis completed by the County determined that the expanded Facility's emissions would be indistinguishable from background concentrations and are considered to be negligible.
- The County proposes emission limits that are at or below New Source Performance Standards (NSPS) under 40 CFR 60, Subpart Eb.
- The human health and ecological risk assessment completed by the County demonstrated that the potential risks from the expanded Facility are below

regulatory and other risk levels and concluded that the proposed expanded Facility is not anticipated to have an adverse impact on human health or the environment.

- The expansion of the Facility is consistent with the County's Comprehensive Plan to increase recycling and reduce dependence on the landfilling of solid waste.

Lee County transmitted, under separate cover, check no. 354552 in the amount of $50,000.00 for payment of the Application Fee (copy attached). We eagerly await the Department's review and the County looks forward to working with the Department to continue to improve the health and welfare of the citizens in Lee and Hendry counties

If you should have any questions concerning this Application submittal or require additional information or copies, please do not hesitate to contact us.

Very truly yours,

MALCOLM PIRNIE, INC.

David S. Cerrato, R.E.M.
Vice President

Supervising Engineer of Record

11-7-02
Robert H. French, P.E.
Associate
FL P.E. No. 22054

c: Distribution (list attached)

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Applicant Information

Applicant's Official Name: **Lee County, Florida**

Address: **Board of County Commissioners**

2120 Main Street, PO Box 398

Ft. Myers, Florida 33901

Address of Official Headquarters:

Lee County Solid Waste Division

10500 Buckingham Road, Suite 200

Fort Myers, Florida 33905

Business Entity (corporation, partnership, co-operative): **Lee County Government**

Names, Owners, etc.: **Lee County Board of County Commissioners**

Name and Title of Chief Executive Officer: **Bob Janes, Chair, Lee County Board of County Commissioners**

Name, Address, and Phone Number of Official Representative Responsible for Obtaining Certification: **Lindsey J. Sampson, P.E., Division Director**

Site Location (County): **Lee County, Florida**

Nearest Incorporated City: **Fort Myers, Florida**

Latitude and Longitude: **26° 37' 54" and 81° 45' 41"**

UTM's Northerly: **2,945,865**

Easterly: **424,252**

Section, Township, Range **Section 24, Township 44S, Range 25E**

Location of any Directly Associated Transmission Facilities (Counties): **N/A**

Existing grid interconnect: **Buckingham Substation NW Quadrant S24 T44S R25E**

Name Plate Generating Capacity: **Existing 39.7 Mw, Proposed 20 Mw**

Capacity of Proposed Additions and Ultimate Site Capacity: **The proposed additional capacity is 20 Mw. The Ultimate Site Capacity is 60-65 Mw.**

Remarks: **Existing Facility Information: Conditions of Certification DEP Case No. PA90-30; Title V Air Operation Permit No. 0110119-001-AV; PSD Permit Nos. PSD-FL-151, PSD-FL-151A, and PSD-FL-151B.**

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ACRONYMS AND ABBREVIATIONS

ADT	Average Daily Traffic
ASTM	American Society of Testing and Materials
BFD	Boiler Feedwater Demineralizer
Btu	British Thermal Unit
cfs	Cubic Feet per Second
CSM	Cubic Feet per Second per Square Mile
DSCM	Dry Standard Cubic Meter
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
FGFWFC	Florida Game and Fresh Water Fish Commission
FLUCFCS	Florida Land Use and Cover Forms Classification System
FMSF	Florida Master Site File
FP&L	Florida Power and Light
gpd	Gallons per Day
HHV	Higher Heating Value
HHW	Household Hazardous Waste
HLDI	High-Level Disinfection
HSH	Highest Second-Highest
HTR	Household Trend Report
IPD	Industrial Planned Development
ISCST	Industrial Source Complex – Short Term
JMM	J. M. Montgomery & Associates
kwh	Kilowatt-Hours
lb/yd^3	Pounds per Cubic Yard
L_{eq}	Equivalent Continuous Sound Levels
LOS	Level of Service
mg/L	Milligrams per Liter
mgd	Million Gallons per Day
MPI	Malcolm Pirnie, Inc.
MSA	Metropolitan Statistical Area
MSL	Mean Sea Level
MW	Megawatt
NGVD	National Geodetic Vertical Datum
NM	Not Measured
NPDES	National Pollution Discharge Elimination System
NSPS	New Source Performance Standards
P^2/SQG	Pollution Prevention/Small Quantity Generator

ACRONYMS AND ABBREVIATIONS

PPSA	Power Plant Siting Act
PSD	Prevention of Significant Deterioration
RMPF	Recovered Materials Processing Facility
SCR	Selective Catalytic Reduction
SFWMD	South Florida Water Management District
SNCR	Selective Non-Catalytic Reduction
SPT	Standard Penetration Test
SR	State Road
STF	Summary Tape File
tpd	Tons per Day
TSP	Total Suspended Particulates
TSS	Total Suspended Solids
USDA	U. S. Department of Agriculture
USEPA, EPA	U. S. Environmental Protection Agency
USFWS	U. S. Fish and Wildlife Service
USGS	U. S. Geological Survey
USSCS	U. S. Soil Conservation Service
VOC	Volatile Organic Compound
WWTP	Wastewater Treatment Plant
$\mu g/m^3$	Micrograms per Cubic Meter

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

1.0 INTRODUCTION

This document summarizes the key facts concerning Lee County's Supplemental Application for Power Plant Site Certification (Application), which addresses the construction and operation of Unit 3 at the County's existing Solid Waste Energy Recovery Facility (Facility). The County has prepared this Application to satisfy the requirements set forth in the Florida Electrical Power Plant Siting Act (PPSA), Sections 403.501-.518, F.S., and the PPSA rules adopted by the Florida Department of Environmental Protection (FDEP) in Chapter 62-17, F.A.C.

2.0 BACKGROUND

In 1985, the Florida Legislature enacted the Lee County Solid Waste Disposal and Resource Recovery Act, which authorized Lee County to construct, operate, and maintain a solid waste disposal and resource recovery system for the benefit of the County's residents. Accordingly, in 1989, the County adopted an Integrated Solid Waste Management Master Plan (Plan), which established a comprehensive plan for the management, reuse, recycling and/or disposal of all solid waste generated in Lee County. The County's Plan was based on the development of: (a) an aggressive recycling program to reduce the quantity of materials requiring disposal; (b) a waste-to-energy facility for waste reduction and energy recovery from those materials that are not recycled; and (c) a landfill for the disposal of ash and by-pass waste (i.e., materials that are not recycled or processed in the WTE facility).

Lee County has implemented its Integrated Solid Waste Management Master Plan with innovative approaches and state of the art technology. For example, the County established a recycling and materials separation goal of 40 percent for its residents, even though the State of Florida's goal is 30 percent. The County's recycling rates have consistently exceeded the State's goal and the County continues to implement new recycling initiatives to achieve the County's goal of 40 percent. As a result of the County's comprehensive recycling activities, Lee County's recycling rate in 2000 was higher than that of any other county in Florida.

The County selected state-of-the-art technology when designing its waste-to-energy (WTE) facility, which was approved under the PPSA in 1992 and commenced commercial operations in 1994. The Facility uses filter fabric baghouses, acid gas scrubbers, selective non-catalytic reduction (SNCR) systems, and an array of continuous emission monitors to ensure that the Facility's emissions are minimized. The County's WTE facility was the first one in the United States to use an activated carbon injection (ACI) system on a continuous basis to control mercury emissions. With these advanced air pollution control systems, the Facility has operated safely and reliably for 8 years, while consistently complying with the applicable FDEP emission limits and other environmental standards.

Lee County built a modern landfill, which is equipped with two synthetic liners, two leachate collection systems, and a network of groundwater monitoring wells to ensure the protection of the environment.

The County's landfill is located in Hendry County, pursuant to an interlocal agreement between Lee County and Hendry County. Under this agreement, the solid waste from both counties is taken to Lee County's Facility for processing and then the ash and by-pass waste are taken to the landfill for disposal. This cooperative, regional approach to solid waste management issues has enabled Lee County and Hendry County to provide environmentally sound, cost-effective programs for the residents of both counties.

3.0 NEED FOR UNIT 3 AT ENERGY RECOVERY FACILITY

Despite Lee County's comprehensive recycling program, the amount of solid waste delivered to the Facility has increased each year since the Facility began operation, primarily due to population growth. In 1999, the County's deliveries were equal to the Facility's guaranteed processing capacity (372, 300 tons). In 2000, the Facility processed more than 392,000 tons of solid waste, but the County still had to dispose almost 44,000 tons of processible waste in its landfill. Current population projections for Lee and Hendry counties suggest that the amount of processible solid waste will continue to increase, reaching almost 550,000 tons by 2010.

Lee County has decided that it should expand the Facility, consistent with the County's long-standing Plan, rather than discard processible waste in a landfill. The Facility currently has two municipal solid waste combustion units, but it was designed to readily accommodate the construction of a third unit. The third unit will be operating at or near its design capacity by 2010 (i.e., within five years after it commences commercial operations).

4.0 SITE AND ASSOCIATED FACILITIES

The Facility is located approximately 2.5 miles east of the intersection of Interstate-75 and State Road 82, on the north side of Buckingham Road. The site contains approximately 155 acres. The site includes the Facility, a Household Hazardous Waste (HHW) drop-off area, a waste tire storage facility, a horticultural waste processing facility, and a Recovered Materials Processing Facility (RMPF). Even after the Facility is expanded, approximately 85 percent of the site will used solely as buffer and conservation areas.

The site and the Facility, including the third unit, are consistent and in compliance with the County's existing land use plans and zoning ordinances. The site was zoned for an Industrial Planned Development, and was designated as Public Facilities in the future land use map of the County's comprehensive land use plan, specifically to allow the Facility to be built and operated on the site.

5.0 EXISTING AND PROPOSED FACILITY

The Facility is owned by the County and operated by Covanta Lee, Inc., pursuant to a long-term contract with the County. It is anticipated that Covanta will design, construct, and operate the third combustion unit.

The Facility currently has two units that use mass-burn technology for the combustion of municipal solid waste. Each combustion unit has a nominal capacity of approximately 600 tons per day (tpd) and a continuous design-rated capacity of 660 tpd when burning a reference waste of 5,000 Btu per pound. When the Facility is expanded, the Facility will have three units and a total nominal capacity of 1,800 tpd.

The Facility was designed and built to accommodate the addition of a third combustion unit, thus making the expansion project relatively simple, without disrupting large areas of the site. The proposed expansion project will include: (a) the construction of a third combustion unit and the associated air pollution control system; (b) the expansion of the existing cooling tower and ash handling building; and (c) the addition of a new lime silo, a scale, a flue within the existing stack, and a 20 megawatt (nominal) steam turbine generator. The proposed improvements to the Facility will be enclosed, except the expansion to the cooling tower.

The new combustion unit will be equipped with the same air pollution control systems that have worked well at the existing Facility: a fabric filter (baghouse) will be used to remove particulate matter from the Facility's airborne emissions; a scrubber will control acid gases; a carbon injection system will control mercury and organics; and a selective non-catalytic reduction system (SNCR) will control nitrogen oxides (NOx).

These air pollution control systems will allow the Facility's third unit to comply with extremely stringent emission limits. At a minimum, the third unit will comply with the New Source Performance Standards (NSPS) that were established by the U.S. Environmental Protection Agency (EPA), based on the use of Maximum Achievable Control Technology (MACT). In addition to meeting the NSPS, the County has voluntarily agreed to accept emission limits that are more stringent than the NSPS, and/or more stringent than the emission limits for the two existing units, with regard to four parameters (particulate matter; sulfur dioxide; volatile organic compounds; fluorides). Further, the County has agreed to establish emissions goals that are lower than the NSPS limits for lead and cadmium.

6.0 EFFECTS OF FACILITY CONSTRUCTION AND OPERATION

The construction and operation of the Facility's third unit will have minimal impacts on the environment. Construction activities on the site will only occur in disturbed upland areas that are part of or adjacent to the Facility's existing footprint. No construction on the site will take place in a wetland, surface water, or sensitive habitat.

The basic operation of the Facility will not change when the third unit is installed. Municipal solid waste will be delivered to the site in trucks, taken inside the refuse storage building, and then dumped into the refuse storage pit. Two overhead cranes will mix the waste in the refuse storage pit and then load the waste into the charging hoppers that feed the combustion units. The combustion of the municipal solid waste will generate electricity and reduce the solid waste to approximately 10 percent of its original volume. Bottom ash from the furnace and fly ash from the emission control system will be stored in the ash management building until it is taken to the County's landfill for disposal.

All of the waste handling activities will take place inside a fully enclosed building. No waste will be stored outside. Since the building will be maintained under negative air pressure, dust and odors will be contained within the refuse storage building. Only municipal solid waste and similar materials will be used as fuel at the Facility. The Facility will not accept hazardous waste, biomedical waste, or other prohibited materials.

The Facility's basic water supply and management system will remain the same after the third unit becomes operational. The Facility will not discharge any industrial or domestic wastewater to any ground water or surface water. All of the Facility's wastewater will continue to be sent via an existing pipeline to the City of Ft. Myers' wastewater treatment plant (WWTP). Treated wastewater from the City's WWTP will be used to satisfy the Facility's need for cooling water. Potable water will be provided to the Facility from the City's water supply plant. On-site wells will be available for emergency water supply purposes. Stormwater will be treated and managed in the existing system of swales and detention/retention ponds.

The operation of the third unit at the Facility will not require the construction of any new pipelines, water supply wells, stormwater management facilities, or electric transmission lines.

The County has carefully evaluated the Facility's potential impacts on air quality. The maximum impacts due to the third unit will be much less than the levels allowed under the federal and state ambient air quality standards (AAQS), Prevention of Significant Deterioration (PSD) increments, and other applicable regulations. Indeed, the maximum impacts from the Facility operating with three units will be much less than the significant impact levels (SILs) for PSD Class II areas. When all three units are operating, the Facility's impacts on ambient air quality will be immeasurably small. The Facility's maximum impacts also will be far less than FDEP's ambient reference concentrations for air toxics.

The County conducted a human health risk assessment to evaluate the potential risks associated with the operation of three units at the Facility. An ecological risk assessment was also conducted to evaluate potential effects on sensitive ecological receptors. These analyses demonstrated that the potential risks associated with the Facility's emissions will be less than the risks that generally are deemed acceptable for human and ecological receptors. These conclusions are consistent with the results of previous studies

performed for this Facility, as well as studies for other modern WTE facilities. Based on all of the analyses that have been conducted, it is anticipated that the operation of three combustion units at the Facility will not have any adverse effect on human health or the environment.

The expansion of the Facility will provide significant benefits. By reducing the volume of solid waste by approximately 90%, the Facility will greatly extend the useful life of the County's landfill and thus postpone the need to build a new landfill in Lee County or Hendry County. By producing electricity from discarded materials, the Facility will reduce the need to use fossil fuels to generate electricity at traditional power plants. For this reason, the third unit of the Facility will eliminate the need to use approximately 5.54 million barrels of oil and thus will save approximately $150 million in oil purchases over the next 20 years. The construction and operation of the Facility also will provide significant direct and indirect economic benefits to the citizens of Lee County.

MALCOLM PIRNIE

Lee County, Florida
Solid Waste Energy Recovery Facility

Supplemental Application for Power Plant Site Certification

Section 1

SECTION 1.0

NEED FOR POWER AND THE PROPOSED FACILITIES

1.0 NEED FOR POWER AND THE PROPOSED FACILITIES

Lee County received a determination of need from the Florida Public Service Commission on January 7, 1991. The County's Solid Waste Energy Recovery Facility (the "Facility") received its original Conditions of Certification in July 1992 (see Volume II, Section 7.1). The proposed 20 megawatt (MW) expansion of the Facility is exempt from the requirements in Section 403.519, Florida Statutes, for a determination of need, pursuant to Section 377.709(6), F.S., which exempts expansions of solid waste facilities of less than 50 MW. Accordingly, the Public Service Commission issued a Declaratory Statement on December 11, 2001, which confirms that the Facility is exempt from the need determination process. The Public Service Commission's Declaratory Statement, as well as additional background materials, is provided in Volume II, Appendix 6.1.

MALCOLM PIRNIE

Lee County, Florida
Solid Waste Energy Recovery Facility

Supplemental Application for Power Plant Site Certification

Section 2

SECTION 2.0

SITE AND VICINITY CHARACTERIZATION

2.1 SITE AND ASSOCIATED FACILITIES DELINEATION

This section briefly describes the dimensions, location, and uses of the County's existing Facility site. Proposed modifications and their locations are described.

The site dimensions have not changed from the original certification application. The only noteworthy modification to the site after the original application is the recent addition of a Recovered Materials Processing Facility (RMPF), which was constructed in 2001 on the southwest corner of the property.

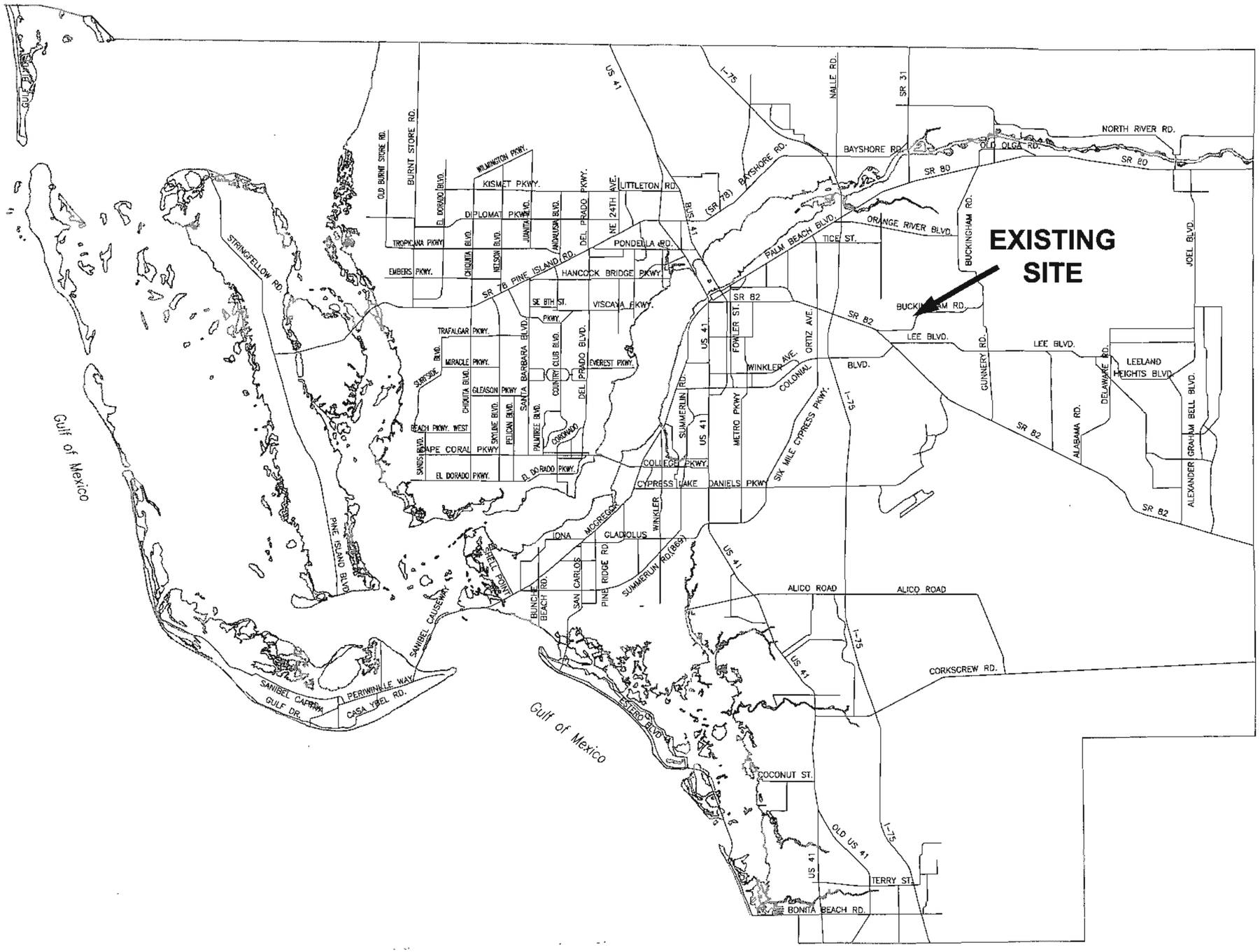
2.1.1 SITE LOCATION

The existing Facility is located at 10500 Buckingham Road, in unincorporated Lee County, Florida. The property is located within portions of Section 24 and Section 25, Township 44 South, Range 25 East, and consists of approximately 155 acres. The existing site acreage delineation is as follows:

Portion of Southeast Quarter of Section 24	145.2	acres
Portion of Northeast Quarter of Section 25 to Buckingham Road	2.8	acres
Facility Power Line Corridor	7.0	acres
	155.0	acres

The portions of the site that include the Facility and its expansion, i.e. a portion of the southeast quarter of Section 24 (145.2 acres) and the north portion of the northeast quarter of Section 25 (2.8 acres) are zoned Industrial Planned Development (IPD). Proof of zoning is provided in Volume II, Appendix 2.1.

The site is located near the center of Lee County, as shown in Figure 2-1. Figure 2-2 provides details of the site layout. The property is located approximately 2.5 miles east of the intersection of Interstate-75 (I-75) and State Road 82, just north of Buckingham Road. A 1:200 scale aerial photograph, dated February 24, 1999, is included as Figure 2-3a in this application to depict the project site and surrounding area. Figure 2-3b is a 1:123 scale aerial photograph dated May 10, 2002.



MALCOLM PIRNIE

REVISIONS				
NO.	BY	DATE	REMARKS	
				DES
				DWN
				CKD

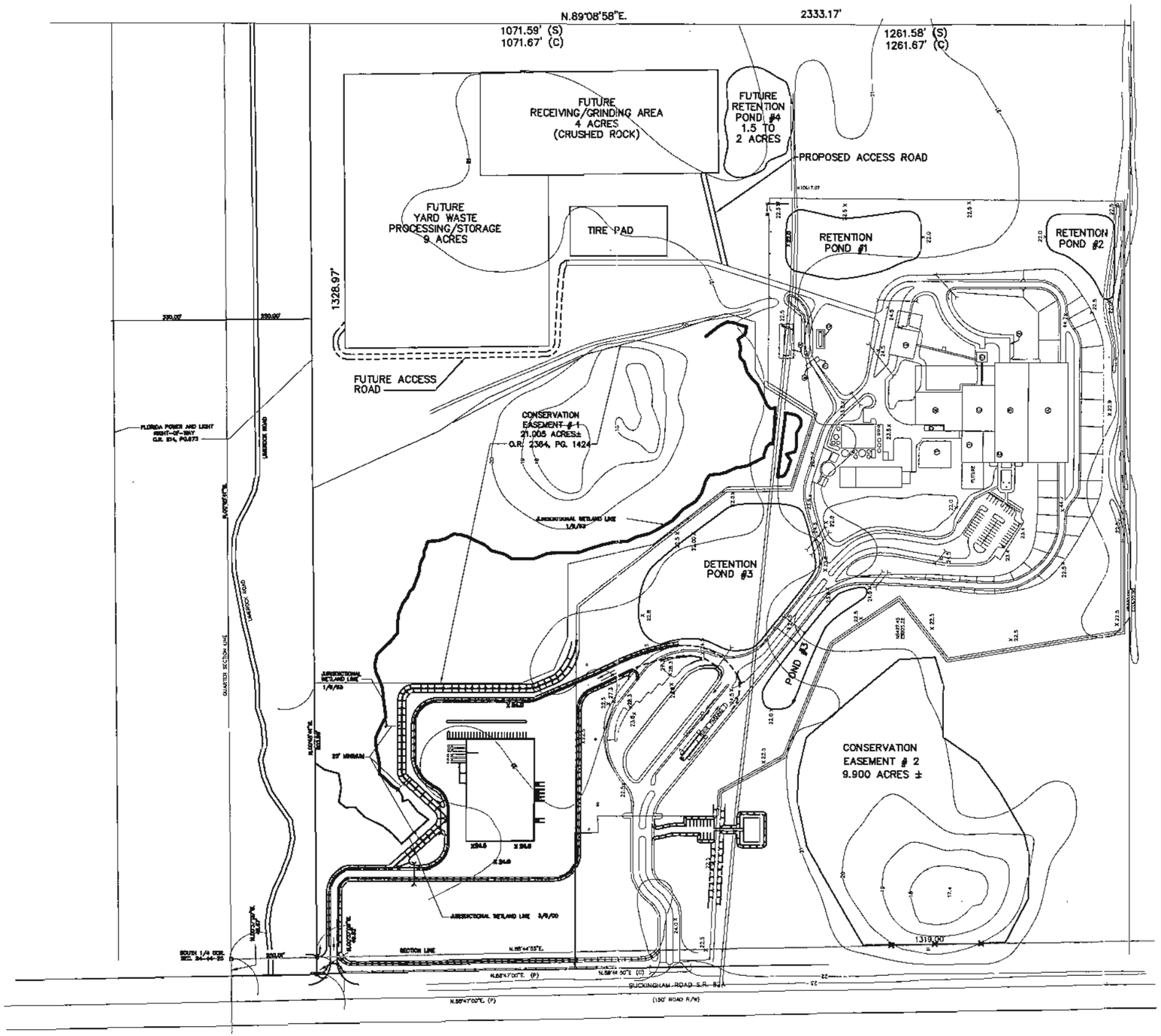
LEE COUNTY
DEPARTMENT OF SOLID WASTE MANAGEMENT
RESOURCE RECOVERY FACILITY EXPANSION
FORT MYERS, FLORIDA

FIGURE 2-1
GENERAL LOCATION MAP

DATE 05-10-2002

SHEET 1 OF 1

CAD REF. NO. 1971028



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REVISIONS			
NO.	BY	DATE	REMARKS

DES
DWN
CKD

LEE COUNTY
DEPARTMENT OF SOLID WASTE MANAGEMENT
RESOURCE RECOVERY FACILITY EXPANSION
FORT MYERS, FLORIDA

FIGURE 2-2
SITE LAYOUT

DATE 05-10-2002

SHEET 1 OF 1

CAD REF. NO. 1971028

LEE COUNTY
FLORIDA

24 44 S 25 E 169 D

0710119-002 (2)

N

0 100 200 300 400 500

SCALE: 1" = 123.3'

MALCOLM PIRNIE	REVISIONS NO. BY DATE REMARKS	LEE COUNTY DEPARTMENT OF SOLID WASTE MANAGEMENT RESOURCE RECOVERY FACILITY EXPANSION FORT MYERS, FLORIDA	FIGURE 2-3B AERIAL OF FACILITY SITE MAY 2002

COPYRIGHT © MALCOLM PIRNIE, INC.
DATE 05-10-2002
SHEET 1 OF 1
CAD REF. NO. 1971028

2.1.2 EXISTING USES

Properties abutting the Facility site boundary are shown in Figure 2-4. A complete list of abutting property owners and information regarding each parcel are contained in Volume II, Appendix 1.1. A Florida Power and Light (FP&L) easement containing power transmission lines is located along the western boundary of the Facility property. Approximately ¾-mile to the west is a limerock, fill, and topsoil mining operation. The 135-acre Buckingham Community Park is adjacent to the eastern property line. An adjacent parcel southeast of the site was previously used as a sanitary landfill (which has been closed and covered), and is now owned by the City of Fort Myers and by private individuals who use it for livestock grazing. The Gulf Coast Sanitary Landfill is located three miles directly south of the site and is an active Class I and Class III landfill. Both landfill sites are shown in Figure 2-5.

The 155-acre Facility site includes approximately 123 acres of upland and 32 acres of wetland vegetation, the fenced area for the existing Facility, and the areas for the expansion, consisting of approximately 0.6 acres. Undeveloped upland areas are dominated by farm pasture, wax myrtle, palmetto prairie, and pine flatwoods. Wetland habitats include cypress, cypress/pine, wet pine flatwoods, and wet prairie.

The primary site use is for operation of a solid waste to energy recovery facility. Other operations and facilities include a Household Hazardous Waste (HHW) drop-off area, a waste tire storage facility, horticultural waste facility and the RMPF. A solid waste transfer facility is expected to be constructed at the site in the near future.

A detailed discussion of vegetation and land use is presented in Section 2.3.5.

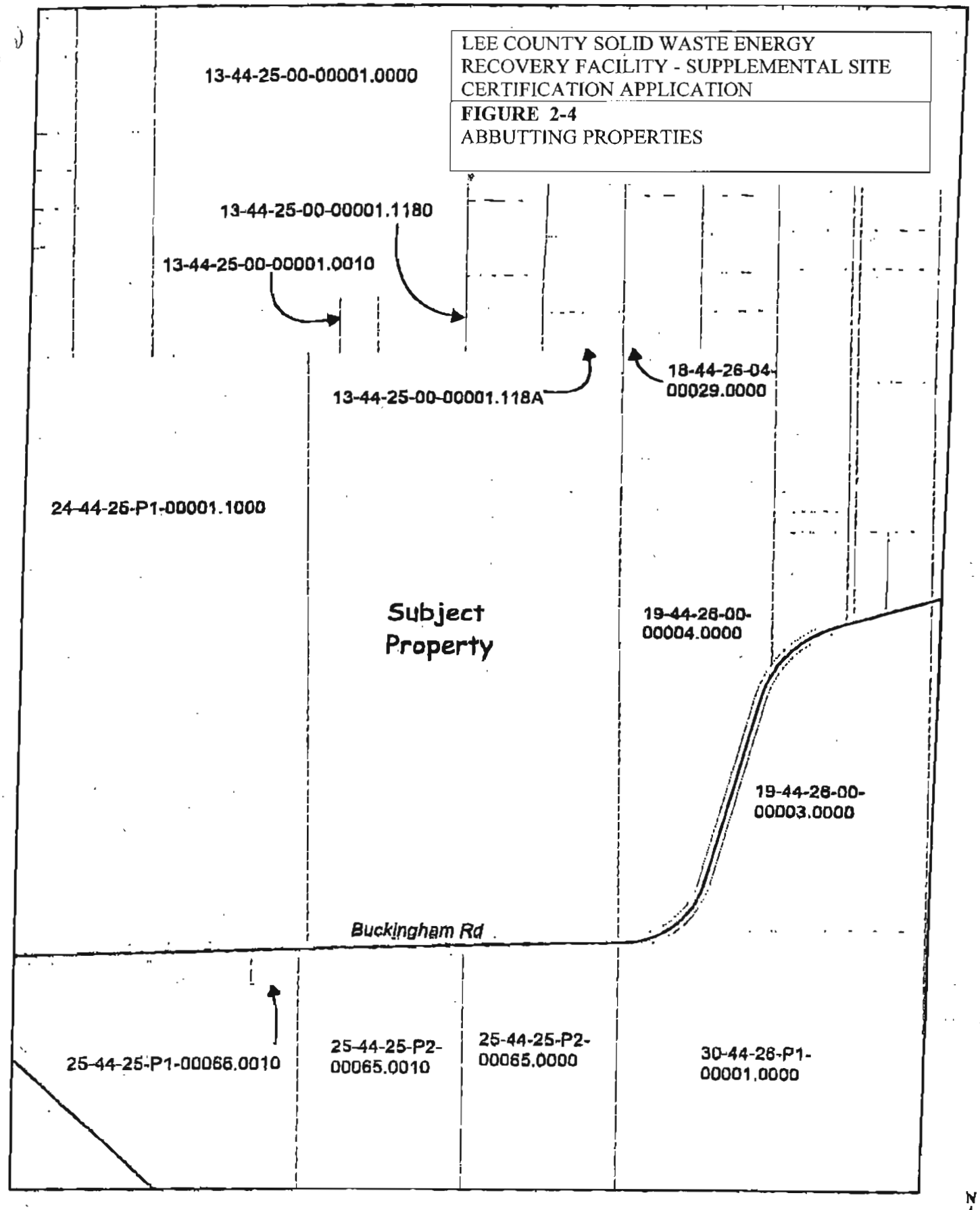
2.1.3 SITE MODIFICATION

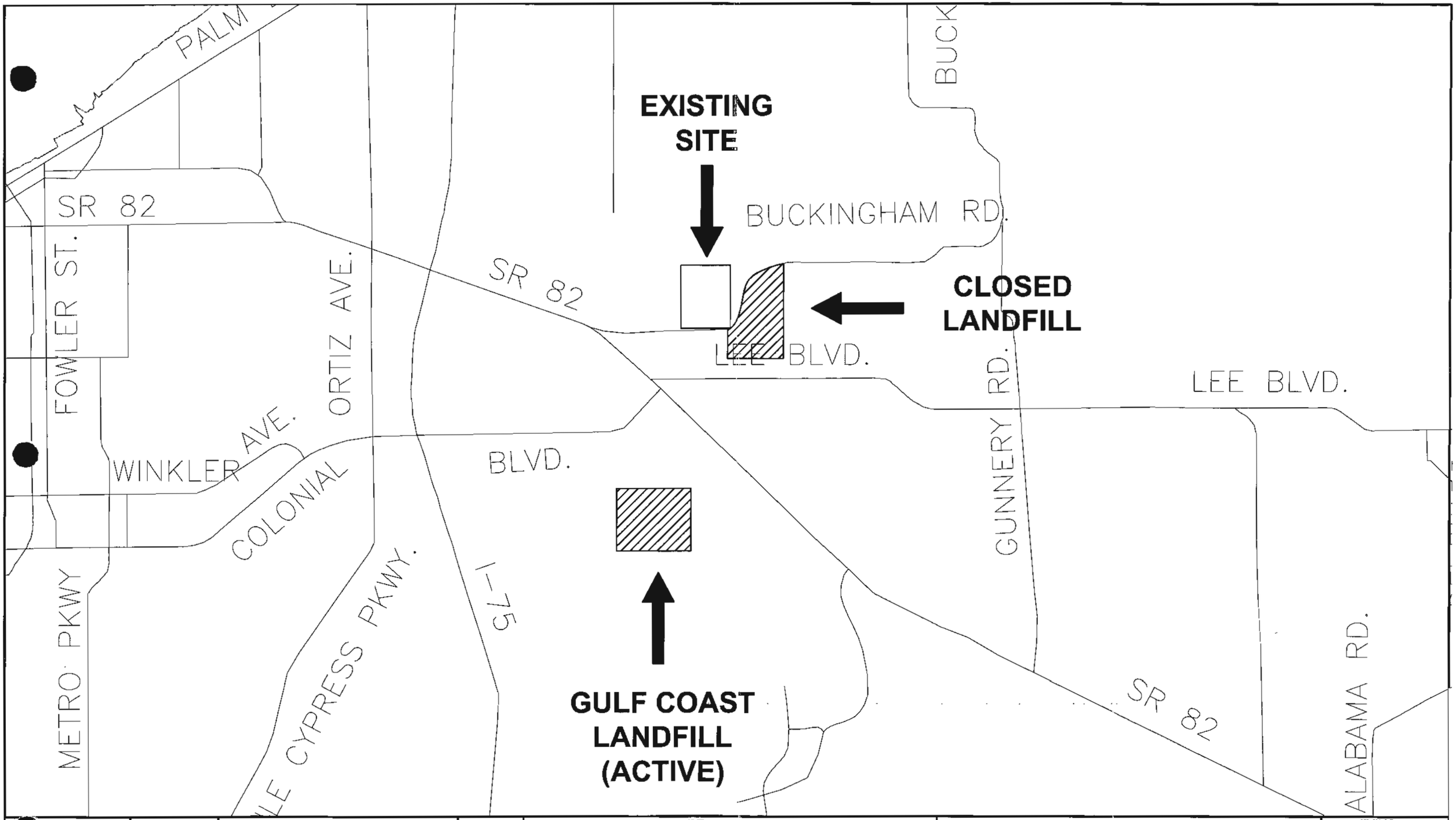
A civil plot plan depicting the layout and future expansion is shown in Figure 2-6. The Facility is located in the approximate center of the eastern half of the 155-acre site, and the proposed expansion will be adjacent to the existing structures. The expansion is not expected to have any impact on-site wetlands. Existing vegetation will be used to buffer the expansion to the greatest extent possible.

The Facility (existing and new expansion) will occupy approximately 2.45 percent of the site; roads and parking about 6.52 percent; and stormwater retention approximately 6.32 percent.

BEST AVAILABLE COPY

Properties Abutting The Waste To Energy Plant





MALCOLM PIRNIE

REVISIONS			
NO.	BY	DATE	REMARKS

DES
DWN
CKD

LEE COUNTY
DEPARTMENT OF SOLID WASTE MANAGEMENT
RESOURCE RECOVERY FACILITY EXPANSION
FORT MYERS, FLORIDA

FIGURE 2-5
EXISTING AND CLOSED LANDFILLS

DATE 05-10-2002
SHEET 1 OF 1
CAD REF. NO. 1971028

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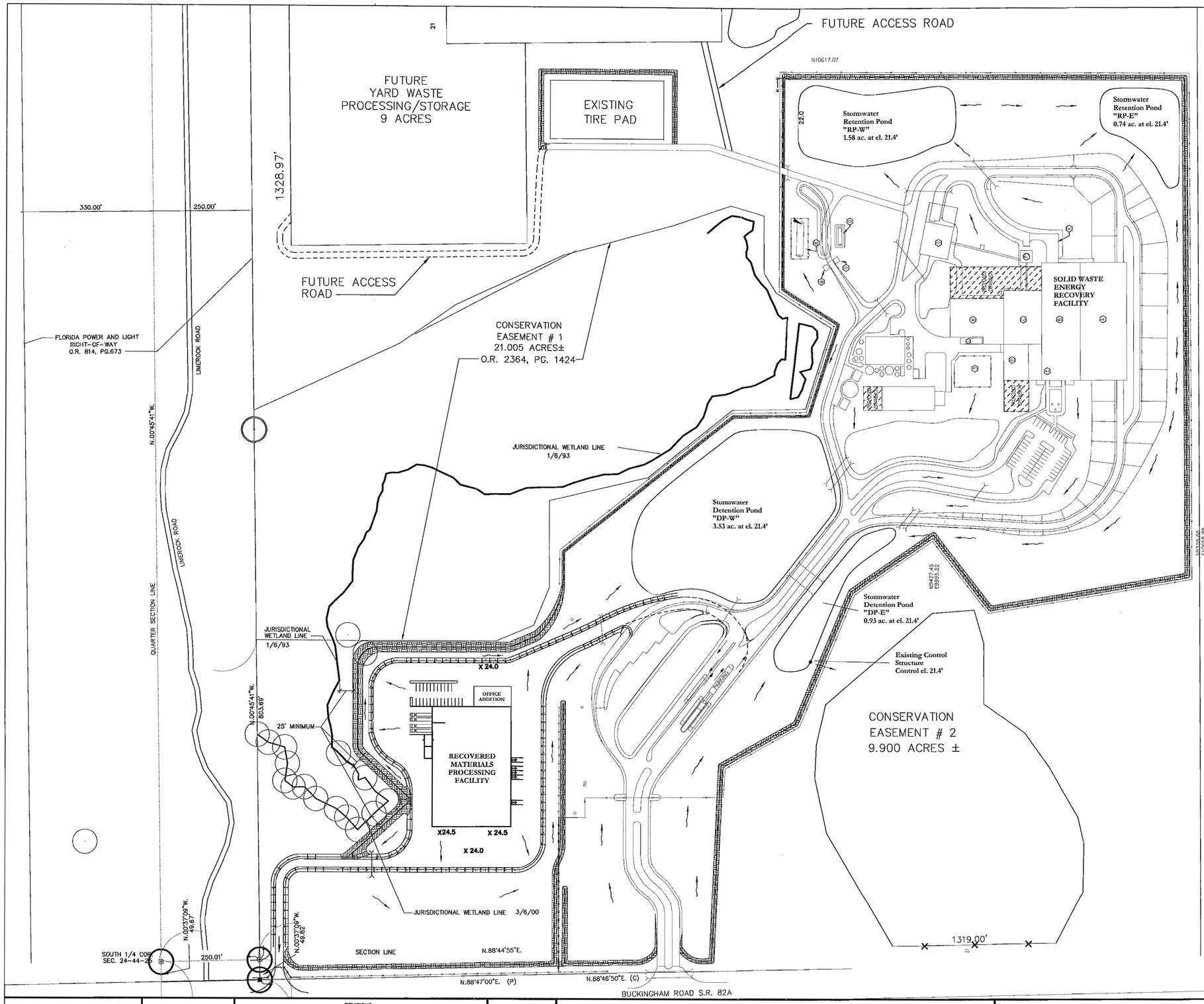


LEGEND

- CONCRETE ROAD
- GRAVEL ROAD
- ASPHALT ROAD
- REINFORCED CONCRETE PIPE
- HEADWALL
- FENCE
- GUARDRAIL
- BERM
- BASIN BOUNDARY

BUILDING INDEX

- (A) TIPPING AREA
- (B) REFUSE PIT AREA
- (C) BOILER AREA
- (D) TURBINE/GENERATOR AREA
- (E) FACILITY ADMINISTRATION AREA
- (F) GRIZZLY BUILDING
- (G) RESIDUE HANDLING BUILDING
- (H) COOLING TOWER
- (K) STACK
- (L) SETTLING BASIN
- (M) APC AREA
- (N) SCALE HOUSE
- (P) FIRE WATER TANK & PUMP HOUSE
- (Q) AMMONIA STORAGE
- (R) PROPANE STORAGE
- (S) SWITCHYARD
- (T) CHLORINATION BUILDING
- (U) WATER TREATMENT BUILDING
- (V) AMMONIA UNLOADING STATION
- (W) PROPANE UNLOADING STATION
- (X) DIESEL OIL TANK & FUELING STATION

LEGEND:

T.	TOWNSHIP
R.	RANGE
LB	LICENSED BUSINESS
(C)	CALCULATED
(S)	DIMENSION AS SHOWN ON SURVEY
(P)	PLAT
FD	FOUND
COR	CORNER
S.R.	STATE ROAD
MON	MONUMENT
ELEV.	ELEVATION
M.W.	MONITORING WELL

SURVEYOR'S NOTES

1. ELEVATIONS SHOWN (IF ANY) ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM. (N.G.V.D.) US GEOLOGICAL SURVEY BENCHMARK "51 WTM 1952" SURVEYOR'S NOTES
2. SURVEY BASED ON FOUND MONUMENTATION AS ESTABLISHED BY OTHERS. REFERENCE IS MADE TO A BOUNDARY SURVEY OF PART OF SECTIONS 24 AND 25, TOWNSHIP 44 SOUTH, RANGE 25 EAST, PERFORMED BY AGNOLI, BARBER & BRUNDAGE, INC., AND DATED JUNE 22, 1990.
3. BOUNDARY INFORMATION IS SHOWN FOR REFERENCE ONLY. VERIFICATION OF PREVIOUS BOUNDARY SURVEY BY AGNOLI, BARBER & BRUNDAGE, INC. NOT INCLUDED UNDER THE SCOPE OF THIS SURVEY.

N

LEE COUNTY SOLID WASTE ENERGY RECOVERY FACILITY - SUPPLEMENTAL SITE CERTIFICATION APPLICATION
FIGURE 2-6
SITE CIVIL PLOT PLAN

SYMBOLS

- DENOTES FOUND REBAR & CAP L.B. 3664
- BARBED WIRE FENCE AS SCALED FROM SURVEY
- DENOTES FOUND CONCRETE MONUMENT L.B. 3664
- DENOTES FOUND CONCRETE MONUMENT

MALCOLM PIRNIE

REVISIONS			
NO.	BY	DATE	REMARKS

DES CCT
DWN CCT
CKD RHF

LEE COUNTY ENERGY RECOVERY FACILITY
LEE COUNTY, BUCKINGHAM RD.
FT. MYERS, FLORIDA

SITE CIVIL PLOT PLAN
FIGURE 2-6

DATE FEBRUARY 18, 2002

SHEET 1 OF 2

CAD REF. NO.

Approximately 63 percent of the site will remain unused, serving as buffer and conservation areas. Table 2-1 summarizes the remaining existing and proposed land uses at the site.

TABLE 2-1

PROPOSED LAND USES AT THE SITE

	Proposed Land Use Areas	
Proposed Use	Acres	Percentage of Site (%)
Expanded Facility	3.8	2.45
Recovered Materials Processing Facility	1.4	0.90
Miscellaneous Structures (e.g., scale house)	0.65	0.42
Horticultural Waste Area	9.64	6.22
Tire Pad Area	0.96	0.62
Future C&D Area	4.81	3.10
Future Use (e.g., Admin. Bldg., Expansion of Hort./C&D Areas)	7.1	4.58
Future Transfer Station	9.2	5.93
Roadways and Parking	10.1	6.52
Retention/Detention Basins	9.8	6.32
Environmental Easements/Wetlands	32.7	21.10
Open Areas/Buffer Zones	64.84	41.84
TOTALS	155.00	100.00 %

2.1.4 100-YEAR FLOOD ZONE

The proposed Facility site is not located within the 100-year flood zone, as defined by the Federal Emergency Management Agency (FEMA). The site is located in an area designated as Zone B, which is defined as:

Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood.

The FEMA map showing the 100-year flood zone and its relation to the project site is included as Figure 2-7.

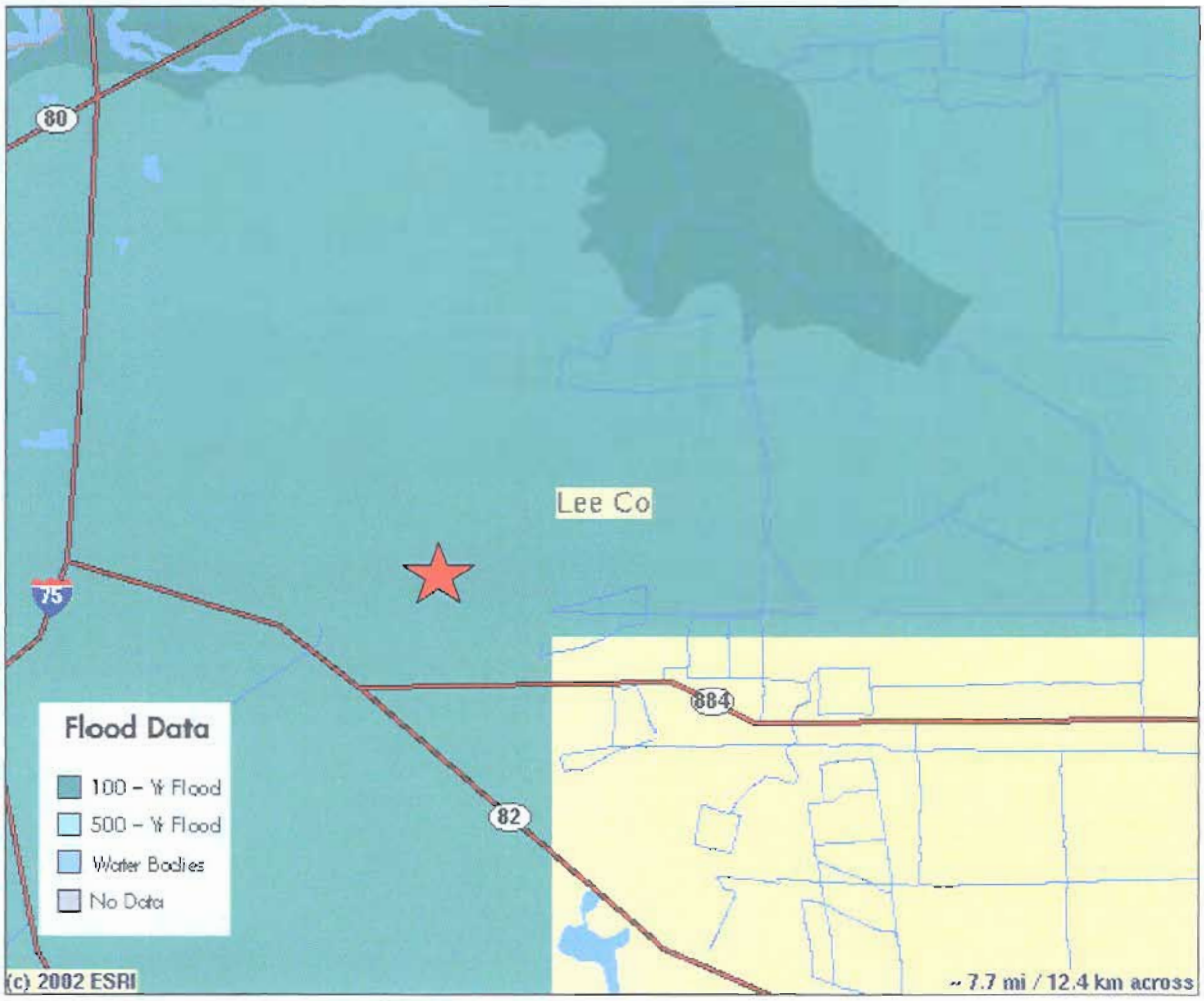
2.2 SOCIO-POLITICAL ENVIRONMENT

This section provides a brief discussion of the governmental entities, demographics, planning issues, and other factors that are present within a 5-mile radius of the Facility.

2.2.1 GOVERNMENTAL JURISDICTIONS

The majority of the area within a five-mile radius of the proposed Facility consists of unincorporated areas of Lee County, except for portions of the City of Fort Myers, which extend to the western and southern boundary of the site. Figure 2-8 indicates the locations of local/regional, state, and federal governmental properties within one (1) to five (5) miles of the site. Table 2-2 briefly describes the data shown on this figure. A complete list of governmental properties is provided in Volume II, Appendix 1.2.

