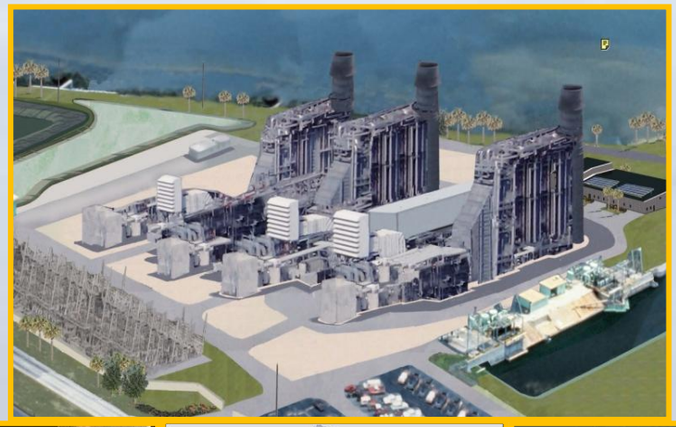
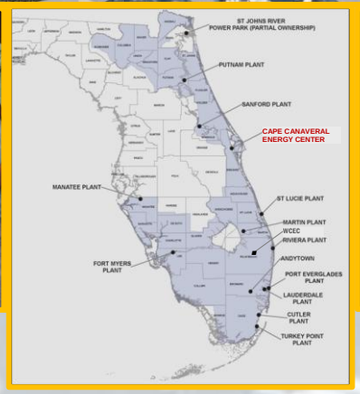
Cape Canaveral

Energy Center





Site Certification Application

Volume I of III

December 2008

FPL

SITE CERTIFICATION APPLICATION
CAPE CANAVERAL ENERGY CENTER

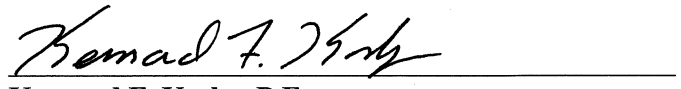
VOLUME 1 OF 3

Submitted by:

Florida Power & Light Company
700 Universe Boulevard
Juno Beach, Florida 33408

December 2008

0838-7633



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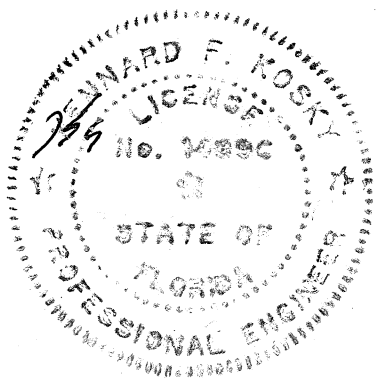

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LIST OF ACRONYMS

AAQS	Ambient Air Quality Standards
ANSI	American National Standard Institute
BACT	Best Available Control Technology
BBtu/hr	billion British thermal units per hour
BCSP	Brevard County Stormwater Program
BEA	U.S. Bureau of Economic Analysis
BMP	Best Management Practice
BOCC	Board of County Commissioners
Btu/gallon	British thermal units per gallon
Btu/kWh	British thermal units per kilowatt hours
Btu/lb	British thermal units per pound
Btu/scf	British thermal units per standard cubic foot
°C	degrees Celsius
CAA	Clean Air Act
CCEC	Cape Canaveral Energy Center
CEM	continuous emission monitoring
CFR	Code of Federal Regulations
cfs	cubic feet per second
cf/yr	cubic foot per year
CO	carbon monoxide
CO_2	carbon dioxide
CT	combustion turbine
dB	decibel
dBA	A-weighted decibel
DLN	dry-low NO_x
EPA	U.S. Environmental Protection Agency
°F	degrees Fahrenheit
F.A.C.	Florida Administrative Code
FAS	Floridan Aquifer System
FCREPA	Florida Committee on Rare and Endangered Plants and Animals
FDACS	Florida Department of Agriculture and Consumer Services
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
FFWCC	Florida Fish and Wildlife Conservation Commission
FGT	Florida Gas Transmission
FLUCFCS	Florida Land Use, Cover and Forms Classification System
FMSF	Florida Master Site File
FNAI	Florida Natural Area Inventory
FPL	Florida Power & Light Company
FPSC	Florida Public Service Commission

F.S.	Florida Statutes
ft	foot
ft^2/day	square feet per day
ft-bgs	feet below ground surface
ft-msl	feet above mean sea level
g/bhp-hr	grams per brake horsepower-hour
gpd	gallons per day
gpm	gallons per minute
gr/100 scf	grains per 100 standard cubic foot
H_2SO_4	sulfuric acid
HHV	high heating value
HRSG	heat recovery steam generator
Hz	hertz
ICU	intermediate confining unit
KDAB	Daytona Beach International Airports
kg	kilogram
km	kilometer
kWh	kilowatt hour
lb/MW-hr	pound per megawatt-hour
lb/MMBtu	pound per million British thermal units
LEED	Leadership in Energy and Environmental Design
LFA	Lower Floridan Aquifer
LHV	low heating value
LOS	Level of Service
m	meter
mag/arcsec^2	magnitudes per square arcsecond
mgd	million gallons per day
mg/L	milligrams per liter
mi^2	square mile
MMBtu/hr	million British thermal units per hour
MMcf/hr	million cubic feet per hour
mph	miles per hour
MPP	Manatee Protection Plan
MPS	Mitsubishi Power Systems
MSW	municipal solid waste
MW	megawatt
NASA	National Academy of Space Administration
NGVD	National geodetic vertical datum
NO_2	nitrogen dioxide
NOI	Notice of Intent
NO_x	nitrogen oxides
NOAA	National Oceanic and Atmospheric Administration

NP	National Park
NRCS	Natural Resource Conservation Service
NSPS	New Source Performance Standards
NWA	National Wilderness Area
NWR	National Wildlife Refuge
NWS	National Weather Service
O_2	oxygen
O_3	ozone
OSHA	Occupational Safety and Health Administration
Pa	pascal
Pb	lead
PCB	polychlorinated biphenyl
PEP	Partnership for Ecosystem Protection
PM	particulate matter
$PM_{2.5}$	particulate matter with an aerodynamic diameter of 2.5 micrometers or less
PM_{10}	particulate matter with an aerodynamic diameter of 10 micrometers or less
POTW	privately owned treatment works
ppm	parts per million
ppmvd	parts per million-dry conditions
PPSA	Power Plant Siting Act
ppt	parts per thousand
PSD	Prevention of Significant Deterioration
PVC	polyvinyl chloride
QA/QC	Quality Assurance/Quality Control
RO/MB	reverse osmosis/mixed bed
ROW	right-of-way
SAS	Surficial Aquifer System
SCA	Site Certification Application
SCR	selective catalytic reduction
SCRAM	Support Center for Regulatory Air Models
SFHA	Special Flood Hazard Area
SJRWMD	St. John's Water Management District
SO_2	sulfur dioxide
SPCC	Spill Prevention Control and Countermeasure
SPL	sound pressure level
SWMD	Solid Waste Management Department
SWMS	Stormwater Management System
SWPPP	Stormwater Pollution Prevention Plan
TDS	total dissolved solids
TPY	tons per year
UFA	Upper Floridan Aquifer
UF/BEBR	University of Florida, Bureau of Economic and Business Research

µg/m^3	micrograms per cubic meter
µm	micrometer
µPa	micropascal
µS/cm	microsiemens per centimeter
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOC	volatile organic compound
vpd	vehicles per day
vph	vehicles per hour

SCA DEFINITIONS

1. "Cape Canaveral Plant" or "existing Plant" – refers to the existing Florida Power & Light (FPL) power plant, including Units 1 and 2 and support facilities, located on the existing Plant Site.

2. "Cape Canaveral Plant Site" or "existing Site" – refers to the FPL-owned property east of U.S. Highway 1 containing Units 1 and 2 and support facilities (about 43 acres including submerged lands lease) and property west of U.S. Highway 1 containing offsite support and electrical facilities (about 56 acres).

3. "Cape Canaveral Energy Center" or "converted Plant" – refers to the proposed combined cycle generating unit and support facilities to be constructed and operated at the existing Plant Site.

4. "Cape Canaveral Energy Center Project" or "Project" – refers to the entire "Project" for which FPL seeks certification, including dismantlement of the existing Plant, construction of the converted Plant, the offsite construction laydown and parking area, and transmission-related activities.

5. "Cape Canaveral Energy Center Site" or "Site" – refers to the property on which both the existing Plant is and the converted Plant will be located, comprising approximately 43 contiguous acres (including approximately 1.5 acres of leased submerged lands) in unincorporated Brevard County, as depicted in the SCA and on the boundary survey included herein, as the Site to be certified for the Cape Canaveral Energy Center.

6. "Power Block" – refers to the area that will be occupied by the proposed combined cycle unit that includes three combustion turbines/heat recovery steam generators (CTs/HRSGs), steam turbine generator, fuel heater, auxiliary boiler, emergency generators, and fire pump engine.

7. "onsite" – refers to areas within the Site.

8. "offsite" – refers to areas outside the Site that consists of the offsite construction laydown and parking area and transmission-related activities.

9. "offsite construction laydown and parking area" – refers to the FPL-owned property located to the west of U.S. Highway 1 and adjacent to the existing FPL substation. This area will be used as the offsite construction laydown and parking area during construction of the Project.

10. "construction" – refers to work to be performed as part of the Project, including construction of the converted Plant's generating unit and all supporting facilities, structures, equipment, and systems, as well as the offsite construction laydown and parking area and transmission-related activities, as presented in the SCA.

11. "dismantlement" – refers to all activities associated with the removal of the existing Cape Canaveral Plant facilities.

12. "peninsula" – refers to the man-made land extending eastward from the Site into the Indian River Lagoon which was constructed by FPL in the mid-1960s to separate the discharge from the existing Plant between the intake and discharge structures. This peninsula is integral to power plant operations and contains a functioning fuel oil barge slip facility.

1.0 INTRODUCTION AND GENERAL INFORMATION

This chapter of the Site Certification Application (SCA) introduces Florida Power & Light Company (FPL or the Company), provides an overview of the Cape Canaveral Energy Center Project ("Project") for which FPL seeks certification, and provides a summary of FPL's public outreach program for the Project.

1.1 Introduction

FPL proposes to convert the existing 43-year-old Cape Canaveral Plant [i.e., two nominal 400-megawatt (MW) conventional dual-fuel fired generating units and support facilities] into a modern, highly efficient, lower-emission next-generation clean energy center using the latest combined cycle technology. The converted Plant will be located within the existing Plant Site boundaries. The conversion will result in increased power generation without using additional land and water sources. The converted Plant will be more energy efficient than the existing Plant and will provide cleaner energy to FPL's customers. The converted Plant will use at least 33 percent less fuel than the existing Plant, for an equivalent amount of electricity production. Moreover, it will be capable of producing nearly 54 percent more power (i.e., 1,250 MW vs. current 800 MW). The existing Cape Canaveral Plant is anticipated to be renamed the Cape Canaveral Energy Center (CCEC), with an in-service date for the converted Plant of June 2013. The Project includes CCEC, an offsite construction laydown and parking area, and a minor upgrade to existing transmission lines/switchyard/substation to connect CCEC to the FPL transmission system.

The existing Cape Canaveral Plant Site is located between Cocoa and Titusville, in unincorporated Brevard County, Florida. The commercial in-service dates for Units 1 and 2 were April 1965 and May 1969, respectively. The CCEC Site is bounded on the east by the Indian River Lagoon (Intracoastal Waterway), on the west by U.S. Highway 1, on the south by Cottrell Avenue, and on the north by a private medical/office facility. The CCEC Site location is presented in Figure 1.1.0-1.

The CCEC Site includes the land that extends east into the Indian River Lagoon (Intracoastal Waterway), which is also referred to as "the peninsula". This man-made peninsula is a functioning and integral component of the Site and the Cape Canaveral Plant operations; specifically, the peninsula was constructed by FPL to serve as a barrier for thermal discharge between the Plant intake and discharge structures. In addition, the peninsula has a functioning barge slip that services the Plant

and that includes leased sovereign submerged lands. Exhibit A presents the CCEC Site legal description for Site Certification (Parcel 1 and Parcel 2).

FPL is seeking approval of the CCEC Project under the Florida Electrical Power Plant Siting Act (PPSA), Chapter 403, Part II, Florida Statutes (F.S.). The PPSA provides a centralized review process for new electrical generating facilities in Florida, involving a balancing of "the increasing demand for electrical power plants with the broad interests of the public." The Florida Public Service Commission (FPSC) is the sole forum for the determination of need for a proposed facility (Section 403.519, F.S.). On September 12, 2008, the FPSC issued an affirmative need determination order for the conversion of the Cape Canaveral Plant (see Chapter 2.0). The Florida Department of Environmental Protection (FDEP) acts as the coordinator for the remainder of the site certification process, with input from various State, regional, and local agencies, along with interested citizens. Ultimate disposition of the SCA is by either the Governor and Cabinet sitting as the Siting Board, or the Secretary of the FDEP.

This SCA is being filed with the FDEP pursuant to Chapter 62-17, Florida Administrative Code (F.A.C.). The SCA describes the Project and addresses its environmental and socioeconomic aspects by presenting information on the existing natural and human environment, the facilities to be dismantled, constructed and operated, and the impacts of the converted Plant on those environments. The format for this SCA follows the draft "Application Instruction Guide: Electrical Power Plant Sites and Associated Facilities Electrical Transmission Lines" issued by FDEP and dated June 27, 2007 (draft DEP Form 62-17.900).

1.2 The Applicant

FPL, a subsidiary of FPL Group, Inc., is the largest electric utility in the State of Florida. FPL serves approximately 4.5 million customer accounts, approximately 8 million customers, in all or parts of 35 Florida counties (Figure 1.2.0-1).

FPL's existing generating resources are located at power plant sites (Figure 1.2.0-1) distributed geographically around its service territory, and also include partial ownership of two units located in Jacksonville, Florida, and one unit in Georgia. The total net generating capability is 22,135 MW consisting of nuclear units (2,939 MW), coal units (896 MW), combined cycle units (9,033 MW), oil/gas fossil steam units (7,023 MW), combustion turbines (324 MW), and gas turbine/diesel units (1,920 MW) (FPL, 2008).

FPL's bulk transmission system is composed of about 6,640 circuit miles of transmission lines. Integration of the generation, transmission, and distribution system is achieved through FPL's approximately 560 substations.

In addition to its combined cycle projects, FPL is actively evaluating and pursuing renewable energy technologies that may be suitable for the State. FPL is currently developing and constructing projects in solar photovoltaic and solar thermal technologies throughout the State, helping to provide platforms to refine the technology and reduce its cost. Currently, FPL is planning to build three Next Generation Solar Energy Centers, including the world's largest photovoltaic solar plant and the first "hybrid" energy center that will combine solar thermal technology with an existing combined-cycle generation unit. FPL is also proposing to construct a wind generation project on the east coast of Florida and is exploring technologies that produce electricity on a commercial scale from ocean current, ocean thermal, and hydrogen technologies. FPL is a leader among the nation's electric utilities for its partnerships with customers in conservation and in energy management (see Appendix 10.8).

The following information addresses the applicant identification requirements:

Applicant's Official Name:	***Florida Power & Light Company (FPL)***
Address:	***700 Universe Boulevard, Juno Beach, FL 33408***
Address of Official Headquarters:	***700 Universe Boulevard, Juno Beach, FL 33408***
Business Entity (corporation, partnership, co-operative):	***Corporation***
Name and Title of Chief Executive Officer:	***Armando J. Olivera, President***
Name, Address, and Phone Number of Official Representative responsible for obtaining certification:	***Barbara Linkiewicz, Director of Environmental Licensing, New Generation Projects, Environmental Services, 700 Universe Boulevard, Juno Beach, FL 33408 Phone: (561) 691-7518 Fax: (561) 691-7049***
Site Location (county):	***Brevard County***
Nearest Incorporated City:	***Between Cocoa and Titusville in unincorporated Brevard County***
Latitude and Longitude:	***28°28' 11"; 80°45' 50" (2nd HRSG stack, approximately center of Power Block).***

UTM Coordinates:	Northerly ***3,149.268 kilometers (km) N;*** Easterly ***523.108 km E (Zone 17)***
Section, Township, Range:	***Portion of Section 19, Township 23, Range 36***
Name Plate Generating Capacity:	***Site Certification: Conversion of existing nominal 800 MW oil/gas steam electric generating facility (net summer) into a nominal 1,250 MW combined cycle unit***

1.3 Overview of the Project

CCEC will be a 3-on-1 combined cycle unit, which will consist of three new advanced combustion turbines (CTs) and one steam turbine/electric generator. Each CT will be connected to a heat recovery steam generator (HRSG). The HRSG will use the waste heat energy from the CTs to produce steam to be utilized in a new steam turbine/electric generator. The CTs are similar to, but much larger and more efficient than, traditional jet engines. The CTs produce electrical energy by direct connection to an electric generator. The exhaust heat from the CTs, which would otherwise be wasted energy released to the atmosphere, will be routed through the HRSGs that act as boilers to produce steam for the new turbine generator to produce additional electricity. The HRSGs will have duct burners to maximize the converted Plant's generating capacity. Natural gas will be the primary fuel for the converted Plant. Ultra low-sulfur light oil will be used as a backup fuel for the CTs. The primary cooling water source for CCEC will be the Indian River Lagoon (Intracoastal Waterway), which will continue to provide once-through cooling water. The existing municipal water supply will continue to be used for process water. By using natural gas as a primary fuel and technology that is recognized by FDEP as the Best Available Control Technology (BACT) for controlling air emissions, the converted Plant will minimize air emissions and will be among the cleanest and most efficient fossil fuel-fired electric power generating plants of its type in the State of Florida, converting about 800 MW of fossil-steam generating capacity into 1,250 MW (nominal) of clean, advanced combined cycle generating capacity.

Decommissioning and dismantling of the existing generating units will be part of the Project and will be required prior to the construction of CCEC. Certain components, such as the cooling water intake and discharge infrastructure and the transmission facilities, will remain intact for use with the converted Plant.

There will be significant benefits associated with the CCEC Project. The Project allows the beneficial reuse of the existing Plant Site and some Plant infrastructure. The converted Plant will have an approximate generating capacity of 1,250 MW (nominal) at a location where only 800 MW is

now generated. The emission rates with CCEC will decrease by almost 100-fold from the existing Cape Canaveral Plant, resulting in substantial annual emissions reductions and increased air quality benefits. In addition, there will be significant reductions in carbon dioxide (CO_2) emissions in FPL's system from 2013 through 2040 with the CCEC. There will be a cumulative reduction of about 8 million tons of CO_2 emissions in FPL's system as a direct result of the CCEC.

The operation of CCEC is expected to generate $184.8 million in property taxes over the expected life of the converted Plant. This figure includes $79.6 million to Brevard County, $88.9 million to the school district, and $16.3 million to other taxing authorities.

1.4 Summary of Public Outreach Program

FPL believes it is important to involve the community in the licensing process as projects are designed to generate and deliver reliable power to customers. Representatives of FPL have been involved with the local community surrounding the Cape Canaveral Plant for many years.

The Project was formally announced on April 30, 2008, at the Cape Canaveral Plant. In attendance were local and regional media as well as environmental and community leaders from around the State. On Saturday, May 3, 2008, an informational open house event was hosted by FPL in Brevard County, which approximately 45 people attended. This dialogue meeting offered the opportunity for participants to have their questions answered by the Project team. A second open house event took place at the Port St. John Library in Brevard County on Saturday, September 6, 2008, for the same purpose. Both open house events included exhibits directly related to the Project as well as a fact sheet for each of the participants.

Throughout the Project, FPL will maintain contact with the community through the following methods:

- Internet: www.FPL.com/Cape;
- Email: Cape_Canaveral_email@FPL.com;
- Toll-free telephone number: 800-581-3990; and
- Direct mailing to adjacent and area property owners, FPL customers, and concerned citizens.

FPL is committed to responding to comments and questions in a timely manner. FPL's goal is to be the first and best source of information about the Project. FPL is committed to keeping the community updated on the Project through ongoing conversations, presentations, information on the FPL website, and in various print materials.

Exhibit A

Cape Canaveral Energy Center Site Legal Description

Parcel 1

A portion of Section 19, Township 23 South, Range 36 East described as follows:

COMMENCING at the Southwest corner of the RE-SUBDIVISION OF ROSEVEAR TERRACE, Plat Book 8, Page 40b according to the Public Records of Brevard County, Florida; thence S89°47'27"E, 401.31 feet to the westerly ROW line of U.S. Highway No. 1 (State Road No. 5); thence S14°53'20"E along said westerly ROW line 314.07 feet; thence N75°06'40"E, 143.00 feet to the easterly ROW line of U.S. Highway No. 1 (State Road No. 5) and the POINT OF BEGINNING; thence N14°53'20"W along said westerly ROW line 1761.01 feet; thence N74°48'10"E, 452.14 feet to the Ordinary High Water Line of the Indian River; (the next 151 courses proceeding along said Ordinary High Water Line); thence S38°29'29"E, 98.21 feet; thence S36°23'58"E, 124.94 feet; thence S45°39'11"E, 95.24 feet; thence S33°19'30"E, 104.09 feet; thence S30°40'51"E, 82.45 feet; thence S41°17'05"E, 70.33 feet; thence S38°55'09"E, 96.12 feet; thence S50°26'25"E, 49.90 feet; thence S46°00'30"E, 26.02 feet; thence S28°55'23"E, 28.56 feet; thence S05°10'25"E, 41.61 feet; thence S31°03'38"E, 62.87 feet; thence S30°54'39"E, 42.24 feet; thence S31°28'52"E, 53.52 feet; thence S31°31'55"E, 50.42 feet; thence S30°51'10"E, 21.53 feet; thence S32°32'55"E, 24.34 feet; thence S31°41'26"E, 50.95 feet; thence S31°39'49"E, 55.60 feet; thence S31°14'52"E, 13.90 feet; thence S31°32'06"E, 37.93 feet; thence S31°03'03"E, 49.68 feet; thence S30°36'10"E, 44.72 feet; thence N52°23'52"E, 1.20 feet; thence S48°20'57"E, 27.90 feet; thence S35°12'29"W, 1.80 feet; thence S66°11'51"E, 31.20 feet; thence S37°59'01"E, 19.34 feet; thence S67°43'53"E, 28.31 feet; thence S79°43'04"E, 55.27 feet; thence S84°28'52"E, 56.13 feet; thence S81°19'03"E, 49.44 feet; thence S83°53'23"E, 52.45 feet; thence S79°16'44"E, 46.12 feet; thence S78°14'16"E, 60.38 feet; thence S81°04'29"E, 62.40 feet; thence S85°19'43"E, 52.85 feet; thence N89°05'19"E, 163.90 feet; thence N89°13'22"E, 110.21 feet; thence N89°22'24"E, 50.85 feet; thence S89°03'48"E, 50.48 feet; thence N81°01'52"E, 40.04 feet; thence S87°22'00"E, 109.67 feet; thence N82°07'27"E, 58.69 feet; thence N87°29'40"E, 53.08 feet; thence N82°16'19"E, 61.08 feet; thence S87°09'16"E, 111.65 feet; thence N81°31'06"E, 50.32 feet; thence S83°26'17"E, 48.14 feet; thence N88°28'43"E, 35.82 feet; thence S89°36'28"E, 64.95 feet; thence S89°47'43"E, 92.54 feet; thence S88°00'04"E, 58.02 feet; thence N85°21'47"E, 53.49 feet; thence N78°33'49"E, 54.42 feet; thence S86°06'38"E, 46.03 feet; thence N89°04'29"E, 57.86 feet; thence S88°16'08"E, 41.48 feet; thence S85°38'13"E, 59.82 feet; thence S87°13'39"E, 39.85 feet; thence N86°51'41"E, 43.70 feet; thence N86°23'12"E, 70.09 feet; thence S80°21'26"E, 40.42 feet; thence S88°57'04"E, 61.04 feet; thence N86°45'45"E, 57.70 feet; thence N85°45'54"E, 51.10 feet; thence N89°02'51"E, 55.96 feet; thence N85°13'57"E, 54.54 feet; thence

S76°00'09"E, 19.78 feet; thence S83°23'43"E, 20.31 feet; thence S39°08'49"E, 22.43 feet; thence S72°39'54"E, 18.72 feet; thence S42°51'23"E, 18.97 feet; thence S27°38'51"W, 25.55 feet; thence S52°25'12"W, 17.91 feet; thence N88°20'29"W, 76.15 feet; thence S84°39'28"W, 38.95 feet; thence N88°32'42"W, 49.33 feet; thence S82°43'06"W, 59.64 feet; thence S77°07'52"W, 54.91 feet; thence S88°53'09"W, 54.40 feet; thence N80°30'49"W, 55.78 feet; thence N83°01'58"W, 51.39 feet; thence S84°54'13"W, 48.47 feet; thence N78°04'10"W, 31.52 feet; thence N87°44'28"W, 18.00 feet; thence S88°51'22"W, 55.71 feet; thence S81°50'12"W, 40.69 feet; thence S80°34'20"W, 54.93 feet; thence S79°55'08"W, 52.41 feet; thence S83°13'24"W, 17.16 feet; thence N58°07'20"W, 24.76 feet; thence N79°22'48"W, 13.72 feet; thence S81°05'52"W, 55.20 feet; thence S72°58'47"W, 44.20 feet; thence S65°04'09"W, 20.76 feet; thence S76°23'17"W, 55.28 feet; thence S66°03'38"W, 38.07 feet; thence N81°25'43"W, 53.18 feet; thence N81°13'33"W, 43.92 feet; thence N84°24'34"W, 94.90 feet; thence N69°24'18"W, 27.86 feet; thence S77°34'39"W, 51.08 feet; thence S84°05'40"W, 53.40 feet; thence S70°40'21"W, 49.69 feet; thence S62°21'00"W, 70.31 feet; thence S01°35'50"E, 13.75 feet; thence S88°24'10"W, 2.50 feet; thence N01°35'50"W, 79.14 feet; thence N78°06'54"W, 92.60 feet; thence S82°02'31"W, 54.39 feet; thence S80°47'08"W, 44.95 feet; thence S76°23'04"W, 75.97 feet; thence S72°42'52"W, 65.89 feet; thence S51°25'25"W, 40.54 feet; thence S00°39'45"E, 28.92 feet; thence S89°08'12"W, 43.51 feet; thence N00°55'40"W, 60.30 feet; thence N66°03'09"W, 8.86 feet; thence N84°07'49"W, 20.40 feet; thence N87°33'01"W, 27.93 feet; thence S89°59'16"W, 33.38 feet; thence S89°08'33"W, 49.70 feet; thence S88°32'59"W, 47.17 feet; thence N85°51'37"W, 57.56 feet; thence S79°44'00"W, 46.86 feet; thence S68°12'45"W, 20.89 feet; thence N76°43'25"W, 14.47 feet; thence S84°48'07"W, 74.09 feet; thence S81°14'09"W, 62.61 feet; thence S70°47'20"W, 22.81 feet; thence S57°34'21"W, 39.16 feet; thence S41°15'23"W, 20.86 feet; thence S59°09'07"W, 23.54 feet; thence S73°29'09"W, 19.45 feet; thence S03°23'27"E, 4.59 feet; thence S00°43'10"W, 134.80 feet; thence S88°19'22"E, 61.08 feet; thence S84°06'40"E, 68.19 feet; thence S81°49'24"E, 30.74 feet; thence S20°00'42"E, 24.19 feet; thence S20°23'16"E, 40.08 feet; thence S20°13'11"E, 39.25 feet; thence S32°42'43"E, 12.67 feet; thence S00°28'30"W, 48.49 feet; thence S01°10'25"E, 51.08 feet; thence S00°20'25"E, 36.51 feet; thence S00°12'23"W, 15.94 feet; thence S01°09'55"W, 34.46 feet; thence S00°03'03"E, 32.21 feet; thence S16°17'55"E, 44.87 feet; thence N89°47'29"W (departing said Ordinary High Water Line), 374.27 feet; thence N00°12'31"E, 90.00 feet; thence N89°48'30"W, 695.55 feet to the Point of Beginning.

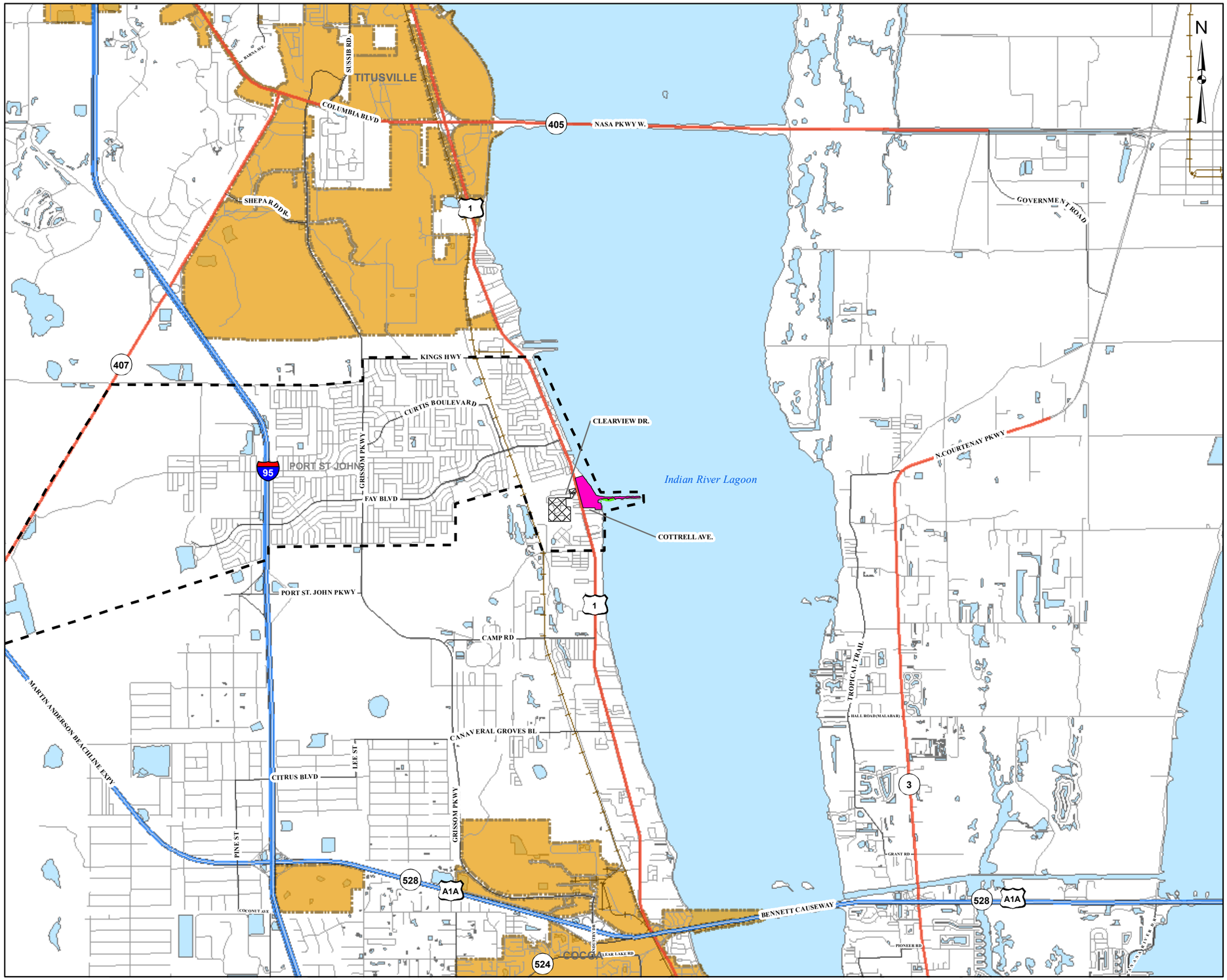
Said lands lying and situate in Brevard County, Florida, containing 1,801,571.06 square feet (41.358 acres) more or less. Parcel = Approximately 41 acres.

Parcel 2

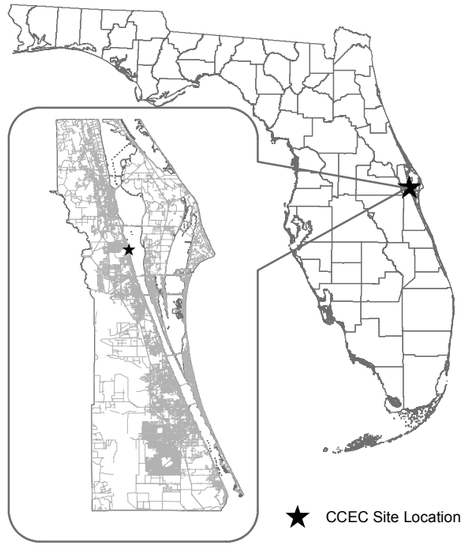
Sovereignty Submerged Lands

Lease No. 050024374

A parcel of sovereignty submerged land in a portion of Section 19, Township 23 South, Range 36 East, in the Indian River, Brevard County, containing 64,100 square feet (1.47 acres) more or less (see Appendix 10.11).



AREA MAP



★ CCEC Site Location

LEGEND

- FPL Cape Canaveral Energy Center(To Be Certified)
- Sovereign Submerged Lands Lease (To Be Certified)
- Offsite Construction Laydown & Parking Area
- Port St John Special Dependent District
- Highway
- Limited Access
- Major Roads
- Ramp
- Minor Roads
- Municipalities

REFERENCE

1. Cape Canaveral Energy Center Site Survey, Avirom & Associates Inc. 2008
2. Offsite Construction Laydown & Parking Area, FPL, 2008
3. Roads, Brevard County, 2008
4. Sovereign Submerged Lands Lease, FPL CAD Drawing No. CC042096, 1998

0 0.5 1 2 Miles

PROJECT

FPL

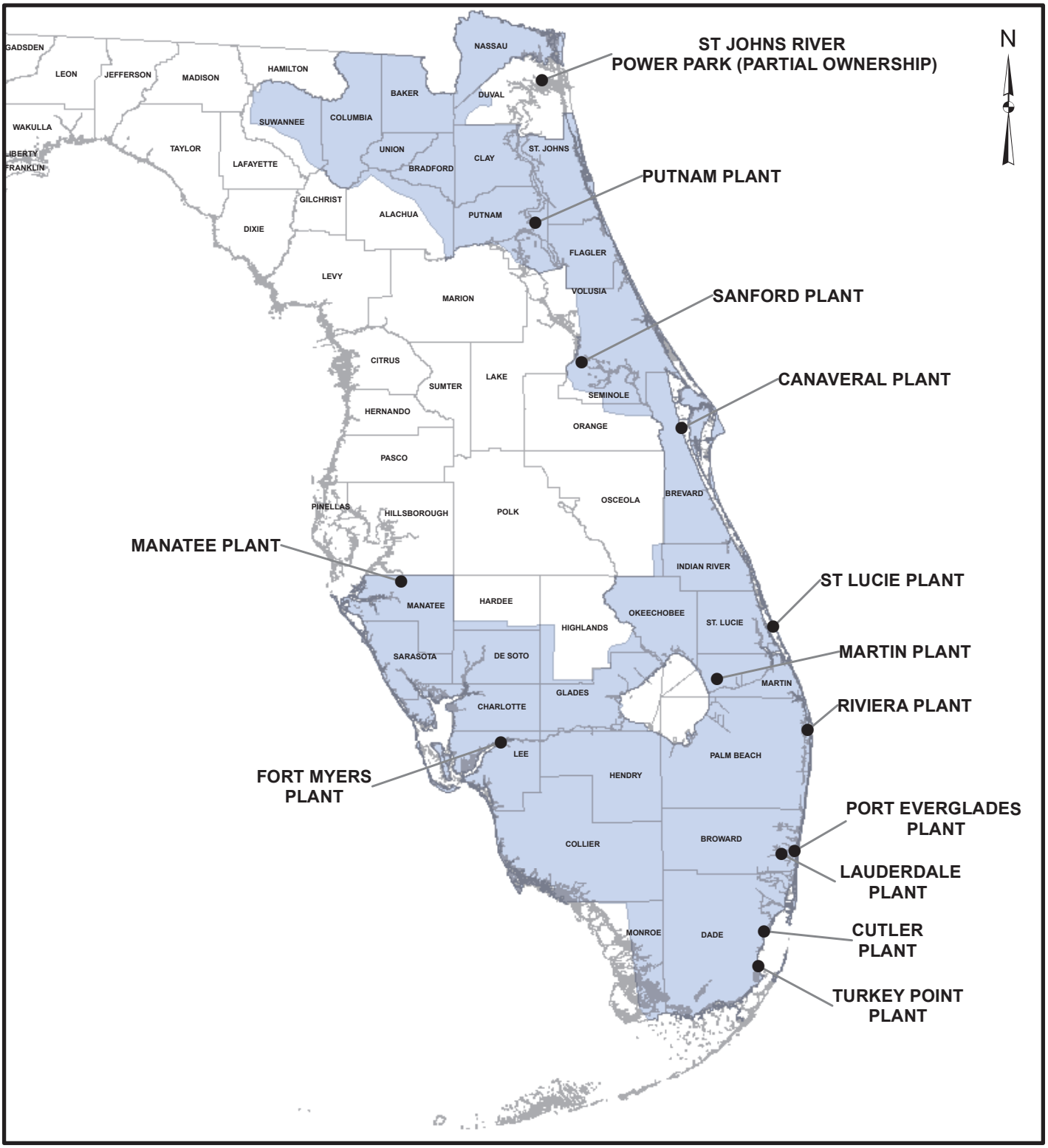
CAPE CANAVERAL ENERGY CENTER PROJECT

TITLE

GENERAL LOCATION

PROJECT No. 083-87633			FILE No. 08387633CA001		REV. 3
DESIGN	RCM	12/12/08	SCALE AS SHOWN		
GIS	NRL	12/12/08	FIGURE 1.1.0-1		
CHECK	RCM	12/12/08			
REVIEW	KFK	12/12/08			

Map Document: P:\GIS\PROJECTS\2008\083-87633_FPL_CCEC_RBEC_Conversion\Canaveral\CA_SCA\ActiveMapDocuments\08387633CA001_Rev2_SiteLocation.mxd / Modified 12/5/2008 2:24:49 PM / Plotted 12/5/2008 2:24:49 PM by rlamar



LEGEND

- Existing FPL Power Plants
- FPL Service Territory

0 25 50 100 Miles

REFERENCE

1. Power plant locations, & service area, FPL, 2007

PROJECT

FPL
CAPE CANAVERAL ENERGY CENTER

TITLE

SERVICE TERRITORY

PROJECT No.083-87633			FILE No. 08387633CA004	REV. 0
DESIGN	KFK	08/18/08	SCALE AS SHOWN	
GIS	NRL	08/20/08	**FIGURE 1.2.0-1**	
CHECK	RCM	10/06/08		
REVIEW	KFK	12/09/08		

FPL

P:\GIS\PROJECTS\2008\083-87633_FPL_CCEC_RBEC_Conversion\CanaveralCA_SCA\ActiveMapDocuments\08387633CA004_ServiceTerritory.mxd

2.0 NEED FOR THE PROPOSED FACILITIES

On September 12, 2008, the FPSC issued an affirmative need determination order for the conversion of the Cape Canaveral Plant. Order No. PSC-08-0591-FOF-EI, which also granted an affirmative need determination for West County Energy Center Unit 3 and the conversion of the Riviera Plant, is attached.

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition to determine need for West County Energy Center Unit 3 electrical power plant, by Florida Power & Light Company.	DOCKET NO. 080203-EI
In re: Petition for determination of need for conversion of Riviera Plant in Palm Beach County, by Florida Power & Light Company.	DOCKET NO. 080245-EI
In re: Petition for determination of need for conversion of Cape Canaveral Plant in Brevard County, by Florida Power & Light Company.	DOCKET NO. 080246-EI ORDER NO. PSC-08-0591-FOF-EI ISSUED: September 12, 2008

The following Commissioners participated in the disposition of this matter:

MATTHEW M. CARTER II, Chairman
LISA POLAK EDGAR
KATRINA J. McMURRIAN
NANCY ARGENZIANO
NATHAN A. SKOP

APPEARANCES:

BRYAN S. ANDERSON, ESQUIRE and JESSICA CANO, ESQUIRE, 700 Universe Boulevard, Juno Beach, Florida 33408-0420; R. WADE LITCHFIELD, ESQUIRE, 215 South Monroe Street, Suite 810, Tallahassee, Florida 32301-1859
On behalf of FLORIDA POWER & LIGHT COMPANY (FPL).

MARTHA CARTER BROWN, ESQUIRE and CAROLINE KLANCKE, ESQUIRE, Florida Public Service Commission, 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399-0850
On behalf of the FLORIDA PUBLIC SERVICE COMMISSION (Staff).

FINAL ORDER GRANTING PETITIONS FOR DETERMINATION OF NEED

BY THE COMMISSION:

BACKGROUND

On April 8, 2008, Florida Power & Light Company (FPL) filed a petition for determination of need for the proposed West County Energy Center Unit 3 (WCEC 3), pursuant

to Section 403.519, Florida Statutes (F.S.), and Rule 25-22.080, Florida Administrative Code (F.A.C.). WCEC 3 will be a combined cycle unit with a summer capacity rating of 1,219 mega-watts (MW), built on an existing generating site in Palm Beach County, Florida, with an in-service date of June 1, 2011.

On April 30, 2008, FPL filed two additional petitions for determination of need at its existing Cape Canaveral and Riviera plants. Both petitions involve converting two oil and natural gas fueled steam electric generating units built in the 1960s into efficient combined cycle power plants. The Cape Canaveral Conversion will convert two operating 400 MW dual-fired steam generating units into a combined cycle power plant with a summer capacity of 1,219 MW. The proposed commercial operation date of the Cape Canaveral Conversion is June 1, 2013. The Riviera Conversion will convert two operating 280 MW dual-fired steam generating units into a combined cycle power plant with a summer capacity of 1,207 MW. The proposed commercial operation date of the Riviera Conversion is June 1, 2014.

Public Testimony

In addition to the prefiled testimony submitted by FPL, we received mailed comments and heard live testimony from two public witnesses at the formal administrative hearing in Tallahassee on June 23, 2008. Topics of interest addressed by the public witnesses included: system reliability and integrity, reasonable costs for electricity, renewable energy, demand-side management, conservation and cost-effectiveness.

Other areas of interest that were discussed during the public testimony focused on subjects beyond the scope of this proceeding under Section 403.519, F.S., or our general regulatory jurisdiction. They included: environmental concerns about water supply becoming contaminated and unavailable, health concerns about drinking contaminated water, safety concerns regarding the plant and associated facilities being located near a blasting area.

Section 403.519, F.S., authorizes us to examine FPL's projected costs for environmental controls necessary to meet current state and federal environmental requirements. The public testimony regarding the environmental concerns and health issues falls under the Department of Environmental Protection's (DEP) jurisdiction.

While safety is not a specific issue in a need determination proceeding conducted under Section 403.519, F.S., we do have jurisdiction to prescribe and enforce safety standards for transmission and distribution facilities of public utilities pursuant to Section 366.04(6), F.S. We also have jurisdiction over natural gas pipeline safety pursuant to Sections 368.01-368.61, F.S., and we have implemented this jurisdiction in Chapter 25-12, F.A.C., "Safety of Gas Transportation by Pipeline." At the hearing for these dockets, in response to the public testimony and questions by the Commissioners, FPL witness Gnecco testified that the project and the related natural gas lateral met safety standards.

Our ability to address some of the issues raised in public testimony is limited by the scope of Section 403.519, F.S., and other statutes which establish our jurisdiction. However,

these concerns may be relevant in certification proceedings before DEP, the Division of Administrative Hearings, and the Governor and Cabinet, sitting as the Siting Board.

Factors for Consideration

Pursuant to Section 403.519(3), F.S., this Commission is the sole forum for the determination of need for an electrical power plant. In making our determination, we must take into consideration the need for electric system reliability and integrity, the need for adequate electricity at a reasonable cost, the need for fuel diversity and supply reliability, whether the proposed plant is the most cost-effective alternative available, and whether renewable energy sources and technologies, as well as conservation measures, are utilized to the extent reasonably available.

This Order reflects our decision on the petitions for determination of need, and serves as our report under the Power Plant Siting Act, as required by Section 403.507, F.S. We have jurisdiction over the subject matter of this proceeding pursuant to Sections 403.519, 403.507, 366.01, 366.04, 366.05, 366.06, and 366.07, F.S. Our decision is explained in detail below.

DECISION

FPL has demonstrated a reliability need for additional resource capacity in 2013. Usually, when a company seeks to satisfy a need for additional resource capacity using natural gas facilities, a petition for need determination would be submitted approximately 3 years before the facility's in-service date. The company decided, however, that unique economic opportunities and site-specific circumstances made it more cost effective to build WCEC 3 for operation in 2011 and perform the conversions at Cape Canaveral and Riviera by 2013 and 2014. FPL contends that it will not be able to perform the conversions of Cape Canaveral and Riviera without approval of the proposed WCEC 3. FPL chose gas-fired combined cycle units as its resource option to meet its capacity needs. This decision was made primarily because coal and nuclear generation have longer construction times and would not be able to provide the additional capacity in the time needed. This approach will maintain FPL's reserve margin above 20 percent throughout the period.

FPL issued a Request for Proposals (RFP) for the WCEC 3 unit on December 13, 2007, according to the principles prescribed in Rule 25-22.082, F.A.C. (Bid Rule). FPL's analysis of the proposals revealed that WCEC 3 was more than $600 million in cumulative present value revenue requirements (CPVRR) less costly than the next best alternative. FPL requested an exemption from the Bid Rule for the conversion petitions under the provisions of subsection 18 of the Bid Rule. FPL claimed that the WCEC 3 RFP results could provide a measure of the cost-effectiveness of the conversions because the WCEC 3 RFP was conducted recently, and FPL did not believe that the results would be materially different from an RFP for the conversions.

As explained below, we approve the need for the new WCEC 3, the conversions of the Cape Canaveral and Riviera plants, and the exemption from the Bid Rule for the conversions.

The Requirements of the Bid Rule

FPL states that its RFP related to the WCEC 3 facility was consistent with the requirements of the Bid Rule, and that specific content required by the Bid Rule was included in the RFP. FPL compared the proposed WCEC 3 to five other proposed resource plans that were received in response to the RFP. FPL's analysis of the proposals showed that WCEC 3 in 2011 was more than $600 million CPVRR less costly than the next best alternative proposed in the RFP. An independent evaluator reviewed FPL's solicitation process and conducted his own evaluation of FPL's Next Planned Generating Unit and the proposals that were submitted in response to the RFP. As a result of his evaluation, the evaluator agreed with the results of the RFP.

The RFP evaluation was done using fuel and economic forecasts developed in 2007. FPL updated its fuel and economic forecast assumptions on March 13, 2008. Since all of the proposals were based on either natural gas or oil generation alternatives, the change in fuel and economic assumptions did not affect the relative rankings of proposals compared to constructing WCEC 3 in 2011.

We find that FPL has met the requirements of Rule 25-22.082, F.A.C. The record shows that WCEC 3 in 2011 is more than $600 million CPVRR less costly than any of the proposals received through the RFP.

Exemption from the Bid Rule

While FPL conducted an RFP consistent with the requirements of the Bid Rule for the WCEC 3 project, FPL has requested an exemption from the Bid Rule for the Riviera and Cape Canaveral Conversion projects. FPL asserts that the conversion of the Riviera and Cape Canaveral plants satisfies each of the three available bases for an exemption from Rule 25-22.082, F.A.C., by providing CPVRR savings to customers, providing highly reliable capacity, and serving the public welfare by reducing emissions and fossil fuel usage.

Subsection 18 of the Bid Rule provides:

> Upon a showing by a public utility and a finding by the Commission that a proposal not in compliance with this rule's provisions will likely result in a lower cost supply of electricity to the utility's general body of ratepayers, increase in the reliable supply of electricity to the utility's general body of ratepayers, or otherwise will serve the public welfare, the Commission shall exempt the utility from compliance with the rule or any part of it for which such justification is found.

FPL contends that if WCEC 3 is placed into service in 2011, the company will have the opportunity to convert the older, inefficient Riviera and Cape Canaveral plants into highly efficient combined cycle power plants. Together, the conversion projects are expected to result in customer savings of $457 million CPVRR. FPL used the December 13, 2007, RFP that was conducted for WCEC 3 to compare the conversion projects. FPL asserted that the proposals

received for the WCEC 3 RFP are similar to proposals that would likely have been received in response to an RFP for the conversions. An independent evaluator reviewed FPL's evaluation and determined that the plan with the conversion projects was $481 million CPVRR less expensive than the most economic resource plan using proposals received in response to the RFP. The conversion projects will be more cost-effective compared to using the purchased power proposals that were evaluated.

FPL has shown that its plan for WCEC 3 with conversions is more cost-effective than the plan that was compared to the RFP responses. We can infer from this evidence that the conversion projects will likely result in a lower cost supply of electricity, and therefore should be granted an exemption from the requirements of the Bid Rule. FPL has agreed to annually report the budgeted versus actual construction expenses for all three projects.

We grant FPL an exemption from the Bid Rule with respect to the Cape Canaveral and Riviera projects. FPL has shown that the conversion projects will result in a lower cost supply of electricity, increase the reliable supply of electricity.

Need for Electric System Reliability and Integrity

FPL contends that reliable forecasts show that, although growing at a slower rate, Florida's population is still on the rise. FPL asserts that the total growth in customers is the primary driver of its projected peak demand growth.

We have reviewed FPL's forecast assumptions, regression models, and the projected system peak demands, and find that this information is appropriate for use in this docket. The forecast assumptions were drawn from independent sources, which we have relied upon in prior cases. The regression models used to calculate the projected peak demands conform to accepted economic and statistical practices. Although slower customer growth could reduce actual peak demand from that forecasted, we find that the projected peak demands produced by the models used by FPL appear to be a reasonable extension of historical trends. FPL witness Morley's testimony indicated that FPL's forecasts accounted for the recent trend of a decreasing population growth rate.

FPL uses the University of Florida's Bureau of Economic and Business Research (BEBR) to develop its population projections. BEBR's population projections are normally updated every year, the most recent being in November 2007. Those projections show continued long-term growth in Florida, specifically, a 1.7 percent annual growth rate beginning in the 2008 through 2017 period. FPL also performed a sensitivity analysis using updated population projections from the University of Florida's BEBR dated February 2008. That analysis revealed that there will still be significant cost savings and other benefits realized with lower customer growth. Although slower customer growth could reduce actual peak demand from that forecasted, we find that the projected peak demands produced by the models used by FPL appear to be a reasonable extension of historical trends.

FPL's base case plan would add new combined-cycle generation in the years 2013, 2014, and 2016 in order to maintain a 20 percent reserve margin. If a 15 percent reserve margin

planning criterion is assumed, FPL's initial reliability need could be delayed until 2014. From 2011 through 2017, FPL has a need for 4,844 MW of additional generating capacity. WCEC 3 will supply approximately 1,219 MW of this need.

Under different circumstances, FPL would not file a petition for a determination of need for WCEC 3 until sometime in 2010. The decision to build WCEC in 2011, which is in advance of the identified reliability need, is driven by unique economic opportunities and site-specific circumstances. For example, the economic analytical results for WCEC 3 in 2011 show that costs of equipment, materials and labor are significantly lower than they would be if WCEC 3 were to be installed later, or at an alternative site. After the addition of WCEC 3 in 2011, FPL's reserve margin will be approximately 27.9 percent. FPL wishes to construct WCEC 3 in 2011 because it believes doing so will provide adequate generating capacity to allow for the removal from service of the existing Cape Canaveral and Riviera generating units in order to pursue the conversion of these facilities and not adversely impact system reliability. When the Canaveral and Rivera units are removed from service, FPL's reserve margin would drop to approximately 21.7 percent in the year 2011.

The table below summarizes the projected reserve margin for the scenarios mentioned previously:

Estimated Impact on Summer Reserve Margin (%)				
Year	**No Additions**	**Base Case**	**WCEC 3 in 2011 without Conversions**	**WCEC 3 in 2011 with Conversions following**
2011	22.3	22.3	27.9	21.7
2012	20.6	20.6	26.0	20.0
2013	18.7	24.0	24.0	23.4
2014	13.6	23.8	23.8	23.2
2015	11.1	21.1	21.1	20.5
2016	3.4	22.9	22.9	22.3
2017	1.1	20.1	20.1	19.5

FPL's need for additional capacity to meet rising electricity demands cannot be satisfied with additional purchased power from renewable generation. Additional DSM programs and renewables are not capable of deferring the need for the additional capacity. Renewable generation opportunities as well as DSM programs will be addressed below.

As discussed above, the conversion of the Riviera and Cape Canaveral units would add approximately 1,069 MW of incremental capacity to FPL's system. FPL's base case plan would add new combined-cycle generation in the years 2013, 2014, and 2016 to maintain a 20 percent reserve margin. If a 15 percent reserve margin planning criterion was assumed, FPL's initial reliability need could be delayed until 2014. Under different circumstances, FPL would not file a petition for a determination of need until sometime in 2010. The decision to convert the Rivera

generating unit is driven by unique economic opportunities and site-specific circumstances. After the addition of WCEC 3 in 2011, FPL's reserve margin will be approximately 27.9 percent. The construction of WCEC 3 in 2011 will provide adequate generating capacity to allow the existing Riviera generating unit to be removed from service during the conversion period without adversely impacting system reliability. When the Riviera and Cape Canaveral units are removed from service, FPL's reserve margin would drop to approximately 21.7 percent in the year 2011. If WCEC 3 were not added in 2011, and FPL continued to pursue the conversions of the Cape Canaveral and Riviera units, FPL's reserve margin would drop below 20 percent beginning in 2011 and beyond. The decision to convert the existing Riviera and Cape Canaveral units is more cost-effective than FPL's base case plan of adding new greenfield generation in 2013 and 2014.