Flood Hazard Map



Map Centerpoint: -81.74450, 26.64028
Map Produced: Wed Sep 4 06:57:24 2002

ESRI/FEMA Project Impact
Hazard Information and Awareness Site
http://www.esri.com/hazards

LEE COUNTY SOLID WASTE ENERGY RECOVERY FACILITY – SUPPLEMENTAL SITE CERTIFICATION APPLICATION

FIGURE 2-7
FEMA FLOOD HAZARD MAP

GOVERNMENTAL JURISDICTIONS WITHIN A 5-MILE RADIUS

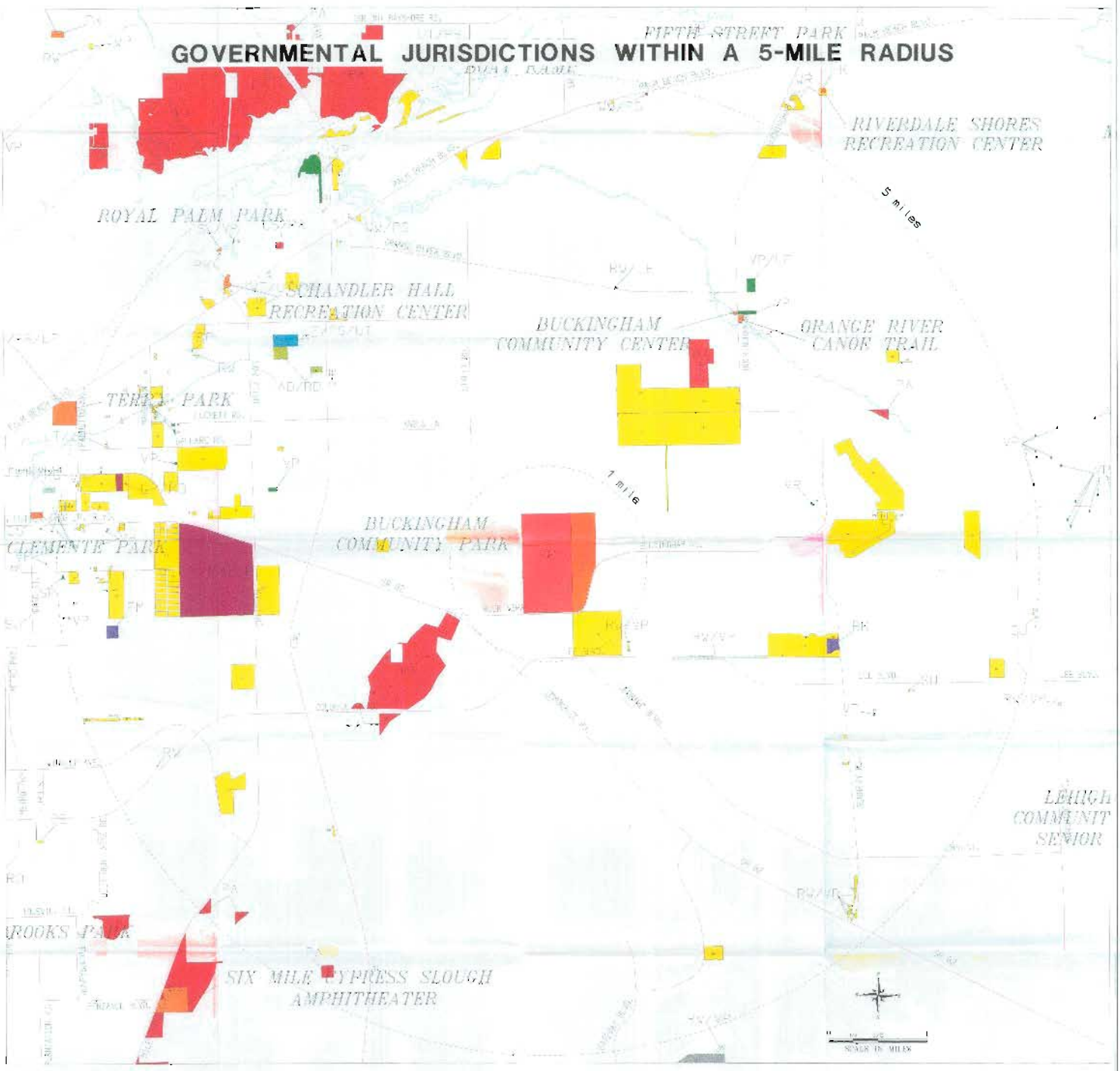


TABLE 2-2

GOVERNMENTAL JURISIDICTIONS WITHIN A FIVE-MILE RADIUS

LOCAL GOVERNMENT

1. City of Fort Myers
2. Fort Myers Housing Authority
3. City of Fort Myers CRA
4. Lehigh Acres Fire Control
5. Lee County Government
6. Fort Myers Shores Fire Protection & Rescue
7. Tice Fire District
8. Lee County District School Board
9. Lee County Hyacinth Control District
10. Lee County Mosquito Control District
11. East Lee County Water Control District

STATE OF FLORIDA

1. State of Florida Department of Transportation
2. South Florida Water Management District
3. State of Florida Division of State Lands
4. Southwest Florida Regional Planning Council
5. State of Florida Department of Environmental Protection

FEDERAL GOVERNMENT

1. United States Postal Service
2. United States Internal Revenue Service
3. United States Army Corps of Engineers
4. United States Fish and Wildlife Service
5. United States Environmental Protection Agency

The following is a summary of the local, regional, state, and federal areas of concern within the study area:

- There are 15 existing recreation areas and one library located within a five-mile radius of the project area (see Figure 2-8).

- There are state-owned submerged lands within the five-mile radius of the Facility. These submerged lands are associated with the Caloosahatchee and Orange Rivers and

other naturally occurring navigable water bodies within the five-mile radius study area.

- The Florida Natural Areas Inventory (**www.fnai.org**) provides a list of special plant and animal elements. A special element is any component of the natural environment, such as an animal or plant species, that is limited in abundance, range, or habitat. Known occurrences of special elements have been recorded in the area and exist on the Facility property near the proposed expansion location. A detailed discussion of existing fauna and flora is provided in Section 2.3.6 (Ecology).

- The South Florida Water Management District (SFWMD), in conjunction with Lee County, has a "Save Our Rivers" project in the study area. The 2,000-acre Six Mile Cypress Slough Preserve is located south of SR 82, adjacent to the Six Mile Cypress Parkway. The Preserve's northern boundary is approximately one mile southwest of the Facility site.

- Only one Outstanding Florida Water exists in the study area. The Caloosahatchee National Wildlife Refuge is located northwest of the site, on the boundary of the five-mile radius.

- There are no state parks or aquatic preserves within the five-mile radius, and there are no state forests in the study area.

- There are no areas of critical state concern in Lee County or any adjacent counties.

- The U.S. Army Corps of Engineers previously noted the presence of dredge-and-fill disposal sites on the boundary of the five-mile radius of the study area. These spoil sites are associated with Corps dredging projects to improve navigation of the Caloosahatchee River.

2.2.2 ZONING AND LAND USE PLANS

The following section highlights applicable issues regarding the Facility with respect to regional, county, and municipal comprehensive plans with jurisdiction within the study area, as well as zoning issues.

During the initial development of the Facility under the PPSA, a Hearing Officer conducted a formal hearing pursuant to Section 403.508(1), F.S., and found that the site is consistent and in compliance with the applicable land use plans and zoning ordinance. The Siting Board subsequently issued a Final Order adopting the Hearing Officer's findings and conclusions. The Hearing Officer's recommended order and the Siting Board's Final Order are contained in Volume II, Appendix 7.1.

The zoning and comprehensive plan descriptions for the site have not changed after issuance of these orders. The proposed expansion of the Facility, like the operation of the existing Facility, is consistent and in compliance with the applicable land use plans and zoning ordinances. The ultimate site capacity will not be exceeded by the expansion of the Facility.

Regional Comprehensive Plans

The Regional Comprehensive Policy Plan For Southwest Florida, adopted by the Southwest Florida Regional Planning Council on May 21, 1987, is the region's policy statement for Charlotte, Collier, Glades, Hendry, Lee, and Sarasota counties. The Regional Comprehensive Policy Plan for Southwest Florida includes regional goals and policies for hazardous and non-hazardous materials and waste. For this project, the most significant goal states:

> **GOAL:** All solid waste, including hazardous waste, wastewater, and all hazardous materials, shall be properly managed, and the use of landfills shall be eventually eliminated.
>
> REGIONAL GOAL: By 1991, the per capita amount of solid waste being disposed of in landfills will begin to decline and will continue to decline over previous years.
>
> POLICY 3: The volume of materials disposed of in landfills should be reduced through feasible recycling.
>
> POLICY 4: Programs for research, development, and implementation of waste reduction and resource recovery methods should be established.

These goals and policies are contained in Volume II, Appendix 2.3 of this Application.

Lee County Comprehensive Plan

The Lee Plan is Lee County's Comprehensive Plan, which was adopted on November 16, 1984. Lee County Ordinance 94-30 amended and adopted the revised format of the Lee Plan. Refer to Volume II, Appendix 2.2 for a copy of the ordinance. The Lee Plan consists of 12 elements, a glossary, and an appendix. The 12 elements are as follows:

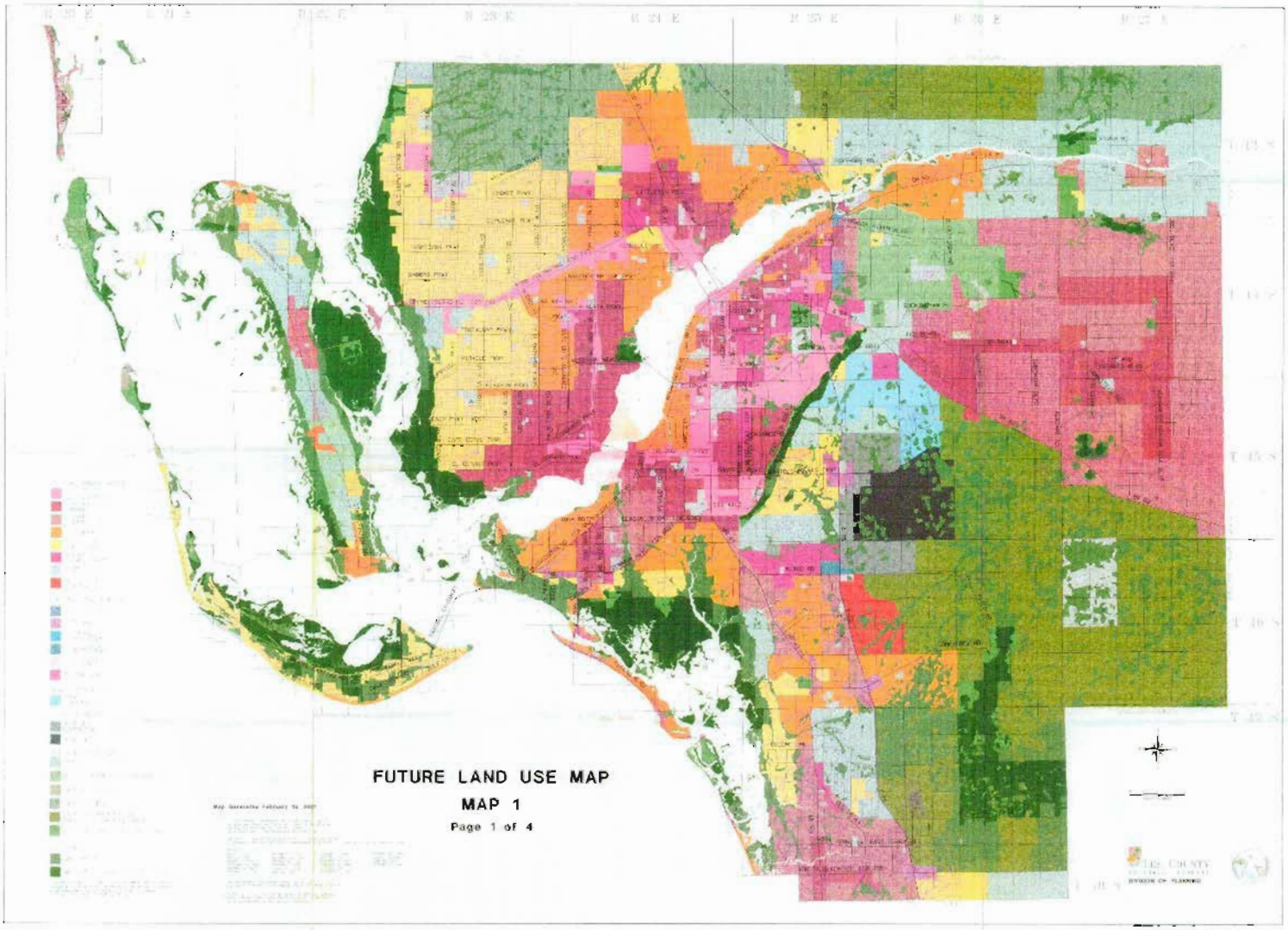
1) Land Use
2) Traffic Circulation
3) Mass Transit
4) Ports, Aviation, and Related Facilities
5) Community Facilities and Services
6) Parks, Recreation, and Open Space
7) Conservation and Coastal Zone
8) Housing
9) Historic and Scenic Preservation
10) Intergovernmental Coordination
11) Implementation
12) Administrative and Procedural Provisions

Applicable sections of the Lee Plan pertaining to the Facility include the Future Land Use Element and the Community Facilities and Services Element.

The Future Land Use Element of the County's comprehensive plan outlines goals, objectives, and policies, which will guide the future land uses for public and private development within Lee County. The element establishes a future land use map and future land use classifications with various allowable utilizations and densities.

Future land uses within the study area include Suburban, Urban Community, Outlying Suburban, Central Urban, Intensive Development, New Community, Rural Open Lands, Industrial Development, Industrial (Interchange), General Commercial (Interchange), Airport Commerce, Public Facilities, and Resource Protection Areas and Transition Zones. The project site is currently classified as Public Facilities.

The future land uses within the study area are illustrated on Figure 2-9(a) and 2-9(b), the future land use maps for Lee County and the City of Ft. Myers, respectively. See Volume II, Appendix

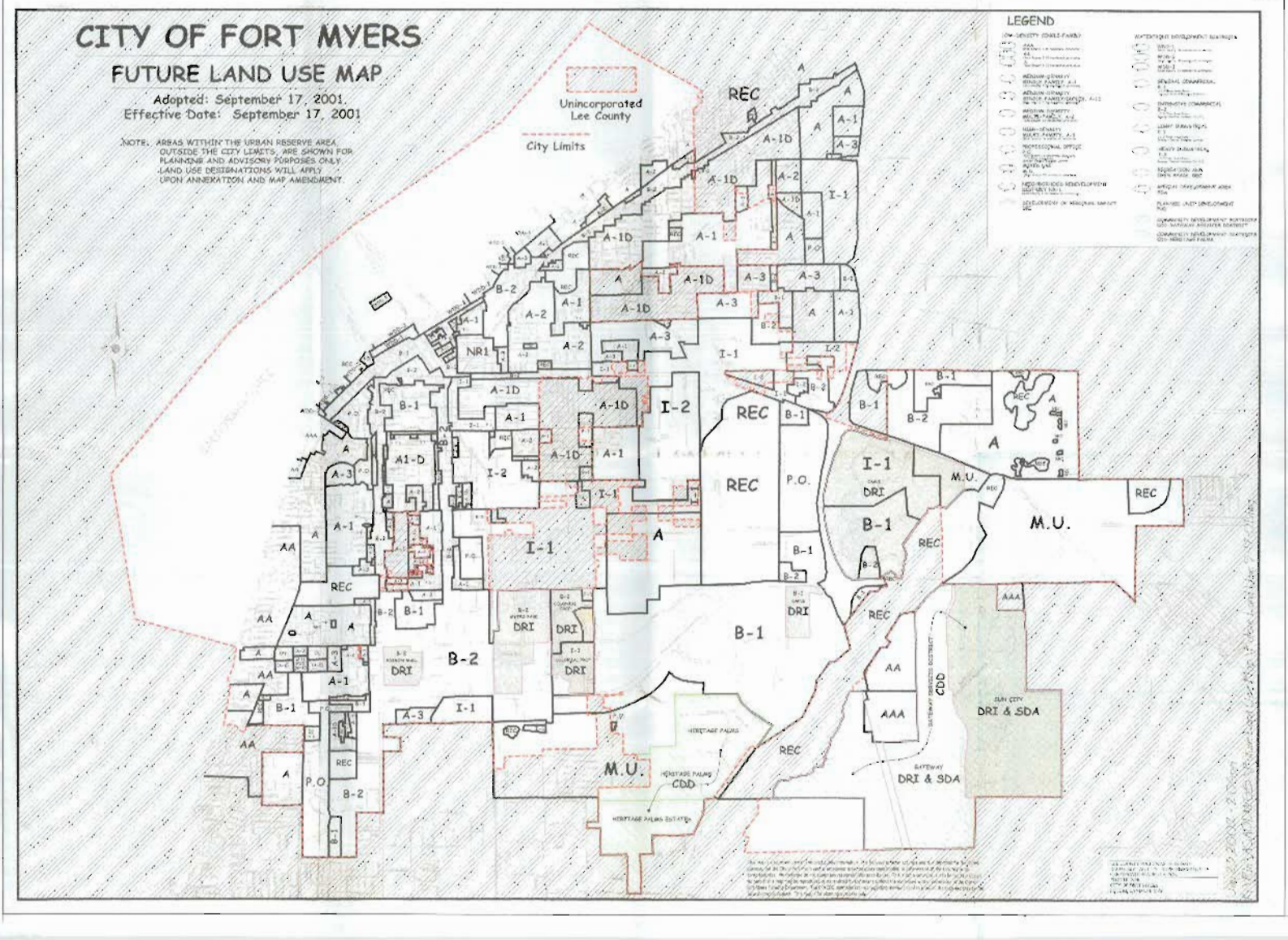

FUTURE LAND USE MAP
MAP 1
Page 1 of 4

CITY OF FORT MYERS

FUTURE LAND USE MAP

Adopted: September 17, 2001.
Effective Date: September 17, 2001

NOTE: AREAS WITHIN THE URBAN RESERVE AREA OUTSIDE THE CITY LIMITS, ARE SHOWN FOR PLANNING AND ADVISORY PURPOSES ONLY. LAND USE DESIGNATIONS WILL APPLY UPON ANNEXATION AND MAP AMENDMENT.



2.3 for the future land use designations.

Pursuant to Objective 1.7 of the Lee Plan, there are "overlays" on the future land use map that provide allowances or impose restrictions in addition to the requirements of the underlying land use categories. The five overlays include: Airport Noise Zones; Committed Development; Urban Reserve; Privately Funded Infrastructure; and a Water-Dependent overlay. Refer to Volume II, Appendix 2.4 for overlay descriptions and locations.

Within the Future Land Use element, there is a goal, objective, and policy relevant to the siting of resource recovery facilities. These provisions of the County's Comprehensive Plan make it clear that the County's resource recovery facility can be operated in any land use category. The goal, objective and policy include:

> GOAL 2: GROWTH MANAGEMENT. To provide for an economically feasible plan which coordinates the location and timing of new development with the provision of infrastructure by government agencies, private utilities, and other sources.
>
> > OBJECTIVE 2.1: DEVELOPMENT LOCATION. Contiguous and compact growth patterns shall be promoted through the rezoning process to contain urban sprawl, minimize energy costs, conserve land, water, and natural resources, minimize the cost of services, prevent development patterns where large tracts of land are by-passed in favor of development more distant from services and existing communities. (Amended by Ordinance No. 94-30).
> >
> > > POLICY 2.1.3: All land use categories and Planning Community Map areas permit the consideration of churches and schools (except in Wetlands and Airport Noise Zones), public uses and buildings, public utilities and resource recovery facilities, public recreational uses (including franchised quasi-commercial uses in conjunction with a public use), and sites for compatible public facilities when consistent with the goals, objectives, policies, and standards in this plan and applicable zoning and development regulations. (Amended by Ordinance No. 94-30, 98-09).

Solid Waste is a sub-element of the Community Facilities and Services Element of the Lee Plan, and it lists goals, objectives, and policies regarding the County's solid waste issues. The goals, objectives, and pertinent policies regarding energy recovery facilities are listed below, including:

GOAL 42: SOLID WASTE. To ensure the health, safety, and general welfare of the citizens of Lee County by protecting the quality of the environment through the proper management and disposal of solid waste.

OBJECTIVE 42.1: SOLID WASTE COLLECTION. Continue programs to segregate construction and demolition debris and to separate newspaper, aluminum cans, and glass bottles for recycling. (Amended by Ordinance No. 94-30)

POLICY 42.1.2: Design and implement resource recovery and recycling programs for glass, paper, plastic, and nonferrous metal containers.

POLICY 42.1.3: Develop programs which will result in a decrease in the volume of materials in the solid waste stream requiring landfilling (i.e., source separation of material which can be reused or disposed of in another manner).

OBJECTIVE 42.2: SOLID WASTE DISPOSAL. By 1995, begin operation of a waste to energy resource recovery facility and continue to explore means to reduce the volume of solid waste. (Amended by Ordinance No. 94-30)

POLICY 42.2.1: The County shall continue to study and implement as appropriate available disposal technologies and volume reduction by recycling to meet Objectives 42.1 and 42.2. Particular attention shall be paid to volume reduction of bulky and potentially recyclable items such as horticultural waste, rubber tires, appliances, etc.

POLICY 42.2.6: The County shall immediately construct a new landfill to serve the entire County including all municipalities. (Amended by Ordinance No. 94-30).

City of Ft. Myers Comprehensive Plan

In addition to the unincorporated portion of Lee County, a portion of the study area is within the City of Fort Myers. The City of Fort Myers Ordinance 25-52 has established concurrent future land use and zoning classifications for lands within city limits. Based on the City of Fort Myers Future Land Use Map, as amended December 18, 1989, the following categories are within the study area:

District	Classification
Residential:	
Single-Family Estate	AAA
Single-Family	AA
Single Family	A
Single Family	A-1
Single-Family/Duplex	A-1D
Medium Density Multi-Family	A-2
High-Density Multi-Family	A-3
Professional Office	P0
Mixed Use	MU
Neighborhood Redevelopment	NR-1
Waterfront Development:	
Water-enhanced development	WDD-1
Water-dependent development	WDD-2
Residential development	WDD-3
General Commercial	B-1
Intensive Commercial	B-2
Light Industrial	I-1
Heavy Industrial	I-2
Planned Unit Development	PUD
Recreation	REC
Public office overlay zone	PZ

The various residential districts are differentiated by the type of housing (single-family/multi-family), densities of use, dimension and area regulations, and permitted uses and conditional uses. Refer to Volume II, Appendix 2.3 for the future land use classifications for the City of Fort Myers.

Zoning

The Lee County Official Zoning Ordinance was established by Ordinance 86-17, which was adopted by the Lee County Board of County Commissioners on June 25, 1986 and went into effect on August 1, 1986. Ordinance 86-17, as amended through Ordinance 93-24 dated September 15, 1993, is the official zoning statement for lands in the unincorporated areas of Lee County.

A listing of the zoning categories located within the study area, with purpose and intent descriptions, is included in Volume II, Appendix 2.5.

The project site was rezoned from Agricultural (AG-2) to Industrial Planned Development (IPD) during the original development of the Facility (refer to Volume II Appendix 2.1). The principal uses of any IPD are the manufacture of goods and materials and the storage and wholesale distribution of such goods and materials. However, for the welfare of the public and for the efficiency of the local economic structure, the IPD District permits many services and activities not allowed elsewhere and a limited number of commercial uses intended to serve principally the employees or patrons of businesses within the IPD (SOURCE: Lee County Zoning Ordinance). The IPD district designation of acceptable uses allows for the development and operation of the Facility.

Zoning surrounding the project site includes agricultural districts in the rural, low-density residential areas north of SR 82. Residential zoning districts characterize Lehigh Acres. Commercial districts are primarily located adjacent to SR 82 and SR 884.

2.2.3 DEMOGRAPHY AND ONGOING LAND USE

Existing Population

Table 2-3 illustrates U.S. Census 1980, 1990, and 2000 populations for major Lee County cities and the unincorporated areas of Lee County. Lee County's population grew 31.6 percent between 1990 and 2000. The state population grew 23.5 percent during the same period. Lee County's population grew 63.3 percent from 1980 to 1990, as compared to the state growth rate of 32.8 percent. The City of Cape Coral had the largest population increase in the County from 1990 to 2000 with 27,295 new residents.

TABLE 2-3

POPULATION: LEE COUNTY 1980 - 2000

Area	1980	1990	2000
Bonita Springs	N.A.	N.A.	32,797
Cape Coral	32,103	74,991	102,286
Fort Myers	36,638	45,206	48,208
Fort Myers Beach	N.A.	N.A.	6,561
Sanibel	3,363	5,468	6,064
Unincorporated Areas	133,162	186,564	204,792
TOTAL	205,266	335,113	440,888

SOURCE: U.S. Census Bureau 1980, 1990 and 2000 Census

Lee County's unincorporated population has also grown from over 130,000 in 1980 to over 200,000 in 2000 even with the incorporation of two cities during this time period.

The majority of the study area is within the unincorporated section of Lee County. A portion of the City of Fort Myers, primarily west of Interstate 75, is within the western part of study area.

Existing Land Use Within a Five-Mile Radius of the Project Site

The study area is comprised of many urban and non-urban land uses and land types. These include residential, commercial, industrial, extractive, institutional, recreation and open lands, croplands, pastureland, forested uplands, shrub and brushland, rivers, small lakes, and wetlands, transportation and utility uses.

The Facility site is comprised of uplands and surrounding wetlands. Existing land uses within the study area are illustrated on Figures 2-9(b) and 2-10 (note: Figure 2-9(b) depicts both current and future land uses). Refer to the Volume II, Appendix 2.5 for existing land use definitions.

There are three urban areas in the study area including: the City of Fort Myers; Lehigh Acres; and an unincorporated area east of Interstate 75. Fort Myers, the most developed urban region in the study area, contains low [less than two dwelling units per acre (du/a)] and medium (two to five du/a) density residential uses in the study area. The city boundary is west and south of the site, with residential uses approximately three and a half miles to the northwest and west of the project site.

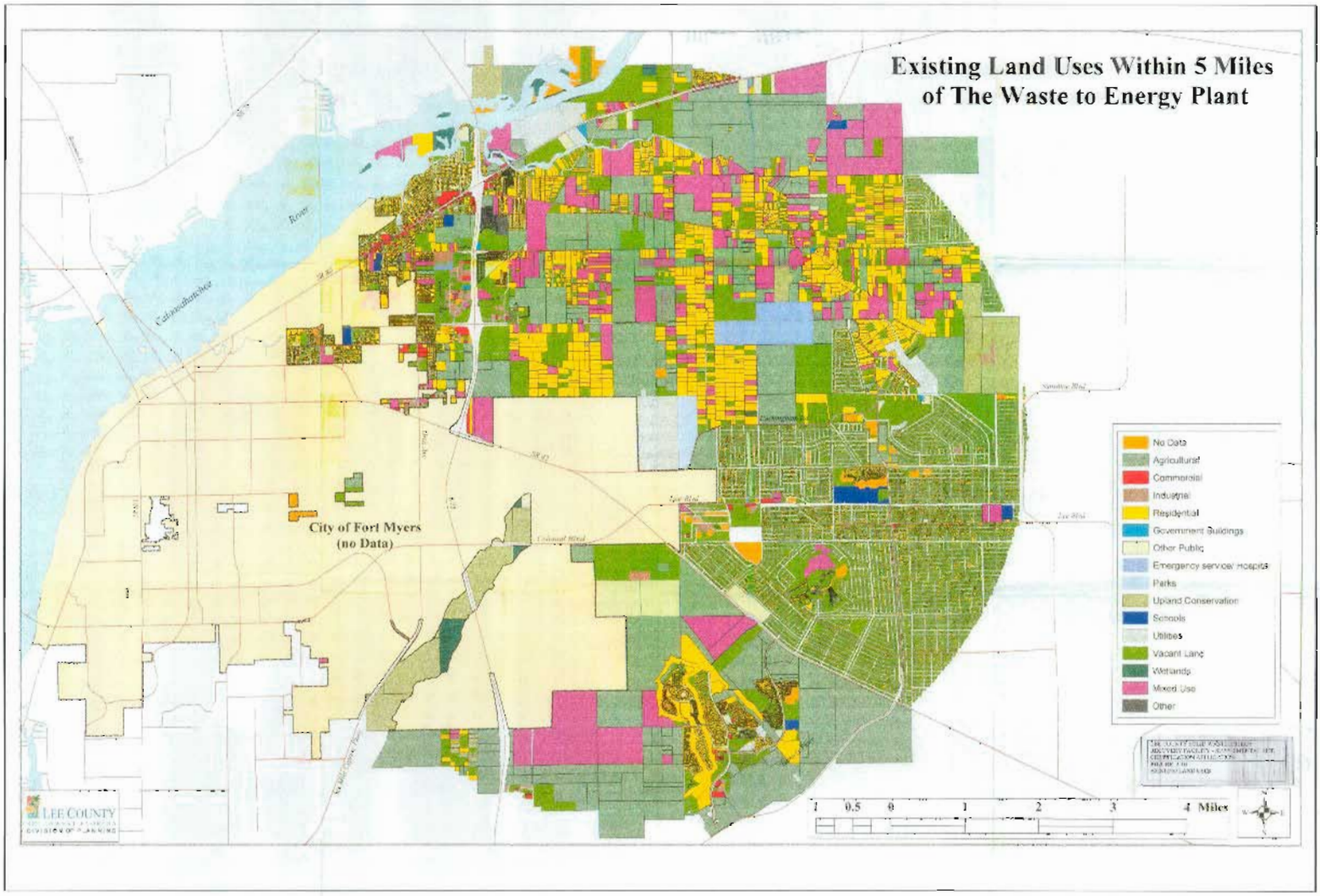
The boundary to Lehigh Acres is located approximately one mile to the southeast of the site. Lehigh Acres contains low-density residential areas in addition to many predominantly vacant areas. The third residential area is located primarily north of SR 884, south of SR 80, and east of Interstate 75. This low-density rural area is scattered among pastureland, uplands, wetlands, and other non-urban uses.

Commercial uses within the study area are primarily located adjacent to roads, including SR 82 and SR 884 west of Interstate 75, and SR 80. Industrial uses are located primarily to the west of Interstate 75 or adjacent to SR 82 west of Interstate 75. Extractive uses are located east of Interstate 75 between SR 80 and SR 82. A mining site is located one mile to the west of the project site.

Institutional uses are located in the urbanized area west of Interstate 75. Recreation areas are located primarily in Fort Myers. Three golf courses are within the study area. One, Eastwood Golf Course, is located northwest of the SR 884/Interstate 75 interchange three miles from the project site. The other two golf courses are private facilities located south and east of the Gulf Coast Landfill, which is three miles south of the project site.

Open lands are those inactive or undeveloped areas within or adjacent to urban areas. The majority of the open lands in the study area are undeveloped lots within the city limits of Fort Myers. Cropland, pastureland, tree crops, nurseries, and vineyards are scattered throughout the study area, with the majority of these areas east of Interstate 75. Shrub and brushland and forested uplands are located throughout the study area.

0710119-002 (7)



The Caloosahatchee River and Orange River are located more than three miles north of the project site. Billy Creek, canals, and other small waterways are not graphically represented on the existing Land Use Map. Numerous small lakes and wetlands are found in the study area, primarily south of SR 82 adjacent to Six Mile Cypress Slough.

Transportation uses include roadways and airstrips in the areas. Interstate 75 is located more than two miles to the west of the project site. The interstate is graphically represented on the existing land use map (Figure 2-10). An airstrip is located almost four miles to the east of the project site.

Utility uses in the study area include a landfill, the existing Facility, and a power transmission line. The Gulf Coast landfill is located three miles south of the project site. A Florida Power and Light (FP&L) power plant is located more than five miles north of the project site, and east of the Interstate 75/SR 80 interchange. An electrical transmission line and associated easement traverse the entire study area. The transmission line is adjacent to and west of the project site.

2.2.4 EASEMENTS, TITLE, AGENCY WORKS

Expansion of the Facility will not require additional easements or titles from government agencies. Power generated by the Facility will continue to be transmitted to FP&L's Buckingham Substation within the transmission line corridor on the site. Water and wastewater lines are within existing City and County rights-of-way. See Section 6.0 for a complete discussion of electrical and utility transmission routes.

2.2.5 REGIONAL SCENIC, CULTURAL AND NATURAL LANDMARKS

Recreational facilities within a five-mile radius of the project site are shown on Figure 2-8 and further described in Volume II, Appendix 1.3.

2.2.6 ARCHAEOLOGICAL AND HISTORIC SITES

During the original permitting of the Facility, Piper Archaeological Research, Inc. of St. Petersburg conducted an investigation of archaeological and historic remains within the vicinity of the site boundary. A cultural resource assessment survey was performed, beginning with a literature review. The document search consisted of a review of the State of Florida Master Site File (FMSF), and examination of historical and archaeological literature and historic records.

The document search revealed no recorded sites on the FMSF within the Facility site. Following the literature search, a field survey was conducted. The field survey focused on areas of high archaeological site potential, as identified by Piper Research using environmental variables known to be associated with prehistoric and early historic period sites. Such variables include soil drainage, proximity to water or wetlands, vegetation, and relative elevation. Subsurface shovel tests, with each dig measuring approximately 40 centimeters in diameter, were conducted to a depth of at least one meter in areas of high site potential. All excavated soil was screened through ¼-inch wire mesh. In areas of minimal vegetation and/or upturned soil, a careful surface inspection was performed. Volume II, Appendix 10.2 contains the original archaeological report.

As part of the original effort, one prehistoric site and one historic structure were identified during the field survey of the study area. However, neither was located on the Facility site. The prehistoric site (8L1 1441) consisted of a single chert waste flake from the manufacture or resharpening of a stone tool. The historic structure (8L1 1442) was identified as a board and batten construction, typical of the early 20th century. The structure was in poor condition and had been highly modified. Neither of these sites was considered to be a regionally significant cultural resource.

Since no significant prehistoric or historic archaeological sites were discovered during the original survey and since this is a Facility expansion on the existing Facility site footprint, it is concluded that no cultural resources will be impacted by the proposed development for the existing Facility expansion.

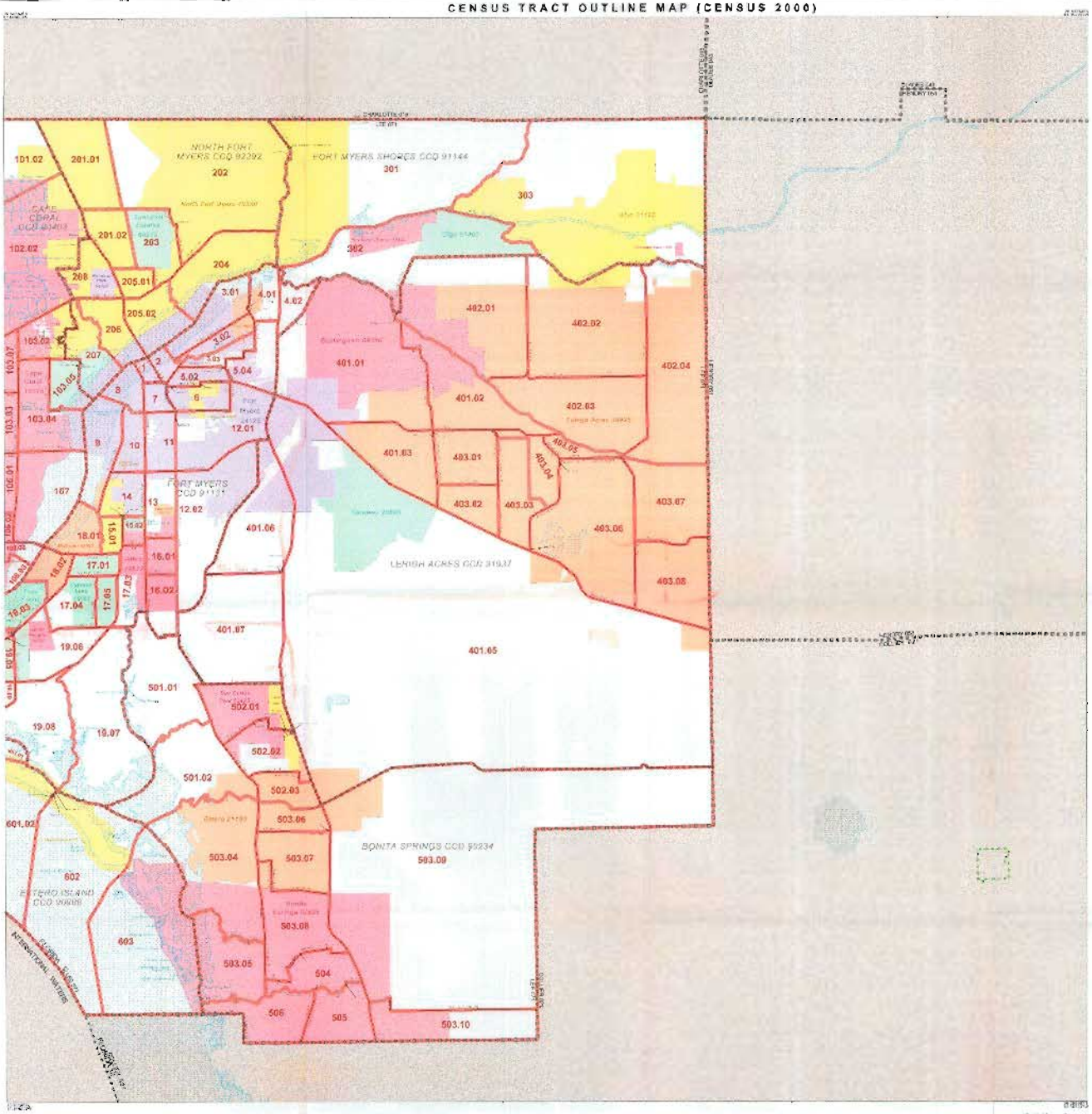
2.2.7 SOCIOECONOMICS AND PUBLIC SERVICES

Social and Economic Characteristics

Current Population. The study area is located within the Buckingham Planning Community. Planning communities were established in the Lee Plan and utilize census tract boundaries. A map delineating the 2000 census tract boundaries is included as Figure 2-11.

Table 2-4 illustrates the estimated 2000 census counts for the census tracts listed above that are partially or wholly within the study area. The project site is located within census tract 401. The majority of the urbanized part of census tract 401 is within the study area. The estimated 2000 census population count for tract 401 is 9,102.

CENSUS TRACT OUTLINE MAP (CENSUS 2000)



ABBREVIATED LEGEND

- INTERNATIONAL
- AIR (FEDERAL)
- Trust Land
- OTSN / TDSA
- AIR (State)
- SDAISA
- STATE
- COUNTY
- CENSUS COUNTY DIV.
- Consolidated City
- Incorporated Place
- Census Designated Place
- Census Tract

N

The plotted map scale is 1:90000

ST: Florida (12)
COU: Lee (071)
SHEET 2 OF 2 PARENT SHEETS

TABLE 2-4
2000 CENSUS ESTIMATES FOR CENSUS TRACTS IN STUDY AREA

Census Tract	2000 Estimated Population
003.01	4,257
003.02	4,358
004.00	4,170
005.02	4,533
006.00	4,335
012.00	3,820
301.00	2,465
302.00	7,448
401.01	3,601
401.02	1,480
401.03	1,205
401.05	2,816
402.01	745
402.03	5,336
403.01	1,930
403.02	637
403.04	4,091

Source: Claritas Inc. Household Trend Report for Lee County dated 02/07/2001

Projected Population. Table 2-5 lists the low, medium, and high population projections for Lee County for 2005 to 2030. The table indicates a significant difference in population projections utilizing the low, medium, or high figures. The medium set of population projections indicates an increase of more than 250,200 persons, or 51 percent for Lee County, between 2005 and 2030.

TABLE 2-5
LEE COUNTY POPULATION PROJECTIONS
(HIGH, MEDIUM AND LOW)

	2005	2010	2015	2020	2025	2030
LOW	434,800	438,400	434,400	421,600	400,000	368,800
MEDIUM	489,900	539,300	590,000	642,200	693,200	740,100
HIGH	553,400	657,500	771,600	895,800	1,028,600	1,167,800

Source: University of Florida Bureau of Economic and Business Research, Florida Population Studies Volume 34, Number 1, Bulletin 128.

Labor Force. Table 2-6 lists the labor force, and number of employed and unemployed persons in Lee County between 1990 and 2000. The table illustrates an 18 percent increase in the labor force during this period, from more than 154,000 persons in 1990 to over 180,000 by 2000. A similar 19 percent increase in employment also occurred, from more than 148,000 employed in 1990 to over 177,000 by 2000. The number of unemployed grew from more than 5,500 in 1990 to over 11,700 by 1992. It then declined yearly until 1999 when it reached a low of 4,589. The number of unemployed increased slightly in 2000 to 4,683 people, but the overall rate of unemployment remained steady at 2.6% in 1999 and 2000.

TABLE 2-6
LEE COUNTY: AVERAGE ANNUAL LABOR FORCE 1990-2000

Year	Average Annual Labor Force	Average Annual Employment	Average Annual Unemployment	Unemployment Rate
2000	181,961	177,278	4,683	2.6%
1999	178,955	174,366	4,589	2.6%
1998	175,192	169,988	5,204	3.0%
1997	171,334	165,545	5,789	3.4%
1996	169,577	163,182	6,395	3.8%
1995	169,940	162,866	7,074	4.2%
1994	167,289	159,093	8,196	4.9%
1993	161,459	152,202	9,257	5.7%
1992	158,881	147,130	11,751	7.4%
1991	156,092	146,730	9,362	6.0%
1990	154,303	148,497	5,807	3.8%

Source: Florida Research and Economic Database (FRED) Website
http://fred.labormarketinfo.com/LABFORCE.asp?geo=1204000071&currsession=LABFORCE

Table 2-7 illustrates the major private sector employers in Lee County. Two of the top three provide retail services and two of the ten largest provide health care services.

TABLE 2-7
LEE COUNTY: MAJOR PRIVATE SECTOR EMPLOYERS IN 2000

Employer	Number of Employees	Product/Service
Lee Memorial Health System	5,300	Hospital/Healthcare
Publix Super Markets	3,752	Grocer, retail
Wal-Mart Corporation	1,850	General merchandise - retail
SW Florida Regional Medical Center	1,600	Hospital/Healthcare
Meristar	1,270	Resort, call center
WCI Communities Inc.	1,007	Real estate developer, residential builder
Bonita Bay Group	911	Real estate developers
Sprint	850	Telecommunication
Sanibel Harbour Resort	750	Resort
Sony Electronics, Inc.	695	Customer service and technical support

Source: Lee County Division of Economic Development

Employment By Industrial Sector. Table 2-8 lists the average monthly employment by industrial sector for Lee County from 1990 through 2000. The County's employment by industry increased 29.5 percent during the 1990 to 2000 time period, with the service sector increasing 46 percent. Table 2-9 provides the most current monthly employment information based on the 2001 first quarter report. Data for calendar year 2001 will be available in the third quarter of 2002.

Employment Projections. Table 2-10 illustrates the projected employment in Lee County from 1998 through 2008. The table indicates an anticipated 27 percent increase in County employment between 1998 and 2008. The largest employment increases during this period are anticipated to be in the service and retail trade sectors, which are projected to increase by 19,700 (41 percent) and 10,370 (35.6 percent) jobs, respectively. Agriculture, Forestry and Fishing, and Transportation, Communication and Public Utilities sectors will experience the slowest growth, with a less than 10 percent increase between 1998 and 2008.

General Income Characteristics. Table 2-11 illustrates payroll by industrial sector for Lee County from 1990 through 2000. The table indicates an 83 percent increase in annual payroll during this time to more than $4.5 billion. The largest payroll sector in 1990 was the service industry, with a County payroll greater than $780,000,000. Service sector payroll increased by more than 67 percent during the ten-year study period.

TABLE 2-8
AVERAGE MONTLY EMPLOYMENT: LEE COUNTY 1990-2000

Industry	1990 Average Monthly Employment	1991 Average Monthly Employment	1992 Average Monthly Employment	1993 Average Monthly Employment
Total Private	*106,061*	*103,568*	*103,323*	*108,357*
Agriculture, Forestry, Fishing	3,757	3,839	3,829	4,402
Mining	-	-	-	-
Construction	12,531	10,810	9,839	10,779
Manufacturing	5,830	5,352	5,339	5,523
Transportation, Communications, and Public Utilities	5,570	5,655	5,736	5,873
Wholesale Trade	4,334	4,861	4,737	4,333
Retail Trade	32,623	30,856	30,685	31,844
Finance, Insurance, Real Estate	9,132	8,541	8,000	8,011
Services	32,154	33,479	35,033	37,428
Non-classifiable and Other	-	77	53	88
Total Government	*19,656*	*20,137*	*20,901*	*21,431*
Local	14,952	15,591	16,445	16,787
Federal	1,563	1,466	1,496	1,530
State	3,141	3,080	2,960	3,024

Source: State of Florida—Annual Edited ES-202 Agency for Workforce Innovation Labor Market Statistics
Note: Due to rounding and non-disclosure editing, subtotals may not equal totals. NR denotes "no report".

TABLE 2-8 (CONT'D)
AVERAGE MONTLY EMPLOYMENT: LEE COUNTY 1990-2000

Industry	1994 Average Monthly Employment	1995 Average Monthly Employment	1996 Average Monthly Employment	1997 Average Monthly Employment
Total Private	*115,226*	*119,778*	*123,446*	*123,741*
Agriculture, Forestry, Fishing	4,544	4,476	4017	3,649
Mining	-	-	-	137
Construction	11,333	10,742	12,069	12,059
Manufacturing	5,609	6,087	6,721	6,770
Transportation, Communications, and Public Utilities	6,129	6,371	6,496	6,799
Wholesale Trade	4,670	4,910	5,140	5,106
Retail Trade	33,880	35,509	36,964	37,118
Finance, Insurance, Real Estate	7,970	8,170	8,121	8,541
Services	40,764	42,943	43,545	43,145
Unassigned Industries	242	480	279	418
Total Government	*21,873*	*22,865*	*23,156*	*24,461*
Local	17,296	18,029	18,176	19,215
Federal	1,568	1,709	1,696	1,729
State	3,009	3,127	3,284	3,517

TABLE 2-8 (CONT'D)
AVERAGE MONTLY EMPLOYMENT: LEE COUNTY 1990-2000

Industry	1998 Average Monthly Employment	1999 Average Monthly Employment	2000 Average Monthly Employment
Total Private	*128,445*	*132,043*	*136,646*
Agriculture, Forestry, Fishing	3,543	3,430	3,556
Mining	156	161	234
Construction	13,236	15,168	16,193
Manufacturing	6,964	6,908	7,181
Transportation, Communications, and Public Utilities	7,345	7,271	6,659
Wholesale Trade	5,332	5,647	5,727
Retail Trade	38,467	39,489	41,028
Finance, Insurance, Real Estate	8,667	9,199	8,706
Services	44,275	44,347	46,957
Unassigned Industries	460	424	405
Total Government	*25,045*	*25,700*	*26,232*
Local	19,492	19,979	20,169
Federal	1,829	1,937	2,106
State	3,723	3,784	3,957

TABLE 2-9
MONTHLY EMPLOYMENT: LEE COUNTY JANUARY – MARCH 2001

INDUSTRY	1/01	2/01	3/01
TOTAL PRIVATE	143,644	145,109	147,197
Agriculture, Forestry & Fishing	3,621	3,764	3,695
Mining	224	226	227
Construction	17,518	17,818	18,305
Manufacturing	7,139	7,213	7,232
Transportation, Communication and Public Utilities	7,113	7,114	7,180
Wholesale	6,106	6,121	6,221
Retail	43,397	43,493	44,009
Finance	9,310	9,432	9,546
Services	49,094	49,763	50,647
Unassigned Industries	122	135	135
TOTAL GOVERNMENT	26,037	26,781	26,803
Federal	1,967	1,943	1,946
State	3,953	4,021	4,026
Local	20,117	20,817	20,831

SOURCE: Florida Department of Labor and Employment Security, Bureau of Labor Market Information, E5202 Program, Edited ES-202, Quarterly County Report on Employment and Wages Covered Under The Florida Unemployment Compensation Law and Unemployment Compensation For Federal Employees, First Quarter 2001.

TABLE 2-10
EMPLOYMENT ESTIMATES: LEE COUNTY 1998 – 2008

Employment	1998	2008	CHANGE Total	CHANGE Percent
TOTAL PRIVATE EMPLOYMENT	176,549	224,948	48,399	27.41
Agriculture, Forestry & Fishing	6,476	7,022	546	8.43
Mining	157	200	43	27.39
Construction	13,452	15,954	2,502	18.60
Manufacturing	6,947	7,908	961	13.83
Transportation, Communication And Public Utilities	7,584	8,135	551	7.27
Wholesale Trade	5,635	7,641	2,006	35.60
Retail Trade	39,092	49,470	10,378	26.55
Finance, Insurance and Real Estate	9,025	10,386	1,361	15.08
Services	48,090	67,795	19,705	40.98
TOTAL GOVERNMENT EMPLOYMENT	25,216	32,268	7,052	27.97
Local	19,624	25,627	6,003	30.59
Federal	1,831	2,136	305	16.66
State	3,761	4,505	744	19.78

Source: Florida Agency for Workforce Innovation, Office of Workforce Information Services, Labor Market Information Program

TABLE 2-11
ANNUAL PAYROLL BY INDUSTRIAL SECTOR: LEE COUNTY 1990-2000

Industry	1990 Average Payroll	1991 Average Payroll	1992 Average Payroll	1993 Average Payroll
Total Private	$2,090,391,992	$2,029,531,087	$2,141,918,638	$2,259,706,205
Agriculture, Forestry, Fishing	$44,099,394	$47,436,450	$51,303,247	$57,176,827
Mining	-	-	-	-
Construction	$269,840,486	$237,113,776	$222,630,365	$251,760,089
Manufacturing	$126,961,800	$120,145,215	$131,947,064	$134,837,192
Transportation, Communications, and Public Utilities	$138,555,958	$146,086,141	$156,454,987	$163,901,983
Wholesale Trade	$101,204,678	$122,259,572	$124,645,797	$115,817,224
Retail Trade	$419,122,587	$413,278,331	$431,084,878	$457,436,300
Finance, Insurance, Real Estate	$202,041,545	$200,046,760	$210,396,401	$221,792,632
Services	$784,429,648	$810,251,718	$810,251,718	$852,565,212
Unassigned Industries	-	$1,540,421	$1,050,481	$1,684,896
Total Government	$423,136,951	$468,144,342	$504,454,061	$526,100,802
Local	$321,279,631	$360,483,533	$391,352,530	$408,010,239
Federal	$46,214,892	$48,433,865	$53,735,798	$55,864,719
State	$55,642,428	$59,226,944	$59,365,733	$62,225,844

TABLE 2-11 (CONT'D)
ANNUAL PAYROLL BY INDUSTRIAL SECTOR: LEE COUNTY 1990-2000

Industry	1994 Average Payroll	1995 Average Payroll	1996 Average Payroll	1997 Average Payroll
Total Private	$2,431,528,333	$2,571,364,757	$2,761,765,012	$2,875,576,156
Agriculture, Forestry, Fishing	$63,158,119	$63,501,755	$61,030,761	$60,095,287
Mining	-	-	-	$5,166,807
Construction	$276,336,843	$267,584,725	$307,021,141	$325,183,987
Manufacturing	$146,004,515	$163,954,399	$186,724,461	$198,749,688
Transportation, Communications, and Public Utilities	$162,632,765	$168,913,158	$176,288,749	$188,702,819
Wholesale Trade	$137,255,467	$146,632,532	$152,475,088	$155,052,365
Retail Trade	$491,688,458	$524,738,666	$578,560,001	$605,854,976
Finance, Insurance, Real Estate	$222,388,060	$243,659,631	$242,462,032	$279,620,565
Services	$924,494,159	$980,228,605	$1,048,772,191	$1,047,668,930
Unassigned Industries	$4,558,998	$9,315,417	$5,358,771	$9,480,731
Total Government	$559,263,942	$601,843,632	$642,027,775	$703,795,421
Local	$434,345,837	$466,953,832	$495,605,466	$544,391,683
Federal	$59,414,661	$65,294,361	$70,188,835	$72,192,851
State	$65,503,444	$69,595,439	$76,233,474	$87,210,887

TABLE 2-11 (CONT'D)
ANNUAL PAYROLL BY INDUSTRIAL SECTOR: LEE COUNTY 1990-2000

Industry	1998 Average Payroll	1999 Average Payroll	2000 Average Payroll
Total Private	$3,122,257,212	$3,354,873,327	$3,747,358,182
Agriculture, Forestry, Fishing	$63,687,646	$65,804,452	$73,100,866
Mining	$6,146,254	$6,495,023	$10,348,500
Construction	$369,905,496	$436,892,923	$500,988,243
Manufacturing	$207,746,534	$214,596,038	$238,990,266
Transportation, Communications, and Public Utilities	$208,194,315	$231,363,770	$255,896,498
Wholesale Trade	$171,752,774	$183,517,915	$199,094,535
Retail Trade	$667,056,361	$719,615,526	$798,595,275
Finance, Insurance, Real Estate	$293.545,822	$331,578,448	$343,733,669
Services	$1,124,439,390	$1,155,057,123	$1,315,615,537
Unassigned Industries	$9,782,621	$9,952,109	$10,994,792
Total Government	$758,930,693	$818,854,811	$860,648,864
Local	$582,558,687	$633,470,658	$654,113,383
Federal	$75,646,303	$80,023,186	$90,115,091
State	$100,725,703	$105,360,967	$116,420,390

Average Wages and Salaries. Table 2-12 illustrates the average annual salary by industrial sector for Lee County from 1990 to 2000. The table indicates an increase of 39 percent in average wages earned by an employee in the private sector from $19,709 in 1990 to $27,424 in 2000. By 2000, the highest average annual salary by sector was mining at $44,193, while the lowest annual salary was in the retail sector at $19,465. More than 30 percent of the employed individuals in Lee County work in the retail sector.

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TABLE 2-12
ANNUAL PAYROLL BY INDUSTRIAL SECTOR:
LEE COUNTY 1990-2000

Industry	1990			1991		
	Average Monthly Employment	Total Annual Payroll	Average Annual Salary	Average Monthly Employment	Total Annual Payroll	Average Annual Salary
Private	106,061	$2,090,391,992	$19,709	103,568	$2,029,531,087	$19,596
Agriculture, Forestry, Fishing	3,757	$44,099,394	$11,738	3,839	$47,436,450	$12,356
Mining	-	-	-	-	-	-
Construction	12,531	$269,840,486	$21,534	10,810	$237,113,776	$21,934
Manufacturing	5,830	$126,961,800	$21,777	5,352	$120,145,215	$22,449
Transportation, Communications, and Public Utilities	5,570	$138,555,958	$24,875	5,655	$146,086,141	$25,833
Wholesale Trade	4,334	$101,204,678	$23,351	4,861	$122,259,572	$25,151
Retail Trade	32,623	$419,122,587	$12,847	30,856	$413,278,331	$13,394
Finance, Insurance, Real Estate	9,132	$202,041,545	$22,125	8,541	$200,046,760	$23,422
Services	32,154	$784,429,648	$24,396	33,479	$810,251,718	$24,202
Unassigned Industries	-	-	-	77	$1,540,421	$20,005
Total Government	19,656	$423,136,951		20,137	$468,144,342	$23,248
Local	14,952	$321,279,631	$21,487	15,591	$360,483,533	$23,121
Federal	1,563	$46,214,892	$29,568	1,466	$48,433,865	$33,038
State	3,141	$55,642,428	$17,715	3,080	$59,226,944	$19,230

TABLE 2-12 (CONT'D)
ANNUAL PAYROLL BY INDUSTRIAL SECTOR
LEE COUNTY 1990-2000

	1992			1993		
	Average Monthly Employment	Total Annual Payroll	Average Annual Salary	Average Monthly Employment	Total Annual Payroll	Average Annual Salary
Industry						
Private	103,323	$2,141,918,638	$20,730	108,357	$2,259,706,205	$20,854
Agriculture, Forestry, Fishing	3,829	$51,303,247	$13,399	4,402	$57,176,827	$12,989
Mining	-	-	-	-	-	
Construction	9,839	$222,630,365	$22,627	10,779	$251,760,089	$23,357
Manufacturing	5,339	$131,947,064	$24,714	5,523	$134,837,192	$24,414
Transportation, Communications, and Public Utilities	5,736	$156,454,987	$27,276	5,873	$163,901,983	$27,908
Wholesale Trade	4,737	$124,645,797	$26,313	4,333	$115,817,224	$26,729
Retail Trade	30,685	$431,084,878	$14,049	31,844	$457,436,300	$14,365
Finance, Insurance, Real Estate	8,000	$210,396,401	$26,300	8,011	$221,792,632	$27,686
Services	35,033	$810,251,718	$23,128	37,428	$852,565,212	$22,779
Unassigned Industries	53	$1,050,481	$19,820	88	$1,684,896	$19,147
Total Government	20,901	$504,454,061	$24,135	21,431	$526,100,802	$24,548
Local	16,445	$391,352,530	$23,798	16,787	$408,010,239	$29,706
Federal	1,496	$53,735,798	$35,920	1,530	$55,864,719	$36,513
State	2,960	$59,365,733	$20,056	3,024	$62,225,844	$20,577

TABLE 2-12 (CONT'D)
ANNUAL PAYROLL BY INDUSTRIAL SECTOR
LEE COUNTY 1990-2000

	1994			1995		
	Average Monthly Employment	Total Annual Payroll	Average Annual Salary	Average Monthly Employment	Total Annual Payroll	Average Annual Salary
Industry						
Private	115,226	$2,431,528,333	$21,102	119,778	$2,571,364,757	$21,468
Agriculture, Forestry, Fishing	4,544	$63,158,119	$13,899	4,476	$63,501,755	$14,187
Mining	-	-	-	-	-	-
Construction	11,333	$276,336,843	$24,383	10,742	$267,584,725	$24,910
Manufacturing	5,609	$146,004,515	$26,030	6,087	$163,954,399	$26,935
Transportation, Communications, and Public Utilities	6,129	$162,632,765	$26,535	6,371	$168,913,158	$26,513
Wholesale Trade	4,670	$137,255,467	$29,391	4,910	$146,632,532	$29,864
Retail Trade	33,880	$491,688,458	$14,513	35,509	$524,738,666	$14,778
Finance, Insurance, Real Estate	7,970	$222,388,060	$27,903	8,170	$243,659,631	$29,824
Services	40,764	$924,494,159	$22,679	42,943	$980,228,605	$22,826
Unassigned Industries	242	$4,558,998	$18,839	480	$9,315,417	$19,407
Total Government	21,873	$559,263,942		22,865	$601,843,632	
Local	17,296	$434,345,837	$25,113	18,029	$466,953,832	$25,900
Federal	1,568	$59,414,661	$37,892	1,709	$65,294,361	$38,206
State	3,009	$65,503,444	$21,679	3,127	$69,595,439	$22,256

TABLE 2-12 (CONT'D)
ANNUAL PAYROLL BY INDUSTRIAL SECTOR
LEE COUNTY 1990-2000

	1996			1997		
	Average Monthly Employment	Total Annual Payroll	Average Annual Salary	Average Monthly Employment	Total Annual Payroll	Average Annual Salary
Industry						
Private	123,446	$2,761,765,012	$22,372	123,741	$2,875,576,156	$23,239
Agriculture, Forestry, Fishing	4017	$61,030,761	$15,193	3,649	$60,095,287	$16,471
Mining	-	-	-	137	$5,166,807	$37,600
Construction	12,069	$307,021,141	$25,439	12,059	$325,183,987	$26,967
Manufacturing	6,721	$186,724,461	$27,782	6,770	$198,749,688	$29,358
Transportation, Communications, and Public Utilities	6,496	$176,288,749	$27,138	6,799	$188,702,819	$27,754
Wholesale Trade	5,140	$152,475,088	$29,664	5,106	$155,052,365	$30,367
Retail Trade	36,964	$578,560,001	$15,652	37,118	$605,854,976	$16,322
Finance, Insurance, Real Estate	8,121	$242,462,032	$29,856	8,541	$279,620,565	$32,739
Services	43,545	$1,048,772,191	$24,085	43,145	$1,047,668,930	$24,282
Unassigned Industries	279	$5,358,771	$19,207	418	$9,480,731	$22,695
Total Government	23,156	$642,027,775		24,461	$703,795,421	$28,772
Local	18,176	$495,605,466	$27,267	19,215	$544,391,683	$28,331
Federal	1,696	$70,188,835	$41,385	1,729	$72,192,851	$41,758
State	3,284	$76,233,474	$23,214	3,517	$87,210,887	$24,798

TABLE 2-12 (CONT'D)
ANNUAL PAYROLL BY INDUSTRIAL SECTOR
LEE COUNTY 1990-2000

	1998			1999		
	Average Monthly Employment	Total Annual Payroll	Average Annual Salary	Average Monthly Employment	Total Annual Payroll	Average Annual Salary
Industry						
Private	128,445	$3,122,257,212	$24,308	132,043	$3,354,873,327	$25,407
Agriculture, Forestry, Fishing	3,543	$63,687,646	$17,974	3,430	$65,804,452	$19,188
Mining	156	$6,146,254	$39,483	161	$6,495,023	$40,328
Construction	13,236	$369,905,496	$27,947	15,168	$436,892,923	$28,803
Manufacturing	6,964	$207,746,534	$29,830	6,908	$214,596,038	$31,055
Transportation, Communications, and Public Utilities	7,345	$208,194,315	$28,347	7,271	$231,363,770	$31,820
Wholesale Trade	5,332	$171,752,774	$32,213	5,647	$183,517,915	$32,500
Retail Trade	38,467	$667,056,361	$17,341	39,489	$719,615,526	$18,223
Finance, Insurance, Real Estate	8,667	$293.545,822	$33,870	9,199	$331,578,448	$36,044
Services	44,275	$1,124,439,390	$25,397	44,347	$1,155,057,123	$26,046
Unassigned Industries	460	$9,782,621	$21,270	424	$9,952,109	$23,490
Total Government	25,045	$758,930,693		25,700	$818,854,811	
Local	19,492	$582,558,687	$29,887	19,979	$633,470,658	$31,706
Federal	1,829	$75,646,303	$41,350	1,937	$80,023,186	$41,313
State	3,723	$100,725,703	$27,054	3,784	$105,360,967	$27,846

TABLE 2-12 (CONT'D)
ANNUAL PAYROLL BY INDUSTRIAL SECTOR
LEE COUNTY 1990-2000

	2000			2001		
	Average Monthly Employment	Total Annual Payroll	Average Annual Salary	Average Monthly Employment	Total Annual Payroll	Average Annual Salary
Industry						
Private	136,646	$3,747,358,182	$27,424			
Agriculture, Forestry, Fishing	3,556	$73,100,866	$20,559	Data for	Full Year Not (Q1-Q3 only)	Yet Available
Mining	234	$10,348,500	$44,193			
Construction	16,193	$500,988,243	$30,939			
Manufacturing	7,181	$238,990,266	$33,282			
Transportation, Communications, and Public Utilities	6,659	$255,896,498	$38,432			
Wholesale Trade	5,727	$199,094,535	$34,762			
Retail Trade	41,028	$798,595,275	$19,465			
Finance, Insurance, Real Estate	8,706	$343,733,669	$39,481			
Services	46,957	$1,315,615,537	$28,017			
Unassigned Industries	405	$10,994,792	$27,148			
Total Government	26,232	$860,648,864	$32,809			
Local	20,169	$654,113,383	$32,432			
Federal	2,106	$90,115,091	$42,791			
State	3,957	$116,420,390	$29,423			

Source: State of Florida – Annual Edited ES-202 Department of Labor and Employment Security Bureau of Labor Market Information

Table 2-13 illustrates the estimated mean household income and income distribution for the County. Data by census tract is not yet available from the U.S. Census Bureau. The range of incomes within the County is from under $10,000 to over $200,000. The mean household income in the Fort Myers – Cape Coral MSA is $55,973. The range of mean incomes in the study area is from $23,740 in census tract 403.04 to $81,689 in census tract 12.00. The mean income in census tract 401.01, which contains the project site, is $47,407. Volume II, Appendix 13.1 contains the Claritas, Inc. Household Trend Report.

TABLE 2-13
INCOME BY HOUSEHOLD: LEE COUNTY 2000
FORT MYERS – CAPE CORAL, FL MSA

Income Range	Number of Households	Percentage of Households
Under $10,000	15,993	8.24%
$10,000 - $24,999	39,956	20.60%
$25,000 - $49,999	61,777	31.85%
$50,000 - $99,999	55,214	28.46%
$100,000 - $149,000	11,276	5.81%
$150,000 - $199,999	4,236	2.18%
$200,000 or more	5,521	2.85%

Source: US Census Bureau 2000, Census 2000 Supplementary Survey

Census Tract	Mean Household Income $	Median Household Income $
3.01	41,631	30,801
3.02	30,662	22,632
4*	37,773	30,804
5.02*	26,570	15335
6	30,676	25408
12.00*	81,689	61216
301	75,299	61,150
302	46,136	40,256
401.01	47,407	43,404
401.02	48,354	39559
401.03	44,581	41,350
401.05*	33,752	26,804
402.01	52,789	41,719
402.03	43,233	35,865
403.01	44,829	40,868
403.02	57,218	53,750
403.04	23,740	17,943

- These census tracts have been further subdivided however data was only available for the tract indicated.

Source: Claritas Inc. Household Trend Report (HTR) 2/27/01

Existing Housing Stock. Table 2-14 illustrates the total number of year-round housing units and number of units per structure in the census tracts that are, at least in part, located within the study area. The table indicates that 53.4 percent of housing within the study area census tracts consists of one-unit dwellings, 16.6 percent of housing are mobile homes, 3.15 percent are duplex units, 5 percent have three to four units, 4.6 percent have five to nine units, 6 percent have ten to nineteen units, and 11.2 percent have 20 or more units. Less than 1 percent of the housing was classified as a boat, RV, van, or other type of structure.

TABLE 2-14
HOUSING UNITS 2000
FORT MYERS – CAPE CORAL, FL MSA

Housing Type	Number of Houses	Percentage of Housing
1 (Detached)	118,472	48.28%
1 (Attached)	12,664	5.16%
2 Units	7,736	3.15%
3 – 4 Units	12,373	5.04%
5 – 9 Units	11,179	4.56%
10 – 19 Units	14,613	5.95%
20 or more	27,464	11.19%
Mobile Homes	40,644	16.56%
Boat, RV, Van etc.	260	<1%

Total Housing Units: 245,405

Source: U.S. Census Bureau, Census 2000 Supplementary Survey

Table 2-15 illustrates the age of the housing stock within the Fort Myers – Cape Coral MSA. Detailed data by census tract is not yet available from the U.S. Census Bureau. The table indicates that 26.4 percent of the units were built between 1990 and 2000, 35.4 percent were built between 1980 and 1989, 24.8 percent were built between 1970 and 1979, 6.7 percent were built between 1960 and 1969, and 4.7% percent were built between 1950 and 1959. Less than 2% of the existing housing stock was constructed before 1940.

TABLE 2-15
AGE OF HOUSING STOCK AS OF 2000
FORT MYERS – CAPE CORAL, FL MSA

Age of Home	Number of Homes	Percentage of Homes
2000 or newer	8,363	3.41%
1995 – 1999	24,851	10.13%
1990 – 1994	31,523	12.85%
1980 – 1989	86,843	35.39%
1970 – 1979	60,891	24.81%
1960 – 1969	16,486	6.72%
1950 – 1959	11,596	4.73%
1940 – 1949	2,123	< 1%
1939 or earlier	2,729	1.1%

Source: Source: U.S. Census Bureau, Census 2000 Supplementary Survey

Housing Costs- Table 2-16 illustrates the housing values for units in the Fort Myers – Cape Coral MSA. The table indicates that the majority of housing units are in the $50,000 to $99,999 range (2000 figures). The median value of specified owner-occupied housing units for the census tracts, wholly or partially within the study area, is not yet available from the U.S. Census Bureau.

TABLE 2-16
HOUSING VALUES IN 2000
FORT MYERS – CAPE CORAL, FL MSA

Housing Value	Number of Units	Percentage of Units
< $50,000	6,237	6.23%
$50,000 - $99,999	40,553	40.52%
$100,000 - $149,000	23,719	23.70%
$150,000 - $199,999	11,068	11.06%
$200,000 - $299,999	9,443	9.44%
$300,000 - $499,999	6,037	6.03%
$500,000 - $999,999	1,892	1.89%
$1,000,000 or more	1,127	1.13%

Median Housing Value: 106,399

Note: Figures are the percent of housing within the value category based on specified owner-occupied housing units. Figure totals may not equal 100% due to rounding. Owner occupied units of 100,076

Source: U.S. Census Bureau, 2000 Supplementary Survey

Table 2-17 illustrates the 2000 building permit activity for Lee County. The table indicates that almost 49 percent of the building permit value was for single-family home construction. The 4,954 building permits for single-family homes had an average building permit value of just over $150,329.

TABLE 2-17
BUILDING PERMITS: LEE COUNTY 2000

Type	Number of Building Permits Issued	Total Value
Single Family	4,954	$ 744,732,841
Multifamily / Duplexes	658	$ 427,346,587
Commercial New/ Remodeling	1,763	$ 371,447,192
Total	7,375	$1,543,526,620

Source: Lee County Department of Economic Development

Public Service and Utilities

Transportation- The Facility is located adjacent to Buckingham Road, approximately one mile east of the SR 82/Buckingham Road intersection and two and one-half miles east of the Interstate 75/SR 82 interchange. Major roads in the area include Interstate 75, SR 82/Martin Luther King Blvd./Immokalee Road, SR 80/Palm Beach Boulevard, SR 884/Colonial Boulevard, SR 884/Lee Boulevard, and Buckingham Road.
These roads are briefly described as follows:

- Interstate 75 is a four-lane, north-south freeway that traverses the eastern United States from Sault Ste. Marie, Michigan to near Miami.
- SR 82/Martin Luther King Blvd./Immokalee Road is a two-lane, east-west minor arterial road running from Fort Myers to SR 29, located approximately five miles north of Immokalee.
- SR 80/Palm Beach Boulevard is a two-lane, east-west principal arterial with some four-lane segments. SR 80 is located approximately four miles to the north of the project site, running from Fort Myers to its intersection with U.S. Highway 27 near Clewiston.

- SR 884/Colonial Boulevard is a four-lane, east-west minor arterial located to the southwest of the project site, running from Fort Myers to Interstate 75. A roadway linking Colonial Boulevard with Lee Boulevard was completed in 2000.
- SR 884/Lee Boulevard is a two-lane, east-west minor arterial located to the southeast of the project site, running from Leeland Heights Boulevard to SR 82 one mile southeast of the site.
- Buckingham Road is a two-lane, north-south minor arterial running from SR 82 to SR 80. The site is located on the north side of Buckingham Road, about a mile east of SR 82.

Table 2-18 lists the existing roadway classifications and the number of lanes for each roadway segment. Table 2-19 lists traffic volumes for various segments of these roadways.

TABLE 2-18
EXISTING ROADWAYS

Roadway	Segment	Number of Lanes
SR82/Immokalee Rd	I-75 to Buckingham Rd	2LU
SR82/Immokalee Rd	Buckingham Rd to Lee Rd	2LU
Buckingham Rd	Immokalee Rd to Orange River Blvd	2LU

Source: Lee County Concurrency Management Inventory and Projections 1999/2000-2000/2001.

Note: 2L represents a two-lane road, 4L represents a four-lane road, U represents an undivided road, and D represents a divided road.

TABLE 2-19
EXISTING TRAFFIC VOLUMES

Roadway	Segment	ADT Volume
SR82/Immokalee Rd	N of Buckingham Rd	14,900
SR82/Immokalee Rd	N of Colonial Blvd	11,900
Buckingham Rd	E of Alvin Ave	2,800

Source: Lee County DOT

Note: Roadway volumes are Average Daily Traffic (ADT) values from 2001 Station Data.

Table 2-20 lists the performance standards for roadways. Performance standards include capacity volumes and levels of service (LOS) for roadway segments. No roadway segment has an existing level of service that is lower than its performance standard.

TABLE 2-20
PERFORMANCE STANDARDS

Roadway	Segment	Performance Standard LOS[1] / Capacity[2]	Existing LOS / Volume[2]	Case 1 Volume Increase of 33% [3]	Case 2 Anticipated Increase in Total Trips[4]
SR82/Immokalee Rd	I-75 to Buckingham Rd	E / 1,140	C / 807	1,073	902
SR82/Immokalee Rd	Buckingham Rd to Lee Blvd	E / 1,140	C / 694	923	812
Buckingham Rd	Immokalee Rd to Orange River Blvd	E / 1,170	C / 256	340	280

Source: Lee County Concurrency Management Inventory and Projections 1999/2000-2000/2001

1. LOS is Level of Service.
2. Using peak hourly values as provided in the Concurrency Management Report.
3. This case assumes a one-third increase in traffic based on the expansion of the Facility by one-third, and is estimated at 527 additional trips per day.
4. This case represents anticipated garbage truck and transfer trailer use of these roads and is estimated at 118 additional vehicles per day or 236 round trips.

As depicted in Table 2-20, the existing LOS traffic is significantly less than the performance LOS Capacity.

Future increases in traffic due to the Facility expansion were calculated for two cases distributed proportionally among the road segments to the breakdowns indicated in the original traffic study. Case 1 represents a very conservative estimate and assumes an increase in all traffic of 33 percent for each road, which corresponds to the proposed one-third increase in Facility capacity. Case 2 represents the anticipated daily increase in garbage trucks and transfer trucks that will use the roads, and is based on 219,000 tons per year (i.e. the third unit at maximum capacity), 260

delivery days to the Facility, 8 tons/garbage truck, and 20 tons/transfer truck, for a total of 105 garbage truck deliveries per day and 13 ash transfers per day to the Lee/Hendry landfill. In either case, the increased traffic expected from the expansion will remain well within the required performance capacity and not significantly impact the road network serving the Facility.

Medical Facilities. Hospitals in the area include:

- East Point Hospital, located at 1500 Lee Boulevard, Lehigh Acres.
- Lee Memorial Hospital, located at 2776 Cleveland Avenue, Fort Myers.
- Lee Memorial Health Park Hospital, located off Summerlin Road.
- Southwest Florida Regional Medical Center, located at 3785 Evans Avenue, Fort Myers.
- Cape Coral Hospital, located at 636 Del Prado Boulevard, Cape Coral.
- Gulf Coast Hospital, located off Metro Road.

Police Protection. The project site is within the East District of the Lee County Sheriff's Department. The East District Substation is located at 4002 Palm Beach Boulevard. The Sheriff's Department Headquarters is located at 1700 Monroe Street, Fort Myers.

Fire Protection. The project site is within the Tice Fire Protection Fire District. The fire district, chartered in 1976, covers 44 square miles and has an average response time of three minutes. The fire district includes three fire stations located at 5170 Tice Street, 3705 Edison Avenue, and 5850 Buckingham Road.

Education. There are five public elementary schools located within the study area: Orange River Elementary School, Tice Elementary School, Edgewood Elementary School, Franklin Park Elementary School, and Michigan Elementary School. There are two public middle schools located within the study area: Dunbar Middle School and Lee Middle School.

Recreation Facilities. There are over 20 recreation facilities located within the study area. Refer to Section 2.2.1 for additional information regarding recreation facilities.

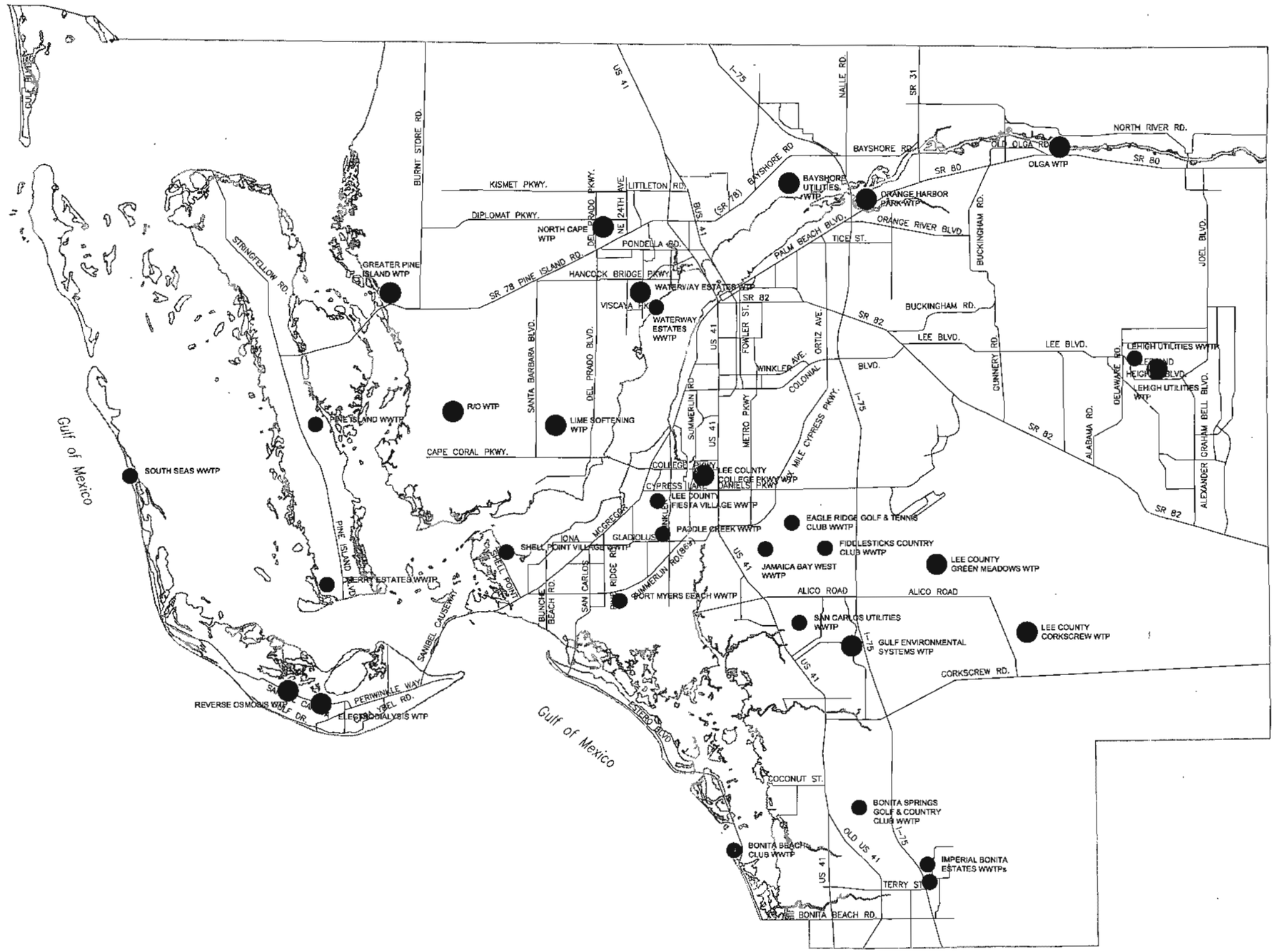
Water Supply Facilities. Potable water service to the site is provided by the existing distribution system of the City of Ft. Myers. A pipeline with a minimum diameter of eight inches ties into the existing system near the intersection of Omni Boulevard and SR82. Typical water pressure in the line is 40 to 60 psi. Water quality is in compliance with FDEP potable water system permit requirements. Typical characteristics of the potable water are a pH range of 7.5 to 9.0, a total hardness between 100 and 200 mg/l as $CaCO_3$, color between 2 and 15 color units, turbidity less than 1.0 Nephelometric Turbidity Units, and chloride concentrations up to 250 mg/l.

Cooling Water Supply. Reclaimed water from the City of Fort Myers Central Advanced Wastewater Treatment Plant (Central WWTP) is used as cooling water for the Facility. The Central WWTP location is shown on Figure 2-12. On-site groundwater wells (4) provide a source of back-up cooling water supply in the event that the primary source is interrupted. Also refer to Section 3.5.1 and Section 6.0 for additional information.

Sewage Treatment Facilities. The City of Fort Myers Central WWTP receives the wastewater generated by the Facility. The wastewater discharge consists of a maximum of approximately 150,000 gpd of sanitary, process wastewater, and cooling tower blowdown wastewater. Process wastewater is reused at the Facility to the greatest extent practicable. For FY2000/2001, the Facility's average maximum discharge was 12,000 gpd.

Wastewater is pumped into a pipeline that ties into an existing pump station near the corner of Flagler Street and SR 82. This pump station is part of the influent transmission facilities of the City of Fort Myers Central WWTP. The wastewater meets city pretreatment requirements.

The current pretreatment requirements prohibit slugs of pollutants, excessive grease and oils, taste or odor-causing substances, radioactive wastes, corrosive wastes, or other wastes which would interfere with treatment operations. The requirements also limit average concentrations of heavy metals and other contaminants in the sewage as it arrives at the wastewater treatment plant to the concentrations shown in Table 2-21. At no time may the hourly concentration at the wastewater treatment plant exceed three times the average concentration.



MALCOLM PIRNIE

REVISIONS				DES	
NO.	BY	DATE	REMARKS	DWN	CHKD

LEE COUNTY
DEPARTMENT OF SOLID WASTE MANAGEMENT
RESOURCE RECOVERY FACILITY EXPANSION
FORT MYERS, FLORIDA

FIGURE 2-12
WATER AND WASTEWATER
TREATMENT PLANT LOCATIONS

DATE 05-10-2002

SHEET 1 OF 1

CAD REF. NO. 1971028

TABLE 2-21
INFLUENT PRETREATMENT REQUIREMENTS FOR THE FORT MYERS CENTRAL ADVANCED WASTEWATER TREATMENT PLANT

Parameter	Maximum Concentration (mg/l) (Time Proportional Composite Sample)	Maximum Instantaneous Concentration (mg/l) (Grab Sample)
Aluminum, dissolved	15.00	30.00
Antimony (Sb)	0.50	1.00
Arsenic (As)	0.05	0.10
Barium (Ba)	2.50	5.00
Boron (B)	1.00	2.00
Cadmium (Cd)	0.01	0.02
Chloride (Cl)	500.00	600.00
Chromium-total (Cr)	1.50	3.00
Cobalt (Co)	5.00	10.00
Copper (Cu)	0.40	0.80
Cyanide (Cn)	0.05	0.10
Fluoride (F)	10.00	20.00
Iron (Fe)	5.00	10.00
Lead (Pb)	0.10	0.20
Manganese (Mn)	0.50	1.00
Mercury (Hg)	0.015	0.03
Nickel (Ni)	0.50	1.00
Phenols	0.40	1.00
Selenium (Se)	0.75	1.50
Silver (Ag)	0.05	0.10
Titanium, dissolved (Ti)	1.00	2.00
Zinc (Zn)	2.00	4.00
Total Dissolved Solids	1875.00	3750.00
BOD	300.00*	
COD	600.00*	
TSS	300.00*	
Total Nitrogen (TKN)	30.00*	
Total Phosphorous	10.00*	
Oil and Grease	100.00	100.00
MBAS	5.00	10.00

* Concentrations above this amount are subject to a surcharge in accordance with the high strength wastewater control schedule and other rate resolutions and ordinances that are applicable.

Solid Waste Collection and Disposal. Lee County enacted its Mandatory Garbage and Solid Waste Collection Ordinance (No. 86-38) in April 1987. This ordinance provides for County control over solid waste collection and disposal within its jurisdiction. A summary of the Lee County Solid Waste Management System is provided in Volume II, Appendix 3.1.

2.3 BIOPHYSICAL ENVIRONMENT

2.3.1 GEOLOGY AND SOILS

The Facility expansion will be located on the existing site footprint. See Figures 2-2, 2-6, and Volume II, Appendix 1.1. The Facility's existing refuse pit is designed and constructed to accommodate the increased volume of solid waste for the expansion and will not require modification. The information contained in the original application relative to the following subsections applies to the proposed expansion. The subsections under this topic describe the soils and geology of the site, as presented in the original application. Information from existing documents, the results of a site-specific geotechnical investigation, and further details of the site-specific geotechnical analysis, together with regional geological information, are presented below.

Site Soils Information

The U.S. Soil Conservation Service (SCS) has published a soil survey for Lee County (USDA, 1984) that was used to identify the characteristic soils on site. The predominant soil series association in the area of the site is the Oldsmar-Malabar-Immokalee series. This association is composed of nearly level, poorly drained, deep sandy soils with a loamy subsoil in some locations. The major soil units on-site include the following.

Unit No.	Soil Unit
13	Boca fine sand
14	Valkaria fine sand
26	Pineda fine sand
27	Pompano fine sand, depressional
34	Malabar fine sand
44	Malabar fine Sand, depressional
74	Boca fine sand, slough
75	Hallandale fine sand, slough
77	Pineda fine sand, limestone substratum

Most of the site is composed of soils from the Boca and Malabar series (soil units 13, 74, 34 and 44 on the map) with isolated areas of Valkaria fine sand (soil unit 14), and Hallandale fine sand (soil unit 75) in slough throughout. There are small areas of Pineda fine sand (soil units 26 and 77) along the southern border of the site including an area with a limestone substratum at depths beyond 50 inches in the southwestern corner. The principal soil series on-site are Malabar, Valkaria, Pompano, and Boca. Each series is summarized below.

The Malabar series consists of deep, sandy soils that are poorly drained. The soils have a moderately low permeability ranging from about 6 to 20 inches per hour but have a zone of much lower permeability (less than 0.2 inches per hour) at depths from about 40 to 60 inches below land surface. The soils have less than 25 percent clay, one to two percent organic matter, and have a low shrink/swell potential. They were formed as thick beds of sandy and loamy marine sediments.

Soils of the Valkaria and Pompano series are deep, poorly drained siliceous sands and fine sands that were formed in thick beds of sandy marine sediments. They have a high permeability of 6 to 20 inches per hour. The soils are found in sloughs and depressional areas and are usually level or sloping up to one percent. The soils have less than five percent clay, one to five percent organic matter, and a low shrink/swell potential.

In areas where the Malabar, Valkaria, or Pompano soils are present, the water table in the uppermost aquifer rises to within 10 inches of the ground surface for one to four months of the year, is 10 to 40 inches below ground surface for about six months a year, and falls beyond 40 inches deep for about three months during dry periods. Where these soils are present in depressions, water ponds on the soil for three to six months per year. In sloughs, these soils are covered by slowly moving, shallow water for seven days to one month or more during and following periods of heavy rain.

The Boca series consists of deep, poorly drained fine sand and fine sandy loam soils. The soils have a moderate permeability of 6 to 20 inches per hour in the upper two to three feet of soil where the clay content is less than two percent and 0.6 to 2 inches/hour below that depth because the clay content increases to about 10 to 30 percent. The soils were formed in moderately thick beds of marine sediment over limestone. The soils have one to three percent organic matter and a low shrink/swell capacity. Fractured limestone was encountered at a depth of 30 inches in a typical sample representative of the series (a pedon). The fractured limestone was reported to have solution cavities filled with sandy clay loam soil. These soils are usually found in nearly

level areas with zero to two percent slope in flatwoods, depressional areas, and sloughs. In the flatwoods, the water table level of the uppermost aquifer is usually within 10 inches below the ground surface for two to four months per year, and recedes below the limestone (beyond 25 to 40 inches) for about six months. In depressional areas, water ponds on the soil for three to six months, and slowly moving water covers the soil in sloughs for seven days to one month or more during and following periods of high rainfall.

For all of these soils, site development is hampered by severe wetness or ponding, seasonal drought, potential for site flooding, and the lack of stability and cohesiveness of soils during excavation; and the Boca series is further limited by the shallow depth to rock (USDA, 1984; Tables 10 and 11). The soils are generally poor materials for roadfill (due to wetness) and are too sandy for gravel or topsoil, but are generally good sources of sand materials (USDA, 1984; Table 12).

Regional Geology

The sequence of geologic sediments that underlie Lee County, Florida, from land surface to a depth of approximately 1,000 feet NGVD, contains three major aquifer systems separated by low permeability confining zones and include the surficial, intermediate, and Floridan aquifer systems.

Surficial Aquifer System. The surficial aquifer system is composed of the water table aquifer and, in the southern part of the County, the lower Tamiami aquifer. The leaky Tamiami confining bed pinches out northwest of Bonita Springs and along a southwest-northeast trending zero isopach line from the Gulf Coast at the Lee-Collier County line to the intersection of Townships 44 and 45 at the Lee-Hendry County line. To the north and west of this zero isopach line, where the proposed energy recovery facility site lies, the lower Tamiami aquifer becomes unconfined and is therefore considered part of the water table aquifer. In general, the water table and lower Tamiami aquifers, and the intervening lower Tamiami confining zone, consist of unconsolidated sands, sandstones, shell beds, and limestones, of the undifferentiated Quaternary Age surficial deposits and the Tertiary Age Tamiami information.

Recharge to the surficial aquifer system in Lee County comes from five principal sources: 1) direct infiltration of precipitation, 2) inflow from surface water bodies, 3) subsurface flow from adjacent areas, 4) upward leakage from semi-confined aquifers, and 5) infiltration from free-flowing artesian wells at the ground surface. Direct infiltration from precipitation is the major

source of recharge to the aquifer. Surface water bodies (Caloosahatchee River, canals, lakes, and rock quarries) may act as recharge sources when their water levels exceed the groundwater levels. The generally high groundwater levels compared to the elevations of surface water bodies suggest that the groundwater may frequently recharge surface water bodies (Wedderburn et al., 1982).

Discharge from the water table aquifer occurs as flow into streams and wetlands, evapotranspiration, downward-leakage into underlying semi-confined aquifers, surface outflow to adjacent areas, and pumping from wells. Evapotranspiration is the major source of natural water loss from the water table aquifer (Wedderburn et al., 1982).

Intermediate Aquifer System. The intermediate aquifer system underlies the surficial aquifer system across the entire County and acts as a regional confining sequence for the deeper Floridan aquifer system (Knapp et al., 1986). This aquifer system is composed predominantly of low permeability clays, dolosilts, limestones, and mixtures of these lithologies. The intermediate aquifer system is capped by an areally extensive zone of very low permeability greenish gray phosphatic, clayey dolosilts and is termed the Upper Hawthorn confining unit. The first appearance of the greenish-gray phosphatic clayey dolosilts is recognized as the top of the Hawthorn formation in Lee County.

The intermediate aquifer system can be subdivided into two aquifers (the sandstone and mid-Hawthorn) separated by the semi-confining mid-Hawthorn zone. The sandstone aquifer underlies the Upper Hawthorn confining zone in nearly all of Lee County but pinches out in the northwestern part of the County. Although the term "sandstone" has been applied to the aquifer, in reality this aquifer is composed of two distinct lithofacies: a classic (sandstone) and a subordinate carbonate (limestone), both confined above and below by clayey dolosilts.

Major recharge to the sandstone aquifer comes from downward leakage from the surficial aquifer system. A hydraulic connection appears to exist between the surficial aquifer system and the sandstone aquifer based on the similar hydrograph shapes in adjacent wells in both aquifers (Boggess and Watkins, 1986). The underlying mid-Hawthorn aquifer has higher potentiometric levels than the sandstone aquifer, but upward leakance is considered minimal due to the better confining properties of the mid-Hawthorn confining zone overlying the mid-Hawthorn aquifer (Wedderburn et al., 1982).

The mid-Hawthorn confining zone underlies the sandstone aquifer in Lee County and is composed of a relatively thick sequence of clayey dolosilts locally interbedded with thin seams of porous limestone, dolostone, and sand. The unit effectively separates the mid-Hawthorn aquifer from overlying hydrostratigraphic units. The mid-Hawthorn aquifer lies below this confining zone and is present throughout the County. Lithologically the unit consists of sandy and phosphatic limestones and dolostones which exhibit intergranular, moldic, and possible fracture and solution porosity. Over most of the County, the potentiometric surface of the mid-Hawthorn aquifer is above land surface, creating flowing artesian conditions in wells which penetrate it.

The lower Hawthorn confining zone lies below the mid-Hawthorn aquifer, and consists of sandy, phosphatic, poorly indurated limestones interbedded with phosphatic dolosilts. The low permeability of this unit results from the fine-grained nature of the rocks, although localized zones of high permeability limestones, dolostones, and sandstones do occur.

Floridan Aquifer System. The Floridan aquifer system lies hydrostratigraphically below the intermediate aquifer system. In the upper portions of the system in Lee County, the Floridan aquifer system can be subdivided into the lower Hawthorn/rampa producing zone and the Suwannee aquifer.

Water quality in the lower Hawthorn//Tampa producing zones is brackish saline. Most of the recharge to the lower Hawthorn/Tampa producing zone originates from outside the County, probably in the Polk County highlands and adjacent areas where the aquifer crops out at higher elevations. Beds of low permeability micrites are present at the base of the lower Hawthorn/Tampa producing zone which separate this zone from the underlying Suwannee aquifer.

The Suwannee aquifer occurs within the interbedded poorly indurated micrites, phosphatic dolosilts, sands, and sandstones of the Suwannee Limestone (Oligocene). The Suwannee aquifer contains nonpotable water throughout all of Lee County. From the top of the lower Hawthorn/Tampa producing zone, water quality usually deteriorates with depth into the Suwannee and deeper aquifers.

Site-Specific Lithographic Description

During the original application process, a geotechnical firm, Mortensen Engineering, Inc. of Tampa, Florida, was contracted to perform a site-specific investigation during April 1990. Their scope of work included installation of five standard penetration test (SPT) borings to a depth of 80 feet (done between April 4 to 6, 1990), classification of soils, and laboratory measurement of amounts of fine particles in selected samples. The geotechnical firm also made recommendations regarding potential subsurface capabilities and limitations to support facility structures. The original Geotechnical Report is provided in Volume II, Appendix 10.1. The following paragraphs summarize its findings.

On-site Borings. The borings were sited in locations to provide geotechnical information about Facility structures. Boring B-1 was sited in the vicinity of the proposed tipping floor area, borings B-4 and B-5 were drilled at either end of the proposed refuse pit area, boring B-2 was placed west of the refuse pit, and boring B-3 was drilled at the proposed site of an exhaust or venting stack.

All five borings were installed to a depth of 80 feet below land surface following an SPT boring procedure consistent with the ASTI4D-1586 method. A 2-15/16-inch diameter tri-cone roller bit and rotary wash drilling technique was used. Soil samples were collected using a splitbarrel (split-spoon) sampler. Two or three soil samples were collected from the upper 10 feet of each boring, then samples were collected every 5 or 10 feet depending upon the lithology. The blow counts to advance the sampler one foot, called "N"-values, were recorded.

The logs depict the geologic stratiography with depth, the N-values or blow counts (which also indicates collection of a soil sample), the percent of fines passing a 200 sieve (using ASTMD-1140), and the depth to groundwater during the drilling activities. The ground surface elevations of the borings are similar. The elevations of borings B-1, B-2, and B-3 are at 21.2 feet above National Geodetic Vertical Datum (NGVD), boring B-4 is at 21.4 feet, and boring B-5 is at 21.3 feet.

The boring logs demonstrate relative consistency in the site geology. All of the borings encountered the same soil or rock formations at similar depths. The geotechnical subconsultant summarized the site stratigraphy which is presented in Table 2-22. The sands, sandy silt, and clayey silt of the upper three strata make up the soils of the uppermost water table (or surficial) aquifer.

TABLE 2-22
SUMMARY OF SOIL BORINGS

Approximate Depth	Stratum No.	Material Description	Material Relative Density or Consistency
0 to 3 feet	1	Fine SAND to slightly silty fine SAND	Loose
3 to 6½ feet	2	Clayey/calcareous SAND and limestone fragments (CAPROCK)	Medium-Dense
6½ to 20 feet	3	Sandy/clayey SILT, with limestone fragments (MARL)	Soft
20 to 25 feet	4	Silty CLAY	Soft/Firm
25 to 67 feet	5/6	Silty to slightly clayey fine SAND with trace phosphates	Very loose to loose (limited medium-dense)
67 to 80 feet	7	Weathered SANDSTONE	Medium-dense (limited dense)

Source: Volume I Application for Power Plant Certification

The silty clayey soil of stratum 4 comprises the confining unit (aquitard) between the water table aquifer and the underlying sandstone aquifer (stratum 7). Stratum 4 is not illustrated on the boring log for boring B-3 but is possibly present between the 15- and 25-foot sampling depths. The confining unit is part of the upper Hawthorn formation. Strata 5 and 6 are transitional soils between the confining unit and the sandstone aquifer. The upper portion of the strata may behave hydraulically as part of the confining unit. Although they are comprised of silts and silty clays, the lower portion of the strata may behave hydraulically as part of the underlying sandstone aquifer.

The water table was approximately 2-1/2 to 4 feet below ground surface during the geotechnical field investigation. Circulation of drilling mud was lost at about the 76-foot depth in borings B-2 and B-3. The 100 percent circulation loss occurred in the weathered sandstone formation and may be attributable to the poorly cemented sandstone which is highly porous. Loss of drilling

mud circulation in the sandstone formation occurs about 70 percent of the time when drilling in that formation in southwestern Florida; it is not indicative of sinkhole activity and does not pose a reason for concern. After completion of the borings, each was grouted to ground surface with Portland cement.

Soil Sample Data. Ten of the soil samples were sent to the laboratory for limited physical testing to determine the percentage of materials in the soil samples that have a diameter less than 75 microns, referred to as fines. The results of the tests, and information about the location of each sample, are summarized in Table 2-23. The percentage of fines in the samples ranges from 8 to 27 percent. No analyses for vertical and horizontal hydraulic conductivity were performed because the information was not needed for a structural evaluation.

TABLE 2-23
SUMMARY OF SIEVE DATA FOR SOIL SAMPLES

BORING	DEPTH OF SAMPLE (feet)	FORMATION (Stratum)	% Material PASSING Sieve 200
B-1	29	5	26
B-1	49	5	13
B-2	39	5	10
B-3	29	5	11
B-3	49	5	11
B-4	29	5	14
B-4	39	6	8
B-4	59	5	30
B-5	24	5	27
B-5	44	5	12

Formation Strata:

5 = Gray-Green to gray silty to slightly clayey fine sand, trace phosphates.

6 = Gray-Green to gray slightly silty to silty fine sand, trace phosphates.

Geologic Mapping

As discussed in the original application, the significant geologic formations for the proposed Facility structures, and for the evaluation of hydrogeology and contaminant transport, are the water table aquifer, the Hawthorn confining unit, and the sandstone aquifer. Isopach maps of the tops of the confining unit and the sandstone aquifer were presented in a publication by the South Florida Water Management District (SFWMD, 1982). They show that the elevation of the top of the upper Hawthorn confining unit is nearly 0 feet NGVD, which is generally consistent with the site-specific boring logs which place the top of the upper Hawthorn confining unit (stratum 4 or 5) between +4 to -4 feet NGVD (17 to 25 feet below ground surface). The thickness of the confining unit may be 75 feet thick in the vicinity of the site (SFWMD) but the site-specific borings indicate confining unit (including strata 4, 5 and 6) to be about 40 to 50 feet thick.

A regional summary of Lee County water resources data was prepared by J. M. Montgomery & Associates (JMM, 1988). That report included an isopach map of the top of the sandstone aquifer which indicated that its elevation ranged between -4 to -60 feet NGVD in the vicinity of the site. This map indicated that the site is located in an area of the County where the sandstone aquifer formation is located closest to the ground surface. The site-specific borings indicate that the top of the sandstone aquifer (stratum 7) lies between -45 to -48 feet NGVD (66 to 69 feet below ground surface).

The Facility does not present sources of concern for groundwater degradation. Notwithstanding, Section 4.3 addresses the potential impact the Facility may have on groundwater flow and quality. The clayey and silty clay soils of the upper Hawthorn confining unit (stratum 4 and to some extent stratum 5) will provide an effective barrier to downward movement of contaminants. Therefore, the potential for contaminant transport from the site focused on the uppermost water table aquifer as the principal formation of concern in the unlikely event of releases to groundwater.

Soil Bearing Strength

As discussed in the original application, the geotechnical subconsultant expressed a concern about the soft and/or loose unconsolidated soils to depths of nearly 70 feet and identified a potential for total and differential settlement in the soft to very soft clayey silt soils of stratum 3, the soft highly plastic silty clay soils of stratum 4, and the loose silty to clayey fine sand soils of strata 5 and 6. Two reasonable options for site improvement to support the Facility structures were provided in the original application and will be considered in the event bearing strength becomes an issue during the expansion.

1. Improve the subsurface conditions using an in situ vibroreplacement technique, install stone columns in areas of major structures, and use a shallow foundation system for structure support; OR

2. Install deep end-bearing and/or friction piling foundation systems.

Each option is described below.

Vibroreplacement Option. Vibroreplacement has proven effective in improving silty sands, silts and soft clays. It uses gravel or stone as backfill along the vibrating probe to form stone columns about two feet in diameter. A cylindrical vibratory probe is used to form holes to a selected depth by displacing and compacting the soft silts, clays, or loose sands present. The gravel or stone backfill is compacted into the hole to create stone columns. The backfill is pushed laterally by the probe into the formation which reduces compressibility potential, and improves shear strength and bearing capacity. Stone columns at the proposed site may be 35 to 70 feet deep and spaced about 8 to 12 feet apart on centers. A field load test using 2 to 3 stone columns would have to be performed to establish the proper foundation design criteria and settlement analyses. Conventional strip and pad shallow foundations could be used to support the structures over a properly designed and installed improved soil/stone column system. The vibroreplacement and stone column technique should only be installed by qualified specialty foundation contractors.

Piling Option. The geotechnical subconsultant believes that pilings would need to be driven at least 80 to 100 feet below ground surface and into the sandstone layer (stratum 7). Deeper test borings, NX-diamond coring and strength testing of the sandstone formation would be needed to evaluate the deep piling foundation option. Piling foundations that could be considered include square prestressed, precast concrete piles, closed or open-ended concrete filled steel pipe piles; steel H-piles; and cast-in-place (such as auger cast) piles.

In light of this information, it is likely that the County will direct the selected vendor to incorporate a friction piling foundation system for facility design and construction. No problems with total or differential settlement have been observed.

2.3.2 GROUNDWATER HYDROLOGY

The subsections under this topic summarize regional and site-specific data on the water table aquifer, the upper Hawthorn confining unit, the sandstone aquifer, and water quality as described in the original application.

Water Table Aquifer

The near surface hydrogeology is characterized by a close interrelationship between surface water and groundwater in the water table aquifer. The wetlands on-site are formed by overland flow of surface water in sloughs during rainy periods, and by groundwater discharge when the water table elevation is higher than the ground surface elevation in the wetlands. The seasonal

groundwater elevations may vary on the order of three feet (USDA, 1984). The Lee County Water Resources Management Project (JMM, 1988) included maps of the dry and wet season water elevations for major aquifers. See Figures 2-13a and 2-13b. The difference between the wet and dry season water level elevations near the proposed site is about two feet (from about 16 feet NGVD during the wet season to 14 feet NGVD during the dry season). The regional groundwater flow gradient at the site is northward toward the Caloosahatchee River. The hydraulic gradient in the vicinity of the site is about 0.001 feet/foot.

The site-specific groundwater elevation data collected during the geotechnical investigation are higher than the regional data, and indicate that there is an overall southeasterly flow direction on-site. The on-site groundwater elevations measured during the field geotechnical investigation ranged from 17.2 to 19.2 feet NGVD. These data are summarized in Table 2-24. The wells are relatively closely spaced, and the water level data probably reflect local effects that are not evident in regional flow. The regional gradient should govern in cases of evaluating groundwater impacts.

It should also be noted that the groundwater data may not have been measured all in one day during the geotechnical investigation so that the information may not reflect similar hydrologic conditions at each boring location. However, there were no rainfall events during the field work.

The water table aquifer, based on the site borings, is about 17- to 25-feet thick (if the transitional stratum 3 is included with the aquifer material). Reviews of regional data report that the water table aquifer thickness near the site ranges from less than 25 feet (SFWMD, 1982) to between 20 and 30 feet (JMM, 1988). An overall aquifer thickness for the proposed site, that can be used for estimation, is 20 feet.

The hydraulic transmissivity of the water table aquifer may be about 80,000 gallons per day/foot (gpd/ft) (JMM, 1988), which, for a 20-to-30-foot thick aquifer, equates to a value of hydraulic conductivity of about 400 to 550 feet/day. The proposed site lies within an area where the hydraulic conductivity of the water table aquifer was estimated to be about 900 feet/day in a County-wide modeling study (CDM, 1987). The specific yield of the water table aquifer is probably between 0.12 to 0.14 (unitless) (JMM, 1988). Other values for aquifer transmissivity and specific yield within four miles south of in the site area have been given as 150,000 gpd/ft and 0.15 (unitless) (Westinghouse Gateway Communities, 1984).