We find that there is a need for the WCEC 3 project and the conversion of the Riviera plant and the Cape Canaveral plant, taking into account the need for electric system reliability and integrity, as this criterion is used in Section 403.519, F.S. The evidence shows that FPL will have a need for approximately 4,844 MW of additional capacity beginning in the 2011 through 2017 period. FPL performed a sensitivity analysis using updated population projections from the University of Florida's BEBR, dated February 2008. That analysis revealed that there would still be significant cost savings and other benefits realized with lower customer growth. FPL has demonstrated a reliability need in the summer of 2013 based on maintaining a 20 percent reserve margin planning criterion. The construction of WCEC 3 in 2011 will provide adequate generating capacity to allow for the conversions of the existing Cape Canaveral and Riviera generating units and will not adversely impact system reliability.

Need for Adequate Electricity at a Reasonable Cost

FPL contends that constructing WCEC 3 in 2011 will take advantage of construction cost efficiencies and provide more cost certainty than building a unit at a greenfield site at a later time. Moreover, adding WCEC 3 in 2011 will save customers $137 to $735 million CPVRR compared to the other available self-build alternatives.

The total installed cost estimate for WCEC 3 is $864.7 million. FPL believes that the costs of WCEC 3 are reasonable and represent the most cost-effective option available. Compared to FPL's other self-build alternatives, FPL's original analysis revealed that the resource plan that included WCEC 3 in 2011 will save customers from $137 million to $460 million CPVRR. A later analysis was conducted using updated fuel and environmental cost forecasts. The results of that analysis depict savings increasing from $460 million CPVRR to $735 million CPVRR by the year 2040. The conversions will add approximately $457 million in additional savings for FPL's ratepayers.

We find that FPL's fuel price forecasts are reasonable for purposes of evaluating its expansion and conversion plans. Although FPL did not compare its fuel forecasts to published forecasts, FPL represents that its forecasts are based on recognized, independent sources of forecast information. We note that, for natural gas, FPL used a real escalation rate – 1.14 percent for WCEC Unit 3 and 2.0 percent for the updated conversion forecasts – based on the average annual escalation from 2020 to 2030 from EIA's Annual Energy Outlook February 2007 price forecast. FPL states the escalation rates are "industry-accepted." FPL further states that the

"fuel price forecasts reflect the projected supply, demand, and price for fuel oil, natural gas, coal, and petroleum coke, as well as the transportation of these fuels to the existing and proposed sites." According to witness Stubblefield, FPL is confident that there is enough natural gas to supply WCEC 3 and the conversion projects during their lifetimes.

Financial Assumptions

FPL's analysis for WCEC 3 assumes an overall cost of capital of 8.40 percent with the federal manufacturer's tax credit and 8.30 percent without the credit. A different discount rate was used for generation-related capital costs because the application of the federal production tax credit for new generating units results in a different effective tax rate for generation-related capital costs compared to other capital costs. These rates of return are based on a capital structure consisting of 55.8 percent equity at a cost rate of 11.75 percent and 44.2 percent debt at a cost rate of 6.43 percent. FPL applied the then current Allowance for Funds Used During Construction (AFUDC) rate of 7.42 percent. FPL used several of the same financial and economic assumptions for WCEC 3, such as the 2.50 percent escalation rate and the capital structure, that were used in the Company's need determination filings for capacity uprates at its four existing nuclear units approved in Order No. PSC-08-0021-FOF-EI[1] and the Turkey Point Units 6 and 7 approved in Order No. PSC-08-0237-FOF-EI.[2] There was no evidence presented in the record that disputes the reasonableness of FPL's financial assumptions. Based on this review, we find that the financial assumptions used for this evaluation are reasonable.

Generation Cost Estimates

The total cost of the proposed WCEC 3 is estimated at $864.7 million and will provide 1,219 MW of capacity. The Riviera conversion total cost is estimated at $1.3 billion, while the Cape Canaveral conversion total cost is estimated at $1.1 billion. The estimated total installed cost for WCEC 3 is $709/kilowatt. This cost estimate includes the benefits associated with utilizing an existing site and infrastructure. FPL has demonstrated that the cost of WCEC 3 is less than the cost of a new greenfield combined-cycle generating unit, which is estimated to be $1,076/kW. West County Units 1 & 2 are currently under construction and FPL would be able to use those construction crews on the WCEC 3 project. If the decision to build any new generation is delayed until 2013, the WCEC site may not be feasible for expansion due to cooling water costs and availability, as well as increased costs due to the need to re-mobilize construction crews.

The estimated total installed cost for the conversion of the Cape Canaveral and Riviera plants are $914/kw and $1,057/kw. The Riviera and Cape Canaveral Conversions will take

[1] Order No. PSC-08-0021-FOF-EI, issued January 7, 2008, in Docket No. 070602-EI, In re: Petition for determination of need for expansion of Turkey Point and St. Lucie nuclear power plants, for exemption from Bid Rule 25-22.082, F.A.C., and for cost recovery through the Commission's Nuclear Power Plant Cost Recovery Rule, Rule 25-6.0423, F.A.C.

[2] Order No. PSC-08-0237-FOF-EI, issued April 11, 2008, in Docket No. 070650-EI, In re: Petition to determine need for Turkey Point Nuclear Units 6 and 7 electrical power plant, by Florida Power & Light Company.

advantage of existing sites and infrastructure, with less cost uncertainty than building units at a greenfield site. FPL's analyses show that the resource plan with the Riviera and Cape Canaveral Conversions is projected to save customers $457 million CPVRR.

Fuel Forecasts

The natural gas and oil price forecasts through 2020 are based on the forward curve for commodity prices and projections from PIRA Energy Group. After 2020, the prices are escalated for real price changes based on the Energy Information Administration's (EIA) long-term price forecast. Transportation costs are added to the commodity prices to obtain delivered prices. For WCEC 3, FPL's assumed gas transportation cost for evaluating the RFP responses is $1.165 per MMBtu. For the conversion projects, FPL's assumed transportation cost for evaluation purposes is $1.40 per MMBtu. For solid fuel, FPL used commodity price forecasts from JD Energy and added in marine and rail transportation costs and terminal charges. All fuel prices are converted to nominal dollars using the 2.5 percent annual escalation rate.

Environmental Costs

In preparing its economic analysis of WCEC Unit 3, FPL included a reasonable level of environmental compliance costs. The allowance costs used by FPL for WCEC Unit 3 were based on ICF International's report titled "U.S. Emission & Fuel Market Outlook, 2006 edition" (ICF's 2006 Report), as well as its updated version, "U.S. Emission & Fuel Market Outlook, 2007 edition" (ICF's 2007 Report). In particular, the mid-range ICF compliance cost forecast, namely ENV II, was used. This forecast is the same as what we recently reviewed and approved in Order No. PSC-08-0237-FOF-EI, for FPL's Turkey Point Units 6 & 7. The allocations of SO_2, NO_x, and H_g allowances were based on the Clean Air Interstate Rule (CAIR) and Clean Air Mercury Rule (CAMR) rules developed by the Environmental Protection Agency. For CO_2, it was assumed that allowances would be purchased under a cap-and-trade system similar to an auction. Apart from the consideration of air emission costs, FPL has also included all equipment and associated operating costs required to comply with current environmental laws and regulations in the economic analysis of the WCEC 3 resource plan.

The same methodology mentioned in the previous paragraph regarding allowance costs was used to evaluate the economic benefit of its conversion plans. FPL used its medium-level natural gas cost forecast and its medium-level CO_2 compliance cost forecast (ENV II). FPL conducted a sensitivity economic analysis that used both the original and the updated high CO_2 compliance cost forecasts provided in ICF's 2006 Report and ICF's 2007 Report. We find that FPL has included a reasonable level of environmental compliance costs in its economic analysis of WCEC 3 and the conversion options of the Cape Canaveral and Riviera plants.

Water Costs

Reclaimed water will be the primary source of cooling and process water for WCEC Unit 3. FPL's witness Gnecco testified that the East Coast Regional Water Reclamation Facility of the Palm Beach County Water Utilities will provide reclaimed water to the WCEC site. Witness

Gnecco asserted that the East Coast Regional Water Reclamation Facility is a very reliable source of reclaimed water. The capital and Operation and Maintenance costs associated with construction, operation, and maintenance of the treatment facility and pipeline will be included in the County's monthly water charge to FPL. Costs associated with the monthly water fee have been included in the economic analysis of this case.

The conversion of the Cape Canaveral and Riviera plants will not use additional water sources or exceed existing water permit limits. Water from the Indian River Lagoon (Intracoastal Waterway) is and will continue to be used for once-through cooling water for the Cape Canaveral conversion. After the conversion, the amount of cooling water required will not exceed current permit limits. In the Riviera conversion, water from Lake Worth (Intra-costal waterway) is and will continue to be used for once-through cooling water for the Riviera conversion. After the conversion, the amount of cooling water required will not exceed current permit limits.

We find that there is a need for the construction of the WCEC 3 plant and the conversion of the Riviera plant and the Cape Canaveral plant, taking into account the need for adequate electricity at a reasonable cost, as this criterion is used in Section 403.519, F.S. The cost information presented in the record demonstrates that the construction of WCEC 3 and the conversions of the Cape Canaveral and Riviera units will not only provide adequate electricity, but also ensure the most reasonable costs to ratepayers.

Need for Fuel Diversity and Supply Reliability

We review the need for fuel diversity in our evaluation of utility generation expansion plans as part of our annual Ten-Year Site Plan review process. In 2006, the Florida Legislature amended Section 403.519, F.S., to require that we specifically consider the need for fuel diversity on a utility's system when evaluating a petition for need.

The decision to build WCEC 3 is primarily driven by economic and environmental benefits. In addition, building WCEC 3 in 2011 will allow for the conversion of FPL's inefficient, 1960s-era Cape Canaveral and Riviera plants to highly efficient state of the art combined cycle units. Coal and nuclear generation have longer construction times and would not be able to provide the additional capacity in the time needed. Therefore, FPL's only available option for base load capacity is natural gas.

At the hearing, the question was raised whether there is an adequate supply of natural gas available to provide reliable service to customers. FPL asserts that there will be an adequate supply of natural gas available to fuel WCEC 3 for the life of the unit. FPL states that it was provided with projected natural gas supply and demand balance availability from the PIRA Energy Group. FPL asserts that those projections demonstrate the adequacy of natural gas supply.

We reviewed a document from the PIRA Energy Group, which contained information regarding the natural gas supply and demand balance. We agree with FPL that an adequate supply of natural gas will be available for the proposed WCEC and conversion projects.

FPL plans to supply WCEC 3 through existing capacity arrangements with the Gulfstream Natural Gas System's (Gulfstream) pipeline that now serves FPL's Martin and Manatee plants. Florida Gas Transmission will expand its pipeline system to begin serving the Martin and Manatee plants. For the conversions, FPL is in discussions with multiple pipeline companies regarding supply of gas to the Canaveral and Riviera plants. FPL expects to have firm transportation arrangements for these plants by late 2008.

FPL's generation mix is still predominately natural gas. The addition of WCEC 3 in 2011 will improve FPL's overall fuel efficiency by approximately 1.4 percent, resulting in a reduction of total oil and gas consumption by approximately 29 million MMBtu through 2017 compared to FPL's base case. Compared to the resource plan that includes WCEC 3 in 2011 without conversions, the addition of the conversions will improve FPL's system average heat rate by about 1.1 percent. The construction of WCEC 3 and the conversion of the Cape Canaveral and Riviera units will not change FPL's generation fuel mix as a percentage of net energy for load. Compared to FPL's base plan, adding WCEC 3 in 2011 followed by the conversion projects is projected to reduce total oil and gas consumption by approximately 87.8 million MMBtu through 2017 and is summarized in the table below:

Total Oil and Gas Usage		
Plan	Usage to 2017 (MMBtu x 1,000	2017 Differential from Base Case (MMBtu x 1,000)
Base Case	5,655,313	0
WCEC 3 w/o Conversions	5,625,803	-29,510
WCEC 3 w/ Conversions	5,567,464	-87,849

As discussed above, the conversions will improve FPL's overall fuel efficiency by approximately 1.1 percent. The conversion projects are projected to result in a reduction of total oil and gas consumption by approximately 58.3 million MMBtu through 2017, compared to a plan that adds WCEC 3 in 2011 followed by a greenfield generating unit in 2014. Compared to FPL's base plan, adding WCEC 3 in 2011 followed by the conversion projects is projected to reduce total oil and gas consumption by approximately 87.8 million MMBtu through 2017.

We find that there is a need for the WCEC 3 plant and the conversion of the Riviera plant and the Cape Canaveral plant, taking into account the need for fuel diversity and supply reliability, as this criterion is used in Section 403.519, F.S. FPL has demonstrated that the addition of WCEC 3 and the conversions of the Cape Canaveral and Riviera plants will result in

a reduction of dependence on natural gas and fuel oil, because it will reduce FPL's total oil and gas consumption by approximately 87.8 million MMBtu through 2017. Building coal or nuclear generation by 2013 is not feasible because of the construction and permitting lead times for those types of generation. The addition of WCEC 3 and the conversions will also lead to an overall increase in system efficiency of 1.4 percent for WCEC 3 and 1.1 percent for the conversions for an overall system efficiency of 2.5 percent.

No Mitigating Renewable Energy Sources and Technologies or Conservation Measures

FPL contends that its forecasted need already accounts for all the cost-effective DSM identified through 2014 and projected through 2017, and available renewable resources, including the planned renewal of its existing firm renewable capacity purchase contracts and 126 MW of new renewable firm capacity.

In assessing the availability of DSM to meet its energy needs, FPL used the same assumptions that were used in the recently approved Turkey Point nuclear proceedings.[3] An estimated 5,513,458 residential customers have participated in FPL's DSM programs through 2007, along with approximately 178,203 commercial customers. In 2007, 165,575 residential DSM audits were performed by FPL. For commercial customers, 11,755 DSM audits were performed by FPL. FPL described its recent and continuing efforts to educate customers on the benefits of energy conservation via DSM programs, including its outreach and participation at events attended by FPL customers. Accounting for reserve margin requirements, FPL's DSM efforts through 2007 have eliminated the need to construct the equivalent of approximately 12 new 400 MW generating units. FPL's initial projection indicates a savings of 3,030 MW of summer demand from the year 2008 through the year 2017. This represents an expected increase in DSM savings of 1,122 MW from 2008 through 2017. FPL evaluates DSM programs based on performance against the rate impact measure and participant tests, and screens out measures that would have a payback period of less than two years for consumers.[4]

In April of 2007, FPL issued an RFP for renewable generation extending to 2015. The responding bids equated to 126 MW of capacity. The amount of capacity that resulted from the bids of the April 2007 RFP would not be able to mitigate the need for the proposed WCEC 3 or conversion projects. No contracts resulted from the RFP due to FPL's determination that the costs were excessive. In 2008, FPL again issued an RFP for renewable generation, receiving proposals for 262 MW. The deadline for the proposals was less than two weeks prior to the date of the hearing in this docket, which allowed insufficient time for FPL to evaluate the responses. However, even if all contracts were signed, it would still not defer the need for WCEC 3 and the Riviera and Cape Canaveral conversion projects.

Witness Sim testified that if the $3.26 billion of installed capital dollars that the proposed WCEC 3 and Conversion units are projected to cost were applied to a hypothetical installation of

[3] Order No. PSC-08-0237-FOF-EI, issued April 11, 2008, in Docket No. 070650-EI, In re: Petition to determine need for Turkey Point Nuclear Units 6 and 7 electrical power plant, by Florida Power & Light Company.
[4] Order No. PSC-04-0763-PAA-EG, issued August 9, 2004, in Docket No. 040029-EG, In re: Petition for approval of numeric conservation goals by Florida Power & Light Company.

renewables, that dollar amount would result in an estimated 90 MW of incremental firm summer capacity from photovoltaics, or 220 MW of summer demand reduction from solar water heaters. Further, FPL indicated that the photovoltaic capacity purchased would require approximately 2,800 acres of land to install, whereas the proposed WCEC 3 and the two conversions would be constructed on land already dedicated to power plants, and thus would not require the purchase of additional land. The hypothetical photovoltaic facility would serve an estimated 56,000 customers compared to Witness Sim's estimation that the three generating units would serve approximately 2 million customers. The customers to be served by the hypothetical solar water heaters would total approximately 1.1 million; however, those customers would have only those costs offset that relate to water heating.

FPL has proposed to install renewable resources in addition to the proposed plants. FPL identified three planned commercial scale solar projects: (1) a 75 MW solar thermal installation at FPL's Martin facility on 600 acres of land to be completed by 2010; (2) a 25 MW photovoltaic installation on FPL property on 180 acres in DeSoto County to be completed by 2010; and (3) a 10 MW photovoltaic installation at NASA's Kennedy Space Center in Brevard County on 60 acres of land. FPL also plans to install up to six wind turbine generators on FPL's property on Hutchinson Island in St. Lucie County. Local, state, and federal permits and approvals have not been attained, which could affect the estimated in-service date of 2010. The St. Lucie Wind Project would total an estimated 13.8 MW on approximately 20 acres.

We find that there are no additional renewable energy sources and technologies or cost-effective conservation measures available that might mitigate FPL's need for the proposed WCEC 3 in 2011 and conversions of the Cape Canaveral and Riviera plants as this criterion is used in Section 403.519(4), F.S. FPL states that while it will continue to pursue renewable resource opportunities, both purchased and self-built, DSM and renewable resources will not be sufficient to meet FPL's future need for more than 4,800 MWs of new generating capacity through 2017.

Most Cost-Effective Source of Power

FPL contends that adding WCEC 3 in 2011 is more cost-effective than its other self-build options, and more cost-effective than all proposals received in response to its 2007 RFP. Adding WCEC 3 in 2011 will result in customer savings of about $460 million CPVRR compared to adding a similar unit at a greenfield site in 2013. If the conversion projects were added to the plan of the proposed WCEC 3 in 2011, FPL asserts that its customers would experience even greater cost savings. FPL states that if the environmental and fuel costs were higher, the economic benefits to customers would be greater.

The evidence in these proceedings demonstrates that the addition of WCEC 3 and the conversions is the most cost-effective optimization of FPL's required capacity additions. In order to optimize the base plan, FPL has strategically used the proposed WCEC 3 in 2011 followed by the conversions to reduce the amounts of fuel used and subsequent emission reductions to bring economic savings to its ratepayers.

FPL's fuel mix is still predominately natural gas. However, the addition of WCEC 3 and the conversions will improve FPL's overall fuel efficiency, resulting in a reduction of total oil and gas consumption by its customers. This in turn would lead to additional economic savings by displacing less efficient units with cleaner, more efficient generating units. In addition, WCEC 3 in 2011 would lead to a reduction of approximately 29,510 million MMBtu of oil and natural gas usage by year 2017. Including the conversions with WCEC 3 in 2011 would lead to additional savings and a reduction of approximately 87,849 million MMBtu of oil and natural gas over the same time period.

Compared to the base case, the addition of WCEC 3 in 2011 will reduce the overall emissions on FPL's system. The reduction in emissions will be even greater when including the conversions with the addition of WCEC 3 in 2011. Witness Silva testified that system fuel efficiency improvement achieved due to the conversion projects is the only way that FPL can significantly reduce CO_2 emissions until the new nuclear generating units are added to FPL's system in 2018. Witness Silva further testified that the conversions will also result in reduced emissions of SO_2 and NO_x. FPL states that the proposed WCEC 3 and the conversions will contribute significantly toward achieving the CO_2 emission targets reflected in the Governor's Executive Order 07-127. The following chart shows the emissions reductions associated with the proposed projects. The chart also reveals that, of the three gases emitted, NO_x, not CO_2, will have the greatest percentage emission savings:

Projected Emissions Analysis 2010-2017									
Plan	SO_2 (tons)	Diff. from Base	SO_2 % Diff.	NO_x (tons)	Diff. from Base	NO_x % Diff.	CO_2 (million tons)	Diff. From Base	CO_2 % Diff.
Base Case	453,874	0	0%	165,901	0	0%	493	0	0
WCEC 3 w/o Conv.	432,805	-21,069	-4%	154,346	-11,555	-7%	490	-3	0%
WCEC 3 w/Conv.	409,576	-44,298	-10%	134,713	-31,188	-23%	485	-8	-1%

FPL's fuel and environmental forecasts for WCEC 3 were based on 2007 forecasts. Those forecasts revealed that the addition of WCEC 3 in 2011 would result in customer savings of about $460 million CPVRR compared to adding a similar unit at a Greenfield site in 2013. FPL provided updated 2008 fuel and environmental cost estimates for the proposed WCEC 3 in 2011 using the updated March 13, 2008, forecasts. The results demonstrated that projected savings for WCEC 3 in 2011 increased to $735 million CPVRR. FPL's fuel and environmental forecasts for the conversion projects used the March 13, 2008 forecasts. The results revealed that the conversions alone would generate savings of $457 CPVRR for FPL's ratepayers. As a result of the new forecasts, the package containing WCEC 3 and the conversions would bring savings of approximately $1.2 billion CPVRR to FPL's ratepayers, compared to the base case.

The following chart addresses the financial assumptions that we analyzed regarding FPL's proposal. The chart shows that the savings to FPL's ratepayers will begin in the near term (2017) and become even greater through the projected life of the units (2040):

Projected Financial Assumptions thru 2040				
Plan	CPVRR (millions thru 2017)	Difference from Base (millions thru 2017)	CPVRR (millions thru 2040)	Difference from Base (millions thru 2040)
Base Case	$54,194	$0	$168,105	$0
WCEC 3 w/o Conv.	$53,887	$-307	$167,370	$-735
WCEC 3 w/Conv.	$53,771	$-423	$166,913	$-1,192

The construction of WCEC 3 and the conversion of the Riviera and Cape Canaveral plants are the most cost-effective alternatives available, as this criterion is used in Section 403.519, F.S. As discussed above, FPL's economic analyses utilized a reasonable range of fuel and environmental costs. As part of the discovery process, FPL provided an updated analysis based upon 2008 fuel and environmental costs estimates. When compared to adding greenfield units in 2013 and 2014, the updated analyses indicate that adding WCEC 3 in 2011 followed by the conversion projects would result in a reduction of approximately 44,298 tons of SO_2 (9.8 percent); 31,188 tons of NO_x (18.8 percent); and 8 million tons of CO_2 (1.6 percent) by the year 2017. In addition, the updated analyses indicate that adding WCEC 3 in 2011 followed by the conversion projects would save approximately 87,849 million MMBtu of oil and natural gas over the same time period. These environmental and fuel reduction benefits continue into the future and combine to result in an estimated savings to FPL's customers of approximately $1.2 billion in present value savings by the year 2040. Compared to the base case and WCEC 3 without conversions plans, the analyses show that the proposed WCEC 3 in 2011 with conversions is the most cost-effective alternative available to FPL and its ratepayers. In fact, updated environmental and fuel cost forecasts revealed even greater savings for FPL's ratepayers. Together, these three projects will result in the greatest savings for FPL's ratepayers.

Need for West County Energy Center Unit 3 and the Conversions of Riviera and Cape Canaveral

FPL asserts that the evidence presented demonstrated that WCEC 3 in 2011, as well as the proposed conversions, satisfies all criteria listed in Section 403.519, F.S. FPL further contends that when compared to other self-build alternatives, WCEC 3 in 2011 without the conversions is the most cost-effective choice available by $137 million to $735 million CPVRR. When combined, the proposed WCEC 3 and the conversions are estimated to save FPL's ratepayers approximately $1.2 billion by the year 2040. Furthermore, FPL argues that if the company were to delay the addition of WCEC 3 beyond 2011, it would not be able to move forward with its conversions of the Cape Canaveral and Riviera plants, thereby missing out on the benefits associated with those projects.

We find that the evidence in the record demonstrates that, based on maintaining a 20 percent reserve margin planning criterion, FPL will have a reliability need for additional capacity

in the summer of 2013. If WCEC 3 is built in 2011, FPL can remove the Cape Canaveral and Riviera plants from operation in 2010. FPL can then convert the steam electric generating units, which have been in operation since the 1960s, to high-efficiency combined cycle power plants, and return them to operation in 2013 and 2014. WCEC 3 is projected to be approximately $735 million less expensive than FPL's base case expansion plan. The acceleration of WCEC 3 allows for the conversion of Cape Canaveral and Riviera plants, which are projected to increase savings to FPL ratepayers of approximately $1.2 billion.

Annual Reporting of Costs

FPL has agreed that it will report, on an annual basis, budgeted and actual costs compared to the estimated total in-service cost of the proposed WCEC 3, Cape Canaveral, and Riviera units. The report shall be submitted to the Director of the Division of Economic Regulation. In addition, FPL also agreed that if a different combustion turbine design from the one presented in these proceedings is chosen, FPL will report to us regarding the comparative cost advantage of the alternate design chosen. Such a selection would only be made if the projected cost to FPL's customers would be lower as a result of the use of an alternate design.

CONCLUSION

FPL has demonstrated that its plan to build WCEC 3 and convert its existing Cape Canaveral and Riviera plants meets all of the requirements of Section 403.519, F.S. The new and converted units will provide nearly 2,300 MW of capacity needed through 2017, and ensure a 20 percent reserve margin. The assessments of various combinations of timings and generating resources used reasonable assumptions in demonstrating the proposed projects would provide adequate electricity at reasonable cost and, in fact, were the most cost-effective alternative. FPL demonstrated that use of all identified cost-effective conservation and reasonably available renewable generation will not provide the capacity or demand reduction necessary to mitigate the need for these projects.

Therefore, we approve the three need determinations and exemption from the Bid Rule for the two conversions. FPL shall report annually to the Director of Economic Regulation the budgeted and actual costs compared to the estimated total in-service cost of the proposed WCEC 3, Cape Canaveral Conversion and Riviera Conversion.

Based on the foregoing, it is

ORDERED by the Florida Public Service Commission that the three petitions for determination of need, filed by Florida Power & Light Company, are hereby granted as set forth herein. It is further

ORDERED that Florida Power & Light Company is granted an exemption from Rule 25-22.082, F.A.C., for the conversions of the Riviera and Cape Canaveral Plants. It is further

ORDERED that Florida Power & Light Company shall report, on an annual basis, budgeted and actual costs compared to the estimated total in-service cost of the West County Energy Center Unit 3, Cape Canaveral, and Riviera units, as set forth herein. It is further

ORDERED that these dockets shall be closed when the time for filing an appeal has run.

By ORDER of the Florida Public Service Commission this 12th day of September, 2008.

/s/ Ann Cole
ANN COLE
Commission Clerk

This is an electronic transmission. A copy of the original signature is available from the Commission's website, www.floridapsc.com, or by faxing a request to the Office of Commission Clerk at 1-850-413-7118.

(S E A L)

MCB/CMK

DISSENT BY: COMMISSIONER SKOP

COMMISSIONER SKOP, dissenting:

I respectfully dissent with the majority view on Issue 9 and Issue 17, to the extent that I am not comfortable waiving Section (15) of Rule 25-22.082 (Bid Rule), Florida Administrative Code for the two conversion projects.[5]

In relevant part, Section (15) of the Bid Rule requires that:

> "If the public utility selects a self-build option, costs in addition to those identified in the need determination proceeding shall not be recoverable unless the utility can demonstrate that such costs were prudently incurred and due to extraordinary circumstances."

From my perspective, it makes no sense to waive the requirement of a Commission rule that is directly on point, and which was clearly intended to protect consumers from cost overruns.[6]

[5] FPL remains bound to the "self-build option" requirement of Rule 25-22.082(15) for the WEC-3 unit.

[6] If changes to the existing rule are warranted, I would respectfully suggest that the Commission would be better served by revising the rule through the rulemaking process.

NOTICE OF FURTHER PROCEEDINGS OR JUDICIAL REVIEW

The Florida Public Service Commission is required by Section 120.569(1), Florida Statutes, to notify parties of any administrative hearing or judicial review of Commission orders that is available under Sections 120.57 or 120.68, Florida Statutes, as well as the procedures and time limits that apply. This notice should not be construed to mean all requests for an administrative hearing or judicial review will be granted or result in the relief sought.

Any party adversely affected by the Commission's final action in this matter may request: 1) reconsideration of the decision by filing a motion for reconsideration with the Office of Commission Clerk, 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399-0850, within five (5) days of the issuance of this order in the form prescribed by Rule 25-22.060, Florida Administrative Code; or 2) judicial review by the Florida Supreme Court in the case of an electric, gas or telephone utility or the First District Court of Appeal in the case of a water and/or wastewater utility by filing a notice of appeal with the Office of Commission Clerk, and filing a copy of the notice of appeal and the filing fee with the appropriate court. This filing must be completed within thirty (30) days after the issuance of this order, pursuant to Rule 9.110, Florida Rules of Appellate Procedure. The notice of appeal must be in the form specified in Rule 9.900(a), Florida Rules of Appellate Procedure.

3.0 SITE AND VICINITY CHARACTERIZATION

3.1 Site and Associated Facilities Delineation

The CCEC Site is located on the same approximately 43 acres now occupied by the existing Cape Canaveral Plant. The Site is located between Cocoa and Titusville in unincorporated Brevard County, Florida (the "Site"). The Site is situated in a portion of Section 19, Township 23, and Range 36 and bounded on the east by the Indian River Lagoon (Intracoastal Waterway), on the west by U.S. Highway 1, on the south by Cottrell Avenue, and on the north by a private medical/office facility (see Figures 3.1.0-1 and 3.1.0-2).

The Site shown in Figure 3.1.0-3 consists of about 41.4 acres of FPL-owned property that includes the land which extends east into the Indian River Lagoon (Intracoastal Waterway), which is also referred to as "the peninsula". The peninsula is a functioning and integral component of the Cape Canaveral Plant operations; specifically, the peninsula was constructed by FPL in the mid-1960s to serve as a barrier between the Plant intake and discharge structures. The peninsula includes a fuel oil barge unloading facility. The Site also includes a barge slip comprised of about 1.5 acres of submerged land leased from the State of Florida.

The Project will include the decommissioning and dismantlement of the existing power generating units and some supporting facilities. The Project also includes the construction of the CCEC on the Site, an offsite construction laydown and parking area that will be located on FPL property west of U.S. Highway 1, and transmission upgrades to connect CCEC to FPL's transmission line system (see Figure 3.1.0-3).

3.1.1 Existing Site Uses

The existing Cape Canaveral Plant consists of two nominal 400-MW electrical generating units with conventional dual-fuel fired steam boilers and steam turbine generators. Each of these conventional steam boilers can burn No. 6 fuel oil or natural gas. Unit 1 entered service in 1965 and Unit 2 entered service in 1969.

Existing onsite support facilities include service buildings, an administration building, fuel oil tanks, water treatment facilities, once-through cooling water intake and outfall structures, wastewater treatment basins and an onsite gas pipeline and gas yard leased by Florida Gas Transmission (FGT). Offsite support facilities, located on the west side of U.S. Highway 1, include a well field,

transmission lines, and a substation (see Figure 3.1.1-1). The Project will be located on the existing Cape Canaveral Plant Site.

3.1.2 Adjacent Properties

The existing land uses that are adjacent to the Site consist of single- and multi-family residences to the south and southwest, commercial property to the northwest, utility systems to the west, and a private medical/office facility to the north.

The closest residences are along Cottrell Avenue, located just south of the southern Site boundary. A second residential area is located across U.S. Highway 1, opposite the main entrance to the Site.

3.1.3 Uses Within the Site

Figure 3.1.1-1 shows the existing Site, including Units 1 and 2 and the facilities that support Plant operation. Survey maps that delineate the Site boundary to be certified and topography are presented in Figures 3.1.3-1a through 3.1.3-1d (Note: Larger sized drawings can be supplied upon request). The Site is within the existing Cape Canaveral Plant Site.

3.1.4 One Hundred-Year Flood Zone

The Federal Emergency Management Agency (FEMA) map for the Cape Canaveral Plant is shown as an overlay to the aerial image of the Site in Figure 3.1.4-1. As recorded on the Flood Insurance Rate Map, the Site is not situated within the 100-year or 500-year flood zone. As depicted in the Figure, most of the Site is classified as Zone X, with the shoreline classified as Zone AE. Zone AE is also identified as a Special Flood Hazard Area (SFHA) and is within the 100-year flood plain.

3.2 Social and Political Environment

3.2.1 Governmental Jurisdictions

The Site is located in unincorporated Brevard County, within the Port St. John Special Dependent District. Municipal jurisdictions within 5 miles of the Site are the City of Cocoa to the south and the City of Titusville to the north.

Figure 3.2.1-1 depicts an area map showing a 1-mile radius around the Site. Figure 3.2.1-2 depicts an area map with 1-, 2-, 3-, 4-, and 5-mile radii around the Site.

3.2.2 Zoning and Land Use Plans

The following section describes relevant provisions of the future land use element of the Brevard County Comprehensive Plan and the County's land development regulations and codes of ordinances.

3.2.2.1 Brevard County Comprehensive Plan

Each Florida county and municipality has adopted a local comprehensive plan to meet the requirements of the Local Government Comprehensive Planning and Land Development Regulations Act of 1985 (also referred to as Florida's Growth Management Act), as presented in Chapter 163, Part II, F.S., and Chapter 9J-5, F.A.C.

Brevard County has adopted a Comprehensive Plan that is in compliance with the State requirement.

The Future Land Use Element of the Brevard County Comprehensive Plan identifies the future land use designations. The Site is identified on the Brevard County Future Land Use Map as Public Facility (PUB), Neighborhood Commercial (NC), and Residential 12 Directive (RES12_DIR) (see Figure 3.2.2-1). The Site is located within the PUB designation with support facilities (i.e., storage and warehouses) located within the NC and RES12_DIR designations. The offsite Project facilities are also located within the Public Facility (PUB), Community Commercial (CC), and Residential 8 Directive (RES8_DIR) future land use designations. As stated in Policy 6.2(B) of the element, public facilities land uses are permitted within all land use designations on the County's Future Land Use Map.

To ensure compatibility with the adjacent land uses and to minimize the potential impact the Project could have on these uses, the Project complies with the relevant substantive provisions of the Conservation Element, Surface Water Management Element, Historic Preservation Element, Potable Water Element, Sanitary Sewer Element, Transportation Element, and the Coastal Management Element.

3.2.2.2 State Comprehensive Plan

The State Comprehensive Plan provides long range policy guidance for the orderly social, economic, and physical growth of the State. The Plan does not create regulatory authority that is not otherwise authorized by State law. The Project is consistent with the Plan, specifically, the applicable provisions identified in the Water Resource, Air Quality, Land Use, and Energy Sections of the Plan.

3.2.2.3 East Central Florida Regional Planning Council

The East Central Florida Regional Planning Council Strategic Regional Policy Plan is a long range guide for the physical, economic, and social development of the planning region encompassing the Cape Canaveral Plant. The Plan addresses five issues – affordable housing, economic development, emergency management, natural resources and transportation. The Project is consistent with the applicable polices of this Plan.

3.2.2.4 Land Development Regulations and Code of Ordinances

Potentially relevant substantive provisions of Brevard County's land development regulations or Code of Ordinances are summarized and discussed in the following paragraphs. The Project complies with the substantive provisions of these regulations.

The Brevard County Land Development Regulations are codified as Chapter 62 of the County's Code of Ordinances. Article VI of this Chapter relates to the zoning regulations. To ensure that all development in unincorporated Brevard County is consistent with the Comprehensive Plan, compatible with surrounding uses, served by adequate public facilities, and sensitive to natural resources, the County has established a series of zoning classifications. In the Land Development Regulations, each of the classifications has its own purpose and permitted uses, accessory uses, conditional uses, and other regulations that control the use of land.

The Site is located within the Government Managed Lands-Utility (GML) (U) zoning classification (see Figure 3.2.2-2). On October 2, 2008, the Board of County Commissioners (BOCC) unanimously approved the Zoning Amendment and Conditional Use Permit Application for CCEC. The Zoning Amendment Application sought to amend the Site from an IU, AU, and R-2-10 zoning classifications to a GML (U) zoning classification (Figure 3.2.2-2). The Conditional Use Permit Application sought approval to utilize the Site for an electric generating facility as required by the amended Section 62-1572. From the approval granted by the BOCC, CCEC complies with the zoning regulations for Brevard County (see Appendix 10.5.2.).

In October 2008, Brevard County amended Section 62-1572 of the Land Development Regulations to permit electric, natural gas, water, and wastewater utilities that are either publicly owned or regulated by the FPSC in the GML zoning classification. The ordinance also amended the zoning designation to include Utility (U) as an intended use of the property within the GML classification. As stated in Ordinance No. 08-40, an electric power generating facility is permitted in a GML (U) classification as a conditional use (see Appendix 10.5.2.).

The offsite construction laydown and parking area west of U.S. Highway 1 is designated as heavy industrial (IU-1) and light industrial (IU) and is appropriately zoned to allow for construction laydown and equipment storage activities related to the Project.

3.2.3 Demography and Ongoing Land Use

From 2000 to 2006, the population of Brevard County was estimated to have increased 14 percent [University of Florida, Bureau of Economic and Business Research (UF/BEBR), 2007]. The median population projection for all of Brevard County for 2030 indicates continued growth, with an estimated population of about 929,600 (UF/BEBR, 2007). According to the Florida Statistical Abstract (UF/BEBR, 2007), the estimated population in Brevard County is 543,050 (UF/BEBR, 2007).

Using the Florida Statistical Abstract information, the table below shows the existing populations using the data projections from Brevard County and the Cities of Titusville and Cocoa, which are the closest municipalities to the Site:

	Census 2000	**Estimate 2006**	**Percentage Change**
Titusville	40,670	44,020	8.24
Cocoa	16,412	17,395	5.99
Unincorporated Brevard County	188,918	213,667	13.10
Brevard County	476,230	543,050	14.03

Existing land use patterns in the vicinity of the Site are depicted in Figure 3.2.3-1, showing existing land uses according to the Florida Land Use Cover and Forms Classification System [(FLUCFCS), FDOT, 1999]. The land use adjacent to the Site's boundary (1-mile radius) includes commercial and services, utilities, shrub and brushland, and residential. The predominant land uses out to a 5-mile radius from the Site are similar to those with a 1-mile radius. The closest residential properties border the Site to the south and the southwest (across U.S. Highway 1).

3.2.4 Leases, Easements, Title, Agency Works

FPL holds a sovereignty submerged lands lease with the State of Florida Board of Trustees of the Internal Improvement Trust Fund associated with the existing Cape Canaveral Plant. This parcel is shown in Figure 3.1.0-3. The lease is for the operation of an existing slip docking/unloading facility exclusively used for mooring of barges and tug vessels in conjunction with an upland fuel oil tank farm/power plant. The sovereign submerged lands, of approximately 1.5 acres, are located south and adjacent to the peninsula (see Appendix 10.11 for a copy of the lease and a lease location map). By

this SCA, FPL seeks perpetual authorization for continued use of the sovereignty submerged lands through certification of the CCEC Project. FPL is also seeking a Public Easement for authorization of use of the existing peninsula. No other leases, easements, title, or agency works approvals are anticipated for the Project.

Turn lanes along U.S. Highway 1 may be necessary to accommodate construction activities; therefore, discussions will be conducted with Florida Department of Transportation (FDOT) and other property-owning regulatory agencies concerning the potential roadway improvements, as applicable.

The Project will also require the relocation and upgrade of the existing electrical transmission and distribution lines associated with the CCEC. This work will be contained within the existing FPL property and easements. These relocations and upgrades will require permits from the Army Corp of Engineers (ACOE), the FDEP, the St. Johns River Water Management District (SJRWMD), and the FDOT for which FPL seeks authorization through this application. Precise drawings will be submitted at a later date to applicable organizations for discussion once detailed engineering is completed.

For the transmission lines that cross the Indian River Lagoon, FPL will coordinate construction dates with the U.S. Coast Guard so a "Notice to Mariners" report is issued. Construction-related activities that require work within the FDOT right-of-way will be coordinated with the FDOT for maintenance of traffic and roadway crossings.

FPL provides an easement (approximately 0.18 acre) to FGT, located east of U.S. Highway 1 across from Clearview Drive, for the sole and exclusive use as a meter and regulator site in connection with supplying gas to the Cape Canaveral Plant (Appendix 10.11). Modification of the Site could include modification of the existing meter and regulator site. As stated in the easement agreement, modification to the easement requires FPL to notify FGT of the necessary modifications and, upon written request, FGT will coordinate efforts to modify the meter and regulator site to accommodate CCEC requirements.

3.2.5 Regional Scenic, Cultural, and Natural Landmarks

There are two national wildlife refuges (NWRs) and one conservation area within 5 miles of the Site: Merritt Island NWR, St. John's NWR, and Pine Island Conservation Area, which are all located in Brevard County. Merritt Island NWR is a 140,000-acre refuge owned by the National Aeronautics and Space Administration (NASA) to provide a buffer zone at the Kennedy Space Center, which is

located approximately 3.5 miles northeast of the Site. Approximately one-half of the refuge's land is brackish estuaries and marshes, while the rest of the land includes coastal dunes, scrub oaks, pine forests and flatwoods, and palm and oak hammocks. Merritt Island NWR offers several recreational activities including hiking trails, a manatee observation deck, an observation tower, nature photography, fishing, guided tours, a 7-mile auto tour route, boating and canoeing, and waterfowl hunting. There is a visitor's center that offers wildlife and habitat exhibits and an educational video. Merritt Island NWR also administers Archie Carr NWR, Lake Wales Ridge NWR, Pelican NWR, and St. John's NWR.

St. John's NWR is a 6,194-acre refuge located off Highway 50, west of Titusville approximately 4.5 miles west of the Site. The refuge was established in 1971 to provide adequate habitat to recover the dusky seaside sparrow from extinction. In December 1990, the species was declared extinct and its habitat in St. John's NWR was delisted. The St. John's NWR has been closed to the public since its establishment to eliminate human disturbance and provide habitat for its resident species. It is currently managed for biodiversity via prescribed burning.

Pine Island Conservation Area is an 850-acre conservation area located on Merritt Island, approximately 3 miles northeast of the Site. The area protects a variety of upland and wetland natural communities, which include mesic pine flatwoods, cabbage palm hammocks and hardwood hammocks, and mangrove forests and high marshes along the Indian River Lagoon. Pine Island Conservation Area provides opportunities for several recreational activities for the public: wildlife viewing, hiking, biking, canoeing, kayaking, and fishing.

3.2.6 Archaeological and Historical Sites

The Florida Master Site File (FMSF) lists no previously recorded archaeological resources within or adjacent to (within 500 feet) the Site boundaries. The FMSF does list one previously recorded archaeological site (Jones Point) within 5 miles of the Project. Jones Point contains a low-density artifact scatter of lithics and ceramics, but the site has not been evaluated for eligibility on the National Register. The FMSF search did not discover any previously recorded historic structures, historic districts, historic cemeteries, historic bridges, or historic linear resources within 500 feet of the Project.

A historic resources reconnaissance investigation was conducted in September 2008 that included a pedestrian survey of the FPL Cape Canaveral Plant Site and a windshield survey of properties within 500 feet of the Site. An architectural historian and one technical assistant identified and mapped any

significant historic buildings, structures, objects, and districts built before or during 1960. The historic resources investigation did not identify any historic resources eligible for listing on the National Register.

The FMSF lists no previously recorded archaeological sites within or adjacent to (within 500 feet) the offsite construction laydown and parking area. There are no previously recorded historic structures, bridges, cemeteries, districts, or linear resources identified within 1 mile of the offsite construction laydown and parking area.

3.2.7 Social and Economic Characteristics and Public Services

3.2.7.1 Social and Economic Characteristics

Labor Force

The total estimated labor force in Brevard County for 2006 was 261,417, with employment of 252,864 (UF/BEBR, 2007). Estimated unemployment in 2006 was 8,553 or 3.3 percent.

The average monthly private-sector employment by major industry groups for Brevard County in 2007 are depicted in Table 3.2.7-1.

The Service-Providing group is the industry group that provides the most employment in Brevard County with about 78 percent of the total County-wide (private sector) employment. The Construction industry provides approximately 13,601 jobs within the County.

General Income

Brevard County had an estimated per-capita personal income of $34,081 in 2006 (BEA, 2008). This income level ranks 17th among the 67 counties in Florida. Based on 2005 earnings, 99.9 percent of the income earned in Brevard County was from non-farm earnings. Of the total non-farm earnings ($11,460,598), approximately 84 percent came from private industry sources. Construction makes up 10 percent of the total non-farm earnings in the County.

The median household income in Brevard County was $44,248 in 2004 (UF/BEBR, 2007). When compared to the 2000 median household income, this is an 8.8-percent increase. Florida had a median household income of $40,900 in 2004, which was an increase of 5.5 percent from 2000. The average wage per job in Brevard County in 2006 was $39,910.

Housing

The total number of housing units in Brevard County, based on the 2006 American Community Survey conducted by the U.S. Census Bureau, for 2006 is shown below by occupancy type:

Housing Occupancy	Estimate
Total Housing Units	260,654
Occupied Housing Unit[1]	220,587
Vacant Housing Units[2]	40,067
Renter Occupied[3]	172,059
Owner Occupied[4]	48,528

1) ± 3,698 margin of error; 2) ± 3,716 margin of error; 3) ± 3,808 margin of error; and 4) ± 3,440 margin of error.

Transient accommodation in Brevard County is average in comparison to other locations within the State. A total of 649 lodgings exist, representing 34,354 lodging units. The total number of apartment building, rooming house, rental, condominium, and transient apartment building units in the County was approximately 24,975 in 2007 (UF/BEBR, 2007).

3.2.7.2 Area Public Service and Utilities

Education

Public education in Florida is operated on a County-wide basis. Each County's respective school district establishes educational policies and staffing requirements. Brevard County had a total enrollment of 74,791 for the 2006-2007 school year (Florida Department of Education, 2008). Brevard County schools employed approximately 8,661 full-time employees in the early part of 2008 and 621 part-time employees.

Brevard County has a total of 126 public schools and approximately 52 private schools. There are no public, private, or charter schools within 1 mile of the Site. The closest charter school is the Campus Charter School, which is approximately 1.28 miles north of the Site. The closest public school to the Site is Fairglen Elementary School, which is approximately 2 miles south of the Site. The closest private school to the Site is Pioneer Christian School, which is 2.5 miles south of the Site. Within 5 miles of the Site, there are a total of 13 schools: six public elementary schools, two junior/senior schools, two charter school, and three private schools.

Transportation

The Site is located at 6000 U.S. Highway 1/North Cocoa Boulevard north of Cottrell Avenue. Access to the Site is provided by U.S. Highway 1/North Cocoa Boulevard via three access driveways (Gate 1, the Main Gate, and the Contractor's Gate). U.S. Highway 1 is a coastal highway that is a major north-south corridor that traverses the eastern portion of Brevard County (see Figure 1.1.0-1). The roadway provides two through lanes in each direction and has a wide landscaped median. There are no paved sidewalks on either side of the roadway for pedestrian traffic. The Site currently contains approximately 135 parking spaces.

Based on machine traffic counts conducted in September 2008, U.S. Highway 1 in the vicinity of the Site has a daily and peak hour traffic volume of approximately 32,000 vehicles per day (vpd) and 3,066 vehicles per hour (vph), respectively. These adjusted (seasonal) traffic volumes represent Level of Service (LOS) C. Because U.S. Highway 1 has an acceptable LOS D, U.S. Highway 1 has excess capacity in the vicinity of the Site.

In September 2008, the existing daily traffic volumes at the three entry gates to the Site were also recorded. The existing Cape Canaveral Plant is currently generating approximately 57 daily trips. The morning and evening peak hour volumes for the existing facility are both six vph, respectively.

In addition, the Site contains a functioning barge slip that serves the existing Plant. The slip is located south and adjacent to the peninsula. The closest rail system to the Site is approximately 0.6 mile to the west (Florida East Coast Railway). The Space Coast Regional Airport and its associated runways lie approximately 3 miles northwest of the Site in the City of Titusville. The Melbourne International Airport is located about 26 miles south of the Site.

Medical Facilities

Brevard County has eight hospitals/medical centers and 64 nursing and residential care facilities. There are 1,142 licensed doctors of medicine and 78 licensed doctors of osteopathy; 267 dentists; 371 dental hygienists; 566 dental radiographers; 1,659 health practitioners (including chiropractors, optometrists, podiatrists, occupational therapist, physical therapists, massage therapists, nursing home administrators, and psychologists); 7,736 registered and practical nurses; 109 opticians; and 505 pharmacists and pharmacist interns in Brevard County (UF/BEBR, 2007).

The medical center closest to the Site is the Wuesthoff Medical Center - Rockledge. This health care provider is located approximately 10 miles south of the Site. Wuesthoff Medical Center is a 300-bed

facility that provides emergency facilities and services, as well as numerous surgical and non-surgical programs (Marie Bed Controll, personal communication, 2008). The Emergency Medical Service Division of Brevard Fire and Rescue Department provides emergency medical transport services throughout the County, including the Site.

Firefighting Facilities

The Brevard County Fire and Rescue Department provides services in the vicinity of the Site. Brevard County Fire Rescue provides a full range of services including fire suppression, advanced life support emergency medical services, public education, inspection, and various special response teams, including a hazardous material team. The Brevard County Fire and Rescue Department currently employs 382 career firefighters and approximately 250 volunteer firefighters, with 33 fire stations throughout the County (Brevard County Fire Rescue Department, 2008). During 2006, the Brevard Fire and Rescue Department responded to a total of 15,833 calls. Sixty-four percent of the total service calls were EMS First Response.

The Site is located within the service area of Station 26. This fire station is located approximately 1.5 miles south from the Site. The station is staffed with four firefighters, three of whom are paramedics, an engine truck, a rescue truck, and a brush truck.

Police Protection

The Brevard County Sheriff's Department provides law enforcement in the unincorporated areas of the County, including the Site. The Department includes five precincts (north, south, east, west, and Canaveral) with locations that are established based on the geographic unincorporated areas of the County. The Cape Canaveral Plant is located in the north precinct with the closest station (sub-station) located in Port St. John. The Brevard County Sheriff's Department also has special operation units, such as agricultural and marine, aviation, bomb unit, dive team, honor guard, K-9 unit, and traffic support.

Recreation Facilities

Brevard County and the surrounding region offer numerous recreational opportunities. Brevard County Parks and Recreation Department manages 108 parks, three campgrounds, three golf courses, 42 beach access sites, 13 school athletic sites, and more than 17,000 acres of Environmentally Endangered Lands sanctuaries and conservation areas. According to the Brevard County Parks and Recreation Department, the closest county recreation facility to the Site is Grissom Parkway located

approximately 2 miles southwest of the Site. The Tico Scrub Sanctuary, the next closest county recreation facility, is located approximately 20 miles northwest of the Site.

Electricity and Gas

FPL supplies electricity to businesses and residents throughout Brevard County. Natural gas is supplied to Brevard County and the Site by FGT. Brevard County is serviced with natural gas by Florida City Gas.

Water Supply Facilities

Potable water is provided to central Brevard County, including the existing Plant, by the City of Cocoa. The City's water sources are groundwater wells, aquifer storage and recovery wells, and Taylor Creek Reservoir. The City of Cocoa Water Department processed approximately 9.8 billion gallons of water, with a peak flow of 38 million gallons per day (gpd), based on the City's 2007 annual water quality report.

Brevard County Utility Services also operates a separate reclaimed water system that provides water for irrigation of lawns and landscaping.

Sewage Treatment Facilities

Brevard County's Utility Services Department provides and maintains sewer service to customers residing in the unincorporated areas of the County. The Site is serviced by the Port St. John Wastewater Services, which provides wastewater services to commercial and residential customers in the areas east of the FEC Railroad and several Brevard County School Board sites. The remainder of the unincorporated areas of the County use private septic tanks for wastewater disposal.

Solid Waste Disposal

Brevard County Solid Waste Management Department (SWMD) is responsible for all operations of the County's landfills (Central Disposal Facility in Cocoa and the Sarno Landfill in Melbourne) and transfer stations (Titusville and Sarno). The SWMD provides collection of garbage and yard waste and recycling services to the unincorporated areas of Brevard County through franchise agreements. Based on existing agreements with the County, the services are provided by Western Waste Industries, Inc. (also known as USA Waste Services) and Harris Sanitation, Inc.

3.3 Physical and Biological Environment

3.3.1 Geology and Hydrology

The geology and hydrology of the Site vicinity, including the offsite construction laydown and parking area, are discussed below. The information presented in this Section provides a brief summary of the geohydrologic baseline information and draws heavily upon previous regional studies. The regional studies include, but are not limited to:

Synthesis of the Hydrogeologic Framework of the Floridan Aquifer System and Delineation of a Major Avon Park Permeable Zone in Central and Southern Florida, Reese and Richardson, 2008;

Hydrogeology and Water Quality Characteristics of the Lower Floridan Aquifer in East-Central Florida, O'Reilly et al., 2003; and

Geologic Framework of the Lower Floridan Aquifer System, Brevard County, Florida, Duncan et al., 1994.

Site-specific subsurface information was obtained from borings conducted in 1965 and 1966 for Units 1 and 2 of the existing Plant.

3.3.1.1 Geologic Description of the Site and Area

The generalized geology and hydrogeology for Brevard County, including the Site, is shown in Figure 3.3.1-1. Based upon review of the U.S. Geological Survey (USGS) Sharpes, Florida, quadrangle map, dated 1949 and photo-revised 1988 and minor revisions 1992, the Site has a natural ground surface elevation of approximately 15 feet NGVD on the west side to less than 5 feet NGVD on the east side. According to the Soil Survey of Brevard County, Florida, published by the U.S. Department of Agriculture, Natural Resource Conservation Service (NRCS), the majority of the Site is occupied by Urban Land. Soils near the Site include Myakka Sand, Immokalee Sand and Pomello Sand.

According to Dr. H.K. Brooks' publication "Guide to the Physiographic Divisions of Florida" (1981), the Site lies near the transition between the Atlantic Coastal Ridge and the Atlantic Barrier Chain of the Eastern Valley.

The undifferentiated deposits (uppermost unit near the Site) are primarily composed of sand, and shell. Rock units ranging in age from Paleocene to recent underlay the Site. Formations and groups discussed in this report include (from oldest to youngest): the Cedar Keys Formation of Paleocene age; Oldsmar Formation of lower Eocene age; Avon Park Formation of middle Eocene age; Ocala Limestone of upper Eocene age; Hawthorn Group of Miocene; and undifferentiated deposits of Pliocene, Pleistocene, and Holocene age (O'Reilly et al., 2002).

The following is a summary of the lithology and approximate thickness of each geologic unit anticipated at the Site, based on regional geology. Figure 3.3.1-2 shows a regional geologic cross section.

In general, the Cedar Keys Formation is subdivided by lithologic character and corresponding geophysical log characteristics into six units (Winston, 1994). In descending order they are: Unit A, characterized by a preponderance of anhedral and cryptocrystalline dolomite; euhedral dolomite is subordinate. Unit B is characterized by the presence of numerous relic grain textures in chalky to microcrystalline euhedral dolomite. Unit C is predominately anhydrite, with subordinate chalky to very fine microcrystalline euhedral dolomite. Unit D is characterized by a predominance of relic grains in a chalky to very fine microcrystalline euhedral dolomite, with few thin bedded anhydrites. Units E and F are similar in texture to Unit D, but contain fewer beds of relic grain texture. The top of the formation ranges from approximately −2,200 feet NGVD in northern Brevard County to −3,000 feet NGVD in southern Brevard County (Duncan et al, 1994).

The Oldsmar Formation is limestone interbedded with dolomite. The Oldsmar Formation is about 1,900 to 2,440 feet thick in the study area. In Brevard County, the top of the Oldsmar Formation is −1,667 feet NGVD to −1,918 feet NGVD. The lower section of the upper Oldsmar Formation, locally called the Boulder Zone, is predominantly dolomite and contains massively bedded, cavernous, or fractured dolomite of high permeability and dense, recrystallized dolomite of low permeability. At the Site, the top of the Bolder Zone is approximately −1910 NGVD (Reese and Richardson, 2008).

The Avon Park Formation in Brevard County is composed predominantly of limestone interbedded with dolostones. Cherty dolostones are typical in the lower most Avon Park Formation. The Avon Park Formation is about 1,400 feet thick in the study area. In Brevard County, the top of the Avon Park Formation is −232 feet NGVD to −443 feet NGVD. The upper portion of the Avon Park

Formation is part of the Upper Floridan Aquifer. Confining units separate the Upper Floridan Aquifer from the Lower Floridan Aquifer.

The Ocala Limestone overlies the Avon Park. In Brevard County, the Ocala Limestone is interbedded packstone and wackestone with occasional grainstone and mudstone. Regionally, this unit averages 130 feet in thickness. In Brevard County, the top of the Ocala Limestone is −120 feet NGVD to −250 feet NGVD. The top of this unit is top of the Upper Floridan Aquifer.

Rocks of Miocene age at the Site belong to the Hawthorn Group. The Hawthorn Group is divided into lower carbonate and upper clastic sequences. The lower carbonate sequence is composed of poorly to moderately indurate phosphatic micrites and dolomites. The upper clastic sequence is composed primarily of greenish-gray phosphatic silts interbedded with coarse sand and sandstones. Clay beds in the Hawthorn Group function as the upper confining units for the Floridan Aquifer System (Duncan et al, 1994). Regionally, this unit ranges from 20 to 235 feet in thickness. In Brevard County, the top of the Hawthorn Group is −55 to −134 feet NGVD.

The undifferentiated deposits consist of unconsolidated shell beds, clays and quartz sands. The thickness of the surficial deposits ranges from 90 to 160 feet.

3.3.1.2 Detailed Site Lithologic Description

Site lithology was determined by numerous borings performed in 1965 and 1966. Based on the results of the investigation, the subsurface soils at the Site consisted of organic material and sand for the first 10 to 15 feet below ground surface (bgs), then a mixture of marl, sand and shell fragments. Depth to limestone ranges from −116 to −150 feet bgs.

3.3.1.3 Geologic Maps

Figures 3.3.1-1 through 3.3.1-3 present generalized geological and hydrological units for Brevard County. CCEC will not generate wastes that would be stored on the Site that would generate leachate (see Section 4.7).

3.3.1.4 Bearing Strength

The Site is suitable for CCEC from a geotechnical standpoint. Lightly loaded structures could be supported on shallow foundations established in structural fill. Paving for access roads or parking areas could also be supported by structural fill. Heavily loaded structures will be supported on deep

foundations such as piles, augered cast piles, stone columns, or other ground improvement methods to limit settlement to acceptable levels.

3.3.2 Subsurface Hydrology

3.3.2.1 Subsurface Hydrology Data for the Site

There are four major components to the subsurface hydrogeologic framework of southern Florida: the unconfined surficial aquifer system (SAS); the nearly impermeable sediments of the Hawthorn Group, which separates the surficial aquifer from the Floridan Aquifer; the confined Floridan Aquifer System (FAS), which includes both the Upper Floridan Aquifer (UFA) and the Lower Floridan Aquifer (LFA); and the Boulder Zone, which is part of the LFA. These components are discussed further below.

Surficial Aquifer System

The uppermost part of the SAS is primarily composed of sands, shell beds, and sandy limestones. The SAS is unconfined and contiguous with land surface. The SAS varies in thickness in Brevard County from 90 to 150 feet thick. The SAS is a source of drinking water for more than half of Brevard County (Duncan et al., 1994).

Intermediate Confining Beds

The Intermediate Confining Unit (ICU) is present throughout the County and consists of phosphoatic clay, silt, sand, limestone, and dolomite deposits of the Hawthorn Group. The Hawthorn Group sediments serve as a confining unit separating the SAS from the Floridan Aquifer System. In the vicinity of the Site, the ICU is 50 to 100 feet thick and thinly confined.

Floridan Aquifer

The FAS in the vicinity of the Site consists of the UFA, middle confining unit, and LFA and ranges in age from Paleocene to Eocene. The uppermost permeable zones in the UFA occur in close association with an unconformity at the base of the Hawthorn Group. The depth to the top of the FAS in the vicinity of the site is approximately −150 feet NGVD. The thickness of the FAS near the site is between 2,500 and 2,600 feet. The Lower Confining Unit (LCU) from −800 to −1,100 feet NGVD is the primary confinement between the UFA and the LFA. The LFA is approximately 1,500 feet thick and includes the Boulder Zone.

A map provided in the report by Duncan et al. (1994) shows the transmissivity of the UFA, in the area of the Site, to be about 100,000 square feet per day (ft^2/day). Water in the UFA, at the Site, is

brackish [1,000 milligrams per liter (mg/L) < total dissolved solids (TDS) < 10,000 mg/L]. A lower zone of water with salinity similar to that of seawater (saline-water zone) is present in the lower portions of the LFA. The brackish-water and saline-water zones are separated by a transition zone (typically 100 to 200 feet thick) in which salinity rapidly increases with depth. The transition zone has been defined by using a salinity of 10,000 mg/L of dissolved-solids concentration (about 5,240 mg/L of chloride concentration) at its top and 35,000 mg/L of dissolved-solids concentration (about 18,900 mg/L of chloride concentration) at its base.

The middle confining unit that separates the UFA and LFA consists of sediments from the Middle Eocene era with compositions similar to the UFA and LFA. The middle confining unit is considered a leaky confining unit. In the vicinity of the Site, the middle confining unit is approximately −500 feet NGVD and 230 feet thick.

The LFA is below the middle confining unit and above the sub-Floridan confining unit. The LFA consists of the thick complex sequence of limestone and dolostone. The water in the LFA usually contains concentrations of greater than 10,000 mg/L TDS. The top of the LFA is approximately −1,100 feet NGVD. The thickness is estimated to be 1,500 feet. The LFA contains the Boulder Zone.

Boulder Zone

The deeply buried zone of cavernous permeability, which is called the Boulder Zone, is found in fractured dolomite in the LFA and underlies most of southern Florida. The site is near the approximate boundary of the Boulder Zone. The top of the Boulder Zone is irregular and is approximately −1,750 feet NGVD near the Site. The permeability of the Boulder Zone is extremely high because of its cavernous nature. This anomalous permeability, which prevents pressure buildup in injection wells, coupled with the fact that the Boulder Zone contains saltwater, makes it a commonly used zone for receiving injected wastewaters. The Boulder Zone is overlain by low-permeability limestone and dolomite, which retard the upward movement of injected fluids to shallower parts of the FAS that contain water that is less saline, although still brackish.

3.3.2.2 Karst Hydrogeology

Karst terrains develop in areas underlain by carbonate rocks such as limestone. They often have drainage systems that are reflected on the surface as sinkholes, springs, disappearing streams, or even caves (http://www.dep.state.fl.us/geology/geologictopics/sinkhole.htm).

According to Map Series No. 10, Sinkhole Type, Development, and Distribution in Florida, (William C. Sinclair and J.W. Stewart, USGS, 1985), the Site is located in Area II, where the cover is reported to be 30 to 200 feet thick. In these areas, sinkholes are reported to be few, shallow, of small diameter, and develop gradually. Furthermore, within the prior borings drilled at the Site, indicators of karst geology, such as voids or losses of circulation were not encountered within 200 feet of the surface.

3.3.3 Site Water Budget and Area Users

3.3.3.1 Site Water Budget

Climate and Meteorology

The Site is located in central peninsular Florida, which has a climate characterized as mild subtropical. Temperatures in the vicinity (measured at Palm River, Florida) range from an average low of about 15 degrees Celsius (°C) in January, to an average high of about 27.6°C in September, with an annual average of about 23.0°C. The highest temperature recorded was 30.3°C and the lowest was 4°C at Palm River.

The mean total annual rainfall in Titusville, Florida, is 54.65 inches; with mean monthly totals ranging from 2.37 to 7.77 inches. Generally, the period of the year with the heaviest rainfall is from June to October.

Mean annual lake evaporation in Central Florida is approximately 51 inches per year (Hydrology of Central Florida Lakes, USGS, 1998). Lake evaporation ranges from a low of 2 inches/month between November through February up to a high of approximately 6 inches/month in May through July. Evapotranspiration from plants and soil is less than lake evaporation, approximately 36 inches per year (Fernald and Patton, 1986). Consequently, regional surface water runoff is approximately 14 inches/year.

Groundwater Resources

The two major aquifers in Brevard County are recharged by separate sources. The SAS is primarily recharged by rainfall and discharge from the FAS. A small amount of recharge to the shallow aquifer results from seepage of water used for agricultural irrigation. In the vicinity of the Site, the Upper Floridan (artesian) Aquifer generally has no recharge in the vicinity of the Site. Cape Canaveral Plant currently has a Consumptive Use Permit from the SJRWMD to withdraw 91.3 million gallons per year with a maximum daily groundwater withdrawal of 0.562 million gallons from SAS wells located west of U.S. Highway 1 on FPL property for use by the existing Plant. Use of reclaimed water from

the Brevard County Port St. John Wastewater Facility to reduce groundwater withdrawals was deemed unfeasible by FPL and SJRWMD earlier this year. CCEC will not require additional groundwater resources. CCEC will not use the existing SAS wells.

Surface Water Resources

The Site is located directly adjacent to the Indian River Lagoon. The Indian River Lagoon system is composed of three interconnected estuarine lagoons, the Mosquito Lagoon, Indian River Lagoon, and Banana River Lagoon. The lagoon system extends southward about 155 miles through six coastal counties from Ponce de Leon Inlet in Volusia County to Jupiter Inlet in Palm Beach County. The system is shallow and narrow with an average depth of about 5 feet and a width that varies from 0.2 to 5.5 miles. Circulation in the lagoon is sluggish except during large storms and near the inlets. Cape Canaveral Plant currently has a Consumptive Use Permit from the SJRWMD to withdraw approximately 300,000 million gallons per year from the Indian River Lagoon. CCEC will not require additional surface water resources.

Groundwater/Surface Water Interactions

There is a complex hydrologic interaction between the SAS and surface water. The current Consumptive Use Permit for the wells located west of U.S. Highway 1 on FPL property requires testing for chloride to ensure that no unacceptable saline water intrusion occurs. CCEC will not use the existing SAS wells.

Area Users

Surface water and groundwater use in the vicinity of the Site is regulated by SJRWMD. Information gathered from SJRWMD was used to prepare the following summary of water uses near the Site.

Figure 3.3.3-1 and Table 3.3.3-1 present the permitted surface and groundwater uses within 5 miles of the Site.

3.3.4 Surficial Hydrology

3.3.4.1 Hydrologic Characterization

Prominent surface water features near the Site include the St. Johns River, the Indian River Lagoon, and the Banana River Lagoon. The Site is located directly adjacent to the Indian River Lagoon, which is the only feasible source for cooling water (see the Water Conservation Plan, Appendix 10.10). Currently, the Cape Canaveral Plant withdraws approximately 300,000 million

gallons per year from the Indian River Lagoon, which is designated as Class II waters in Chapter 62-302, F.A.C.

The Indian River Lagoon at the Site is a tidal estuary with a tidal range less than 2 feet, weak tidal flows, and limited fresh water inflows. Most of the freshwater inflow to the Indian River Lagoon near the Site is from local drainage. Based on review of the navigation charts of the area (U.S.C. and G.S. Nautical Chart 1245, Ponce de Leon Inlet to Cape Canaveral; and NOAA NOS Nautical Chart No. 11484, Ponce de Leon Inlet to Cape Canaveral), as well as the appropriate USGS topographical quad sheets (USGS 7.5 minute quadrangles Courtenay and Sharpes), it is concluded that the Indian River Lagoon is relatively shallow and generally less than 5 feet in depth, except in the vicinity of the Intracoastal Waterway. The Intracoastal Waterway has a depth of 10 feet.

Table 3.3.4-1 shows water quality monitoring data collected from the Indian River Lagoon between State Road 405 and State Road 528 between 2005 and 2008 (FDEP STORET, 2008). The salinity of the water in this part of the estuary is between 16 and 31 parts per thousand (ppt). Temperatures range from 12.8°C in the winter to 32.1°C in the summer. The average dissolved oxygen concentration in this segment of the Indian River Lagoon meets water quality standards (mean 6.3 mg/L), but excursions above and below standards are observed (minimum 3.5 mg/L and maximum 10.2 mg/L). The pH ranges from 7.7 to 8.4 standard units (SU) with a mean of 8.0 SU.

The Indian River Lagoon between State Road 520 and State Road 405 (WBID 2963D, Florida's Impaired Waters List) is listed as impaired for nutrients, including nitrogen and phosphorus, dissolved oxygen, mercury in fish tissue, and coliform. Total Maximum Daily Load (TMDL) for nutrients and dissolved oxygen was finalized in March 2007. TMDL development for mercury and coliform is scheduled for 2011 and 2017, respectively.

Condenser cooling for the existing Plant is accomplished using a once-through cooling water system with intake from and discharge to the Indian River Lagoon. The existing once-through cooling water system is authorized to operate under FDEP Industrial Wastewater Facility Permit FL0001473 and a Consumptive Use Permit (No. 10652) from SJRWMD. The once-through cooling water system uses two circulating water pumps per unit, with a design rating for each pump of 137,500 gallons per minute (gpm). The existing Plant has two intake structures (one per unit), and each structure has two intake bays, with one circulating water pump per bay. Each intake bay also has an auxiliary equipment cooling water pump and a screen wash pump. The total design once-through cooling water flow for each unit of the existing Plant is 396 MGD. Auxiliary equipment cooling is performed

with a once-through system with a design flow of 30 MGD for both units combined. The total design capacity for the existing Plant is 822 MGD. The converted Plant will use three of the four existing intake bays at a given time and have a total design intake flow capacity of 619 MGD. Consequently, the maximum cooling water flow of the converted Plant during normal operation will be 25 percent less than the total design intake capacity of the existing Plant.

The existing intake canal varies from 11.5 to 14 feet in depth on the centerline (ABI, 1980). The current intake for Unit 1 is approximately 470 feet from the intake canal opening to the Indian River Lagoon. The bottom of the intake structure opening is 14.5 feet below mean low water and each pump bay is 11 feet 8 inches wide. The current intake for Unit 2 is located approximately 180 feet west of the Unit 1 intake structure.

Discharge from the existing Plant's cooling water system consists of two 78-inch outfall pipes for each unit, discharging through a single seal well. The two seal wells are set 550 feet apart. Discharge from the auxiliary equipment cooling system is performed with a once-through system that has a single 22-inch outfall. Cooling water for the converted Plant will continue to be withdrawn from the Indian River Lagoon through the existing intake canal intake bays. The existing intake and discharge infrastructure will be used for CCEC.

As required by the FDEP IWWF Permit FL0001473, water quality monitoring has been conducted for various water quality parameters. The samples are taken for effluents released into evaporation-percolation basins and to discharge points identified in the IWWF Permit. The intake is also sampled. Table 3.3.4-2 presents a summary of the latest IWWF Permit water quality sampling results.

3.3.4.2 Measurement Programs

Data for the water use permits were obtained from the SJRWMD database. Water quality data for the existing Cape Canaveral Plant are from reports submitted to FDEP to meet requirements of the IWWF Permit FL0001473. Water quality data for the Indian River Lagoon in proximity to the Cape Canaveral Plant were obtained from FDEP STORET database.

3.3.5 Vegetation/Land Use

Vegetation/land use survey of the Site and surrounding areas were completed in April, June, and December 2008. The resulting vegetation/land use map of the Site is found in Figure 3.3.5-1. Vegetative communities in and adjacent to the Site are discussed in detail in Subsection 3.3.6.1.

Vegetation/land use within the Site consists of electric power facilities (FLUCFCS Code 831), a stormwater retention pond (reservoir less than 10 acres, FLUCFCS Code 534), two small depressional areas within the existing oil tank containment area (FLUCFCS Code 831), and the mangrove shoreline of the Indian River Lagoon (FLUCFCS Code 612). The majority of the Site is occupied by electric power generating facilities, buildings, parking lots, and other infrastructure of the existing Cape Canaveral Plant.

The surrounding vicinity of the Site includes the Indian River Lagoon (FLUCFCS Code 540) to the east; residential properties (FLUCFCS Codes 110, 120, and 130) to the south and west; commercial properties (FLUCFCS Code 140); a cemetery (FLUCFCS Code 148); the existing Cape Canaveral and Frontenac Substations (FLUCFCS Code 831); a transmission line ROW (FLUCFCS Code 832); a ditch (FLUCFCS Code 511) to the west; and upland scrub, pine, and hardwoods (FLUCFCS Code 436) to the north and south (see Figure 3.3.5-1).

The offsite construction laydown and parking area is located west of U.S. Highway 1, to the southwest of the existing Cape Canaveral and Frontenac Substations and south of the existing transmission line. Vegetation within the approximately 45-acre offsite construction laydown and parking area consists of open land (FLUCFCS Code 190); upland scrub, pine, and hardwoods (FLUCFCS Code 436); ditches (FLUCFCS 511); undeveloped land adjacent to the existing Cape Canaveral and Frontenac substations (FLUCFCS 831); and a transmission line ROW (FLUCFCS 832).

3.3.6 Ecology

3.3.6.1 Species-Environmental Relationships

The following subsections include descriptions of important flora and fauna within the Site, the offsite construction laydown and parking area, and surrounding vicinity. This discussion includes information related to the presence of important wildlife species and the value of the vegetative and aquatic habitats present. The following descriptions of the flora and fauna at or near the Site follow the FLUCFCS-Level III codes.

Terrestrial Ecology Systems—Flora (Within the Site)

Electric Power Facilities (FLUCFCS Code 831)

The majority of the Site consists of buildings, parking lots, and other infrastructure of the existing Cape Canaveral Plant (see Figure 3.3.5-1). Undeveloped areas of the Site, such as the picnic area in the southwest corner of the Site and areas located between parking lots, are typically mowed, and are

vegetated with bahia grass (*Paspalum notatum*) as well as weedy vegetation such as lantana (*Lantana camara*), fingergrass (*Eustachys* spp.), goldenrod (*Solidago* spp.), common dandelion (*Taraxacum officinale*), dayflower (*Commelina* spp.), Florida tasselflower (*Emilia fosbergii*), capeweed (*Phyla nodiflora*), mexican clover (*Richardia* spp.) and pepperweed (*Lepidium* spp.), with occasional native and ornamental trees such as cabbage palm (*Sabal palmetto*), Brazilian pepper (*Schinus terebinthifolius*), slash pine (*Pinus elliotti*), live oak (*Quercus virginiana*), sweetgum (*Liquidambar styraciflua*), arborvitae (*Thuja orientalis*), Chinese privet (*Ligustrum sinense*), and woman's tongue (*Albizia lebbeck*).

Reservoir Less than 10 Acres (FLUCFCS Code 534)

One small stormwater retention pond approximately 0.10 acre in size is present on the Site west of the existing Power Block. Although it meets the criteria for a wetland (hydric soils, hydrophytic vegetation, hydrology), the stormwater retention pond was artificially created to support Plant operations. Vegetation found in the retention pond includes spiderwort (*Tradescantia* spp.), capeweed, bristly foxtail (*Setaria* spp.), torpedograss (*Panicum repens*), dogfennel (*Eupatorium capillifolium*), marsh pennywort (*Hydrocotyle* spp.), and Florida tasselflower.

Mangroves (FLUCFCS Code 612)

Approximately 2.61 acres of mangrove-dominated shoreline adjacent to the Indian River Lagoon border the peninsula portion of the Site. The peninsula contains riprap along the shoreline, with wetland vegetation established through the riprap material. Additional areas of mangroves are also present at the northeastern shoreline of the Site, comprising 0.31 acre. The mangrove communities are dominated by red mangrove (*Rhizophora mangle*), buttonwood (*Conocarpus erectus*), white mangrove (*Laguncularia racemosa*), and black mangrove (*Avicennia germinans*), with additional species including false nettle (*Boehmeria cylindrica*), false willow (*Baccharis* spp.), bigleaf sumpweed (*Iva frutescens*), three-square (*Scirpus americanus*), cordgrass (*Spartina* spp.), sea purslane (*Sesuvium portulacastrum*), seaside heliotrope (*Heliotrophium curassavicum*), sea oxeye (*Borrichia frutescens*), and Brazilian pepper also observed.

Oil Tank Containment Area (Electric Power Facilities, FLUCFCS Code 831)

Two small man-made depressional areas totaling 0.21 acre occur on the Site within the bermed containment area of the existing oil storage tanks. Vegetation includes Carolina willow (*Salix caroliniana*), capeweed, torpedograss, Peruvian primrosewillow (*Ludwigia peruviana*), smutgrass (*Sporobolus indicus*), greenwhite sedge (*Carex albolutescens*), marsh pennywort, sweet white clover

(*Melilotus alba*), dogfennel, false willow, beaksedge (*Rhynchospora* spp.), cattail (*Typha* spp.), and bristly foxtail.

Terrestrial Ecology Systems—Flora (Within the Offsite Construction Laydown and Parking Area)

Open land (FLUCFCS Code 190), upland scrub, pine, and hardwoods (FLUCFCS 436), ditches (FLUCFCS 511), and a transmission line ROW (FLUCFCS 832) are found within the offsite construction laydown and parking area (see Figure 3.3.5-1). Dominant species and quality of each vegetative community/land use type are described below.

Open Land (FLUCFCS Code 190)

These are previously cleared areas dominated by herbaceous and other low-growing species typically found on disturbed sites. Species present within open land areas include cactus (*Opuntia* sp.), gopher apple (*Licania michauxii*), wire grass (*Aristida stricta*), lantana, muscadine (*Vitis rotundifolia*), sand spur (*Cenchrus* sp.), partridge pea (*Chaemaechrista* sp.), smutgrass (*Sporobolus indicus*), hoary pea (*Tephrosia* sp.), passionflower (*Passiflora incarnata*), sapling winged sumac (*Rhus copallina*), sapling toothache tree (*Zanthoxylum clava-herculis*), many-flowered beardtongue (*Penstemon multiflorus*), creeping oxeye (*Webelia trilobata*), spurge (*Chamaesyche* sp.), and rock rose (*Helianthemum nashii*). Open land covers approximately 7 acres of the offsite construction laydown and parking area.

Upland Scrub, Pine, and Hardwoods (FLUCFCS 436)

Forested areas within the offsite construction laydown and parking area are found on very dry, sandy soils and contain species typical of such sites. Sandhill oak (*Quercus inopina*), Chapman's oak (*Q. chapmanii*), loblolly pine (*Pinus taeda*), longleaf pine (*P. palustris*), cabbage palm, Brazilian pepper, and toothache tree are present in the canopy. Myrtle oak (*Q. myrtifolia*), sand live oak (*Q. geminata*), saw palmetto, muscadine, and greenbrier are common in the understory. In general, these areas are thickly vegetated with a high percentage of canopy cover. Approximately 20 acres of upland scrub, pine, and hardwoods are located within the offsite construction laydown and parking area.

Ditches (FLUCFCS Code 511)

A drainage ditch is located along the western side of the existing Cape Canaveral Substation adjacent to the main offsite construction laydown and parking area. The ditch was dry at the time of the survey, although soils were saturated at the southern end. The dominant species in the ditch include

cattail (*Typha latifolia),* andropogon (*Andropogon* sp.), Carolina willow, and dogfennel. Other species present include capeweed, Bermuda grass (*Cyonodon dactylon*), fireweed (*Erechtites hieracifolius*), wax myrtle (*Myrica cerifera*), camphor weed (*Pluchea* sp.), torpedo grass, water hyssop (*Bacopa monnieri*), and greenwhite sedge. This ditch will not be impacted by proposed offsite construction laydown and parking area.

A small drainage ditch is also located on the north side of the triangular shaped approximately 1-acre parcel that will also be used for construction laydown and parking. This area is located just northeast of the main offsite construction laydown and parking area. Species present in this area include beggarticks, frog fruit (*Phyla nodiflora*), and Peruvian primrosewillow. This ditch will not be impacted by proposed offsite construction laydown and parking area.

Electrical Utilities (FLUCFCS Code 831)

The existing FPL Cape Canaveral and Frontenac Substations are located west of the Site across U.S. Highway 1. Undeveloped portions of the substation properties totaling approximately 2 acres will be used for construction laydown and parking

Electrical Power Transmission Lines (FLUCFCS Code 832)

The existing transmission line right-of-way associated with the FPL Cape Canaveral Plant is located to the west of the Plant. A portion of the ROW is located within the offsite construction laydown and parking area. The ROW is maintained in this area and species present are similar to those described for open land (FLUCFCS 190). Approximately 15 acres of transmission line ROW are within the offsite construction laydown and parking area.

Terrestrial Ecology Systems – Flora (Adjacent to the Site and Offsite Construction Laydown and Parking Area)

The areas surrounding the Project includes the Indian River Lagoon (FLUCFCS Code 540), residential properties (FLUCFCS Codes 110, 120, and 130), commercial properties (FLUCFCS Code 140), a cemetery (FLUCFCS Code 148), the existing Cape Canaveral and Frontenac Substations (FLUCFCS Code 831), a transmission line ROW (FLUCFCS Code 832), open land (FLUCFCS Code 190), upland scrub, pine, and hardwoods (FLUCFCS Code 436), and an area of exotic wetland hardwoods (FLUCFCS 619) (see Figure 3.3.5-1). Dominant species and quality of each vegetative community/land use type are described below.

Low, Medium, and High Residential (FLUCFCS Codes 110, 120, and 130)

Residential properties are present to the south, north, and west of the Site and the offsite construction laydown and parking area.

Commercial (FLUCFCS Code 140)

Commercial properties are present to the north and southwest of the Site.

Cemeteries (FLUCFCS Code 148)

A cemetery is present immediately to the south of the offsite construction laydown and parking area.

Upland Scrub, Pine, and Hardwoods (FLUCFCS Code 436)

Forested areas adjacent to the Site are found on very dry, sandy soils supporting species of trees, shrubs, and groundcover adapted to xeric conditions. Sandhill oak, Chapman's oak, loblolly pine, longleaf pine, cabbage palm, Brazilian pepper and toothache tree are present in the canopy.

Exotic Wetland Hardwoods (FLUCFCS Code 619)

A small area of exotic wetland hardwoods is present to the north of the existing transmission line ROW. This area is dominated by Brazilian pepper and Carolina willow.

Electrical Utilities (FLUCFCS Code 831)

The existing FPL Cape Canaveral and Frontenac Substations are located west of the Site across U.S. Highway 1 and northeast and adjacent to the offsite construction laydown and parking area.

Terrestrial Ecology Systems—Fauna

Available wildlife habitat within the Site is severely limited due to existing Plant operations. Few habitats present within the Site provide nominal wildlife habitat, such as the reservoir and mangrove shoreline. Many areas adjacent to the Site are also disturbed and do not provide quality wildlife habitat. Non-listed species observed within the vicinity of the Site are described below.

A great egret (*Casmerodius albus*) and a cormorant (*Phalacrocorax auritus*) were observed along the eastern shoreline of the Site. Additionally, a pair of green-winged teals (*Anas crecca*) was observed within the retention pond on the Site.

Several wildlife species were observed within the offsite construction laydown and parking area, specifically within nearby open land and upland scrub, pine, and hardwoods areas. These species

include blue jays (*Cyanocitta cristata*), cardinals (*Cardinalis cardinalis*), Northern mockingbirds (*Mimus polyglottos*), European starlings (*Sternus vulgaris*), common ground doves (*Columbina passerina*), mourning doves (*Zenaida macroura*), crows (*Corvus* sp.), red-shouldered hawks (*Buteo lineatus*), osprey (*Pandion haliaetus*), rough green snake (*Opheodrys aestivus*), and black racer (*Coluber constrictor*).

Threatened and Endangered Species—Flora and Fauna

Plant and animal species designated by the U.S. Fish and Wildlife Service (USFWS), the Florida Fish and Wildlife Conservation Commission (FFWCC), and the Florida Department of Agriculture and Consumer Services (FDACS) as endangered, threatened, species of special concern, commercially exploited, or under review, were included in this category.

Several manatees (*Trichechus manatus*) were observed in the Indian River Lagoon near the discharge outfall during a site visit in June 2008. Manatees are classified as endangered by both the USFWS and the FFWCC. Several aquatic birds, such as the brown pelican (*Pelecanus occidentalis*), little blue heron (*Egretta caerulea*), and white ibis (*Eudocimus albus*) (all classified as species of special concern by the FFWCC), were observed along the eastern shoreline of the Site. These species are common to the area and use other similar habitats that are found throughout the surrounding region.

Fifty-three (53) active and 14 inactive gopher tortoise burrows were observed within the offsite construction laydown and parking area or within a 25-foot buffer during surveys conducted in April and December 2008. Gopher tortoises are listed as a threatened species by FFWCC due to loss of preferred habitat, which includes xeric upland areas that are prime parcels for residential/commercial development. Gopher tortoises are protected by State law, Chapter 68A - 27.004, F.A.C.

Florida scrub jays (*Aphelocoma coerulescens*) (classified as threatened by the FFWCC and the USFWS), were observed within the offsite construction laydown and parking area and adjacent to the offsite construction laydown and parking area on the edge of the transmission line ROW and in the upland scrub, pine, and hardwood area to the north.

Aquatic Systems

The aquatic systems at the existing Cape Canaveral Plant and vicinity include the cooling water intake and the discharge canals (FLUCFCS Code 510) and the Indian River Lagoon (FLUCFCS Code 541).

Cooling Water Intake and Discharge Canals (FLUCFCS Code 510)

The condenser cooling water system for the existing Cape Canaveral Plant is a once-through system with an intake and discharge in the Indian River Lagoon.

Barrier Island Area

The barrier islands area is separated from the mainland by the Indian River Lagoon and is bordered on the east by the Atlantic Ocean. The islands are composed of relict beach ridges formed by wind and oceanic wave action and are generally parallel to the present shoreline. The elevation of the barrier islands range from sea level along the shoreline to 19.6 feet above sea level along the top of the dune ridges.

Indian River Lagoon (FLUCFCS 541)

The Site is located directly adjacent to the Indian River Lagoon. The Indian River Lagoon system consists of three lagoons: the Mosquito Lagoon, the Banana River, and the Indian River Lagoon. In addition to the estuary/lagoon habitat, the Indian River Lagoon system consists of several other major habitat types, including seagrass and macroalgae beds, mangroves, barrier islands, beaches and dunes, salt flats, salt and freshwater marshes, and forested wetlands (EPA, 2008). The Indian River Lagoon system is part of the longest barrier island complex in the United States, occupying over 30 percent of Florida's east coast. The Indian River Lagoon is a narrow, tidally influenced estuarine lagoon system extending 156 miles from the Ponce de Leon Inlet in Volusia County to the Jupiter Inlet in Palm Beach County. The width of the Indian River Lagoon varies from a few hundred meters at New Smyrna Beach to over 5 miles north of Titusville. The average depth of the Indian River Lagoon is between 4 and 5 feet, but dredged areas may range from 6 to 12 feet. Several low-gradient rivers, creeks, and canals discharge into the Indian River Lagoon. The rivers and canals generally have locks that are opened or closed depending on inland conditions.

The portion of the Indian River Lagoon located within Brevard County has only one direct connection with the Atlantic Ocean through the barrier islands, namely Sebastian Inlet. Indirectly, the lagoon connects with the Atlantic Ocean via Haulover Canal and Mosquito Lagoon at the Ponce de Leon Inlet, approximately 26 miles north of the Haulover Canal. The Canaveral Barge Canal connects the lagoon with the Banana River across from Port Canaveral; however, the connection to the Atlantic Ocean via this route is limited to occasions when traffic moves through the Port Canaveral ship lock.

Cooling water for the existing Plant is withdrawn from the Indian River Lagoon through an intake canal and routed through the Plant condensers and then discharged back to the Indian River Lagoon

via discharge structures located along the shoreline. The Indian River Lagoon is typically shallow at the point of intake of the Cape Canaveral Plant. The average water depth is 2.3 to 4.5 feet deep. The water within the Indian River Lagoon is saline, varying from a high of 36 ppt to a low of 21 ppt. The salinity is controlled by tidal action from the Atlantic Ocean and is also affected by rainfall and localized urban stormwater runoff.

The Indian River Lagoon is characterized as having diverse assemblages of plant and animals. Mangrove shorelines, expansive beds of seagrasses, and attached and drift algae provide nursery area habitat for a variety of fish and shellfish, many of which are important components of local sport and commercial fisheries. Nearly 400 species of fish have been recorded from the lagoon system (Gilmore, 1995), as well as 260 species of mollusks and 479 species of shrimp and crabs. Because of its biological significance, the Indian River Lagoon (from Malabar to Fort Pierce) has been designated as an Aquatic Preserve by the State of Florida and as an "estuary of significance" by the U.S. Environmental Protection Agency (EPA). It is now part of the National Estuary Program (NEP). Marine mammals such as manatees (*Trichechus manatus*) and reptiles also rely on the lagoon habitat. A bottlenose dolphin (*Tursiops truncatus*) was observed in the Indian River Lagoon near the discharge outfall during the Site reconnaissance.

Fisheries—The Harbor Branch Oceanographic Institution (Harbor Branch) and the Smithsonian Marine Station are both located in Fort Pierce and have completedresearch in the Indian River Lagoon. The Smithsonian Marine Station specializes in studying the marine biodiversity and ecosystems of Florida, with a focus on the Indian River Lagoon and offshore environments. From 1971 to 1981, Harbor Branch (co-funded by FPL) conducted over 2,000 collections in the Indian River Lagoon, its freshwater tributaries, and nearshore reefs in an effort to qualitatively assess the estuarine faunal diversity. The results of these collections were summarized in *Fishes of the Indian River Lagoon and Adjacent Water* (Gilmore, *et al.*, 1981). These studies were primarily carried out to develop a list of fishes in Indian River Lagoon habitats, and this study provided regional descriptions and checklists of fishes in this region.

Several institutions and agencies are currently conducting, or have conducted, ecological studies in the vicinity of the CCEC. The FFWCC's Fisheries Independent Monitoring (FIM) program has sampled numerous sites along the lagoon shoreline in the vicinity of the CCEC. The FIM was instituted in 1985 to monitor the relative abundance of fishery resources in Florida's more estuarine, costal, and reef systems. Large fish are the target of this study and generally only fish that are 100 millimeters (mm) or greater standard length are captured. FIM has conducted intensive sampling

of fish and invertebrates in the northern IRL since 1990. In 2007, bay anchovy (*Anchoa mitchilli*) was the most numerous species collected in the FIM northern IRL samples, representing 66 percent of the total catch. The next most abundant taxa, rainwater killifish (*Lucania parva*), mojarras (*Eucinostomus* spp.), Irish pompano (*Diapterus auratus*), and silversides (*Menidia* spp.) accounted for an additional 16.2 percent of the total catch (FFWCC, 2007)

Macroinvertebrates—Horseshoe crabs are the most predominant shellfish in the area. Other dominant shellfish include commercial shrimp (*Penaeidae)* and blue crabs *(Callinectes sapidus* and congeners).

Plant Communities—The Indian River Lagoon plant community is dominated by mangrove marshes or swamps, salt marshes, marine grass beds, and drift algae. All serve as important spawning or nursery grounds for commercially important species. The most prevalent seagrass species are manatee grass (*Syringodium filiforme*), shoal grass (*Halodule wrightii*), and turtle grass *(Thalassia testudinum*).

Threatened and Endangered Species—Methodology

Literature and agency surveys were undertaken to determine the species that could potentially be present in the habitats found in the vicinity of the Site. Primary sources of information are the Florida Natural Areas Inventory (FNAI) database (1997); Florida Committee on Rare and Endangered Plants and Animals (FCREPA) reports; Preservation of Native Flora of Florida Law, Rule Chapter 5B-40, F.A.C.; the Regulated Plant Index (5B-40.0055); and Notes on Florida's Endangered and Threatened Plants, FDACS, Division of Plant Industry, Bureau of Entomology, Nematology and Plant Pathology – Botany Section, Contribution No. 38, Addition 2, Gainesville. A Site-Specific Data Report was also obtained from FNAI for the Site. In addition, previous reports of surveys conducted in and near the Project were reviewed.

Plant and Animal Surveys

An evaluation of the habitat conditions was used to determine the probable presence or absence of threatened and endangered species. Based on the literature review, federally and State listed species whose ranges include the Site and the offsite construction laydown and parking area were identified.

Flora—Threatened, endangered, and/or plant species of special concern that occur within Brevard County are listed in Table 3.3.6-1. Due to the developed nature of the Site, minimal suitable habitat for listed plant species exists within the Site. The FNAI database review did not result in any

occurrences of listed plant species adjacent to the Site, nor were any occurrences noted in the Site-Specific Data Report obtained from FNAI (Appendix 10.7.1). The offsite construction laydown and parking area is within some portion of a disturbed area and provides minimal suitable habitat for listed plant species (see Section 4.6 for habitat description).

Fauna—Threatened, endangered, and/or animal species of special concern that occur within Brevard County are listed in Table 3.3.6-1. Several listed bird species were observed at the Site, including the brown pelican, white ibis, and little blue heron. In addition to these, it is likely that other wading birds classified by the State as species of special concern may occasionally utilize the shoreline and intake canal to forage, including the snowy egret (*Egretta thula*) and tricolor heron (*Egretta tricolor*). Several manatees were observed in the Indian River Lagoon near the discharge outfall. The Indian River Lagoon provides suitable habitat for the American alligator, classified by the FFWCC as a species of special concern and as threatened by the USFWS due to similarity in appearance with the federally endangered American crocodile (*Crocodylus acutus*). Several active and inactive gopher tortoise burrows were observed within and adjacent to the offsite construction laydown and parking area. In addition, Florida scrub jays were observed within and adjacent to the offsite construction laydown and parking area.

The FNAI database review and Site Specific Data Report did not result in any occurrences of listed animal species on the Site. However, there are several reported occurrences of listed species within a 5-mile radius of the Site. There is a documented manatee aggregation site within the Indian River Lagoon, at the existing Plant discharge canal area (see Figure 3.3.6-1 and Appendix 10.7.1). Scrub jays, a federally threatened species, gopher tortoises, a State threatened species, and bald eagles (*Haliaeetus leucocephalus*), a State managed species, are reported from multiple locations within a 5-mile radius of the Site (Figure 3.3.6-1.). Three State-listed plant species were reported from within a 5-mile radius of the Site: celestial lily (*Nemastylis floridana*; endangered), giant orchid (*Pteroglossaspis ecristata*; threatened), and hand fern (*Ophioglossum palmatum*; endangered) (see Figure 3.3.6-1).

Indian River Lagoon – Threatened and Endangered Species

Wildlife

The Indian River Lagoon is a diverse estuary with more than 2,200 different species of animals and 2,100 species of plants. According to the EPA, there are at least 21 animal species listed by the FFWCC and/or USFWS as endangered, threatened, or of special concern known to occur within the Indian River Lagoon (EPA, 2008), summarized in the following table.

Scientific Name	Common Name	Status
Mammals		
Peromyscus polionotus niveiventris	Southeastern Beach Mouse	FT, ST
Trichechus manatus	West Indian Manatee	FE, SE
Birds		
Aphelocoma coerulescens	Florida Scrub Jay	FT, ST
Charadrius melodus	Piping Plover	FT, ST
Dendroica kirtlandii	Kirtland's Warbler	FE
Falco peregrinus	Peregrine Falcon	SE
Haliaeetus leucocephalus	Bald Eagle	ST
Mycteria americana	Wood Stork	FE, SE
Picoides borealis	Red-cockaded Woodpecker	FE, SSC
Rostrhamus sociabilis plumbeus	Snail Kite	FE, SE
Sterna dougallii	Roseate Tern	FT, ST
Vermivora bachmanii	Bachman's Warbler	FE, SE
Reptiles		
Alligator mississippiensis	American Alligator	FT (SA), SSC
Eretmochelys imbricata	Atlantic Hawksbill Turtle	FE, SE
Caretta caretta	Loggerhead Sea Turtle	FT, ST
Chelonia mydas	Atlantic Green Sea Turtle	FE, SE
Dermochelys coriacea	Leatherback Sea Turtle	FE, SE
Drymarchon couperi	Eastern Indigo Snake	FT, ST
Lepidochelys kempii	Atlantic Ridley Sea Turtle	FE, SE
Nerodia clarkii taeniata	Atlantic Salt Marsh Snake	FT, ST
Fish		
Acipenser brevirostrum	Shortnose Sturgeon	FE, SE

Notes:

SSC = State Species of Special Concern, FT = Federally Threatened, ST = State Threatened, FE = Federally Endangered, SE = State Endangered, FT (SA) = Federally Threatened due to Similarity of Appearance to the American crocodile.

The entire inland section of the Banana River, the Indian River Lagoon, and all the waterways between the Indian River Lagoon and Banana River are designated by the USFWS as Critical Habitat for the West Indian manatee (USFWS, 1983). Nearly one-third of the nation's manatee population lives here or migrates through the Indian River Lagoon seasonally. FNAI also reports the presence of a manatee aggregation site directly adjacent to the Site (see Figure 3.3.6-1). According to FNAI, up to 138 manatees have been aerially estimated at this location and the nearby Reliant Indian River Plant in 1988. Studies conducted from January 1978 through February 1980 show that the number of manatees in the Indian River Lagoon and Banana River varies seasonally, with the highest number of individuals observed in the spring and summer (Shane, 1980 in ABI, 1980). The Shane study also found that manatees seemed to frequent particular sites depending on the season. Manatees were

found to move into the Canaveral Pool in late November and be most abundant in the Plant effluent from December through March. Five hundred and thirty (530) manatees were observed using the Cape Canaveral Plant and nearby Reliant Indian River Plant effluents as winter refuges during aerial surveys conducted in 2007. Of these, 407 were observed at the Cape Canaveral Plant (Mote, 2007).

FPL has developed a Manatee Protection Plan (MPP) approved by State and federal regulatory authorities, as part of the Industrial Wastewater Facility Permit. The intent of the MPP is to minimize impacts to the manatees that may congregate in the intake and discharge canal areas during the operation of the Plant. During the period from November 15 through March 31 of each year, in the event the ambient water temperature falls below 61 degrees Fahrenheit (°F), the Cape Canaveral Plant "endeavors to operate in a manner that maintains the water temperature in an adequate portion of the discharge area, for at least one unit, at or above 68°F, until such time as the ambient water temperature reaches 61°F, unless otherwise authorized….or unless safety or reliability of the Plant would be compromised."

Seven species of seagrasses can be found in the Indian River Lagoon: turtle grass (*Thalassia testudinum*), shoal grass (*Halodule wrightii*), manatee grass (*Syringodium filiforme*), Johnson's sea grass (*Halophila johnsonii*), star grass (*Halophila engelmannii*), paddle grass (*Halophila decipiens*), and widgeon grass (*Ruppia maritima*). Of these species, Johnson's sea grass is listed as threatened by the USFWS. The most common species in the Indian River Lagoon are shoal grass and manatee grass, with turtle grass and star grass usually accounting for less than 5 percent of the seagrass cover (Rey & Rutledge, 2001).

3.3.6.2 Pre-Existing Stresses

Terrestrial Systems

The greatest pre-existing stress to terrestrial systems of the Site and surrounding area is the result of industrial, commercial, and residential development. The natural topography, soils, and hydrology of the Site are extensively altered as a result of the addition of fill material for construction of the original Plant. The natural ecosystems and wildlife habitat previously located at the Site have been lost and natural drainage features have been modified. The natural topography, soils, and hydrology of the offsite construction laydown and parking area have also been modified by previous land uses.

Aquatic Systems

Aquatic systems in the vicinity of the Site, specifically the Indian River Lagoon, are subjected to stress from numerous sources (EPA, 2008). Pre-existing stresses include:

- Human population growth,
- Habitat loss/alteration,
- Fisheries loss/decline,
- Species loss/decline,
- Freshwater inflow,
- Nutrients,
- Sedimentation,
- Conventional pollutants,
- Introduced/pest species,
- Toxics, and
- Power plant intake/discharge.

3.3.6.3 Measurement Programs

Terrestrial Ecology

Terrestrial ecological resources were evaluated through Site reconnaissance, agency review, previous studies, and literature searches. Vegetative communities, wildlife utilization, and potential for threatened and endangered wildlife occurrence were addressed during several reconnaissance surveys conducted for this SCA from spring through fall of 2008..

Threatened and Endangered Species–Methodology

Prior to the field surveys, literature and agency surveys were undertaken to determine the species that could potentially be present in the habitats found on the Site and the offsite construction laydown and parking area. Primary sources of information are the FNAI database; FCREPA reports; Preservation of Native Flora of Florida Law, Rule Chapter 5B-40, F.A.C.; the Regulated Plant Index (5B-40.0055); and Notes on Florida's Endangered and Threatened Plants, FDACS.

Wetland Methodology

Three agencies, U.S. Army Corps of Engineers, FDEP, and SJRWMD, have rules that apply to wetlands. To be jurisdictional, a wetland must ascribe to three characteristics defined by rule: presence of vegetation listed as belonging in wetlands, having a certain defined hydrology, and the presence of hydric soils. The applicable characteristics for wetland determination as prescribed by the regulatory agencies were used during surveys conducted in the spring and summer of 2008.

3.3.7 Meteorological and Ambient Air Quality

The maximum air quality impacts of the existing Plant and CCEC are predicted to be well below National and Florida ambient air quality standards (AAQS) (see Section 6.6 and Appendix 10.2.5 for details). The following sections present information regarding existing meteorology and ambient air quality.

3.3.7.1 Meteorology

Meteorological data collected at existing monitoring stations were used to describe the local and regional climatology in the vicinity of the Site. The closest existing meteorological station to this Site with complete data is the National Weather Service (NWS) station located at the Daytona Beach International Airport, situated approximately 80 kilometers (km) (50 miles) north-northwest of the Site. The NWS has recorded weather observations for more than 50 years at this station. These data are the most complete for and representative of the region surrounding the Site.

The climate in the vicinity of the Site is subtropical with a marine influence from the Atlantic Ocean. The monthly and annual average temperatures for this area are presented in Table 3.3.7-1. The annual average temperature is approximately 71°F with monthly average temperatures varying from a maximum of 91°F to a minimum of 47°F. Record extreme temperatures range from a low of 15°F to a record high of 102°F. During the summertime, temperatures rarely exceed 100°F due to the high relative humidity with subsequent cloud cover formation and the abundant convective-type precipitation (e.g., thunderstorms).

The monthly and annual average precipitation data are presented in Table 3.3.7-2. Approximately 60 percent of the annual precipitation falls during the six warmest months, May through October. The average annual precipitation is approximately 49 inches, but this has varied from as little as 31 inches to more than 70 inches in the past 30 years. The majority of rain is in the form of short-lived convection showers (e.g., thunderstorms). Almost all of the rainfall during the winter months is associated with frontal passages.

Monthly and annual average relative humidities, which indicate the amount of moisture in the air at a given temperature, are presented in Table 3.3.7-2 for the morning hours of 1:00 a.m. and 7:00 a.m. and early afternoon and evening hours of 1:00 p.m. and 7:00 p.m. The highest humidities are coincident with the coolest ambient temperatures, which generally occur at 7:00 a.m., or near dawn. The lowest humidities coincide with the highest ambient temperatures.

Annual and seasonal wind roses for the 5-year period from 2001 through 2005 are given in Figures 3.3.7-1 through 3.3.7-5. A summary of the seasonal and annual average wind direction and wind speed, including calm conditions, is presented in Table 3.3.7-3. As shown in the figures, the predominant winds during the year are from the east. The predominant easterly winds occur because the Site lies entirely within the trade wind belt (i.e., below 30 degrees North latitude). Also, because of the location of the Atlantic Ocean, the easterly winds are reinforced due to the moderate to strong late afternoon sea breezes that occur on days with strong land heating and produce localized onshore winds. The data for this period were also used in the air quality impact analyses.

Except during the passage of tropical storms or hurricanes, high wind speeds generally do not occur. During the winter and spring, there are usually a few days when wind speeds are greater than 30 miles per hour (mph).

Atmospheric stability is a measure of the atmosphere's capability to disperse pollutants and potentially reduce ground-level concentrations. During the daytime with strong solar heating, the atmosphere can disperse pollutants very quickly for a relatively short period of time. This condition is considered as very unstable and generally occurs infrequently during the year. During the nighttime under clear skies and light wind speeds, the atmosphere is considered stable with minimal potential to disperse pollutants. During the day or night when wind speeds are moderate to high, pollutants are dispersed at moderate rates (i.e., dispersion rates that are lesser than those during unstable conditions but greater than those during stable conditions). This condition is considered neutral and occurs frequently throughout the year. The seasonal and annual average occurrences of atmospheric stability classes for this area for 2001 to 2005 are shown in Table 3.3.7-4. During the summer months, unstable conditions occur more than 40 percent of the time due to strong solar heating, whereas unstable stability occurs about 20 percent of the time in the winter months. Neutral stability occurs most frequently during the winter months due to the higher wind speeds that occur in this season. The occurrence of stable stability is nearly uniform throughout the year.

The mixing height is a parameter used to define the vertical height to which pollutants can disperse and, therefore, is used in estimating the volume of air in which pollutants are emitted and can be dispersed. In general, the higher the mixing height, the greater the potential for pollutants to be dispersed and for ground-level concentrations to be reduced.

The seasonal and annual average morning and afternoon mixing heights estimated for this area for 2001 to 2005 are listed in Table 3.3.7-5. The highest afternoon mixing heights occur in the spring and summer and the lowest morning mixing heights occur in winter.

Thunderstorms are the most frequent of severe storms, occurring an average of 77 days per year as reported by the NWS at Daytona Beach International Airport. These storms occur throughout the year, but about 80 percent occur from May through September.

Hurricanes and tornadoes are other types of severe weather that can occur at the Site, but the probability of a hurricane or tornado passing over the Site is low.

In the 80-km (50-mile) coastal strip from Titusville to Melbourne, there is about a 7-percent chance that a tropical storm will pass over the area during any given year (Gale Research Co., 1980). For storms of hurricane strength (i.e., wind speeds exceeding 73 mph), the chance decreases to about 5 percent with a 1-percent chance that the winds will be greater than 124 mph (i.e., wind speeds of a great hurricane).

Statistics compiled by the severe local storms branch of the national severe storms forecast center (Paulz, 1969) show that an average of three tornadoes were spotted within the 1-degree latitude by 1-degree longitude square centered near the Site from 1955 to 1967. The tornado recurrence interval for any specific point location within the 1-degree square was estimated by the methodology of Thom (1963). The recurrence interval, r, is equal to 1/p where p is the probability of a tornado striking within the 1 square mile area and is estimated as follows:

$$p = (2.8209 \times t) / a$$

where: t = mean annual frequency of tornadoes occurring, and
a = area (mi^2) of the 1degree square.

In this analysis, *t* was assumed to be 0.9 based on data collected from 1953 to 1962 and *a* was estimated to be 4,100 mi^2. Therefore, the mean recurrence interval for a tornado striking a point within this square is more than 1,000 years. The month during which tornadoes occur most frequently is June.

3.3.7.2 Ambient Air Quality

Ambient Standards

The National and Florida AAQS are presented in Table 3.3.7-6. Primary National AAQS were promulgated to protect the public health, and secondary National AAQS were promulgated to protect the public welfare from any known or anticipated adverse effects associated with the presence of pollutants in the ambient air. Areas of the country in compliance with AAQS are designated as attainment areas. Pollutants for which AAQS have been established are referred to as criteria pollutants. These pollutants include particulate matter with an aerodynamic particle size of 10 micrometers (µm) or less (PM_{10}), sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), and lead (Pb).

Brevard County is classified as an attainment area for all criteria pollutants (Rule 62-204.340, F.A.C.). Adjacent counties, such as Volusia and Indian River Counties, are also classified as attainment areas for all criteria pollutants.

On July 18, 1997, the EPA promulgated revisions to the National AAQS for O_3 and particulate matter (PM) (62 Federal Register No. 138). The O_3 standard was modified to be 0.08 parts per million (ppm) for an 8-hour average concentration. This standard is achieved when the 3-year average concentration of the 4th highest value is 0.08 ppm or less. The 1-hour average AAQS will no longer apply to an area 1 year after the effective date of the designation of that area for the 8-hour O_3 AAQS.

The revised PM AAQS included two new $PM_{2.5}$ standards ($PM_{2.5}$ represents PM with an aerodynamic diameter of 2.5 µm or less); a short-term 24-hour average standard and an annual average standard. In October 2006, EPA promulgated revised AAQS for PM_{10} and $PM_{2.5}$ [Federal Register, October 17, 2006 (71 FR 61144)]. For PM_{10}, the annual standard was revoked and the 24-hour standard was retained. The 24-hour $PM_{2.5}$ standard was revised to 35 micrograms per cubic meter (µg/m^3) from 65 µg/m^3 in the promulgated 1997 AAQS. The 24-hour $PM_{2.5}$ standard is based on a 3-year average of the 98th percentile of 24-hour average concentrations that must not exceed 35 µg/m^3 (from population-orientated monitors) and a 3-year average of annual average concentrations that must not exceed 15 µg/m^3 (from a single or community-orientated monitor). These AAQS are effective December 18, 2006.