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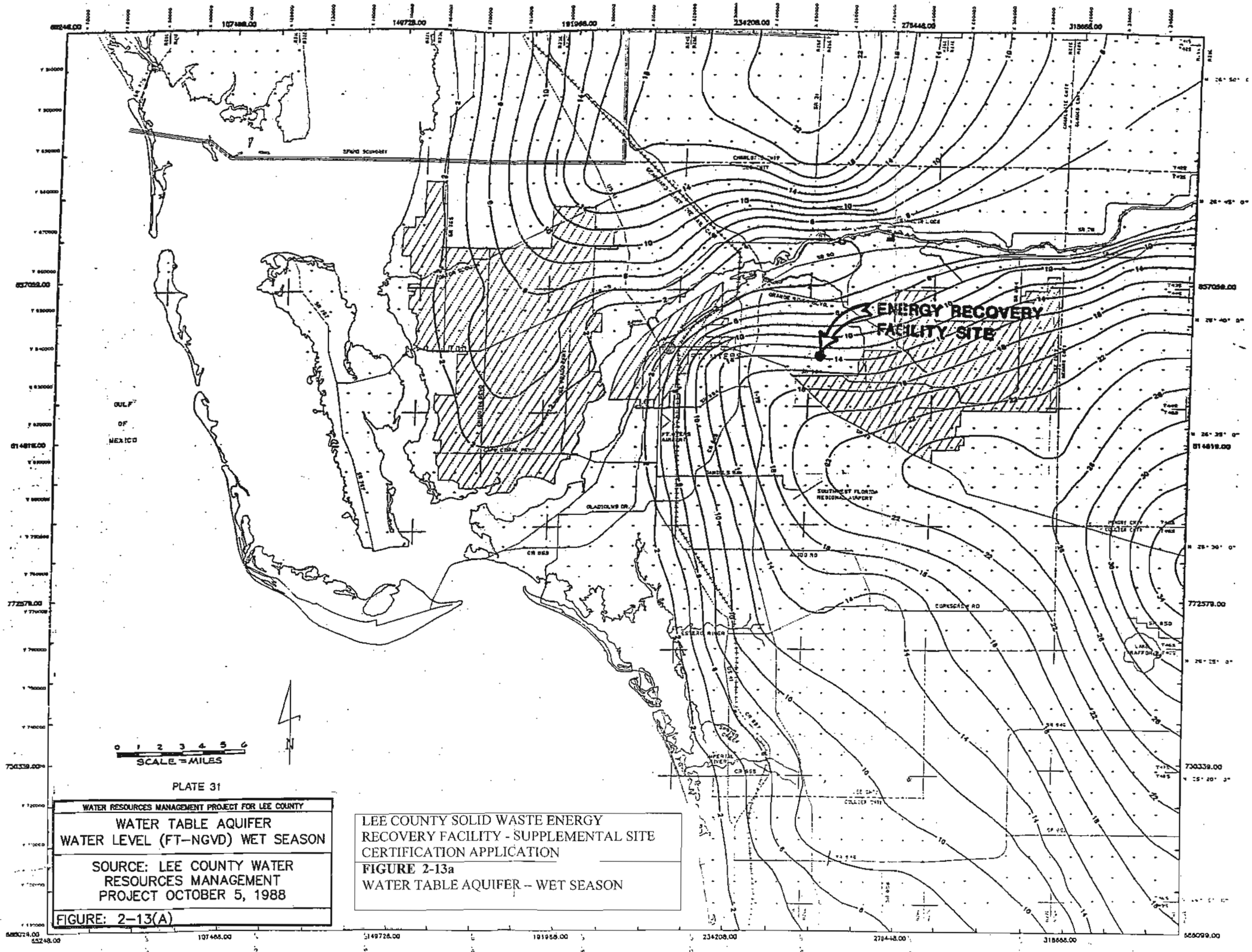

PLATE 31

WATER RESOURCES MANAGEMENT PROJECT FOR LEE COUNTY

WATER TABLE AQUIFER
WATER LEVEL (FT–NGVD) WET SEASON

SOURCE: LEE COUNTY WATER RESOURCES MANAGEMENT PROJECT OCTOBER 5, 1988

FIGURE: 2–13(A)

LEE COUNTY SOLID WASTE ENERGY RECOVERY FACILITY - SUPPLEMENTAL SITE CERTIFICATION APPLICATION

FIGURE 2-13a
WATER TABLE AQUIFER – WET SEASON

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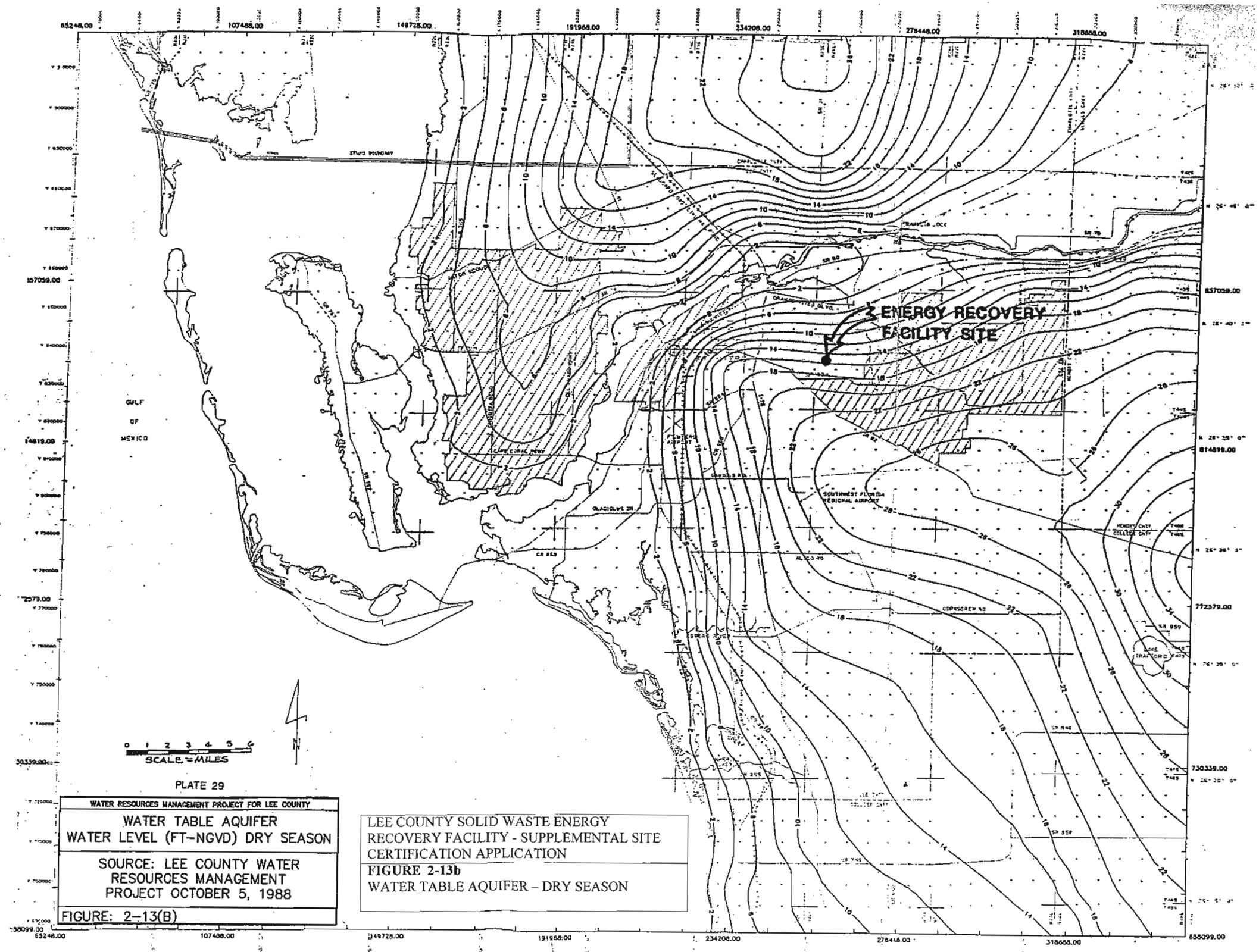


PLATE 29

WATER RESOURCES MANAGEMENT PROJECT FOR LEE COUNTY
WATER TABLE AQUIFER WATER LEVEL (FT–NGVD) DRY SEASON
SOURCE: LEE COUNTY WATER RESOURCES MANAGEMENT PROJECT OCTOBER 5, 1988
FIGURE: 2–13(B)

LEE COUNTY SOLID WASTE ENERGY RECOVERY FACILITY - SUPPLEMENTAL SITE CERTIFICATION APPLICATION

FIGURE 2-13b
WATER TABLE AQUIFER – DRY SEASON

The water table aquifer is used as a public water supply and agricultural irrigation aquifer. The public water supplies closest to the proposed site that are permitted to withdraw from the water table aquifer are the Gulf Utilities Green Meadows well field located about eight to ten miles southeast of this site, and the proposed Westinghouse Gateway well field about four miles southeast of the site.

TABLE 2-24

ON-SITE GROUNDWATER ELEVATION DATA

BORING	GROUND SURFACE ELEVATION (feet NGVD)	DEPTH TO GROUNDWATER (feet)	ELEVATION OF GROUNDWATER (feet NGVD)
B-1	21.2	3.5	17.7
B-2	21.2	4	17.2
B-3	21.2	2	19.2
B-4	21.4	3	18.4
B-5	21.3	3.5	17.8

SOURCE: Lee County Application for Power Plant Certification, June 1990.
NOTE: Depth to groundwater measured during field work on April 4 to 6, 1990.

Upper Hawthorn Confining Unit

The thickness of the confining unit in the vicinity of the site is about 50 feet (SFWMD, 1982). The on-site borings indicate that the confining unit composed of stratum 4 ranges in thickness from about three to eight feet. However, it is likely that at least portions of strata 5 and 6 are part of the confining unit and when they are included, the thickness ranges from about 42 feet in boring B-3 to about 52 to 58 feet in boring B-5.

The upper Hawthorn confining unit does allow some groundwater to be transmitted through the formation, but the water travels at a much slower rate. Groundwater moves through the confining unit when there is a hydraulic gradient across the layer, and it is typically assumed that the water flow is vertical. The assumption of vertical flow through the confining unit is a reasonable one, plus it simplifies the mathematics describing the interrelationship of adjacent aquifers. The vertical flow, or potential for flow, through an aquitard (confining unit) is often expressed in terms of a leakance value. In the vicinity of the site, this value is about 0.003 gpd/ft^3 (JMM, 1988). This value is not significant by itself, but can be used in equations of flow for the aquifer system. Another value for leakance within four miles south of the site area has been given as 0.001 gpd/ft^3 (Westinghouse Gateway Communities, 1984). The vertical hydraulic conductivity of the confining unit is on the order of 0.0005 feet/day (CDM, 1987).

Sandstone Aquifer

The sandstone aquifer is a confined aquifer. It is recharged from the overlying water table aquifer and from upgradient areas within the formation. The groundwater potentiometric head in the sandstone aquifer below the site ranges from about 18.5 feet NGVD during the wet season to 14.5 feet NGVD during the dry season (JMM, 1988). These elevations are slightly higher than the water table elevations (2.5 feet and 0.5 feet) which indicates there is an upward hydraulic flow gradient through the upper Hawthorn confining unit during the wet season and maybe during the dry season also.

The groundwater flow direction in the sandstone aquifer below the site is generally to the north-northwest (JMM, 1988). The hydraulic gradient in the vicinity ranges from about 0.0002 to 0.0003 feet/foot during the dry season to 0.0002 feet/foot during the wet season. The thickness of the sandstone aquifer in the vicinity of the proposed site is between 25 and 50 feet (SFWMD, 1982), or between 40 and 60 feet (JMM, 1988). For estimation purposes, it would be reasonable to assume that the thickness of the sandstone aquifer is 50 feet at the site. None of the on-site borings were designed to penetrate the entire thickness of the sandstone aquifer so they cannot be used to confirm the sandstone aquifer thickness.

The hydraulic transmissivity of the sandstone aquifer is about 10,000 gpd/ft (JMM, 1988), which for a 50-foot thick aquifer, equates to a value of hydraulic conductivity of about 30 feet/day. The proposed site lies in an area where the hydraulic conductivity of the sandstone aquifer was estimated to be about 50 feet/day in a county-wide modeling study (CDM, 1987). The coefficient of storativity ranges between 0.00024 and 0.00036 (unitless) (JMM, 1988). Another value for aquifer transmissivity within four miles south of the site area has been given as 20,000 gpd/ft (Westinghouse Gateway Communities, 1984).

The sandstone aquifer is used as a public water supply and agricultural irrigation aquifer. The public water supplies closest to the proposed site that are permitted to withdraw from the sandstone aquifer are the Lehigh Acres well field, located about eight to ten miles east and southeast of the site, Gulf Utilities Green Meadows well field, about eight to ten miles southeast of the site, and the proposed Westinghouse Gateway well field, about four miles southeast of the site.

A map that shows locations of permitted groundwater withdrawals (greater than 500,000 gallons/month) within a five-mile radius of the Facility site is provided as Figure 2-14. A groundwater well inventory lists the wells that have consumptive use permits (included in Volume II, Appendix 9.1) and the smaller wells not permitted by SFWMD (Volume II, Appendix 9.2).

Water Quality

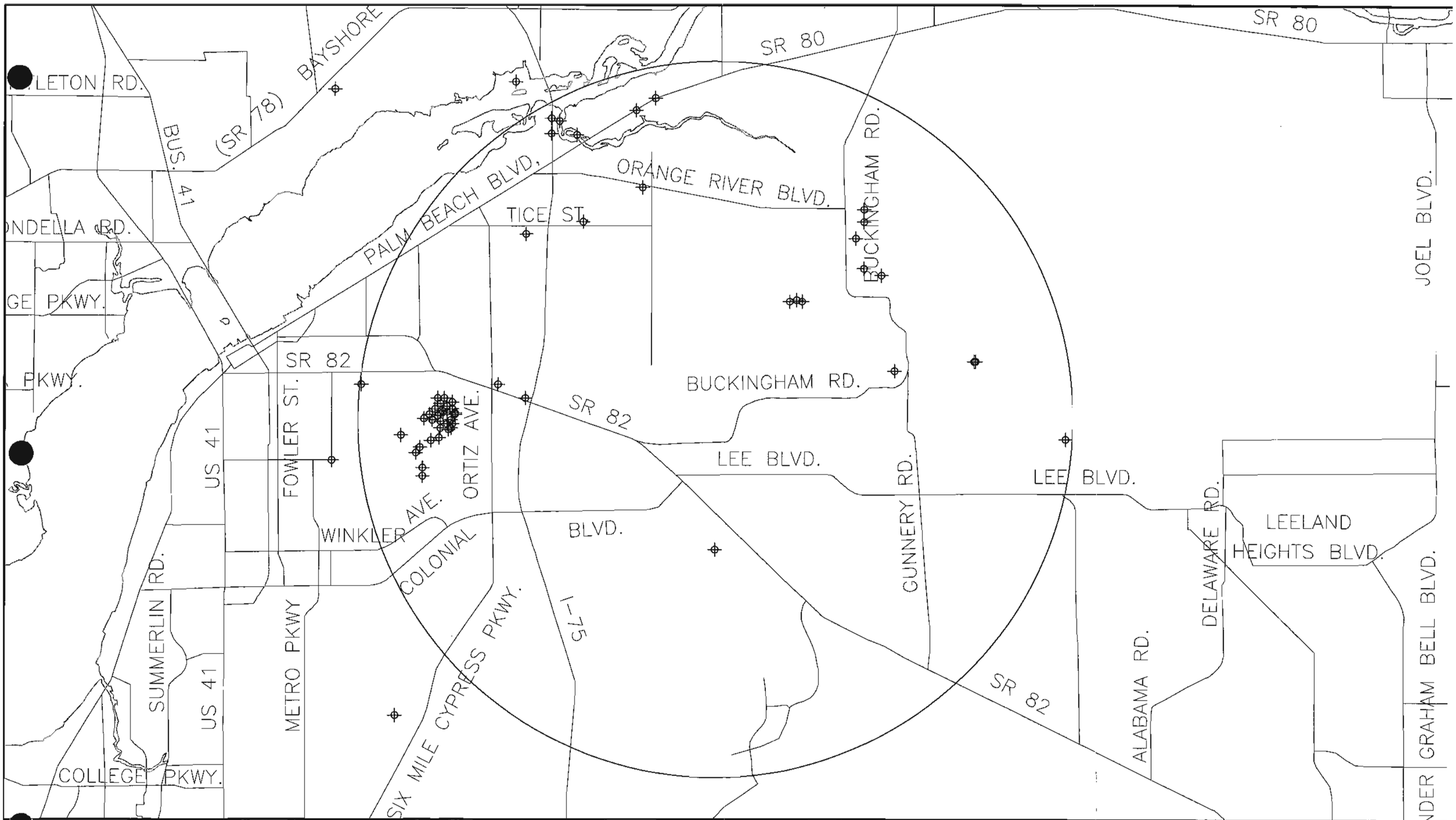
There are several USGS-monitored groundwater quality monitor wells located near the proposed site (Boggess and Watkins, 1986). Some of the closest monitor wells include:

Well No.	Open Depth	Unit Monitored	Approximate Distance from Site
L-234	70 to 100 feet	Sandstone Aquifer	1 mile west
L-1981	75 to 106 feet	Sandstone Aquifer	1/2 mile east
L-728	30 to 32 feet	Water Table Aquifer	1/2 mile south

Water levels and water samples from these wells are collected periodically. A water sample for chemical analysis was collected from monitoring well L-1981 in 1976. The results of the laboratory analyses are included in Table 2-25 along with general water quality ranges for the water table and sandstone aquifers.

Additional monitoring wells have been installed to monitor the abandoned landfill located southeast of the site. A USGS-sponsored study was performed to evaluate the impact the landfill had had on groundwater quality (Boggess, 1975). The County continues to monitor groundwater quality in monitoring wells installed around the abandoned landfill.

The geologic deposits that make up the aquifer system in southwest Florida, principally limestone, dolomite and carbonate materials, contribute dissolved solids to the groundwater. The dissolved solids in the sandstone aquifer range from about 236 to 2,360 mg/I in the eastern part of the County (Boggess and Watkins, 1986). Concentrations of total dissolved solids greater than 800 mg/I are considered to be an indication of saltwater contamination, possibly from underlying aquifers of brackish water. Concentrations of chloride usually range between 26 and 100 mg/I (Boggess and Watkins, 1986). Saltwater from the Caloosahatchee River and underlying brackish aquifers can influence local chloride concentrations.



MALCOLM PIRNIE

REVISIONS				DES	
NO.	BY	DATE	REMARKS	DWN	CKD
				CKD	

LEE COUNTY
DEPARTMENT OF SOLID WASTE MANAGEMENT
RESOURCE RECOVERY FACILITY EXPANSION
FORT MYERS, FLORIDA

FIGURE 2-14
PERMITTED WELLS WITHIN
A FIVE-MILE RADIUS

DATE 05-10-2002

SHEET 1 OF 1

CAD REF. NO. 1971028

TABLE 2-25
SUMMARY OF GROUNDWATER QUALITY DATA

Parameters	Water Table and Lower Tamiami Aquifer[a]	Sandstone Aquifer	Well L-1981[b]
Primary Drinking Water[c]			
Arsenic	0 to 0.001	0 to 0.001	NM[d]
Cadmium	0 to 0.002	0 to 0.002	NM
Chromium	0	0 to 0.001	NM
Lead	0.003 to 0.016	0 to 0.0022	NM
Mercury	0	0 to 0.005	NM
Sodium	20 to 100	26 to 520	100
Secondary Drinking Water			
Chloride	26 to 120	45 to 1,000	180
Copper	0 to 0.001	0 to 0.002	NM
Iron	0.01 to 0.21	0.01 to 0.74	0.08
Manganese	0	0 to 0.017	NM
Sulfate	5 to 71	2.0 to 410	82
Zinc	0.006 to 0.010	0 to 0.020	NM
Color (Pt-Co units)	10 to 100	0 to 8.6	10
pH	7.0 to 8.4	6.9 to 8.6	7.2
Total Dissolved Solids	137 to 570	328 to 2,350	785
Others			
Silica			33
Calcium			100
Magnesium			32
Strontium			1.0
Potassium			8
Flouride			0.5
Bicarbonate			344
Alkalinity (as $CaCO_3$)			282
Hardness as $CaCO_3$: Calcium/Magnesium			380
Hardness as $CaCO_3$: Noncarbonate			98

Source: Volume I Application for Power Plant Certification

[a] The lower Tamiami aquifer is not present near the proposed site but the source document did not distinguish the lower Tamiami aquifer as being separate from the water table aquifer.

[b] Samples collected for well L-1981 on April 6, 1976.

[c] Concentrations of Barium, Nitrate, Selenium and Silver were analyzed or not reported so these parameters are deleted from the table.

[d] NM means not analyzed (measured)

2.3.3 SITE WATER BUDGET AND AREA USES

The general hydrologic conditions of the Facility site reported in the original application are included in Table 2-26. This table contains information on rainfall, temperature, estimated evapotranspiration, groundwater recharge, and surface runoff.

TABLE 2-26

HYRDROLOGICAL DATA REPRESENTATIVE OF THE PROJECT SITE LEE COUNTY ENERGY RECOVERY FACILITY

Month	Monthly Mean Participation Fort Myers (Inches)	Monthly Mean Temperature (Degrees)[a]	Monthly Mean Percentage of Daylight Hours	Monthly Evaporation Potential (Inches) [b]	Runoff in/Month Groundwater 0.25 In/Month [c]	Potential at stated Recharge 0.56 In/Month [c]
January	1.90	64.32	7.46	1.03	0.62	0.31
February	2.16	65.36	7.11	1.59	0.32	0.01
March	2.21	68.62	8.38	2.91	0.00	0.00
April	2.37	73.07	8.65	4.20	0.00	0.00
May	3.90	77.34	9.40	5.81	0.00	0.00
June	9.09	80.60	9.32	6.57	2.27	1.96
July	8.47	81.99	9.52	6.64	1.58	1.27
August	8.00	82.41	9.13	5.94	1.81	1.50
September	8.13	81.15	8.32	4.64	3.24	2.93
October	3.88	76.26	8.05	3.33	0.30	0.00
November	1.37	69.44	7.33	1.94	0.00	0.00
December	1.51	65.50	7.34	1.18	0.08	0.00
	52.99 (inch/year)	73.84 (annual mean)			10.21 (inch/year)	7.97 (inch/year)

Source: Volume I of Application for Power Plant Certification

(a) Climatological data is based on the data provided for the Fort Myers Weather Station included in the South Florida Water Management District's Management of Water Use Permit Information Manual. The weather station is reported as having 98 years of recorded data (SFWMD, 1985)

(b) The evapotranspiration potential was estimated using the Modified Blaney-Criddle Equation.

(c) The soils data is based on the SCS Soil Survey of Lee County, Florida. Two groundwater recharge rates, 0.25 and 0.56 inch/month are assumed based on available soils data to present minimum and maximum runoff scenarios.

In Table 2-26, the evaporation potential and the groundwater recharge potential are subtracted from the average monthly precipitation, resulting in estimates of runoff in the last two columns. Runoff quantities are presented for groundwater recharge rates of 0.25 and 0.56 inches per month. This table also indicates that, under average conditions, the maximum runoff will likely occur June through September. Although runoff may occur throughout the year depending upon the current climatic conditions, information presented in Table 2-26 indicates the average annual runoff from the site to be in the range of 7.97 to 10.21 inches.

Major water users in the area may be categorized as domestic, industrial, irrigation, and public water supply. A database search was performed of the SFWMD records for all permitted wells greater than 500,000 gpd capacity within a five-mile radius of the Facility site and the results are provided in Volume II, Appendix 9.1. Volume II, Appendix 9.2 contains data provided by the Lee County Health Department for smaller wells located within the one-mile radius of the Facility.

2.3.4 SURFICIAL HYDROLOGY

Hydrologic Characterization

The Facility's existing stormwater ponds and control structures are sufficient to manage the additional stormwater runoff that may result from the expansion. Volume II, Appendix 7.6 of this Application contains the revised stormwater calculations for the Facility site. The Facility site has no natural surface water bodies within its boundary. FDEP jurisdictional wetlands are present along the western edge of the site. Vegetation and land use is more fully described in Section 2.3.5. Existing surface water runoff sheet-flows into on-site stormwater ponds or the wetlands. Additional information regarding site wetlands is contained in Volume II, Appendix 8.2, SFWMD Notice of Compliance and Appendix 13.3 Eighth Annual Mitigation Report.

The Six Mile Cypress Slough is classified in the Lee County Comprehensive Plan as an "Environmentally Critical Area" and a "Resource Protection Area." Historic drainage patterns on-site have been altered, in part, by an entrance road, which acts as a drainage basin divide for small rain events. An existing 18-inch diameter culvert, located under the entrance road, connects a small depressional flow-way in the eastern portion of the site to the wetlands in the west. Additional information regarding the Facility site's stormwater and control structures is provided in Volume II, Appendix 7.6 of this Application.

2.3.5 VEGETATION/LAND USE

In the original permit process, land use and vegetation types were studied and identified at the Facility site. In accordance with current regulations, this data must be revisited if it is more than one year old. Since the original information gathering process was performed more than one year ago, a new habitat assessment and vegetative survey was conducted, the results of which are discussed at the end of this section.

In the original PPSA application, seventeen land use and vegetation types were identified on the Facility site. These types had been classified to Levels III and IV of the Florida Land Use and Cover Forms Classification System (FLUCFCS). The vegetation types for the site included farm pasture (210), low pasture (212), palmetto prairie (321), palmetto prairie invaded by exotics (3219), pine flatwoods (411), pine flatwoods invaded by exotics (4119), wet pine flatwoods (415), wet pine flatwoods invaded by exotics (4159), Brazilian pepper (422), mesic oak (425), wax-myrtle (429), Australian pine (437), drainage canal (514), cypress (621), cypress/pine (624), cypress/pine invaded by exotics (6249), and wet prairie (643).

The acreage quantities for the various vegetation types were based upon a Facility site acreage of 154.1 acres as determined by unrectified aerial photographs. The percentage of wetlands was based on the unrectified areal acreage.

The undeveloped site was severely impacted from previous agricultural drainage practices, as well as overgrazing by cattle. As a result of these agricultural practices, most of the habitats on the site were in poor condition. Some of the habitats such as wax-myrtle (429), pine flatwoods (411), and wet pine flatwoods (415) had been logged in the past.

Farm Pasture (210) occupied 51.0 acres or 33.1 percent of the Site. Vegetation of this upland habitat was dominated by pasture grasses that had been severely grazed by cattle. Common species included thin paspalum (Paspalum setaceum), marsh-pinks (Sabatia grandiflora), stinkweeds (Pluchea spp.), and frog-fruit (Lippia nodiflora). Species scattered throughout this habitat included cabbage palm (Sabal palmetto), wax-myrtle (Myrica cerifera), saw palmetto (Serenoa repens), live oak (Quercus virginiana), laurel oak (Quercus laurifolia), slash pine (Pinus elliottii), wiregrass (Aristida spp.), pawpaw (Asimina reticulata), and bluesteiu (Andropogon spp.). This habitat had been severely impacted from overgrazing and drainage practices.

Low Pasture (212) occupied 1.3 acres or 0.8 percent of the property. Vegetation of this habitat was dominated by pasture grasses and wood sorrel (Oxalis spp.). Other common species included coinwort (Centella asiatica), frog-fruit, wax-myrtle, Brazilian pepper (Schinus terebinthifolius), dog fennel (Eupatoriulfl spp.), and scattered small slash pine. This area had been severely impacted by overgrazing as evidenced by the pasture grasses being only at ground level.

Palmetto Prairie (321) occupied 3.8 acres or 2.5 percent of the property. Vegetation of this upland habitat was dominated by saw palmetto from dense thickets more than five feet tall to scattered clumps with an open intermittent ground cover of wiregrass. Common ground cover vegetation consisted of wiregrass, dwarf wax-myrtle, and stinkweed. Scattered species included the problematic Brazilian pepper and melaleuca (Melaleuca quinquenervia). Other scattered species included black-root (Pterocaulon pycnostachytlm), thistle (Cirsium spp.), umbrella-grass (Fuirena spp.), grape (Vitis spp.), greenbriar (Smilax spp.), slash pine, cabbage palm, laurel oak, live oak, and buckthorn (Bumelia reclinata). Golden polypody (Phelebodium aureum), listed as a threatened plant by the Florida Department of Agriculture (Wood, 1989), was found on scattered cabbage palm throughout this habitat.

Palmetto Prairie Invaded by Exotics (3219) occupied 0.3 acres or 0.2 percent of the property. The overstory vegetation of this upland habitat was dominated by saw palmetto and the problematic melaleuca. Common ground cover vegetation species included wiregrass, stinkweed, and dwarf wax-myrtle. Also present were scattered slash pine and tickseed (Coreopsis leavenworthii).

Pine Flatwoods (411) occupied 17.9 acres or 11.6 percent of the property. Vegetation of this upland habitat was dominated by an overstory of slash pine with scattered melaleuca. Midstory species included saw palmetto, melaleuca, wax-myrtle, and scattered cabbage palm, buckthorn, Brazilian pepper, and slash pine. Ground cover species included wiregrass and dwarf wax-myrtle. Scattered ground cover species included heliotrope (Heliotropium polyphyllum), bluestem, stinkweed, black-root, tickseed, dog fennel, grape, Virginia creeper, Black-eyed Susan (Rudbeckia hirta), and thistle. This habitat had been disturbed by logging, grazing, and drainage activities. Several age classes of pine were observed with most of the pine being immature. Very few mature pine were observed in this habitat.

Pine Flatwoods Invaded by Exotics (4119) occupied 2.6 acres or 1.7 percent of the property. The dominant vegetation of the overstory of this upland habitat was slash pine. The midstory was

dominated by Brazilian pepper with scattered cabbage palm and melaleuca. The ground cover was non-existent under the dominant midstory Brazilian pepper, however, where Brazilian pepper was not present, the ground cover was dominated by wiregrass.

Wet Pine Flatwoods (415) occupied 4.7 acres or 3.0 percent of the property. The overstory of this wetland habitat was dominated by slash pine with a midstory of wax-myrtle, ± 6-foot cypress (Taxodium distichum), scattered Brazilian pepper, and cabbage palm. Ground cover vegetation included wiregrass, coinwort, stinkweed, and scattered yellow-eyed grass (Xyris spp.), rush (Juncus spp.), and Tracyi' s beak rush (Phynchospora tracyi). This wetland habitat had been disturbed by heavy grazing, drainage, and logging activities. Several age classes of pine were observed with most of the pine being immature.

Wet Pine Flatwoods Invaded by Exotics (4159) occupied 3.1 acres or 2.0 percent of the property. Dominant vegetation of the overstory included slash pine and melaleuca. Midstory species included ± 6-foot cypress, melaleuca, Brazilian pepper, cabbage palm, wax-myrtle, and slash pine. Ground cover species included wiregrass, dwarf wax-myrtle, scattered small pine, heliotrope, stinkweed, grape, Tracyi's beakrush, rushes, and yellow-eyed grass. This wetland habitat had been heavily disturbed by grazing, drainage, and logging activities. Some areas of this habitat were heavily infested by the problematic melaleuca and Brazilian pepper as a result of excessive agricultural practices. Several age classes of pine were observed with most of the pine being immature. A very small percentage of the pine observed in this area was mature.

Brazilian Pepper (422) occupied 2.9 acres or 1.9 percent of the property. Vegetation of the overstory of this upland habitat was dominated by Brazilian pepper. The ground cover ranged from very little vegetation to scattered vegetation that consisted of stinkweed, different grasses, Boston fern (Nephrolepsis exaltata), coinwort, grape, greenbriar, Virginia creeper, common rag weed (Ambrosia artemisiifolia), thistle, and very small slash pine. This highly disturbed habitat had been impacted by overgrazing and drainage practices.

Mesic Oak (425) occupied 0.7 acres or 0.5 percent of the property. Vegetation of the overstory of this upland habitat was dominated by laurel oak with some scattered live oak. The oaks ranged in height from 15 feet to 30 feet tall. The midstory consisted of widely scattered wax-myrtle and cabbage palm. The ground cover vegetation consisted of wiregrass, stinkweed, coinwort, yellow-eyed grass, and Boston fern. This upland habitat had been impacted by overgrazing and drainage practices.

Wax-myrtle (429) occupied 40.10 acres or 26.0 percent of the property. Dominant overstory vegetation of this upland habitat included wax-myrtle, Brazilian pepper, scattered cabbage palm, and slash pine. A few scattered laurel and live oak also made up the overstory of this habitat. Midstory vegetation included wax-myrtle, saw palmetto, scattered cabbage palm, and melaleuca. A wide variety of ground cover vegetation existed in this habitat. Species included wiregrass, stinkweed, greenbriar, grape, Virginia creeper, coinwort, pepper-vine (Ampelopsis arborea), black-root, yellow-eyed grass, aster (Aster spp.), tickseed, frog-fruit, purple thistle (Cirsium horridulum), dog fennel, hat pin (Eriocaulon spp.), bluestem, Boston fern, common rag weed, beauty-berry (Callicarpa americana), lantana (Lantana spp.), and poison ivy (Toxicodendron radicans). This highly disturbed habitat had been severely impacted by overgrazing, drainage practices, and logging.

Australian Pine (437) occupied 0.8 acres or 0.5 percent of the property. Vegetation of the overstory of this upland habitat was dominated by Australian pine (Casuarina litorea). No midstory or ground cover species existed. The Australian pine were approximately 40 to 50 feet tall.

Drainage Canal (514) occupied 0.6 acres or 0.4 percent of the property. This wetland habitat contained no standing water and was vegetated by coinwort and various grasses. The drainage canal habitat had been impacted by overgrazing and lack of water.

Cypress (621) occupied approximately 13.7 acres or 8.9 percent of the property. Dominant overstory vegetation included cypress. Midstory species included wax-myrtle, cypress, cabbage palm, myrsine (Myrsine quianensis), and the problematic melaleuca and Brazilian pepper. Ground cover vegetation included smartweed, southern blue flag (Iris virginica), swamp fern (Blechnum serrulatum), dwarf arrowhead (Sagittaria subulata), panicum (Pani'cum spp.), thistle, groundsel (Senecio glabellus), and mock bishop's weed (Ptilininium capillaceum). This wetland habitat had been severely impacted from overgrazing and drainage practices.

Cypress/Pine (624) occupied 2.8 acres or 1.8 percent of the property. Dominant overstory vegetation included cypress and slash pine. Midstory vegetation consisted of wax-myrtle, cabbage palm, myrsine, and scattered problematic Brazilian pepper and melaleuca. Ground cover vegetation included swamp fern, wiregrass, yellow-eyed grass, rush, ludwigia (Ludwigia spp.), thistle, stinkweed, coinwort, Virginia creeper, and scattered sawgrass (Cladium jamaicense). This wetland habitat had been severely impacted by cattle grazing, logging, and drainage activities.

Cypress/Pine Invaded by Exotics (6249) occupied 3.2 acres or 2.1 percent of the property. Dominant overstory vegetation included cypress, slash pine, and melaleuca. Midstory vegetation included cypress, slash pine, the problematic melaleuca and Brazilian pepper, wax-myrtle, scattered cabbage palm and myrsine. Ground cover vegetation included small slash pine, frog-fruit, panicum, tickseed, bluestem, wood sorrel, dog fennel, wiregrass, stinkweed, scattered swamp fern, yellow-eyed grass, rush, and ludwigia. This wetland habitat had been impacted by drainage practices.

Wet Prairie (643) occupied 4.6 acres or 3.0 percent of the property. Dominant overstory vegetation included wax-myrtle and sand cordgrass (Spartina bakeri). Common ground cover vegetation included wiregrass, stinkweed, yellow-eyed grass, milkwort (Polygala spp.), rush, different sedges, and tickseed. Vegetation scattered throughout this wetland habitat was saw palmetto, cabbage palm, slash pine, heliotrope, frog-fruit, coinwort, umbrella-grass marsh-pinks, small cypress, and bitter mint (Hyptis alata). The problematic melaleuca and Brazilian pepper were also present throughout this wetland habitat. This habitat had been impacted by cattle grazing and drainage activities.

In summary, eight of the 17 vegetation types were wetland habitats. Wetland vegetation types included low pasture (212), wet pine flatwoods (415), wet pine flatwoods invaded by exotics (4159), drainage canal (514), cypress (621), cypress/pine (624), cypress/pine invaded by exotics (6249), and wet prairie (643). The total of these wetland vegetation types equaled 34.0 acres or 22.0 percent of the property. The remainder of the property was upland habitat, which included 120.1 acres or 78.0 percent of the property. The ecological value of all the wetlands and uplands on site had been greatly reduced by farm practices, such as cattle grazing, logging, and drainage practices. These impacts had been compounded by the infestation of the problematic exotics melaleuca and Brazilian pepper. The vegetation types that had particularly been impacted by these exotics are palmetto prairie, pine flatwoods, wet pine flatwoods, and cypress/pine.

As stated above, a new habitat assessment and vegetative survey was conducted in February 2002 to determine the current conditions on the site. The survey was conducted during the low water time of year, and the site was completely accessible except for the middle of the cypress domes, which had approximately one to two feet of water. As before, the property was found to be predominantly upland scrub with multiple large wetland habitats. The upland areas consisted of Industrial, Mixed Rangeland, Utilities, and Upland Coniferous Forests. The wetland habitats included small Reservoirs, Vegetated Non-Forested Wetlands, Wetland Coniferous Forests, and Wetland Hardwood Forests.

There were no changes to the plant species list for the Facility site, and those protected plant species observed on site were still present and looked healthy (e.g., Golden Polypoid). In addition, the restored wetlands were in good condition. See Volume II, Appendix 13.3, Eighth Annual Wetland Mitigation Report. Volume II, Appendix 8.2 contains the SFWMD August 20, 2002 Notice of Final Compliance indicating that all SFWMD requirements for wetlands have been satisfied. The results of the new habitat survey are shown in Figure 2-15.

2.3.6 ECOLOGY

In October 2001, Malcolm Pirnie conducted a field survey of the Facility site for rare species. The survey was conducted to ensure that no rare species inhabit the area to be used for the proposed expansion of the Facility. Although this expansion will be contained in the fenced area of the site, adjacent to the existing facility, the survey was conducted on the majority (i.e. accessible) of the entire site. The field survey was conducted along linear survey lines, except within the fenced area where 100 percent of the area was surveyed. The area outside the fence was inundated and thus some of this area was inaccessible at the time of the survey. Wildlife sightings were noted from the survey, but none of these were within the area proposed for the expansion. Table 2-27 below provides a list of the notable wildlife sighted on or adjacent to the site. Figure 2-16 provides the approximate location of the wildlife observed.

TABLE 2-27
WILDLIFE SURVEY RESULTS OCTOBER 2001
(Species protected by law or that pose safety risk)

Name	Genus/Species	Status
Wood Stork	Mycteria Americana	Federally Endangered
Florida Sandhill Crane	Grus Canadensis pratensis	Federally Threatened (off-site)
Bald Eagle	Haliaeetus leucocephalus	Federally Threatened (off-site)
American Alligator	Alligator mississippiensis	Florida Species of Special Concern
Feral Pig	Sus serofa	Game Animal
Wild Turkey	Melagris gallopavo	Game Animal
Mourning Dove	Zenaida macroura	Game Animal

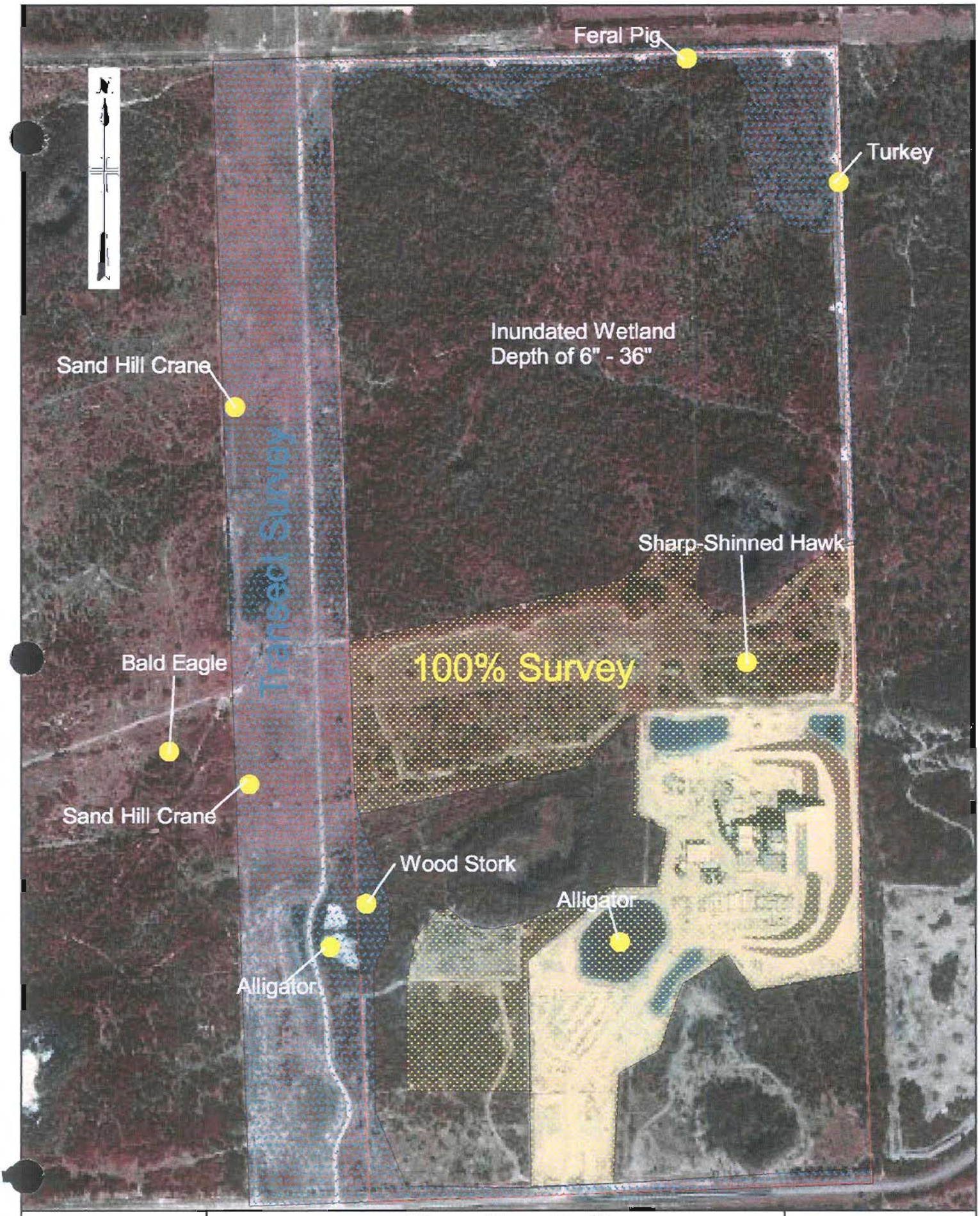
MALCOLM PIRNIE

Waste to Energy Facility
Lee County, Florida

Habitat Survey Results

March 2002

Figure 2 - 15



MALCOLM PIRNIE	Waste to Energy Facility Lee County, Florida **Wildlife Survey Results**	October 2001 Figure 2 - 16

Table 2-28 lists the wildlife species observed or expected to occur within the project boundary as discussed in the original application. The wildlife list sequence is in phylogenetic order from the animals that evolved first to the more complex and advanced animals. This list includes fish, amphibians, reptiles, birds, and mammals. Wildlife species listed as "observed" were observed by direct sighting of the animal or their sign, such as tracks, feces, vocalizations, burrow spoils, snake skins, etc. Wildlife species listed as "expected" were based on distribution maps or range charts and habitat types found on the property. Wildlife species were also identified as species of special concern, threatened, or endangered as listed by the U.S. Fish and Wildlife Service (USFWS) or Florida Game and Fresh Water Fish Commission (FGFWFC) (Wood, 1989). Other important species, such as those listed as game, fur bearers, or freshwater game fish in Florida Administrative Code Rule 39-1, are discussed in the text below.

During the initial survey conducted before the facility was built, a total of 126 wildlife species were listed for the site, of which only 39 species or 31.0 percent of the total list were observed on the site. This is extremely low when one considers the variety of habitats and was most likely due to the poor condition of the habitats on the site caused by previous overgrazing by cattle, logging, and drainage practices. Furthermore, the wetlands on the site, such as the cypress habitats, were dry due to the existing drought conditions and the dry season during the time of wildlife surveys. There were moderate numbers of game birds such as wild turkey (Melagris gallopavo), mourning dove (Zenaida macroura), and northern bobwhite (Colinus virginianus). These game birds were observed on or adjacent to the site along the north-south power line easement.

TABLE 2-28
WILDLIFE OBSERVED OR EXPECTED TO OCCUR ON THE FACILITY SITE

Scientific Name	Common Name
Fish	
Lepisostes platyrhincus	Florida Gar[b]
Jordanella floridae	Flagfish
Gambusia affinis	Mosquitofish[b]
Amphibians	
Bufo quercicus	Oak toad
Bufo terrestris	Southern toad
Acris gryllus dorsalis	Southern cricket frog
Pseudacris nigrita verrucosa	Southern chorus frog
Hyla cinerea cinerea	Green tree frog
Rana areolata aesophus	Gopher frog[f]
Ran sphenocephala	Southern leopard frog
Reptiles	
Terrapene Carolina	Eastern box turtle
Gopherus polyphemus	Gohper tortoise
Eumeces egregious onocrepis	Mole skink
Anolis carlinensis	Green anole
Thamnophis sauritis sackeni	Eastern ribbon snake
Thamnophis sirtalis sirtalis	Eastern garter snake
Diadophis punctatus punctatus	Eastern ringneck snake[b]
Heterodon platyrhinos	Eastern hognose snake
Elaphe guttata guttata	Corn snake
Elaphe obsolete quadirvittata	Rat snake

TABLE 2-28 (CONT'D)
WILDLIFE OBSERVED OR EXPECTED TO OCCUR ON THE FACILITY SITE

Scientific Name	Common Name
Opheodrys aestivus	Rough green snake
Drymarchon corais couperi	Eastern indigo snake
Coluber constrictor priapus	Southern black racer
Masticophis flagellum flagellum	Eastern coachship snake
Sistrurus miliarius	Pigmy rattlesnake
Crotalus adamanteus	Eastern diamondback
Rattlesnake	
Birds	
Podilymbus podiceps	Pied-billed grebe
Anhinga anhinga	Anhinga
Nycticorax nycticorax	Black-crowned night heron
Butorides striatus	Green-backed heron[b]
Egretta tricolor	Tricolored heron[b,d]
Egretta caerulea	Little blue heron[b,d]
Bubulcus ibis	Cattle egret[b]
Egretta thula	Snowy egret[b,d]
Caserodius albus	Great egret[b]
Ardea herodias	Great blue heron[b]
Mycteria Americana	Wood stork[g,h]
Grus Canadensis preatensis	Florida sandhill crane
Anas platyrhynchos	Mallard[v]
Anas strepera	Gadwall[c]
Anas crecca	Green-winged teal[c]
Anas discors	Blue-winged teal[c]
Aix Sponsa	Wood duck
Lophodytes cucullatus	Hooded merganser
Aramus guarana	Limpkin

TABLE 2-28 (CONT'D)
WILDLIFE OBSERVED OR EXPECTED TO OCCUR ON THE FACILITY SITE

Scientific Name	Common Name
Gallinula choropus	Common moorhen
Charadrius vociferous	Killdeer
Gallinago gallinago	Common snipe[c]
Cathartes aura	Turkey vulture
Coragyps atratus	Black vulture
Haliaeetus leucocephalus	Bald eagle[f,g]
Elanoides forficatus	American swallow-tailed kite[b,c]
Rostrhamus isoclabilis	Snail kite[g,h]
Circus cyaneus	Northern harrier[c]
Accipiter striatus	Sharp-shinned hawk[c]
Accipter cooperli	Cooper's hawl
Buteo lineatus	Red-shouldered hawk
Buteo jamaicensis	Red-tailed hawk
Pandion haliaetus	Osprey
Polyborus plancus audubonii	Audobon's crested caracara
Falco sparverius	American kestrel
Colinus virginianus	Northern bobwhite[b]
Meleagris gallopavo	Wild turkey[b]
Zenaida macroura	Mourning dove
Columbina passerina	Common ground-dove
Bubo virginianus	Great horned owl
Strix varia	Barred owl
Otus asio	Eastern screach-owl
Caprimulgus carolinensis	Chuck-will's-widow[b]
Chordeiles minor	Common nighthawk[b,c]
Ceryle alcyon	Belted kindfisher
Melanerpes carolinus	Red-bellied woodpecker[b]
Colaptes auratus	Northern flicker[b]
Sphyrapicus varius	Yellow-bellied sapsucker[c]

TABLE 2-28 (CONT'D)
WILDLIFE OBSERVED OR EXPECTED TO OCCUR ON THE FACILITY SITE

Scientific Name	Common Name
Picoides pubescens	Downy woodpecker
Dryocopus pileatus	Pileated woodpecker[b]
Tyrannus dominicensis	Grey kindbird[c]
Myiarchus crinitus	Great crested flycatcher[b,c]
Tachycineta bicolor	Tree swallow[c]
Cyanocitta cristata	Blue jay
Corvus brachyrhynchos	American crow
Corvus ossifragus	Fish crow[b]
Parus bicolor	Tufted titmouse
Thryothorus ludovicianus	Carolina wren
Polioptila caerulea	Blue-gray gnatcatcher
Sialia sialis	Eastern bluebird
Turdus migratorius	American robin[c]
Lanius ludovicianus	Loggerhead shrike
Dumetella carolinensis	Gray catbird[b,c]
Mimus polyglottos	Northern mockingbird[b]
Toxostoma rufum	Brown thrasher
Bombycilla cedrorum	Cedar waxwing[c]
Sturnus vulgaris	European starling[b]
Vireo griseus	White-eyed vireo[b]
Dendroica coronata	Yellow-rumped warbler[b,c]
Dendroica pinus	Pine warbler
Dendroica discolor	Prairie warbler
Dendroica palmarum	Palm warbler[c]
Geothlypis trichas	Common yellowthroat
Setophaga ruticilla	American redstart[b,c]
Cardinalis cardinalis	Norhtern cardinal[b]
Pipilo erythrophthalmus	Rufous-sided towhee[b]
Zonotrichia albicollis	White-throated sparrow[c]
Sturnella magna	Eastern meadowlark[b]

TABLE 2-28 (CONT'D)
WILDLIFE OBSERVED OR EXPECTED TO OCCUR ON THE FACILITY SITE

Scientific Name	Common Name
Agelaius phoeniceus	Red-winged blackbird[b]
Quiscalus major	Boat-tailed grackle
Carduelis tristis	American goldfinch[c]
Mammals	
Didelphis marsupialis	Opossum
Dasypus novemcinctus	Nine-banded armadillo[b]
Sylvilagus palustris	Marsh rabbit
Sciurus niger avicennia	Big cypress fox squirrel[b,f]
Sciurus niger shermani	Sherman's fox squirrel[d]
Oryzomys palustris	Rice rat
Reithrodontomys humulis	Eastern harvest mouse
Peromyscus gossypinus	Cotton mouse
Sigmodon hispidus	Hispid cotton rat
Procyon lotor	Raccoon[b]
Mephitis mephitis	Striped skunk
Felis concolor coryi	Florida panther[g,h]
Lynx rufus	Bobcat
Sus scrofa	Pig
Odocoileus virginianus	White-tailed deer

[a] Based on distribution maps and range charts, as well as habitat types found on the property.
[b] Direct sighting of the animal or their skin (tracts, feces, vocalizations, burrow spoils, snake skins, etc.
[c] Migratory species that possibly could use the site seasonally or on a stop-over basis.
[d] Species of Special concern – Florida Game and Fresh Water Fish Commission (FGFWFC).
[e] Threatened – U.S. Fish and Wildlife Service (USFWS)
[f] Threatened – FGFWFC
[g] Endangered – USFWS
[h] Endangered - FGFWFC

As reported in the original application, important wildlife species observed on the site were limited. Several wildlife surveys were conducted for the purpose of locating listed and other important wildlife species. Only one sighting was made of the tricolored heron (Egretta tricolor), little blue heron (Egretta caerulea), and snowy egret (Egretta thula). All three of these species are listed as species of special concern by the FGFWFC (Wood, 1989). The species of special concern status indicates a species that is not in immediate danger of extinction, but which could eventually become threatened or endangered. The Florida sandhill crane (Grus canadensis pratensis) and wood stork (Mycteria americana) are listed as threatened and endangered, respectively by the FGFWFC. The wood stork is also listed as endangered by the USFWS (Wood, 1989). These species have been observed feeding in suitable habitats within a five-mile radius of the site.

The Florida sandhill crane (Grus Canadensis pratensis) was not observed on site, but were observed in the transmission line easement west of the site.

The wood stork (Mycteria americana) was seen on the site, just east of the transmission line easement as depicted in Figure 2-16. However, no nesting was observed.

The bald eagle (Haliaeetus leucocephalus) is listed as endangered by both the FGFWFC and the USFWS (Wood 1989). It has not been observed on the site, but occasionally has been observed flying over the site (Higginbotham, 1990) or perched west of the site as noted in Figure 2-16. The feeding flight paths from the eagle nests are toward the existing sanitary landfill, away from the Lee County Facility site. The Gulf Coast landfill is several miles to the south of the site.

Audubon's crested caracara (Polyborus plancus audubonii) is listed as threatened by both the FGFWFC and USFWS (Wood, 1989). Four Audubon's crested caracara's were observed within a five-mile radius of the site on February 13, 1990 and old (15 years ago) sitings of these birds were made in the vicinity of Colonial Boulevard when favorable habitat existed (Dryman, 1990). However, this habitat has slowly degraded due to the invasion of melaleuca. The Audubon's crested caracara prefers large cabbage palm and open space habitats. These type of habitats do not exist on the site. There is a large open area to the west associated with the north-south power line easement, and this species could occasionally use this area as a stop-over. However, the Audubon's crested caracara is not expected to use the site and have not been recently observed.

Burrowing owls (Athene cunicularia) are listed as species of special concern by the FGFWFC (Wood, 1990). The Florida scrub jay (Aphelocoma coerulescens coerulescens) is listed as

threatened by the FGFWFC and the USFWS (Wood, 1990). The results of the wildlife survey indicate that burrowing owls and scrub jays do not exist on the site due to the lack of suitable habitat. These species and their favored habitats were not observed on the site.

Red-cockaded woodpeckers (Picoides borealis) are listed as threatened and endangered by the FGFWFC and USFWS, respectively (Wood, 1990). Suitable red-cockaded woodpecker habitat does not exist on the site. The pine flatwood (411) and transitional pine (415) have been heavily logged over the last ± 20 years removing most of the mature pine favored by these birds for nesting, cavities, and foraging. Also, these habitats have been invaded by the problematic melaleuca with many of these trees being greater than 15 feet tall. This also makes these habitats unsuitable for the Red-cockaded woodpecker. Several clans of red-cockaded woodpeckers exist within a five-mile radius of the site, however, due to the lack of suitable habitat on the site for foraging and nesting, the birds will most likely remain to the south of the project site.

The gopher tortoise (Gopherus polyphemus) is listed as a species of special concern by the FGFWFC (Wood, 1989). Habitat for the gopher tortoise does exist on the site; however, surveys for the gopher tortoise revealed no burrows or other signs of the gopher tortoise. Commensal species of the gopher tortoise are the gopher frog (Rana aerolata aesopus) and eastern indigo snake (Drymarchon corais couperi). The gopher frog is listed as a species of special concern by the FGFWFC (Wood, 1990). The eastern indigio snake is listed as threatened by both the FGFWFC and USFWS (Wood, 1990). These two listed species do not occupy the site due to the lack of habitat (i.e., gopher tortoise burrows). Gopher tortoises exist along the Orange and Caloosahatchee River corridors and in the Lehigh Acres area.

The snail kite (Roskhamus sociabilis) is listed as endangered by both FGFWFC and USFWS. Although no snail kites have been observed on site, this species has been observed within a five-mile radius. However, available habitat for this species on-site is small (less than 40 acres and of poor quality).

The big cypress fox squirrel (Sciurus niger avicennia) is listed as threatened by the FGFWFC (Wood, 1990). Two big cypress fox squirrels may have been observed on the site: one in March 1990 and one in April 1990. As previously reported by the FGFWFC (1990), the big cypress fox squirrel is found on the south side of the Caloosahatchee River, while the Sherman's fox squirrel is found on the north side of the Caloosahatchee River. The site is south of the Caloosahatchee River, so the fox squirrels previously observed may be the big cypress fox squirrel. As noted in Figure 2-16, no fox squirrels were found on or adjacent to the site in the Fall of 2001.

The Florida panther (Felis concolor coryi) is listed as endangered by both the FGFWFC and USFWS (Wood 1990). The Florida Game and Freshwater Fish Commission, has previously stated that the site may have been in the travel corridor of a young Florida panther in 1990. Available habitat of pine flatwoods (411) on the site for the Florida panther is small, about 17.9 acres or 11.6 percent of the property, and these areas will not be disturbed by the energy recovery facility location. There is no evidence that the site or surrounding areas have been used or traversed by a panther since 1990.

Observed mammals on this site which can be considered game animals or fur bearers (Julie Hovis, 1990) are the eastern cottontail (Sylvilagus floridanus) and raccoon (Procyon lotor). Other species that may also be found on the site are white-tailed deer (Odocoileus virginianus), pig (Sus serofa), bobcat (Lynx refus), striped skunk (Mephitis mephitis), opossum (Didelphis marsupialis), and marsh rabbit (Sylvilagus palustris).

Species-Environmental Relationships

There are no species present within the boundary of the Facility site that are endemic or unique to this site. The species and habitats on the site are common to the Lee County and southwest Florida areas.

As reported in the original application, based upon an extensive evaluation during various field surveys, the site was heavily impacted by drainage, logging, and cattle grazing, and offered few areas of prime habitat for wildlife. The site had also been invaded by exotic tree species, reducing vegetation diversity and offering few habitat niches for feeding and reproduction. Since 1990, the development of the Facility site has enhanced those areas of the site such as wetlands, buffer areas and stormwater retention. The location of the third unit expansion is adjacent to the existing Facility and will have no impact upon any species habitat.

Pre-Existing Stresses

As reported in the original application, pre-existing environmental stresses within the Lee County Facility site boundary were evident. Prior to Facility construction, the site had been extensively grazed by cattle (i.e. 1970-1990). This grazing activity stressed vegetation and plant communities in the area. Prior to grazing, the site was logged and drained. These logging activities removed the majority of mature pine trees and associated pine habitat, making this area

unsuitable for some species of wildlife, such as the red-cockaded woodpecker (Picoides borealis) which is listed as threatened and endangered by the FGFWFC and USFWS, respectively. Environmental stresses due to drainage were also evident. Changes in the area's hydrology have stressed and reduced areas of wetlands. In addition, exotic plant species, such as Brazilian pepper (Schinus terebinthifolius) and melaleuca, are abundant on the site as a result of these drainage practices. The development of the Facility site has improved the drainage for the site.

Measurement Programs

In 1990 and in 2001, all major upland and wetland vegetation associations on-site were delineated on 1" = 200' aerial photographs and groundtruthed. Ground truthing was conducted by a trained ecologist to ensure the accuracy and completeness of the mapping effort. Habitats were categorized using the Florida Land Use, Cover and Forms Classification System (FLUCFCS), Levels III and IV. The acreage of each individual FLUCFCS mapping unit is calculated and depicted on Figure 2-15.

The manuals used as ecological or taxonomic guides are listed in Section 10, References.

2.3.7 METEOROLOGY AND AMBIENT AIR QUALITY

Meteorology

The Facility is located on the west coast of southern Florida in Lee County. The climate of this region is influenced by the surrounding salt water of the Gulf of Mexico to the west and the Atlantic Ocean to the east. Topography ranges from low-level coastal areas to approximately 200 to 300 feet above mean sea level in the northern interior of the state. Summers are long, warm, and relatively humid. Winters have periodic cool to cold air from the north, but are generally mild due to the southern latitude and the warm adjacent ocean waters.

The climatology of Lee County can be determined from data collected at local National Weather Service (NWS) station. The nearest NWS station to the site is Page Field Airport located in Fort Myers. Table 2-29 presents the Local Climatological Data (LCD) of the Normals, Means, and Extremes at Page Field. The annual temperature, precipitation, and relative humidity data were collected for 30 years from 1970 to 2000. This data indicates that the annual average normal dry bulb temperature for the region is 74.3 deg F, with monthly averages ranging from 83.0 deg F in the summer to 63.8 deg F in the winter. The annual average normal daily maximum and

minimum temperatures range from 83.9 deg F to 64.8 deg F, with monthly averages as high as 91.3 deg F in the summer, and as low as 53.2 deg F in the winter.

Rainfall is varied both in annual and seasonal distribution throughout the year. Over half of the annual average rainfall for the area typically occurs during the summer rainy season, from June to September. Precipitation is usually in the form of local showers and thundershowers. Occasionally, tropical storms produce substantial amounts of rain over large areas. The annual average precipitation for the area is 53.37", with monthly averages peaks as high as 9.66" in August, and as low as 1.06" in April. The annual average relative humidity for the area is 76%, with monthly averages peaks as high as 80% in August and September, and as low as 70% in April.

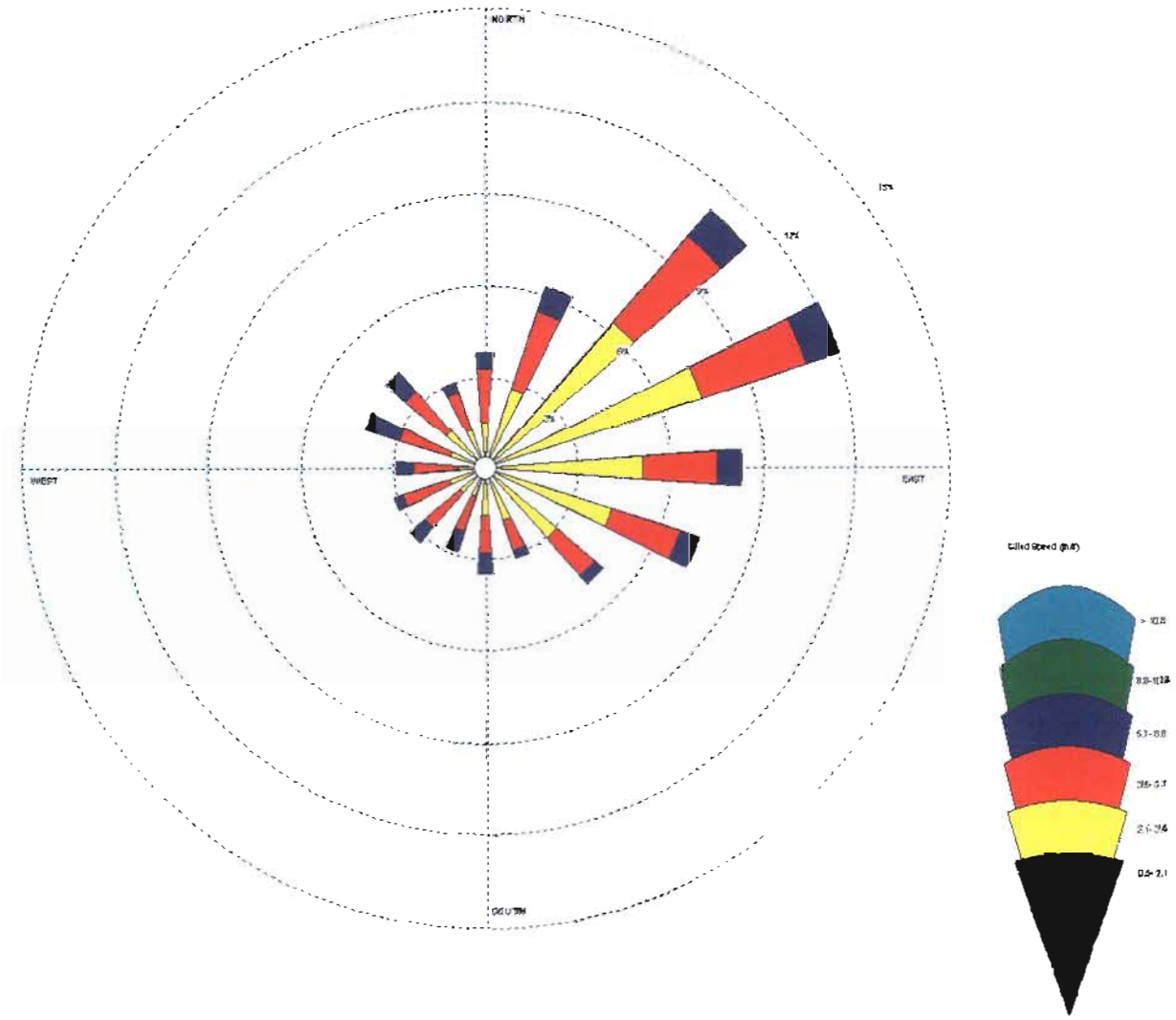
Atmospheric Dispersion

The principal parameters that affect stack plume dispersion are wind speed, wind direction, atmospheric stability, and mixing heights. To determine the seasonal and annual averages of these parameters, data collected at the Page Field NWS was used. Because surface measurements at Page Field were suspended between October 1995 and March 1998, the LCD wind speed and wind direction data presented in Table 2-29 is not extensive. Therefore, the Page Field meteorological data (1990-1994) that was used in the PSD permit application air dispersion modeling analysis was used to determine average dispersion characteristics.

The 5-year data set was used to create annual average and monthly wind rose plots of wind speeds distributed over 16 wind direction sectors, as shown in Figures 2-17 to 2-29. The data presented in Figure 2-17 indicates that the annual average wind speed for the Fort Myers area is 3.75 m/s, and that the prevailing wind direction is from the northeasterly direction. The monthly wind rose plots presented in Figures 2-18 to 2-29 indicate that the:

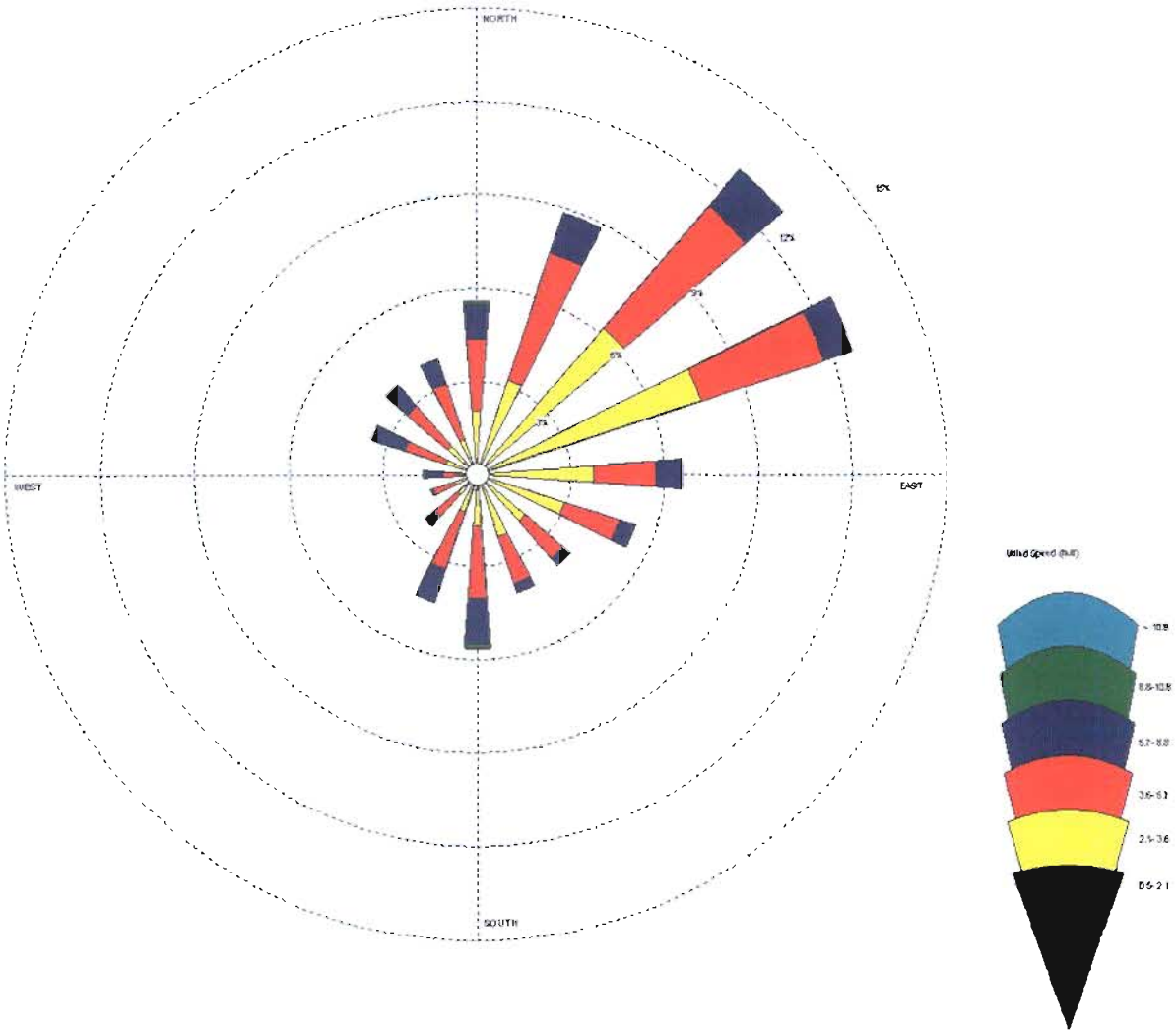
- winter season (December-February) average wind speed ranges from 3.64 to 4.17 m/s, and that the prevailing wind direction is from the northeast.
- spring season (March-May) average wind speed ranges from 3.81 to 4.34 m/s, and that the prevailing wind directions are from the east-northeast and easterly directions,
- summer season (June-August) average wind speed ranges from 3.23 to 3.48 m/s, and that the prevailing wind directions are from the east-northeast to east-southeast directions, and
- autumn season (September-November) average wind speed ranges from 3.18 to 3.97 m/s, and that the prevailing wind direction is from the northeasterly direction.

FIGURE 2-17
Page Field Airport – Fort Myers, FL
NWS Station #12835
January 1990 – December 1994



Parameter:	Wind Speed
Units:	m/s
Orientation:	Direction (blowing from)
Average Wind Speed:	3.75 m/s
Calm Winds:	15.11%

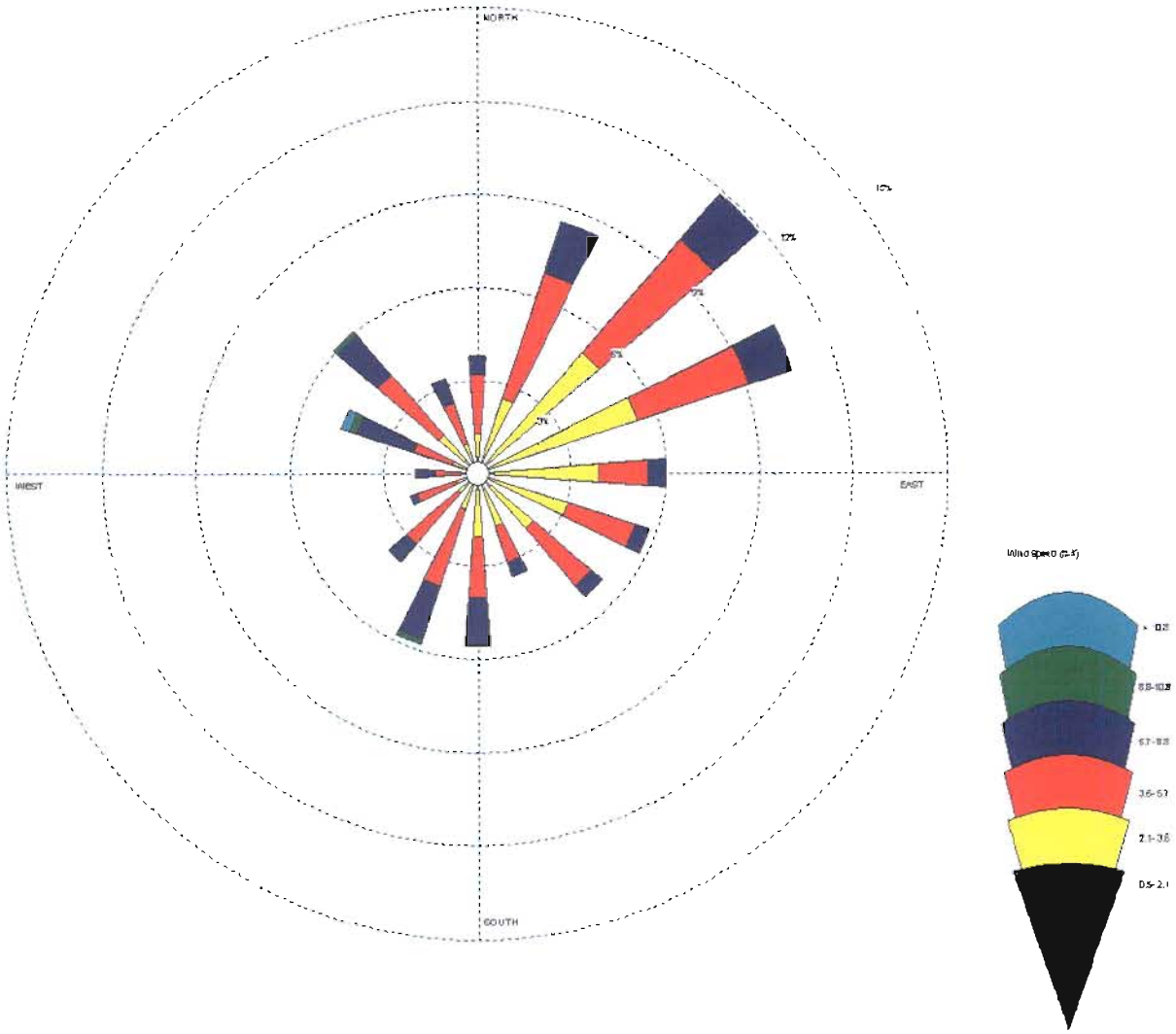
FIGURE 2-18
Page Field Airport – Fort Myers, FL
NWS Station #12835
January 1990 – 1994



Parameter:	Wind Speed
Units:	m/s
Orientation:	Direction (blowing from)
Average Wind Speed:	3.97 m/s
Calm Winds:	12.66%

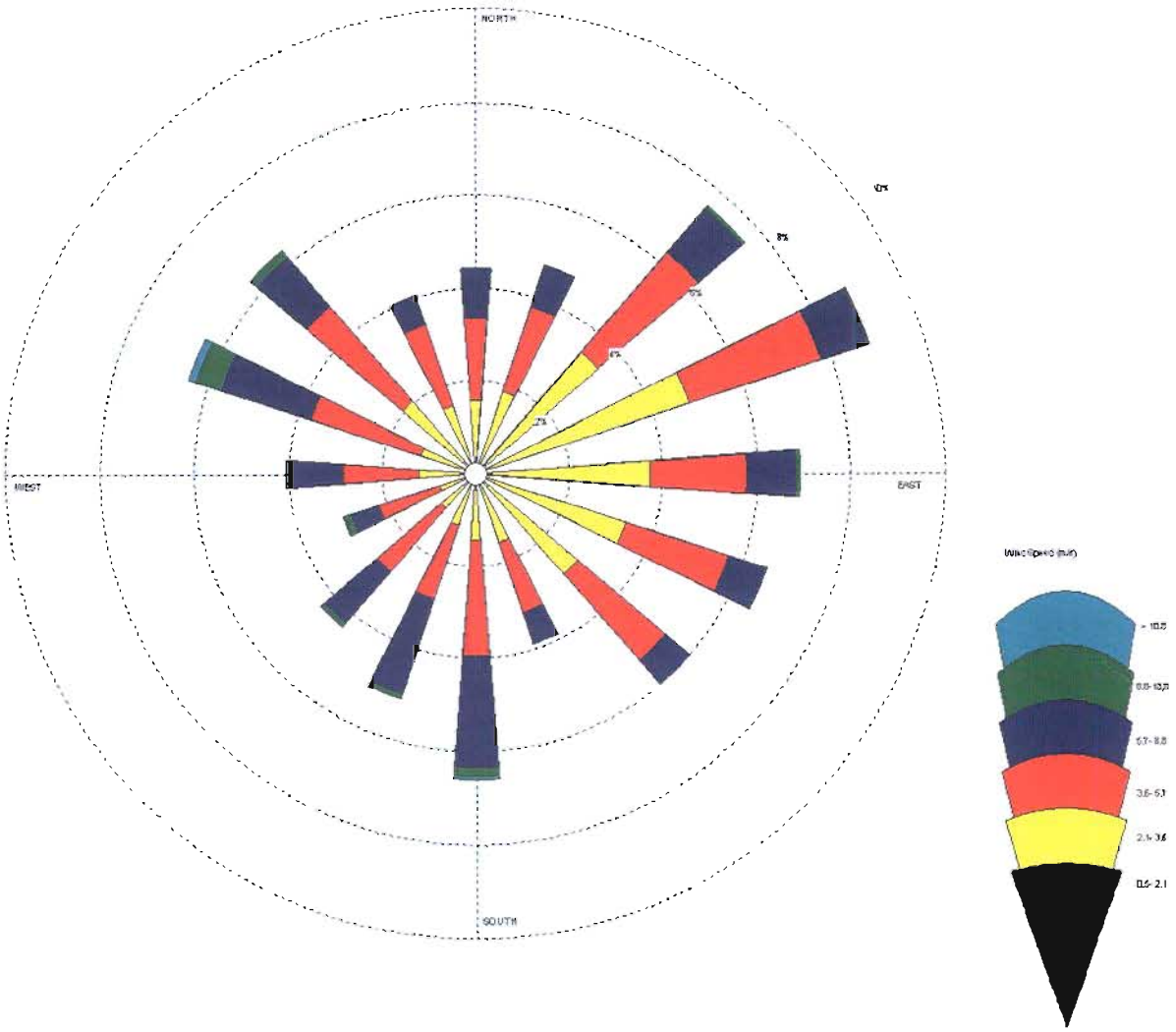
Privileged & Confidential: Attorney - Client Communication/Work Product

FIGURE 2-19
Page Field Airport – Fort Myers, FL
NWS Station #12835
February 1990 – 1994



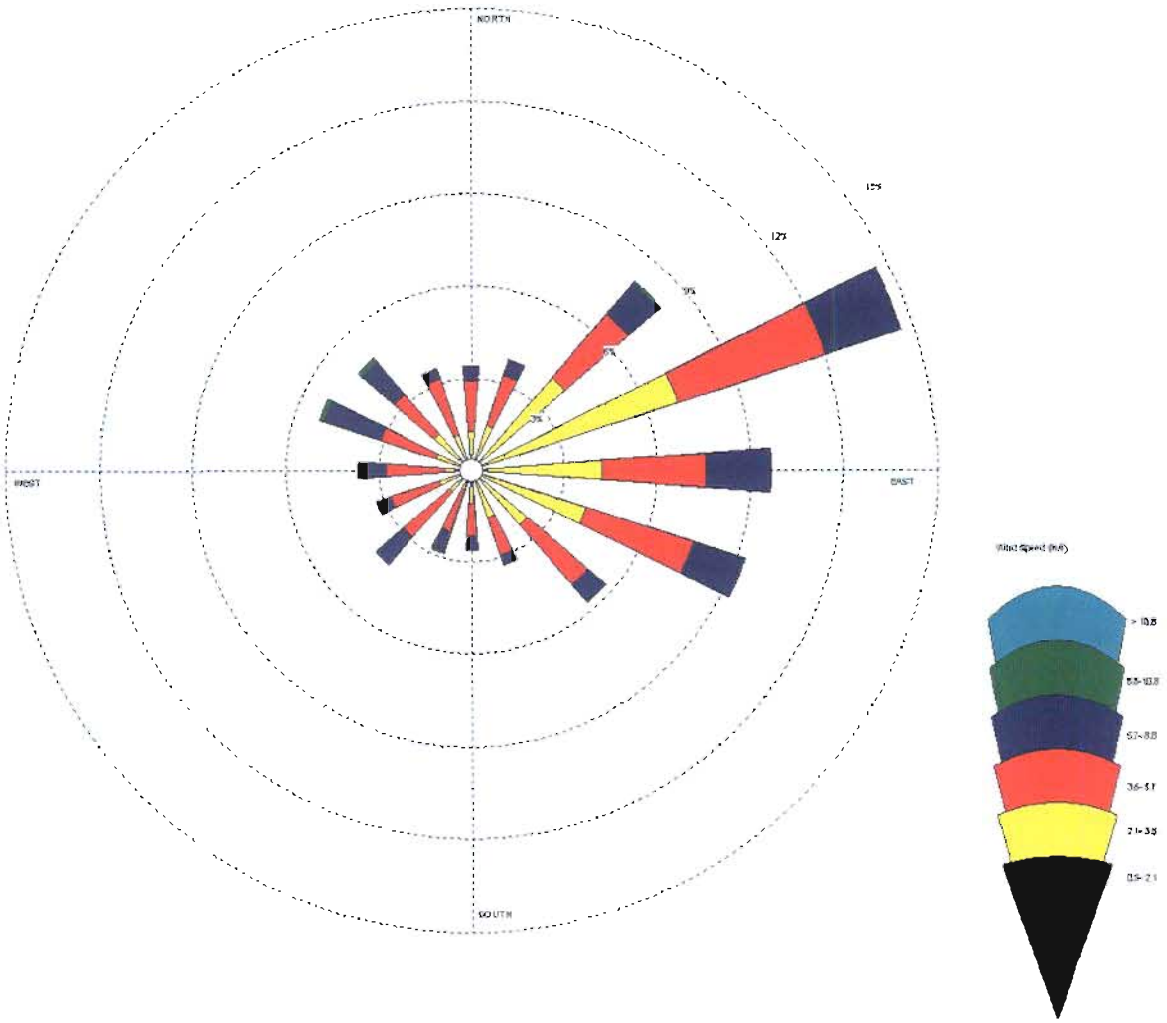
Parameter:	Wind Speed
Units:	m/s
Orientation:	Direction (blowing from)
Average Wind Speed:	4.17 m/s
Calm Winds:	10.54%

FIGURE 2-20
Page Field Airport – Fort Myers, FL
NWS Station #12835
March 1990 – 1994



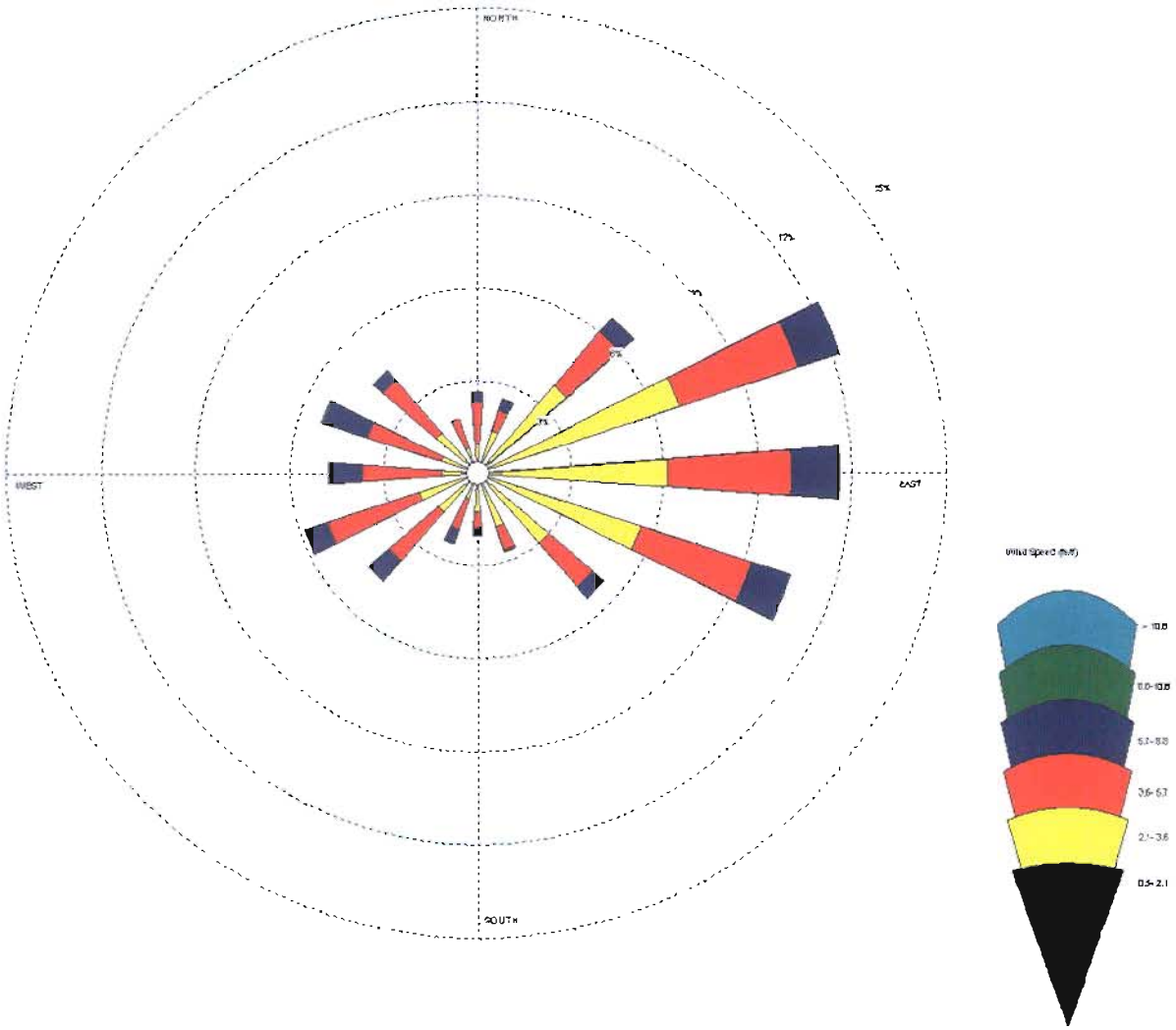
Parameter:	Wind Speed
Units:	m/s
Orientation:	Direction (blowing from)
Average Wind Speed:	4.34 m/s
Calm Winds:	10.78%

FIGURE 2-21
Page Field Airport – Fort Myers, FL
NWS Station #12835
April 1990 – 1994



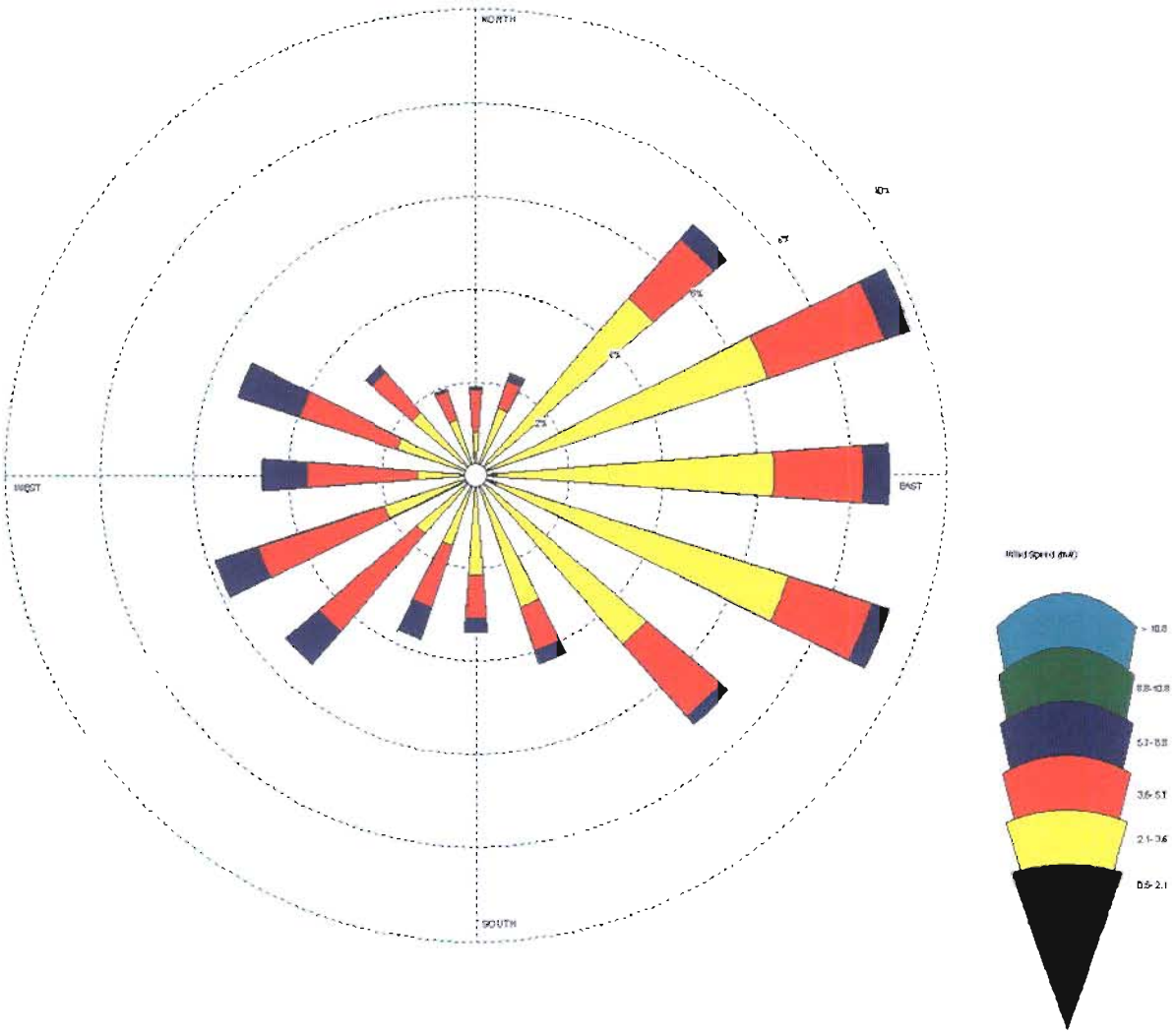
Parameter:	Wind Speed
Units:	m/s
Orientation:	Direction (blowing from)
Average Wind Speed:	4.14 m/s
Calm Winds:	11.50%

FIGURE 2-22
Page Field Airport – Fort Myers, FL
NWS Station #12835
May 1990 – 1994



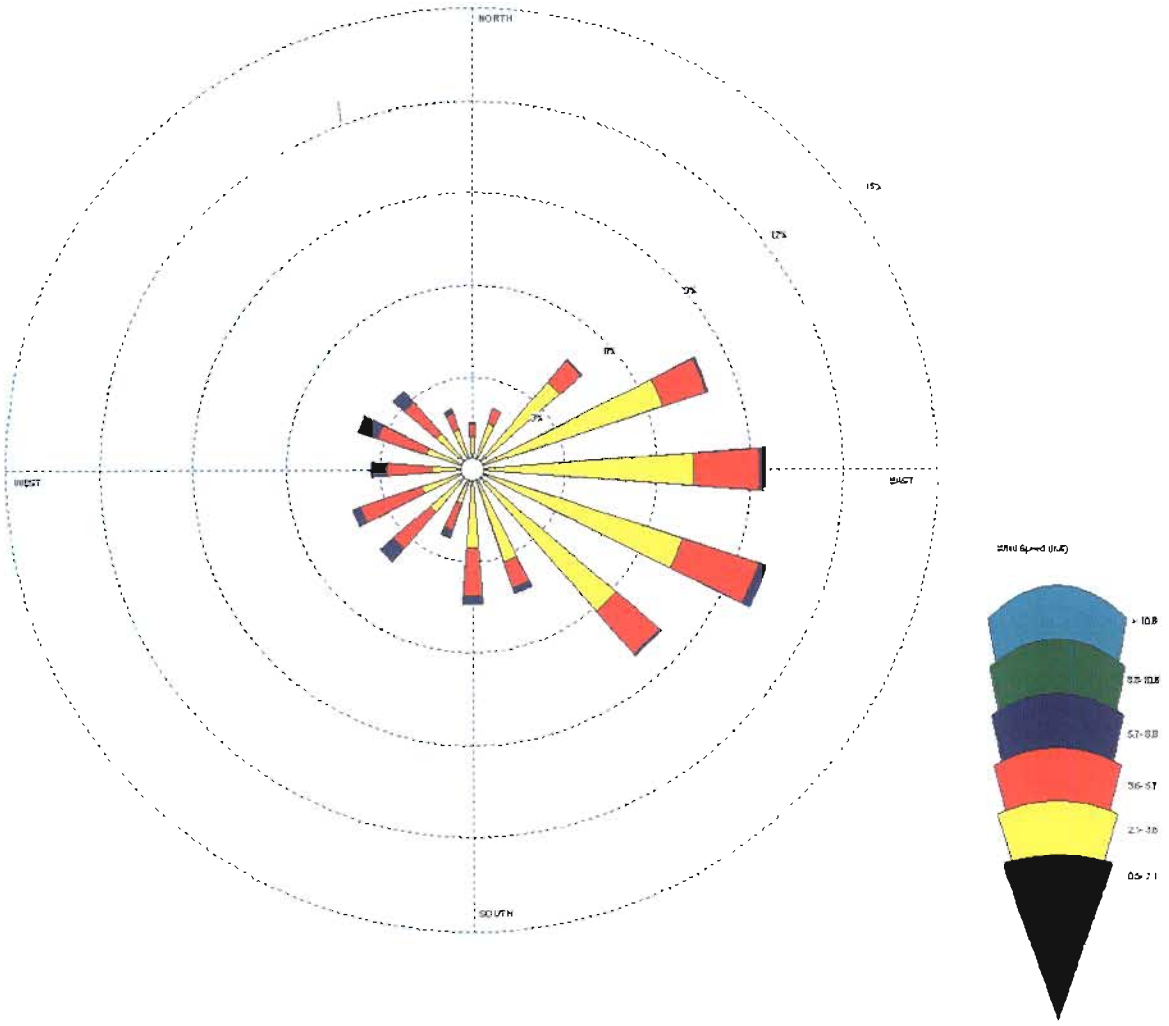
Parameter:	Wind Speed
Units:	m/s
Orientation:	Direction (blowing from)
Average Wind Speed:	3.81 m/s
Calm Winds:	13.87%

FIGURE 2-23
Page Field Airport – Fort Myers, FL
NWS Station #12835
June 1990 – 1994



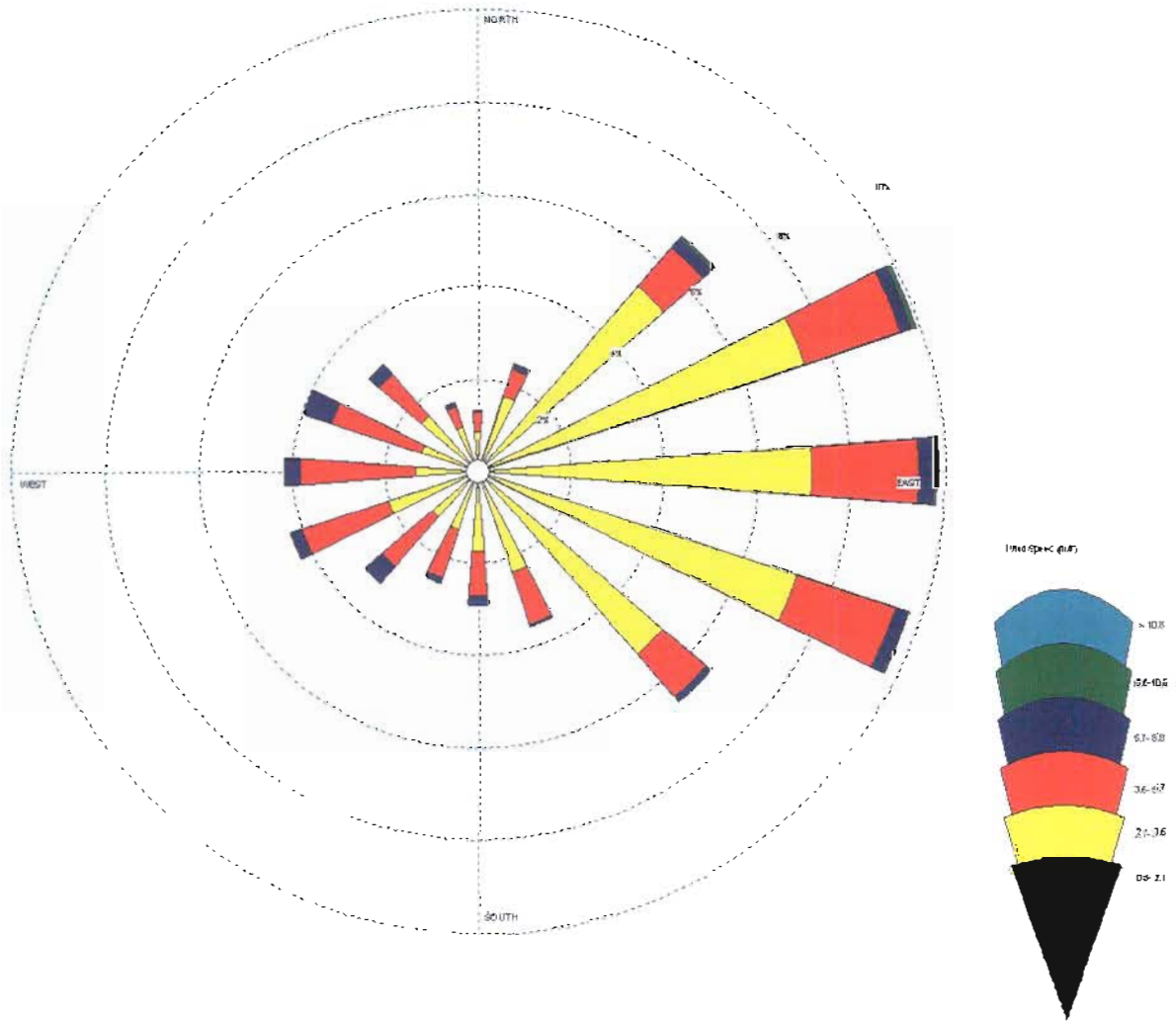
Parameter:	Wind Speed
Units:	m/s
Orientation:	Direction (blowing from)
Average Wind Speed:	3.48 m/s
Calm Winds:	15.97%

FIGURE 2-24
Page Field Airport – Fort Myers, FL
NWS Station #12835
July 1990 – 1994



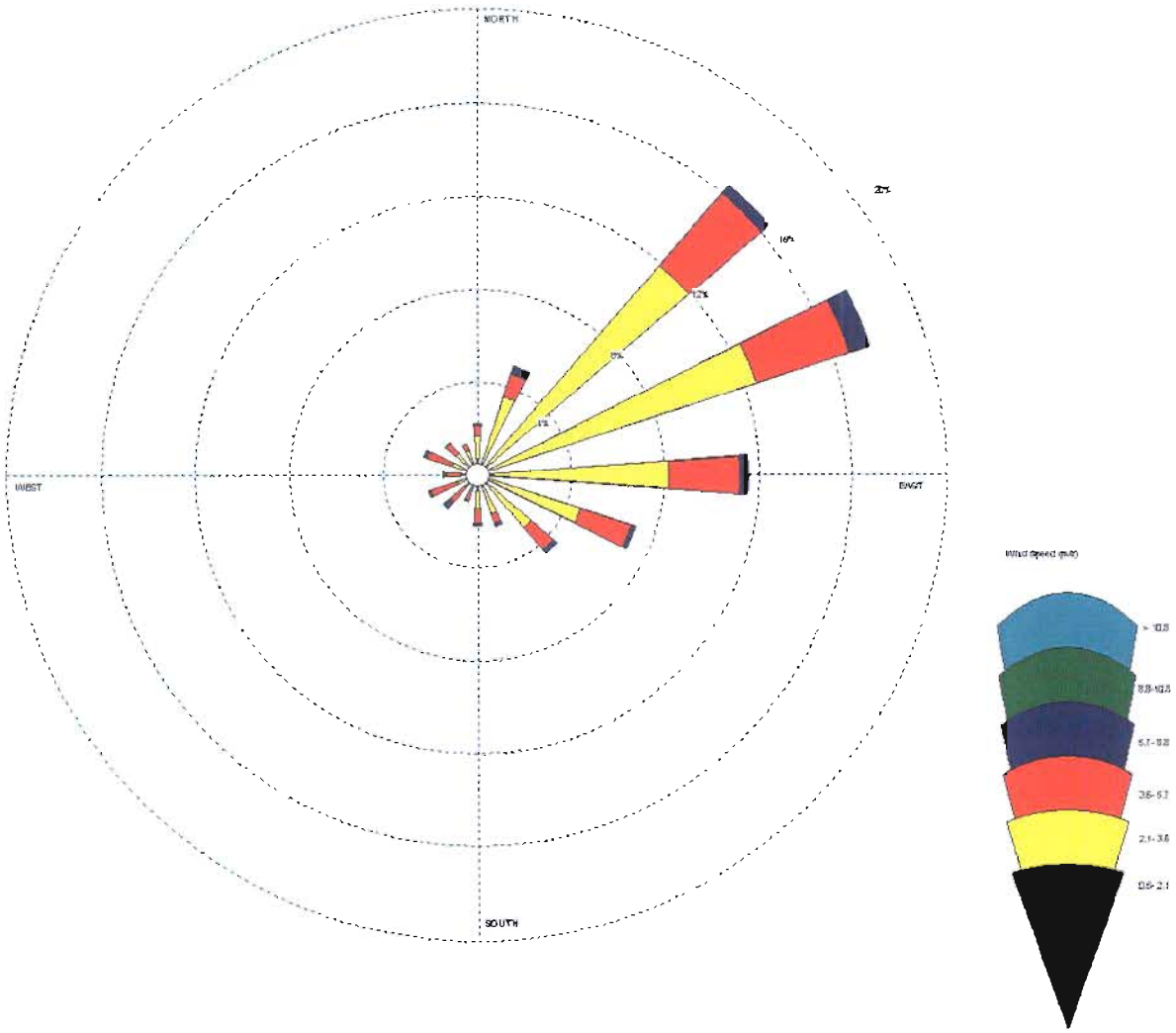
Parameter:	Wind Speed
Units:	m/s
Orientation:	Direction (blowing from)
Average Wind Speed:	3.23 m/s
Calm Winds:	23.60%

FIGURE 2-25
Page Field Airport – Fort Myers, FL
NWS Station #12835
August 1990 – 1994



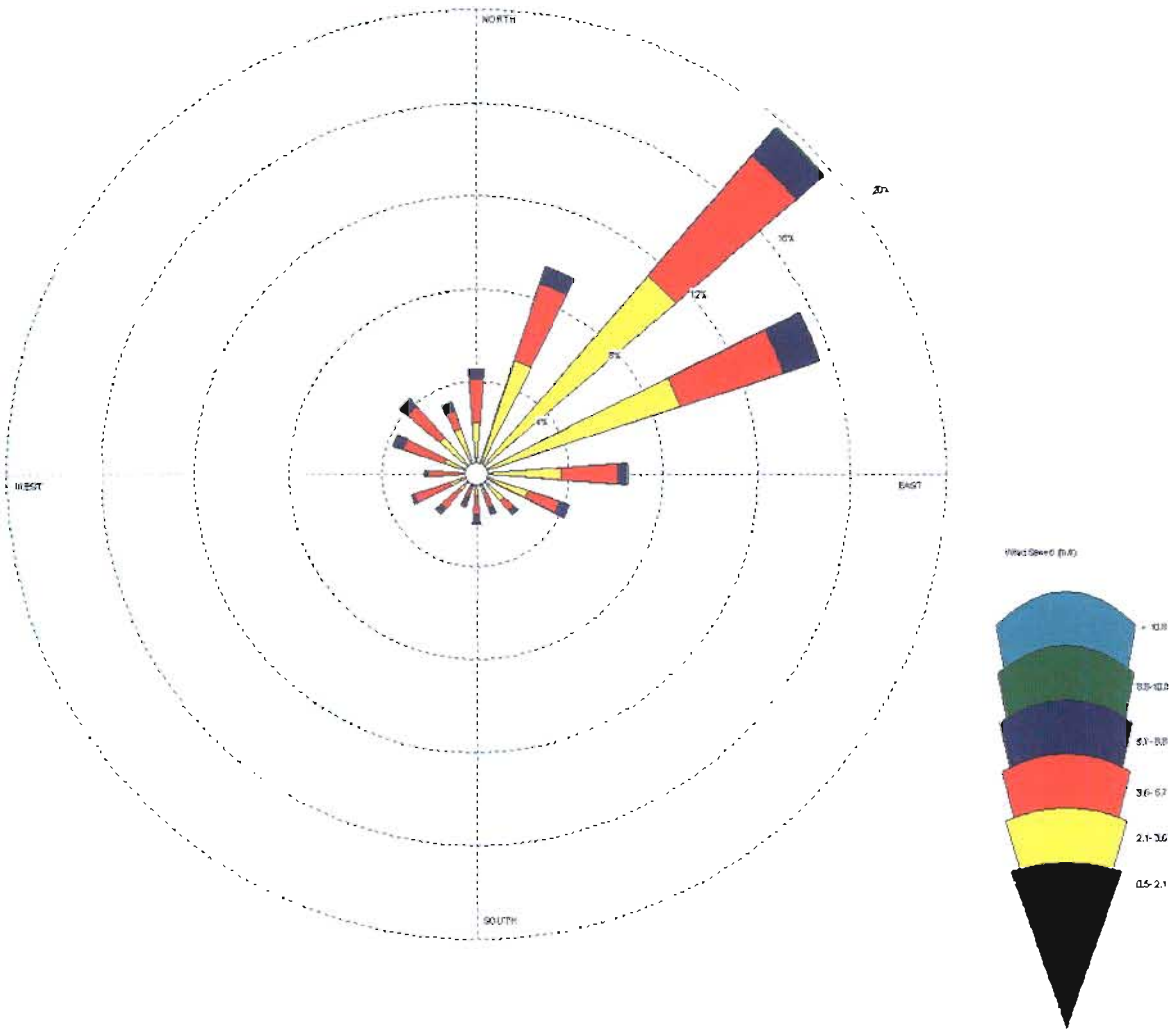
Parameter:	Wind Speed
Units:	m/s
Orientation:	Direction (blowing from)
Average Wind Speed:	3.24 m/s
Calm Winds:	23.76%