FDEP has not yet adopted the revised O_3, PM_{10}, or $PM_{2.5}$ AAQS. Based on evaluations performed by FDEP and EPA, Brevard County has been designated an attainment area for the revised 1997 O_3 AAQS [Federal Register, April 30, 2004 (69 FR 23996)], as well as an attainment area for

the 1997 $PM_{2.5}$ AAQS [Federal Register, January 5, 2005 (70 FR 944)]. Although FDEP and EPA have not yet designated areas for $PM_{2.5}$ in Florida based on the 2006 $PM_{2.5}$ AAQS, monitoring data collected over the last several years indicate that Brevard County and adjoining counties would be classified as attainment of the $PM_{2.5}$ AAQS. These standards must be implemented in the 2008 to 2009 timeframe with a revision to the State Implementation Plan.

In promulgating the 1977 Clean Air Act (CAA) Amendments, Congress specified that certain increases above an air quality *baseline concentration* level of SO_2 and PM concentrations would constitute *significant deterioration* for sources located in attainment areas. The magnitudes of the allowable increases, or prevention of significant deterioration (PSD) increments, depend on the classification of the area in which a new source (or modification) will be located or have an impact. Three PSD increment classifications were designated based on criteria established in the 1977 CAA Amendments. Initially, Congress designated areas as either Class I [international parks, national wilderness areas (NWAs), and memorial parks larger than 5,000 acres, and national parks (NPs) larger than 6,000 acres] or as Class II (all areas not designated as Class I). No Class III areas, which would be allowed greater deterioration than Class II areas, were designated. EPA then promulgated as regulations the requirements for classifications and area designations.

On October 17, 1988, EPA promulgated regulations to prevent significant deterioration due to nitrogen oxides (NO_x) emissions and established PSD increments for NO_2 concentrations. The EPA class designations and allowable PSD increments are presented in Table 3.3.7-6. Florida has adopted the EPA allowable increments for PM_{10}, SO_2, and NO_2.

Brevard County is classified as a Class II area (Rule 62-204.340, F.A.C.) since it is an attainment area for all pollutants. The nearest Class I areas to the Site are the Chassahowitzka NWA, located about 182 km (109 miles) from the Site, and the Everglades NP, located about 292 km (175 miles) from the Site.

Existing Air Pollutant Sources

The Site is located in Brevard County, which has a minimal number of air pollution sources. Existing major sources in addition to FPL Cape Canaveral Plant with SO_2, PM, or NO_x emissions greater than 100 tons per year (TPY) and within 25 km (16 miles) of the Site include Reliant Energy, FGT compressor station, and Sea Ray Boats.

Existing Ambient Air Quality

Ambient air quality monitoring data have been collected in Brevard County for more than 20 years. Air monitoring data currently are collected for SO_2, PM_{10}, NO_2, O_3, and CO. These data are generally representative of air quality for areas in the County with more industrial development than that around the Site. Thus, the measured air quality data from these sites provide a conservative indication of air quality around the Site.

A summary of the maximum pollutant concentrations measured in Brevard County from 2005 through 2007 is presented in Table 3.3.7-7. These data indicate that the maximum air quality concentrations measured in the region are well below applicable standards.

3.3.7.3 Measurement Programs

All information (i.e., meteorology and air quality data) was compiled from offsite monitoring stations maintained and operated by FDEP or cooperating governmental agencies (i.e., NWS). No significant changes in these programs are anticipated after the construction of CCEC.

Meteorological data were obtained from the NWS surface and upper-air stations at the Daytona Beach International Airport and Miami, respectively. These data were obtained for a 5-year period from 2001 through 2005 from which the joint frequency of wind direction, wind speed, and atmospheric stability and a 5-year average of mixing heights were developed. Since 1986, the wind sensors at the Daytona Beach International Airport have been located 33 feet above grade. Regular surface observations are taken just before each hour, 7 days per week. Upper-air soundings are conducted twice per day at 7:00 a.m. and 7:00 p.m., Eastern Standard Time.

Since the estimated increases in potential emissions due to the Project do not exceed the PSD significant emission rates for regulated pollutants, an ambient air monitoring analysis is not required under PSD regulations. In addition, as indicated in Table 3.3.7-7, available monitoring data collected from regional monitoring sites are well below the AAQS.

3.3.8 Noise

3.3.8.1 Background

Sound propagation involves three principal components: a noise source, a person or a group of people, and the transmission path. While two of these components, the noise source and the transmission path, are easily quantified (i.e., by direct measurements or through predictive calculations), the effect of noise on humans is the most difficult to determine due to the varying

responses of humans to the same or similar noise patterns. The perception of sound (noise) by humans is very subjective and, just as for odors and taste, it is very difficult to predict a response from any particular individual to another.

The magnitude of noise levels or loudness is referred to as sound pressure level (SPL) with units in decibels (dB). Decibels are calculated as a logarithmic function of SPL in air to a reference effective pressure, which is considered the hearing threshold, or:

$$SPL = 20 \log_{10} (P_e/P_o)$$

where: P_e = measured effective pressure of sound wave in micropascals (µPa), and

P_o = reference effective pressure of 20 µPa.

To account for the effect of how the human ear perceives sound pressure, at moderate to low levels, SPLs are adjusted for frequency (or pitch). One of the most commonly used frequency filters is the A weighting [A-weighted decibel (dBA)], which adjusts measurements for the approximated response of the human ear to low frequency SPLs [i.e., below 1,000 hertz (Hz)] and high-frequency SPLs (i.e., above 1,000 Hz).

The CCEC Site is located in unincorporated in Brevard County, Florida. U.S. Highway 1, which runs along the Site's western boundary, is heavily traveled and a significant contributor to the overall existing noise levels in the Project area. The traffic on U.S. Highway 1 is constant with a large component of trucks.

3.3.8.2 Noise Monitoring Locations

Noise levels were measured at eight locations in the vicinity of the existing Site. Three of these locations were taken onsite at or near the Plant boundary. The five offsite locations were taken near residential and public receptors and are located at the nearest public access to the Site. Figure 3.3.8-1 shows the baseline noise monitoring locations at the Cape Canaveral Power Plant.

3.3.8.3 Noise Measurement Procedures

Noise measurements were made using a sound level meter that was set to the slow response mode to obtain consistent, integrated, A-weighted SPL. Concurrent one-third octave band frequencies were also measured at all sites. The octave band data from each monitoring site have measured and stored during each monitoring period. Both daytime and nighttime monitoring measurements were performed to accurately assess the baseline noise conditions.

Integrated SPL data consisting of the following noise parameters were collected at each location:

- L_{eq} - The sound pressure level averaged over the measurement period; this parameter is the continuous steady sound pressure level that would have the same total acoustic energy as the real fluctuating noise over the same time period;
- L_{max} - The maximum sound pressure level for the sampling period;
- L_{min} - The minimum sound pressure level for the sampling period; and
- L_n - The sound pressure levels which were exceeded n percent of the time during sampling period. For example, L_{90} is the level exceeded 90 percent of the time.

The SPL data were analyzed and reported in both dB and dBA. The higher the decibel value, the louder the sound.

The SPL averages were calculated using the following formula:

$$\text{Average SPL} = 10 \text{ Log } \frac{\sum_{i=1}^{N} 10^{(SPL_i/10)}}{N}$$

where: N = number of observations, and

SPL_i = individual SPL in data set.

The SPLs and octave band data were collected during each monitoring event, using measurement techniques set forth by American National Standards Institute (ANSI) S12.9-1993/Part 3, 1993.

The noise monitoring equipment used during the study included:

- Larson Davis Model 824 Precision Integrating Sound Level Meter with Real Time Frequency Analyzer;
- Larson Davis Model PRM902 Microphone Preamplifier;
- Larson Davis Model 2560 Prepolarized ½-inch Condenser Microphone;
- Windscreen, tripod, and various cables;
- Sound Level Meter Calibration Unit; and
- Larson Davis Model CAL200 Sound Level Calibrator, 94/114 dB at 1,000 Hz.

Monitoring was conducted using the sound level meter mounted on a tripod at a height of 1.5 meters (m) (5 feet) above grade. A windscreen was used because all measurements were taken outdoors. The microphone was positioned so that a random incidence response was achieved. The sound level meter and octave band analyzer were calibrated immediately prior to and just after the sampling period to provide a quality control check of the sound level meter's operation during monitoring.

Local meteorological conditions (wind speed, wind direction, temperature, and relative humidity) were measured during the monitoring periods. The operator recorded detailed field notes during monitoring and included major noise sources in the area. The Larson Davis sound level meter complies with Type I - Precision requirements set forth for sound level meters and for one-third octave filters.

3.3.8.4 Measured Ambient Baseline Sound Pressure Levels with Existing Plant Offline

Baseline noise measurements were collected in March 2008 while the existing Cape Canaveral Plant was offline for scheduled maintenance. The onsite noise levels were at a minimum and the resulting noise measurements represent the noise levels in the Project area without any contributions from current Plant operations.

The baseline study shows that the major noise source in the area is the traffic noise on U.S. Highway 1. The baseline noise results are presented Table 3.3.8-1. It is common practice to reference the L_{90} value, the value that is exceeded 90 percent of the time, when reporting the sound level recorded at each site since the value filters out most transient noise such as traffic, air planes, dogs barking, etc.

The daytime L_{90} noise measurements ranged from 50 dBA at Site 1 to 62 dBA at Site 4. The nighttime L_{90} noise measurements ranged from 45 dBA at Site 7 to 58 dBA at Site 2 and Site 4. Since both units were offline during this monitoring period, a representative baseline noise level from sources outside of the Plant is provided.

3.3.8.5 Measured Ambient Baseline Sound Pressure Levels with the Existing Plant Online

Baseline noise measurements were collected in May 2008 while the existing Cape Canaveral Plant was in full operation after the planned maintenance outage. The noise measurements were collected while the Plant was operating at base load at the same eight locations as the baseline noise study. The results show that, once again, the traffic noise due to U.S. Highway 1 is the major noise source in the Project area. The noise study results with the Plant operating at baseload are presented in

Table 3.3.8-2. The daytime L_{90} noise measurements ranged from 52 dBA at Site 6 to 70 dBA at Site 2. The nighttime L_{90} noise measurements ranged from 51 dBA at Site 6 to 69 dBA at Site 3.

The background noise levels measured ranged from 45 to 63 dBA during the daytime and 46 to 58 dBA during the nighttime at these locations.

TABLE 3.2.7-1
PRIVATE SECTOR EMPLOYMENT BY MAJOR INDUSTRY
FOR BREVARD COUNTY

Major Industry Group	Average Employment
Total, All Industries	172,757
Goods Producing	37,247
Natural Resources and Mining	325
Agriculture, Forestry, Fishing and Hunting	245
Mining	81
Construction	13,601
Manufacturing	23,320
Durable Goods Manufacturing	22,078
Nondurable Goods Manufacturing	1,242
Service-Providing	135,510
Trade, Transportation, and Utilities	36,150
Wholesale Trade	5,142
Retail Trade	27,798
Transportation and Warehousing	2,767
Utilities	443
Information	2,751
Financial Activities	8,141
Finance and Insurance	5,168
Real Estate and Rental and Leasing	2,972
Professional and Business Services	34,156
Professional, Scientific, and Technical Services	12,074
Management Companies and Enterprises	1,175
Administration and Support and Waste Management and Remediation Services	20,907
Education and Health Services	28,118
Educational Services	3,081
Health Care and Social Assistance	25,037
Leisure and Hospitality	20,662
Arts, Entertainment & Recreation	3,064
Accommodation and Food Services	17,598
Other Services (except Public Administration)	5,494
Unclassified	39

Source: State of Florida, Labor Market Statistics, Quarter 4 2007. "Quarterly Census of Employment and Wages" (ES-202), Annual NAICS files.

TABLE 3.3.3-1
WATER USE PERMITS WITHIN 5 MILES OF CCEC

Permit Number	Station No.	Permittee	Status	Section	Range	Township	County	Source	Maximum Capacity (gallons per minute)
1878	1279	B & T Grove	Active	23	36E	23S	Brevard	Ditch Pond	8700
1922	1367	Baltusrol Development	Active	25	36E	23S	Brevard	Drainage Ditch	70000
1938	33375	Bracco Reservoir/Jerry Seller Water Reclaimation	Proposed	17	36E	24S	Brevard	Surficial Aquifer	50
1938	33376	Bracco Reservoir/Jerry Seller Water Reclaimation	Proposed	7	36E	24S	Brevard	Surficial Aquifer	50
1938	33377	Bracco Reservoir/Jerry Seller Water Reclaimation	Proposed	13	35E	24S	Brevard	Surficial Aquifer	50
1938	33378	Bracco Reservoir/Jerry Seller Water Reclaimation	Proposed	18	36E	24S	Brevard	Surficial Aquifer	50
1938	33382	Bracco Reservoir/Jerry Seller Water Reclaimation	Proposed	18	36E	24S	Brevard	Surficial Aquifer	50
1864	1265	Chase Hammock Grove	Active	36	36E	23S	Brevard	Ditch	0
50759	1238	Crisafulli Borrow Pit	Active	23	36E	23S	Brevard	Surficial Aquifer	1000
1906	1332	Crisafulli Rd Borrow Pit	Proposed	25	36E	23S	Brevard	Surfical Aquifer	690
50884	20238	Dalbora Grove	Inactive	24	36E	23S	Brevard	Floridan Aquifer	0
50884	20239	Dalbora Grove	Inactive	6	23E	12S	Putnam	Floridan Aquifer	0
50884	20240	Dalbora Grove	Active	24	36E	23S	Brevard	Ditch Pond	2500
10652	1094	FP&L Cape Canaveral Plant	Active	19	36E	23S	Brevard	Indian River	137000
10652	1095	FP&L Cape Canaveral Plant	Active	19	36E	23S	Brevard	Indian River	137000
10652	1096	FP&L Cape Canaveral Plant	Active	19	36E	23S	Brevard	Indian River	137000
10652	4276	FP&L Cape Canaveral Plant	Abandoned	19	36E	23S	Brevard	Surficial Aquifer	0
10652	4277	FP&L Cape Canaveral Plant	Active	19	36E	23S	Brevard	Surficial Aquifer	30
10652	4278	FP&L Cape Canaveral Plant	Active	19	36E	23S	Brevard	Surficial Aquifer	30
10652	4279	FP&L Cape Canaveral Plant	Active	19	36E	23S	Brevard	Surficial Aquifer	60
10652	4280	FP&L Cape Canaveral Plant	Active	19	36E	23S	Brevard	Surficial Aquifer	60
10652	4281	FP&L Cape Canaveral Plant	Active	19	36E	23S	Brevard	Surficial Aquifer	30
10652	4282	FP&L Cape Canaveral Plant	Active	19	36E	23S	Brevard	Surficial Aquifer	60
10652	4283	FP&L Cape Canaveral Plant	Active	19	36E	23S	Brevard	Surficial Aquifer	60
10652	4284	FP&L Cape Canaveral Plant	Active	19	36E	23S	Brevard	Surficial Aquifer	30
10652	4285	FP&L Cape Canaveral Plant	Active	19	36E	23S	Brevard	Surficial Aquifer	30
10652	4286	FP&L Cape Canaveral Plant	Active	19	36E	23S	Brevard	Surficial Aquifer	60
10652	4287	FP&L Cape Canaveral Plant	Active	19	36E	23S	Brevard	Surficial Aquifer	60
10652	4288	FP&L Cape Canaveral Plant	Active	19	36E	23S	Brevard	Surficial Aquifer	30
10652	26965	FP&L Cape Canaveral Plant	Active	19	36E	23S	Brevard	Indian River	137500
10652	26966	FP&L Cape Canaveral Plant	Active	19	36E	23S	Brevard	Indian River	4400
10652	26967	FP&L Cape Canaveral Plant	Active	19	36E	23S	Brevard	Indian River	4400
10652	26968	FP&L Cape Canaveral Plant	Active	19	36E	23S	Brevard	Indian River	6000
10652	26969	FP&L Cape Canaveral Plant	Active	19	36E	23S	Brevard	Indian River	6000
10652	26970	FP&L Cape Canaveral Plant	Active	19	36E	23S	Brevard	Indian River	44
10652	26971	FP&L Cape Canaveral Plant	Active	19	36E	23S	Brevard	Indian River	44
10652	26972	FP&L Cape Canaveral Plant	Active	19	36E	23S	Brevard	Indian River	600
10652	26973	FP&L Cape Canaveral Plant	Active	19	36E	23S	Brevard	Indian River	600
10652	34053	FP&L Cape Canaveral Plant	Active	19	36E	23S	Brevard	Indian River	600
10652	34054	FP&L Cape Canaveral Plant	Active	19	36E	23S	Brevard	Indian River	600
10652	35382	FP&L Cape Canaveral Plant	Inactive	19	36E	23S	Brevard	Surficial Aquifer	12.5
10652	35383	FP&L Cape Canaveral Plant	Inactive	19	36E	23S	Brevard	Surficial Aquifer	12.5
10652	35384	FP&L Cape Canaveral Plant	Inactive	19	36E	23S	Brevard	Surficial Aquifer	12.5
10652	35385	FP&L Cape Canaveral Plant	Inactive	19	36E	23S	Brevard	Surficial Aquifer	12.5

TABLE 3.3.3-1
WATER USE PERMITS WITHIN 5 MILES OF CCEC

Permit Number	Station No.	Permittee	Status	Section	Range	Township	County	Source	Maximum Capacity (gallons per minute)
10652	35386	FP&L Cape Canaveral Plant	Inactive	19	36E	23S	Brevard	Surficial Aquifer	12.5
10652	35387	FP&L Cape Canaveral Plant	Inactive	19	36E	23S	Brevard	Surficial Aquifer	12.5
10652	35388	FP&L Cape Canaveral Plant	Inactive	19	36E	23S	Brevard	Surficial Aquifer	12.5
10652	35389	FP&L Cape Canaveral Plant	Inactive	19	36E	23S	Brevard	Surficial Aquifer	12.5
10652	35390	FP&L Cape Canaveral Plant	Inactive	19	36E	23S	Brevard	Surficial Aquifer	12.5
10652	35391	FP&L Cape Canaveral Plant	Inactive	19	36E	23S	Brevard	Surficial Aquifer	12.5
10652	35392	FP&L Cape Canaveral Plant	Inactive	19	36E	23S	Brevard	Surficial Aquifer	12.5
10652	35393	FP&L Cape Canaveral Plant	Inactive	19	36E	23S	Brevard	Surficial Aquifer	12.5
1871	21350	Gabbert Groves	Active	13	36E	23S	Brevard	Wholly Owned Ditches	2500
1871	21351	Gabbert Groves	Active	24	36E	23S	Brevard	Wholly Owned Ditches	5000
50885	20241	Gator South	Never Established	24	36E	23S	Brevard	Floridan Aquifer	600
1920	1366	George Groves	Active	24	36E	23S	Brevard	Drainage Ditch	0
4438	18426	Glenn Northcraft	Active	25	36E	23S	Brevard	Floridan Aquifer	0
1873	33792	Gold Coast	Capped	26	36E	23S	Brevard	Perimeter Ditch	0
1861	1258	Grissom Parkway, Pond #2 Outfall	Proposed	12	35E	24S	Brevard	Surficial Aquifer	2000
1861	5369	Grissom Parkway, Pond #2 Outfall	Proposed	12	35E	24S	Brevard	Floridan Aquifer	1500
1923	1368	Home Grove	Active	26	36E	23S	Brevard	lake impoundment	1500
1923	5503	Home Grove	Inactive	26	36E	23S	Brevard	Floridan Aquifer	0
1923	5504	Home Grove	Inactive	26	36E	23S	Brevard	Floridan Aquifer	0
1792	5186	Island	Active	2	36E	24S	Brevard	Floridan Aquifer	451
1792	5187	Island	Active	11	36E	24S	Brevard	Floridan Aquifer	398
1933	1373	Island Tropical Farms	Active	25	36E	23S	Brevard	Ditch	3000
1743	3128	Ivy Smith					Brevard		0
1743	18429	Ivy Smith					Brevard		0
1743	18430	Ivy Smith					Brevard		0
1743	18431	Ivy Smith					Brevard		0
1786	1196	John Albert Perkinson	Active	10	36E	24S	Brevard	Onsite pond	0
1786	5172	John Albert Perkinson	Active	10	36E	24S	Brevard	Floridan Aquifer	70
1786	5173	John Albert Perkinson	Active	10	36E	24S	Brevard	Floridan Aquifer	0
1905	5478	Lil Champ Foodstore #185	Proposed				Brevard	Floridan Aquifer	5
1905	5479	Lil Champ Foodstore #185	Proposed				Brevard	Floridan Aquifer	5
112286	105694	Magruder-Smith Farms	Proposed				Brevard	Borrow Pit	850
112286	105695	Magruder-Smith Farms	Proposed				Brevard	Borrow Pit	850
112286	105696	Magruder-Smith Farms	Proposed				Brevard	Borrow Pit	1750
1796	5202	Merritt Isl Reg Wstwtr Imp Pro	Proposed	2	36E	24S	Brevard	Floridan Aquifer	0
1796	5203	Merritt Isl Reg Wstwtr Imp Pro	Proposed	2	36E	24S	Brevard	Floridan Aquifer	0
1796	5204	Merritt Isl Reg Wstwtr Imp Pro	Proposed	2	36E	24S	Brevard	Floridan Aquifer	0
1796	5205	Merritt Isl Reg Wstwtr Imp Pro	Proposed	2	36E	24S	Brevard	Floridan Aquifer	0
1796	5206	Merritt Isl Reg Wstwtr Imp Pro	Proposed	2	36E	24S	Brevard	Floridan Aquifer	0
1796	5207	Merritt Isl Reg Wstwtr Imp Pro	Proposed	2	36E	24S	Brevard	Floridan Aquifer	0
1796	5208	Merritt Isl Reg Wstwtr Imp Pro	Proposed	2	36E	24S	Brevard	Floridan Aquifer	0
1796	5209	Merritt Isl Reg Wstwtr Imp Pro	Proposed	2	36E	24S	Brevard	Floridan Aquifer	0
1796	5210	Merritt Isl Reg Wstwtr Imp Pro	Proposed	2	36E	24S	Brevard	Floridan Aquifer	0
1796	5211	Merritt Isl Reg Wstwtr Imp Pro	Proposed	2	36E	24S	Brevard	Floridan Aquifer	0

TABLE 3.3.3-1
WATER USE PERMITS WITHIN 5 MILES OF CCEC

Permit Number	Station No.	Permittee	Status	Section	Range	Township	County	Source	Maximum Capacity (gallons per minute)
1868	1266	Merritt Island Grove	Inactive	22	36E	23S	Brevard	Ditch	1000
1868	1267	Merritt Island Grove	Active	22	36E	23S	Brevard	Ditch	5000
1836	1231	Osceola Grove	Active	23	36E	23S	Brevard	Grove Ditches	7500
1836	1232	Osceola Grove	Active	23	36E	23S	Brevard	Grove Ditches	0
1836	5291	Osceola Grove	Active	23	36E	23S	Brevard	Floridan Aquifer	250
1836	5292	Osceola Grove	Active	23	36E	23S	Brevard	Floridan Aquifer	128
1836	5293	Osceola Grove	Active	23	36E	23S	Brevard	Floridan Aquifer	200
1924	1369	Policicchio Groves	Active	27	36E	23S	Brevard	internal ditches	4750
1924	5505	Policicchio Groves	Inactive	27	36E	23S	Brevard	Floridan Aquifer	0
1924	5506	Policicchio Groves	Inactive	27	36E	23S	Brevard	Floridan Aquifer	0
1921	5501	Port St. John Basin A & Basin C	Proposed				Brevard	Floridan Aquifer	0
1921	5502	Port St. John Basin A & Basin C	Proposed				Brevard	Floridan Aquifer	0
1862	1261	Preserve Pointe (f.k.a. Baxley Grove)	Active	15	36E	23S	Brevard	Possum Inn	1391
1862	5373	Preserve Pointe (f.k.a. Baxley Grove)	Active	15	36E	23S	Brevard	Floridan Aquifer	0
1711	1098	Reliant Energy Indian River Plant	Active				Brevard	Indian River	45000
1711	1099	Reliant Energy Indian River Plant	Active				Brevard	Indian River	45000
1711	1100	Reliant Energy Indian River Plant	Active				Brevard	Indian River	77000
1711	4296	Reliant Energy Indian River Plant	Active				Brevard	Surficial Aquifer	200
1711	4297	Reliant Energy Indian River Plant	Active				Brevard	Surficial Aquifer	200
1711	4298	Reliant Energy Indian River Plant	Active				Brevard	Surficial Aquifer	200
1711	21995	Reliant Energy Indian River Plant	Active				Brevard	Surficial Aquifer	0
1711	21996	Reliant Energy Indian River Plant	Active				Brevard	Surficial Aquifer	0
1711	21997	Reliant Energy Indian River Plant	Active				Brevard	Surficial Aquifer	0
1711	21998	Reliant Energy Indian River Plant	Active				Brevard	Surficial Aquifer	0
1711	21999	Reliant Energy Indian River Plant	Active				Brevard	Surficial Aquifer	0
1711	22000	Reliant Energy Indian River Plant	Active				Brevard	Surficial Aquifer	0
1711	22001	Reliant Energy Indian River Plant	Active				Brevard	Indian River	77000
1711	22002	Reliant Energy Indian River Plant	Active				Brevard	Indian River	108000
1711	22003	Reliant Energy Indian River Plant	Active				Brevard	Indian River	108000
1711	22004	Reliant Energy Indian River Plant	Active				Brevard	Indian River	108000
1811	1207	Sam's Executive Golf Course	Inactive	31	36E	23S	Brevard	Retention Pond	200
1811	1208	Sam's Executive Golf Course	Inactive	31	36E	23S	Brevard	Water Runoff Pond	200
1811	5254	Sam's Executive Golf Course	Active	31	36E	23S	Brevard	Surficial Aquifer	170
1811	5255	Sam's Executive Golf Course	Active	31	36E	23S	Brevard	Surficial Aquifer	300
1811	5256	Sam's Executive Golf Course	Active	31	36E	23S	Brevard	Surficial Aquifer	300
1811	33654	Sam's Executive Golf Course	Active	31	36E	23S	Brevard	Surficial Aquifer	50
1811	33655	Sam's Executive Golf Course	Active	31	36E	23S	Brevard	Surficial Aquifer	170
1811	33856	Sam's Executive Golf Course	Active	31	36E	23S	Brevard	Surficial Aquifer	0
1823	1221	Syke Creek Impoundment	Inactive	35	36E	23S	Brevard	Barge Canal	12000

Source: SJRWMD, 2008 (Database for Consumptive Use Permits; permits with unidentified permittee and maximum capacity of 0 gallons per minute not included in table).

TABLE 3.3.4-1

INDIAN RIVER LAGOON SURFACE WATER QUALITY

Parameter	Units	Count	Mean	Minimum	Maximum
Temperature	°C	63	24.4	12.8	32.1
pH	SU	36	8.0	7.7	8.4
Salinity	ppt	64	22	16.4	30.9
Dissolved Oxygen	mg/L	64	6.3	3.5	10.2
Fecal Coliform	MPN/100 ml	58	47	2	1,600
Turbidity	NTU	52	2.5	0.7	6.8
TOC	mg/L	86	13.89	8.53	22.5
Ammonia NH_3	mg/L	4	0.10	0.084	0.13
TKN	mg/L	90	1.10	0.69	1.86
$NO_2 + NO_3$, as N	mg/L	47	0.03	0	0.166
Phosphorus	mg/L	3	0.028	0.024	0.029
Chlorophyll a, corrected	mg/m^3	47	4.5	0.4	36.9

Source: Golder 2008; FDEP STORET Data from 2005 to 2008, Indian River Lagoon between SR 405 and SR 528.

TABLE 3.3.4-2

WATER QUALITY DATA SUBMITTED FOR CAPE CANAVERAL PLANT PURSUANT TO FDEP INDUSTRIAL WASTEWATER FACILITY PERMIT

		EP Basin	SW Basin	D011-D012		D-030
		Effluent	Effluent	Effluent	Intake	Effluent
Parameter		Max. Daily	Max. Daily	Max. Daily	Long-term Avg	Max. Daily
Carbonaceous Biochemical Oxygen Demand	mg/L	< 4	< 2	< 4	< 4	< 4
Chemical Oxygen Demand	mg/L	18	29	320	1100	430
Total Organic Carbon	mg/L	2.5	6.3	10	9.9	7.7
Total Suspended Solids	mg/L	5.3	< 3	63	37	9
Total Nitrogen (as N)	mg/L	0.65	0.55	2	1.7	0.57
Total Phosphorus (as P)	mg/L	1.7	0.09	0.13	0.09	0.13
Ammonia (as N)	mg/L	< 0.02	0.14	< 0.1	< 0.1	0.1
Flow	MGD			792		0.083
Specific Conductivity	umhos	5820		32.37	32.04	31.7
Temperature (summer)	F	26.67		45.56		32
pH		8.3		7.7		8.4
Bromide	mg/L	< 50	1.3	60	19	< 10
Color	CU	30	50	40	30	60
Fecal Coliform	col/100 ml			< 1	< 1	
Fluoride	mg/L	< 0.2	< 0.1	< 2	< 2	< 0.5
Nitrate-Nitrite (as N)	mg/L	0.1	0.1	0.038	0.018	0.55
Nitrogen, Total Organic (N)	mg/L	0.65	0.55	2	1.7	0.57
Oil and Grease	mg/L	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7
Phosphorus, Total (P)	mg/L	1.7	0.09	0.13	0.09	0.13
Sulfate (as SO4)	mg/L	2500	72	1900	1900	78
Surfactants	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Aluminum, Total	mg/L	250	140	< 10	< 10	
Iron, Total	ug/L	90	490	< 20	< 20	440
Magnesium, Total	mg/L	19	11	840	890	62
Molybdenum, Total	ug/L	2400	130			90
Manganese, Total	ug/L	7	260			94
Antimony, Total	ug/L	59	< 5	< 2	< 2	< 5
Arsenic, Total	ug/L	< 10	< 3	< 2	< 2	< 3
Beryllium, Total	ug/L	17	< 0.1	< 20	< 20	< 0.1
Cadmium, Total	ug/L	< 5	< 0.5	< 0.08	< 0.08	< 0.05
Chromium, Total	ug/L	< 5	< 5	< 10	< 10	< 5
Copper, Total	ug/L	< 10	18	4	2.8	52
Lead, Total	ug/L	< 5	< 3	< 0.17	< 0.17	< 3
Mercury, Total	ug/L	< 0.2	< 0.08	< 0.1	< 0.1	< 0.07
Nickel, total	ug/L	100	200	< 20	< 20	6
Selenium, Total	ug/L	< 10	< 5	< 2	< 2	< 20
Silver, Total	ug/L	< 10	< 2	< 1	< 1	< 2
Thallium, Total	ug/L	< 2	< 1.6	< 1.1	< 1.1	< 1
Zinc, Total	ug/L	39	640	< 12	< 12	< 10
Cyanide, Total	ug/L	< 5	< 1.7	< 1.7	< 1.7	< 5
Phenols, Total	ug/L	< 10	17.7	< 10	< 10	< 10
Acrolein	ug/L	< 50	< 50	< 50	< 50	< 50
Acrylonitrile	ug/L	< 50	< 50	< 50	< 50	< 50
Benzene	ug/L	< 1	< 1	< 1	< 1	< 1
Bis (Chloromethyl) ether	ug/L	< 10	< 10	< 10	< 10	< 10
Bromoform	ug/L	1.7	1.7	< 1	< 1	4.7
Carbon Tetrachloride	ug/L	< 1	< 1	< 1	< 1	< 1
Chlorobenzene	ug/L	< 1	< 1	< 1	< 1	< 1
Chlorodi-bromomethane	ug/L	< 0.11	5.4	< 0.4	< 0.4	30
Chloroethane	ug/L	< 1	< 1	< 1	< 1	< 1
2-Chloro-ethylvinyl Ether	ug/L	< 10	< 10	< 10	< 10	< 10
Chloroform	ug/L	2.4	2.4	< 1	< 1	17
Dichloro-bromomethane	ug/L	< 0.12	4.3	< 0.6	< 0.6	26
Dichloro-difluoromethane	ug/L	< 1	< 1	< 1	< 1	< 1
1,1-Dichloroethane	ug/L	< 1	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/L	< 1	< 1	< 1	< 1	< 1
1,1-Dichlororethylene	ug/L	< 1	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/L	< 1	< 1	< 1	< 1	< 1
1,3-Dichloropropylene	ug/L	< 0.18	< 0.6	< 0.2	< 0.2	< 0.2
Ethylbenzene	ug/L	< 1	< 1	< 1	< 1	< 1
Methyl Bromide	ug/L	< 1	< 1	< 1	< 1	< 1
Methyl Chloride	ug/L	< 1	< 1	< 1	< 1	< 1
Methylene Chloride	ug/L	< 5	< 5	< 5	< 5	< 5
1,1,2,2-Tetra-chloroethance	ug/L	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2

TABLE 3.3.4-2

WATER QUALITY DATA SUBMITTED FOR CAPE CANAVERAL PLANT PURSUANT TO FDEP INDUSTRIAL WASTEWATER FACILITY PERMIT

		EP Basin Effluent	SW Basin Effluent	D011-D012		D-030 Effluent
				Effluent	Intake	
Parameter		Max. Daily	Max. Daily	Max. Daily	Long-term Avg	Max. Daily
Tetrachloroethylene	ug/L	< 1	< 1	< 1	< 1	< 1
toluene	ug/L	< 1	< 1	< 1	< 1	< 1
1,2 Trans-Dichloroethylene	ug/L	< 1	< 1	< 1	< 1	< 1
1,1,1-Trichlororethane	ug/L	< 1	< 1	< 1	< 1	< 1
1,1,2-Trichlororethane	ug/L	< 1	< 1	< 1	< 1	< 1
Trichloroethylene	ug/L	< 1	< 1	< 1	< 1	< 1
Trichloro-fluormethane	ug/L	< 1	< 1	< 1	< 1	< 1
Vinyl Chloride	ug/L	< 1	< 1	< 1	< 1	< 1
2-Chlorophenol	ug/L	< 10	< 10	< 10	< 10	< 10
2,4-Dichlorophenol	ug/L	< 10	< 10	< 10	< 10	< 10
2,4-Dimethylphenol	ug/L	< 10	< 10	< 10	< 10	< 10
4,6-Dinitro-O-Cresol	ug/L	< 50	< 50	< 50	< 50	< 50
2,4-Dinitrophenol	ug/L	< 50	< 50	< 50	< 50	< 50
2-Nitrophenol	ug/L	< 10	< 10	< 10	< 10	< 10
4-Nitrophenol	ug/L	< 10	< 10	< 10	< 10	< 10
P-Chloro-M-Cresol	ug/L	< 10	< 10	< 10	< 10	< 10
Pentachlorophenol	ug/L	< 8.5	< 8.5	< 7.9	< 7.9	< 7.9
Phenols, Total	ug/L	< 10	< 10	< 10	< 10	< 10
2,4,5-Trichloro-phenol	ug/L	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8
Acenaphthene	ug/L	< 10	< 10	< 10	< 10	< 10
Acenaphtylene	ug/L	< 10	< 10	< 10	< 10	< 10
Antihracene	ug/L	< 10	< 10	< 10	< 10	< 10
Benzidine	ug/L	< 30	< 30	< 30	< 30	< 30
Benzo (a) Anthracene	ug/L	< 10	< 10	< 10	< 10	< 10
Benzo (a) Pyrene	ug/L	< 10	< 10	< 10	< 10	< 10
3,4-Benzo-fluoranthene	ug/L	< 10	< 10	< 10	< 10	< 10
Benzo (ghi) Perylene	ug/L	< 10	< 10	< 10	< 10	< 10
Benzo (k) Fluoranthene	ug/L	< 10	< 10	< 10	< 10	< 10
Bis (2-Chloroethoxy) Methane	ug/L	< 10	< 10	< 10	< 10	< 10
Bis (2-Chloroethyl) ether	ug/L	< 10	< 10	< 10	< 10	< 10
Bis (2-Chloroisopropyl) Ether	ug/L	< 10	< 10	< 10	< 10	< 10
Bis (2-Ethylhexyl) Phthalate	ug/L	< 10	< 10	< 10	< 10	< 10
4-Bromophenyl Phenyl Ether	ug/L	< 10	< 10	< 10	< 10	< 10
Butyl Benzyl Phthlate	ug/L	< 10	< 10	< 10	< 10	< 10
2-Chloronaphthalene	ug/L	< 10	< 10	< 10	< 10	< 10
4-Chlorophenyl Phenyl Ether	ug/L	< 10	< 10	< 10	< 10	< 10
Chrysene	ug/L	< 10	< 10	< 10	< 10	< 10
Dibenzo (a,h) Anthracene	ug/L	< 10	< 10	< 10	< 10	< 10
1,2-Dichlorobenzene	ug/L	< 10	< 10	< 10	< 10	< 10
1,3-Dichlorobenzene	ug/L	< 10	< 10	< 10	< 10	< 10
1,4-Dichlorobenzene	ug/L	< 10	< 10	< 10	< 10	< 10
3,3-Dichlorobenzene	ug/L	< 20	< 20	< 20	< 20	< 20
Diethyl Phthalate	ug/L	< 10	< 10	< 10	< 10	< 10
Dimethyl Phthalate	ug/L	< 10	< 10	< 10	< 10	< 10
Di-N-Butyl Phthalate	ug/L	< 10	< 10	< 10	< 10	< 10
2,4-Dinitrotoluene	ug/L	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
2,6-Dinitrotoluene	ug/L	< 10	< 10	< 10	< 10	< 10
Di-N-Octyl Phthalate	ug/L	< 10	< 10	< 10	< 10	< 10
1,2-Diphenythydrazine (as Azobenzene)	ug/L	< 10	< 10	< 10	< 10	< 10
Fluoranthene	ug/L	< 10	< 10	< 10	< 10	< 10
Fluorene	ug/L	< 10	< 10	< 10	< 10	< 10
Hexachlorobenzene	ug/L	< 10	< 10	< 10	< 10	< 10
Hexachlorobutadiene	ug/L	< 10	< 10	< 10	< 10	< 10
Hexachlorocyclopentadiene	ug/L	< 10	< 10	< 10	< 10	< 10
Hexachloroethane	ug/L	< 10	< 10	< 10	< 10	< 10
Indeno (1,2,3-cd) Pyrene	ug/L	< 10	< 10	< 10	< 10	< 10
Isophorone	ug/L	< 10	< 10	< 10	< 10	< 10
Naphthalene	ug/L	< 10	< 10	< 10	< 10	< 10
Nitrobenzene	ug/L	< 10	< 10	< 10	< 10	< 10
N-Nitrosodimethylamine	ug/L	< 10	< 10	< 10	< 10	< 10
N-Nitrosodi-N-Propylamine	ug/L	< 10	< 10	< 10	< 10	< 10
N-Nitro-sodiphenylamine	ug/L	< 10	< 10	< 10	< 10	< 10
Phenanthrene	ug/L	< 10	< 10	< 10	< 10	< 10
Pyrene	ug/L	< 10	< 10	< 10	< 10	< 10
1,2,4-Trichlorobenzene	ug/L	< 10	< 10	< 10	< 10	< 10

Source: FPL, 2008.

TABLE 3.3.6-1
THREATENED, ENDANGERED, AND SPECIES OF SPECIAL CONCERN KNOWN TO OCCUR IN BREVARD COUNTY, FLORIDA

Scientific Name	Common Name	Federal Status	State Status
Plants			
Argusia gnaphalodes	Sea Lavender	N	E
Calamovilfa curtissii	Curtiss' Sandgrass	N	T
Centrosema arenicola	Sand Butterfly Pea	N	E
Chamaesyce cumulicola	Sand-dune Spurge	N	E
Conradina grandiflora	Large-flowered Rosemary	N	T
Dennstaedtia bipinnata	Hay Scented Fern	N	E
Dicerandra thinicola	Titusville Balm	N	E
Glandularia maritima	Coastal Vervain	N	E
Glandularia tampensis	Tampa Vervain	N	E
Halophila johnsonii	Johnson's Seagrass	T	N
Harrisia simpsonii	Simpson's Prickly Apple	N	E
Lantana depressa var. floridana	Atlantic Coast Florida Lantana	N	E
Lechea cernua	Nodding Pinweed	N	T
Lechea divaricata	Pine Pinweed	N	E
Nemastylis floridana	Celestial Lily	N	E
Nolina atopocarpa	Florida Beargrass	N	T
Ophioglossum palmatum	Hand Fern	N	E
Peperomia humilis	Terrestrial Peperomia	N	E
Pteroglossaspis ecristata	Giant Orchid	N	T
Tephrosia angustissima var. curtissii	Coastal Hoary-pea	N	E
Warea carteri	Carter's Warea	E	E
Zephyranthes simpsonii	Rain Lily	N	T
Fish			
Acipenser oxyrinchus oxyrinchus	Atlantic Sturgeon	C	SSC
Rivulus marmoratus	Mangrove Rivulus	C	SSC
Amphibians			
Rana capito	Gopher Frog	N	SSC
Reptiles			
Alligator mississippiensis	American Alligator	T (SA)	SSC
Caretta caretta	Loggerhead	T	T
Chelonia mydas	Green Turtle	E	E
Dermochelys coriacea	Leatherback	E	E
Drymarchon couperi	Eastern Indigo Snake	T	T
Gopherus polyphemus	Gopher Tortoise	N	T
Lepidochelys kempii	Kemp's Ridley	E	E
Pituophis melanoleucus mugitus	Florida Pine Snake	N	SSC

TABLE 3.3.6-1
THREATENED, ENDANGERED, AND SPECIES OF SPECIAL CONCERN KNOWN TO OCCUR IN BREVARD COUNTY, FLORIDA

Scientific Name	Common Name	Federal Status	State Status
Birds			
Aphelocoma coerulescens	Florida Scrubjay	T	T
Aramus guarauna	Limpkin	N	SSC
Athene cunicularia floridana	Florida Burrowing Owl	N	SSC
Caracara cheriway	Crested Caracara	T	T
Charadrius melodus	Piping Plover	T	T
Egretta caerulea	Little Blue Heron	N	SSC
Egretta rufescens	Reddish Egret	N	SSC
Egretta thula	Snowy Egret	N	SSC
Egretta tricolor	Tricolored Heron	N	SSC
Eudocimus albus	White Ibis	N	SSC
Falco peregrinus	Peregrine Falcon	N	E
Falco sparverius paulus	Southeastern American Kestrel	N	T
Grus canadensis pratensis	Florida Sandhill Crane	N	T
Haematopus palliatus	American Oystercatcher	N	SSC
Haliaeetus leucocephalus	Bald Eagle	N	T
Mycteria americana	Wood Stork	E	E
Pelecanus occidentalis	Brown Pelican	N	SSC
Picoides borealis	Red-cockaded Woodpecker	E	SSC
Platalea ajaja	Roseate Spoonbill	N	SSC
Rynchops niger	Black Skimmer	N	SSC
Sterna antillarum	Least Tern	N	T
Mammals			
Eubalaena glacialis	Black Right Whale	E	E
Peromyscus polionotus niveiventris	Southeastern Beach Mouse	T	T
Podomys floridanus	Florida Mouse	N	SSC
Sciurus niger shermani	Sherman's Fox Squirrel	N	SSC
Trichechus manatus	Manatee	E	E
Ursus americanus floridanus	Florida Black Bear	N	T

Notes:
N = Not currently listed, nor currently being considered for listing
C = Candidate species for which federal listing agencies have sufficient information on biological vulnerability and threats to support proposing to list as Endangered or Threatened
SSC = Species of Special Concern
T = Threatened
T (SA) = Threatened due to similarity of appearance to the American crocodile (*Crocodylus acutus*)
E = Endangered

Source: Florida Natural Areas Inventory, 2008.

TABLE 3.3.7-1
MONTHLY AND ANNUAL AVERAGE TEMPERATURES
MEASURED AT DAYTONA BEACH INTERNATIONAL AIRPORT

	Daily Temperatures (°F)[a]			Extremes (°F)[b]	
Month	**Average**	**Maximum**	**Minimum**	**Maximum**	**Minimum**
January	58.4	69.7	47.1	87	15
February	60.0	71.1	48.8	89	24
March	64.7	75.6	53.7	92	26
April	68.9	79.8	58.0	96	35
May	74.8	85.0	64.5	100	44
June	79.7	88.8	70.6	102	52
July	81.7	91.0	72.4	102	60
August	81.5	90.1	72.8	100	65
September	79.9	87.9	71.9	99	52
October	74.0	82.6	65.3	95	41
November	67.0	76.9	57.0	89	27
December	60.8	71.4	50.1	88	19
Annual	71.0	80.8	61.0	102	15

[a] 30-year period of record, climatological normal, 1971 to 2000.

[b] 64-year period of record, 1944 to 2007.

Source: National Oceanic and Atmospheric Administration (NOAA), 2007.

TABLE 3.3.7-2

MONTHLY AND ANNUAL AVERAGE PRECIPITATION AND RELATIVE HUMIDITY MEASURED AT DAYTONA BEACH INTERNATIONAL AIRPORT

Month	Precipitation (inches)			Humidity (%) hour (LT)[a]			
	Average[a]	Maximum[b]	Minimum[b]	1 a.m.	7 a.m.	1 p.m.	7 p.m.
January	3.13	7.16	0.15	85	87	59	77
February	2.74	9.13	0.29	84	86	56	72
March	3.84	12.15	0.08	84	87	55	69
April	2.54	7.12	<0.01	83	85	53	67
May	3.26	12.33	0.08	85	85	57	70
June	5.69	15.19	0.83	88	87	63	75
July	5.17	14.58	0.16	89	90	63	76
August	6.09	19.89	2.01	90	92	66	80
September	6.61	16.46	0.42	88	90	67	80
October	4.48	13.51	0.19	84	87	62	77
November	3.03	12.91	<0.01	86	88	61	80
December	2.71	11.98	0.06	85	87	61	80
Year	49.29	73.99[c]	31.36[c]	86	88	60	75

Note: LT = local time.

[a] 30-year period of record, climatological normal, 1971 to 2000.

[b] 64-year period of record, 1944 to 2007.

[c] 30-year period of record, 1978 to 2007.

Source: NOAA, 2007.

TABLE 3.3.7-3

SEASONAL AND ANNUAL AVERAGE WIND DIRECTION AND WIND SPEED MEASURED AT DAYTONA BEACH INTERNATIONAL AIRPORT[a]

Season	Average Wind Speed (mph)	Calm (%)	Prevailing Wind Direction
Winter	7.1	17.1	Northwest
Spring	6.9	19.4	East
Summer	5.8	27.1	South
Fall	6.9	23.4	East
Annual	6.7	21.8	East

[a] 5-year period of record, 2001 to 2005. The data for this period were also used in the air quality impact analyses for the Project.

Source: NOAA, 2001-2005.

TABLE 3.3.7-4

SEASONAL AND ANNUAL AVERAGE ATMOSPHERIC STABILITY CLASSES DETERMINED AT DAYTONA BEACH INTERNATIONAL AIRPORT[a]

Season	Occurrence (%) of Stability Class					
	Very Unstable	Moderately Unstable	Slightly Unstable	Neutral	Slightly Stable	Moderately Stable
Winter	0.1	7.2	12.3	32.5	14.6	32.4
Spring	5.4	11.9	14.7	25.0	13.9	28.9
Summer	10.8	17.1	13.8	12.3	10.5	35.4
Fall	3.4	9.9	12.1	28.9	12.5	32.6
Annual	5.2	11.6	13.4	24.6	12.9	32.3

[a] 5-year period of record, 2001-2005. The data for this period were also used in the air quality impact analyses for the Project.

Source: NOAA, 2001-2005.

TABLE 3.3.7-5

SEASONAL AND ANNUAL AVERAGE MORNING AND AFTERNOON MIXING HEIGHTS DETERMINED AT DAYTONA BEACH INTERNATIONAL AIRPORT[a]

	Mixing Height (m)	
Season	**Morning**	**Afternoon**
Winter	373	1,039
Spring	539	1,526
Summer	457	1,532
Fall	468	1,303
Annual	459	1,352

[a] 5-year period of record, 2001 to 2005. Mixing heights based on surface temperatures and upper-air data from the NWS stations at Daytona Beach International Airport and Miami, respectively.

Source: NOAA, 2001-2005.

TABLE 3.3.7-6
NATIONAL AND STATE AAQS, ALLOWABLE PSD INCREMENTS, AND SIGNIFICANT IMPACT LEVELS

		National AAQS (µg/m^3) [a]			Significant Impact			
		Primary	Secondary	Florida AAQS [a]	PSD Increments (µg/m^3) [a]		Levels (µg/m^3) [b]	
Pollutant	Averaging Time	Standard	Standard	(µg/m^3)	Class I	Class II	Class I	Class II
Particulate Matter [c] (PM_{10})	Annual Arithmetic Mean	NA	NA	50	4	17	0.2	1
	24-Hour Maximum	150	150	150	4	30	0.3	5
Particulate Matter [c] ($PM_{2.5}$)	Annual Arithmetic Mean	15	15	NA	NA	NA	NA	NA
	24-Hour Maximum	35	35	NA	NA	NA	NA	NA
Sulfur Dioxide	Annual Arithmetic Mean	80	NA	60	2	20	0.1	1
	24-Hour Maximum	365	NA	260	5	91	0.2	5
	3-Hour Maximum	NA	1,300	1,300	25	512	1.0	25
Carbon Monoxide	8-Hour Maximum	10,000	10,000	10,000	NA	NA	NA	500
	1-Hour Maximum	40,000	40,000	40,000	NA	NA	NA	2,000
Nitrogen Dioxide	Annual Arithmetic Mean	100	100	100	2.5	25	0.1	1
Ozone [d]	1-Hour Maximum [d]	NA	NA	235	NA	NA	NA	NA
	8-Hour Maximum [e]	147	147	NA	NA	NA	NA	NA
Lead	Calendar Quarter Arithmetic Mean	1.5	1.5	1.5	NA	NA	NA	NA

Note: Particulate matter (PM_{10}) = particulate matter with aerodynamic diameter less than or equal to 10 micrometers.
Particulate matter ($PM_{2.5}$) = particulate matter with aerodynamic diameter less than or equal to 2.5 micrometers.
NA = Not applicable, i.e., no standard exists or not promulgated yet.

[a] Short-term maximum concentrations are not to be exceeded more than once per year, except for PM_{10}, $PM_{2.5}$, and O_3 AAQS which are based on a number of expected exceedances.

[b] Maximum concentrations are not to be exceeded.

[c.] $PM_{2.5}$: 24-hour standard based on the 3-year averages of the 98th percentile values; annual standard based on 3-year average at community monitors. These standards must be implemented in the 2007-2008 timeframe. On October 17, 2006, EPA finalized the PM AAQS (71 FR 61236). The 24-hour $PM_{2.5}$ standard was changed to 35 µg/m^3. Annual PM_{10} standard was revoked by EPA. The FDEP has not yet adopted the revised PM_{10} or $PM_{2.5}$ standards.

[d] 1-hour standard of 0.12 ppm was revoked by EPA on June 15, 2005; FDEP has not yet adopted this change.

[e.] 8-hour standard was lowered by EPA from 0.08 to 0.075 ppm on March 27, 2008, achieved when the 3-year average of 99th percentile values is 0.075 ppm or less. FDEP had not yet adopted the revised standard.

Sources: Federal Register, Vol. 43, No. 118, June 19, 1978; 40 CFR 50; 40 CFR 52.21; Florida Chapter 62.204, F.A.C.
Golder, 2006.