FIGURE 2-26
Page Field Airport – Fort Myers, FL
NWS Station #12835
September 1990 – 1994



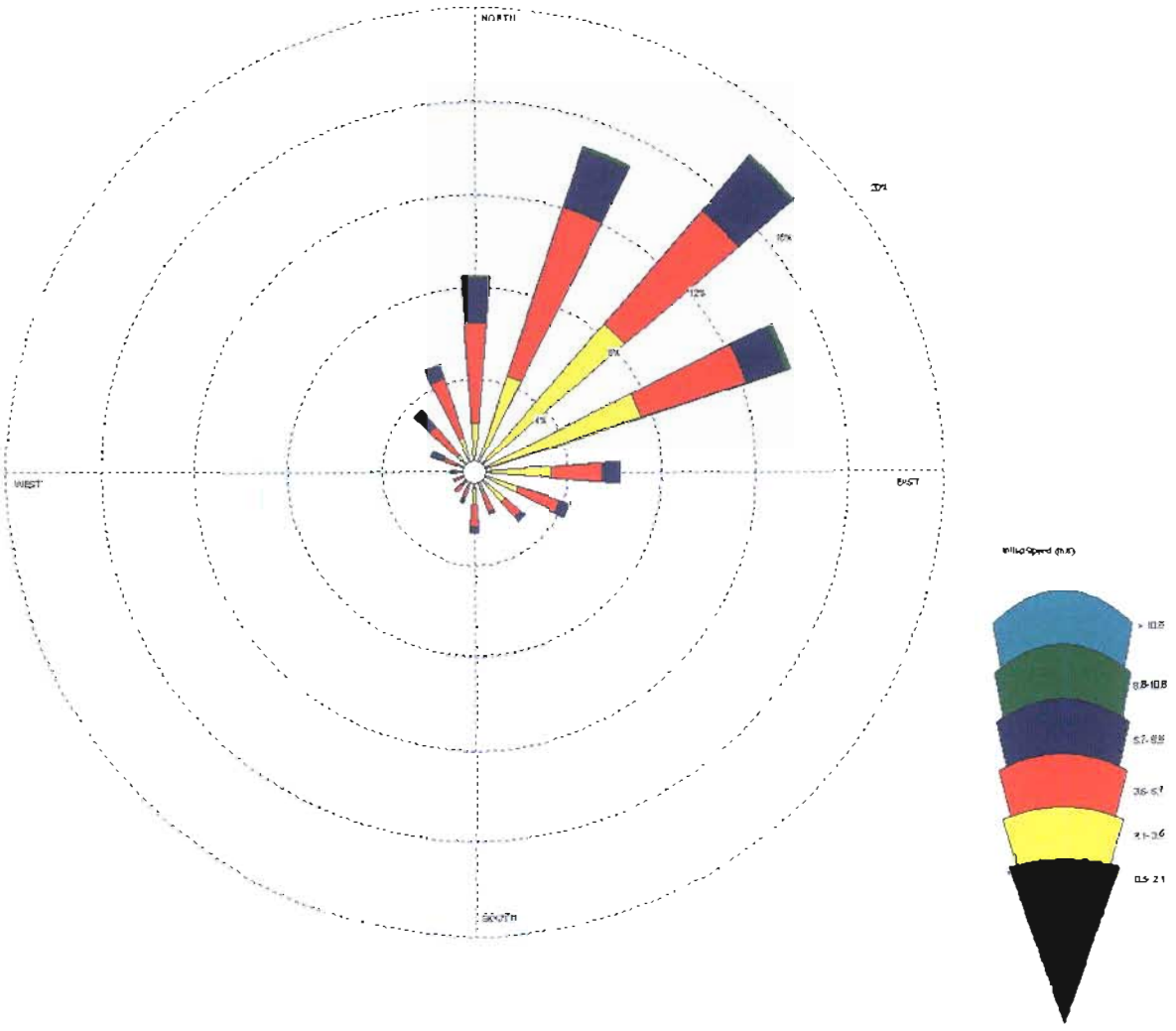
Parameter:	Wind Speed
Units:	m/s
Orientation:	Direction (blowing from)
Average Wind Speed:	3.18 m/s
Calm Winds:	17.72%

FIGURE 2-27
Page Field Airport – Fort Myers, FL
NWS Station #12835
October 1990 – 1994



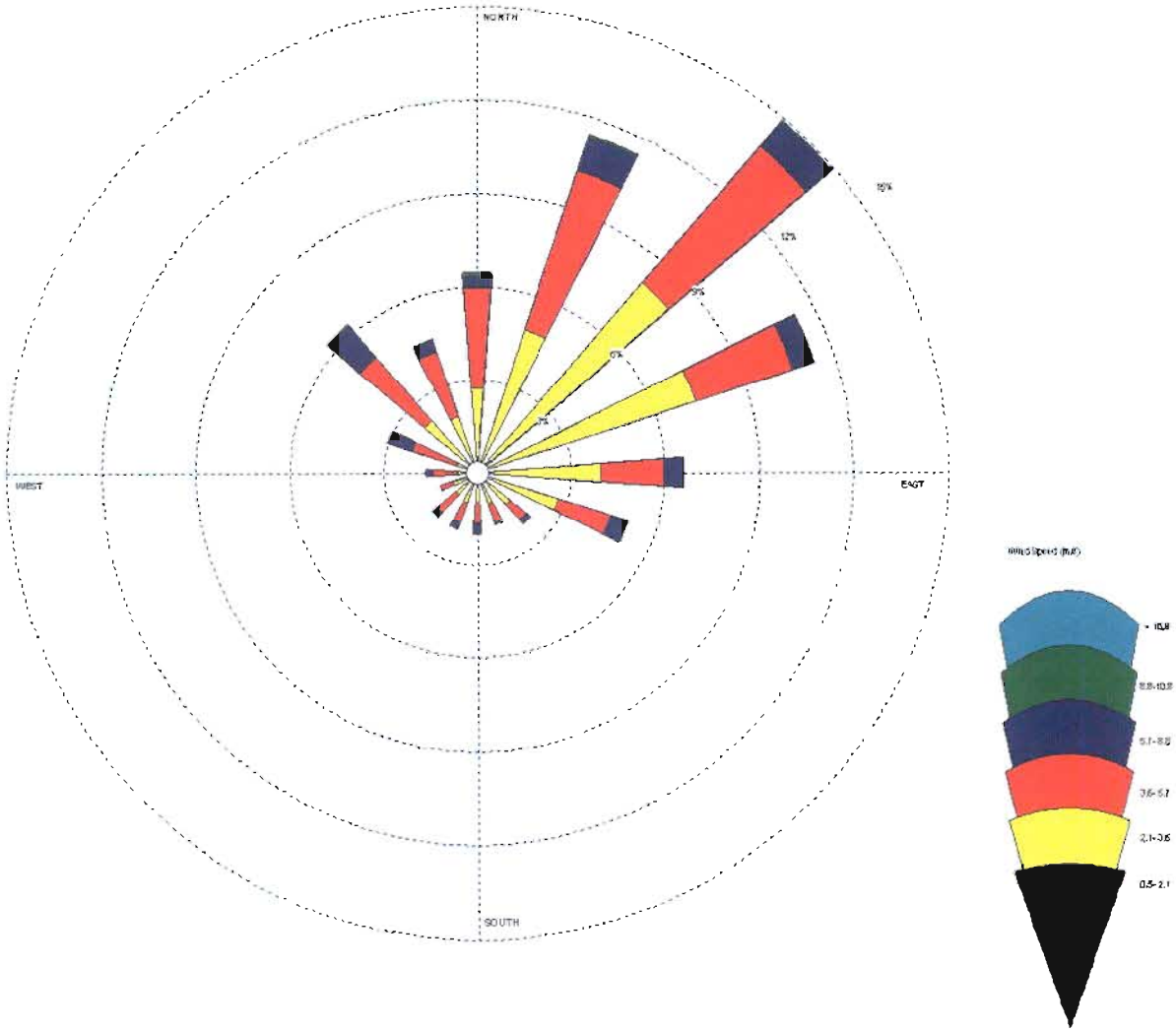
Parameter:	Wind Speed
Units:	m/s
Orientation:	Direction (blowing from)
Average Wind Speed:	3.60 m/s
Calm Winds:	12.72%

FIGURE 2-28
Page Field Airport – Fort Myers, FL
NWS Station #12835
November 1990 – 1994



Parameter:	Wind Speed
Units:	m/s
Orientation:	Direction (blowing from)
Average Wind Speed:	3.97 m/s
Calm Winds:	10.67%

FIGURE 2-29
Page Field Airport – Fort Myers, FL
NWS Station #12835
December 1990 – 1994



Parameter:	Wind Speed
Units:	m/s
Orientation:	Direction (blowing from)
Average Wind Speed:	3.64 m/s
Calm Winds:	16.85%

Mixing height is the height above the surface through which vigorous vertical mixing occurs. Table 2-30 presents the seasonal and annual averages of the rural mixing heights collected at the nearest upper air monitoring station, Tampa International Airport, as well as the seasonal and annual averages of the atmospheric stability calculated from surface measurements at Page Field Airport in Fort Myers. This data indicates that the annual average rural mixing height is 1133.14 meters above the surface. The annual average stability category over the 5-year data set is 4.5 (i.e. Class D), which equals a neutral stability condition.

The 5-year meteorological data set (1990-1994) at Page Field was also used to develop a joint wind speed and stability frequency table presented in Table 2-31, and a joint wind speed and wind direction frequency table presented in Table 2-32. The stability categories presented in Table 2-31 range from Class A (unstable) to Class F (stable). The most unstable conditions (Classes A & B) occur less than 1% and 7% of the time, and the neutral to stable conditions (Classes C, D, E and F) occur 14%, 29%, 16% and 17% of the time, respectively.

TABLE 2-29
CLIMATOLOGICAL DATA
NORMALS, MEANS, AND EXTREMES

PAGE FIELD AIRPORT, FORT MYERS
NORMALS, MEANS, AND EXTREMES
FORT MYERS, FL (FMY)

LATITUDE: 26° 35' 11" N | LONGITUDE: 81° 51' 49" W | ELEVATION (FT): GRND: 18 BARO: 18 | TIME ZONE: EASTERN (UTC + 5) | WBAN: 12835

	ELEMENT	POR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F	NORMAL DAILY MAXIMUM	30	74.3	75.4	79.7	84.2	88.7	90.3	91.1	91.3	89.8	85.8	80.7	76.0	83.9
	MEAN DAILY MAXIMUM	2	75.6	76.4	80.0	84.0	89.2	90.9	91.0	91.2	88.5	85.4	80.5	76.3	84.1
	HIGHEST DAILY MAXIMUM	2	85	84	89	93	96	97	100	96	93	92	87	86	100
	YEAR OF OCCURRENCE		1999	2000	1998	1999	1998	1998	1998	1998	1998	1998	1998	2000	JUL 1998
	MEAN OF EXTREME MAXS.	2	84.0	83.5	87.7	90.3	94.0	95.0	96.7	94.7	92.3	91.0	86.0	84.0	89.9
	NORMAL DAILY MINIMUM	30	53.2	54.2	58.6	62.0	67.9	73.1	74.5	74.7	74.2	68.6	60.9	55.1	64.8
	MEAN DAILY MINIMUM	2	54.5	54.3	57.8	63.1	67.9	73.2	74.9	74.7	74.3	68.1	60.9	56.5	65.0
	LOWEST DAILY MINIMUM	2	37	41	42	48	55	67	71	71	67	54	42	33	33
	YEAR OF OCCURRENCE		2000	2000	1999	2000	1999	1999	2000	2000	1999	2000	2000	2000	DEC 2000
	MEAN OF EXTREME MINS.	2	37.5	41.0	46.0	51.0	57.0	69.0	72.0	71.3	69.3	57.3	49.3	39.3	55.0
	NORMAL DRY BULB	30	63.8	64.8	69.1	73.1	78.3	81.7	82.8	83.0	82.0	77.2	70.8	65.6	74.3
	MEAN DRY BULB	2	65.1	65.4	68.9	73.6	78.6	82.1	83.0	82.9	81.4	76.7	70.8	66.4	74.6
	MEAN WET BULB			59.8	63.1	66.8	70.8	74.3	76.8	75.6	75.8	69.1	64.1	63.1	
	MEAN DEW POINT			55.8	59.0	62.7	67.5	72.1	74.6	73.7	73.9	66.1	60.8	60.5	
	NORMAL NO. DAYS WITH:														
	MAXIMUM ≥ 90°	30	0.0	0.1	3.3	0.5	13.2	19.8	24.6	24.6	19.0	5.8	0.5	0.6	111.9
	MAXIMUM ≤ 32°	30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MINIMUM ≤ 32°	30	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
	MINIMUM ≤ 0°	30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
H/C	NORMAL HEATING DEG. DAYS	30	153	108	32	0	0	0	0	0	0	0	25	100	418
	NORMAL COOLING DEG. DAYS	30	116	103	160	247	412	501	552	558	510	378	199	119	3855
RH	NORMAL (PERCENT)	30	75	73	72	70	72	78	79	80	80	76	76	75	76
	HOUR 01 LST	30	86	84	84	84	85	89	90	90	89	87	88	87	87
	HOUR 07 LST	30	89	88	89	89	88	90	90	91	92	90	90	89	90
	HOUR 13 LST	30	56	54	52	47	50	58	60	61	61	57	56	56	56
	HOUR 19 LST	30	72	69	67	64	66	74	77	78	78	73	74	74	72
S	PERCENT POSSIBLE SUNSHINE														
W/O	MEAN NO. DAYS WITH:														
	HEAVY FOG(VISBY≤1/4 MI)	2	5.5	5.5	1.0	1.0	0.3	1.7	0.3	0.7	0.7	1.0	2.0	3.3	23.0
	THUNDERSTORMS	2	2.0	0.5	2.3	1.7	5.0	16.0	17.0	16.0	9.3	1.7	0.3	0.0	71.8
CLOUDINESS	MEAN:														
	SUNRISE-SUNSET (OKTAS)	1			4.0		4.0								
	MIDNIGHT-MIDNIGHT (OKTAS)														
	MEAN NO. DAYS WITH:														
	CLEAR	1			12.0	14.0	12.0								
	PARTLY CLOUDY	1			14.0	12.0	13.0								
	CLOUDY	1			5.0	3.0	6.0								
PR	MEAN STATION PRESSURE(IN)	2	30.13	30.13	30.03	30.01	29.99	30.01	30.03	30.01	29.89	29.99	30.04	30.10	30.03
	MEAN SEA-LEVEL PRES. (IN)	2	30.15	30.16	30.06	30.03	30.01	30.05	30.06	30.03	29.91	30.02	30.06	30.13	30.06
WINDS	MEAN SPEED (MPH)	2	7.1	7.1	8.1	8.1	6.7	6.1	5.6	5.6	6.5	7.7	6.7	7.1	6.9
	PREVAIL.DIR(TENS OF DEGS)														
	MAXIMUM 2-MINUTE:														
	SPEED (MPH)	2	37	24	31	30	38	48	30	38	36	32	24	32	48
	DIR. (TENS OF DEGS)		28	20	02	34	20	31	33	07	05	02	02	34	31
	YEAR OF OCCURRENCE		2000	2000	2000	1999	1999	1999	2000	1999	1999	1999	2000	2000	JUN 1999
	MAXIMUM 5-SECOND:														
	SPEED (MPH)	2	47	33	41	33	46	59	38	45	48	44	30	39	59
	DIR. (TENS OF DEGS)		28	20	23	01	21	30	32	09	14	03	04	33	30
	YEAR OF OCCURRENCE		2000	2000	2000	1999	1999	1999	2000	1999	2000	1999	1999	2000	JUN 1999
PRECIPITATION	NORMAL (IN)	30	1.84	2.23	3.07	1.06	3.87	9.52	8.26	9.66	7.82	2.94	1.57	1.53	53.37
	MAXIMUM MONTHLY (IN)	2	2.34	0.19	5.40	1.91	3.46	10.90	10.01	9.41	13.59	1.83	7.58	1.50	13.59
	YEAR OF OCCURRENCE		1999	1999	1998	2000	1999	1999	1998	1999	1998	1999	1998	1999	SEP 1998
	MINIMUM MONTHLY (IN)	2	1.27	0.11	0.85	0.66	2.56	6.53	8.04	8.40	8.29	0.57	1.53	0.45	0.11
	YEAR OF OCCURRENCE		2000	2000	1999	1999	1998	1998	1999	2000	1999	1998	2000	2000	FEB 2000
	MAXIMUM IN 24 HOURS (IN)	2	1.18	0.11	2.67	1.63	1.90	3.40	3.44	2.19	6.39	1.72	3.09	0.88	6.39
	YEAR OF OCCURRENCE		1999	1999	1998	2000	2000	1998	2000	2000	2000	2000	1998	1999	SEP 2000
	NORMAL NO. DAYS WITH:														
	PRECIPITATION ≥ 0.01	30	5.6	5.8	5.5	3.1	7.4	14.9	17.3	17.6	14.6	6.7	4.4	4.3	107.2
	PRECIPITATION ≥ 1.00	30	0.4	0.8	0.9	0.3	1.0	3.2	2.4	3.2	2.4	1.0	0.4	0.4	16.4
SNOWFALL	NORMAL (IN)														
	MAXIMUM MONTHLY (IN)														
	YEAR OF OCCURRENCE														
	MAXIMUM IN 24 HOURS (IN)														
	YEAR OF OCCURRENCE														
	MAXIMUM SNOW DEPTH (IN)														
	YEAR OF OCCURRENCE														
	NORMAL NO. DAYS WITH:														
	SNOWFALL ≥ 1.0														

TABLE 2-30
ANNUAL AVERAGE RURAL MIXING HEIGHTS AND STABILITY
JANUARY 1990 – DECEMBER 1994

TAMPA INTERNATIONAL AIRPORT, TAMPA
AND
PAGE FIELD AIRPORT, FORT MYERS

Parameter	1990	1991	1992	1993	1994	Average
Annual						
Rural Mixing Ht (m)	1282.29	1119.11	1062.04	1111.08	1091.16	1133.14
Stability	4.61	4.52	4.52	4.41	4.46	4.50
Winter						
Rural Mixing Ht (m)	1140.41	1002.50	817.69	913.42	893.34	953.47
Stability	4.75	4.71	4.63	4.60	4.53	4.64
Spring						
Rural Mixing Ht (m)	1349.05	1219.15	1166.11	1198.89	1315.06	1249.65
Stability	4.56	4.46	4.43	4.33	4.44	4.44
Summer						
Rural Mixing Ht (m)	1246.02	1125.08	1167.17	1301.94	1127.76	1193.59
Stability	4.44	4.39	4.38	4.28	4.32	4.36
Autumn						
Rural Mixing Ht (m)	1409.73	1170.39	1068.32	1065.27	989.86	1140.71
Stability	4.63	4.58	4.61	4.46	4.54	4.56

Note:
Class A = 1
Class B = 2
Class C = 3
Class D = 4
Class E = 5
Class F = 6

TABLE 2-31
FREQUENCY DISTRIBUTION OF WIND SPEED AND STABILITY
JANUARY 1990 – DECEMBER 1994

PAGE FIELD AIRPORT, FORT MYERS

	Stability Classes						
	A	B	C	D	E	F	Total
Direction							
N	0.04%	0.32%	0.48%	1.67%	0.81%	0.58%	3.90%
NNE	0.05%	0.33%	0.75%	2.62%	1.45%	1.14%	6.35%
NE	0.07%	0.58%	1.47%	3.68%	2.40%	3.03%	11.23%
ENE	0.10%	0.65%	1.73%	3.55%	2.69%	3.40%	12.12%
E	0.07%	0.55%	1.26%	2.51%	1.71%	2.24%	8.34%
ESE	0.08%	0.55%	1.41%	2.03%	1.43%	1.79%	7.30%
SE	0.09%	0.55%	0.99%	1.33%	0.90%	1.18%	5.02%
SSE	0.04%	0.38%	0.60%	1.02%	0.51%	0.61%	3.16%
S	0.04%	0.32%	0.64%	1.54%	0.52%	0.49%	3.55%
SSW	0.05%	0.29%	0.62%	1.43%	0.32%	0.24%	2.96%
SW	0.07%	0.37%	0.90%	1.40%	0.37%	0.19%	3.29%
WSW	0.07%	0.48%	1.05%	1.03%	0.34%	0.21%	3.17%
W	0.05%	0.33%	0.75%	1.14%	0.44%	0.24%	2.94%
WNW	0.05%	0.29%	0.69%	1.93%	0.79%	0.44%	4.18%
NW	0.07%	0.29%	0.58%	1.66%	0.96%	0.74%	4.30%
NNW	0.05%	0.25%	0.39%	1.05%	0.76%	0.57%	3.07%
Total	0.98%	6.52%	14.32%	29.57%	16.40%	17.10%	85%

Frequency of Calm Winds: 15%
Average Wind Speed: 3.75 m/s

TABLE 2-32
FREQUENCY DISTRIBUTION OF WIND SPEED AND WIND DIRECTION
JANUARY 1990 – DECEMBER 1994

PAGE FIELD AIRPORT, FORT MYERS

	Speed (m/s)						
	0.51-2.06	2.06-3.60	3.60-5.66	5.66-8.75	8.75-10.80	>10.80	Total
Direction							
N	0.04%	1.54%	1.72%	0.55%	0.04%	0.00%	3.90%
NNE	0.10%	2.70%	2.68%	0.83%	0.03%	0.00%	6.35%
NE	0.19%	6.18%	3.70%	1.11%	0.05%	0.00%	11.23%
ENE	0.27%	7.12%	3.57%	1.11%	0.04%	0.00%	12.12%
E	0.24%	4.89%	2.41%	0.78%	0.03%	0.00%	8.34%
ESE	0.24%	4.10%	2.32%	0.63%	0.01%	0.00%	7.30%
SE	0.18%	2.88%	1.61%	0.35%	0.00%	0.00%	5.02%
SSE	0.13%	1.73%	1.03%	0.28%	0.00%	0.00%	3.16%
S	0.10%	1.49%	1.23%	0.68%	0.03%	0.01%	3.55%
SSW	0.04%	0.97%	1.23%	0.69%	0.04%	0.00%	2.96%
SW	0.06%	1.05%	1.51%	0.64%	0.02%	0.00%	3.29%
WSW	0.05%	1.20%	1.56%	0.34%	0.01%	0.00%	3.17%
W	0.02%	0.87%	1.45%	0.58%	0.02%	0.00%	2.94%
WNW	0.03%	1.18%	1.73%	1.08%	0.12%	0.04%	4.18%
NW	0.04%	1.63%	1.78%	0.79%	0.07%	0.00%	4.30%
NNW	0.04%	1.33%	1.31%	0.39%	0.00%	0.00%	3.07%
Total	1.76%	40.89%	30.83%	10.81%	0.52%	0.07%	85%

Frequency of Calm Winds: 15%

Average Wind Speed: 3.75m/s

Ambient Air Quality

Available Florida ambient air monitoring reports for 1998 through 2000 were used to develop background concentrations of PSD criteria pollutants in the vicinity of the proposed Facility. This period represents the most recent three-year period for which complete ambient monitoring data is available. Because there are few monitoring stations within Lee County, monitors outside of the County are also considered for determining background concentrations for some pollutants and may be shown for comparison even when a local Ft. Myers monitor exists, as in the case of SO_2. However, if local monitoring data does exist, it has been chosen in lieu of more distant monitoring data. Tables 2-33 and 2-34 present the monitoring sites and the monitoring data used for developing the background concentrations.

Most available monitoring sites in southern Florida are located in areas of heavy urban or industrial growth, such as Broward, Sarasota, Collier, and Palm Beach counties. Therefore, many sites in the Florida monitoring network will be conservative when used to estimate background levels at the Facility site, which is more rural. The proposed background concentrations for criteria pollutants emitted by the Facility are presented in Table 2-35.

TABLE 2-33
NEAREST AMBIENT AIR QUALITY MONITORING SITES

County/Site ID	Site Address	Measured Pollutant(s)	Type	Sampler
Lee County				
071-0005	Fort Myers WTP	PM_{10}	SLAMS	TEOM
071-2001	Cape Coral Driver's License Office	O_3	NAMS	TECO 49
071-3002	Fort Myers Beach	O_3	NAMS	TECO 49
Collier County				
021-0003	E. Naples Fire Dept.	PM_{10}	SLAMS	TEOM
Sarasota County				
115-0014	US 41 Bypass	CO	SLAMS	TECO 48
115-0013	Bee Ridge Park	PM_{10}	SLAMS	1200
115-1002	Brookside Middle School	SO_2 O_3	NAMS	TECO 43A TECO 49
115-1006	4570 17th Street	SO_2 O_3	NAMS	TECO 43A TECO 49
115-1004	2000 N Main Street	CO	SLAMS	TECO 48
115-1005	Lido Park McKinley Drive	SO_2 O_3	NAMS	TECO 43A TECO 49
Hillsborough County				
057-0081	Simmons Park	NO_2 SO_2 O_3	SPM SLAMS SLAMS	TECO 42 TECO 43A TECO 49
057-1066 (1)	1700 N 66th Street	Pb	SLAMS	HI VOL
057-1073 (1)	6811 E 14th Street	Pb	SPM	HI VOL
057-1074 (1)	3100 N 66th Street	Pb	SPM	HI VOL
Broward County				
011-0031	12600 W Sample Road	NO_2 O_3	SLAMS	TECO 42C TECO 49C
Pinellas County				
103-0024	2301 66th Street N	CO Pb	NAMS SLAMS	DASIBI HI VOL
103-3005	11401 47th Street N	Pb	SLAMS	HI VOL
Palm Beach County				
099-0018	Jog Road	Pb	NAMS	HI VOL

Note:
(1) The Hillsborough County lead monitoring sites were not used for background because these are special purpose monitors for an industrial lead emissions source.

TABLE 2-34
AMBIENT MONITORING DATA USED TO DERIVE BACKGROUND CONCENTRATIONS FOR THE LEE COUNTY ENERGY RECOVERY FACILITY

Pollutant/Avg.Time Year	Concentration at Nearest Monitoring Site	Concentration at Next Closest Monitoring Site
SO_2/3-hour Second-Highest Concentration (ppm)		
1998	**0.057 ppm**[a] Sarasota County	0.056 ppm Sarasota County
1999	0.033 ppm 115-1002 (98-99)	0.032 ppm 115-1005
2000	0.044 ppm 115-1006 (99-00)	0.045 ppm
SO_2/24-hour Second-Highest Concentration (ppm)		
1998	**0.019 ppm** Sarasota County	0.014 ppm Sarasota County
1999	0.011 ppm 115-1002 (98-99)	0.011 ppm 115-1005
2000	0.016 ppm 115-1006 (99-00)	0.019 ppm
SO_2/Annual Arithmetic Mean Concentration (ppm)		
1998	0.002 ppm Sarasota County	**0.003 ppm** Sarasota County
1999	0.003 ppm 115-1002 (98-99)	0.002 ppm 115-1005
2000	0.002 ppm 115-1006 (99-00)	0.002 ppm
NO_2/Annual Arithmetic Mean Concentration (ppm)		
1998	0.006 ppm Hillsborough County	0.009 ppm Broward County
1999	0.007 ppm 057-0081	**0.010 ppm** 011-0031
2000	0.008 ppm	0.009 ppm
CO/1-hour Second-Highest Concentration (ppm)		
1998	5.5 ppm Sarasota County 115-0014	**10.9 ppm** Sarasota County 115-1004
1999	3.7 ppm	4.5 ppm
2000	4.2 ppm	6.6 ppm
CO/8-hour Second-Highest Concentration (ppm)		
1998	2.6 ppm Sarasota County 115-0014	**5.6 ppm** Sarasota County 115-1004
1999	2.6 ppm	3.3 ppm
2000	2.1 ppm	4.3 ppm

TABLE 2-34
AMBIENT MONITORING DATA USED TO DERIVE BACKGROUND CONCENTRATIONS FOR THE LEE COUNTY ENERGY RECOVERY FACILITY (CONT'D)

Pollutant/Avg. Time Year	Concentration at Nearest Monitoring Site	Concentration at Next Closest Monitoring Site
O_3/1-hour Maximum, Fourth-Highest Day over three years (ppm)[b]		
1998-2000	0.096 ppm Lee County 071-2001	**0.098 ppm** Lee County 071-3002
PM_{10}/24-hour Fourth-Highest Concentration over three years (ug/m3)		
1998-2000	36 ug/m^3 Lee County 071-0005	**39 ug/m^3**[a] Collier County 021-0003
PM_{10}/Annual Arithmetic Mean Concentration (ug/m3)		
1998	18 ug/m^3 Lee County 071-0005	19 ug/m^3 Collier County 021-0003
1999	**19 ug/m^3**	17 ug/m^3
2000	19 ug/m^3	18 ug/m^3
Pb/Maximum Quarterly Arithmetic Mean Concentration (ug/m3)		
1998	**0.01 ug/m^3** Pinellas County	0.00 ug/m^3 Palm Beach County
1999	0.01 ug/m^3 103-0024 (98-99)	0.00 ug/m^3 099-0018
2000	0.01 ug/m^3 103-3005 (99-00)	N/A (1999 shutdown)

[1] The baseline concentration selected (i.e., the maximum concentration appropriate for the AAQS) from both nearest monitoring sites is **bolded.**

[b] Round to two significant digits before AAQS comparison as required by regulations (i.e., 0.098 ppm rounds to 0.10 ppm).

TABLE 2-35
PROPOSED BACKGROUND CONCENTRATIONS FOR CRITERIA POLLUTANTS

Pollutant Name	Averaging Time	Baseline Concentrations (ug/m^3) [a]	AAQS [b] (ug/m^3)	Percent of AAQS
SO_2	3-Hour	149	1,300	11%
	24-Hour	50	260	19%
	Annual	8	60	13%
NO_2	Annual	19	100	19%
CO	1-Hour	12,535	40,000	31%
	8-Hour	6,440	10,000	64%
PM_{10}	24-Hour	39	150	26%
	Annual	19	50	38%
Pb	Quarter	0.01	1.5	<1%
O_3	1-Hour	196	235	83%

[a] Baseline concentrations are the appropriate maximum concentrations for the applicable AAQS at the two nearest monitoring sites for the most recently available three years of data. Short-term concentrations (24-hours or less) are high second-high concentrations over three years while long-term concentrations (quarterly and annual) are the maximum concentration over three years except for 24-hour PM10 and 1-hour O3 (fourth-highest daily maximum concentration over three consecutive years). SO2, NO2, CO and O3 ppm converted from ppm to ug/m3 using 2620, 1881, 1150 and 1963 ug/m3 per ppm, respectively.

[b] AAQS shown are generally the Florida AAQS, which are more restrictive than the National AAQS.

Additional information about the development of the background concentrations is presented in Section 5.0 of the PSD Permit Application (see Volume III-Air Quality).

Measurement Programs

The Florida Department of Environmental Protection has established an air quality surveillance system in accordance with EPA regulations 40 CFR Part 58.20 (f). The surveillance system was established to collect measurements of pollutant concentration levels in ambient air for six criteria pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter of 10 microns or less in diameter (PM_{10}), ozone (O_3), and lead (Pb). Two types of monitoring networks are used to collect the ambient air data in the state. These networks are the State/Local Air Monitoring Station (SLAMS), Special Purpose Monitor (SPM), and the National Air Monitoring Station (NAMS). Within the Florida monitoring program, a sampler location is determined by the monitoring objectives and siting criteria contained in the Network Design for State and Local Air Monitoring Stations section of 40 CFR Part 58. Continuous samplers run 24 hours per day. Manual samplers run for 24 hours every second, third, or sixth day. Missing values are carefully documented, and make-up days may be required in manual networks to ensure that reporting requirements are met. Each sampler is calibrated on a regular basis. Calibration standards are referenced to the National Bureau of Standards - Standard Reference Materials. Calibrations are performed at least once each quarter to test the instrument over its full operating range. Final unadjusted calibrations are performed prior to maintenance, before instrument shut-down, when biweekly span checks exceed +15 percent error, and after an air quality exceedance. Confidence limits of precision and accuracy are assigned to all measurements with federally approved references or equivalent methods/monitors. EPA's audit covers facilities, equipment, procedures, documentation, and personnel.

2.3.8 NOISE

The Facility is in compliance with the Lee County Noise Ordinance 88-47, as revised. The noise impacts due to the expansion of the existing Facility are anticipated to be minimal, as further described in Section 5.7.

Technical noise analyses were performed prior to construction of the original Facility and again during the Acceptance Test during initial Facility operations. The noise studies are presented in Volume II, Appendix 11.1 and 11.2, respectively. The studies describe the methodologies used in estimating and determining the operational impacts of the Facility and the results of the analysis. The results from the studies indicated that Facility noise levels were acceptable and in compliance with all applicable standards.

The selection of the monitoring locations was based on the following criteria.

- Land use or zoning-specifically, an area with a significant residential population or commercial use;

- Local noise ordinances-governmental agencies have established local noise levels which may not be exceeded; and

- Sensitive receptors-concentrations of individuals who may be sensitive to an increase in noise level (e.g., hospitals, schools, nursing homes, etc.).

All of the major equipment, with the exception of the cooling tower, to be added to the Facility will be enclosed in order to minimize potential noise emitted from the operations of the expanded Facility. A comparison of the previous studies with the assumed impacts due to the Facility expansion indicates that the expansion of the Facility will not increase the noise levels emitted from the Facility beyond allowable limits and not cause a discernable impact at any sensitive receptor.

MALCOLM PIRNIE

Lee County, Florida
Solid Waste Energy Recovery Facility

Supplemental Application for Power Plant Site Certification

Section 3

SECTION 3.0

THE PLANT AND

DIRECTLY ASSOCIATED FACILITIES

3.0 THE PLANT AND DIRECTLY ASSOCIATED FACILITIES

3.1 BACKGROUND

The County plans to expand the existing Facility because the County's comprehensive recycling program and the existing Facility are unable to process all of the solid waste that is being generated in Lee and Hendry Counties. A Solid Waste Master Plan Update was completed for Lee County by Malcolm Pirnie, Inc. (MPI) in April 2000. The revised plan recommended the development of a third 600 tpd (nominal) mass-burn unit at the existing Facility. On June 5, 2001, the Lee County Board of County Commissioners approved beginning the permitting and preliminary design process for adding the third unit to the Facility. The Materials Separation Plan, included in Volume II, Appendix 3.1, outlines the current systems and procedures employed in the management of the County's solid waste. This plan provides a detailed description of the County's integrated solid waste management system.

3.1.1 FACILITY SITING

The initial site selection process for the Facility began in 1989 with a detailed study prepared by the County's consulting engineers. A specific siting methodology was used to evaluate the suitability of all potential sites. The methodology eliminated areas that were either unacceptable or marginal by applying negative siting criteria, such as flood potential, well field impacts, airport proximity, urban development, and the presence of water bodies. Environmentally sensitive areas, such as cypress forests, wildlife management areas, and high water table areas, were avoided. Remaining sites were then characterized by comparing land availability and ownership, and a shortlist of six sites was developed.

A site analysis completed in February 1990 provided a more detailed comparison of these six candidate sites. This analysis compared the sites in terms of availability of water and wastewater services, proximity to electrical interconnection with FP&L or the Lee County Electric Co-op, transportation impacts and access, zoning and land use, haul cost, air quality, flood plains, wetlands, wildlife, soils and geology with respect to earthwork and foundation requirements, hydrologic conditions, and relative cost. The current Facility site was selected based on these criteria and additional information received at a public hearing before the Board of Lee County Commissioners. The original siting analyses were based on the development of a Facility with an initial capacity of 1,800 tpd and an ultimate site capacity of 2,400 tpd.. The County subsequently

decided to build the Facility with an initial capacity of 1,200 tpd (nominal). The County now wishes to increase the Facility capacity 1,800 tpd (nominal).

The 2000 Solid Waste Master Plan Update considered alternatives for meeting the County's increased need for solid waste disposal capacity. Alternatives included: expanding the existing Facility; exporting Lee and Hendry County waste to other disposal sites not in either county; and/or increasing the amount of solid waste recycled. Based on an analysis of the alternatives, the County concluded that expansion of the existing Facility was the preferred alternative, given that the County could not feasibly recycle all of the excess solid waste being generated.

3.1.2 EXISTING AND PROPOSED FACILITIES

The County has decided that its current and foreseeable solid waste needs are best served by expansion of the existing Facility with a third "identical" municipal waste combustor, which uses mass-burn technology for the combustion of solid waste. This process recovers heat energy in the form of steam, and converts that steam energy into electricity that can be sold.

Existing ancillary facilities including truck scales, a scale house for weighing refuse, an ash handling building, cooling tower, and switch yard. A RMPF, a waste tire storage facility, Household Hazardous Waste (HHW) drop-off facility, and horticultural waste facility have also been constructed at the Facility site. A description of the Facility expansion is provided below.

The Facility is owned by Lee County, and operated by a full-service vendor (Covanta Lee, Inc.) under contract to the County. It is anticipated that Covanta will provide design, construction, start-up, and acceptance testing services for the Facility expansion.

Energy Recovery Facility

The existing Facility has a nominal rated capacity of 1,200 tpd. With the expansion of the Facility, the new capacity will be a nominal 1,800 tpd. The expanded Facility will have three stoker waterwall combustion/steam generation units, each with a continuous design-rated capacity of 660 tpd at a reference waste of 5,000 Btu/lb, and a total design capacity of 1,980 (at 5,000 Btu/lb). Each boiler unit operates independently; therefore, it is possible to shut down one unit at a time for maintenance and inspection.

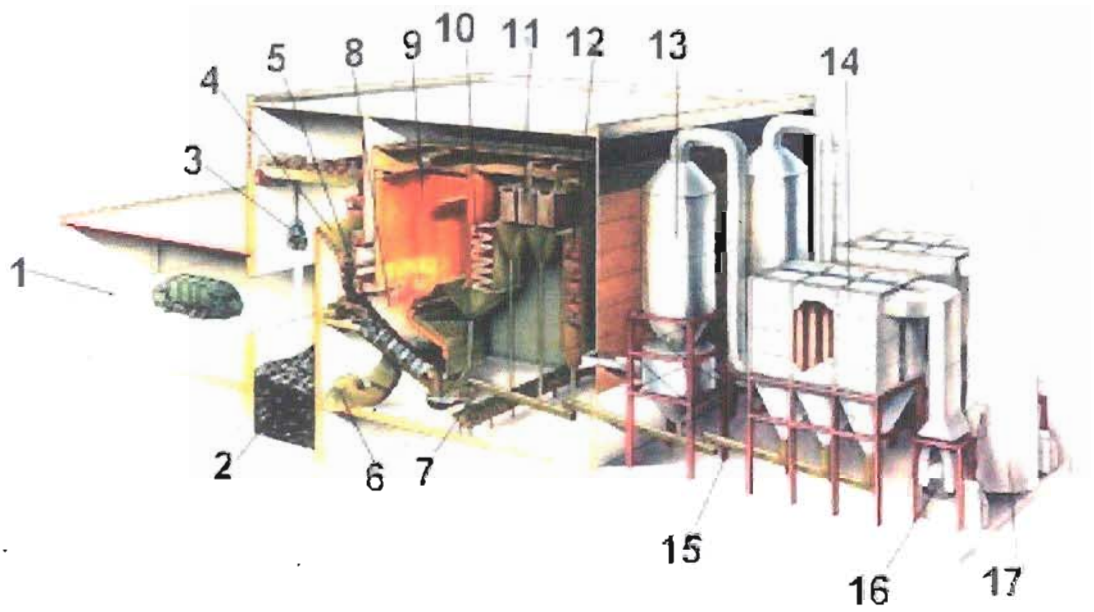
The expansion project will include construction of the third boiler unit, expansion of the air quality control system, expansion of the cooling tower, expansion of the ash handling/storage building, addition of a lime silo, addition of a new flue within the existing stack, addition of a scale platform, and addition of a 20 megawatt (nominal) steam turbine generator. With the exception of the cooling tower, all major additions will be enclosed (e.g., the turbine-generator, APC equipment). The tipping area and refuse storage pit have already been sized to handle 1,800 tpd. The expanded Facility will generate approximately 60 megawatts at 1,800 tpd. Electrical transmission lines from the Facility's electrical switch yard connect with the FP&L Buckingham substation near the Facility. The County and its operator share electrical revenues from energy sales.

Since the Facility uses mass-burn technology, there will be no significant pre-processing of wastes at the Facility prior to combustion. Separation of recyclables will continue to occur at the RMPF. A schematic diagram of a typical stoker mass-burn facility similar to the proposed Unit No. 3 MWC is presented in Figure 3-1. Municipal solid waste will be truck-delivered to the Facility, and ash residue will be removed by the same mode of transport. The solid waste will be placed on the tipping floor and/or in the refuse bunker directly from transfer trailers and packer trucks inside the refuse storage building. All waste will be stored inside the building, and no waste will be visible from the outside. Two overhead cranes will mix the waste in the bunker and load the charging hoppers.

It is anticipated that the municipal solid waste will be reduced to 10 percent of its original volume and about 30 percent of its original weight by the combustion process. The resulting ash will be quenched to approximately 30 percent moisture. Bottom ash from the furnace and fly ash from the emission control system will be commingled and stored in the ash management building prior to removal from the Facility.

The new unit will be equipped with fabric filters (baghouses) for particulate removal. Acid gas dry scrubbers will also be used, as well as a carbon injection system and a selective non-catalytic reduction system and (SNCR).

FIGURE 3-1 Typical Stoker Mass-Burn Facility



1 Tipping Floor
2 Refuse Pit
3 Overhead Crane
4 Feed Chute
5 MARTIN® Stoker Grate
6 Combustion Air Fan
7 MARTIN® Ash Discharge
8 Combustion Chamber
9 Furnace
10 Convection Zone
11 Superheater
12 Economizer
13 Scrubbers
14 Baghouse
15 Fly Ash Handling System
16 Induced Draft Fan
17 Stack

3.2 SITE LAYOUT

The general site development plan (Figure 2-6) shows the existing Facility layout and the proposed (future) expansion. The existing and proposed Facility structures comply with the requirements of local setback ordinances. An access road loops around the Facility. Roads and scale houses are arranged to separate most of the truck traffic from employee and visitor parking and administration areas. The Facility includes landscaping to comply with local development standards.

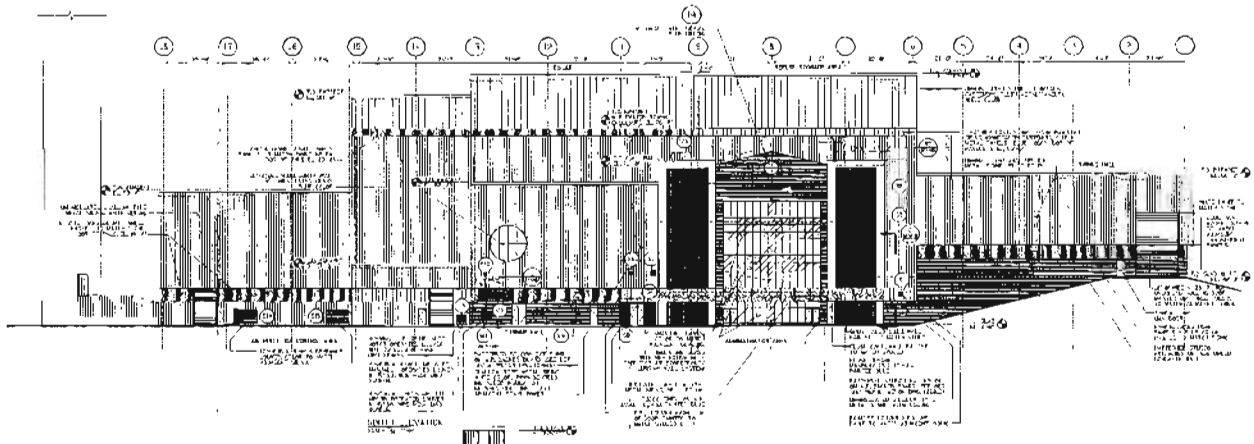
Roadway grades on Facility access roads do not exceed three to five percent for inbound traffic, and five percent on egress, to minimize gear shifting by trucks and the associated noise. All roads are all-weather construction for heavy traffic and comply with FDOT design standards and requirements. Traffic patterns are regulated by signs and control lights as needed to allow efficient and safe traffic flow. Parking spaces have been provided to accommodate the work force, potential visitors, and shift overlaps. Automobile parking is separated from truck circulation to minimize potential conflicts.

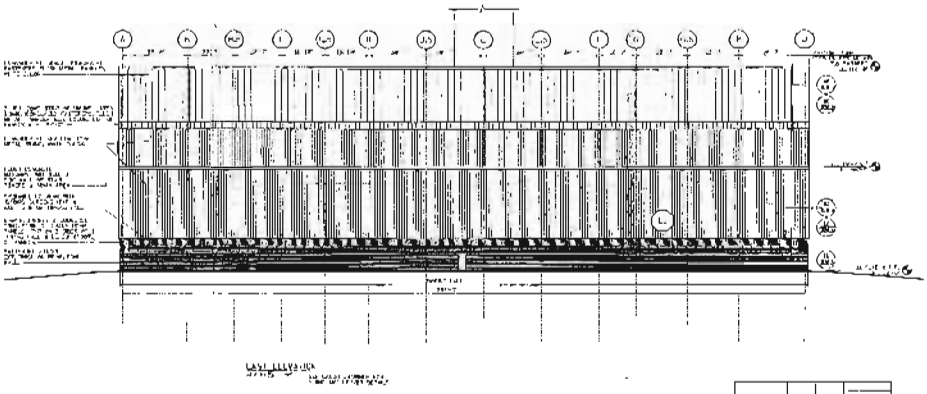
3.2.1 BUILDING DIMENSIONS

The Facility consists of several contiguous and separate buildings, as shown in Figure 2-6. A profile with dimensions is given in Figures 3-2a and 3-2b. The exact Facility dimensions for the expansion will be determined by Covanta and the County, but will be consistent with the existing Facility dimensions.

The existing administration building is approximately 90 feet high, 150 feet long, and 90 feet wide. It is bordered on three sides by the centrally located processing facilities, with the fourth side facing the parking area. Offices are located along the inner side of the administration building. The administration building will not require modification to accommodate the expansion.

The processing facility varies in height and area depending on the processing function housed in that portion of the building. On the tipping floor side, the building is approximately 47 feet high, and 118 feet by 290 feet in surface area, to accommodate refuse unloading activities. The maximum height of fill at the tipping floor is approximately 20 feet above existing grade. This portion of the Facility is elevated to allow waste collection trucks to drop refuse into the storage pit. The pit itself is approximately 70 feet by 235 feet in surface area, with its bottom

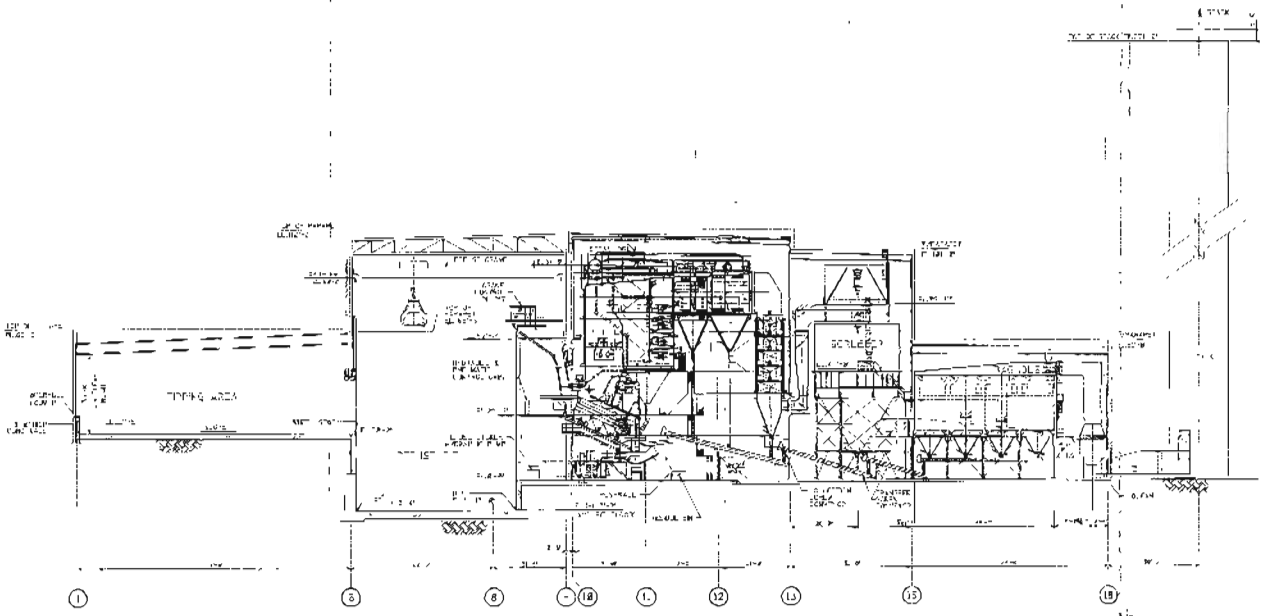




LOUVER SCHEDULE

ARCHITECTURAL
BUILDING ELEVATIONS

SOUTH MARTIN SYSTEMS OF TEXAS, INC.



SECTION A-A

GENERAL ARRANGEMENT
SECTION A-A

GOOCH MARTIN SYSTEMS OF LEE, INC.

approximately 13 feet below existing grade. No changes are required to the tipping building or refuse storage pit for the expansion of the Facility.

The two existing combustion/steam generation units, with appurtenances, are housed in a building that measures approximately 114 feet by 128 feet, and the new unit will increase the building surface area to approximately 176 feet by 128 feet when the Facility reaches its ultimate capacity of 1,800 tpd. Appurtenances include charging hoppers and chutes, feeders, stokers or combustors, siftings hoppers and conveyors, waterwall furnace and non-radiant superheater and convection sections, steam drums, a soot cleaning system, boiler support steel, a water quenching residue discharge/conveyor, combustion air blowers, auxiliary fuel burners, controls, and an economizer. The height of the building over the boiler units is approximately 110 feet. A new turbine building, approximately 80 feet long by 67 feet wide, will be added adjacent to the existing turbine building, towards the administration building as part of the expansion.

The existing air pollution control equipment is housed in a 97-foot by 136-foot building. With the addition of the new air pollution control equipment, the building has an approximate 176-foot by 136-foot surface area at the expanded capacity of 1,800 tpd. The existing Facility stack, located about 40 feet west of the air pollution equipment, has a height of approximately 275 feet above existing grade, or about 300 feet above mean sea level, and will house the new flue for the expanded facility.

The cooling tower and electrical switchyard are located west of the Facility proper. The ash building, to the north, is expected to expand to75 feet wide by 100 feet long. An additional scale platform may be required near the Facility entrance.

3.2.2 VISUAL IMPACT

For the original application, a preliminary study was performed to determine the visual impact of the Facility on residences in the area. Since the emissions stack is the tallest structure of the Facility, its potential maximum height of 400 feet above MSL was chosen for study purposes. The conclusion of the study was that the stack will not cause a major impact to area aesthetics.

The existing stack is 300 feet above MSL and will not be made taller for the expanded Facility. Therefore, there will be no new or increased visual impacts due to the Facility expansion. For the expansion, the existing stack will be utilized with the addition of a third flue.

The Facility landscaping provides a natural appearance and limits the visibility of the Facility buildings. In addition to the buffer requirements of local zoning and development ordinances, the landscaping incorporates primary, secondary, and minor trees and shrubbery. Landscaping is provided along the entrance road and adjacent to the administration building and parking area. Wherever possible, native plants are used for landscaping.