TABLE 3.3.7-7
SUMMARY OF MAXIMUM MEASURED SO_2, NO_2, PM_{10}, $PM_{2.5}$, O_3, AND CO CONCENTRATIONS
REPRESENTATIVE OF CCEC PROJECT, 2005 THROUGH 2008

Pollutant/ AIRS Site No.	Location	County	Measurement Period Year	Months	Measured Concentration 1-Hour Highest	1-Hour 2nd Highest	3-Hour Highest	3-Hour 2nd Highest	8-Hour Highest	8-Hour 2nd Highest	8-Hour 3-year Average 4th Highest	24-Hour Highest	24-Hour 2nd Highest	Annual Average
Sulfur dioxide	**Florida AAQS**				**NA**	**NA**	**NA**	**0.5 ppm**	**NA**	**NA**	**NA**	**NA**	**0.1 ppm**	**0.02 ppm**
12-009-0011	Cocoa/ 6315 Depot Ave.	Brevard	2008	Jan-Mar	NA	NA	0.006	0.005	NA	NA	NA	0.002	0.002	0.0011
			2007	Jan-Dec	NA	NA	0.029	0.024	NA	NA	NA	0.006	0.005	0.0012
			2006	Jan-Dec	NA	NA	0.007	0.003	NA	NA	NA	0.002	0.002	0.0011
Nitrogen dioxide	**Florida AAQS**				**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**0.053 ppm**
12-095-2002	Winter Park/ Morris Blvd.	Orange	2008	Jan-Mar	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0078
			2007	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0069
			2006	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0085
			2005	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0086
PM_{10} [a]	**Florida AAQS**				**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**150 µg/m³**	**50 µg/m³**
12-009-0011	Cocoa/ 6315 Depot Ave.	Brevard	2008	Jan-Mar	NA	NA	NA	NA	NA	NA	NA	32	24	14.6
			2007	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	74	34	15.6
			2006	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	27	26	14.1
12-009-0004	Titusville/ Tico Airport		2005	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	60	48	15.5
$PM_{2.5}$ [a]	**Florida AAQS**				**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**(35 µg/m³)**	**(15 µg/m³)**
12-009-0007	Melbourne/ 401 Florida Ave.	Brevard	2008	Jan-Mar	NA	NA	NA	NA	NA	NA	NA	16.0	15.3	7.36
			2007	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	23.5	21.9	7.29
			2006	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	36.0	34.7	8.99
			2005	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	31.5	30.3	11.4
Ozone [b]	**Florida AAQS**				**NA**	**0.12 ppm**	**NA**	**NA**	**NA**	**NA**	**0.08 ppm**	**NA**	**NA**	**NA**
12-009-0007	Melbourne/ 401 Florida Ave.	Brevard	2008	Jan-Jun	0.084	0.074	NA	NA	NA	NA	0.069	NA	NA	NA
			2007	Jan-Dec	0.079	0.077	NA	NA	NA	NA	0.069	NA	NA	NA
			2006	Jan-Dec	0.094	0.083	NA	NA	NA	NA	0.069	NA	NA	NA
			2005	Jan-Dec	0.081	0.077	NA	NA	NA	NA	0.068	NA	NA	NA
12-009-4001	Cocoa Beach/ 400 South 4th Street Freedom 7 Elementary School	Brevard	2008	Jan-Jun	0.105	0.070	NA	NA	NA	NA	0.071	NA	NA	NA
			2007	Jan-Dec	0.085	0.080	NA	NA	NA	NA	0.072	NA	NA	NA
			2006	Jan-Dec	0.091	0.089	NA	NA	NA	NA	0.072	NA	NA	NA
			2005	Jan-Dec	0.082	0.081	NA	NA	NA	NA	0.070	NA	NA	NA
Carbon monoxide	**Florida AAQS**				**NA**	**35 ppm**	**NA**	**NA**	**NA**	**9 ppm**	**NA**	**NA**	**NA**	**NA**
12-095-2002	Winter Park/ Morris Blvd.	Orange	2008	Jan-Mar	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
			2007	Jan-Dec	1.6	1.5	NA	NA	1.0	1.0	NA	NA	NA	NA
			2006	Jan-Dec	2.5	2.3	NA	NA	1.7	1.5	NA	NA	NA	NA
			2005	Jan-Dec	2.2	2.1	NA	NA	2.0	1.8	NA	NA	NA	NA
12-095-1005	Orlando/ No. 1 Orange Ave.	Orange	2008	Jan-Mar	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
			2007	Jan-Dec	4.2	4.1	NA	NA	2.3	1.7	NA	NA	NA	NA
			2006	Jan-Dec	3.0	2.3	NA	NA	1.6	1.5	NA	NA	NA	NA
			2005	Jan-Dec	8.6	7.8	NA	NA	5.2	2.6	NA	NA	NA	NA

Note: NA = not applicable.
AAQS = ambient air quality standard.

[a] On October 17, 2006, EPA promulgated revised PM_{10} and $PM_{2.5}$ AAQS; the $PM_{2.5}$ AAQS had been promulgated on July 18, 1997. For PM_{10}, the annual standard was revoked and the 24-hour standard was retained. The 24-hour $PM_{2.5}$ standard was revised to 35 µg/m³ based on the 3-year averages of the 98th percentile values. The annual $PM_{2.5}$ standard of 15 µg/m³, 3-year averages at community monitors, was retained. As of August 2008, Florida DEP has not yet adopted the revised standards.

[b] On July 18, 1997, EPA promulgated revised AAQS for ozone. The O_3 standard was modified to be 0.08 ppm for the 8-hour average; achieved when the 3-year average of 99th percentile values is 0.08 ppm or less. On March 27, 2008, EPA revised the 8-hour average ozone AAQS to 0.075 ppm, effective May 27, 2008. The format of the standard remained the same as the previous promulgation. As of August 2008, Florida DEP has not yet adopted the revised standards.

TABLE 3.3.8-1
MEASURED BASELINE AMBIENT SOUND PRESSURE LEVELS AT FPL CAPE CANAVERAL PLANT, PLANT OFF LINE, MARCH 2008

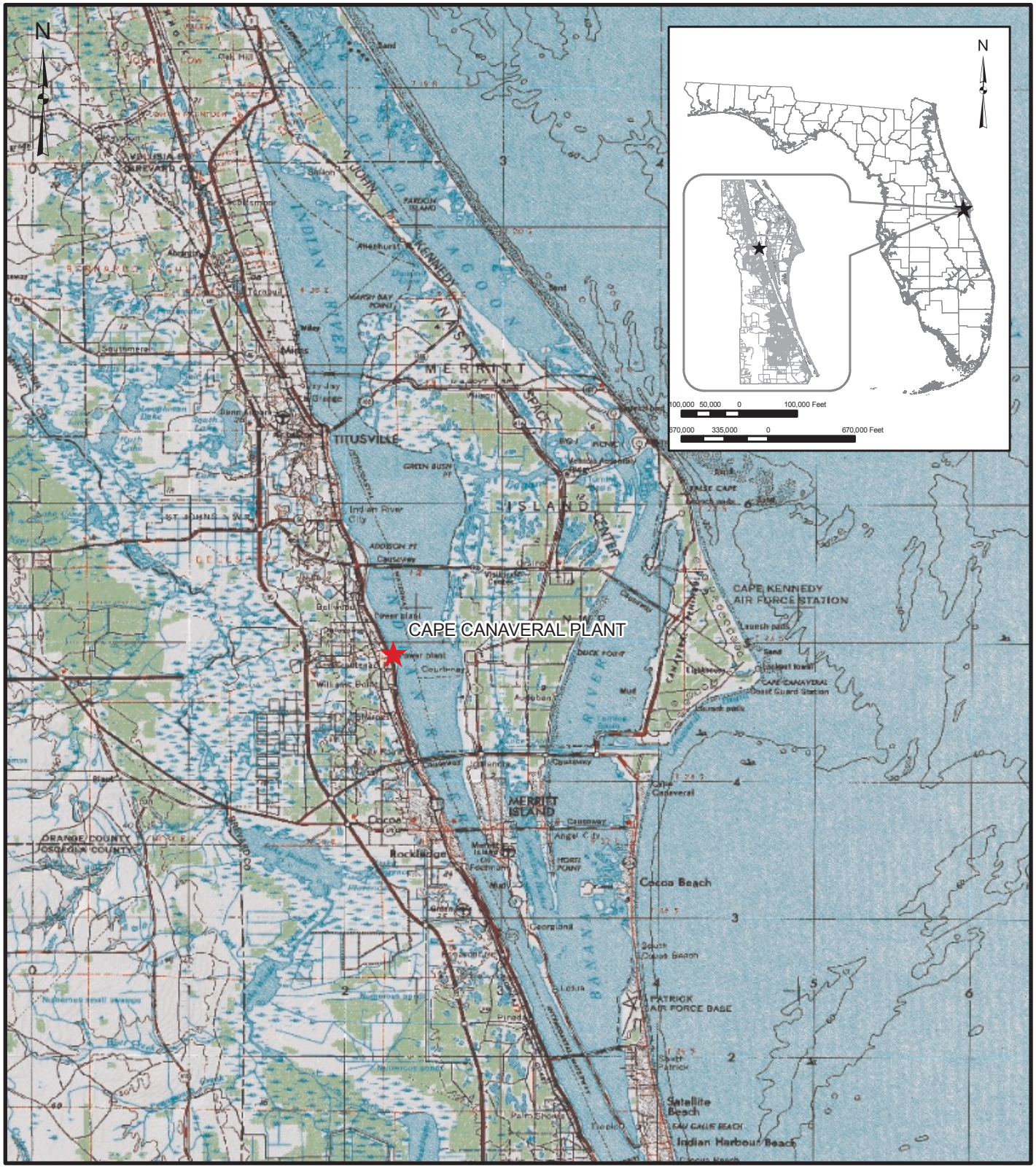
Site	Coordinates	Date	Time	Sound Levels (dBA)				Observations
				Min	Max	L_{90}	Leq	
1: Onsite North of Power Block	28° 28' 16.2" N	26-Mar-08	Daytime	48	72	50	56	Maintenance on Unit 1, circ pumps, traffic on U.S. Highway 1.
near used oil storage area	080° 45' 52.3"W	26-Mar-08	Nighttime	51	65	51	53	Traffic on U.S. Highway 1, insects.
2: Onsite at main gate to the	28° 28' 12.6" N	26-Mar-08	Daytime	52	75	56	60	Maintenance on Unit 1, traffic on U.S. Highway 1.
Tank Yard	080° 45' 56.8"W	26-Mar-08	Nighttime	56	70	58	60	Traffic on U.S. Highway 1, insects, gas yard hiss.
3: Onsite South of the Power	28° 28' 03.5" N	26-Mar-08	Daytime	54	66	56	59	Maintenance on Unit 1, traffic on U.S. Highway 1.
Block in grass parking lot	080° 45' 47.2"W	26-Mar-08	Nighttime	55	67	55	56	Plant maintenance, insects.
4: Gate to Switch Yard off of	28° 28' 06.3" N	26-Mar-08	Daytime	57	78	62	71	Constant traffic on U.S. Highway 1, maintenance on Unit 1, switch yard.
Route 1	080° 45' 57.3"W	26-Mar-08	Nighttime	55	78	58	65	Traffic on U.S. Highway 1 1, plant maintenance, switch yard.
5: Frontenac Baptist Church	28° 27' 44.3" N	26-Mar-08	Daytime	48	73	55	62	Constant traffic on U.S. Highway 1, air plane noise.
parking lot	080° 45' 47.4"W	26-Mar-08	Nighttime	46	64	50	58	Traffic on U.S. Highway 1, insect noise.
6: Corner of Clearview Rd	28° 28' 12.2" N	26-Mar-08	Daytime	50	80	53	60	Constant traffic on U.S. Highway 1, Maintenance on Unit 1, local traffic.
and Codner Lane	080° 46' 02.4"W	26-Mar-08	Nighttime	48	67	49	56	Traffic on U.S. Highway 1, plant maintenance, local traffic, switch yard.
7: Port St. John Boat Ramp	28° 28' 29.8" N	26-Mar-08	Daytime	50	66	54	57	Light boating traffic, maintenance on Unit 1, traffic on U.S. Highway 1.
	080° 46' 00.8"W	26-Mar-08	Nighttime	43	66	45	53	Traffic on U.S. Highway 1, insect noise.

Source: Golder, 2008.

TABLE 3.3.8-2
MEASURED BASELINE AMBIENT SOUND PRESSURE LEVELS AT FPL CAPE CANAVERAL PLANT, PLANT ON LINE, MAY 2008

Site	Coordinates	Date	Time	Sound Levels (dBA)				Observations
				Min	Max	L_{90}	Leq	
1: Onsite North of Power Block	28° 28' 16.2" N	16-May-08	Daytime	56	64	57	59	Plant operations, wind in the trees, air plane.
near used oil storage area	080° 45' 52.3"W	16-May-08	Nighttime	54	62	56	57	Plant operations, insect noise, air plane.
2: Onsite at main gate to the	28° 28' 12.6" N	16-May-08	Daytime	69	81	70	71	Gas yard noise, plant operations, traffic on U.S. Highway 1.
Tank Yard	080° 45' 56.8"W	16-May-08	Nighttime	67	69	67	68	Gas yard noise, plant operations, traffic on U.S. Highway 1.
3: Onsite South of the Power	28° 28' 03.5" N	16-May-08	Daytime	65	70	66	67	Plant operations.
Block in grass parking lot	080° 45' 47.2"W	16-May-08	Nighttime	68	70	69	69	Plant operations and insects.
4: Gate to Switch Yard off of	28° 28' 06.3" N	16-May-08	Daytime	62	83	65	71	Constant traffic on U.S. Highway 1, plant operations, switch yard.
Route 1	080° 45' 57.3"W	16-May-08	Nighttime	60	77	61	68	Constant traffic on U.S. Highway 1, plant operations, switch yard.
5: Frontenac Baptist Church	28° 27' 44.3" N	16-May-08	Daytime	49	76	59	64	Constant traffic on U.S. Highway 1, air plane noise.
parking lot	080° 45' 47.4"W	16-May-08	Nighttime	49	73	53	60	Traffic on U.S. Highway 1, insect noise.
6: Corner of Clearview Rd	28° 28' 12.2" N	16-May-08	Daytime	51	76	52	58	Constant traffic on U.S. Highway 1, plant operations, local traffic.
and Codner Lane	080° 46' 02.4"W	16-May-08	Nighttime	50	67	51	54	Traffic on U.S. Highway 1, plant operations, local traffic, switch yard.
7: Port St. John Boat Ramp	28° 28' 29.8" N 080° 46' 00.8"W	16-May-08	Daytime	50	70	55	59	Traffic on U.S. Highway 1, insect noise.
8: At used car dealer west of the	28° 28' 04.4" N	16-May-08	Nighttime	59	78	61	67	Plant operations, traffic on U.S. Highway 1, switchyard buzz, insect noise.
main gate	080° 45' 56.8"W							

Source: Golder, 2008.



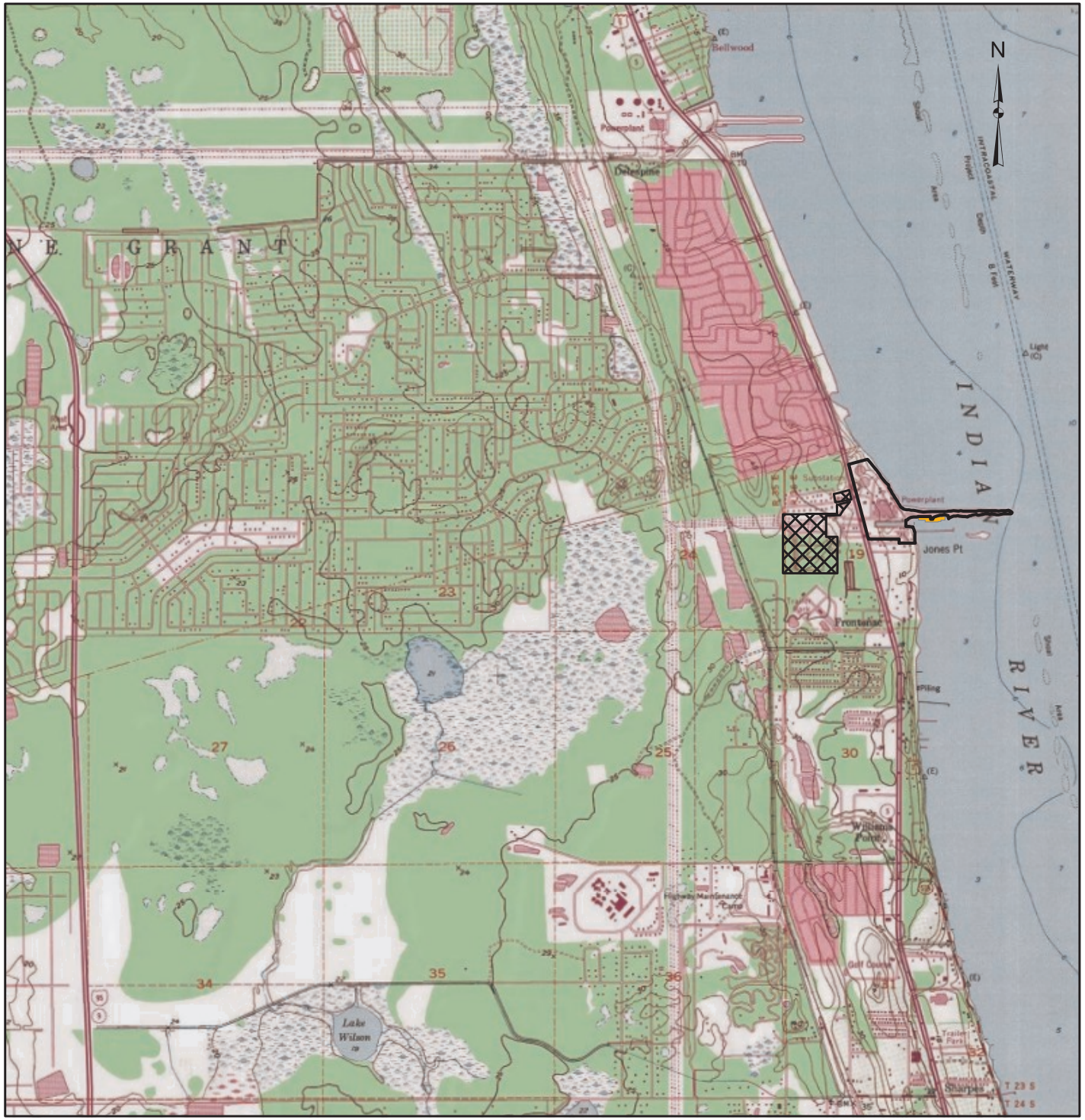
REFERENCE

1. Imagery, USA Imagery.lyr, ESRI, 2006

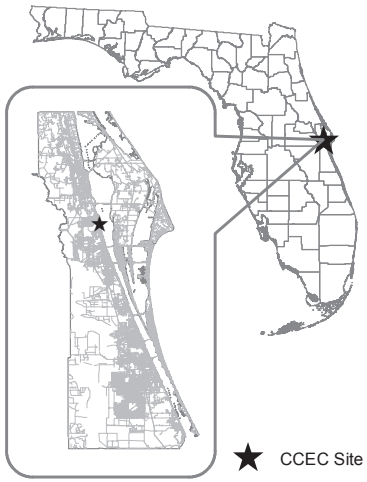
35,000 0 35,000 Feet

FPL	SCALE AS SHOWN	TITLE	
	DESIGN RCM	**LOCATION OF THE FPL CAPE CANAVERAL PLANT IN BREVARD COUNTY, FLORIDA**	
PROJECT No. 083-87633	GIS NRL		
FILE No. 08387633CA038 REV. 0	CHECK RCM	PROJECT FPL CAPE CANAVERAL ENERGY CENTER	**FIGURE 3.1.0-1**
	REVIEW KFK		

Map Document: P:\GIS\PROJECTS\2008\083-87633_FPL_CCEC_RBEC_Conversion\Canaveral\CA_SCA\ActiveMapDocuments\08387633CA038_Location.mxd / Modified 12/9/2008 11:03:25 AM / Plotted 12/9/2008 11:03:26 AM by rlamar



AREA MAP



LEGEND

- FPL Cape Canaveral Energy Center (To Be Certified)
- Sovereign Submerged Lands Lease (To Be Certified)
- Offsite Construction Laydown & Parking Area

REFERENCE

1. Topographic Map, Quad Name SHARPES, Quad Number, 3607, USGS, 1994.
2. Cape Canaveral Energy CenterSite Survey, Avirom & Associates Inc., 2008.
3. Offsite Construction Laydown & Parking Area, FPL, 2008.
4. Sovereign Submerged Lands Lease, FPL CAD Drawing No. CC042096, 1998.

0 1,000 2,000 4,000 Feet

PROJECT

FPL
CAPE CANAVERAL ENERGY CENTER PROJECT

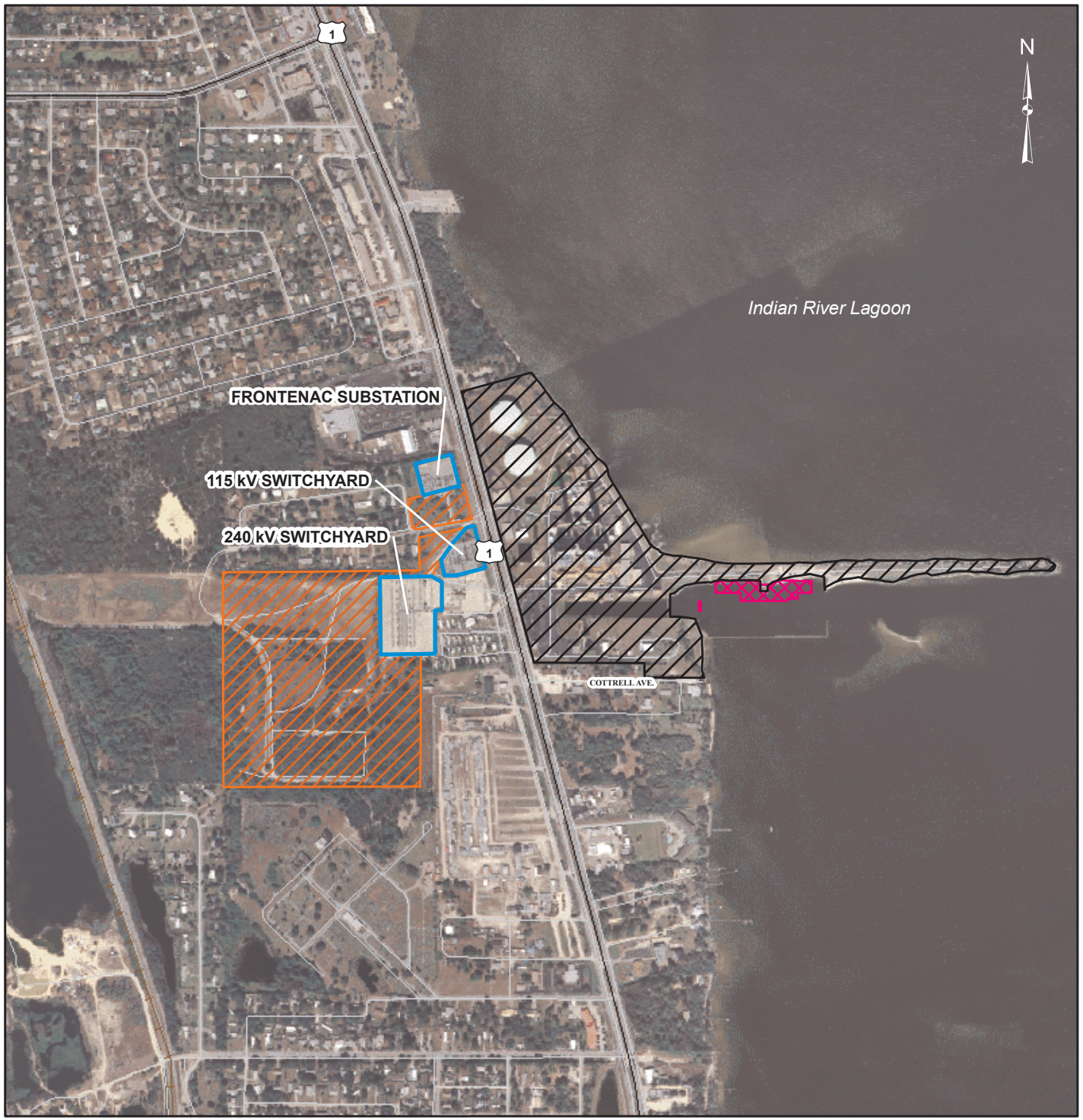
TITLE

PROJECT SITE LOCATION

PROJECT No. 083-87633			SCALE AS SHOWN	REV. 3
DESIGN	RCM	12/12/08	FILE No. 08387633CA003	
GIS	NRL	12/12/08		
CHECK	RCM	12/12/08	**FIGURE 3.1.0-2**	
REVIEW	KFK	12/12/08		

FPL

Map Document: P:\GIS\PROJECTS\2008\083-87633_FPL_CCEC_RBEC_Conversion\Canaveral\CA_SCA\ActiveMapDocuments\08387633CA003_Rev3_USGSTopo.mxd / Modified 12/12/2008 5:19:29 PM / Plotted 12/12/2008 5:19:29 PM by rlamar



LEGEND

- FPL Cape Canaveral Energy Center (To Be Certified)
- Sovereign Submerged Lands Lease (To Be Certified)
- Offsite Construction Laydown & Parking Area
- FRONTENAC SUBSTATION
- 240 kV SWITCHYARD
- 115 kV SWITCHYARD

REFERENCE

1. Cape Canaveral Energy Center Site Survey, Avirom & Associates, 2008.
2. Imagery, National Image Mosaics, USGS, 2006.
3. Offsite Construction Laydown & Parking Area, FPL, 2008.
4. Sovereign Submerged Lands Lease, FPL CAD Drawing No. CC042096, 1998

0 370 740 1,480 Feet

PROJECT

FPL
CAPE CANAVERAL ENERGY CENTER PROJECT

TITLE

CERTIFICATION BOUNDARY

PROJECT No. 083-87633			FILE No. 08387633CA022	REV. 2
DESIGN	RCM	12/12/08	SCALE AS SHOWN	
GIS	NRL	12/12/08		
CHECK	RCM	12/12/08	FIGURE 3.1.0-3	
REVIEW	KFK	12/12/08		

FPL

Map Document: P:\GIS\PROJECTS\2008\083-87633_FPL_CCEC_RBEC_Conversion\Canaveral\CA_SCA\ActiveMapDocuments\08387633CA022_Rev2_SiteLayout.mxd / Modified 12/15/2008 5:01:58 PM / Plotted 12/15/2008 5:01:58 PM by rlamar

LEGEND

FPL Cape Canaveral Plant Site

REFERENCE

1. Cape Canaveral Plant Site, FPL, 2008
2. Imagery, National Image Mosaics, USGS, 2006.

0 375 750 1,500 Feet

PROJECT

FPL
CAPE CANAVERAL ENERGY CENTER PROJECT

TITLE

EXISTING PLANT SITE

PROJECT No. 083-87633			FILE No. 08387633CA046		REV. 0
DESIGN	RCM	12/12/08	SCALE AS SHOWN		
GIS	NRL	12/12/08	FIGURE 3.1.1-1		
CHECK	RCM	12/12/08			
REVIEW	KFK	12/12/08			

FPL

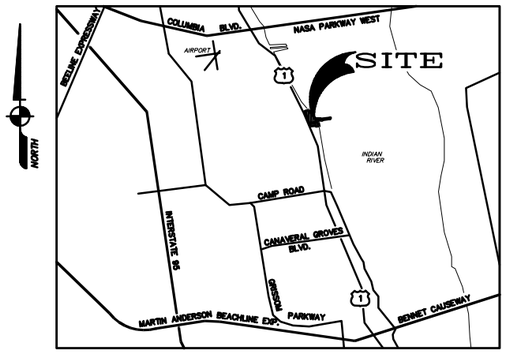
Map Document: P:\GIS\PROJECTS\2008\083-87633_FPL_CCEC_RBEC_Conversion\Canaveral\CA_SCA\ActiveMapDocuments\08387633CA039_ExistingPlantSite.mxd / Modified 12/12/2008 1:15:08 PM / Plotted 12/12/2008 1:15:08 PM by rlamar

LEGAL DESCRIPTION:

A portion of Section 19, Township 23 South, Range 36 East described as follows:

COMMENCING at the Southwest corner of the RE-SUBDIVISION OF ROSEVEAR TERRACE, Plat Book 8, Page 40b according to the Public Records of Brevard County, Florida; thence S89°47'27"E, 401.31 feet to the westerly right-of-way line of U.S. Highway No. 1 (State Road No. 5); thence S14°53'20"E along said westerly right-of-way line 314.07 feet; thence N75°06'40"E, 143.00 feet to the easterly right-of-way line of U.S. Highway No. 1 (State Road No. 5) and the POINT OF BEGINNING; thence N14°53'20"W along said westerly right-of-way line 1761.01 feet; thence N74°48'10"E, 452.14 feet to the Ordinary High Water Line of the Indian River; (the next 151 courses proceeding along said Ordinary High Water Line); thence S38°29'29"E, 98.21 feet; thence S36°23'58"E, 124.94 feet; thence S45°39'11"E, 95.24 feet; thence S33°19'30"E, 104.09 feet; thence S30°40'51"E, 82.45 feet; thence S41°17'05"E, 70.33 feet; thence S38°55'09"E, 96.12 feet; thence S50°26'25"E, 49.90 feet; thence S46°00'30"E, 26.02 feet; thence S28°55'23"E, 28.56 feet; thence SO5°10'25"E, 41.61 feet; thence S31°03'38"E, 62.87 feet; thence S30°54'30"E, 42.24 feet; thence S31°28'52"E, 53.52 feet; thence S31°31'55"E, 50.42 feet; thence S30°51'10"E, 21.53 feet; thence S32°32'55"E, 24.34 feet; thence S31°41'26"E, 50.95 feet; thence S31°39'49"E, 55.60 feet; thence S31°14'52"E, 13.90 feet; thence S31°32'06"E, 37.93 feet; thence S31°03'03"E, 49.68 feet; thence S30°36'10"E, 44.72 feet; thence N52°23'52"E, 1.20 feet; thence S48°20'57"E, 27.90 feet; thence S35°12'29"W, 1.80 feet; thence S86°11'51"E, 31.20 feet; thence S37°59'01"E, 19.34 feet; thence S87°43'53"E, 28.31 feet; thence S79°43'04"E, 55.27 feet; thence S84°28'52"E, 56.13 feet; thence S81°19'03"E, 49.44 feet; thence S83°53'23"E, 52.45 feet; thence S79°16'44"E, 46.12 feet; thence S78°14'16"E, 60.38 feet; thence S81°04'29"E, 62.40 feet; thence S85°19'43"E, 52.85 feet; thence N89°05'19"E, 163.90 feet; thence N89°13'22"E, 110.21 feet; thence N89°22'24"E, 50.85 feet; thence S89°03'48"E, 50.48 feet; thence N81°01'52"E, 40.04 feet; thence S87°22'00"E, 109.67 feet; thence N82°07'27"E, 58.69 feet; thence N87°29'40"E, 53.08 feet; thence N82°19'19"E, 51.08 feet; thence S87°09'16"E, 111.65 feet; thence N81°31'06"E, 50.32 feet; thence S83°26'17"E, 48.14 feet; thence N88°28'43"E, 35.82 feet; thence S89°36'28"E, 64.95 feet; thence S89°47'43"E, 92.54 feet; thence S88°00'04"E, 58.02 feet; thence N85°21'47"E, 53.49 feet; thence N78°33'49"E, 54.42 feet; thence S86°06'38"E, 46.03 feet; thence N89°04'29"E, 57.86 feet; thence S88°16'08"E, 41.48 feet; thence S85°38'13"E, 59.82 feet; thence S87°13'39"E, 39.85 feet; thence N86°51'41"E, 43.70 feet; thence N86°23'12"E, 70.09 feet; thence S80°21'26"E, 40.42 feet; thence S88°57'04"E, 61.04 feet; thence N86°45'45"E, 57.70 feet; thence N85°45'54"E, 51.10 feet; thence N89°02'51"E, 55.96 feet; thence N85°13'57"E, 54.54 feet; thence S76°00'09"E, 19.78 feet; thence S83°23'43"E, 20.31 feet; thence S39°08'49"E, 22.43 feet; thence S72°39'54"E, 18.72 feet; thence S42°51'23"E, 18.97 feet; thence S27°38'51"W, 25.55 feet; thence S32°25'12"W, 17.91 feet; thence N88°20'29"W, 76.15 feet; thence S84°39'28"W, 38.95 feet; thence N88°32'42"W, 49.33 feet; thence S82°43'06"W, 59.64 feet; thence S77°07'52"W, 54.91 feet; thence S88°53'09"W, 54.40 feet; thence N80°30'49"W, 55.78 feet; thence N83°01'58"W, 51.39 feet; thence S84°54'13"W, 48.47 feet; thence N78°04'10"W, 31.52 feet; thence N87°44'28"W, 18.00 feet; thence S88°51'22"W, 55.71 feet; thence S81°50'12"W, 40.69 feet; thence S80°34'20"W, 54.93 feet; thence S79°55'08"W, 52.41 feet; thence S83°13'24"W, 17.16 feet; thence N58°07'20"W, 24.76 feet; thence N79°22'48"W, 13.72 feet; thence S81°05'52"W, 55.20 feet; thence S72°58'47"W, 44.20 feet; thence S85°04'09"W, 20.76 feet; thence S76°23'17"W, 55.28 feet; thence S66°03'38"W, 38.07 feet; thence N81°25'43"W, 53.18 feet; thence N81°13'33"W, 43.92 feet; thence N84°24'34"W, 94.90 feet; thence N69°24'18"W, 27.86 feet; thence S77°34'39"W, 51.08 feet; thence S84°05'40"W, 53.40 feet; thence S70°40'21"W, 49.69 feet; thence S62°21'00"W, 70.31 feet; thence S01°35'50"E, 13.75 feet; thence S88°24'10"W, 2.50 feet; thence NO1°35'50"W, 79.14 feet; thence N78°06'54"W, 92.60 feet; thence S82°02'31"W, 54.39 feet; thence S80°47'08"W, 44.95 feet; thence S76°23'04"W, 75.97 feet; thence S72°42'52"W, 65.89 feet; thence S51°25'25"W, 40.54 feet; thence S00°39'45"E, 28.92 feet; thence S89°08'12"W, 43.51 feet; thence N00°55'40"W, 60.30 feet; thence N66°03'09"W, 8.86 feet; thence N84°07'49"W, 20.40 feet; thence N87°33'01"W, 27.93 feet; thence S89°59'16"W, 33.38 feet; thence S89°08'33"W, 49.70 feet; thence S88°32'59"W, 47.17 feet; thence N85°51'37"W, 57.56 feet; thence S79°44'00"W, 46.86 feet; thence S68°12'45"W, 20.89 feet; thence N76°43'25"W, 14.47 feet; thence S84°48'07"W, 74.09 feet; thence S81°14'09"W, 62.61 feet; thence S70°47'20"W, 22.81 feet; thence S57°34'21"W, 39.16 feet; thence S41°15'23"W, 20.86 feet; thence S59°09'07"W, 23.54 feet; thence S73°29'09"W, 19.45 feet; thence S03°23'27"E, 4.59 feet; thence S00°43'10"W, 134.80 feet; thence S88°19'22"E, 61.08 feet; thence S84°06'40"E, 88.19 feet; thence S81°49'24"E, 30.74 feet; thence S20°00'42"E, 24.19 feet; thence S20°23'16"E, 40.06 feet; thence S20°13'11"E, 39.25 feet; thence S32°42'43"E, 12.67 feet; thence S00°28'30"W, 48.49 feet; thence S01°10'25"E, 51.08 feet; thence S00°20'25"E, 36.51 feet; thence S00°12'23"W, 15.94 feet; thence S01°09'55"W, 34.46 feet; thence S00°03'03"E, 32.21 feet; thence S16°17'55"E, 44.87 feet; thence N89°47'29"W (departing said Ordinary High Water Line), 374.27 feet; thence N00°12'31"E, 90.00 feet; thence N89°48'30"W, 695.55 feet to the Point of Beginning.

Said lands lying and situate in Brevard County, Florida, containing 1,801,571.06 square feet (41.358 acres) more or less.



LOCATION SKETCH
NOT TO SCALE

SURVEYOR'S REPORT:

1. *Not valid without the signature and original raised seal of a Florida licensed Surveyor and Mapper.*
2. *The Legal Description was prepared by the surveyor. It is possible that there are Deeds, Easements, or other instruments (recorded or unrecorded) which may affect the subject property. No search of the Public Records has been made by the Surveyor.*
3. *The undersigned surveyor has no knowledge as to wether any of the hereon property is filled formerly submerged lands.*
4. *No underground improvements were located.*
5. *Bearings and Coordinates shown hereon are referenced to Grid North, based on the 1990 adjustment of the North American Datum of 1983 (NAD 83/90) of the Florida State Plane Coordinate System (Traverse Mercator Projection), East Zone, with the east right-of-way line of U.S. Highway No. 1, having a bearing of N 14°53'20" W.*
6. *Elevations shown hereon are based on the North American Vertical Datum of 1988.*
7. *Benchmark Description: National Geodetic Survey Bench Mark 872 1574 Tidal #1 (PID AK8957) Elevation = 13.36 feet (NAVD 88)*
8. *Ordinary High Water Line Information was provided by the Florida Bureau of Survey and Mapping. Ordinary High Water Line = 1.10' (N.G.V.D. 29) and converted to -0.24' (N.A.V.D. 88).*
9. *The Safe Upland Line (elevation 1.10 NGVD 29) is at or above the approximate Ordinary High Water Line.*
10. *Elevations were converted from N.G.V.D. 1929 to N.A.V.D. 1988 using Corpscon version 5.11.08 as found on Land Boundary Information System Internet web site (www.labins.org).*
11. *Abbreviation Legend: ℄= Centerline; F.P.L.= Florida Power & Light Company; G.P.S.= Global Positioning System; L.B.= Licensed Business; N.G.V.D.=National Geodetic Vertical Datum; P.S.M.= Professional Surveyor and Mapper; N.A.V.D.= North American Vertical Datum.*
12. *Coordinates shown hereon are based on a Real-Time Kinematic (RTK) G.P.S. survey which is certified to 2 Centimeter local accuracy, relative to the nearest National Geodetic Survey (NGS) Geodetic Station as surveyed in the field on June 27, 2008. Station Observed: "Brevard GPS 1057 (PID – AK7506) Brevard County.*

Equipment
GPS Receiver: Trimble R8 5800 RTK
Software: Trimble Geomatics Office, Version Number 1.63
Method: Wide Area Continuously Operating GPS Station Network.

NOTE:

BOUNDARY SURVEY	SHEETS 1 THROUGH 4
TOPOGRAPHIC SURVEY	SHEETS 1 THROUGH 4
WETLAND DELINEATION	SHEETS 5 AND 6

NOTE:
NOT VALID UNLESS ACCOMPANIED BY SHEETS 1 THRU 6 OF 6

CERTIFICATION:

I HEREBY CERTIFY that the attached Boundary and Topographic Survey of the hereon described property is true and correct to the best of my knowledge and belief as prepared under my direction. I FURTHER CERTIFY that this Boundary and Topographic Survey meets the Minimum Technical Standards set forth in Chapter 61G17-6, Florida Administrative Code, puruaunt to Section 472.027, Florida Statutes.

Date: _____

_____
ALAN M. REYNOLDS, P.S.M.
Florida Registration No. 6346
AVIROM & ASSOCIATES, INC.
L.B. No. 3300

AVIROM & ASSOCIATES, INC.
SURVEYING & MAPPING
50 S.W. 2ND AVENUE, SUITE 102
BOCA RATON, FLORIDA 33432
TEL. (561) 392-2594, FAX (561) 394-7125
www.AVIROM-SURVEY.com

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SCALE	
DATE	06/24/08
BY	A.M.R.
CK'D.	M.D.A.
F.B. S1	PG. 70
JOB NO.	8460

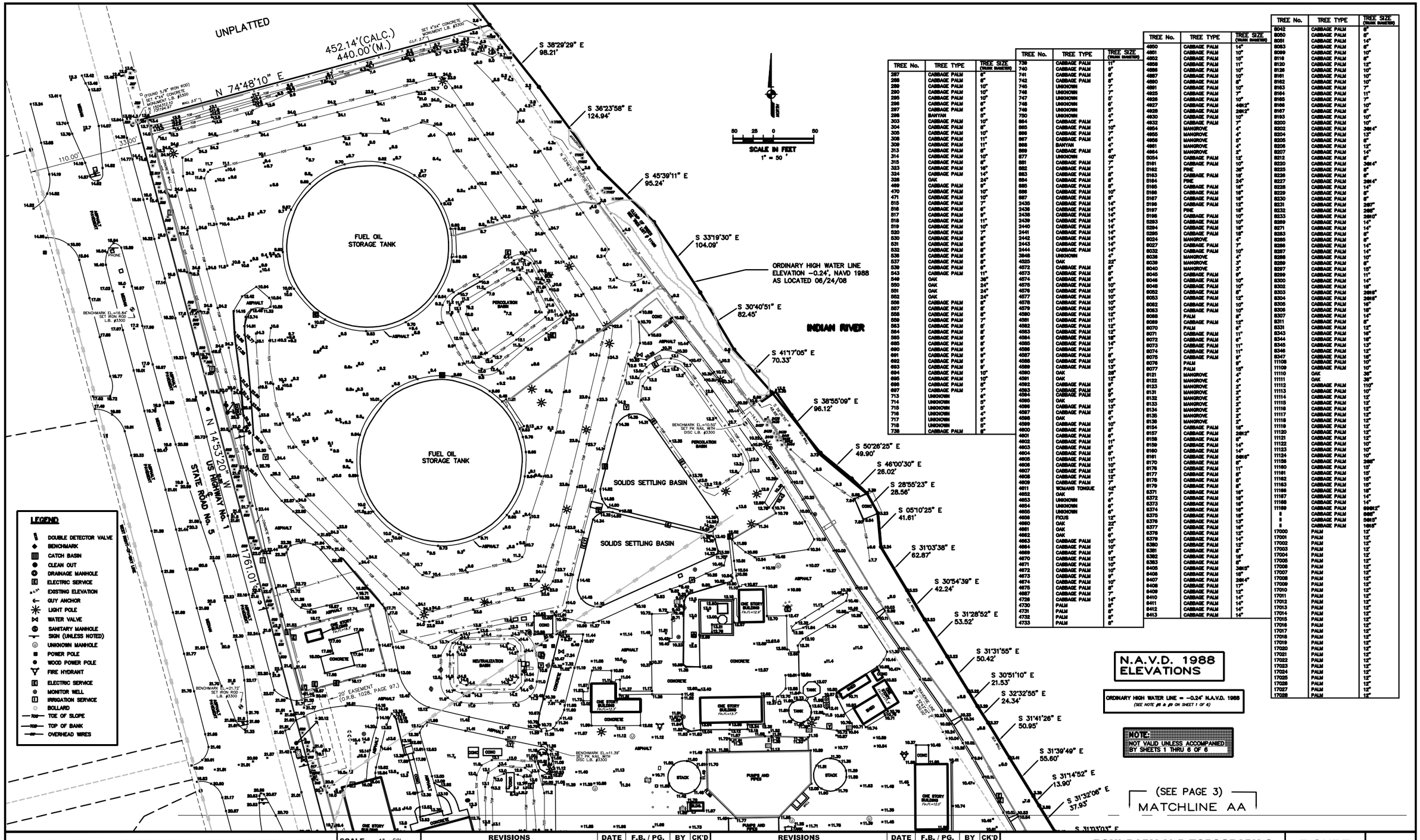
REVISIONS	DATE	F.B. / PG.	BY	CK'D
REVISE DESCRIPTION – ADD PENINSULA	07/29/08	S-3 / 63	AMR	MDA
REVISE BOUNDARY– TO INCLUDE SUBMERGED LANDS	09/10/08	-	A.M.R.	M.D.A.

REVISIONS	DATE	F.B. / PG.	BY	CK'D

BOUNDARY AND TOPOGRAPHIC SURVEY
CAPE CANAVERAL PLANT
SECTION 19, TOWNSHIP 23 S., RANGE 36 E.
BREVARD COUNTY
FLORIDA.

FIGURE 3.1.3-1a
FILE No. 08387633CA042

SHEET 1 OF 6



LEGEND

- DOUBLE DETECTOR VALVE
- BENCHMARK
- CATCH BASIN
- CLEAN OUT
- DRAINAGE MANHOLE
- ELECTRIC SERVICE
- EXISTING ELEVATION
- GUY ANCHOR
- LIGHT POLE
- WATER VALVE
- SANITARY MANHOLE
- SIGN (UNLESS NOTED)
- UNKNOWN MANHOLE
- POWER POLE
- WOOD POWER POLE
- FIRE HYDRANT
- ELECTRIC SERVICE
- MONITOR WELL
- IRRIGATION SERVICE
- BOLLARD
- TOE OF SLOPE
- TOP OF BANK
- OVERHEAD WIRES

TREE No.	TREE TYPE	TREE SIZE (TRUNK DIAMETER)
287	CABBAGE PALM	8"
288	CABBAGE PALM	8"
289	CABBAGE PALM	10"
290	CABBAGE PALM	8"
295	CABBAGE PALM	10"
296	CABBAGE PALM	9"
297	CABBAGE PALM	9"
298	BANYAN	5"
303	CABBAGE PALM	10"
304	CABBAGE PALM	8"
305	CABBAGE PALM	10"
308	CABBAGE PALM	11"
309	CABBAGE PALM	8"
313	CABBAGE PALM	9"
314	CABBAGE PALM	10"
315	CABBAGE PALM	8"
323	CABBAGE PALM	16"
324	CABBAGE PALM	14"
328	OAK	24"
469	CABBAGE PALM	8"
470	CABBAGE PALM	10"
471	CABBAGE PALM	10"
515	CABBAGE PALM	9"
516	CABBAGE PALM	9"
517	CABBAGE PALM	9"
518	CABBAGE PALM	11"
519	CABBAGE PALM	9"
520	CABBAGE PALM	7"
530	CABBAGE PALM	9"
531	CABBAGE PALM	9"
532	CABBAGE PALM	9"
536	CABBAGE PALM	9"
537	CABBAGE PALM	9"
539	CABBAGE PALM	11"
543	CABBAGE PALM	11"
549	OAK	36"
550	OAK	24"
551	OAK	24"
552	OAK	24"
556	CABBAGE PALM	9"
557	CABBAGE PALM	7"
558	CABBAGE PALM	9"
559	CABBAGE PALM	7"
583	CABBAGE PALM	9"
584	CABBAGE PALM	9"
585	CABBAGE PALM	9"
686	CABBAGE PALM	9"
690	CABBAGE PALM	9"
691	CABBAGE PALM	9"
692	CABBAGE PALM	9"
693	CABBAGE PALM	9"
694	CABBAGE PALM	9"
695	CABBAGE PALM	10"
696	CABBAGE PALM	9"
697	CABBAGE PALM	7"
713	UNKNOWN	9"
714	UNKNOWN	9"
715	UNKNOWN	9"
716	UNKNOWN	9"
717	UNKNOWN	9"
718	UNKNOWN	9"
738	CABBAGE PALM	9"
736	CABBAGE PALM	11"
740	CABBAGE PALM	9"
741	CABBAGE PALM	8"
742	CABBAGE PALM	8"
745	UNKNOWN	7"
746	UNKNOWN	7"
747	UNKNOWN	5"
748	UNKNOWN	6"
749	UNKNOWN	8"
750	UNKNOWN	4"
884	CABBAGE PALM	7"
885	CABBAGE PALM	8"
886	CABBAGE PALM	7"
887	CABBAGE PALM	8"
888	BANYAN	4"
889	CABBAGE PALM	8"
877	UNKNOWN	40"
881	CABBAGE PALM	7"
882	CABBAGE PALM	7"
883	CABBAGE PALM	8"
884	CABBAGE PALM	8"
885	CABBAGE PALM	8"
886	CABBAGE PALM	10"
887	CABBAGE PALM	10"
2435	CABBAGE PALM	14"
2436	CABBAGE PALM	14"
2438	CABBAGE PALM	14"
2439	CABBAGE PALM	14"
2440	CABBAGE PALM	14"
2441	CABBAGE PALM	14"
2442	CABBAGE PALM	14"
2443	CABBAGE PALM	14"
2444	CABBAGE PALM	14"
3648	UNKNOWN	6"
4525	OAK	22"
4572	CABBAGE PALM	9"
4573	CABBAGE PALM	9"
4574	CABBAGE PALM	8"
4575	CABBAGE PALM	10"
4576	CABBAGE PALM	10"
4577	CABBAGE PALM	10"
4578	CABBAGE PALM	10"
4579	CABBAGE PALM	10"
4580	CABBAGE PALM	12"
4581	CABBAGE PALM	11"
4582	CABBAGE PALM	12"
4583	CABBAGE PALM	12"
4584	CABBAGE PALM	14"
4585	CABBAGE PALM	14"
4586	CABBAGE PALM	14"
4587	CABBAGE PALM	14"
4588	CABBAGE PALM	14"
4589	CABBAGE PALM	13"
4590	OAK	28"
4591	OAK	24"
4592	CABBAGE PALM	8"
4593	CABBAGE PALM	8"
4594	CABBAGE PALM	8"
4595	OAK	10"
4596	CABBAGE PALM	10"
4597	CABBAGE PALM	8"
4598	OAK	4"
4599	CABBAGE PALM	10"
4600	CABBAGE PALM	8"
4601	CABBAGE PALM	8"
4602	CABBAGE PALM	8"
4603	CABBAGE PALM	8"
4604	CABBAGE PALM	8"
4605	CABBAGE PALM	11"
4606	CABBAGE PALM	12"
4607	CABBAGE PALM	12"
4608	CABBAGE PALM	12"
4609	CABBAGE PALM	12"
4611	WOMANS TONGUE	4"
4652	OAK	7"
4653	UNKNOWN	6"
4654	UNKNOWN	6"
4655	UNKNOWN	6"
4656	FICUS	22"
4660	OAK	6"
4661	OAK	6"
4662	OAK	6"
4663	CABBAGE PALM	10"
4664	CABBAGE PALM	12"
4669	CABBAGE PALM	14"
4670	CABBAGE PALM	12"
4671	CABBAGE PALM	10"
4672	CABBAGE PALM	10"
4673	CABBAGE PALM	10"
4674	CABBAGE PALM	10"
4675	CABBAGE PALM	10"
4687	CABBAGE PALM	7"
4688	CABBAGE PALM	8"
4720	PALM	8"
4731	PALM	8"
4732	PALM	8"
4733	PALM	8"
4850	CABBAGE PALM	14"
4851	CABBAGE PALM	10"
4852	CABBAGE PALM	18"
4858	CABBAGE PALM	11"
4886	CABBAGE PALM	10"
4887	CABBAGE PALM	10"
4890	CABBAGE PALM	8"
4891	CABBAGE PALM	10"
4825	CABBAGE PALM	7"
4826	CABBAGE PALM	10"
4827	CABBAGE PALM	40½"
4828	CABBAGE PALM	28½"
4830	CABBAGE PALM	10"
4832	CABBAGE PALM	7"
4854	MANGROVE	4"
4855	MANGROVE	4"
4856	MANGROVE	5"
4881	MANGROVE	4"
4884	MANGROVE	2"
5054	CABBAGE PALM	12"
5161	CABBAGE PALM	10"
5162	PINE	36"
5163	CABBAGE PALM	18"
5164	PINE	24"
5165	CABBAGE PALM	18"
5166	CABBAGE PALM	18"
5167	CABBAGE PALM	18"
5196	CABBAGE PALM	12"
5197	PINE	18"
5198	CABBAGE PALM	10"
5293	CABBAGE PALM	10"
5294	CABBAGE PALM	10"
5295	CABBAGE PALM	18"
6024	MANGROVE	4"
6027	CABBAGE PALM	7"
6032	CABBAGE PALM	10"
6036	MANGROVE	3"
6039	MANGROVE	3"
6040	MANGROVE	3"
6045	CABBAGE PALM	9"
6046	CABBAGE PALM	10"
6048	CABBAGE PALM	10"
6052	CABBAGE PALM	10"
6053	CABBAGE PALM	12"
6082	CABBAGE PALM	10"
6083	CABBAGE PALM	10"
6088	PALM	8"
6089	CABBAGE PALM	12"
6070	PALM	8"
6071	CABBAGE PALM	11"
6072	CABBAGE PALM	8"
6073	CABBAGE PALM	11"
6074	CABBAGE PALM	11"
6075	CABBAGE PALM	8"
6076	PALM	8"
6077	PALM	10"
6121	MANGROVE	5"
6122	MANGROVE	5"
6123	MANGROVE	5"
6131	MANGROVE	5"
6132	MANGROVE	5"
6133	MANGROVE	5"
6134	MANGROVE	5"
6135	MANGROVE	5"
6138	MANGROVE	5"
6154	CABBAGE PALM	16"
6157	CABBAGE PALM	28½"
6158	CABBAGE PALM	8"
6159	CABBAGE PALM	14"
6160	CABBAGE PALM	14"
6161	CABBAGE PALM	20½"
6170	CABBAGE PALM	8"
6176	CABBAGE PALM	11"
6177	CABBAGE PALM	8"
6178	CABBAGE PALM	8"
6179	CABBAGE PALM	8"
6371	CABBAGE PALM	16"
6372	CABBAGE PALM	16"
6373	CABBAGE PALM	16"
6374	CABBAGE PALM	16"
6375	CABBAGE PALM	16"
6376	CABBAGE PALM	16"
6377	CABBAGE PALM	16"
6378	CABBAGE PALM	12"
6379	CABBAGE PALM	14"
6380	CABBAGE PALM	12"
6381	CABBAGE PALM	8"
6382	CABBAGE PALM	16"
6383	CABBAGE PALM	8"
6405	CABBAGE PALM	30½"
6406	CABBAGE PALM	10"
6407	CABBAGE PALM	28½"
6408	CABBAGE PALM	17"
6409	CABBAGE PALM	12"
6410	CABBAGE PALM	14"
6411	CABBAGE PALM	14"
6412	CABBAGE PALM	14"
6413	CABBAGE PALM	14"
8042	CABBAGE PALM	8"
8050	CABBAGE PALM	8"
8051	CABBAGE PALM	14"
8083	CABBAGE PALM	8"
8099	CABBAGE PALM	10"
8116	CABBAGE PALM	8"
8120	CABBAGE PALM	12"
8126	CABBAGE PALM	10"
8161	CABBAGE PALM	10"
8162	CABBAGE PALM	10"
8163	CABBAGE PALM	7"
8164	CABBAGE PALM	11"
8165	CABBAGE PALM	7"
8166	CABBAGE PALM	10"
8167	CABBAGE PALM	8"
8193	CABBAGE PALM	10"
8200	CABBAGE PALM	7"
8202	CABBAGE PALM	36½"
8204	CABBAGE PALM	12"
8205	CABBAGE PALM	8"
8206	CABBAGE PALM	12"
8207	CABBAGE PALM	14"
8212	CABBAGE PALM	8"
8220	CABBAGE PALM	36½"
8225	CABBAGE PALM	8"
8226	CABBAGE PALM	8"
8227	CABBAGE PALM	28½"
8228	CABBAGE PALM	14"
8229	CABBAGE PALM	8"
8230	CABBAGE PALM	8"
8231	CABBAGE PALM	28½"
8232	CABBAGE PALM	36½"
8233	CABBAGE PALM	28½"
8269	CABBAGE PALM	14"
8271	CABBAGE PALM	14"
8283	CABBAGE PALM	8"
8285	CABBAGE PALM	8"
8286	CABBAGE PALM	8"
8287	CABBAGE PALM	14"
8288	CABBAGE PALM	8"
8289	CABBAGE PALM	8"
8297	CABBAGE PALM	18"
8299	CABBAGE PALM	11"
8300	CABBAGE PALM	14"
8302	CABBAGE PALM	14"
8303	CABBAGE PALM	36½"
8304	CABBAGE PALM	28½"
8305	CABBAGE PALM	16"
8306	CABBAGE PALM	16"
8307	CABBAGE PALM	14"
8311	CABBAGE PALM	12"
8331	CABBAGE PALM	12"
8343	CABBAGE PALM	16"
8344	CABBAGE PALM	12"
8345	CABBAGE PALM	12"
8346	CABBAGE PALM	12"
8347	CABBAGE PALM	16"
11108	CABBAGE PALM	12"
11109	CABBAGE PALM	10"
11110	OAK	36"
11111	OAK	36"
11112	CABBAGE PALM	110"
11113	CABBAGE PALM	10"
11114	CABBAGE PALM	12"
11115	CABBAGE PALM	12"
11116	CABBAGE PALM	12"
11117	CABBAGE PALM	12"
11118	CABBAGE PALM	14"
11119	CABBAGE PALM	10"
11120	CABBAGE PALM	28½"
11121	CABBAGE PALM	8"
11122	CABBAGE PALM	14"
11123	CABBAGE PALM	14"
11124	CABBAGE PALM	20½"
11156	CABBAGE PALM	28½"
11160	CABBAGE PALM	14"
11161	CABBAGE PALM	16"
11162	CABBAGE PALM	16"
11163	CABBAGE PALM	16"
11166	CABBAGE PALM	16"
11167	CABBAGE PALM	14"
11168	CABBAGE PALM	14"
11169	CABBAGE PALM	69½"
‖	CABBAGE PALM	96"
‖	CABBAGE PALM	36½"
‖	CABBAGE PALM	104"
17000	PALM	12"
17001	PALM	12"
17002	PALM	12"
17003	PALM	12"
17004	PALM	12"
17005	PALM	12"
17006	PALM	12"
17007	PALM	12"
17008	PALM	12"
17009	PALM	12"
17010	PALM	12"
17011	PALM	12"
17012	PALM	12"
17013	PALM	12"
17014	PALM	12"
17015	PALM	12"
17016	PALM	12"
17017	PALM	12"
17018	PALM	12"
17019	PALM	12"
17020	PALM	12"
17021	PALM	12"
17022	PALM	12"
17023	PALM	12"
17024	PALM	12"
17025	PALM	12"
17026	PALM	12"
17027	PALM	12"
17028	PALM	12"

N.A.V.D. 1988 ELEVATIONS

ORDINARY HIGH WATER LINE = -0.24' N.A.V.D. 1988
(SEE NOTE #8 & #9 ON SHEET 1 OF 6)

NOTE:
NOT VAUID UNLESS ACCOMPANIED BY SHEETS 1 THRU 6 OF 6

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SCALE	1" = 50'
DATE	06/24/08
BY	A.M.R.
CK'D.	M.D.A.
F.B.	S1 PG. 70
JOB NO.	8460

REVISIONS	DATE	F.B. / PG.	BY	CK'D
REVISE LEGAL – ADD PENINSULA	07/29/08	S-3 / 63	AMR	MDA
REVISE BOUNDARY–TO INCLUDE SUBMERGED LANDS	09/10/08	–	A.M.R.	M.D.A.

REVISIONS	DATE	F.B. / PG.	BY	CK'D

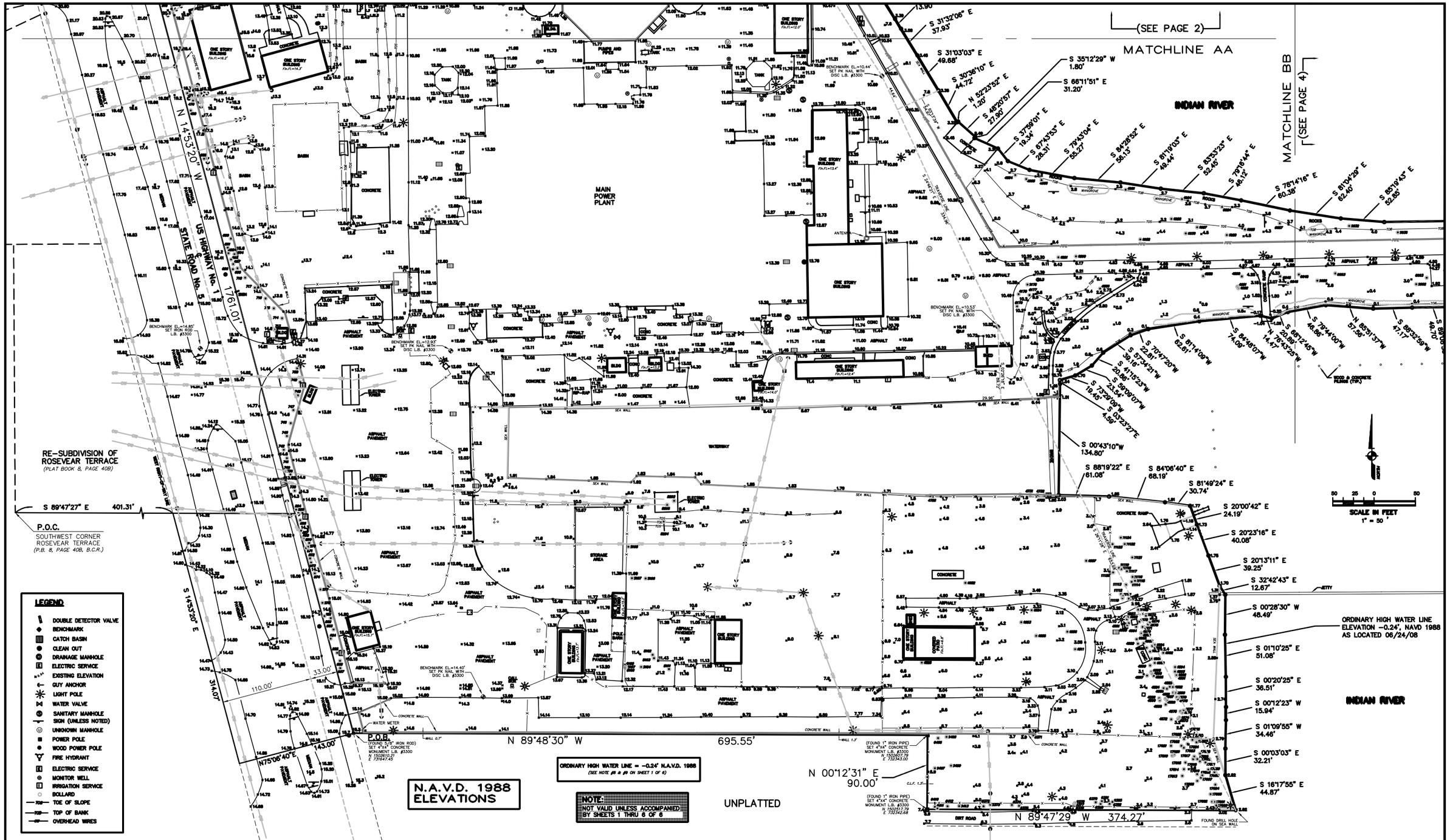
BOUNDARY AND TOPOGRAPHIC SURVEY

CAPE CANAVERAL
PLANT
SECTION 19, TOWNSHIP 23 S., RANGE 36 E.
BREVARD COUNTY
FLORIDA.

FIGURE 3.1.3-1b

FILE No. 08387633CA043

SHEET 2 OF 6



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SCALE	1" = 50'
DATE	06/24/08
BY	A.M.R.
CK'D.	M.D.A.
F.B. S1	PG. 70
JOB NO.	8460

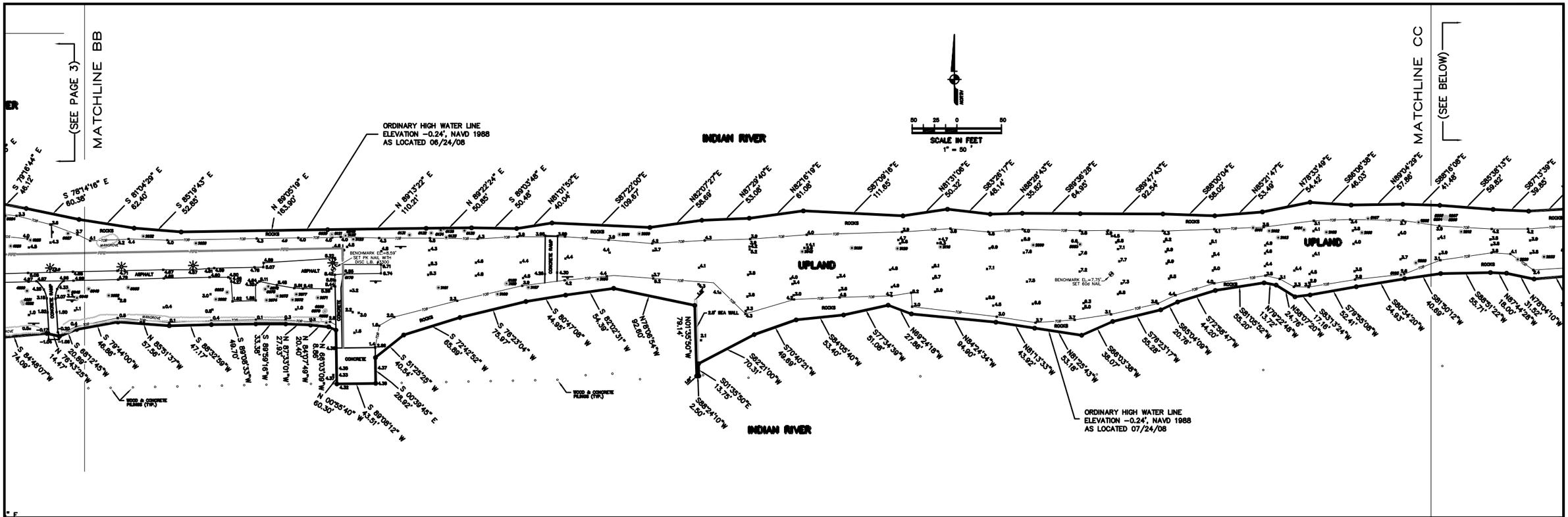
REVISIONS	DATE	F.B. / PG.	BY	CK'D
REVISE LEGAL – ADD PENINSULA	07/29/08	S-3 / 63	AMR	MDA
REVISE BOUNDARY–TO INCLUDE SUBMERGED LANDS	09/10/08	-	A.M.R.	M.D.A.

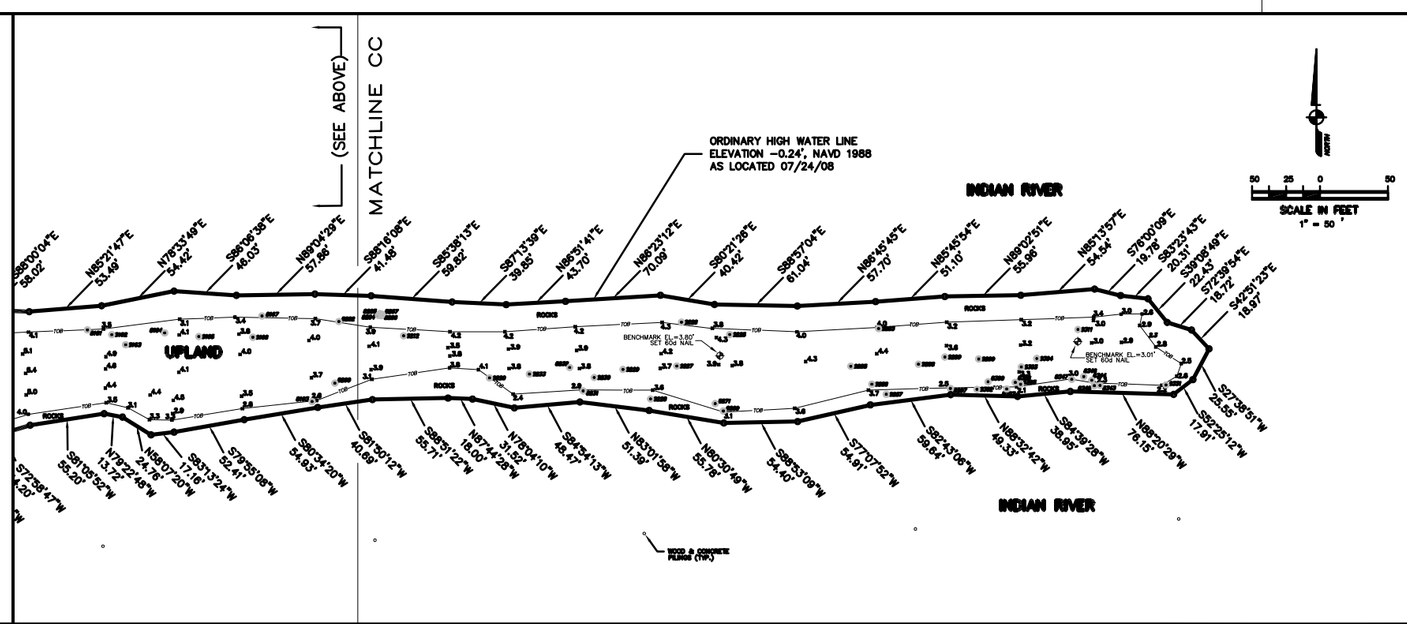
REVISIONS	DATE	F.B. / PG.	BY	CK'D

BOUNDARY AND TOPOGRAPHIC SURVEY
CAPE CANAVERAL PLANT
SECTION 19, TOWNSHIP 23 S., RANGE 36 E.
BREVARD COUNTY
FLORIDA.

FIGURE 3.1.3-1c
FILE No. 08387633CA044

SHEET 3 OF 6





LEGEND

- DOUBLE DETECTOR VALVE
- BENCHMARK
- CATCH BASIN
- CLEAN OUT
- DRAINAGE MANHOLE
- ELECTRIC SERVICE
- EXISTING ELEVATION
- GUY ANCHOR
- LIGHT POLE
- WATER VALVE
- SANITARY MANHOLE
- SIGN (UNLESS NOTED)
- UNKNOWN MANHOLE
- POWER POLE
- WOOD POWER POLE
- FIRE HYDRANT
- ELECTRIC SERVICE
- MONITOR WELL
- IRRIGATION SERVICE
- BOLLARD
- TOE OF SLOPE
- TOP OF BANK
- OVERHEAD WIRES

N.A.V.D. 1988 ELEVATIONS

ORDINARY HIGH WATER LINE = -0.24' N.A.V.D. 1988
(SEE NOTE #8 & #9 ON SHEET 1 OF 6)

NOTE:
NOT VALID UNLESS ACCOMPANIED BY SHEETS 1 THRU 6 OF 6

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SCALE	1" = 50'
DATE	06/24/08
BY	A.M.R.
CK'D.	M.D.A.
F.B. S1	PG. 70
JOB NO.	8460

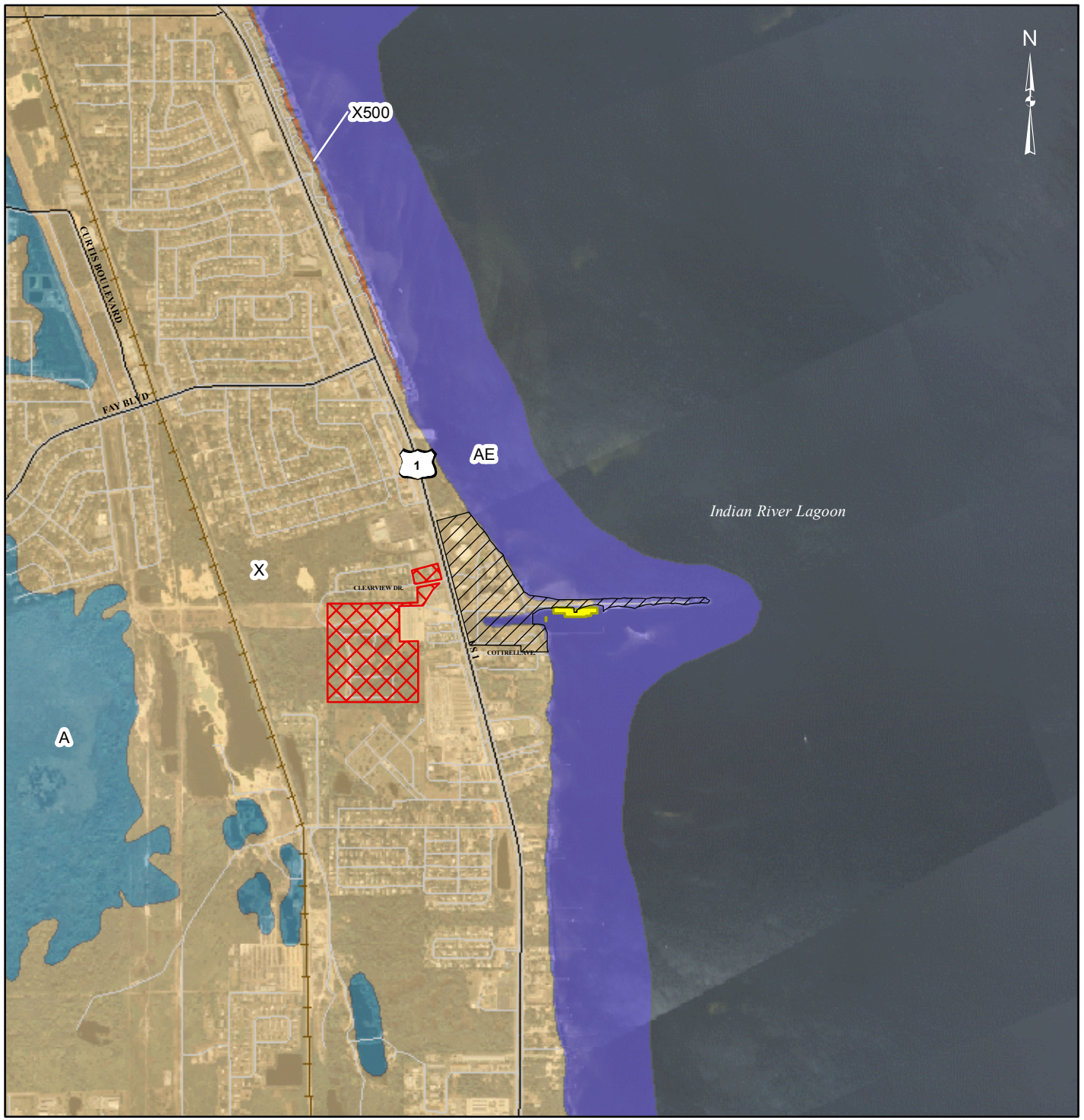
REVISIONS	DATE	F.B. / PG.	BY	CK'D
REVISE LEGAL – ADD PENINSULA	07/29/08	S-3 / 63	AMR	MDA
REVISE BOUNDARY–TO INCLUDE SUBMERGED LANDS	09/10/08	–	A.M.R.	M.D.A.

REVISIONS	DATE	F.B. / PG.	BY	CK'D

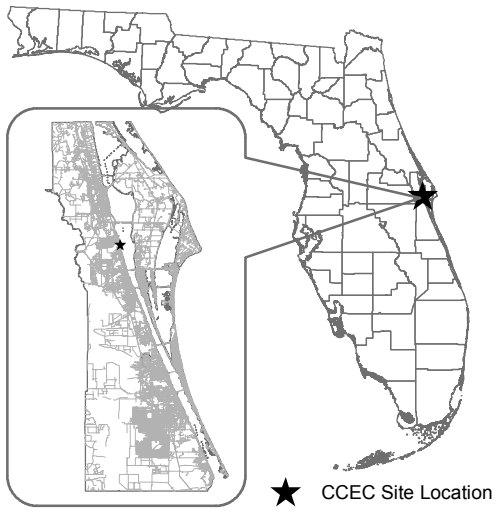
BOUNDARY AND TOPOGRAPHIC SURVEY
CAPE CANAVERAL
PLANT
SECTION 19, TOWNSHIP 23 S., RANGE 36 E.
BREVARD COUNTY
FLORIDA.

FIGURE 3.1.3-1d
FILE No. 08387633CA045

SHEET 4 OF 6



AREA MAP



LEGEND

- FPL Cape Canaveral Energy Center (To Be Certified)
- Sovereign Submerged Lands Lease (To Be Certified)
- Offsite Construction Laydown & Parking Area

ZONE

- A
- AE
- X
- X500

Zone	*Zone Name*	*Description*
A	Zone A	An area inundated by 100 year flooding, for which no BFEs have been established.
AE	Zone AE	An area inundated by 100-year flooding, for which BFEs have been determined.
X	Zone X	An area that is determined to be outside the 100- and 500-year floodplains.
X500	Zone X (500-Year)	An area inundated by 500-year flooding; an area inundated by 100-year flooding with average depths of less than 1 foot or with drainage areas less than 1 square mile; or an area protected by levees from 100-year flooding.

REFERENCE

1. Imagery, National Imagery Mosaics, USGS, 2006
2. Special Flood Hazard Area, FEMA, 1995
3. Cape Canaveral Energy Center Site Survey, Avirom & Associates Inc. , 2008.
4. Offsite Construction Laydown & Parking Area, FPL, 2008.
5. Sovereign Submerged Lands Lease, FPL CAD Drawing No. CC042096, 1998.

0 1,000 2,000 4,000 Feet

PROJECT

FPL

CAPE CANAVERAL ENERGY CENTER PROJECT

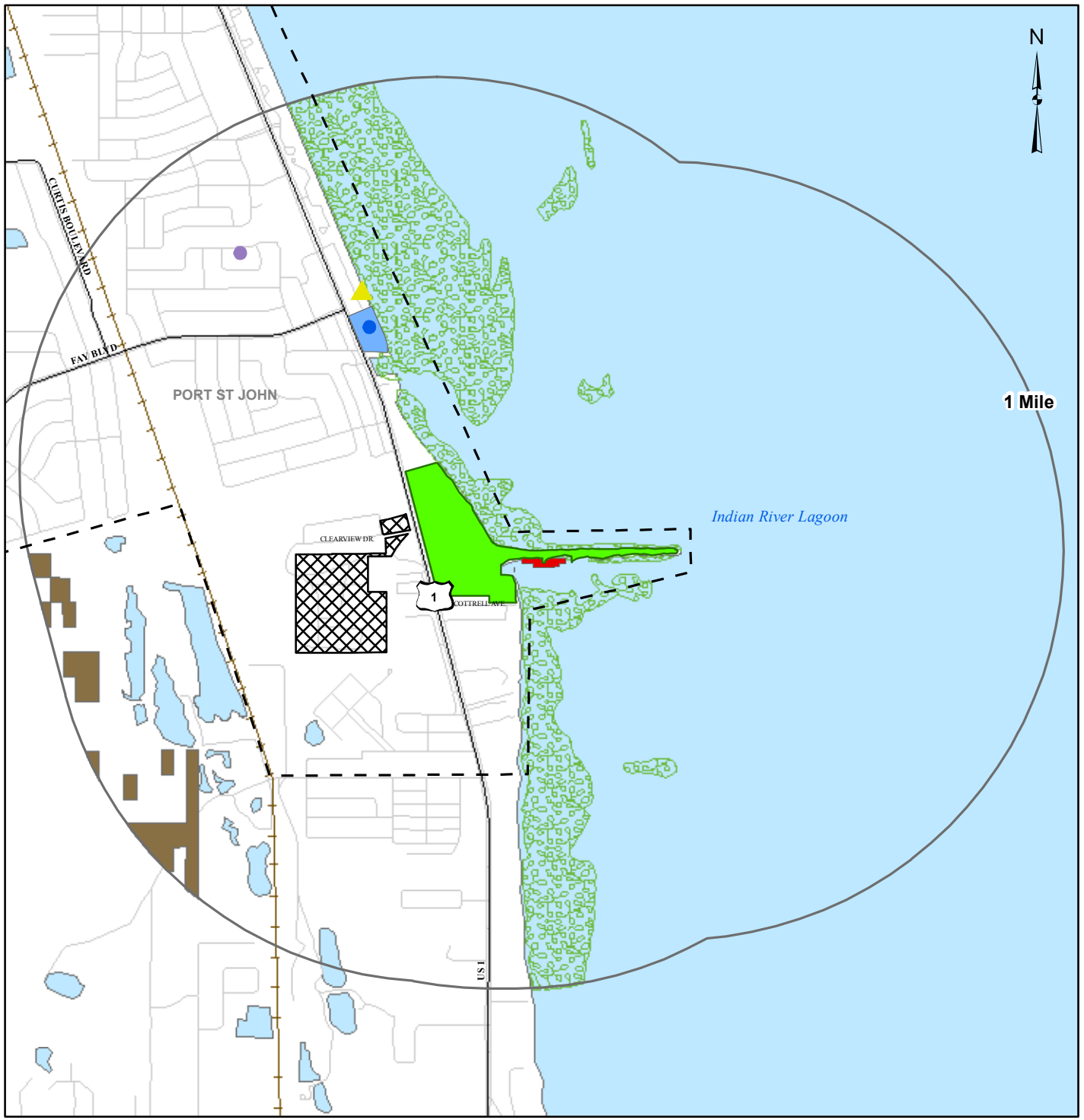
TITLE

100 - YEAR FLOOD ZONE

PROJECT No. 083-87633			FILE No. 08387633CA002	REV. 2
DESIGN	RCM	12/12/08	SCALE AS SHOWN	
GIS	NRL	12/12/08	FIGURE 3.1.4-1	
CHECK	RCM	12/12/08		
REVIEW	KFK	12/12/08		

FPL

Map Document: P:\GIS\PROJECTS\2008\083-87633_FPL_CCEC_RBEC_Conversion\Canaveral\CA_SCA\ActiveMapDocuments\08387633CA002_Rev1_FEMA.mxd / Modified 12/5/2008 2:29:22 PM / Plotted 12/5/2008 2:29:22 PM by rlamar



LEGEND

- FPL Cape Canaveral Energy Center (To Be Certified)
- Sovereign Sumberged Lands Lease (To Be Certified)
- Offsite Construction Laydown & Parking Area
- Port St. John Boat Ramp
- Friendship Park
- Robert Nicol Park
- Port St John Special Dependent District
- Robert Nicol Park
- Seagrass
- Grissom Parkway

NOTE

Radius drawn from FPL Cape Canaveral Plant Site

REFERENCE

1. Cape Canaveral Energy Center Site Survey, Avirom & Associates, 2008.
2. Landmarks, ESRI Data, 2004.
3. Seagrass, Florida Department of Environmental Protection, 2007.
4. Boat Ramps, Brevard Parks, Brevard County Planning Department, 2008.
5. Grissom Parkway, Florida Managed Lands, 2007.
6. Sovereign Submerged Lands Lease, FPL CAD Drawing No. CC042096, 1998.
7. Offsite Construction Laydown & Parking Area, FPL, 2008.

0 1,000 2,000 4,000 Feet

PROJECT

FPL

CAPE CANAVERAL ENERGY CENTER PROJECT

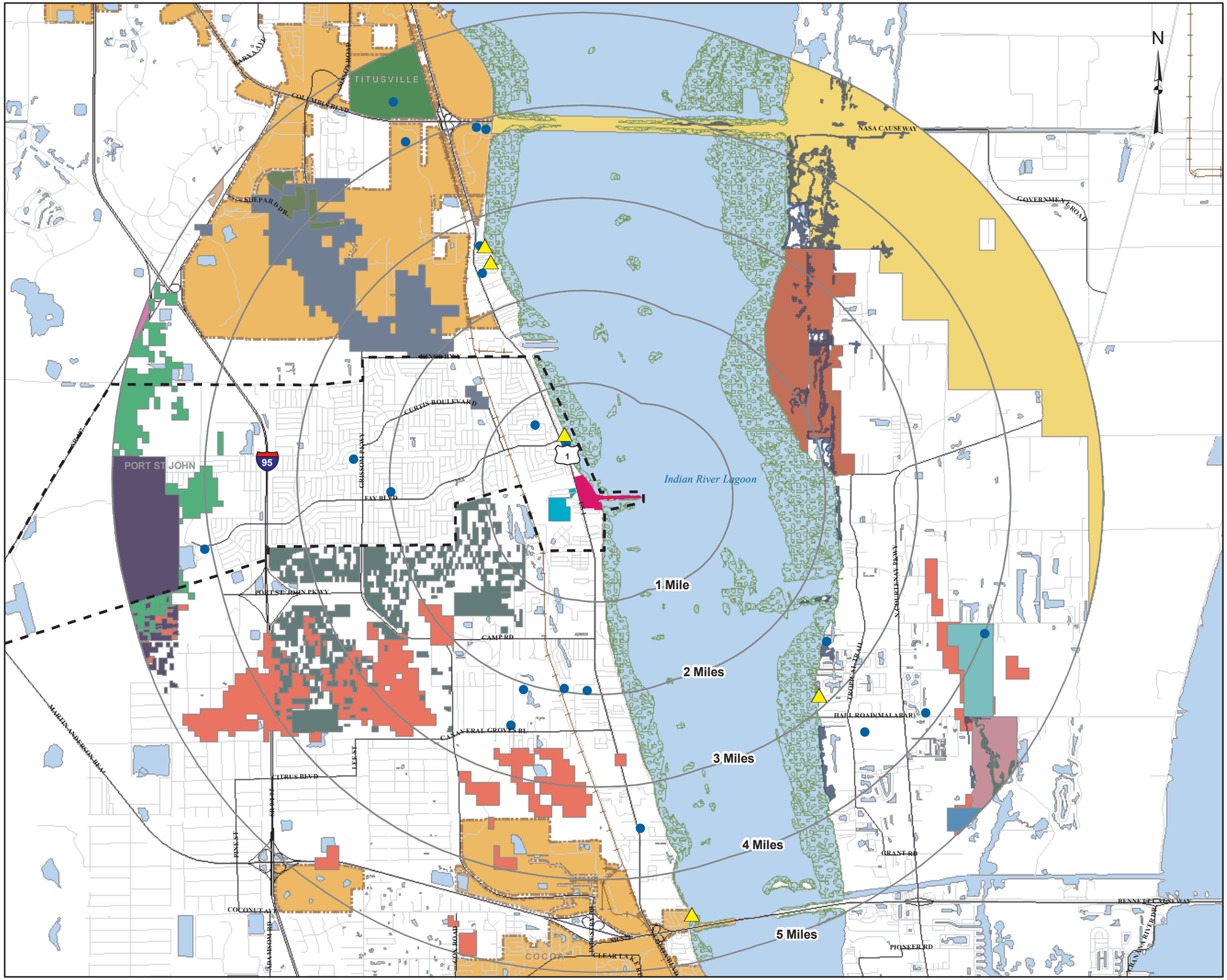
TITLE

GOVERNMENTAL JURISDICTIONS WITHIN 1-MILE RADIUS

PROJECT No. 083-87633			FILE No. 08387633CA007	REV. 2
DESIGN	KFK	12/12/08	SCALE AS SHOWN	
GIS	NRL	12/12/08	FIGURE 3.2.1-1	
CHECK	RCM	12/12/08		
REVIEW	KFK	12/12/08		

FPL

Map Document: P:\GIS\PROJECTS\2008\083-87633_FPL_CCEC_RBEC_Conversion\Canaveral\CA_SCA\ActiveMapDocuments\08387633CA007_Rev1_GovJur_1Mile.mxd / Modified 12/5/2008 2:38:06 PM / Plotted 12/5/2008 2:38:06 PM by rlamar



LEGEND

- FPL Cape Canaveral Energy Center (To Be Certified)
- Sovereign Submerged Lands Lease (To Be Certified)
- Offsite Construction Laydown & Parking Area
- Brevard Boat Ramps
- Brevard County Parks
- Port St John Special Dependent District
- Banana River Aquatic Preserve
- Mangroves
- Seagrass
- Bird Lake Marsh
- Canaveral Marshes Conservation Area
- Enchanted Forest Sanctuary
- Grissom Parkway
- Kabboord Sanctuary
- Kings Park
- Merritt Island National Wildlife Refuge
- Pine Island Conservation Area
- St. Johns National Wildlife Refuge
- Sykes Creek Headwaters - Tract A
- Tico Scrub Sanctuary
- Florida Scrub Jay Habitat
- Limpkin Habitat
- Wading Birds Habitat
- Municipalities

NOTE

Radii drawn from FPL Cape Canaveral Energy Center

REFERENCE

1. Florida Managed Lands, Seagrass, Aquatic Preserve, Florida Department of Environmental Protection, 2007.
2. Conservation Areas, Mangroves, Saint Johns River Water Management District, 2006.
3. Strategic Habitat Conservation Area, Florida Natural Areas Inventory, 2007.
4. Cape Canaveral Energy Center Site Survey, Avirom & Associates. Inc., 2008.
5.National Wildlife Refuges, National Oceanic Atmospheric Administration, 1998.
6. Landmarks, ESRI Data, 2004.
7. Parks, Public School Brevard County Planning Department, 2008.
8. Sovereign Submerged Lands Lease, FPL CAD Drawing No. CC042096, 1998.
9. Offsite Construction Laydown & Parking Area, FPL, 2008.

0 0.5 1 2 Miles

PROJECT

FPL

CAPE CANAVERAL ENERGY CENTER PROJECT

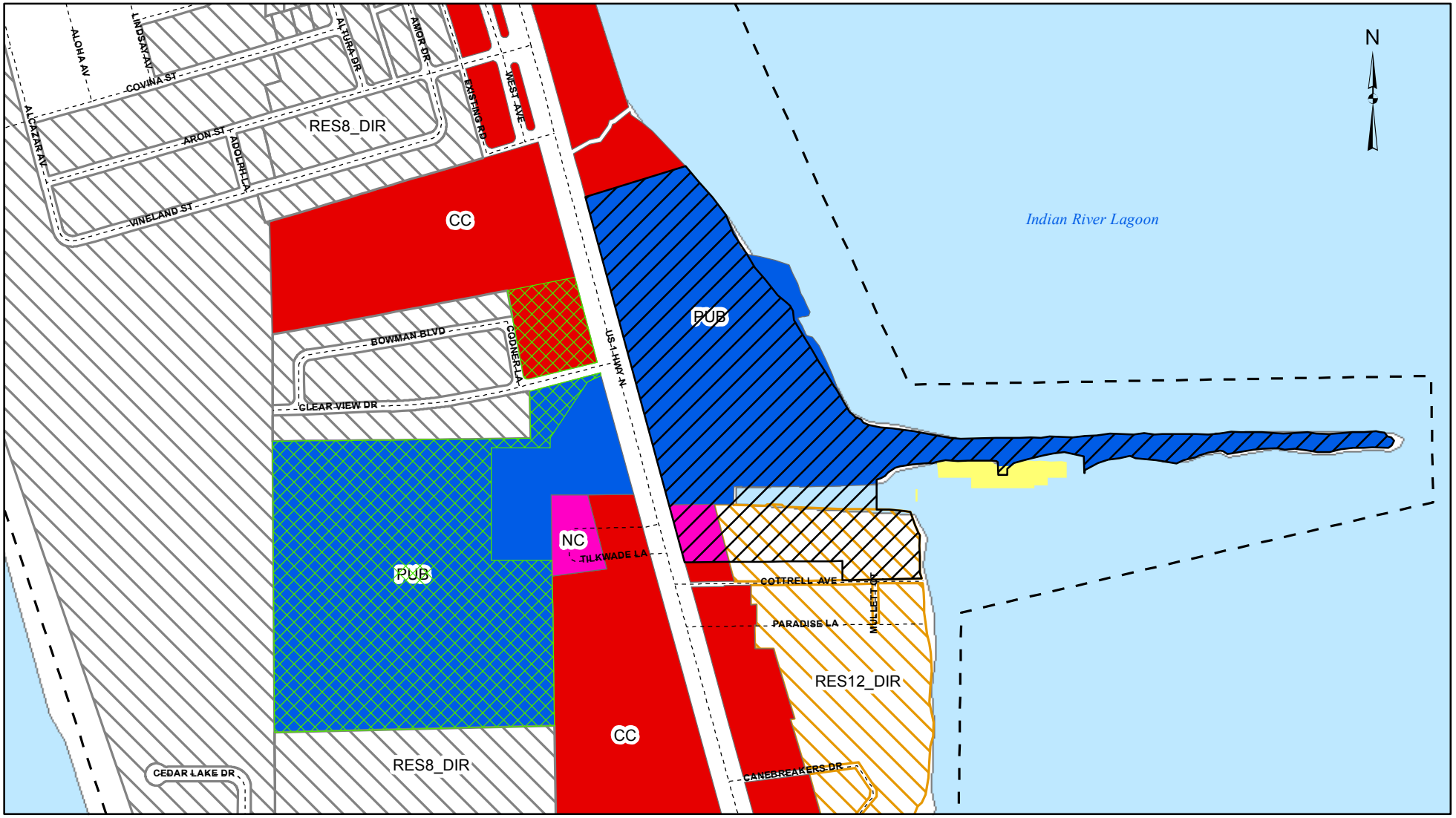
TITLE

GOVERNMENTAL JURISDICTIONS WITHIN 1,2,3,4, AND 5-MILE RADII

PROJECT No. 083-87633			FILE No. 08387633CA008	REV. 2
DESIGN	RCM	12/12/08	SCALE AS SHOWN	
GIS	NRL	12/12/08		
CHECK	RCM	12/12/08	FIGURE 3.2.1-2	
REVIEW	KFK	12/12/08		

FPL

Map Document: P:\GIS\PROJECTS\2008\083-87633_FPL_CCEC_RBEC_Conversion\Canaveral\CA_SCA\ActiveMapDocuments\08387633CA008_Rev2_GovJur_5Miles.mxd / Modified 12/15/2008 5:02:50 PM / Plotted 12/15/2008 5:02:50 PM by rlamar



LEGEND

- FPL Cape Canaveral Energy Center *
- Sovereign Submerged Lands Lease (To Be Certified)
- Offsite Construction Laydown & Parking Area
- Port St John Special Dependent District
- Road Centerlines

FUTURE LAND USE

- CC - COMMUNITY COMMERCIAL
- NC - NEIGHBORHOOD COMMERCIAL
- PUB - PUBLIC FACILITY
- RES12_DIR - RESIDENTIAL 12 UP TO 12 DWELLLINGS PER ACRE
- RES8_DIR - RESIDENTIAL 8 UP TO 8 DWELLLINGS PER ACRE

0 250 500 1,000 Feet

PROJECT

FPL
CAPE CANAVERAL ENERGY CENTER

TITLE

FUTURE LAND USE

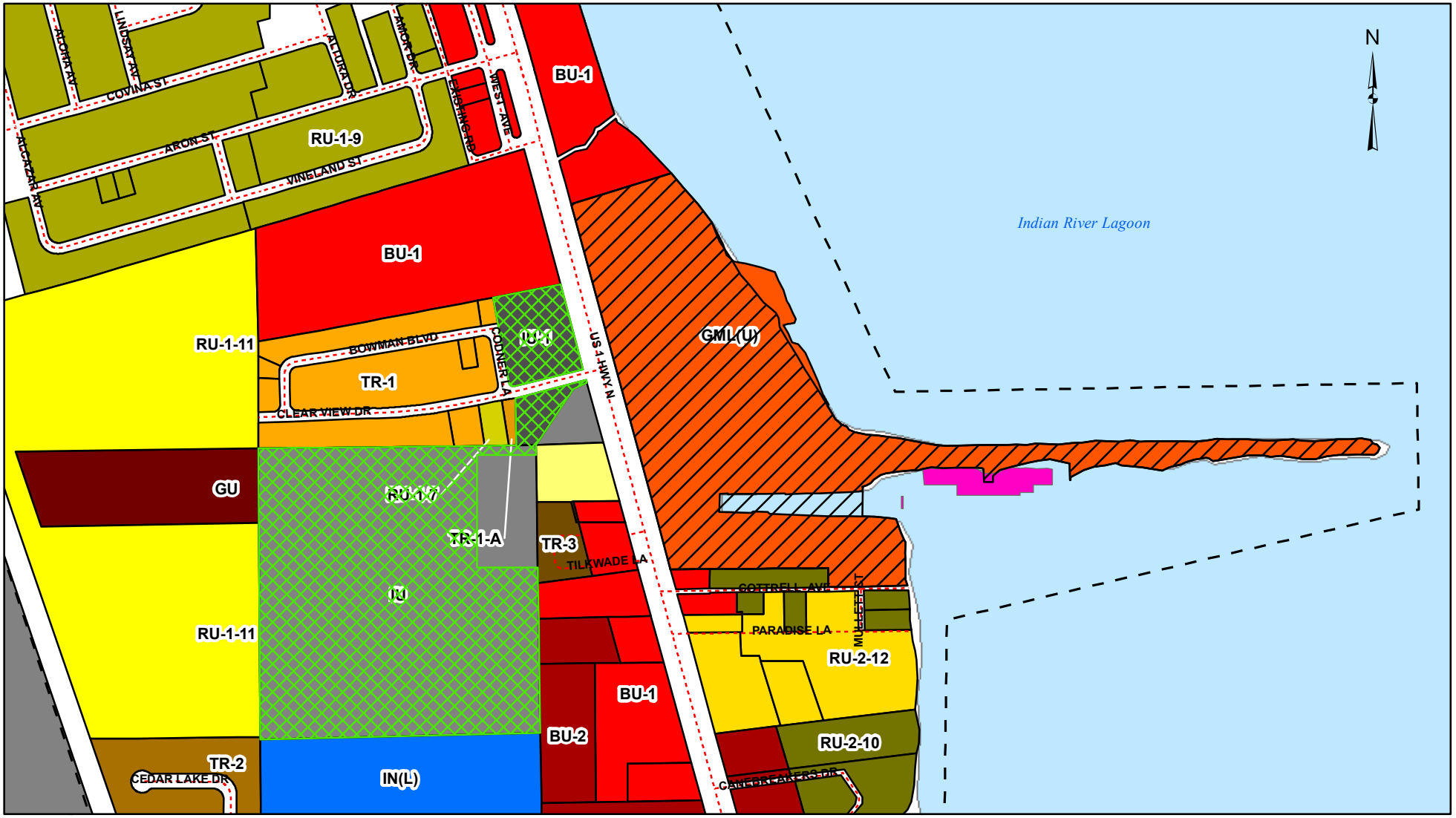
REFERENCE

1. FPL Cape Canaveral Energy Center Boundary, Golder Associates Inc., 2008 2. Future Land Use, Brevard County Planning Department, 2008. 3. Submerged Sovereign Lands Lease, FPL CAD Drawing No. CC042096, 1998

NOTE

* FPL Cape Canaveral Energy Center Boundary and Construction Laydown & Parking Area adjusted to fit Brevard County future land use data.

PROJECT No. 083-87633			FILE No. 08387633CA011	REV. 2
DESIGN	RCM	12/12/08	SCALE AS SHOWN	
GIS	NRL	12/12/08	FIGURE 3.2.2-1	
CHECK	NRL	12/12/08		
REVIEW	KFK	12/12/08		



LEGEND

- FPL Cape Canaveral Energy Center *
- Sovereign Submerged Lands Lease (To Be Certified)
- Offsite Construction Laydown & Parking Area
- Port St John Special Dependent District
- Road center lines

Zoning

- AU - AGRICULTURAL RESIDENTIAL
- BU-1 - GENERAL RETAIL COMMERCIAL
- BU-2 - RETAIL, WAREHOUSING, AND WHOLESALE COMMERCIAL
- GML(U) - GOVERNMENT MANAGED LANDS (UTILITY)
- GU - GENERAL USE
- IN(L) - INSTITUTIONAL USE
- IU - LIGHT INDUSTRIAL
- IU-1 - HEAVY INDUSTRIAL
- RU-1-11 - SINGLE FAMILY RESIDENTIAL
- RU-1-7 - SINGLE FAMILY RESIDENTIAL
- RU-1-9 - SINGLE FAMILY RESIDENTIAL
- RU-2-10 - MEDIUM-DENSITY MULTI-FAMILY RESIDENTIAL
- RU-2-12 - MEDIUM-DENSITY MULTI-FAMILY RESIDENTIAL
- TR-1 - SINGLE FAMILY MOBILE HOME
- TR-1-A - SINGLE FAMILY MOBILE HOME
- TR-2 - SINGLE FAMILY MOBILE HOME
- TR-3 - MOBILE HOME PARK

REFERENCE

1. FPL Cape Canaveral Energy Center Boundary, Golder Associates Inc., 2008.
2. Zoning, Brevard County Planning Department, 2008. 3. Sovereign Submerged Lands Lease, FPL CAD Drawing No. CC040296, 1998

NOTE

* FPL Cape Canaveral Energy Center Boundary and Offsite Construction Laydown and Parking Area adjusted to fit Brevard County zoning data.

0 250 500 1,000 Feet

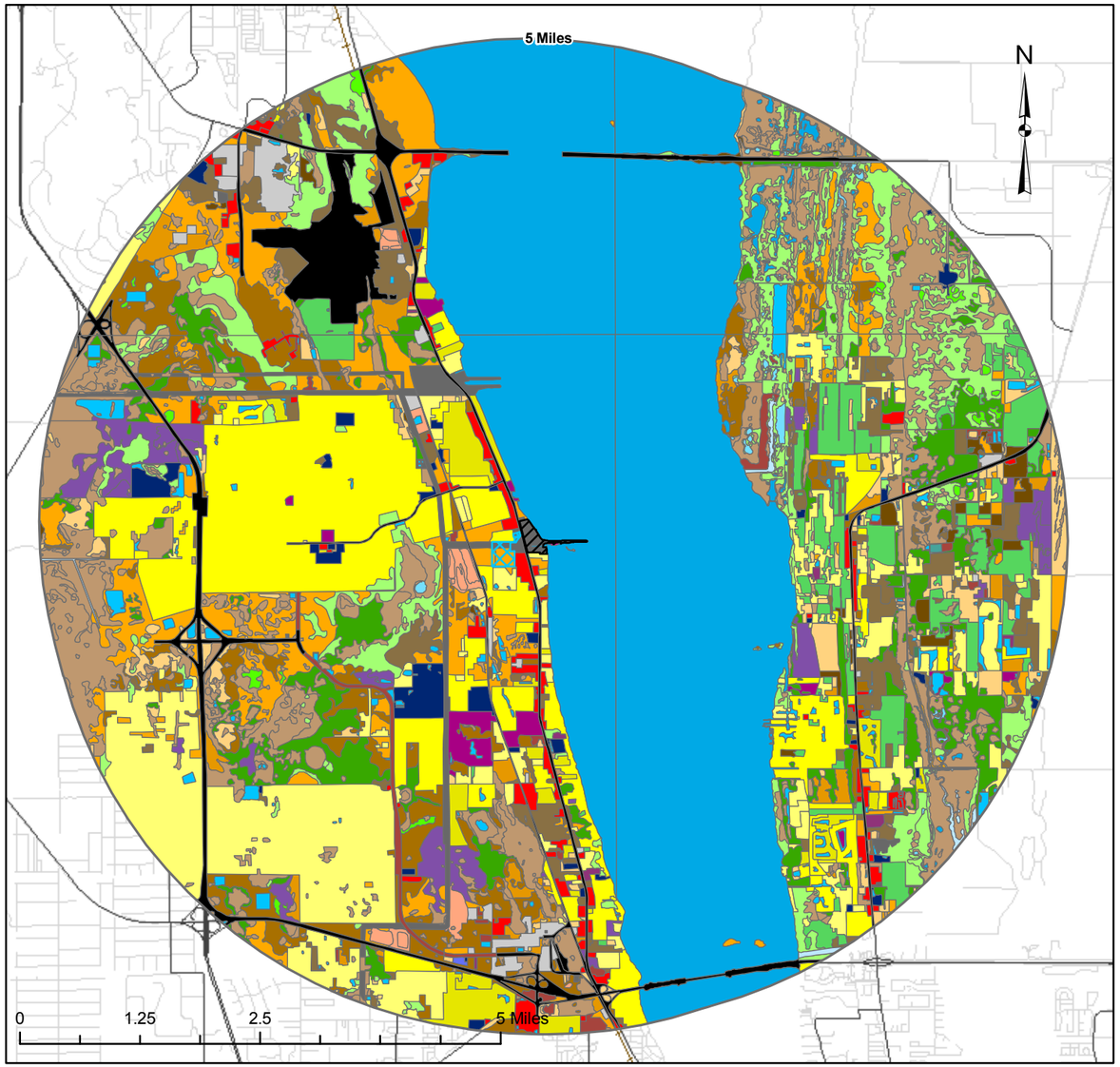
PROJECT

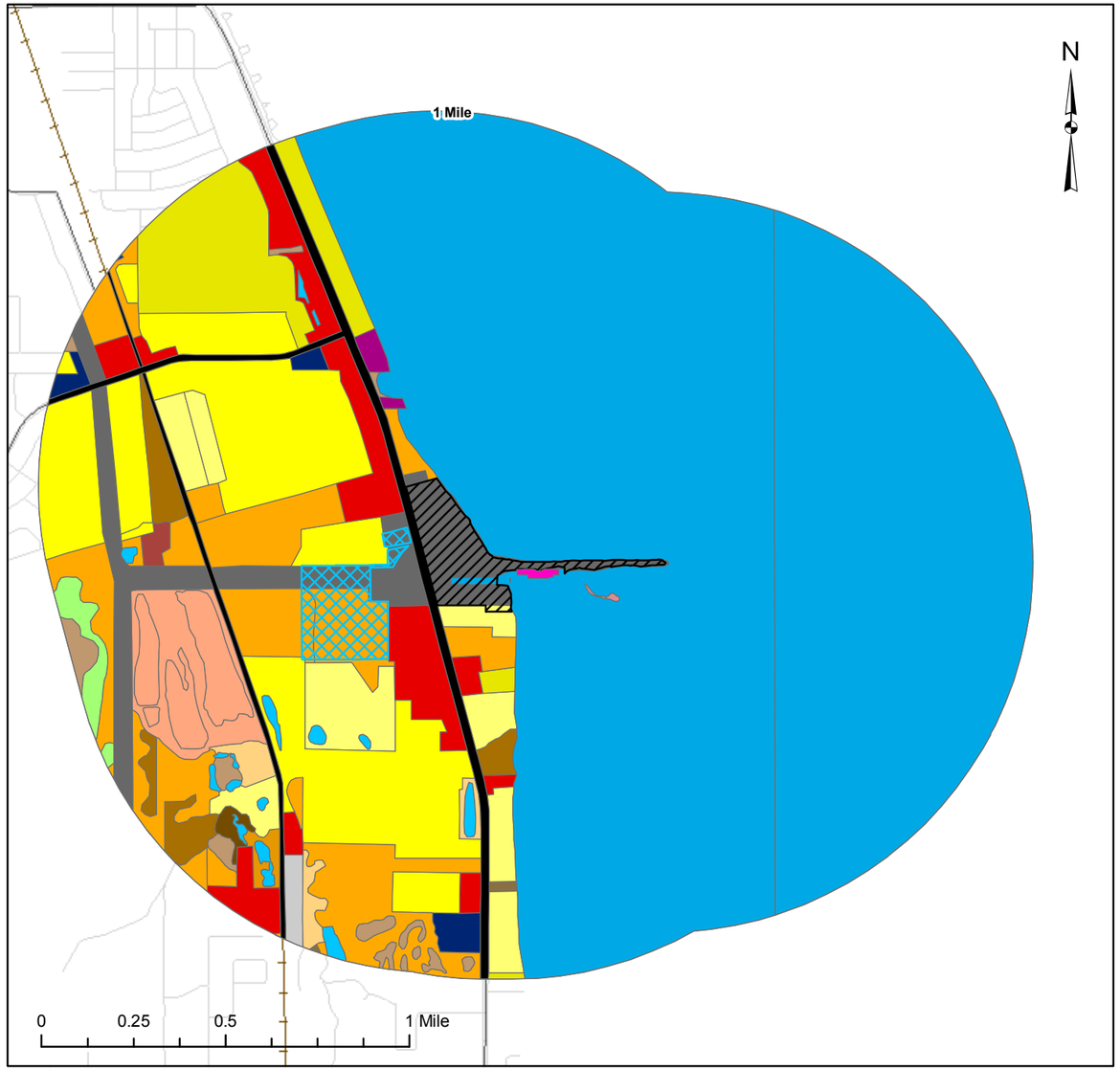
FPL
CAPE CANAVERAL ENERGY CENTER

TITLE

ZONING

PROJECT No. 083-87633			FILE No. 08387633CA010	REV. 2
DESIGN	RCM	12/12/08	SCALE AS SHOWN	
GIS	NRL	12/12/08	**FIGURE 3.2.2-2**	
CHECK	RCM	12/12/08		
REVIEW	KFK	12/12/08		





LEGEND

- FPL Cape Canaveral Energy Center (To Be Certified)
- Sovereign Submerged Lands Lease (To Be Certified)
- Offsite Construction Laydown & Parking Area

Existing Land Use

- 110 - RESIDENTIAL
- 120 - RESIDENTIAL
- 130 - RESIDENTIAL
- 140 - COMMERCIAL AND SERVICES
- 150 - INDUSTRIAL
- 160 - EXTRACTIVE
- 170 - INSTITUTIONAL
- 180 - RECREATIONAL
- 210 - CROPLAND AND PASTURELAND
- 220 - TREE CROPS
- 230 - FEEDING OPERATIONS
- 240 - NURSERIES AND VINEYARDS
- 250 - SPECIALTY FARMS
- 310 - HERBACEOUS (DRY PRAIRIE)
- 320 - SHRUB AND BRUSHLAND
- 330 - MIXED RANGELAND
- 410 - UPLAND CONIFEROUS FORESTS
- 420 - UPLAND HARDWOOD FORESTS
- 430 - UPLAND HARDWOOD FORESTS CONTINUED
- 510 - STREAMS AND WATERWAYS
- 520 - LAKES
- 530 - RESERVOIRS
- 540 - BAYS AND ESTUARIES
- 610 - WETLAND HARDWOOD FORESTS
- 620 - WETLAND CONIFEROUS FORESTS
- 630 - WETLAND FORESTED MIXED
- 640 - VEGETATED NON-FORESTED WETLANDS
- 720 - SAND OTHER THAN BEACHES
- 740 - DISTURBED LANDS
- 810 - TRANSPORTATION
- 820 - COMMUNICATIONS
- 830 - UTILITIES

REFERENCE

1. Existing Land Use, SJRWMD, 2004. 2. Cape Canaveral Energy Center Site Survey, Avirom & Associates Inc., 2008. 3. Offsite Construction Laydown & Parking Area, FPL, 2008. 4. Sovereign Submereged Lands Lease, FPL CAD Drawing No. CC042096, 1998.