3.3 FUEL

The expanded Facility, like the current one, will obtain its fuel (i.e., municipal solid waste) from Lee and Hendry Counties. Only processible solid waste will be used at the Facility. The Facility will not use hazardous or biomedical waste, or sewage sludge.

3.3.1 FUEL SUPPLY

The only fuels burned in the Facility's municipal waste combustion units are solid wastes allowed by the Conditions of Certification, and natural gas and propane as auxiliary fuels. Other wastes shall not be burned without prior approval from the FDEP. A detailed description of the authorized fuel supply is provided in Volume II, Appendix 7.1 of this Application.

The Facility's throughput exceeded Covanta's Annual Processing Guarantee (372,000 tpy) by 20,257 tons in Fiscal Year 2000. Following completion of the expansion, the Facility's processing guarantee will be a minimum of 558,450 tpy.

Most waste is delivered in standard municipal-type packer vehicles, open-bodied dump trucks, and transfer trailers. The Facility receives solid waste deliveries 6 days per week, 52 weeks per year.

All calculations, analyses, and performance data for the Facility have been based on an as-fired solid waste with a higher heat value of 5,000 Btu per pound, with a 21 percent moisture content by weight. Table 3-1 presents the composition of the reference waste and Table 3-2 lists the ultimate analysis for the reference waste.

3.3.2 FUEL STORAGE

The existing Facility is equipped with a weighing station to weigh and record the quantity of solid waste delivered. An additional scale platform may be required. The Facility also includes a totally enclosed tipping floor with 6 tipping bays of varying width, totaling approximately 234

feet. Wheel-stops are provided at each tipping bay to prevent vehicles from backing into the solid waste storage pit. Solid waste is stored in a completely enclosed pit with a bottom elevation below that of the tipping floor. The pit is sized for a minimum storage capacity of 5,400 tons of solid waste at a density of 550 pounds per cubic yard, which will provide at least three days storage at the Facility's ultimate capacity of 1,800 tpd. Leachate in the storage pit is normally absorbed by the solid waste and processed through the combustion units.

TABLE 3-1
REFERENCE SOLID WASTE COMPOSITION

Waste Category	Nominal Percentage By Weight
Combustibles	58.4
Moisture	20.7
Non-Combustibles	20.9
TOTAL	**100.0**

TABLE 3-2
REFERENCE SOLID WASTE ULTIMATE ANALYSIS

Component	Percent by Weight
Carbon	28.5
Hydrogen	3.8
Oxygen	25.1
Nitrogen	0.5
Sulfur	0.1
Chlorine	0.4
Ash and Inerts	20.9
Moisture	20.7
TOTAL	**100.0**

The refuse pit ensures adequate on-site storage for refuse over long weekends. The refuse pit capacity is also used to store incoming refuse when the Facility is down for scheduled or unscheduled maintenance. In this manner, the need to bypass waste directly to a landfill is

minimized. It is anticipated that in the event all three units are out of operation, the refuse pit will provide a minimum of approximately 5 days of storage capacity before waste must be directed to a Class I landfill.

3.4 AIR EMISSIONS AND CONTROLS

3.4.1 AIR EMISSION TYPES AND SOURCES

The proposed expansion of the Facility is the installation of a third 660-tpd MWC unit (Unit #3) and associated equipment, which will increase the Facility's capacity to 1,980-tpd. The expansion also will include the installation of a new boiler, air pollution control system and steam turbine generator for Unit 3.

Since the original PPSA application for the Facility anticipated the installation of a third MWC unit, the design of the Facility was planned to facilitate the addition of Unit 3. Space is available for an additional flue in the Facility's stack, and the tipping floor and refuse pit have been sized to accommodate the operation of three MWC units at 1,980-tpd.

All MSW is stored inside the fully enclosed Facility prior to combustion. Air is drawn from the tipping floor and refuse pit and then used in the combustion process. As a result, the tipping floor and refuse pit are kept under negative pressure, which helps ensure dust and odors do not escape into the atmosphere. Loading and unloading of trucks will take place inside the residue storage building and enclosed tipping floor building, respectively. Trucks entering and leaving the site will be covered and will travel on paved roads.

The existing ash handling building will be expanded to accommodate Unit 3 operations. Bottom ash from all three MWC units, and fly ash from the fabric filters are combined in an ash discharger and transported inside fully enclosed conveyors to the ash handling building, where ferrous and non-ferrous metals are removed. A fabric filter will be used to remove any potential particulate emissions released from this area.

In addition, a new lime storage silo will be installed to accommodate the increased lime usage due to the addition of Unit 3. A fabric filter will be used to remove lime particulate emissions from the loading operations. Thus, the emissions from the Unit 3 boiler stack will be the only major source of emissions from the proposed expansion. There are no PSD significant changes planned for Units 1 and 2; therefore, Units 1 and 2 are not subject to New Source Review (NSR).

A complete description of stack emissions is contained in Section 3.0 of the Prevention of Significant Deterioration (PSD) Permit Application (Volume III-Air Quality). Maximum expected emission levels for the proposed facility are contained in Table 3-1, Section 3.0, of the PSD Permit Application in Volume III. A complete Form 62-210.900$_{(1)}$ "Application for Air Permit – Title V Source", is provided in Attachment A of Volume III.

3.4.2 AIR EMISSION CONTROLS

Air pollution control technologies are available to control the different classes of pollutants, which include particulate matter (PM, including particulate matter less than 10 microns in diameter, PM_{10}), trace metals and organic compounds, sulfur dioxide (SO_2) and acid gases, nitrogen oxides (NOx) and products of incomplete combustion such as carbon monoxide (CO) and volatile organic compounds (VOCs).

Emissions from the Unit 3 stack are controlled through a combination of good combustion practices (GCP), spray dryer absorber (SDA), fabric filter (FF) baghouse, activated carbon injection (ACI), and selective non-catalytic reduction (SNCR). These commercially available pollution control systems and their operating characteristics are fully described in the Best Available Control Technology (BACT) analysis in Section 4.0 of the Prevention of Significant Deterioration (PSD) Permit Application (Volume III-Air Quality).

3.4.3 BEST AVAILABLE CONTROL TECHNOLOGY

The proposed modification of the addition of Unit 3 is a major modification to an existing major stationary source in an attainment area and is subject to PSD review because this modification will result in an increase in pollutant emission rates in excess of the PSD significant emission rates. (Table 2-1 of Volume III.)

The BACT analysis is presented in Section 4.0 of the PSD Application (see Volume III-Air Quality). The analysis evaluates the technical feasibility, environmental, economic and energy aspects of alternative control techniques and methods. For all of the criteria pollutants, Lee County is designated as being in attainment of the National Ambient Air Quality Standards (or unclassified), and hence subject to BACT. Based on a review of various air pollutant control alternatives, a spray dryer absorber and baghouse are proposed as BACT for all pollutants (other than NOx and Hg) subject to PSD review. The spray dryer absorber will be designed to achieve an emission limit of 29 parts per million on a dry volume basis (ppmdv) at 7% O_2 or 80%

reduction for SO_2; and 25 ppmdv at 7% O_2, or 95% reduction, for HCl. The baghouse will be designed to achieve an outlet grain loading of 0.009 grains per dry standard cubic foot corrected to 7 % O_2 (gr/dscf at 7%O_2). Combustion control techniques will be employed to minimize emissions of CO (100 ppmdv at 7% O_2) and VOCs (30 ppmdv at 7% O_2). Selective non-catalytic reduction (SNCR) will be used to control NOx emissions to 180 ppmdv at 7% O_2 for the first year of operation and 150 ppmdv at 7% O_2 thereafter. In addition, activated carbon injection will be used to control mercury emissions to 70 micrograms per dry standard cubic meter (ug/dscm) at 7% O_2 or 85% control. BACT controls for these and other pollutants are discussed in more detail in Section 4.0 of the PSD Application (Volume III-Air Quality).

3.4.4 DESIGN DATA FOR CONTROL EQUIPMENT

Design data for control equipment are not available because the furnace/boiler supplier has not been selected yet. Design parameters for the proposed expansion facilities, used in the BACT analysis, are presented in Section 4.0 of the PSD Application (Volume III-Air Quality).

3.5 PLANT WATER USE

During normal operation of the Facility, water is purchased from the City of Fort Myers' potable water system, which provides potable water used for boiler makeup and other potable purposes. Currently, the Facility uses 0.051 mgd of potable water. The Facility's use of potable water will be 0.075 mgd when the Facility processes 1,800 tpd. Treated wastewater effluent (reclaimed water) drawn from the City of Fort Myers Central Advanced Wastewater Treatment Plant (Central WWTP) is used for all process cooling water. The Central WWTP is located approximately six miles west of the site. The cooling tower blowdown water is used internally at the Facility, to the greatest practicable extent, for ash quenching, lime slaking, and any other area where usable. Process water is reused internally for ash quenching. On-site wells are available for back-up cooling water needs. However, the wells have not been regularly used as a source for back-up cooling water since the Facility was constructed. No process or sanitary wastewater is discharged to surface water or groundwater bodies. Alternative sources of water are discussed in Section 8.0. A quantitative water use diagram is provided in Figure 3-3. Volume II, Appendix 7.9 contains the Facility's Water Conservation Plan, submitted to the SFWMD August 13, 2002.

3.5.1 HEAT DISSIPATION SYSTEM

System Design

Cooling water is used in a closed-loop system, which employs water-cooled condensers to condense the low-pressure steam discharged from the turbine. Cooling water circulates through the condensers, and waste heat is dissipated from the condenser cooling water by passage through a wet mechanical draft cooling tower.

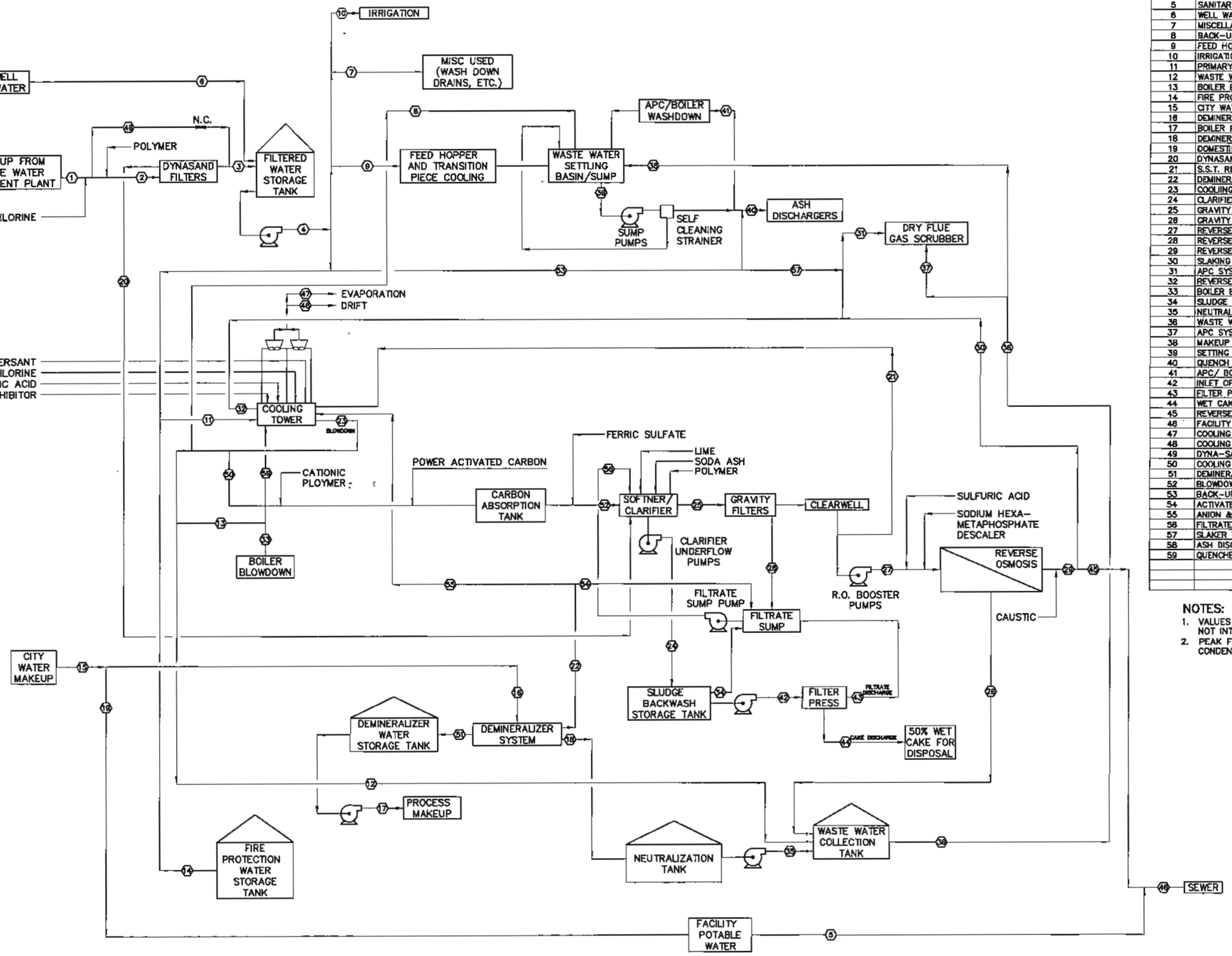
The cooling tower system only has adequate capacity to dissipate the heat from steam generated by firing 1,200 tpd of solid waste. Therefore, the cooling tower system will have to be expanded to handle the third 600 tpd unit. If the steam turbine generator is out of service at any time when the boilers are producing high-pressure steam, a separate bypass condenser accepts the full rated design capacity of high pressure steam from the plant's boilers. Through the use of the bypass condenser system, Facility processing capacity will not be diminished during periods of full or partial turbine generator outage.

Consumptive (non-potable) water use is primarily due to losses from the cooling tower system in the form of evaporation, drift, and blow down. The average water loss due to evaporation, drift, and blowdown will be 0.80 mgd at 1,800 tpd. Other water uses (losses) include water consumed in ash quenching operations and the operation of the dry scrubber system.

All of the cooling water used by the Facility is delivered by pipeline from the Central WWTP. No wastewater is discharged from the Facility system, except for a maximum of 0.15 mgd of combined sanitary and process wastewater, which is routed to the Central WWTP for treatment and reuse. Cooling ponds are not used at the Facility.

Source of Cooling Water

All cooling tower makeup water is obtained through a direct pipeline link with the Central WWTP. It is anticipated that approximately 1.2 mgd of reclaimed water will be required for cooling tower makeup water when the Facility is operating at 1,800 tpd. The Central WWTP has a capacity of 11 MGD, which is ample to supply the reclaimed water needs of the expanded Facility, even during low wastewater flow periods. Table 3-3 lists the current pretreatment requirements for the Central WWTP. The back-up cooling water supply for the Facility is four (4) on-site wells. Additional information regarding the backup cooling water supply is provided in Section 8.2.



WATER BALANCE[1]
HHV = 5,000 BTU/LB

STREAM	DESCRIPTION	HISTORIC DATA (GPM)	EXPANDED PLANT TO 1800 TPD (GPM)	PEAK FLOW (GPM)[2]
1	MAKEUP FROM WASTE WATER TREATMENT PLANT	415	623	1250
2	DYNA-SAND FILTER INLET	415	623	867
3	FILTERED WATER MAKEUP TO STORAGE	385	578	1250
4	FILTERED WATER TOTAL PLANT MAKEUP	410	615	1250
5	SANITARY WASTE	2	3	75
6	WELL WATER EMERGENCY MAKEUP	–	–	1000
7	MISCELLANEOUS USED (WASHDOWN, ETC.)	4	6	50
8	BACK-UP SETTLING BASIN MAKE-UP	–	0	85
9	FEED HOPPER AND TRANSITION PIECE COOLING	–	0	25
10	IRRIGATION	–	0	85
11	PRIMARY COOLING TOWER MAKEUP	395	593	825
12	WASTE WATER COLLECTION TANK MAKEUP	15	35	110
13	BOILER BLOWDOWN QUENCH WATER	.5	.1	190
14	FIRE PROTECTION MAKEUP	–	–	625
15	CITY WATER MAKEUP	36	50	224.2
16	DEMINERALIZER SYSTEM MAKEUP	23	35	172
17	BOILER PROCESS MAKEUP	20	30	57
18	DEMINERALIZER CONCENTRATED REGENERATION WASTE	3	4.5	56
19	DOMESTIC WATER	2	3	75
20	DYNASAND BACKWASH TO WASTE WATER TREATMENT	30	45	52.5
21	S.S.T. RECIRC. TO COOLING TOWER	65	98	300
22	DEMINERALIZER BACKWASH AND FINAL RINSE	3	4.5	120
23	COOLING TOWER BLOWDOWN	90	135	490
24	CLARIFIER SLUDGE BLOWDOWN	2	3	50
25	GRAVITY FILTER INLET	105	158	300
26	GRAVITY FILTER BACKWASH	4	6	1178
27	REVERSE OSMOSIS INLET	101	150	200
28	REVERSE OSMOSIS REJECT STREAM	19	28	50
29	REVERSE OSMOSIS PRODUCT STREAM	82	123	150
30	SLAKING WATER AND SECONDARY COOLING TOWER MAKEUP	82	123	150
31	APC SYSTEM SLAKING WATER	13	18	31
32	REVERSE OSMOSIS PRODUCT TO COOLING TOWER	69	105	150
33	BOILER BLOWDOWN	10	15	87.5
34	SLUDGE STORAGE TANK DECANT/ OVERFLOW	8	12	18.4
35	NEUTRALIZATION TANK DISCHARGE	13	19	140
36	WASTE WATER COLLECTION TANK DISCHARGE	47	72	110
37	APC SYSTEM DILUTION WATER	37	55	82
38	MAKEUP TO SETTING BASIN	10	15	110
39	SETTING BASIN DISCHARGE	16	24	85
40	QUENCH WATER TO ASH DISCHARGERS	16	24	36
41	APC/ BOILER AREA WASHDOWNS	–	–	85
42	INLET OF FILTER PRESS	9	14	100
43	FILTER PRESS FILTRATE DISCHARGE	8	12	20
44	WET CAKE DISCHARGE	.2	.3	.5
45	REVERSE OSMOSIS PRODUCT WATER TO SEWER	–	–	150
46	FACILITY DISCHARGE TO SEWER	4	6	225
47	COOLING TOWER EVAPORATION	427	641	801.9
48	COOLING TOWER DRIFT	2	3	6.5
49	DYNA-SAND FILTER BYPASS	6	9	1250
50	COOLING TOWER BLOWDOWN TO WASTE WATER TREATMENT	100	150	300
51	DEMINERALIZED WATER	21	31	52
52	BLOWDOWN TO CLARIFIER	100	150	300
53	BACK-UP WATER TO SLAKERS & ASH DISCHARGERS	–	–	87
54	ACTIVATED CARBON BED BACKWASH & RINSE	.5	1.0	120
55	ANION & CATION BACKWASH & RINSE	2.0	3.0	100
56	FILTRATE SUMP DISCHARGE	14	21	150
57	SLAKER WATER BACK-UP	–	–	31
58	ASH DISCHARGER BACK-UP WATER	–	–	36
59	QUENCHED BOILER BLOWDOWN	10.5	16	277.5

NOTES:
1. VALUES SHOWN ARE FOR TYPICAL OPERATIONS ONLY AND NOT INTENDED FOR DESIGN PURPOSES.
2. PEAK FLOW ARE CALCULATED BASED ON 2 LINE DUMP CONDENSER OPERATIONS.

WATER BALANCE DIAGRAM (PRELIMINARY)
FIGURE 3-3

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TABLE 3-3

PRETREATMENT REQUIREMENTS FOR THE FORT MYERS CENTRAL ADVANCED WASTEWATER TREATMENT PLANT

Parameter	Maximum Concentration (mg/l) (Time) Proportional Composite Sample	Maximum Instantaneous (mg/l) Concentration (Grab Sample)
Aluminum dissolved	15.00	30.00
Antimony (Sb)	0.50	1.00
Arsenic (As)	0.05	0.10
Barium (Ba)	2.50	5.00
Boron (B)	1.00	2.00
Cadmium (Cd)	0.01	0.02
Chloride (Cl)	500.00	600.00
Chromium-total (Cr)	1.50	3.00
Cobalt (Co)	5.00	10.00
Copper (Cu)	0.40	0.80
Cyanide (Cn)	0.05	0.10
Fluoride (F)	10.00	20.00
Iron (Fe)	5.00	10.00
Lead (Pb)	0.10	0.20
Manganese (Mn)	0.50	1.00
Mercury (Hg)	0.015	0.03
Nickel (Ni)	0.50	1.00
Phenols	0.40	1.00
Selenium (Se)	0.75	1.50
Silver (Ag)	0.05	0.10
Titanium dissolved (Ti)	1.00	2.00
Zinc (Zn)	2.00	4.00
Total Dissolved Solids	1875.00	3750.00
BOD	300.00*	
COD	600.00*	
TSS	300.00*	
Total Nitrogen (TKN)	30.00*	
Total Phosphorous	10.00*	
Oil and Grease	100.00	100.00
MBAS	5.00	10.00

* Concentrations above this amount are subject to a surcharge in accordance with the high strength wastewater control schedule and other rate resolutions and ordinances that are applicable.

3.5.1.3 Dilution System

Process water is treated and reused internally within the Facility to the greatest extent practical. A maximum wastewater discharge of 0.15 mgd is allowed from the Facility. This discharge includes a combination of sanitary wastewater and process water. Most of the sanitary wastewater discharged from the Facility comes from showers, offices, and personnel areas. Process water is used for ash quenching. No process water will be discharged to ground water or surface waters.

3.5.1.4 Blowdown

Flows from blowdown systems will come from the boiler, the cooling towers, and the boiler feedwater demineralizers (BFD). Blowdown flows from the BFDS and boilers will be collected in the blowdown tank and either discharged to the residue quench tank or treated and reused in the Facility. Cooling tower blowdown is recycled in the lime slaking dry scrubber system and other Facility uses to the greatest extent possible.

3.5.1.5 Injection Wells

No injection wells are used at this Facility and such use at the Facility is not contemplated for the future.

3.5.2 DOMESTIC / SANITARY WASTEWATER

The existing wastewater systems can accommodate the expansion of the Facility. Sanitary wastewater flows are generated within the Facility only in the personnel service areas (e.g., showers, break rooms and washrooms). The Facility employs approximately 40 people for normal operation, with fluctuating staff increases from time to time as contractors and other specialty staff are retained for task-specific work. Provisions exist to accommodate up to 30 visitors at the Facility at any one time.

Wastewater discharged from the Facility is limited to 0.15 mgd and consists of sanitary sewage, and small quantities of waste process water. Wastewater discharges are not currently pretreated prior to disposal in the City of Fort Myers publicly owned treatment works. If it becomes necessary, wastewater will be treated on-site, prior to discharge to comply with the City of Fort

Myers pretreatment requirements, detailed in Section 2.2.7. Wastewater will be discharged via sanitary sewer to the Central WWTP for treatment.

Potable water requirements (up to 0.075 mgd) are supplied by the City of Ft. Myers Water Treatment Plant's distribution system. The potable water transmission route is described in Section 6.2.

3.5.3 PROCESS WATER SYSTEMS

To meet its process water needs at the nominal design capacity of 1,800 tpd, the Facility will use up to 1.1 mgd of advanced treated effluent from the Central WWTP. The Facility uses this reclaimed water for cooling purposes, and will treat and reuse the process water. Any remaining liquid wastes will become part of the returned sanitary and process flows for treatment at the Central WWTP.

3.6 CHEMICAL AND BIOCIDE WASTE

Chemicals are added to several of the process streams. Corrosion inhibitors and oxygen scavengers are added to the boiler make-up water. Corrosion inhibitors, biocides, and chlorine are added to the cooling tower make-up water. The boiler make-up water (usually 1-2% of the boiler steam flow rate) replaces water that is removed from the boiler to reduce the solids content of the boiler water. The boiler blowdown water is relatively pure and is suitable for direct disposal in the sanitary sewer once cooled. There are no discharges from chemical processing, spent process water treatment, or waste piles as a result of plant operation that would enter the local environment.

The cooling tower blowdown amounts to approximately 25% of the make-up supply, depending upon the concentration levels of phosphates in the incoming water. Cooling tower blowdown is a primary source of make-up water to the ash quench system and scrubber dilution water. All but approximately 6% of blowdown water is used internally. The remaining blowdown is discharged to the sanitary sewer (approximately 7,600 gallons per day). The sanitary sewer system was designed for 150,000 gpd and is operating at 8% of that capacity. The flow diagram of the Facility wastewater system is included in Figure 3-3.

3.7 SOLID AND HAZARDOUS WASTE

Non-combustible material, ash residue, and lime grit are generated at the Facility. Appropriate disposal practices are in place to handle each of these waste streams.

3.7.1 SOLID WASTE

Municipal solid waste combustion residue consists primarily of noncombustible materials, fly ash, and bottom ash. Spent lime and carbon are a residue by-product of the air quality control system. The residue handling system removes these materials from the combustion system for disposal. The bottom ash siftings and the fly ash are quenched and commingled prior to disposal. Conveyers transport ash and spent lime from the boilers, dry scrubbers, and bag house to the residue system. The ash and lime are conveyed to the ash building where ferrous and non-ferrous materials are removed. The remaining material is loaded into dump trucks and transported to the Gulf Coast Landfill or the Lee/Hendry Landfill.

The residue contains no more than four percent noncombustible material by dry weight content after recycling.

Ash Management Plan

Ash falls from the bottom of each combustion unit directly into a water-filled quench tank. The quench tank is fully enclosed to prevent ash siftings from becoming airborne. The quenched ash is then allowed to drain free water, and is mechanically loaded into an enclosed conveyor system, which transports the ash and residue to the enclosed ash storage building. A back-up system for ash transport to the ash storage building is also in place. Mechanical transport equipment consisting of front-end loaders is available at the Facility to transport ash in the event of a breakdown of the conveyor system.

Fly ash falls from the bottom of the bag house onto conveyors. The ash removal conveyors are fully enclosed to prevent the escape of fine particulate matter. The bottom ash and fly ash are commingled in the combustion unit quench tank system and the combined ash is conveyed to the ash storage building as described above.

The ash building has a watertight, sealed concrete floor. Any free liquid that is generated during ash storage is collected and reused for ash quenching. The ash conveyors and storage building are covered to keep out rainwater and are enclosed to prevent wind blown emissions.

The ash is transferred from the storage area to covered leak resistant vehicles for off-site disposal at a landfill. All loading and preparation for ash transport occurs within the fully enclosed ash storage building. The ash residue is transported from the Facility to the Gulf Coast Landfill or the Lee/Hendry Landfill. Because the ash is moist, dust is not generated during transportation and conveyance. The consistency and appearance of the wetted ash material is that of wet aggregate.

As part of the ash handling system, a ferrous and nonferrous metal removal system has been installed to recover ferrous material and nonferrous material such as aluminum. In Fiscal Year 2000, over 9,200 tons of ferrous material and approximately 600 tons of non-ferrous material were recovered from the ash at the Facility. A complete description of the Lee County Materials Separation and Recycling program, as well as quantities and types of solid waste are provided in Volume II, Appendix 3.1.

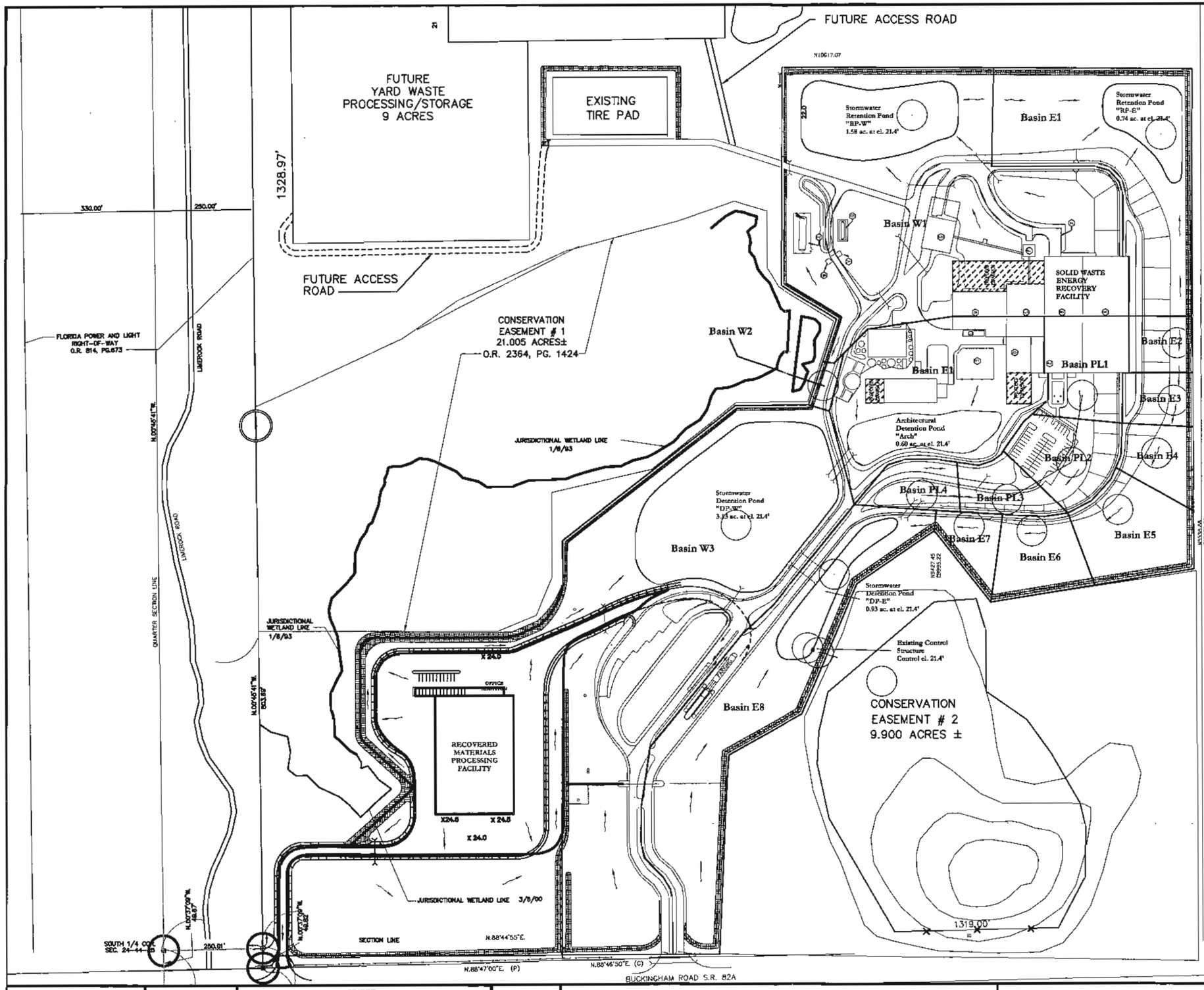
3.7.2 HAZARDOUS WASTE

No hazardous waste is generated onsite, nor accepted for processing with the solid waste; therefore, there is no hazardous waste disposal at the Facility. Section 5.4.2 describes the procedures that are to be followed if any apparent hazardous material is identified by tipping floor personnel, crane operators, or scale house personnel.

3.8 ONSITE DRAINAGE SYSTEM

The stormwater drainage system was designed for a peak discharge of 37 cubic feet per second per square mile (csm) for a 25-year, 72-hour storm event (9.78 inches of rainfall) in accordance with SFWMD criteria. The 37-csm peak discharge is based on the allowable discharge limit for the Six Mile Cypress Watershed, and equates to 3.3 cfs for the developed site (57.4 acres).

During large rain events, stormwater runoff from the drainage basins flows into the on-site retention and detention ponds (see Figure 3-4). When the wet detention ponds are filled to the design elevation, the stormwater discharges through a control structure into the wetlands area in the southeast corner of the site. The water flows south through the wetland and discharges into



LEGEND

- CONCRETE ROAD
- GRAVEL ROAD
- ASPHALT ROAD
- REINFORCED CONCRETE PIPE
- HEADWALL
- FENCE
- GUARDRAIL
- BERM
- BASIN BOUNDARY

BASIN INFORMATION

PL1 - 1.25 AC.
PL2 - 1.15 AC.
PL3 - 0.66 AC.
PL4 - 0.62 AC.
E1 - 4.37 AC.
E2 - 0.53 AC.
E3 - 0.55 AC.
E4 - 0.71 AC
E5 - 1.47 AC.
E6 - 1.00 AC.
E7 - 0.53 AC.
E8 - 5.55 AC.
A1 - 4.19 AC.
W1 - 10.76 AC.
W2 - 0.14 AC.
W3 - 24.09 AC.

BUILDING INDEX

- (A) TIPPING AREA
- (B) REFUSE PIT AREA
- (C) BOILER AREA
- (D) TURBINE/GENERATOR AREA
- (E) FACILITY ADMINISTRATION AREA
- (F) GRIZZLY BUILDING
- (G) RESIDUE HANDLING BUILDING
- (H) COOLING TOWER
- (I) STACK
- (L) SETTLING BASIN
- (M) APC AREA
- (N) SCALE HOUSE
- (P) FIRE WATER TANK & PUMP HOUSE
- (Q) AMMONIA STORAGE
- (R) PROPANE STORAGE
- (S) SWITCHYARD
- (T) CHLORINATION BUILDING
- (U) WATER TREATMENT BUILDING
- (V) AMMONIA UNLOADING STATION
- (W) PROPANE UNLOADING STATION
- (X) DIESEL OIL TANK & FUELING STATION

LEGEND:

T	TOWNSHIP
R	RANGE
(LB)	LICENSED BUSINESS
(C)	CALCULATED
(SC)	CHOVISON AS SHOWN ON SURVEY
PO	PLAT
FD	FOUND
COR	CORNER
S.R.	STATE ROAD
MON	MONUMENT
ELEV	ELEVATION
M.W.	MONITORING WELL

SURVEYOR'S NOTES

1. ELEVATIONS SHOWN (IF ANY) ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM, (N.G.V.D.) U.S. GEOLOGICAL SURVEY BENCHMARK "51 WTM 1952" SURVEYOR'S NOTES
2. SURVEY BASED ON FOUND MONUMENTATION AS ESTABLISHED BY OTHERS. REFERENCE IS MADE TO A BOUNDARY SURVEY OF PART OF SECTIONS 24 AND 25, TOWNSHIP 44 SOUTH, RANGE 25 EAST, PERFORMED BY AGNOLI, BARBER & BRUNDAGE, INC., AND DATED JUNE 23, 1980
3. BOUNDARY INFORMATION IS SHOWN FOR REFERENCE ONLY. VERIFICATION OF PREVIOUS BOUNDARY SURVEY BY AGNOLI, BARBER & BRUNDAGE, INC. NOT INCLUDED UNDER THE SCOPE OF THIS SURVEY.

SYMBOLS

- DENOTES FOUND REBAR & CAP L.B. 3664
- BARBED WIRE FENCE AS SCALED FROM SURVEY
- DENOTES FOUND CONCRETE MONUMENT L.B. 3664
- DENOTES FOUND CONCRETE MONUMENT

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FIGURE 3-4

REVISIONS			
NO.	BY	DATE	REMARKS

DES CCT
DWN CCT
CKD RHF

LEE COUNTY ENERGY RECOVERY FACILITY
LEE COUNTY, BUCKINGHAM RD.
FT. MYERS, FLORIDA

BASIN AND SUB-BASIN BOUNDARIES

DATE FEBRUARY 18, 2002

SHEET 2 OF 2

CAD REF. NO.

the swale on the north side of Buckingham Road. Once in the swale, the water flows west along Buckingham Road and eventually flows under Buckingham Road (through two 10' x 2.2' box culverts) and SR 82 (through two 10' x 4' box culverts) into the Six Mile Cypress Slough.

A copy of the letter to the South Florida Water Management District notifying them of the Facility expansion and depicting the de minimis changes to the stormwater runoff volumes calculated for a 25-year and 75-year storm events are provided in Volume II, Appendix 7.6. No changes to the on-site drainage system are necessary to accommodate the flow from the expanded Facility (1,800 tpd).

3.9 MATERIALS HANDLING

The existing Facility has two independent municipal solid waste process trains and will add a third as part of the expansion. Common elements, such as the waste feed cranes, ash conveyers, and boiler feedwater systems have redundant capabilities. The independent municipal solid waste processing trains provide flexibility during operation of the Facility, allowing solid waste processing and energy production to continue if one train breaks down or needs to be shut down for scheduled maintenance.

The refuse bunker and tipping floor area are under slight negative air pressure to prevent the escape of odors and dust. The underfire and overfire fans, which supply the combustion system with air, draw all the necessary air from the refuse bunker and tipping floor area. Vents installed on the walls opposite the air intakes induce cross-flow ventilation. Any dust particles and odors generated in the area are directed into the combustion zone, thereby minimizing odors outside the refuse bunker and tipping floor area. The combustion process destroys odorous compounds.

Two overhead solid waste handling cranes are installed to charge the combustion units and maintain the solid waste storage area. The cranes are the traveling bridge type, employing an orange peel-type grapple. Each crane is capable of meeting the solid waste handling requirements of the expanded Facility.

Lime for the acid gas dry scrubber is delivered two to three times a week and is pneumatically transferred to an on-site storage silo. An additional lime storage silo will be required for the third combustion unit. The lime is slaked and pumped in a slurry form to the scrubber unit, where up to 2 tons are used each day. Ash residue, which includes spent lime, is transported on a six-day per week basis to the landfill/ashfill, except for holidays.

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Section 4

SECTION 4.0

EFFECTS OF SITE PREPARATION, AND PLANT AND ASSOCIATED FACILITIES CONSTRUCTION

4.0 EFFECTS OF SITE PREPARATION, AND PLANT AND ASSOCIATED FACILITIES CONSTRUCTION

An overview of anticipated construction activities associated with the expansion of the Facility is provided as a preface to the discussion of the effects of site preparation and construction. The duration of field construction for the expansion of the Facility will be approximately 21 months. Additional personnel training, equipment testing, and calibration will be provided when construction is substantially complete. The entire design, construction, and start-up period will extend for approximately 28 months, from notice to proceed to full plant operation. The principal construction phases will include minimal site preparation (site clearing and preparation, excavation, pile construction and backfilling), expansion of the facility (foundations, building and process equipment erection, electrical and mechanical systems installation, instrumentation), and finalization (road construction and paving, final grading, painting, landscaping, and clean-up). Completion of final construction activities may extend into the start-up period.

4.1 LAND IMPACT

4.1.1 GENERAL CONSTRUCTION IMPACTS

Impact on Solid Waste Generation and Disposal

During construction associated with the expansion of the Facility, a variety of spent materials and solid waste will be generated, including vegetative matter, wood, paper products, concrete, scrap metal and lumber, and miscellaneous oils and fluids required for equipment operation. These will be disposed and/or recycled periodically using a licensed hauler to transport the materials to properly permitted disposal/recycling facilities.

Minimal site clearing activities are anticipated because the expansion is occurring within the existing Facility footprint. However, any non-marketable wood debris generated by the removal of landscape plants will go to an FDEP approved site for processing or disposal or burned on-site.

It is anticipated that small quantities of used oils and spent solvents may be generated on-site during equipment maintenance and various construction activities. Used oil will be generated at a rate of about one drum (55-gallon barrel) every two to three months. Typically, fewer spent solvents would be generated than used oils, except during certain phases of equipment installation. Drums of used oils and spent solvents will be stored on pallets within a bermed area.

They will be properly labeled and covered with a weatherproof canvas or plastic drop cloth. Neither used oils nor spent solvents will be stored on-site for more than 90 days. Transport and disposal will be handled by properly licensed contractors.

It is estimated that approximately 60 tons of solid waste will be generated during construction associated with the Facility's expansion. Whenever practical, recyclable materials will be recovered from this waste stream. It is anticipated that roll-off containers will be used to collect and haul materials to a FDEP approved disposal and/or recycling facility. The pattern of waste generation will correspond to the types and levels of activity occurring on the construction site. Higher generation rates will coincide with construction and installation.

Staging, Material Laydown, and Work Force Parking Areas

The staging, materials laydown, storage, and work force parking areas will be assigned to locations where construction activities are minimal and there is sufficient space away from jurisdictional wetlands. Staging will be assigned to an area adjacent to the main Facility, which will keep staged work as close to the actual construction area as possible. General work force parking and a construction office will be located near the material laydown area. These areas will be prepared to minimize dust and potential run-off (e.g., silt screens, hay bales, gravel or mulch parking etc.). Stormwater run-off will be directed to existing stormwater system.

Land Disturbance

Minimal disturbance to existing terrain is anticipated because the Facility expansion is occurring within the existing footprint of the site and adjacent to existing structures.

4.1.2 ROADS

The project site is accessed from Buckingham Road. Other than the main Facility access road and feeder roads to the RMPF and tire storage area, there are no other paved roads on-site and none will be built for this project. An existing, unimproved road is in the powerline corridor to provide access if required.

4.1.3 FLOOD ZONES

The Facility site is not located within the 100-year flood plain designated on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps. Consequently, this section does not apply to this project.

4.1.4 TOPOGRAPHY AND SOILS

The existing site topography will be minimally altered by the proposed Facility expansion. As construction progresses, a portion of the site area will be covered with impervious surfaces such as foundations and buildings. When expansion is complete, the site will have approximately 16.9 acres of impervious surface and the stormwater retention/detention ponds, environmental easements/wetlands and buffer areas will make up approximately 107 acres.

The creation of new impervious surfaces will not change the site drainage features and percolation rates. The hydrologic analysis is summarized in Volume II, Appendix 7.6 of this Application. Consequently, no new stormwater management facilities are needed for the expansion project.

The following measures will be suggested to the contractor to control soil erosion and air pollutants during construction:

- On-site traffic will be limited to the main access road and/or feeder roads as much as possible;
- Use of siltation barriers (i.e., haybales, sedimentation fencing earth berms) will be employed during any dewatering activities and around parking and lay-down areas; and
- Designated lay-down area and construction worker parking areas.

The existing site buffer zone will be maintained along the site border to minimize visual impacts during construction.

4.2 IMPACT ON SURFACE WATER BODIES AND USES

4.2.1 IMPACT ASSESSMENT

No impact to surface water bodies and uses is anticipated due to Facility expansion construction activities. There are no proposed intake or discharge structures for cooling water or other process waters; therefore, an NPDES discharge permit is not required related to the Facility expansion. However, possible dewatering activities during construction may trigger the requirement for a permit, depending upon the time of year that these activities will be taking place.

There are site preparation and construction activities that will have temporary impacts. For instance, if dewatering of the uppermost aquifer becomes necessary, water from the dewatering effort will be discharged to the stormwater retention and/or detention pond(s), and to a temporary retention basin created specifically for the temporary dewatering. Surface water may be discharged from the stormwater retention and/or detention pond(s), and the temporary dewatering retention pond, to on-site wetlands or drainage ditches after the suspended solids have settled from the dewatering discharge. A NPDES General Permit Coverage Notice is included in Volume II, Appendix 6.2.

4.2.2 MEASURING AND MONITORING PROGRAMS

During Facility expansion construction activities that involve dewatering, surface water may be released from the existing retention and/or detention pond(s) to on-site wetlands or existing drainage ditches. Periodic water quality sampling will be conducted at the discharge points from the retention and/or detention basins. The parameters for analysis will include field pH, field specific conductivity, metals, total dissolved solids, and suspended solids.

Stormwater runoff from the construction areas will not directly discharge to wetlands within the project site. Furthermore, since the Facility is fully enclosed and roofed, stormwater will not come into contact with solid waste and no significant impacts to the quality of surface waters in the vicinity are expected (e.g., no turbidity impact).

As described in Section 3.8, stormwater runoff from the developed site will be directed to the retention basin. In accordance with SFWMD requirements, dry pretreatment will also be provided. This allows for siltation and filtration of stormwater before it reaches the retention

and/or detention basin(s). The discharge structure for the retention basin includes a baffle to provide additional protection against the discharge of floatables and sediments. Since the majority of storm events in the Lee County area are less than one inch in total rainfall, appreciable discharge from the site will occur infrequently.

4.3 GROUNDWATER IMPACTS

4.3.1 IMPACT ASSESSMENT

The saturated thickness of the surficial aquifer below the site varies depending upon seasonal precipitation patterns and varying depths to the confining layer. During the wet season, the water table of the surficial aquifer is within one to five feet below ground surface. In the dry season, the water table of the surficial aquifer declines to depths of about three to seven feet below ground surface. The overall thickness of the surficial aquifer formation is about 20 feet (see Section 2.3.2).

Minimal groundwater impacts are anticipated as a result of the Facility expansion. The Facility was originally designed with construction of a third unit planned for the future. The refuse pit is already constructed. It is anticipated that minimal dewatering will be required for the expansion.

4.3.2 MEASURING AND MONITORING PROGRAMS

In the event that significant dewatering is necessary, a groundwater monitoring program will be established to monitor water elevations of the water table aquifer during dewatering if necessary. Temporary monitoring wells or piezometers will be installed before the initiation of expansion construction so that they can be used to measure the decline and subsequent recovery of water levels during and following dewatering activities.

An existing groundwater water quality-monitoring program is established for Facility operation.

4.4 ECOLOGICAL IMPACTS

4.4.1 IMPACT ASSESSMENT

Impacts to fish and wildlife populations caused by construction of the proposed Facility expansion are expected to be minimal. The Facility fenced area occupies approximately 17.3 acres of the 155-acre parcel. The Facility expansion will be located within the fenced upland area that was previously developed during the original Facility's construction. The open areas within the fence are comprised of bahia grass fields, gravel and paved lots, and stormwater retention and detention ponds. The expansion will not impact any sensitive habitats outside of the fenced area. In addition, with the exception of the American alligator, rare species do not currently inhabit the area within the fenced area of the site.

The Facility site is not an area of unique habitat. This is a previously disturbed site that has been vegetationally and hydrologically altered by logging, drainage, grazing, and construction activities over the course of 30 to 40 years. Species diversity and composition at the Facility site is not expected to undergo any major alterations as a result of the expansion construction. The present diversity of on-site habitats will not be impacted by the Facility's expansion. Impacts to existing wetlands will be avoided and no wetland impacts are anticipated.

The wildlife survey was updated by Malcolm Pirnie biologists on October 3rd, 2001. This survey encompassed the majority of the Facility property, but only the proposed impact area was searched entirely for rare species or suitable habitat. The results of the wildlife survey indicated that gopher tortoise burrows and burrowing owl burrows are not located on-site. Suitable habitats for Audubon's crested caracara, scrub jay, and red-cockaded woodpeckers were not found on-site. No suitable nesting sites for bald eagles are present, although eagles do feed southeast and southwest of the proposed site.

The Florida panther (Felis concolor coryi) may have used part of the area as a corridor of movement according to information supplied by the USFWS in 1990. Available habitat of pine flatwoods (map number 411) for the Florida panther is small, about 17.9 acres or 11.1 percent of the total site; these areas will not be disturbed by the expansion of the Facility. The County is not aware of any evidence indicating that the site or surrounding area has been used recently by the Florida panther.

Wetland bird fauna, the tricolored heron, snowy egret, and little blue heron, will not be impacted. Although the wood stork and sandhill crane use parts of the site for foraging, they are transient and will not be impacted by the expansion. No wetland habitat is expected to be disturbed during the expansion project.

Two American alligators were found on the property during the wildlife survey. The first was located in the detention pond that is 20 meters south west of the Administration building. The second was located in the undisturbed cypress dome wetland on the property owned by the County immediately north of the site. Neither is located in the proposed construction area and will not be impacted by the Facility's expansion.

The big cypress fox squirrel may also be found on the property, but no squirrel habitat exists within the proposed Facility expansion area. No negative impacts on this species are anticipated.

4.4.2 MEASURING AND MONITORING PROGRAMS

No wildlife monitoring programs are proposed because impacts will be minimal during the construction phase of this proposed project. There are no anticipated wetland impacts. The County's Exotic Species Control Plan, is provided in Volume II, Appendix 14.1.

4.5 AIR IMPACT

4.5.1 EMISSION RATES

Facility expansion construction activities may cause localized, short-term, adverse air quality impacts. Potential impacts include:

- Fugitive dust emissions from site preparation activities and temporary travel on unpaved surfaces; and
- Emissions from fuel combustion by construction equipment at the construction site.

It is anticipated that Facility construction will take a total of approximately 21 months.

Fugitive dust will be generated throughout the construction period by fill placement, excavation, grading, travel on unpaved surfaces, and wind erosion of unvegetated areas. In the event that fugitive dust becomes an issue, periodic watering will be employed to reduce the fugitive dust.

Good site maintenance will be practiced. The contractor will be required to employ proper dust control techniques to minimize fugitive emissions.

Internal combustion engines, primarily diesel-fuel, are associated with the dozers, backhoes, tractors, graders, trucks, concrete mixers, cranes, generators, compressors, and some smaller equipment that will be used. This equipment will emit, in decreasing order by total mass, nitrogen oxides, carbon monoxide, sulfur dioxide, hydrocarbons, and particulates. These emissions will not be great enough to cause any local exceedances of ambient air quality standards.

4.6 IMPACT ON HUMAN POPULATIONS

The expansion of the Facility may create both positive and negative impacts on the local and regional populations. Positive impacts will include the creation of construction jobs, the secondary influx of monies into the local economy from the construction work force, and revenues from the purchase of construction materials for the Facility. Negative impacts are anticipated to be minimal but could include possible short-term visual and noise impacts and traffic increases due to construction worker arrivals and deliveries of equipment and supplies.

4.6.1 SENSITIVE RECEPTORS

Sensitive receptors are individuals, institutions, or enterprises that are located in proximity to the project site that are affected by the construction. A summary of the demography and existing land use within a five-mile radius of the project site is presented in Section 2.2.3. Based on the demographic and land use section of this application, the predominant land uses on the Facility site's periphery include a FP&L power transmission line and associated easement, a county park, forested uplands, and wetlands.

Sensitive receptors in the immediate vicinity of the Facility site include the low-density residential area of Lehigh Acres located from approximately one-half to five miles east of the project site. The majority of the residentially zoned area of Lehigh Acres within two miles of the Facility site is vacant or underdeveloped. This vacant land and the county park on the east side of the Facility site will buffer the developed residential area of Lehigh Acres from the Facility site. In addition, wetlands, forested uplands, cropland, and pastureland are located between the Facility and this primarily undeveloped area, and act as a buffer. Additional low density residential areas are located approximately one to four miles north of the Facility site. This rural

area is buffered from the Facility site by wetlands, forested uplands, cropland, and pastureland that surround the site.

No effects on sensitive receptors are anticipated due to Facility expansion. The distance from the Facility site to the residential areas and the presence of the buffer areas, support this determination.

4.6.2 WORK FORCE

During construction associated with the expansion of the Facility, the daily work force is expected to average between 25 to 75 people. The initial phase of construction will require a work force of approximately 50 people, while peak phases will require approximately 125 persons. The work force, from the eighth to the eighteenth month of the construction schedule, should average from 75 to 125 people. Throughout the course of the Facility construction, a total of approximately 750 people of various construction trades may be employed. Figure 4-1 illustrates the estimated work force requirements during Facility construction.

Work Shifts

The majority of activities required for the expansion of the Facility will take place on an eight- to ten hour per day shift, five-day per week schedule. Depending on construction progress and deadline constraints, alternative schedules, such as shifts of ten hours per day, four, five, or six days per week and overtime, may be implemented. However, all construction activities will be conducted during eight- to ten-hour per day shifts.

Construction Work Force Revenues

On a short-term basis, the Facility expansion construction phase will supply the region with benefits associated with a construction project in the range of $65 to $70 million. The construction phase will provide jobs for the construction labor and will create additional revenue for the local economy from the purchase of construction materials and services. Secondary benefits will include the secondary spending into the local economy from the construction labor force and related employment increases in these service sector jobs, and increased employment opportunities and sales revenues for businesses providing construction materials and services to the Facility project site.