NOTE

Radii drawn from FPL Cape Canaveral Energy Center

PROJECT

FPL
CAPE CANAVERAL ENERGY CENTER PROJECT

TITLE

EXISTING LAND USE

PROJECT No. 083-87633			FILE No. 08387633CA012		
DESIGN	RCM	12/12/08	SCALE AS SHOWN		Rev. 2
GIS	NRL	12/12/08			
CHECK	RCM	12/12/08			
REVIEW	KFK	12/12/08			

FIGURE 3.2.3-1

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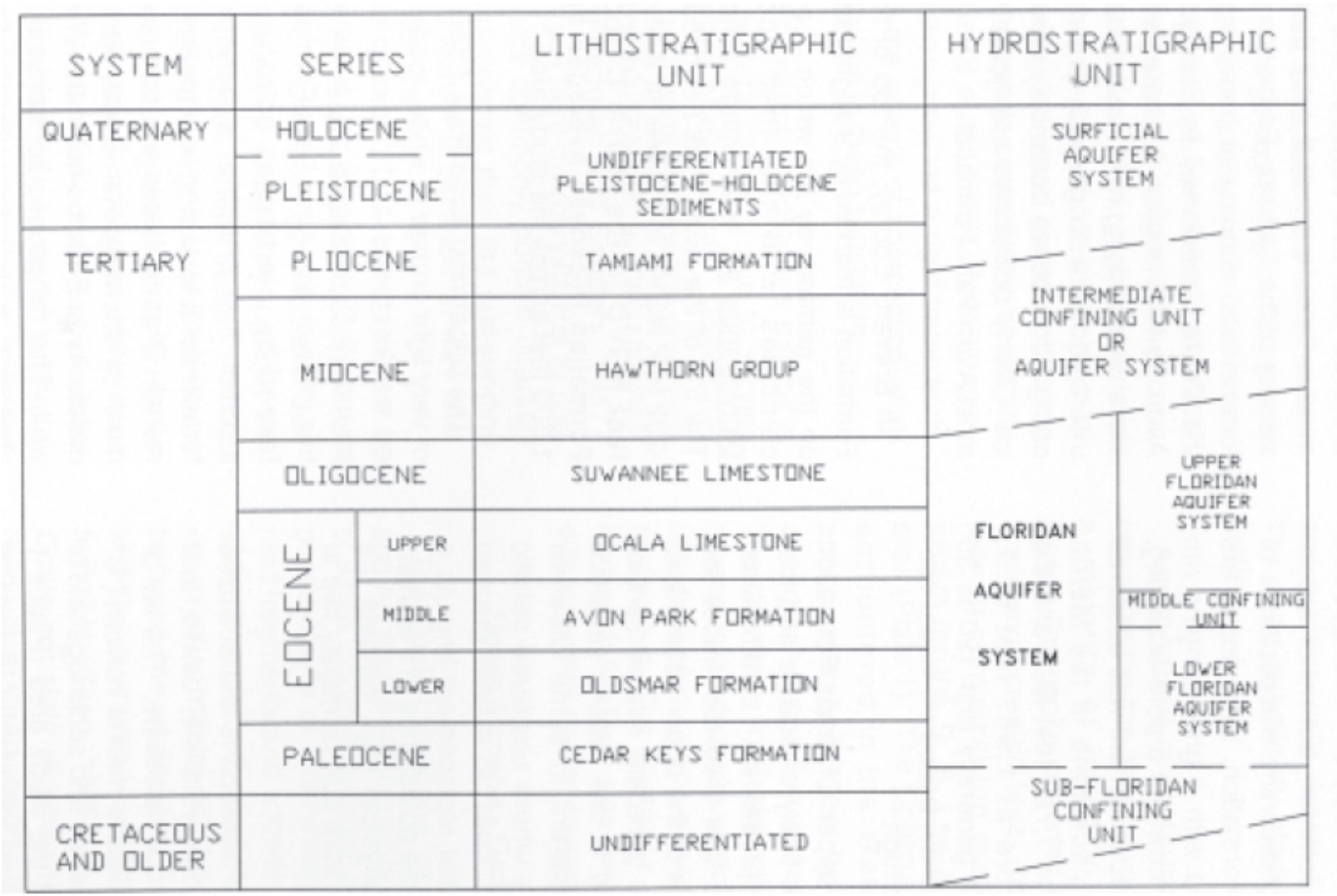


LEGEND

REFERENCE

1. Lithostratigraphic/hydrostratigraphic nomenclaute for southern Florida (modified from Ad Hoc Committee on Florida Hydrostratigraphic Unit Definition, Southeastern Geological Society (SEGS), 1986). Bulletien Number 64, page 15, figure 10.

PROJECT

FPL
CAPE CANAVERAL ENERGY CENTER

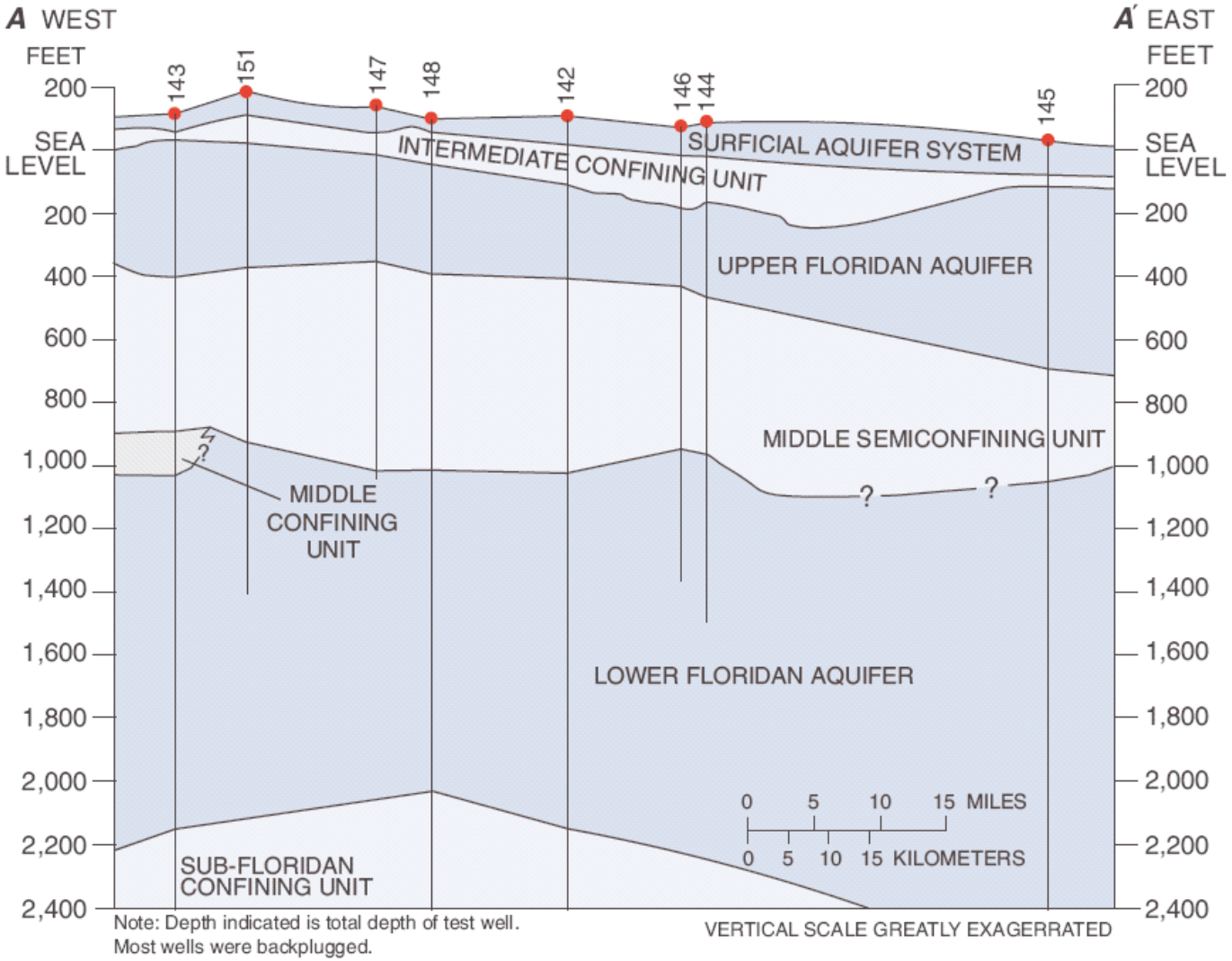
TITLE

GENERALIZED GEOLOGY AND HYDROGEOLOGY OF BREVARD COUNTY

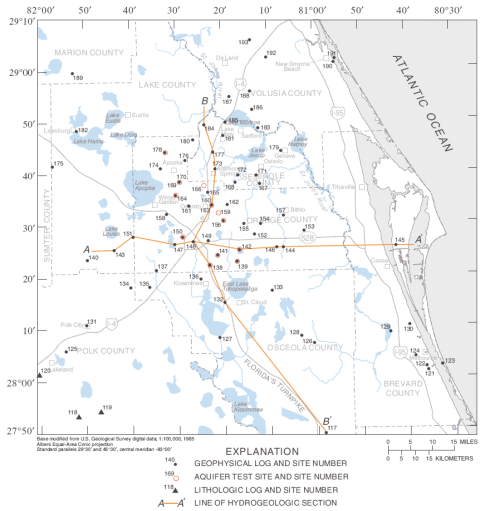
PROJECT No. 083-87633			FILE No. 08387633CA017	REV. 0
DESIGN	MF	08/28/08		
GIS	NRL	10/06/08		
CHECK	RCM	10/24/08		
REVIEW	KFK	12/09/08		

FPL

FIGURE 3.3.1-1



AREA MAP



REFERENCE

1. U.S. Geological Survey Water Resources-Investiations Report 02-4193, page 7, Figure 3, Page 10, Figure 5A

PROJECT
FPL
CAPE CANAVERAL ENERGY CENTER

TITLE
GENERAL EAST-WEST HYDROGEOLOGICAL CROSS SECTION OF BREVARD COUNTY

PROJECT No. 083-87633			FILE No. 08387633CA018	REV. 0
DESIGN	MF	08/28/08		
GIS	NRL	10/06/08		
CHECK	RCM	10/24/08		
REVIEW	KFK	12/09/08		

FIGURE 3.3.1-2

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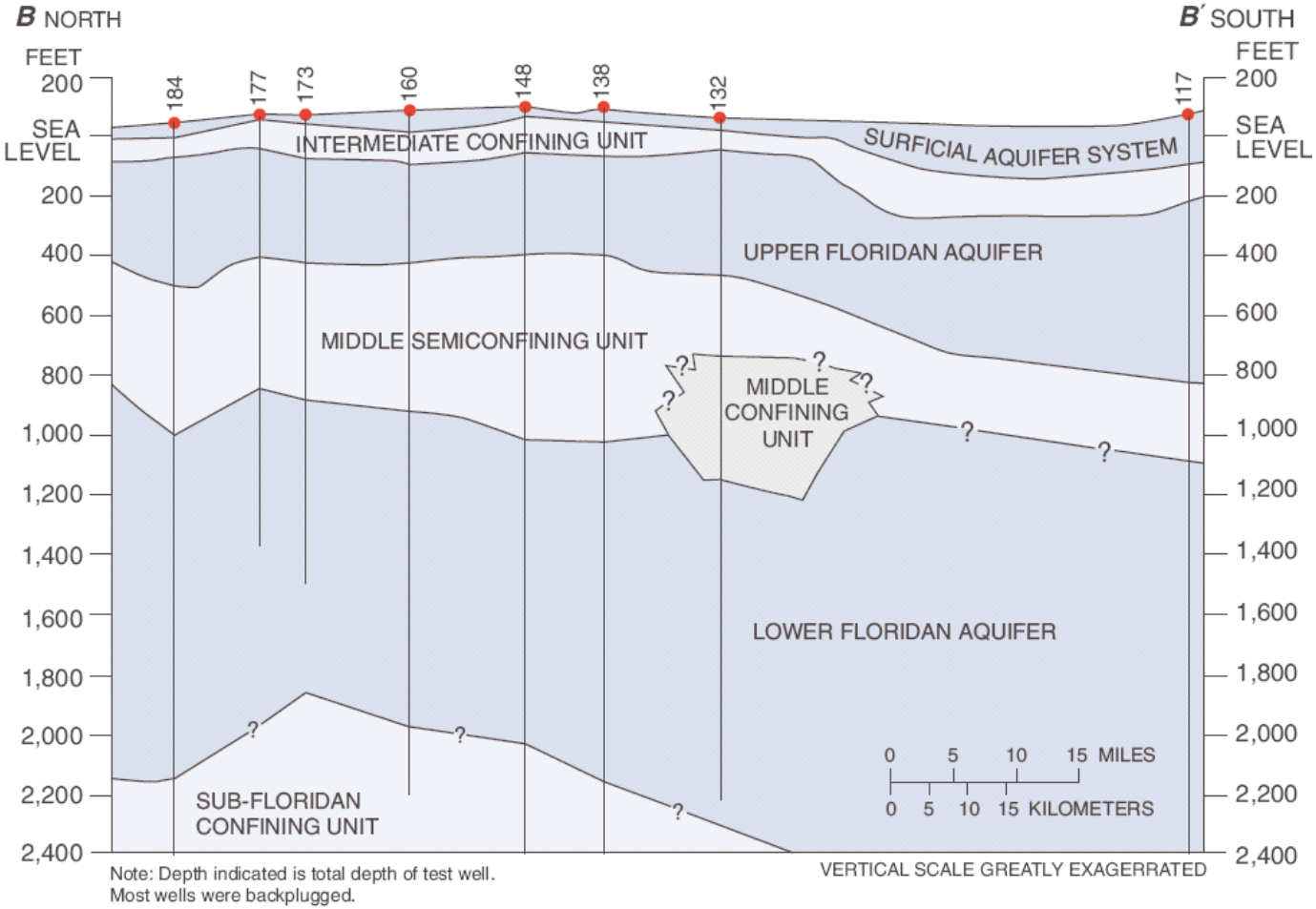
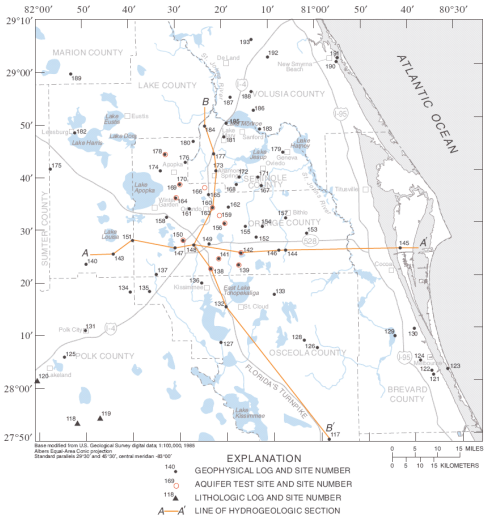


Note: Depth indicated is total depth of test well.
Most wells were backplugged.

AREA MAP



REFERENCE

1. U.S. Geological Survey Water Resources-Investiations Report 02-4193, page 7, Figure 3, Page 10, Figure 5B

PROJECT
FPL
CAPE CANAVERAL ENERGY CENTER

TITLE
GENERAL NORTH-SOUTH HYDROGEOLOGICAL CROSS SECTION OF BREVARD COUNTY

PROJECT No. 083-87633			FILE No. 08387633CA019	REV. 0
DESIGN	MF	08/28/08		
GIS	NRL	10/06/08		
CHECK	RCM	10/24/08		
REVIEW	KFK	12/09/08		

FIGURE 3.3.1-3

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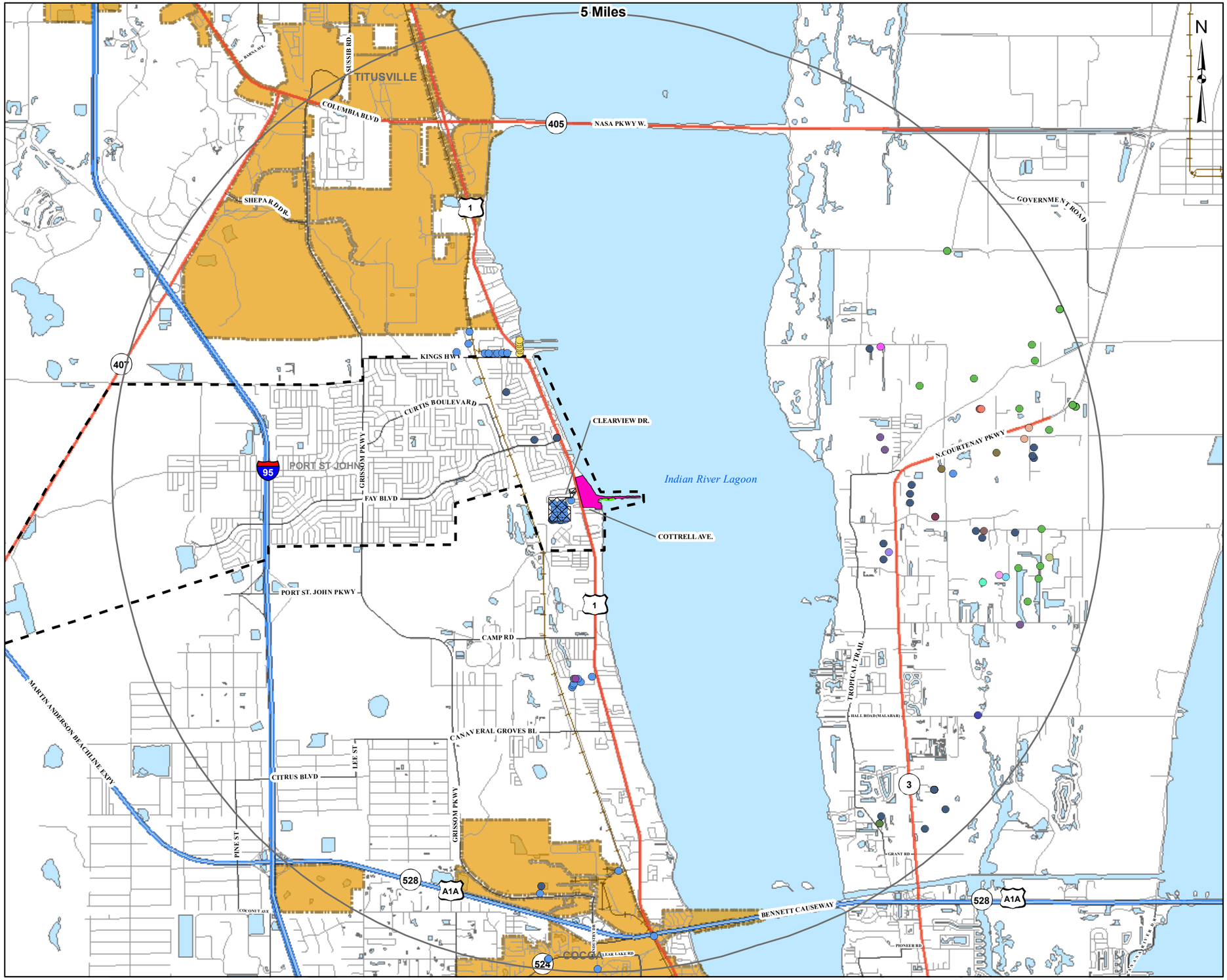

LEGEND

- FPL Cape Canaveral Energy Center (To Be Certified)
- Sovereign Submerged Lands Lease (To Be Certified)

Feat_Name

- Offsite Construction Laydown & Parking Area

Water Use Sources

- Barge Canal
- Borrow Pit
- DRAINAGE DITCH
- Ditch
- Ditch Pond
- Floridan Aquifer
- Grove Ditches
- Indian River
- Perimeter Ditch
- Possum Inn
- Retention Pond
- Surfical Aquifer
- Surficial Aquifer
- WHOLLY OWNED DITCHES
- Water Runoff Pond
- ditch
- internal ditches
- lake impoundment
- on-site pond
- Port St John Dependent Special District
- Municipalities

NOTE

Radius drawn from FPL Cape Canaveral Energy Center

REFERENCE

1. Cape Canaveral Energy Center Site Survey, Avirom & Associates Inc. 2008
2. Temporary Construction Laydown & Parking Area, FPL, 2008
3. Roads, Brevard County, 2008
4. Sovereign Submerged Lands Lease, FPL CAD Drawing No. CC042096, 1998
5. Water use sources, Saint Johns River Water Management Distrcit, 2008

0 0.5 1 2 Miles

PROJECT

FPL

CAPE CANAVERAL ENERGY CENTER PROJECT

TITLE

WATER USE PERMITS WITHIN A 5-MILE RADIUS

PROJECT No. 083-87633			FILE No. 08387633CA014	REV. 3
DESIGN	RCM	12/12/08	SCALE AS SHOWN	
GIS	NRL	12/12/08		
CHECK	RCM	12/12/08	**FIGURE 3.3.3-1**	
REVIEW	KFK	12/12/08		

FPL

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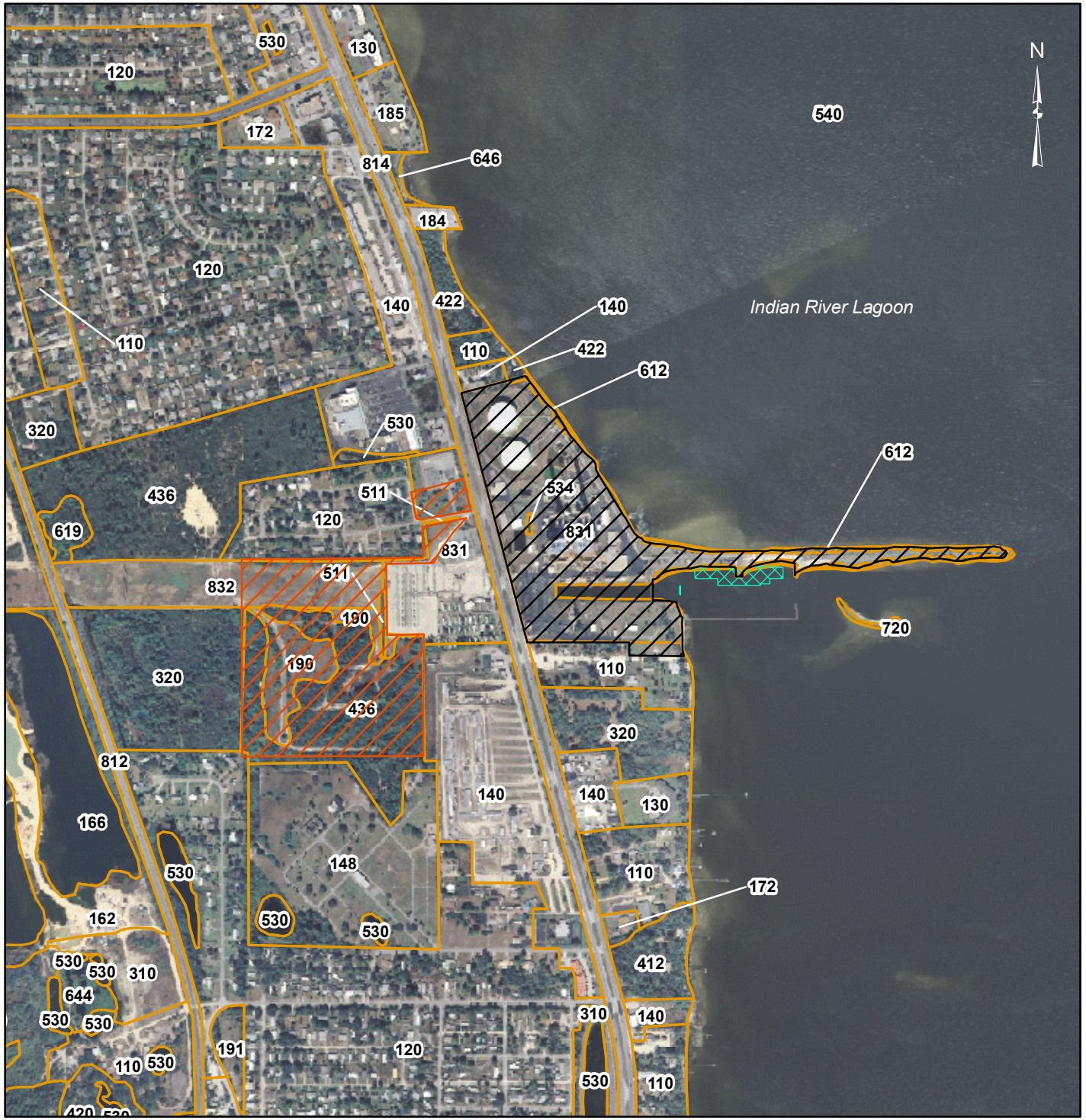


LEGEND

- FPL Cape Canaveral Energy Center (To Be Certified)
- Sovereign Submerged Lands Lease (To Be Certified)
- Offsite Construction Laydown & Parking Area

Vegetation / Land Use Classification

- 110 - RESIDENTIAL LOW DENSITY
- 120 - RESIDENTIAL MEDIUM DENSITY
- 130 - RESIDENTIAL HIGH DENSITY
- 140 - COMMERCIAL AND SERVICES
- 148 - CEMETERIES
- 162 - SAND AND GRAVEL PITS
- 166 - HOLDING PONDS
- 172 - RELIGIOUS
- 184 - MARINAS AND FISH CAMPS
- 185 - PARKS AND ZOOS
- 190 - OPEN LAND
- 191 - UNDEVELOPED LAND WITHIN URBAN AREAS
- 310 - HERBACEOUS (DRY PRAIRIE)
- 320 - SHRUB AND BRUSHLAND
- 411 - PINE FLATWOODS
- 412 - LONGLEAF PINE - XERIX OAK
- 420 - UPLAND HARDWOOD FORESTS
- 422 - BRAZILIAN PEPPER
- 436 - UPLAND SCRUB PINE AND HARDWOODS
- 511 - DITCHES
- 530 - RESERVOIRS
- 534 - RESERVOIRS <10 ACRES
- 540 - BAYS AND ESTUARIES
- 612 - MANGROVE SWAMPS
- 619 - EXOTIC WETLAND HARDWOODS
- 644 - EMERGENT AQUATIC VEGETATION
- 646 - TREELESS HYDRIC SAVANNA
- 720 - SAND OTHER THAN BEACHES
- 812 - RAILROADS
- 814 - ROADS AND HIGHWAYS
- 831 - ELECTRIC POWER FACILITIES
- 832 - ELECTRICAL POWER TRANSMISSION LINES

REFERENCE

1. Cape Canaveral Energy Center Site Survey, Avirom & Associates, Inc. 2008
2. Imagery, National Image Mosaics, 2006.
3. Land use classification, SJRWMD, 2004 Golder Associates, 2008
4. Offsite Construction Laydown & Parking Area, FPL, 2008
5. Sovereign Submerged Lands Lease, FPL CAD Drawing No. CC042096, 1998.

0 500 1,000 2,000 Feet

PROJECT

FPL

CAPE CANAVERAL ENERGY CENTER PROJECT

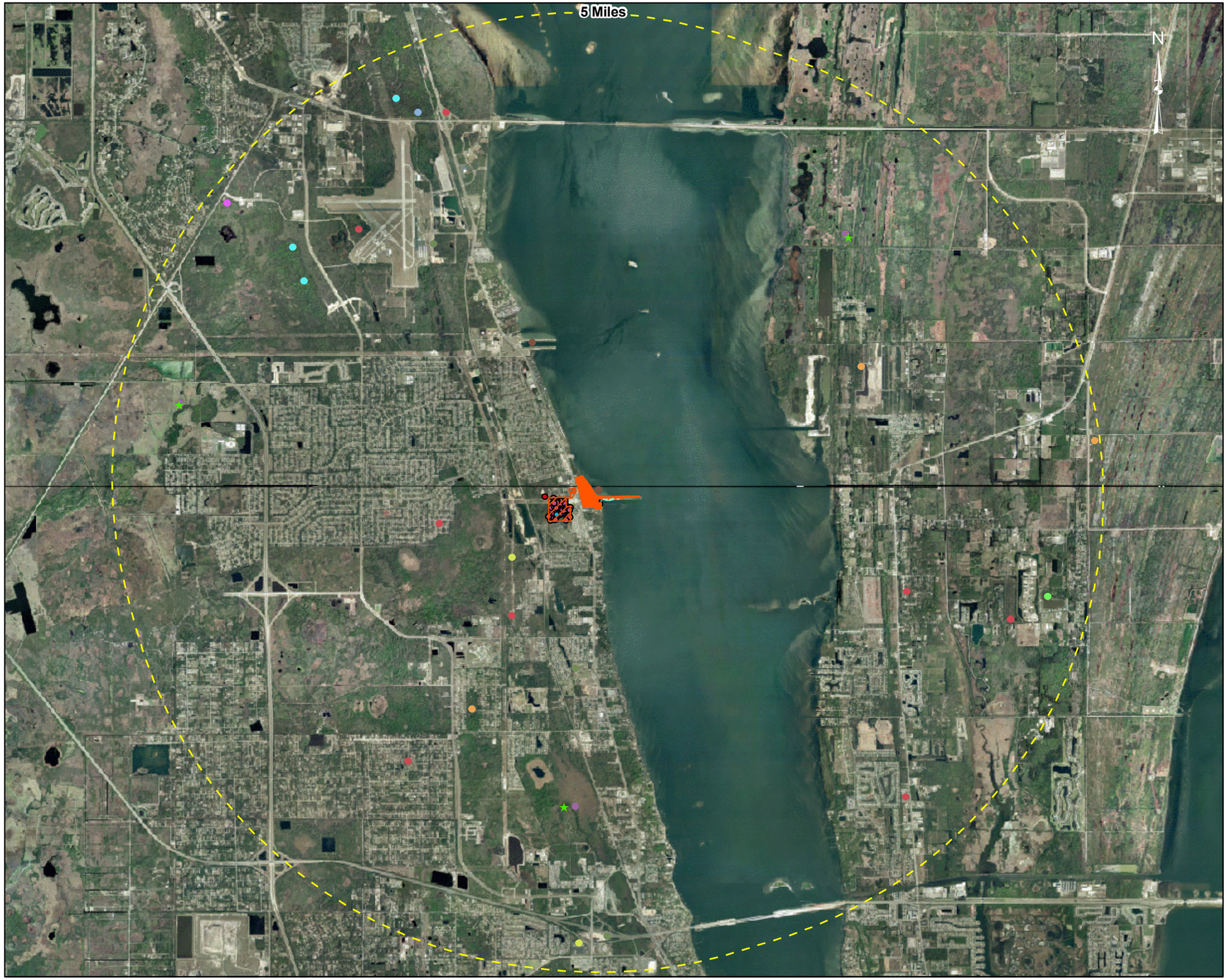
TITLE

VEGETATION / LAND USE

PROJECT No. 083-87633			FILE No. 08387633CA015	REV. 2
DESIGN	RCM	12/12/08	SCALE AS SHOWN	
GIS	NRL	12/12/08		
CHECK	RCM	12/12/08	FIGURE 3.3.5-1	
REVIEW	KFK	12/12/08		

FPL

Map Document: P:\GIS\PROJECTS\2008\083-87633_FPL_CCEC_RBEC_Conversion\Canaveral\CA_SCA\ActiveMapDocuments\08387633CA015_Rev1_LandUse_Vegetation.mxd / Modified 12/5/2008 3:49:28 PM / Plotted 12/5/2008 3:49:28 PM by rlamar



LEGEND

- FPL Cape Canaveral Energy Center (To Be Certified)
- Sovereign Submerged Lands Lease (To Be Certified)
- Offsite Construction Laydown & Parking Area
- Scrub Jay

Observed Species

- Brown Pelican
- Little Blue Heron
- Scrub Jay (3)
- White Ibis (5)
- Gopher Tortoise Burrows
- FWC Bald Eagles Nests

FNAI Reported Occurences

- Bald Eagle
- Celestial Lily
- Curtiss' Sandgrass
- DATA SENSITIVE ELEMENT OCCURRENCE - contact FNAI for more information
- Florida Scrub Lizard
- Florida Scrub-jay
- Giant Orchid
- Gopher Tortoise
- Hand Fern
- Manatee aggregation site

NOTE

Radius drawn from FPL Cape Canaveral Energy Center

REFERENCE

1. Imagery, National Imagery Mosaics, USGS, 2006.
2. FNAI occurences, FNAI, 2006.
3. Observed Species, Golder Associates, 2008.
4. Eagles Nests, FWC, 2006.
5. Sovereign Submerged Lands Lease, FPL CAD Drawing No. CC042096, 1998.
6. Offsite Construction Laydown & Parking Area, FPL, 2008.
7. Cape Canaveral Energy Center Site Survey, Avirom & Associates, Inc., 2008.

0 0.5 1 2 Miles

PROJECT

FPL

CAPE CANAVERAL ENERGY CENTER PROJECT

TITLE

LISTED AND OBSERVED SPECIES OCCURENCES WITHIN 5-MILES

PROJECT No. 083-87633			FILE No. 08387633CA020	REV. 2
DESIGN	RCM	12/12/08	SCALE AS SHOWN	
GIS	NRL	12/12/08		
CHECK	RCM	12/12/08		
REVIEW	KFK	12/12/08		

FPL

FIGURE 3.3.6-1

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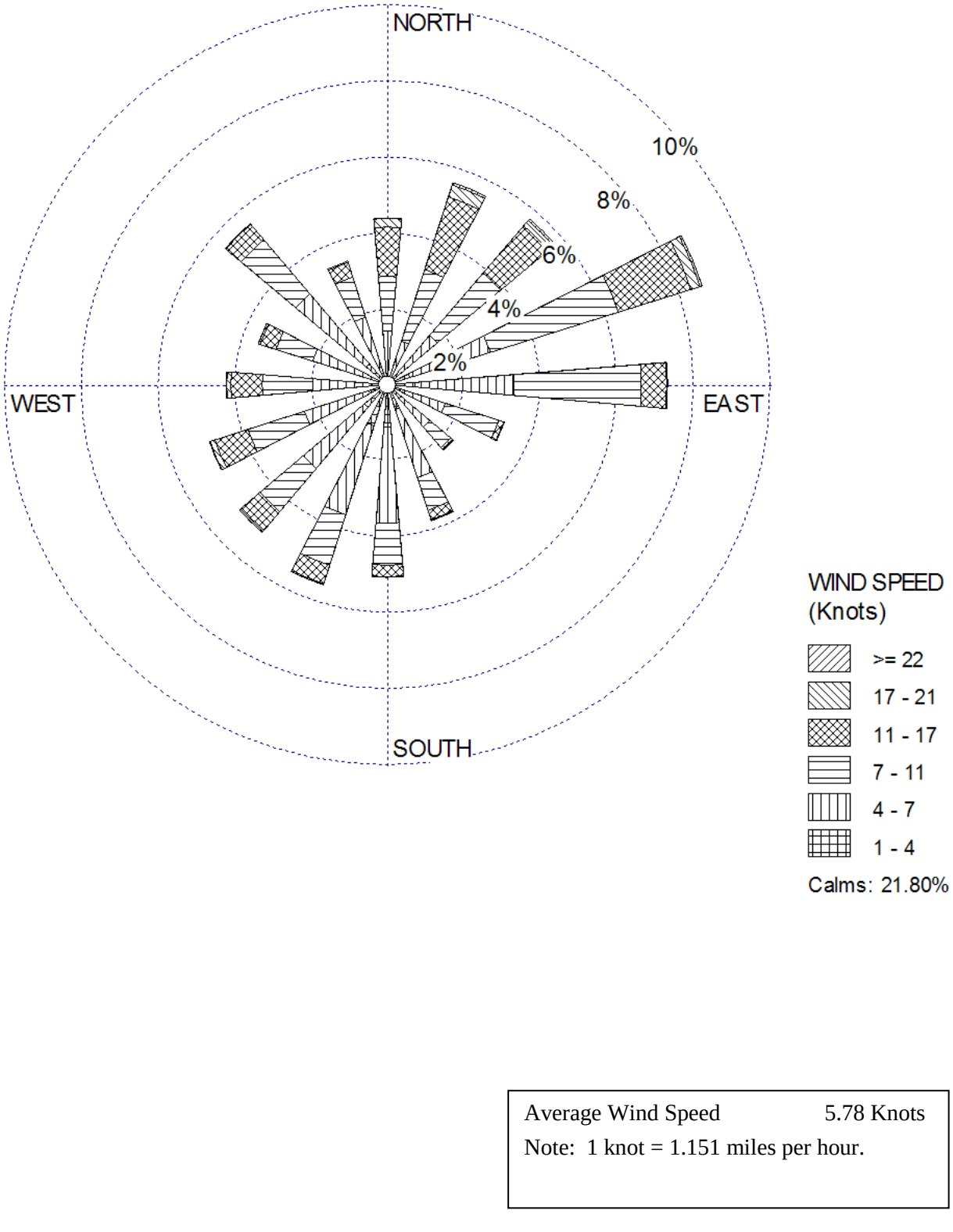


Average Wind Speed	5.78 Knots

Note: 1 knot = 1.151 miles per hour.

Figure 3.3.7-1. Annual Wind Rose for 2001 to 2005
at Daytona Beach International Airport, Florida (Station No. 12844)
FPL Cape Canaveral Energy Center, Brevard County, Florida

08387633\Rpts\SCA\CCEC\Fig 2.3.7-1.doc

Source: National Climatic Data Center, 2001–2005; Golder, 2008.

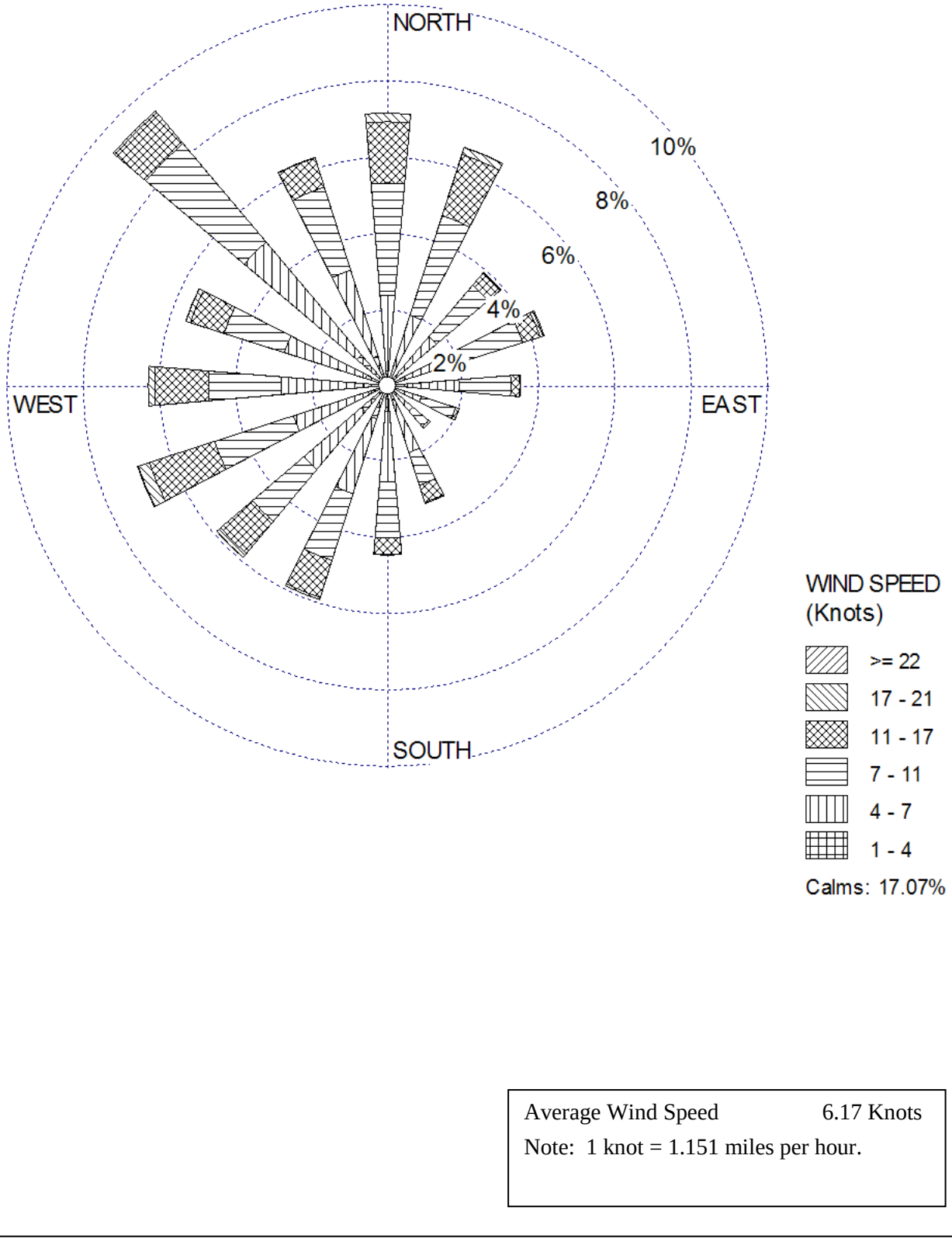
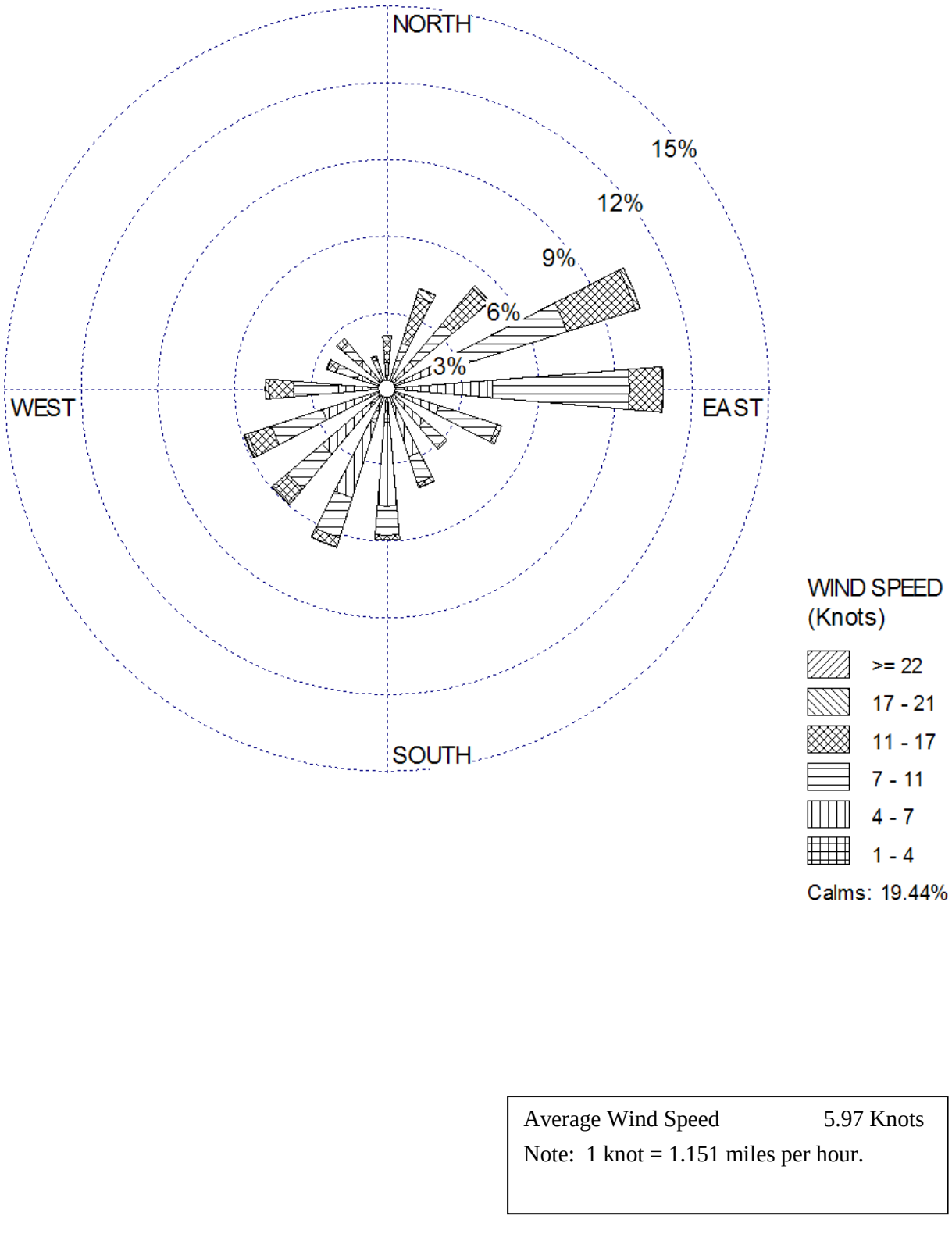


Figure 3.3.7-2. Winter Wind Rose for 2001 to 2005
at Daytona Beach International Airport, Florida (Station No. 12844)
FPL Cape Canaveral Energy Center, Brevard County, Florida

08387633\Rpts\SCA\CCEC\Fig 2.3.7-1.doc

Source: National Climatic Data Center, 2001–2005; Golder, 2008.



Average Wind Speed	5.97 Knots

Note: 1 knot = 1.151 miles per hour.

Figure 3.3.7-3. Spring Wind Rose for 2001 to 2005
at Daytona Beach International Airport, Florida (Station No. 12844)
FPL Cape Canaveral Energy Center, Brevard County, Florida

08387633\Rpts\SCA\CCEC\Fig 2.3.7-1.doc

Source: National Climatic Data Center, 2001–2005; Golder, 2008.

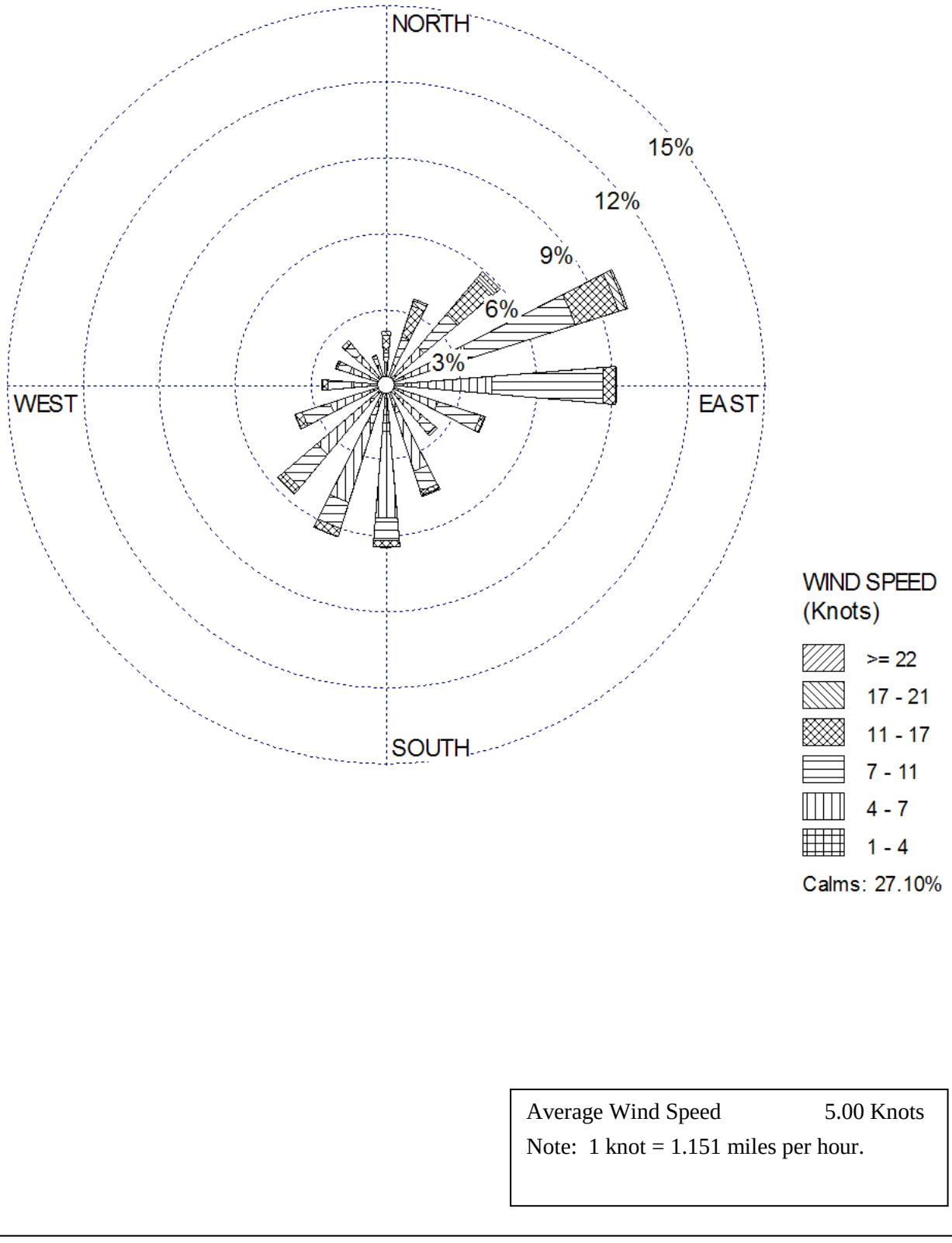


Figure 3.3.7-4. Summer Wind Rose for 2001 to 2005
at Daytona Beach International Airport, Florida (Station No. 12844)
FPL Cape Canaveral Energy Center, Brevard County, Florida

08387633\Rpts\SCA\CCEC\Fig 2.3.7-1.doc

Source: National Climatic Data Center, 2001–2005; Golder, 2008.

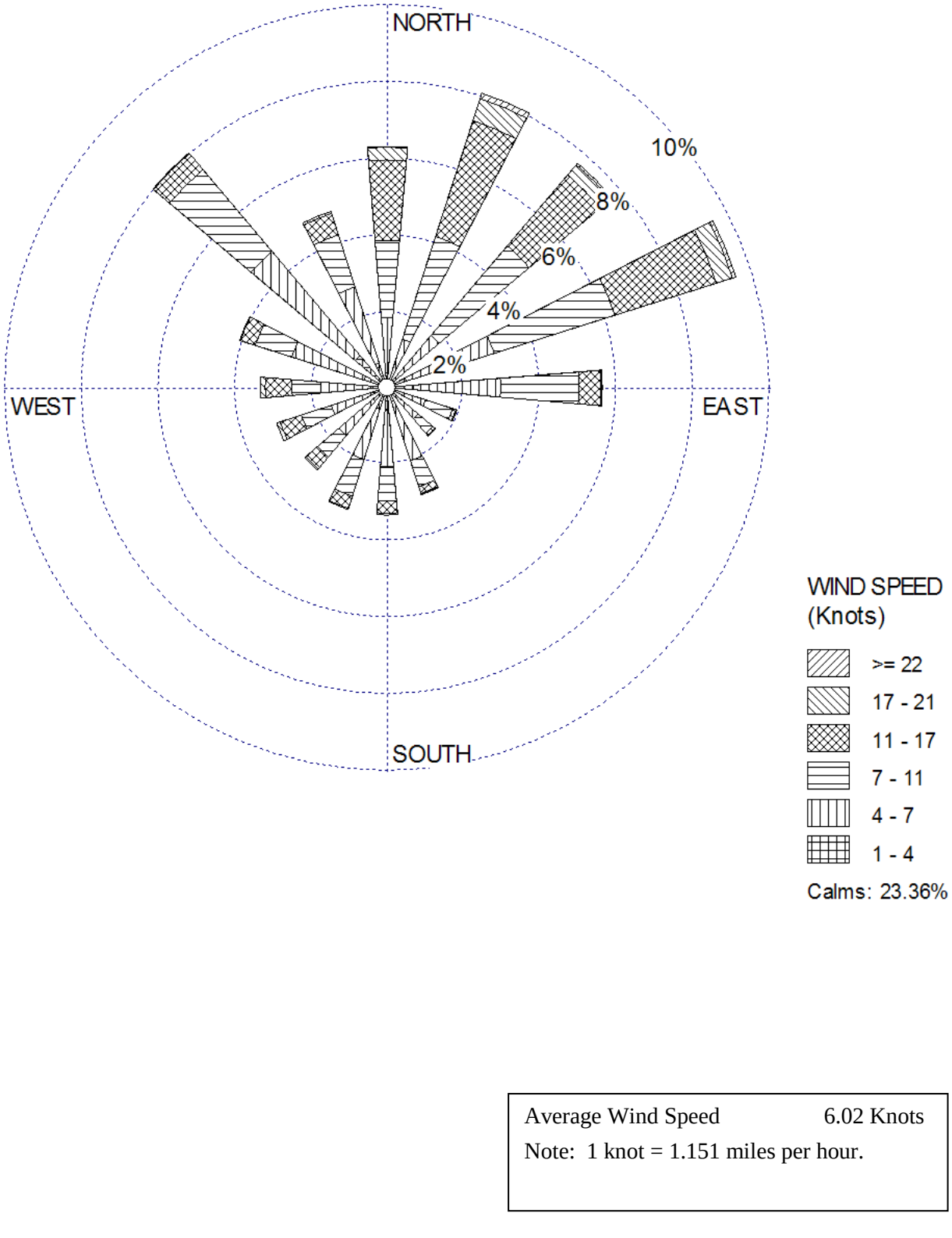
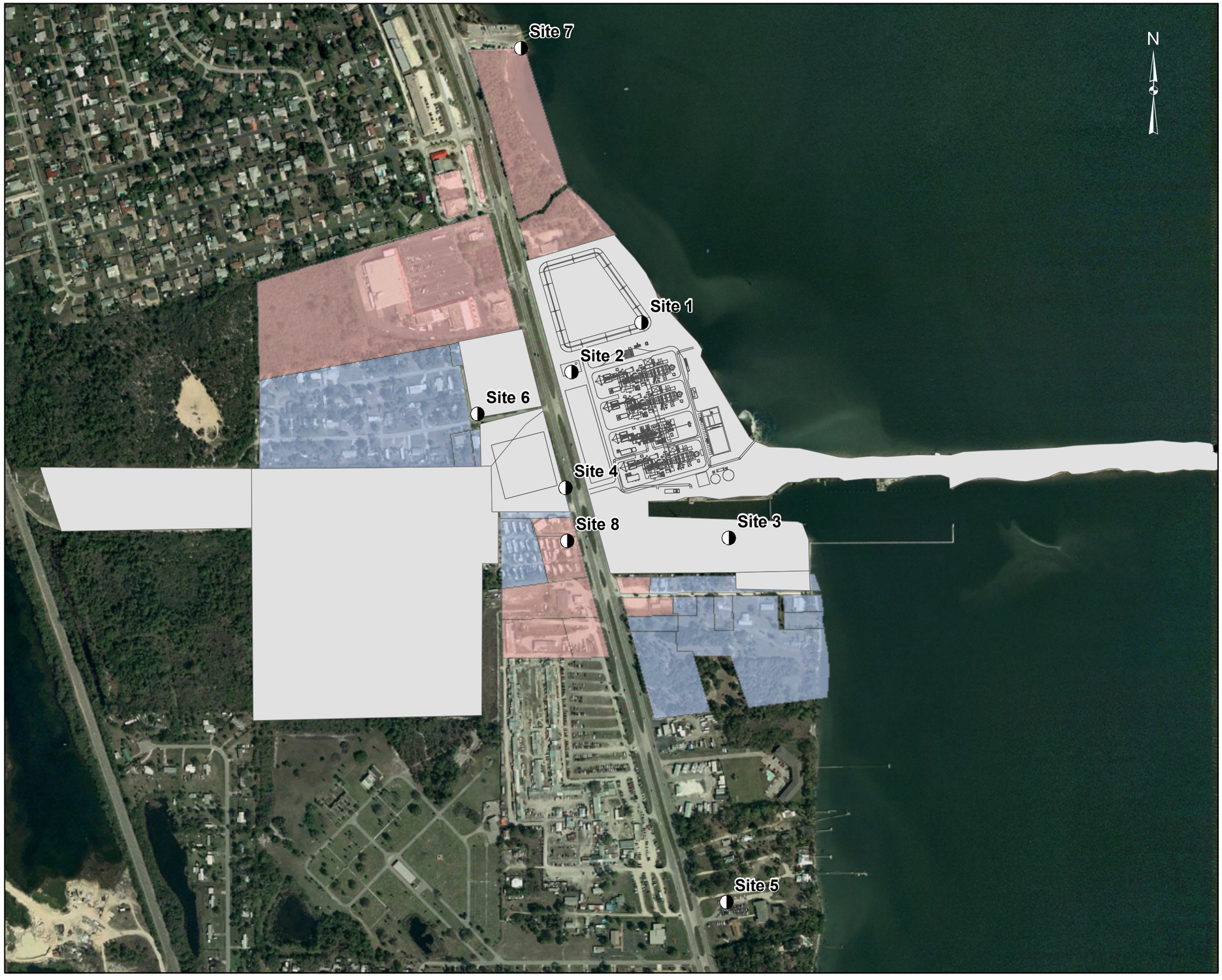


Figure 3.3.7-5. Fall Wind Rose for 2001 to 2005
at Daytona Beach International Airport, Florida (Station No. 12844)
FPL Cape Canaveral Energy Center, Brevard County, Florida

08387633\Rpts\SCA\CCEC\Fig 2.3.7-1.doc

Source: National Climatic Data Center, 2001–2005; Golder, 2008.