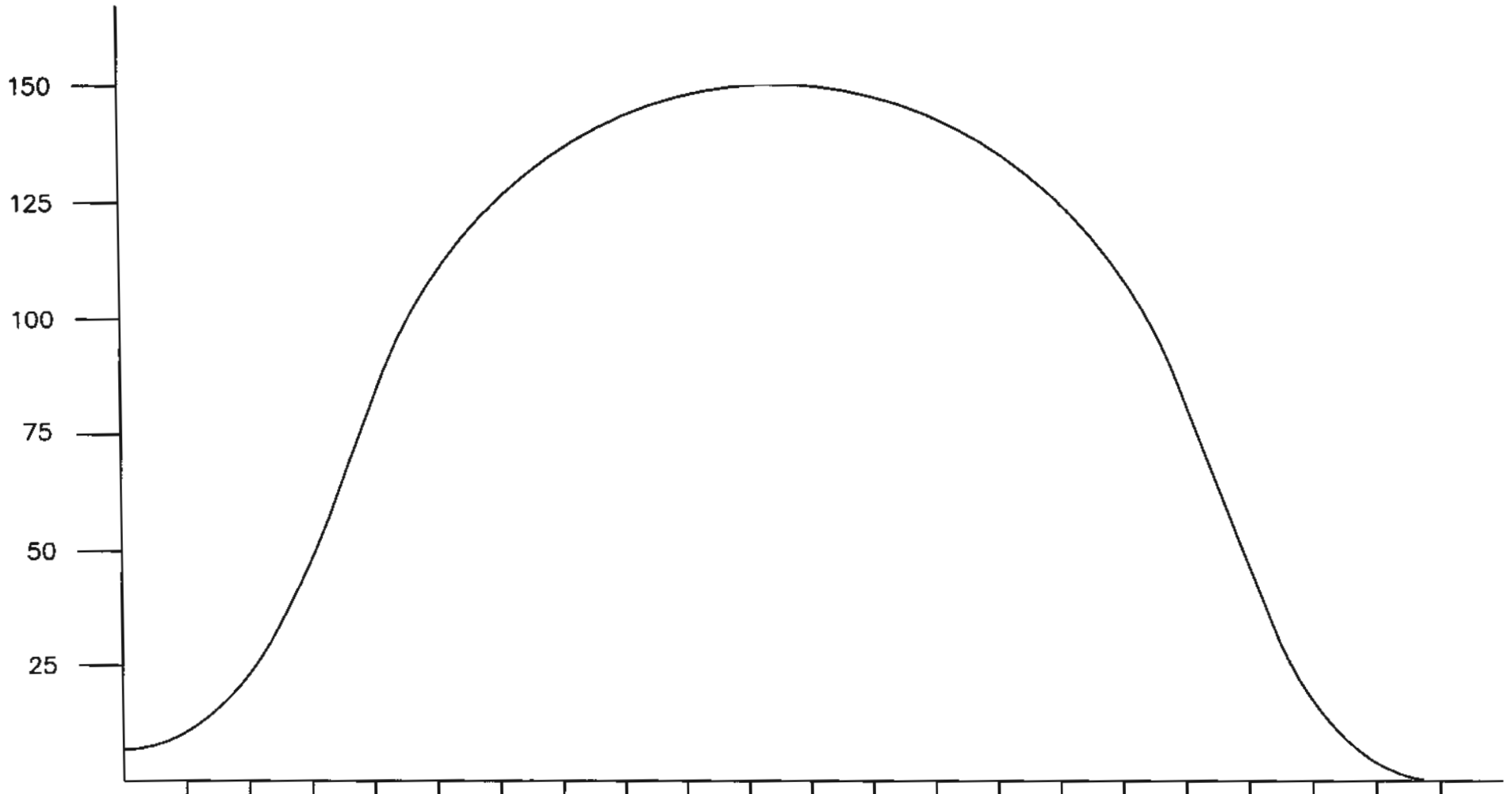

FIGURE 4-1

MALCOLM PIRNIE

ESTIMATED WORK FORCE REQUIREMENT DURING CONSTRUCTION –
EXPANDED LEE COUNTY ENERGY RECOVERY FACILITY

Work Force Availability

The majority of the work force for the expansion of the Facility is anticipated to be provided by the existing labor pool in Lee County and adjacent county areas. Because no major relocation and influx of construction workers and their families is expected, no increased demand and impact on the available housing stock and public facilities is anticipated.

4.6.3 TRAFFIC ASSOCIATED WITH CONSTRUCTION

The original traffic impact study, performed to assess the impacts associated with Facility construction and operation at the ultimate site capacity of 1,800 tpd, showed no impacts on the surrounding roadway network and is provided in Volume II, Appendix 11.3 of this Application.

The original traffic impact study considered trip generation, trip distribution, area of influence, existing traffic conditions, future traffic conditions, link and intersection capacity, and level of service with a 1,800 tpd Facility. For the original Facility construction, it was determined that there was a significant impact on only one of the links within the area of influence-Buckingham Road between SR 82 and the site access drive. A left-turn lane for east-bound traffic was constructed to service the vehicles accessing the site. No other roadway improvements were required to accommodate construction traffic from the Facility, although roadway improvements were also made to SR82 at the Buckingham Road intersection.

4.7 IMPACT ON LANDMARKS AND SENSITIVE AREAS

The expansion of the Facility may minimally impact Buckingham Community Park, a 135-acre park located adjacent to the eastern boundary of the project site. This park was built by the County after the Facility was constructed. Activities-based recreation, in the form of ball fields and court games, normally is not as sensitive to noise and visual impacts as a passive-based recreation area, so impacts to this park are expected to be minimal. The expansion of the Facility is not anticipated to significantly impact other parks in the area, given the distance from the Facility to the parks.

4.8 IMPACT ON ARCHAEOLOGICAL AND HISTORIC SITES

No impacts on significant archaeological or historic sites are expected as a result of construction activities associated with the expansion of the Facility because the expansion is occurring on the existing Facility site footprint. In the unlikely event that a potential archaeological site should be unearthed during expansion construction, officials of the State Division of Historical Resources will be contacted to determine its significance.

4.9 SPECIAL FEATURES

This section discusses the special features associated with site preparation, and Facility and associated facilities construction that may influence the environment and ecological systems of the site and adjacent areas as a result of the Facility's expansion.

During construction associated with the expansion of the Facility, solid and liquid wastes may be generated. This waste may consist of discarded packaging materials, refuse produced by construction workers, earth spoils, sanitary wastes, or used oils and other wastes associated with this type of construction activity. Earth spoils will be transferred to a Class III landfill or other suitable fill area. Sanitary wastes and used oils will be handled by the appropriate licensed haulers/disposers.

4.10 SUMMARY OF IMPACTS AND BENEFITS FROM CONSTRUCTION

Benefits from construction associated with the expansion of the Facility include:

- The employment of construction laborers throughout the course of construction, during which approximately 750 workers may be employed.

- Additional income to the area generated by the construction work force, including retail and service oriented businesses, which will benefit from increased sales to the construction laborers.

- The sale of goods and services relating to construction operations this should include increased employment for construction product companies providing goods and services to the construction site.

Impacts from construction of the expansion Facility include:

- A temporary increase in solid waste generated due to construction activities.
- The minimal disturbance of existing terrain.
- The minimal alteration of site topography.
- Minimal temporary aquifer drawdown if dewatering occurs during foundation construction.
- Localized, short-term air quality impacts from fugitive dust and fuel combustion emissions.
- Short-term visual and noise impacts (e.g., pile driving) and increased traffic during construction.

4.11 VARIANCES

No variances from any standards or guidelines are anticipated or requested.

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Section 5

SECTION 5.0

EFFECTS OF FACILITY OPERATION

5.0 EFFECTS OF FACILITY OPERATION

This section describes (1) the interaction of the Facility with the environment, and (2) Lee County's plans for monitoring the environmental impacts during operation of the Facility. In the discussion that follows, irreversible or unavoidable environmental effects are distinguished from those that are unavoidable, but temporary, or suitable for later amelioration. Mitigation actions are described, when applicable. The impacts of Facility operations are quantified whenever possible, and the source of each impact is identified. The relationship between short- and long-term effects is also discussed.

5.1 EFFECTS OF THE OPERATION OF THE HEAT DISSIPATION SYSTEM

As described in Section 3.5, cooling towers will be used on-site to dissipate heat. There will be no thermal discharges to surface water bodies; therefore, Section 316 demonstrations for thermal discharges are not applicable.

5.1.1 TEMPERATURE EFFECT ON RECEIVING WATER BODY

This section is not applicable to the Facility because there will be no direct discharge to surface waters from the Facility. All process water will be cooled in the cooling towers. Cooling water will be treated and reused as much as possible. A limited volume of spent cooling, process and sanitary wastewater (10,000 gpd normally, up to a maximum 150,000 gpd) will be discharged to the City's Central WWTP. Prior to discharge, all applicable pretreatment requirements will be met.

5.1.2 EFFECTS ON AQUATIC LIFE

This section does not apply to this Facility. There will be no discharge to surface water or groundwater, and no impacts on aquatic life in the area will occur as a result of Facility operations.

5.1.3 BIOLOGICAL EFFECTS OF MODIFIED CIRCULATION

This section is not applicable. The Facility will use reclaimed water supplied via pipeline from the Fort Myers Central WWTP. There are no surface water intake structures associated with the Facility.

5.1.4 EFFECTS OF OFFSTREAM COOLING

It is estimated that the cooling towers on the expanded Facility will use about 800,000 gallons per day (gpd) of reclaimed water from the Central WWTP to "make up" for water lost to evaporation at its ultimate capacity of 1,800 tpd. Chlorine or other equivalent compounds will be used for disinfection of the reclaimed water in conformance with Chapter 62-610, FAC. High-level disinfection (HLDI) will provide 1.0 mg/L total chlorine residual after 15 minutes of contact time at the maximum daily flow or after 30 minutes of contact time at the average daily flow, whichever provides a higher level of public health protection for the Facility in accordance with Chapter 62-610.460, FAC. The reclaimed water received from the Central WWTP will be pretreated as required to a maximum of 5.0 milligrams per liter of suspended solids prior to high-level disinfection. Filtration will be provided for control of total suspended solids (TSS). Chemical feed facilities for TSS removal will be provided as required. All process water will be treated in compliance with the City of Fort Myers Sewer Use Ordinance. The chlorination is performed at the Central WWTP, upon receipt of treated wastewater effluent provided by the County, which meets standards for public access as required for discharge from County treatment facilities.

During the cooling process, approximately 0.015 percent of the makeup water is lost as droplets in the cooling tower exhaust (cooling water "drift"). The drift will be of approximately the same quality as the reclaimed water used as makeup water. When the droplets of water composing the drift are vented from the tower, they are carried away from the Facility. The distance traveled is dependent on the size of the droplets formed.

As determined in the original application, and based on the results from operation of the existing Facility, the drift emanating from the expanded Facility will not present a health hazard to residents of nearby areas. The reclaimed water will comply with the FDEP's standards for use in unrestricted public access areas (e.g., parks, lawns, etc.). Consequently, no setbacks are required from the Facility's cooling towers. In this case, however, there will be a buffer of 800 feet between the cooling towers and the County park, the nearest place of public access. High-level disinfection of the Facility's cooling water will be implemented in accordance with Chapter 62-610.460, FAC. A monitoring program is in place at the Facility, as described in the following section.

5.1.5 MEASUREMENT PROGRAM

The existing reclaimed water supply system from the Central WWTP includes continuous on-line monitoring for turbidity prior to disinfection and total chlorine residual at the compliance monitoring point. An operating protocol, designed to ensure that the high-level disinfection criteria will be met, has been approved by the FDEP and is in compliance with Rule 62-610.463, FAC.

5.2 EFFECTS OF CHEMICAL AND BIOCIDE DISCHARGES

5.2.1 INDUSTRIAL WASTEWATER DISCHARGES

There will be no industrial discharges to surface waters from operation of the energy recovery facility. Cooling water is treated and reused. A normal flow of 10,000 gpd, and up to a maximum of 150,000 gpd, of sanitary wastewater and spent process water is routed to the Central WWTP, following on-site pretreatment, as required, to meet Fort Myers requirements. The Facility is designed with equipment to treat the reclaimed water prior to use in the cooling tower, as needed to meet a maximum wastewater discharge limitation of 0.15 mgd. The existing Facility operates in compliance with all applicable local, State and Federal discharge regulations and water quality standards for domestic wastewater and industrial wastewater, including chemical and biocidal wastes, and oil and grease. The expanded Facility will also operate in compliance with these regulations and standards.

5.2.2 COOLING TOWER BLOWDOWN

Reclaimed water from the Central WWTP is used as cooling water for the Facility. The capacity of the Central WWTP is currently 11 mgd, which is much greater than the total water demand of the Facility (1.1 mgd). Consequently, there is ample reclaimed water available for cooling water usage at the Facility. Cooling tower blowdown is treated and reused at the Facility to the greatest extent possible. Cooling tower blowdown not reused at the Facility is blended with sanitary wastewater and discharged to the Central WWTP via sewer.

5.2.3 MEASUREMENT PROGRAMS

There is periodic monitoring of the Facility treatment operations and wastewater discharge to the sewer. The frequency of monitoring of wastewater discharge is in accordance with the City of Fort Myers Sewer Use Ordinance.

5.3 IMPACTS ON WATER SUPPLIES

5.3.1 SURFACE WATER

There are no direct impacts to surface water associated with the operation of the Facility because the Facility does not directly discharge to a surface water body.

The Facility uses reclaimed water for cooling tower makeup. Spent process water is recycled for other uses such that the minimum possible discharge occurs from the Facility. Sanitary wastewater and a small amount of spent process water is transmitted to the Central WWTP following pretreatment.

5.3.2 GROUNDWATER

The primary source of cooling water and potable water is provided by the City of Fort Myers. The principal source used to meet the demand for cooling water is treated reclaimed water from the Central WWTP in Fort Myers. The maximum usage allowed is 1.1 mgd. The Facility currently uses approximately 0.62 mgd, and will require approximately0.93 mgd after expansion. The Facility administrative building and other on-site facilities requiring potable water are tied into the City's potable water distribution network. On-site wells are used as an emergency supply for back-up cooling water. The wells are not used during normal operation or normal conditions.

The current Conditions of Certification specifies the following with regard to the backup water supply wells:

1. Maximum daily withdrawal of 1.5 mgd, not to exceed a total of 10 days in any 12-month period. Withdrawals should only occur when treated effluent is not available from the City of Fort Myers.
2. Maximum annual withdrawal of 15.8 mg.

3. Authorized withdrawal facilities include six wells, eight inches in diameter and 150 feet deep, with a pumping capacity of 175 gpm per well. However, only four wells were actually installed.

For the Facility expansion, the County is requesting a change to the specification given above, to increase the number of days in any 12-month period to a maximum of 15 days. The new Site Certification Condition would read: [INSERT 1: CHANGE 10 DAYS TO 15 DAYS].

The anticipated annual withdrawal from the wells is expected to be very small because the primary source of cooling water (the Central WWTP) is rated at Class I Reliability-the highest reliability rating.

It is anticipated, based upon Facility operational history that there will not be an impact from the emergency back-up wells on other legal users, because of the infrequent use of the wells. Figure 2-14 illustrates locations of permitted withdrawals within a five-mile radius of the site. No impact on surface waters or wetlands are anticipated due to pumping from the sandstone aquifer because of the low leakage rate through the upper Hawthorn confining unit. Historical use of the wells over the past nine years of Facility operations also supports the fact that impacts will be negligible because pumping from the wells is very limited and of short duration on an emergency basis only.

Groundwater contamination from the existing and proposed Facility structures or site operations is not anticipated. All solid waste and ash are stored in enclosed buildings to prevent contact with stormwater runoff. The storage structures for the solid waste and ash are constructed of waterproof concrete to eliminate the potential for any releases to groundwater or surface waters.

The bottom of the concrete refuse storage bunker is completely sealed to prevent groundwater from seeping into the bunker. Any moisture or liquids inherent to the municipal solid waste are bound to the waste materials and incorporated into the main storage mass and combusted with the solid wastes. Typically, there is no free leachate in the refuse bunker.

There are some potential sources of off-site upgradient contamination, including a landfill located three miles south of the Facility site, and the former Buckingham Road landfill(s) located one-half mile east and southeast of the Facility site. However, there are active groundwater quality monitoring programs in place at these locations to monitor for off-site impacts.

Additionally, as described in the original certification application, the surficial groundwater system and the confining unit that underlies the site have high clay content and have a large adsorptive capacity for organic and inorganic contaminants in groundwater. Subsurface clay materials tend to bind up or adsorb a high proportion of contaminants, including metals, and thus retard potential migration.

5.3.3 DRINKING WATER

The Facility drinking water and potable water supply needs are met by distribution from the City of Ft. Myers potable water system. All municipal water supply systems in the area are 2.5 to 3 miles from the Facility. The closest supply well fields that produce more than 1 mgd are located upgradient and withdraw primarily from the sandstone aquifer. Historically, there have not been any impacts on drinking water sources and no impacts on drinking water sources are anticipated as a result of the expansion of the Facility.

5.3.4 LEACHATE AND RUNOFF

Stormwater runoff from vegetated areas, paved surfaces, and rooftops is collected in the stormwater retention/detention basins. All refuse or residue storage areas are enclosed and designed so that no runoff occurs from these surfaces. Groundwater and surface water quality is thus protected from unprocessed waste and residue. The Facility's Oil Pollution Prevention Plan is provided in Volume II, Appendix 14.2, and the Facility's Stormwater Pollution Prevention Plan is provided in Volume II, Appendix 14.3.

An off-site Class I landfill will be used to dispose of the noncombustible material from the Facility. The ashfill/landfill is in compliance with applicable FDEP regulations. Ash residue is truck transferred to the Lee-Hendry Regional Landfill in Hendry County.

5.3.5 GROUNDWATER MODELING AND MONITORING

A groundwater monitoring program exists for the Facility. Groundwater monitoring wells are installed at the Facility. There have not been any violations from existing Facility operations. The Facility Groundwater and Surface Water Monitoring Plan is provided in Volume II, Appendix 7.7.

5.4 SOLID/HAZARDOUS WASTE DISPOSAL IMPACTS

5.4.1 SOLID WASTE

This section discusses impacts not yet discussed in Section 5.2 or 5.3, which result from the processing of solid wastes on the site (solid waste is processed, but not actually disposed on the Facility site). This section also describes the benefits to be gained from the combustion of solid wastes. The existing Lee County solid waste management system is more fully described in Volume II, Appendix 3.1.

The Facility has had a net beneficial impact on solid waste disposal in Lee and Hendry Counties. The estimated processible solid waste quantities expected to be delivered annually to the energy recovery facility through the year 2010 are shown in Table 5-1. If these quantities of solid waste were to be landfilled rather than combusted, they would require about 961,400 cubic yards of landfill space (including cover) in 2005, increasing annually to about 1,093,400 cubic yards of landfill space in 2010. Instead, by achieving a 90 percent volume reduction through combustion, the ash residue to be landfilled would require only about 96,100 cubic yards of landfill space in 2005, ultimately increasing to about 109,300 cubic yards of landfill space in 2010.

Therefore, the potential savings in landfill capacity is considerable. The prolonged life of the landfill will decelerate the need for future siting of landfills in Lee and Hendry Counties (landfill volume calculations based on 1,000 lb/cy^3 for municipal solid waste).

In addition to ferrous and nonferrous metal recovery at the Facility, Lee County has incorporated an aggressive materials separation and recycling program as an integral component of its total solid waste management system. This program is more fully described in the Materials Separation Plan provided in Volume II, Appendix 3.1.

TABLE 5-1
PROJECTED SOLID WASTE QUANTITIES
LEE & HENDRY COUNTIES
1995-2010

YEAR	LEE COUNTY	HENDRY COUNTY	TOTAL
1995	296,870	25,020	321,890
1996	301,600	26,364	327,964
1997	316,563	26,977	343,540
1998	342,233	28,120	370,353
1999	364,637	31,104	395,741
2000	380,400	31,700	412,100
2001	393,500	32,300	425,800
2002	406,600	32,900	439,500
2003	419,600	33,600	453,200
2004	432,700	34,300	467,000
2005	445,700	35,000	480,700
2006	458,200	35,700	493,900
2007	470,700	36,400	507,100
2008	483,200	37,100	520,300
2009	495,600	37,800	533,400
2010	508,100	38,600	546,700

5.4.2 HAZARDOUS WASTE

Hazardous waste is not disposed at the Facility. The Facility accepts only municipal solid waste, which includes residential, commercial, and non-hazardous industrial wastes. Public and private users of the Facility are informed of these limitations. Signs are posted at the Scale House to indicate the types of wastes that are accepted at the Facility. Routine visual inspections by personnel monitor the types of wastes received upon arrival at the Facility gates and random inspections of waste loads per 62-701, FAC are conducted. A radioactive waste detector is also installed at the scale. The crane operator is trained to visually inspect waste in the bunker. Additionally, spotters are stationed on the tipping floor to ensure that loads are inspected prior to unloading into the refuse storage bunker. Finally, contractual agreements between Lee County

and the Facility operator create shared responsibilities for the prevention of hazardous materials entering the Facility. If hazardous materials are discovered to have entered the Facility, the materials are isolated or temporarily stored. A licensed hazardous materials contractor is notified to collect and transport these materials to a proper treatment or disposal Facility. A detailed description of the programs implemented by the County for the proper management and handling of hazardous and household hazardous waste is provided in Volume II, Appendix 3.1.

A chemical and toxicity analysis of the combined ash residue (including both combustion residue and air pollution control device residues) was conducted during acceptance testing and is currently conducted quarterly. This testing is used to verify that the ash is not toxic or hazardous. Test methods used are in conformance with Rule 62-702, FAC, Solid Waste Combustor Ash Management. Based on a comparison of the test data to the USEPA and FDEP regulatory limits, the ash residue is non-hazardous. Therefore, this waste material is suitable for disposal in a Class I sanitary landfill.

5.5 SANITARY AND OTHER WASTE DISCHARGES

Solid waste generated by Facility operations (employee and visitor refuse, packing material, etc.) is collected from receptacles located throughout the Facility and deposited into the main solid waste refuse storage pit. Materials not suitable for placement into the solid waste pit are separated for off-site disposal at the Hendry County landfill/ashfill or other appropriate facility. All sanitary wastewater and spent cooling water, up to a maximum of 150,000 gpd of wastewater, is collected and discharged to the Central WWTP. Therefore, the wastes created during the operations of the Facility are handled in compliance with all applicable regulations to minimize potential impacts.

5.6 AIR QUALITY IMPACTS

5.6.1 IMPACT ASSESSMENT

The air quality modeling analysis was divided into three parts:

1. Screening Modeling Analysis - This analysis identified the operating conditions (based on waste throughput and heat content) that would have the greatest calculated air quality impact. The screening model runs were made using the Industrial Source Complex-Short Term (ISCST3) dispersion model and five years (1990 to 1994) of

hourly surface meteorological data from Page Field Airport in Fort Myers and upper air data from Tampa International Airport.

2. Refined Modeling Analysis – The refined modeling analysis was conducted using the worst-case conditions from the screening modeling analysis to identify maximum ground-level impacts for pollutants emitted from both the proposed unit and the combined facility. The refined modeling was performed using the ISCST3 model and five years (1990 to 1994) of hourly surface meteorological data from Page Field Airport in Fort Myers and upper air data from Tampa International Airport. The results of this analysis were used for a comparison of impacts from the project with applicable air quality standards and criteria. A detailed discussion of the air impacts is contained in Section 6 of the PSD Air Permit Application (Volume III - Air Quality).

3. Additional Class I Area Impact Analysis - This analysis modeled concentrations of regulated pollutants for comparison to proposed Prevention of Significant Deterioration (PSD) Class I significant impact levels, the effects of the Facility's plume on visibility, and the potential for ecological impacts due to deposition at the nearest Class I area, Everglades National Park. A detailed discussion of the air impacts is contained in Section 7 of the PSD Air Permit Application (Volume III - Air Quality).

The highest value of the second-highest concentration at each receptor for each year of meteorological data modeled (called high second high and abbreviated H2H or HSH) was selected for comparison to ambient air quality standards and PSD increments for short-term averaging times (24 hours or less). The maximum annual concentration for all receptors and years of meteorological data modeled was selected for comparison to ambient air quality standards and PSD increments for long-term averaging times (quarterly and annual periods).

Both EPA and Florida have ambient air quality standards (AAQS). Table 5-2 presents the maximum predicted impacts from the modeling analysis compared to the most restrictive ambient standard between the National AAQS and Florida AAQS. These tables appear in Section 6.10 of the PSD Air Permit Application (Volume III). Table 5-2a compares the maximum increase due to the proposed unit compared to the AAQS, while Table 5-2b compares the maximum impact for the combined facility compared to the AAQS. The predicted impacts for the proposed unit and for the combined facility are well below all AAQS.

TABLE 5-2
COMPARISON OF MAXIMUM INCREASES AND COMBINED FACILITY IMPACTS ($\mu g/m^3$) TO THE NAAQS/FAAQS

a. MAXIMUM INCREASES (ug/m^3) DUE TO PROPOSED UNIT

Pollutant	AAQS	Baseline	Max Increase for Proposed Unit	Percent of AAQS	Increase + Baseline	Percent of AAQS
CO 1-Hour	40,000	12,535	6.754	0.02%	12,542	31.35%
CO 8-Hour	10,000	6,440	2.441	0.02%	6,442	64.42%
NO_x Annual	100	19	0.216	0.22%	19.2	19.22%
SO_2 3-Hour	1,300	149	9.061	0.70%	158	12.16%
SO_2 24-Hour	260	50	2.168	0.83%	52	20.06%
SO_2 Annual	60	8	0.200	0.33%	8.2	13.67%
PM_{10} 24-Hour	150	28	0.276	0.18%	28.3	18.87%
PM_{10} Annual	50	19	0.054	0.11%	19.1	38.20%
Pb Quarter	1.5	0.01	0.0023	0.15%	0.012	0.82%

b. MAXIMUM IMPACTS ($\mu g/m^3$) FOR COMBINED FACILITY

Pollutant	AAQS[a]	Baseline	Max Impact[b] for Facility	Percent of AAQS	Facility + Baseline	Percent of AAQS
CO 1-Hour	40,000	12,535	12.431	0.03%	12,547	31.37%
CO 8-Hour	10,000	6,440	4.234	0.04%	6,444	64.44%
NO_x Annual	100	19	0.436	0.44%	19.4	19.40%
SO_2 3-Hour	1,300	149	13.038	1.00%	162	12.46%
SO_2 24-Hour	260	50	3.112	1.20%	53	20.38%
SO_2 Annual	60	8	0.279	0.47%	8.3	13.83%
PM_{10} 24-Hour	150	28	0.814	0.54%	28.8	19.20%
PM_{10} Annual	50	19	0.161	0.32%	19.2	38.40%
Pb Quarter[c]	1.5	0.01	0.0075	0.50%	0.018	1.20%

[a] The most restrictive AAQS between the Florida AAQS (Rule 62-204.240, F.A.C.) and National AAQS (40 CFR 50) are used.
[b] Based on high second-high short-term and maximum long-term impacts.
[c] The maximum 24-hour modeled concentrations were used to conservatively determine compliance with quarterly value.

In Table 5-3, the maximum increases for the proposed project and the maximum combined Facility impacts are compared to the PSD Class II increments. The maximum impacts for both the proposed unit and for the combined facility are all well below their respective PSD Class II increments. This table appears in Section 6.9 of the PSD Air Permit Application (Volume III).

TABLE 5-3
COMPARISON OF MAXIUMUM INCREASES AND COMBINED FACILITY IMPACTS ($\mu g/m^3$) TO PSD CLASS II INCREMENTS

Pollutant	Class II Increment [a]	Max Increase [b] for Proposed Unit	Percent of PSD Class II Increment	Max Impact [b] for Facility	Percent of PSD Class II Increment
NO_x Annual	25	0.216	0.9%	0.436	1.7%
SO_2 3-hour	512	9.061	1.8%	13.038	2.5%
SO_2 24-hour	91	2.168	2.4%	3.112	3.4%
SO_2 Annual	20	0.200	1.0%	0.279	1.4%
PM_{10} 24-hour	30	0.276	0.9%	0.814	2.7%
PM_{10} Annual	17	0.054	0.3%	0.161	0.9%

[a] From Rule 62-204.260(2), F.A.C. (Prevention of Significant Deterioration Increments).

[b] Based on high second-high short-term and maximum long-term impacts.

Additional analyses of impacts from the proposed facility were conducted for impairment to visibility, and soils and vegetation. Visibility modeling of the plume was performed for the Everglades National Park, a PSD Class I area. Using the CALPUFF Model in a screening level mode, no visibility degradation is predicted. For the soils and vegetation impact analysis, the predicted maximum annual deposition rates are well below the ecological screening thresholds, below which Facility impacts are not discernable from background levels. Additional information concerning ecological impacts is provided in Volume II, Appendix 12.1. For the PSD Class I increments, the predicted maximum concentrations are well below the proposed USEPA significant impact levels, below which Facility impacts are not discernable from background levels. Detailed Class I air quality impact analyses are presented in Section 7 of the PSD Air Permit Application (Volume III).

5.6.2 MONITORING PROGRAM

A continuous emission monitoring program will be operated for opacity, oxygen, sulfur dioxide, carbon monoxide and nitrogen oxide concentrations. The equipment will be installed, calibrated and maintained in accordance with applicable USEPA and FDEP regulations. Periodic compliance testing will also be conducted for pollutants with emission limiting standards in accordance with applicable USEPA and FDEP regulations.

5.7 NOISE

Technical noise analyses were performed prior to construction of the original Facility and again during the Acceptance Test during initial Facility operations. The noise studies are presented in Volume II, Appendix 11.1 and 11.2, respectively. The studies describe the methodologies used in estimating and determining the operational impacts of the Facility and the results of the analysis. The results from the studies indicated that Facility noise levels were acceptable and in compliance with all applicable standards.

For the original certification application, traffic noise was determined using the noise prediction model, STAMINA, 2.0 (FEWA, 1982). Traffic noise levels were compared with and without Facility traffic, and modeling predicted that Facility truck traffic would not be audible at any of the nearest residences.

Table 5-4 compares the pre-Facility and post-Facility noise levels at each monitoring station to the County standards. As depicted in Table 5-4 below, the operational noise levels of the Facility are lower than both the daytime standard and the night-time standard at all property boundary locations (See Volume II, Appendix 11.2).

All of the major equipment, with the exception of the cooling tower, to be added to the Facility will be enclosed in order to minimize potential noise emitted from the operations of the expanded Facility. A comparison of the previous studies with the assumed impacts due to the Facility expansion indicates that the expansion of the Facility will not increase the noise levels emitted from the Facility beyond allowable limits and not cause a discernable impact at any sensitive receptor.

To date there have not been any complaints regarding noise impacts from the existing Facility and it is anticipated that the operation of the expanded Facility will not cause adverse noise impacts.

TABLE 5-4
LEE COUNTY ENERGY RECOVRY FACILITY
FACILITY NOISE LEVELS

Receptor Location[1]	Monitoring Period	Background Noise Level 1990[2]	Operational Noise Level 1994[3]	County Standard
Boundary B1	Day Night	48.0 35.0	53 53	66 55
Boundary B1A[4]	Day Night	Not Measured	48 48	66 55
Boundary B2	Day Night	52.0 50.0	51 48	66 55
Boundary B3	Day Night	48.0 42.0	49 49	66 55
Boundary B4	Day Night	52.0 50.0	47 48	66 55
Residence M3	Day Night	39.0 35.0	<42[5] <42[5]	66 55
Residence R3	Day Night	55.0 42.0	<43[5] <43[5]	66 55

[1] For receptor locations refer to Appendix 11.1, Figure 11-1 and Appendix 11.2, Figure1-1.

[2] Source Table 11-6, 1990 Noise Impact Study (See Appendix 11.1)

[3] Source Table 4-2, 1994 Operational Noise Study Report (See Appendix 11.2)

[4] This receptor is located along the new northern site boundary line and was not measured in 1990

[5] The < symbol indicates that the noise level was below the dynamic monitoring limit of the measuring instrument

5.8 CHANGES IN NON-AQUATIC SPECIES POPULATIONS

5.8.1 IMPACT

The expansion of the Facility will occur within the existing Facility boundaries. It is anticipated that the Facility expansion will have minimal, if any, impacts on existing species populations and long-term species diversity. Given the disturbed nature of the original site, development of the Facility site, including the hydrologic enhancements, may have actually had a net positive effect with respect to species diversity, abundance, and composition on the property.

To date, there have been no adverse impacts to onsite wetlands, and no impacts are anticipated from the long-term operation of the expanded Facility. The stormwater management ponds are designed for a 25-year, 72-hour stormwater event. During design rainfall events, the stormwater pond design provides a maximum discharge of 1.7 cubic feet per second (cfs) and an average discharge of <=0.5 cfs or less (see Volume II, Appendix 7.6). This discharge flows to the wetlands in the southeast quarter of the property site. This flow enhances these wetlands and does not adversely impact them. Groundwater seepage from the stormwater pond is directed toward these wetlands. Therefore, these wetlands should have enhanced hydroperiods, and thus greater wildlife utilization during operation of the Facility.

5.8.2 MONITORING

Minimal impacts on species populations are anticipated; therefore, no long-term wildlife monitoring is necessary.

5.9 OTHER FACILITY OPERATION EFFECTS

For the original application, an analysis of the traffic impacts from the originally proposed Facility was performed. The results of this study are provided in Volume II, Appendix 11.3. To facilitate access to the Facility, left and right turn lanes for traffic were constructed to service vehicles accessing the site from Buckingham Road. In addition, left and right turn lanes were constructed on SR 82 for service vehicles accessing Buckingham Road. Based on historical information obtained from the Lee County Concurrency Inventory and Projections Report (Dec 2000), the Lee County D.O.T. Traffic Section and the worst case and best-case traffic impact estimates presented in Section 2, Table 2-20, the expansion of the Facility is not anticipated to have any adverse traffic impacts.

5.10 ARCHAEOLOGICAL SITES

For the original application, an archaeological and historic survey was conducted for the Facility site (see Volume II, Appendix 10.2). Two archaeological/historic sites were found:

1. A prehistoric campsite, marked by a single chert waste flake; and

2. An early 20th century structure of board-and-batten construction, highly modified and in poor condition.

These sites were located within the study area for the archaeological/historic survey, but were not located on the Facility site. It was concluded that neither of these sites has significance for inclusion in the National Register of Historic Places. Therefore, no significant prehistoric or historic archaeological resources will be impacted by the proposed Facility expansion, since the expansion will be within the existing footprint for the Facility.

5.11 RESOURCES COMMITTED

The commitment of resources in this case is typical for major capital-intensive projects. Natural and human resources will be consumed, converted, or made unavailable for future use if the proposed Facility expansion is implemented.

The resources used in the construction of the Facility will be committed to this project. Some building materials will be irretrievably used in expansion of the Facility or irreversibly committed to the Facility. Certain lumber products and concrete structures will be committed, as well as glass, ceramics, paint, insulation, and paving materials. In addition to the materials consumed during construction, the energy and human labor expended cannot be retrieved.

Financial commitments include dedication of bond issue funds or other sources of construction funds. As with the commitment of labor and materials, the financial requirements for a major capital project are very typical.

The combustion process chemically alters many of the compounds within the waste stream. The solid waste consumed in the combustion process is permanently lost. However, this is considered a positive impact resulting in the generation of electrical energy, which otherwise would have been lost when the waste were buried in a landfill. The expanded Facility will generate over 6.67 billion net kilowatt-hours of electricity during a 20-year life. In addition to the revenue earned on the electricity sold to the power company, the energy production translates into over $500 million[1] reduction on oil expenditures over 20 years and the reduction in consumption of nearly 19.7 million barrels of oil. The alternative processing of 1,800 tons per day of municipal solid waste by the Facility at 90% availability will conserve approximately 3.6 million tons of coal over 20 years, which would otherwise be consumed for power production. It also offers the potential for recovery of reusable materials such as ferrous and nonferrous metals.

Thus, the resources committed to this project will actually benefit the community by providing an environmentally preferred alternative to conventional landfilling, reducing the amount of solid waste to be landfilled and reducing the associated environmental risks, supplying an alternative source of energy, conserving natural resources, and stimulating the economy (by providing new jobs, which ultimately translate into the consumption of goods and services from local businesses, etc.).

5.12 VARIANCES

It is not anticipated that variances from applicable standards will be requested as part of the site certification process.

[1] Based on 2002 price of $27/Barrel for bunker C oil.

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Section 6

SECTION 6.0

TRANSMISSION LINES

AND

OTHER LINEAR FACILITIES

6.0 TRANSMISSION LINES AND OTHER LINEAR FACILITIES

Linear facilities are those that must be routed over land, including transmission lines and pipelines. This section discusses the current routes for electrical transmission, water/wastewater, and reclaimed water for the expansion of the Facility. The expansion of the Facility will utilize existing linear facilities; no new linear facilities will be required.

6.1 TRANSMISSION LINES

The Facility site is bounded on the west by a FP&L easement, through which FP&L electrical transmission lines pass. About one-half mile north of the site (on the northern boundary of the northeast quarter of Section 24) is FP&L's Buckingham substation. Electricity generated at the Facility is routed to this substation.

The Facility's existing electrical transmission line is routed north along the eastern border of Section 24 to the FPL substation, as depicted in Figure 2-2. No new electrical lines or improvements are required for the expansion of the Facility.

Electric and Magnetic Fields

As part of the original construction of the Facility, an electrical transmission line corridor was constructed to establish the electrical interconnection between the Facility and the FP&L transmission grid. The interconnect transmission line traverses a 60-foot wide corridor for approximately 2,400 feet north and 2,600 feet west to the existing FP&L Buckingham substation. The interconnect line size has a specified capacity of 138 kV. The original design elements of the interconnect transmission line were addressed in relation to power line geometry, pole spacing, height, ground clearance, current, and voltage. These elements, combined with other design variables, were used to demonstrate compliance with Chapter 17-244, FAC, Electric and Magnetic Field (EMF), based on nominal 1,800 tpd and 60 MW.

The expansion will raise the Facility's electrical generating capacity to approximately 60 MW, which translates into a transmission line amperage of 251 A at 138 kV line voltage. The original Power Plant Siting Application contained documentation that the Electric and Magnetic Field Compliance Study was performed at a rating of 272 A at 138 kV line voltage, or about eight percent above what the capacity of the expanded Facility will be (i.e., nominal 1,800 tpd/60-65 MW). It is therefore concluded that the Electric and Magnetic Field Compliance Study performed for the original Power Plant Siting Application adequately addressed the installation

of the third combustor unit and accompanying turbine-generator. No new impacts are anticipated due to the expansion, and thus the original EMF study demonstrates that the expanded Facility will comply with the FDEP's EMF rules.

6.2 ASSOCIATED LINEAR FACILITIES

At the time of the original construction, there were no municipal potable water and wastewater utilities serving the project area. Surrounding residences use private wells and septic tanks. In order to service the Facility, three transmission pipelines were constructed and are described below.

Pipelines convey potable water and reclaimed water to the site, and wastewater from the site. The reclaimed water line was installed along SR 82, from the site westward under Interstate 75 to the intersection of Michigan Avenue, thence north and west along Michigan Avenue to the City of Ft. Myers Central Wastewater Treatment Plant. The potable water line was installed in a separate trench in accordance with guidelines for the proper separation of water and wastewater pipelines. The potable water line is routed west along SR 82 and ties into an existing distribution system near the intersection of Omni Avenue. Water is supplied by the City of Ft. Myers Water Treatment Plant. Potable water use at the project site is anticipated to increase to 75,000 gallons per day (gpd) from 51,000 gpd with the expansion.

The Facility currently generates an average of approximately 6,600 gpd of wastewater, which is treated at the Central WWTP. It is anticipated that the fully expanded facility will generate approximately 10,000 gpd of wastewater. The wastewater collection line is routed to travel along SR 82 to the intersection of Flagler Street where it ties into an existing wastewater collection system.

The existing water, reclaimed water, and wastewater transmission lines are approximately three, six, and five miles in length, respectively. These lines were all constructed in existing State and County rights-of-way. The routes avoided major intersections and congested areas to the greatest extent possible.

The Facility also uses four (4) on-site wells to provide back-up water for the cooling tower on an as-needed basis, as described in Volume I, Section 8. The Facility's Water Conservation Plan is provided in Volume II, Appendix 7.9.

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Section 7

SECTION 7.0

ECONOMIC AND SOCIAL EFFECTS

OF

PLANT CONSTRUCTION AND OPERATION

7.0 ECONOMIC AND SOCIAL EFFECTS OF PLANT CONSTRUCTION AND OPERATION

Expansion and operation of the new combustion unit at the Facility will provide a number of benefits. Specifically, the Facility will:

- Meet the intent of the state Legislature [Section 377.109(1) Florida Statutes] to encourage energy conservation, to dispose of solid refuse in a proper manner, and to use resource recovery facilities as an environmentally preferred alternative to conventional solid waste disposal;
- Provide an improved process for the disposal of solid waste which remains after recycling, while minimizing ecological impacts;
- Provide a long-term economic method of solid waste disposal for those materials that remain after recycling;
- Decrease the amount of land required for sanitary landfilling purposes;
- Recover energy from the combustion of solid waste;
- Generate revenues from the sale of energy;
- Reduce the demand for auxiliary energy sources;
- Stabilize or reduce future cost increases for the disposal of the County's solid waste; and
- Become an integral component of the total solid waste management program.

Quantifying the economic and social ramifications of the expansion and operation of the Facility is a challenging task. Economic impacts are more readily identifiable, while social impacts are more difficult to calculate. The following sections discuss the socioeconomic benefits and costs related to the expansion of the Facility.

7.1 SOCIOECOMOMIC BENEFITS

Land disposal of solid waste is becoming more difficult in most areas of the state. The operation of sanitary landfills has been constrained by public resistance, a decrease of available land, a decrease in suitable land away from urban sprawl, increasing environmental regulations regarding landfills and increased concerns about sanitary landfills and the protection of limited groundwater resources for increasing County and State populations. These issues suggest that the energy recovery process is the best current method of solid waste disposal for the waste that

remains after recycling. This is the approach that Lee County has chosen as its preferred method for solid waste disposal.

After expansion, the Facility will have a continuous nominal rated capacity of 1,800 tpd. Some noncombustible materials will be transported directly to the designated County landfill/ashfill. However, of the 1,800 tpd processed by the Facility, less than 10 percent by volume (containing less than 4.0 percent combustible debris) will require landfilling. This significant decrease in waste tonnage corresponds with a 90 percent reduction in waste volumes. A related 90 percent reduction in the annual space requirements for landfilling can be expected. The energy recovery process will increase the landfill/ashfill life span significantly.

The environmental benefits relating to energy recovery operations are anticipated to include improved protection of the limited, valuable, and sensitive groundwater and surface water resources in the area. The remaining ash materials processed by energy recovery operations consist of combusted matter, which is relatively inert (less than four percent combustible material).

Another benefit related to the Facility's expansion is the generation of a minimum of an additional 94.4 million kilowatt hours (kwh) of electricity per year or 1.88 billion kwh over the life of the third unit at the Facility (i.e., based on an average 160,000 tons per year over a 20-year period, and 590 kwh/ton net output). This additional production corresponds to a decrease in the use of crude oil by 278,000 barrels per year or a minimum of 5.54 million barrels over the life of the Facility. At 2001 oil prices ($27/barrel), the decreased demand for crude oil translates into a reduction of about $7.5 million per year in spending or $150 million over the 20-year life of the Facility. These figures do not address expected inflation, which will increase the savings further as the price of crude oil increases.

Local economic benefits from the existing energy recovery operations include the full-time employment of approximately 40 personnel. The annual payroll for the personnel is approximately $2.0 million, which contributes over $40 million into the local economy over a 20-year period. Retail sales from energy recovery personnel will contribute $0.50 million or approximately twenty-five percent of their annual income to local establishments. An estimated additional $1.0 million in personal income will be generated by local residents. It is estimated that the expanded Facility will require an additional 9 employees for operation and maintenance of the Facility. This will increase payroll by approximately $400,000 annually, of which 25 percent is estimated to be put back into the local retail market.

The Facility also contributes to the local economy through routine costs associated with operating and maintaining the Facility equipment. Approximately $5.0 million per year is spent in procurement of spare parts, consumable goods, utilities, and outside service contractors in maintaining the Facility.

The expanded Facility will also add additional economic benefits to the County. As the new process line becomes operational, so in turn will the need for additional utilities, consumable products, spare parts, and personnel to maintain the expanded Facility. Initial costs will range from $1.0 million per year, up to $2.0 million per year after several years of operation as Facility components age and require replacement.

There are additional anticipated economic benefits related to Facility expansion. The local economy and labor market will benefit from the approximate $70 million construction project. Increased revenues from construction-related goods and services purchases and secondary increased jobs from this spending will benefit the area. A significant amount of construction supplies, such as concrete, structural steel, glass, piping, fittings, and landscape material, are anticipated to be purchased from local businesses. There will also be indirect benefits to retail and service sector establishments supplying the work force with goods and services throughout the course of the project. It is estimated that there will be over 125 construction workers employed during the peak of construction activities, with a total of over 750 workers employed throughout the construction process.

In addition to these benefits during construction, long-term benefits associated with the expansion of the Facility include a safe method of solid waste processing and disposal, the reduction of landfilling requirements, increased protection of groundwater supplies, the generation of electric power for resale, the recovery of ferrous and non-ferrous metals, the conservation of oil and gas, and increased employment associated with a permanent work force at the Facility.

7.2 SOCIOECONOMIC COSTS

This section provides an overview of the costs related to the construction and operation of the Facility over a 20-year period.

Expansion of the Facility will be within the original proposed footprint on the 155-acre project site. The following is an approximation of costs related to the Facility expansion. The operator of the Facility receives an annual operating and maintenance fee of approximately $9.2 million from Lee County. Operation and maintenance costs are fixed but subject to escalation indices over the life of the service agreement. It is estimated that for the new unit the operator will receive approximately $1.5 million from Lee County for annual operations and maintenance of the new unit.

There are several land use, comprehensive plan, and zoning components that minimize the long-term land use impacts on the project site's immediate area. For example, Buckingham Park, a 135-acre parcel of land, was constructed by Lee County immediately adjacent to the project site's eastern boundary. The presence of this large park to the east, combined with the FP&L transmission corridor between the project site and any future development to the west of the Facility site, will maintain a permanent green space buffer. The wetlands and associated resource protection areas located adjacent to and north of the site buffer the site from existing and potential residential development to the north.

The Facility has become an extension of the industrial and utility uses that exist in the area, consistent with zoning and/or future land use considerations. The existing industrial use along SR 82 is a gravel pit. In addition, the majority of SR 82 frontage within two miles east of Interstate 75 is zoned for industrial, commercial, or mixed uses. The mixed use area, surrounding Six Mile Cypress Slough near SR 82, will benefit from siting commercial uses near SR 82 and residential uses away from the roadway. The existing utility uses include a landfill and a major transmission power line adjacent to the Facility site. The expansion of the Facility is compatible with these existing uses.

The majority of land surrounding the Facility site to the north of SR 82 is designated in the Lee County Existing Land Use Plan as agricultural, with minimal residential and mixed use designated.

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Section 8

SECTION 8.0

SITE AND FACILITY DESIGN ALTERNATIVES

8.0 SITE AND FACILITY DESIGN ALTERNATIVES

Many factors were evaluated during the planning of the original Lee County energy recovery project including alternative sites, solid waste management methods, ownership and financing options, and Facility size and boiler configuration. Currently, the existing Facility is a vital component of the County's integrated solid waste management system. This system also incorporates an aggressive recycling and materials recovery program that is more fully described in the County's Materials Separation Plan which is provided in Volume II, Appendix 3.1.

8.1 SITE ALTERNATIVES

In March 1990, following discussion and review at a public hearing, the Lee County Board of County Commissioners approved the current site location for the Facility. The site is located in east-central Lee County, and is relatively central to the County geographically. The site offers good access roads, a large area of land, and excellent buffer zones. The expansion of the existing Facility was anticipated in the original siting location study.

In addition, provided in Volume II, Appendix 4.1 are the Section 403.7061 requirements for new waste-to-energy facility capacity.

8.2 ALTERNATIVE WATER SOURCES

Reclaimed water from the City of Fort Myers Central WWTP is used for cooling purposes at the Facility. This primary supply was selected because of its guaranteed availability in a region where potable water supplies are extensively developed. By using reclaimed water to meet its maximum cooling water demand of 1.5 mgd, the Facility drastically reduces the burden on fresh water resources in Lee County.

Alternative sources of cooling water include City of Fort Myers and County water supplies, and a on-site wells. During the original Facility planning stages these sources were rejected as a primary cooling water supply source because of the availability of reclaimed water and the desire to preserve potable water resources in the area. However, a back-up cooling water supply was determined to be beneficial in the event that reclaimed water becomes unavailable (e.g., due to an emergency).

After an evaluation of potential back-up supplies, it was determined that on-site wells installed in the sandstone aquifer would best meet emergency cooling water needs. The current certification specifies the following with regard to the backup water supply wells:

- Maximum daily withdrawal of 1.5 mgd, not to exceed a total of 10 days in any 12-month period. Withdrawals should only occur when treated effluent is not available from the City of Fort Myers.

- Maximum annual withdrawal of 15.8 mg.

- Authorized withdrawal facilities include six wells, eight inches in diameter and 150 feet deep, with a pumping capacity of 175 gpm per well. However, only four wells were actually installed.

As stated in Section 5.3.2 the County is requesting a change to the Certification Condition to increase the number of days in any 12-month period to a maximum of 15 days.

Potable water for the Facility is supplied by the City. Wastewater from the Facility is pumped to the Fort Myers Central WWTP for treatment. The City utilities are considered reliable sources of potable water and wastewater treatment, such that no back-up systems are needed for these Facility services.

Volume II, Appendix 7.9 contains the County's Water Conservation Plan.

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SECTION 9.0

COORDINATION

The permitting process for the expansion of the existing Lee County Facility has required coordination with numerous federal, state, regional, county, and local government agencies. Information was obtained through meetings, telephone calls, e-mail, websites and correspondence between the County's representatives and representatives from these agencies. Table 9-1 provides a list of government agencies and individuals who were contacted during preparation of this permit application.

TABLE 9-1
CONTACTS AND CORRESPONDENCE

Federal Agencies	**Contact**
U.S. Census Bureau	2000 Census Data, SF-1 and SF-2
U.S. Environmental Protection Agency	Eddie L. Wright, Environmental Justice Program
U.S. Environmental Protection Agency	Lynda C. Crum, Office of Legal Support
U.S. Environmental Protection Agency	R. Scott Davis, Air and Radiation Technology Branch
U.S. Environmental Protection Agency	James W. Little, Air, Pesticides & Toxics Management Division
U.S. Environmental Protection Agency	Gregg M. Worley, Air Pesticides & Toxics Management
U.S. Fish & Wildlife Service	Robert A. Frakes, Ph.D., Environmental Contaminants Coordinator
U.S. Fish & Wildlife Service	Jim F. Boggs, Environmental Contaminants Specialist
U.S. Fish & Wildlife Service	Jane Tutton, South Florida Ecosystem Office
Federal Websites	www.epa.gov www.census.gov
State Agencies	**Contact**
Florida Department of Labor and Employment Security	Bureau of Labor Market Information, ES202 Program www.labormarketinfo.com
Florida Department of Environmental Protection	Ronald D. Blackburn, District Air Program Administrator, Air Resources Management
Florida Department of Environmental Protection	Al Linero, Administrator of New Source Review, Bureau of Air Regulation
Florida Fish & Wildlife Commission	Gina Moultrie, Wildlife Surveys
State Website	www.lee-county.com
State Website	dep.state.fl.us

State Website	www.sfwmd.gov
State Website	www.myFlorida.com
County Agencies	**Contact**
Lee County Office of Economic Development	Director: Janet Watermeier and Staff
Lee County Office of Economic Development Website	http://www.leecountybusiness.com/FactsandFigures/Economic_Data/Building_Permits.htm
Lee County Planning Department	Robert J. Beluschak, Planner
Lee County Property Appraiser's Office	Helena McMullen
Lee County Community Development	Peter Blackwell
Lee County D.O.T. Traffic Section	Robert Brown, Traffic Engineering
Other Agencies	**Contact**
Claritas Inc.	Household Trend Report prepared for Economic Development Office of Lee County, dated 02/07/2001
Covanta Energy	Thomas C. Eriksen, General Manager, Covanta Lee, Inc.
Covanta Energy	Joseph R. Treshler, Vice President, Regional Business Management
York STB, Inc.	Alan Sakole