LEGEND

- Monitoring Locations
- FPL Property

Zoning

- Residential
- Commercial

REFERENCE

Based on conceptual design information.
Aerial Express, 2006; Brevard County Planning and Zoning Office GIS Dept.
Projection: Transverse Mercator Datum: NAD 83 Coordinate System: UTM Zone 17

500 0 500 Feet

PROJECT

FPL CAPE CANAVERAL ENERGY CENTER

TITLE

NOISE MONITORING LOCATIONS

PROJECT No. 083-87556			SCALE AS SHOWN	REV. 0
DESIGN	AB	07 Oct. 2008		
GIS	AB	07 Oct. 2008		
CHECK	DB	07 Oct. 2008		
REVIEW	BM	07 Oct. 2008		

FIGURE 3.3.8-1

4.0 THE PLANT AND DIRECTLY ASSOCIATED FACILITIES

4.1 Background

This chapter provides a description of the Project, including the CCEC, a layout, key components and their operation, and proposed controls for air emissions and water discharges. Fuel specifications are provided for natural gas and ultra low-sulfur light oil. Estimates of the expected character, quality, and quantity of discharges and emissions from the CCEC are provided.

The existing Cape Canaveral Plant consists of two nominal 400-MW fossil fuel-fired steam-generating units. The commercial in-service date for Unit 1 was April 1965, and the commercial in-service date for Unit 2 was May 1969. The units are authorized pursuant to FDEP Final Title V Permit 009006-003-AV to operate on natural gas, No. 6 fuel oil, and No. 2 fuel oil. Each unit has a permitted maximum heat input of 4,000 million British thermal units per hour (MMBtu/hr) on oil and 4,180 MMBtu/hr on natural gas. The air emissions from the units are exhausted through two 397-foot stacks.

Figure 4.1.0-1 shows the CCEC Site and the offsite construction laydown and parking area to be located west of U.S. Highway 1.

Condenser cooling for CCEC will be accomplished using the existing Plant's once-through cooling system intake and discharge structures which withdraw from and discharge to the Indian River Lagoon, currently authorized to operate under FDEP Industrial Wastewater Facility Permit FL0001473 and Consumptive Use Permit No. 10652 from the SJRWMD. Locating the converted Plant at the Site and selection of the combined cycle technology will maximize the beneficial use of the Site while minimizing environmental, land use, and cost impacts. CCEC will benefit from the existing infrastructure. CCEC will utilize the existing infrastructure, including a previously developed site, existing access roads, existing access to the FPL electric system, northern fuel oil storage tank, existing barge-unloading facility for liquid fuel, existing cooling water system, and the existing FGT onsite gas yard and pipeline.

The CCEC Project consists of the conversion of the existing Cape Canaveral Plant into a nominal 1,250-MW "3-on-1" combined cycle power plant. The "3-on-1" unit will consist of three nominal 250-MW advanced CTs and three HRSGs, which will utilize the waste heat from the CTs to produce

steam to be utilized in a single steam turbine generator. The use of the existing infrastructure at the Cape Canaveral Plant for the converted Plant allows the location of 1,250 MW in generation capacity where only 800 MW of capacity is currently located.

Two different classes of CT designs are being considered for the converted Plant: the Mitsubishi Power Systems (MPS) "G" Class CTs, and the Siemens Power Generation, Inc. "H" Class CT. The MPS "G" Class CTs consist of the M501G (as authorized for the West County Energy Center), the updated M501G3 and the M501G1PLUS. Duct burners are proposed for each HRSG and will be fired during peak demand periods to achieve the total nominal generating capacity. Duct firing will be limited to an equivalent of 2,880 hours per CT per year at the maximum firing rate.

Each CT will utilize evaporative cooling for inlet air cooling. Evaporative cooling systems achieve adiabatic cooling using water in the form of water evaporated from a treated paper material. The evaporated water extracts the latent heat of vaporization from the inlet air stream when the water droplet is converted to water vapor. Heat is removed at a rate of 1,075 British thermal units per pound (Btu/lb) of water. The result is a cooler, more moisture-laden air stream. This allows additional power to be produced.

The CTs will use natural gas as the primary fuel with ultra low-sulfur distillate "light oil" used as a backup fuel. The HRSG duct burners will fire natural gas only. Gas for CCEC will be transported to the Site via a natural gas pipeline. New onsite gas compressors may be installed by FPL to raise the gas pressure to the appropriate level for the CTs. The Project may also involve installation of a new onsite gas yard and onsite gas pipeline. Ultra low-sulfur light oil will be either trucked or barged to the Site and stored in the existing north fuel oil tank. When firing natural gas, NO_x emissions will be controlled using dry low-NO_x (DLN) combustion technology and selective catalytic reduction (SCR). Demineralized water is utilized during firing of ultra low-sulfur light oil to reduce the combustion temperature and the generation of NO_x emissions from the CT. Water injection and SCR will be used to reduce NO_x emissions when firing ultra low-sulfur light oil.

Primary water uses at CCEC will be the cooling water and process water. Cooling water is required for condenser cooling, auxiliary cooling and cooling pump seal water. Condenser cooling for the steam cycle portion of the converted Plant will be accomplished using the existing once-through cooling water system intake and discharge structures. Process water is required for CT inlet air

cooling, NO_x injection water, steam cycle makeup, service water and fire protection. Minor uses will include intake screen wash water, potable water for employee use and water for landscape irrigation.

The Site stormwater management system for the converted Plant will be designed to handle a 25-year 24-hour storm event. Contact stormwater runoff from the Power Block and equipment areas will be treated through an oil/water separator and routed to the onsite stormwater retention ponds. Non-contact stormwater from outside the Power Block will also be collected and routed to the stormwater ponds. The Site stormwater management system is designed to meet all federal, State, regional, and local requirements (see Subsection 4.8.1). The offsite construction laydown and parking area will meet stormwater management requirements through BMPs (see Subsection 4.8.1).

CCEC will be connected to the existing FPL transmission network through the existing offsite switchyard. Although no new offsite transmission lines are required to connect CCEC to FPL's existing transmission network, FPL will need to relocate and upgrade the existing transmission line system within current easements or FPL-owned property. Additional distribution lines will be installed to provide temporary electric service to CCEC during construction.

4.2 Site Layout

The Power Block will be located in the central portion of the existing Site (Figure 4.2.0-1). Typical profiles of a CT/HRSG train are shown in Figures 4.2.0-2 (north-south) and 4.2.0-3 (east-west).

Non-contact stormwater runoff from the Site will be drained into stormwater retention ponds. Contact stormwater runoff from the Power Block for CCEC and equipment areas will be treated through an oil/water separator and routed to stormwater retention ponds. Stormwater runoff that is collected in the retention ponds will be managed by a combination of detention/retention, percolation and evaporation.

4.3 Fuel

The primary fuel used by the CTs and for HRSG duct firing will be natural gas, delivered to the Site via a natural gas pipeline. Typical properties of natural gas are shown in Table 4.3.0-1. The heat content is typically about 21,000 Btu/lb [lower heating value (LHV)] with a maximum sulfur content of 2 grains per 100 standard cubic feet (gr/100 scf) of gas.

Ultra low-sulfur light oil will be used as a backup fuel for an equivalent of 1,000 hours per year at baseload conditions. Typical properties of ultra low-sulfur light oil are shown in Table 4.3.0-2. The heat content is typically about 18,400 Btu/lb (LHV) with a maximum sulfur content of 0.0015 percent by weight.

No onsite storage will be provided for natural gas. Ultra low-sulfur light oil will be delivered to the Site by truck or barge and will be stored in the northern existing 11.3-million-gallon fuel oil storage tank (268,000 barrels). The southern existing tank will be removed according to applicable regulations.

The generating capacity of a combined cycle plant is affected by ambient temperature, with increased temperature resulting in less efficient electric production. Greater overall fuel consumption will occur at lower ambient temperatures. For the purpose of calculating maximum hourly fuel use quantities representative of a nominal 1,250-MW combined cycle unit, the following specific operating conditions for the CTs were used (see Appendix 10.2.5):

- 35°F dry-bulb turbine inlet temperature;
- 60-percent relative humidity;
- 38 feet NGVD elevation; and
- An equivalent of 20,909-British thermal units per pound (Btu/lb) and 918 British thermal units per standard cubic foot (Btu/scf) heating value (LHV) of natural gas and 18,387-Btu/lb and 129,900 Btu/gallon heating value (LHV) for ultra low-sulfur light oil.

The maximum heat input for the CTs being considered for CCEC ranges from 2,785 MMBtu/hr (LHV) to 2,488 MMBtu/hr (LHV) when firing natural gas (100-percent capacity, 35°F). The corresponding maximum fuel usage ranges from about 2.6 million cubic feet per hour (MMcf/hr) to 2.7 MMcf/hr of natural gas for each CT. Maximum potential fuel usage at 59°F turbine inlet temperature ranges from about 6.6×10^{10} cubic foot per year (cf/yr) to 6.9×10^{10} cf/yr of natural gas for CCEC.

The HRSG duct burners associated with each CT/HRSG train will have a maximum firing rate of 475 MMBtu/hr [high heating value (HHV)] or 428 MMBtu/hr (LHV). The HRSG duct burner maximum heat input rate will be the same for each CT being considered for the converted Plant. The maximum annual fuel usage for the duct burners is based on an equivalent 2,880 hours per year at this

heat input. The maximum potential annual fuel usage for the duct burners is calculated to be about 4 billion scf/year.

Ultra low-sulfur light oil use will be limited to the equivalent of 1,000 hours per year per CT at full load. The maximum fuel use is about 17,500 gallons per hour per CT at 59°F turbine inlet with an annual usage rate of 52 million gallons for three CTs each operating for 1,000 hours and a turbine inlet temperature of 59°F.

4.4 Air Emissions and Controls

4.4.1 Air Emissions Units

Air pollutants will be emitted from the CT/HRSGs when firing natural gas and ultra low-sulfur light oil. Air emissions result from either the combustion process or impurities in the fuel. Tables 4.4.1-1A through 4.4.1-2B present the performance and maximum estimated emission rates of regulated pollutants for each CT/HRSG being considered for CCEC. Information for the MPS "G" Class CTs is presented in Tables 4.4.1-1A and 4.4.1-2A; and information for the Siemens "H" Class CT is presented in Tables 4.4.1-1B and 4.4.1-2B.

The maximum estimated emission rates when firing natural gas and ultra low-sulfur light oil were determined using the manufacturer's information for the equipment proposed for the converted Plant. The design parameters are provided in Tables 4.4.1-1A through 4.4.1-2B for operating loads of 100 percent (baseload) and 75 percent, and a range of turbine inlet temperatures. Appendix 10.2.5, the Air Construction Permit Application, presents the basis for the emission rates and maximum annual emissions of regulated and non-regulated pollutants.

During combustion, two primary types of NO_x are formed: fuel NO_x and thermal NO_x. Fuel NO_x emissions are formed through the oxidation of a portion of the nitrogen contained in the fuel. Thermal NO_x emissions are generated through the oxidation of a portion of the nitrogen contained in the combustion air. NO_x formation can be limited by lowering combustion temperatures (through water or steam injection) and/or staging combustion (a reducing atmosphere followed by an oxidizing atmosphere, known as dry NO_x control). The proposed NO_x emissions rates for CCEC (concentrations) are 2.0 parts per million-dry by volume (ppmvd), corrected to 15-percent oxygen (O_2) or less when firing natural gas and 8 ppmvd corrected to 15-percent O_2 or less when firing ultra low-sulfur light oil.

Carbon monoxide (CO) is formed by incomplete combustion of fuel. High combustion temperatures, adequate excess air, and good fuel/air mixing during combustion will minimize CO formation. CO formation is limited by ensuring complete efficient combustion of the fuel in the turbines. Recent improvements in CT combustor technology allow for both reduced NO_x emissions and low CO emissions.

The proposed CO emission rates for the MPS "G" Class CTs when firing natural gas are 4.1 ppmvd corrected to 15-percent O_2 at baseload operation and 7.6 ppmvd corrected to 15-percent O_2 with maximum duct firing. For the Siemens "H" Class CTs, the proposed CO emission rates when firing natural gas are 5 ppmvd corrected to 15-percent O_2 at baseload operation and 7.2 ppmvd corrected to 15-percent O_2 with maximum duct firing.

The proposed CO emission rates for oil-firing at baseload conditions are 8 ppmvd corrected to 15-percent O_2 for the MPS "G" Class CTs and 10 ppmvd corrected to 15-percent O_2 for the Siemens "H" Class CTs.

Similarly, volatile organic compound (VOC) emissions are formed by incomplete combustion of fuel. High combustion temperatures, adequate excess air, and good fuel/air mixing during combustion will minimize VOC formation. VOC formation is limited by ensuring complete efficient combustion of the fuel in the turbines. Recent improvements in CT combustor technology allow for both reduced NO_x emissions and low VOC emissions.

The proposed VOC emission rates for the MPS "G" Class CTs when firing natural gas are 1.2 ppmvd corrected to 15-percent O_2 at baseload operation and 1.6 ppmvd corrected to 15-percent O_2 with maximum duct firing. For the Siemens "H" Class CTs, the proposed CO emission rates when firing natural gas are 1.5 ppmvd corrected to 15-percent O_2 at baseload operation and 1.9 ppmvd corrected to 15-percent O_2 with maximum duct firing.

The proposed VOC emission rates for oil-firing at baseload conditions are 6 ppmvd corrected to 15-percent O_2 for the MPS "G" Class CTs and 2 ppmvd corrected to 15-percent O_2 for the Siemens "H" Class CTs.

Maximum SO_2 emission rates are controlled and minimized by the very low sulfur content in the fuels, which will be 2 grains sulfur/100 scf for natural gas and 0.0015-percent sulfur by weight for ultra low sulfur light oil.

CCEC will be equipped with two 100-percent capability, 2,250-kW emergency generators. These emergency generators will be used when electric power is not available. This would primarily occur during catastrophic events such as hurricanes. Appendix 10.2.5 contains emissions and manufacturer's information for the emergency generators proposed for the converted Plant. Normally these emergency generators would be operated 1 to 2 hours per month for maintenance and reliability testing.

The converted Plant will also include one natural gas-fired fuel heater and a spare. These heaters will utilize a heat transfer fluid for heating the natural gas and be fired with only natural gas. These heaters will have a heat input of 10 MMBtu/hr or less and will be used as necessary to heat natural gas above the dew point. Only one fuel heater will be necessary for the operation of CCEC. Appendix 10.2.5 contains performance and emissions information for the fuel heaters.

The auxiliary boiler will be used as necessary for startup. The limited-use auxiliary boiler will have a maximum heat input of 99.8 MMBtu/hr firing natural gas. Appendix 10.2.5 contains performance and emissions information for the auxiliary boiler. (Note: For construction, a temporary boiler will be required for steam blows and cleaning. This boiler is described in Appendix 10.2.5).

CCEC also includes a new gas compressor station to increase pressure from the existing FGT lateral to the CTs. The gas compressor station will consist of up to seven reciprocating gas compressors. These gas compressors will be equipped with oxidation catalysts to reduce the emissions of CO and VOCs. Appendix 10.2.5 contains performance and emissions information for the gas compressors.

The northern existing 11.3-million-gallon fuel oil storage tank will be used to store the ultra low-sulfur light oil. Appendix 10.2.5 contains VOC emissions information for the fuel oil tank.

Finally, CCEC will be equipped with a 300-hp fire pump engine. This engine will be used when necessary during catastrophic events such as fires. Appendix 10.2.5 contains emissions and manufacturer's information for the engine proposed for the converted Plant. Normally, this fire pump engine would be operated only 1 to 2 hours per month for maintenance and reliability testing.

The total annual emissions from CCEC include air emissions from the CTs, duct burners, fuel heater, emergency generators, auxiliary boiler, fire pump engine, compressor station, and fuel oil tank. Tables 4.4.1-3A to 4.4.1-3B present the annual potential emissions for CCEC for the MPS "G" Class, and Siemens "H" Class CTs, respectively. Annual emissions were based on maximum emissions for baseload operation and ambient temperatures of 59°F. The maximum emissions are based on 7,760 hours firing natural gas and 1,000 hours per year firing oil. Natural gas firing includes 2,880 hours with maximum duct firing. The potential emissions are based on the 59°F turbine inlet temperature at 100-percent load condition since it represents a conservative average when the annual average temperatures are slightly higher than 70°F.

Tables 4.4.1-3A to 4.4.1-3B present the net emission changes resulting from the conversion of the existing plant to the CCEC reflecting the maximum projected CCEC emissions and the resulting changes compared to the existing Cape Canaveral Plant, and the PSD significant emission rates, which are thresholds for PSD review for modifications to major sources. PSD review is required for emissions of a pollutant greater than the listed PSD significant emission rate. As shown in these tables, the net emission changes for CCEC are less than the PSD significant emission rates for all pollutants. The Air Construction Permit Application (see Appendix 10.2.5) is being filed for the purpose of establishing federally-enforceable emission limitations that insure the Project will not result in a significant net increase in emissions of any regulated air pollutant, in accordance with the Department's federally-approved minor source air construction permit program under Florida's federally-required State Implementation Plan. Nevertheless, as discussed in Section 4.4.3, the air emission controls are representative of BACT emission limits under PSD regulations.

4.4.2 Air Emission Controls

The use of clean fuel (i.e., natural gas), combustion controls, and air pollution control equipment will minimize air emissions and ensure compliance with applicable emission-limiting standards. Using clean fuels will minimize emissions of SO_2, PM/PM_{10}, and other fuel-bound contaminants. Combustion controls will minimize the formation of NO_x and the formation of CO and VOCs by combustor design. Further NO_x reduction will be achieved by SCR. The combination of these techniques has been determined to represent BACT on previous combined cycle projects based on an evaluation of economic, energy, and environmental impacts. The following subsection presents a summary of the Air Pollution Control Technology proposed for CCEC, which is presented in detail in the Air Construction Permit Application (Appendix 10.2.5).

CCEC, among other measures, will continue FPL's major efforts to reduce CO_2 emissions in FPL's system. The maximum CO_2 emission rate after the conversion of the Cape Canaveral Plant will be about one-half the maximum CO_2 emission rate for the existing Plant. This reduction in CO_2 emission rate is a result of the efficiency of advanced combined cycle technology and the use of natural gas. The CCEC will be among the most efficient natural gas fired generating units in FPL's system, and will displace generation that would otherwise be produced by less efficient units in FPL's system, thereby reducing system CO_2 emissions. The increased efficiency can be shown by the CO_2 emission rate in pounds of CO_2 emitted per megawatt of energy produced per hour (lb/MW-hr). Figure 4.4.2-1 shows the lb/MW-hr emission rates before and after the conversion of the Cape Canaveral Plant to combined cycle technology. As shown in this figure, the CO_2 emission rate for CCEC will be 753 lb/MW-hr, while the CO_2 emission rates for the existing Cape Canaveral Plant is 1,440 lb/MW-hr, or 190 percent higher than CCEC. Moreover, CCEC will reduce FPL's system emissions of CO_2 by nearly 8 million tons from 2013 through 2040, which will be a significant reduction in CO_2 emissions FPL's system as a direct result of the Project (see Appendix 10.8).

4.4.3 Control Technology Description

FDEP has adopted PSD rules in Rule 62-212.400, F.A.C. The BACT review is part of the evaluation of control technology under the Florida PSD rules. BACT review is required only for those pollutants that trigger PSD review. BACT is applicable to all pollutants for which PSD review is required and is pollutant specific. It is an emission limitation that is based on the maximum degree of reduction for each regulated pollutant, which is determined to be appropriate after taking into account the energy, environmental, and economic impacts and other costs. The emission limits proposed for CCEC are reflective of BACT, even though PSD review is not required for the converted Plant.

EPA updated the NSPS for stationary CTs that will commence construction after February 18, 2005. The Subpart KKKK requirements apply to units with a gross capacity of greater than 1 MW. The Subpart KKKK requirements applicable to CTs greater than 30 MW apply to the CT/HRSG trains associated with CCEC. The NO_x emissions are limited to 15 parts per million (ppm) corrected to 15-percent O_2 or 0.43 lb/MW-hr for gas-firing and 42 ppm corrected to 15-percent oxygen or 1.3 lb/MW-hr for light oil firing. For SO_2 emissions, Subpart KKKK requirements limit emissions to 0.9 lb/MW-hr or a potential total sulfur content equivalent to 0.06 pound per million British thermal units (lb/MMBtu) if multiple fuels are fired.

NSPS are also applicable to the auxiliary boiler, fuel heaters, gas compressors, fire pump engine, and emergency generators. The EPA NSPS Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units, applies to the auxiliary boilers and fuel heaters. For the emergency generators, gas compressors, and fire pump engine, NSPS Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, is applicable.

Appendix 10.2.5 of the SCA contains the Air Construction Permit Application for CCEC. The application includes the air pollution control technology evaluation for CCEC and addresses air quality impacts for compliance with AAQS. The remainder of this section briefly describes those control technologies that are proposed for CCEC.

4.4.3.1 Nitrogen Oxides

There will be a net emissions decrease of more than 7,000 TPY for NO_x emissions (i.e., a 93-percent reduction from historical emissions) with CCEC. PSD review, including a BACT determination, is not applicable. However, the NO_x control technology and emission limits proposed for CCEC are consistent with emission limits established as BACT in Florida and EPA Region IV for similarly designed projects. The use of DLN combustors and SCR for CCEC with NO_x emission levels of 2 ppmvd corrected to 15-percent O_2 when firing natural gas and 8 ppmvd corrected to 15-percent O_2 is consistent with recently established BACT emission limits for other combined cycle units when firing ultra low-sulfur light oil. Similarly, the NO_x emission rates proposed for the auxiliary boiler, natural gas heaters, emergency generators, and gas compressors have been established as BACT in previous PSD permits.

DLN combustor technology has been offered and installed by CT manufacturers to reduce NO_x emissions by inhibiting thermal NO_x formation through premixing fuel and air prior to combustion and providing pre-mix combustion to reduce flame temperatures. The DLN combustors have premixed fuel zones plus a standard diffusion flame pilot burner for startup. Low NO_x levels are achieved by introducing fuel primarily to the pre-mix zones and reducing the amount of fuel being combusted from the pilot nozzle.

When firing natural gas, NO_x emissions will be controlled using DLN combustors. NO_x emissions will be further controlled by SCR systems when firing either natural gas or ultra low-sulfur light oil. SCR is a post-combustion process where NO_x in the gas stream is reacted with ammonia in the

presence of a catalyst to form nitrogen and water. The reaction occurs typically between about 320 and 400°C (600 and 750°F). These temperatures occur within the HRSG where the SCR catalyst and ammonia injection grid is installed. Ammonia will be stored onsite in tank(s). The SCR system will be designed for additional NO_x reduction. Flue gas NO_x emissions when firing natural gas will be reduced to 2 ppmvd, corrected to 15-percent O_2. When firing ultra low-sulfur light oil, SCR will reduce NO_x emissions by 80 percent or more to 8 ppmvd corrected to 15-percent O_2 or less.

The NO_x emissions from the auxiliary boiler, fuel heaters, emergency generators, pump fire engine, and gas compressors will be limited using combustion techniques. The auxiliary boiler will be equipped with low-NO_x burners to limit NO_x emissions to 0.05 lb/MMBtu. The fuel heaters will use combustion controls to limit NO_x emissions to 0.095 lb/MMBtu. The emergency generators will meet the NSPS Subpart IIII NO_x emission requirements of 6.5 grams per brake horsepower-hour (g/bhp-hr). The gas compressors will be lean-burn engines with a NO_x emission rate of 0.7 g/bhp-hr.

4.4.3.2 Carbon Monoxide

There will be a net emissions decrease of 170 TPY for CO emissions (i.e., a 24-percent decrease from historical emissions) with CCEC. PSD review, including a BACT determination, is not applicable. However, the use of combustion controls to limit CO emissions in the range proposed for natural gas and ultra low-sulfur light oil firing has been the technology used to achieve emission rates established as BACT.

The proposed emission rates are based upon the CTs being considered for CCEC. The CTs will utilize advanced combustion technology, and the proposed emission rates are consistent with emission rates established as BACT for similar projects. The proposed CO emission rates for the MPS "G" Class CTs when firing natural gas are 4.1 ppmvd corrected to 15-percent O_2 at baseload operation and 7.6 ppmvd corrected to 15-percent O_2 with maximum duct firing. When firing oil, the CO emissions from the MPS "G" Class CTs will be limited to 8 ppmvd corrected to 15-percent O_2. The Siemens "H" Class CTs CO emissions will be limited to 5 ppmvd corrected to 15-percent O_2 when firing natural gas at baseload operation and 7 ppmvd corrected to 15-percent O_2 when duct firing. For the Siemens "H" Class CTs when firing oil, the CO emissions will be limited to 10 ppmvd corrected to 15-percent O_2.

Combustion techniques will be used to limit the CO emissions from the auxiliary boiler, fuel heaters, fire pump engine, and emergency generators. Oxidation catalysts will be installed in the gas

compressors to control CO emissions. The auxiliary boiler will be equipped with low-NO_x burners designed to limit CO emissions to 0.08 lb/MMBtu. The fuel heaters will use combustion controls to limit CO emissions to 0.08 lb/MMBtu. The emergency generators will meet the NSPS Subpart IIII CO emission requirements of 8.5 g/bhp-hr. Each gas compressor will be equipped with an oxidation catalyst to reduce CO emissions by about 80 percent and have an emission rate of 0.5 g/bhp-hr.

The CO emission rates proposed for the auxiliary boiler, fuel heaters, emergency generators, and gas compressors have also been established as BACT in previous PSD permits.

4.4.3.3 Sulfur Oxides (SO_2 and H_2SO_4 Mist)

There will be a net emissions decrease of more than 10,000 TPY for SO_2 emissions and 400 TPY for sulfuric acid (H_2SO_4) mist (i.e., reductions of more than 95 percent for SO_2 and 90 percent for H_2SO_4 from historical emissions with CCEC. PSD review, including a BACT determination, is not applicable. The only feasible control for the combined cycle unit, auxiliary boilers, fuel heaters, emergency generators, fire pump engine, and gas compressors is combustion of clean fuels. Natural gas and ultra low-sulfur light oil are the cleanest fuels available with maximum sulfur contents of 2 grains/100 scf for natural gas and 0.0015-percent sulfur for ultra low-sulfur light oil proposed for CCEC. Additionally, H_2SO_4 emissions will be minimized by the use of low-sulfur fuels. Natural gas and ultra low-sulfur light oil have been established as BACT in previous PSD permits.

4.4.3.4 Particulate Matter and Other Regulated Pollutants

There will be a net emissions decrease of more than 700 TPY for PM/PM_{10} (i.e., a reduction of 76 percent from historical emissions) with CCEC. PSD review, including a BACT determination, is not applicable. The use of clean fuels, characterized by low PM and trace contaminant contents, and advanced combustion techniques result in minimal PM and PM_{10} emissions from the combined cycle unit, auxiliary boiler, fuel heaters, emergency generators, fire pump engine, and gas compressors. The use of clean fuels (i.e., natural gas and ultra low-sulfur light oil) has been established as BACT for PM/PM_{10} emissions in previous PSD permits.

4.4.3.5 Volatile Organic Compounds

There will be a net emissions increase of less than 40 TPY for VOC with CCEC. Therefore, PSD review, including a BACT determination, is not applicable. Combustion techniques will be used to limit the VOC emissions from the combined cycle unit, auxiliary boiler, fuel heaters, emergency generators, fire pump engine, and gas compressors. The CTs will utilize advanced combustion

technology, and the proposed emission rates are consistent with those established as BACT for these turbines.

The proposed VOC emission rates for the MPS "G" Class CTs when firing natural gas are 1.2 ppmvd corrected to 15-percent O_2 at baseload operation and 1.6 ppmvd corrected to 15-percent O_2 with maximum duct firing. When firing oil, the VOC emissions from the MPS "G" Class CTs will be limited to 6 ppmvd corrected to 15-percent O_2. VOC emissions for the Siemens H CTs will be limited to 1.5 ppmvd (corrected to 15-percent O_2) when firing natural gas at baseload operation and 1.9 ppmvd (corrected to 15-percent O_2) when duct firing. For the Siemens "H" Class CTs when firing oil, the VOC emissions will be limited to 2 ppmvd corrected to 15-percent O_2.

The auxiliary boiler is designed with proper combustion techniques to limit VOC emissions to 0.005 lb/MMBtu. The fuel heaters will use combustion controls to limit VOC emissions to 0.005 lb/MMBtu. The emergency generators will meet the NSPS Subpart IIII VOC emission requirements of 1 g/bhp-hr as total hydrocarbons. Each gas compressor will be equipped with an oxidation catalyst to reduce VOC emissions by 50 percent and attain an emission rate of 0.18 g/bhp-hr.

4.4.4 Design Data for Control Equipment

Design data for the air pollution control equipment are presented in Appendix 10.2.5 (Air Construction Permit Application).

4.4.5 Design Philosophy

CCEC will convert an existing 1960s vintage oil- and gas-fired steam electric facility to an advanced, natural gas fired combined cycle plant that minimizes air pollutant emissions by using the most fuel efficient and pollution-preventing technology. This concept has been incorporated with the selection of a combined cycle process utilizing advanced CTs. Combined cycle plants can be expected to achieve fuel conversion rates of approximately 6,585 British thermal units per kilowatt hour (Btu/kWh) (75°F, baseload). In contrast, the existing Cape Canaveral Plant has an efficiency of about 10,000 Btu/kWh, which is about 50 percent less efficient than the proposed combined cycle unit. Thus, by maximizing the megawatt output per unit of fuel consumed, the air pollutant emissions per megawatt output are minimized. In addition, the efficiency of CCEC and the use of natural gas minimizes the emissions of CO_2 (see Subsection 4.4.2 and Appendix 10.8).

Pollution prevention is incorporated in the design by the use of clean fuels and advanced combustion technology. Natural gas and ultra low-sulfur light oil will be used. Moreover, advanced DLN combustion technology will be used to minimize NO_x emissions while ensuring that CO and VOC emissions are within accepted limits. SCR will be installed to further reduce NO_x emissions. Taken together, the design of CCEC will incorporate features that will make the converted Plant one of the most efficient and lowest polluting power plants in the State of Florida.

In 2000, the FDEP recognized FPL's environmental stewardship through its Partnership for Ecosystem Protection (PEP) program for the Fort Myers Repowering Project. PEP is an incentives-based recognition program developed by the FDEP Division of Air Resources to enhance the FDEP's ability to encourage, promote, and reward facilities in Florida through appropriate recognition of their commitment toward pollution prevention and environmental stewardship. CCEC involves technology that is even more advanced than the previous FPL repowering projects and furthers the goals for FDEP's Environmental Stewardship plans. Moreover, the conversion of the existing Cape Canaveral Plant supports FPL's commitment to reduce CO_2 emissions toward the targets specified in the Governor's 2007 Executive Order (see Appendix 10.8).

4.5 Plant Water Use

Primary water uses for CCEC, like the existing Plant, will include cooling water and process water. Cooling water is required for condenser cooling, auxiliary cooling and cooling pump seal water. Process water is required for CT inlet air cooling, NO_x injection water when firing ultra low-sulfur light oil, steam cycle makeup, service water and fire protection. Other uses will include intake screen wash water, potable water for employee use and water for landscape irrigation. Condenser cooling for the steam cycle portion of the converted Plant and auxiliary cooling will be accomplished using the existing once-through cooling system intake and discharge structures. Water for cooling pump seals and for screen wash also will come from the cooling water intake system. Process, potable, and irrigation water for the converted Plant will come from the existing City of Cocoa potable water supply.

The stormwater management system for CCEC will be designed to meet all local, regional, State, and federal permit requirements (see Section 4.8). Contact stormwater runoff from the Power Block area will be routed to oil/water separators and then to onsite stormwater retention/detention ponds.

Non-contact stormwater from outside the Power Block will also be collected and routed to stormwater ponds.

The Water Conservation Plan in Appendix 10.10 discusses water conservation technology, methods, and procedures that will be used at the converted Plant. Cooling towers are not practical or optimum at the CCEC Site. Therefore, the converted Plant will continue to use the existing Plant's once-through cooling water system intake and discharge structures withdrawing surface water from and discharge to the Indian River Lagoon. The salinity of surface and groundwater sources at the Site is too high to be used economically for potable or process water supply. While some reclaimed water is available from Brevard County, FPL has determined that high nitrogen levels are not compatible with existing Industrial Wastewater Facility permit limits. The SJRWMD recently concurred that it is currently infeasible for the existing Plant to use reclaimed water (letter from SJRWMD, October 2008). If a reliable source of reclaimed water can be delivered to the Site that meets the quantity and quality requirements of the facility's environmental permits, FPL will evaluate the economic and technical feasibility of using the reclaimed source. If use of the reclaimed water source should become feasible in the future, FPL will provide a plan to the appropriate regulatory agencies for implementation at that time. Stormwater reuse also is not practicable at the Site. The size of the Site does not allow for efficient reuse of stormwater. First, only 10 percent to 12 percent of the process and irrigation water demand can be supplied by this source. Second, a significant onsite storage capacity would be required, at least 0.5 million gallons. Third, this supply would require additional treatment. The limited benefit does not justify the additional cost. Therefore, the only feasible source for process and potable water, at this time, is the existing supply from the City of Cocoa.

The CCEC water balance is presented schematically in Figure 4.5.0-1. Process, potable, irrigation, and fire protection water will be obtained from the existing City of Cocoa water connection. The Indian River Lagoon will be used as the source of cooling water. The design water quality for the Indian River Lagoon is presented in Chapter 3.0 of the SCA. The design water quality for the process/potable water supply is presented in Table 4.5.0-1. This information on water quality has been derived from information described in Subsection 3.3.4. Subsections 4.5.1 through 4.5.4 provide detailed descriptions of CCEC water uses.

4.5.1 Heat Dissipation System

Condenser cooling for CCEC will be performed using the existing once-through cooling system intake and discharge structures, which withdraw from and discharge to the Indian River Lagoon as

described in Section 3.3.4-1. The CCEC cooling system, including auxiliary cooling flows, will have a total design intake flow capacity of 619 MGD.

Operation of CCEC during periods of Plant startup and shutdown, steam turbine shutdowns, or other atypical/emergency operating conditions where steam is being produced in the heat recovery steam generators and discharged directly into the condenser before passing through the steam turbine, is defined as steam turbine bypass or "Bypass Operation". During the majority of the operating scenarios while in Bypass Operation, the thermal energy discharged to the condenser falls within the normal design full-load thermal discharge. However, under certain conditions during Bypass Operation, the thermal energy of the bypassed steam entering the condenser is greater than the design full load thermal energy discharged to the condenser. During operating scenarios where the thermal energy of the bypassed steam entering the condenser is greater than the full load design thermal energy, all four once-through cooling water pumps will be placed in service to maintain the cooling water temperature rise at approximately the same level as the CCEC full-load design temperature rise.

During normal operation, the converted Plant will use at most three of the four existing once-through cooling water pumps at any given time. Consequently, the maximum cooling water flow of the converted Plant will be 25 percent less than the design intake capacity of the existing Plant. During atypical operating scenarios where the thermal energy of bypassed steam entering the condenser is greater than the full load design thermal energy, all four once-through cooling water pumps may be placed in service to maintain the cooling water temperature rise at approximately the same level as the CCEC full load design temperature rise.

While CCEC will operate at a higher annual capacity factor than the existing Plant has historically operated, even if it operated at 100 percent annual capacity, the maximum annual flow still would be less than the permitted maximum annual flow for the existing Plant. The through-screen intake velocity for CCEC will remain the same, but the total maximum flow will be reduced.

4.5.2 Domestic/Sanitary Wastewater

Sanitary wastewater from the existing Cape Canaveral Plant is routed to a Brevard County publicly owned treatment works (POTW). Restroom facilities will be reconstructed to accommodate the employees of CCEC using the same connection. Sanitary wastewater flows are expected to average approximately 1 to 3 gpm, approximately the same as the existing Plant.

4.5.3 Potable Water Systems

Potable water for CCEC will be obtained from City of Cocoa. Potable water demand is expected to average 1 to 3 gpm, approximately the same as for the existing Plant.

4.5.4 Process Water Systems

FPL will continue to use a reverse osmosis/mixed bed (RO/MB) demineralizer system for process water treatment using water from the City of Cocoa. The demineralized water will be pumped into a new onsite storage tank. RO reject water (average flow 45 gpm) will be mixed with the cooling water flow used for condenser cooling. Water from the Indian River Lagoon that is used for the intake screen wash (flow 1,200 gpm) will be released back to the Indian River Lagoon north of the peninsula that separates the intake channel from the discharge.

4.5.4.1 Demineralized Water

CCEC will require the use of demineralized water [i.e., conductivity <0.1 microsiemens per centimeter (μS/cm)]. Demineralized water is required for:

- Makeup to replace blowdown from the HRSG (necessary to maintain a low dissolved solids content in the HRSG);
- Makeup to replace miscellaneous steam losses in the steam cycle;
- Injection into the CTs for NO_x control when firing ultra low-sulfur light oil; and
- CT air inlet evaporative cooling system feed.

Water from the City of Cocoa will be used as process water treatment system influent and may be used as service water. The HRSG blowdown (average flow of 35 gpm) will be mixed with the cooling water flow before discharge.

4.5.4.2 General Service Water

General service water uses, including seal water, cleaning and flushing water, and fire protection water, will be provided by the process/service water system.

4.6 Chemical and Biocide Waste

The wastewaters generated by CCEC will include cooling water, HRSG blowdown, process water treatment system wastewater, wash water, and equipment area stormwater. HRSG blowdown may be

quenched with wash water and reused as cooling water or it may be placed in the cooling water discharge pipe. Contact stormwater will be passed through an oil/water separator and then routed to the stormwater ponds. Water treatment wastewaters, non-hazardous low-volume wastewaters (e.g., wash water and equipment drains) will be treated, as necessary and appropriate, and routed to the cooling system outfall.

The principal uses of chemicals and biocides will be for steam cycle water quality control and chemical cleaning of the HRSGs and pre-HRSG piping systems.

Table 4.6.0-1 presents a list of the waste streams associated with CCEC, their characterization and proposed method of disposal. The following sections provide further information on the characteristics of these waste streams (see also Section 4.7).

4.6.1 Cooling System Water Chemical Treatment

Intermittent shock chlorination as authorized under FDEP Industrial Wastewater Facility Permit FL0001473 (major) will continue to be used for CCEC to prevent biofouling of the heat rejection system.

4.6.2 Steam Cycle Water Treatment

The steam-condensate-feedwater will be chemically treated to prevent corrosion or scaling of the condensate piping and the HRSG. The steam cycle water will be treated with ammonia or an amine for pH control. Sodium phosphate will be fed to the HRSGs for control of pH and hardness. Residual phosphate in the HRSG will react with hardness to form a non-adherent precipitate that will be removed through HRSG boiler blowdown.

4.6.3 Sanitary Wastewater Treatment

The sanitary system for CCEC will utilize the existing sanitary system connection to Brevard County POTW. No pretreatment will be provided for the converted Plant.

4.6.4 Makeup Water Demineralization

As discussed in Subsection 4.5.4, the makeup water to the steam cycle will be demineralized using portable RO/MB type demineralizer trains. The resulting RO reject will be routed to the condenser cooling system intake and reused for condenser cooling. Regeneration of the MB ion exchange units will be performed offsite.

4.6.5 Chemical Cleaning

The HRSG and feedwater piping will be chemically cleaned initially during commissioning and also periodically during the life of the converted Plant. The chemicals used will not be permanently stored onsite but will be delivered to the Site by a licensed contractor at the time of the scheduled periodic cleanings. The chemical cleaning solutions to be used for acid and alkaline cleaning of the HRSG must be consistent with the HRSG manufacturer's recommendations. Chemicals typically used in HRSG and feedwater pipe cleaning may include the following:

- Inhibited citric acid,
- Aqueous ammonia,
- Organic chelates, such as EDTA,
- Disodium phosphate,
- Trisodium phosphate,
- Nonfoaming wetting agents, and
- Foam inhibitors.

Wastewaters will consist of the cleaning solutions and material removed during the cleaning process. Chemical cleaning is an infrequent maintenance operation; it does not contribute to the liquid wastes produced by the normal operation of CCEC.

Chemical cleaning wastes will be maintained onsite and tested and, if meeting the requirements authorized under FDEP Industrial Wastewater Facility Permit FL0001473, will be routed to the condenser cooling system outfall. Hazardous wastes will be managed according to all applicable local, State, and federal rules and regulations.

4.6.6 Miscellaneous Drains

Wastewater can result from draining a storage tank or from cleaning and maintenance operations such as washdown of storage areas. Wastewater from these processes will meet the requirements authorized under FDEP Industrial Wastewater Facility Permit FL0001473 and be routed to the condenser cooling system outfall. Flows from the miscellaneous CCEC drains will be intermittent and will not normally contribute to the wastewater flows. Periodic offline washes of the CTs, using water or a detergent-water solution, will also produce wastewaters. CT offline wash wastewater will be managed by draining these wastewaters into a tank and transferring by a portable pump to tank trucks for offsite disposal by a services contractor.

4.7 Solid and Hazardous Wastes

Any non-hazardous and hazardous wastes associated with the operation of CCEC will be managed according to federal, State, and local regulations and FPL's "Waste Guidelines" (see Table 4.7.0-1). The CCEC may periodically generate hazardous waste [less than 100 kilograms (kg) per month], including spent solvents, boiler chemical cleaning wastes, and other wastes. These wastes will be collected and managed as hazardous waste until tested to determine their characteristics. Wastes generated during dismantlement are discussed in Section 5.1.

Solvent rags will be collected and laundered. Residual waste from punctured aerosol cans will be collected and managed as hazardous waste. Paint waste, polyvinyl chloride (PVC) cleaner, and PVC cement wastes will be minimized by implementation of programs requiring use of all material prior to issuance of additional material.

4.7.1 Solid Wastes

Solid wastes will be generated by the operation of CCEC, but generally in small quantities. Such solid wastes will be limited to municipal solid waste, infrequent replacement of inlet air filters, and solids from water pretreatment process. An approved solid waste disposal contractor will dispose of all solid wastes. There will be no facilities requiring a permit under FDEP Rule 62-701.300(2), F.A.C., for the converted Plant. As a result, information required by this FDEP rule pertaining to waste containment design, leachate control, surface water control, geotechnical investigations, water quality monitoring plan, closure plan and long-term care, and financial assurance are not applicable to CCEC.

4.7.2 Hazardous Wastes

FPL will operate CCEC to minimize, if not eliminate, the generation of hazardous waste. Any hazardous waste associated with the CCEC will be less than 100 kg per month and may include spent solvents, HRSG chemical cleaning wastes, and other wastes. Hazardous wastes, if any, will be collected onsite and disposed of by a licensed hazardous waste contractor. Hazardous waste will be managed according to applicable rules and regulations.

4.8 Drainage

4.8.1 Onsite Drainage System

4.8.1.1 Design Criteria and Applicable Regulations

The surface water management system for CCEC will be designed to meet the requirements of all applicable local, regional, State, and federal requirements, which include the rules of the SJRWMD, Brevard County, FDEP, and EPA. The design rainfall event, based on a 25-year 24-hour storm, is approximately 9.5 inches. The basic design philosophy is that the required water quality treatment volume of runoff from CCEC will be treated by onsite retention.

The Project drainage system of catch basins, pipes, channels, swales, and culverts will convey runoff to stormwater retention ponds. Preliminary surface water and stormwater management calculations that include CCEC are presented in Appendix 10.4.

4.8.1.2 Construction Site Drainage

The construction drainage plan is presented in Figure 4.8.1-1 for the Site. Prior to beginning any earth-disturbing activities, perimeter controls such as hay bales and/or silt fences will be installed around the Site along the Site boundary line as shown in Figure 4.8.1-1.

Prior to dismantlement and construction activities associated with the Site, a silt fence will be installed along the perimeter of areas designated for dismantlement and those areas to be used for new construction laydown, parking, and trailers, and where runoff to offsite areas may occur. Stormwater retention ponds will be installed and will serve as sedimentation ponds during dismantlement of Units 1 and 2 and the construction of CCEC.

During construction, the extent of earth disturbances will be minimized as much as is practical. Areas outside of cut-and-fill operations will be protected against unnecessary equipment traffic. Aggregate-surfaced areas will be provided for roads, while limerock surfacing will be provided for laydown and parking areas.

Construction runoff ponds (Retention Areas on Figure 4.8.1-1) will be installed to intercept and store runoff from earth-disturbing activities. Temporary erosion and sedimentation control measures will be designed to prevent sediment from being displaced. Construction personnel and equipment will enter the Site over paved roads. Temporary construction entrances will be provided and maintained

as required to minimize migration of sediment from construction areas onto public roads. Within the construction laydown areas, temporary swales, ditches, silt fences and hay bales will be provided as necessary to divert runoff to detention areas or temporary sedimentation ponds. If necessary, public roads impacted by construction activities will be swept periodically to remove excess sediment tracked from the Site. Sediment collected in the sedimentation ponds during construction will be removed as required to maintain proper functioning of these measures. All temporary sediment and erosion control measures will be removed at the end of construction.

Since May 1, 2003, construction sites in Florida that will result in a disturbance of 1 acre or more, are required to seek coverage under the Generic Permit for Stormwater Discharge from Large and Small Construction Activities [FDEP Document 62-621.300(4)(a)]. FPL will prepare a Notice of Intent (NOI) to obtain such coverage, and will develop and implement a Stormwater Pollution Prevention Plan (SWPPP) as required under the Generic Permit. The NOI will be submitted to FDEP at least 2 days prior to commencement of construction. The SWPPP will be prepared prior to filing of the NOI.

4.8.1.3 Operational Site Drainage

At the completion of construction, the areas not used for CCEC will be seeded and their runoff will be routed to non-contact stormwater retention ponds (see Figure 4.8.1-2). A detailed description of the pre-construction and post-construction site drainage features and associated modeling of design stormwater runoff is presented in Appendix 10.4. The pre-existing peak runoff is estimated to be 58 cubic feet per second (cfs) for the design storm.

Operational site runoff that is unaffected by industrial activity will be handled by a new stormwater management system. The stormwater management system will provide the required water quality treatment in a series of interconnected dry retention areas located throughout the Site (see Figure 4.8.1-2). Runoff in excess of the water quality treatment volume will be discharged to the Indian River Lagoon. The peak discharge flow resulting from the design storm is estimated to be 56 cfs.

Runoff from the CCEC Power Block and equipment areas will be routed through an oil/water separator and then routed to the stormwater ponds. Stormwater runoff from the potentially oil-contaminated areas (containment areas for transformers, oil tanks, and other oil-containing or

handling equipment) will also be routed through an oil/water separator and then combined with the cooling water for discharge.

4.8.2 Offsite Drainage System

The offsite construction laydown and parking area will be provided with temporary sedimentation ponds, swales, ditches, silt fences and hay bales, as necessary, to minimize stormwater impacts and to meet all local, State, and federal stormwater management requirements. The offsite construction laydown and parking area will result in a disturbance of 1 acre or more. Therefore, FPL will seek coverage under the Generic Permit for Stormwater Discharge from Large and Small Construction Activities [FDEP Document 62-621.300(4)(a)]. FPL will prepare a NOI to obtain such coverage, and will develop and implement a SWPPP as required under the Generic Permit. The NOI will be submitted to FDEP at least 2 days prior to commencement of construction. The SWPPP will be prepared prior to filing of the NOI.

4.9 Heavy Equipment and Materials

4.9.1 Construction Materials and Equipment

Construction materials and equipment will be delivered to the Site by existing roadways. The existing U.S. Highway 1 will be used during construction of the Project.

The construction activities for the Project will occur within the Site and on the offsite construction laydown and parking area located on the west side of U.S. Highway 1. As necessary, additional fill materials suitable for the construction of the Project will be placed within the appropriate areas. Limestone and aggregate will be used as necessary for stabilization of the offsite construction laydown and parking area associated with the Project.

Equipment and component parts of the combined cycle unit will be unloaded and moved around the Site using portable cranes and trucks. Some of the heaviest items such as the new CTs, steam turbine, electric generator, HRSGs, and transformers may require special transport. Pollution control measures for the laydown areas will include runoff collection as discussed above in Section 4.8. As necessary, additional roads required for the Project's laydown areas will be surfaced with aggregate/limerock and may be treated with dust palliative to reduce dust. Alternatively, water sprays may be used, as required, to control dust due to traffic.

4.9.2 Roads

Trucks and equipment associated with the construction of the Project will travel to the Site using U.S. Highway 1. Construction traffic will utilize existing driveways and local roads to access the offsite construction laydown and parking areas. Analysis of construction traffic impacts and mitigation is presented in greater detail in Subsection 5.7.2. U.S. Highway 1 will continue to be used for trucks and equipment necessary to support the operation of CCEC. Operational traffic is discussed in greater detail in Section 6.9.

4.10 Associated Linear Facilities

There will be no associated facilities as part of the Project.

4.11 Emergency Disaster Preparedness Plans

FPL has comprehensive emergency disaster preparedness plans for both operational emergencies and natural disasters that can occur in Florida (e.g., hurricanes). FPL has been an industry leader in the preparation for hurricanes and in the recovery after a storm. FPL will continue with these efforts in the future, and enhance emergency preparedness plans for new projects like CCEC. The existing Cape Canaveral Plant currently has an Emergency Action Plan. This Emergency Action Plan will be updated based on the design and operation of CCEC.

TABLE 4.3.0-1
TYPICAL NATURAL GAS COMPOSITION

Composition	Mole %
Nitrogen (N_2)	0.27 - 0.45
Helium (He)	0.01
Carbon Dioxide (CO_2)	0.44 - 0.88
Methane (CH_4)	96 - 97.0
Ethane (C_2H_6)	1.8 - 2.6
Propane (C_3H_8)	0.16 - 0.29
Butane (C_4H_{10})	0.011 - 0.017
Pentanes (C_5H_{12})	0.007 - 0.03
Hexanes (C_6H_{14})	0.03
Heptanes (C_7H_{16})	0.01
Octanes (C_8H_{18})	0.0
Argon, Oxygen (Ar, O_2)	0.0
Sulfur (S)	2 grains per 100 scf
Water Vapor (H_2O)	0.6 lb/MMscf

Low Heating Value (LHV) = 21,000 Btu/lb; 920 Btu/scf (approximate).
High Heating Value (HHV) = 23,300 Btu/lb; 1,020 Btu/scf (approximate).

Note: scf = standard cubic feet.
MM = million.

TABLE 4.3.0-2
EXPECTED ULTRA LOW-SULFUR LIGHT OIL COMPOSITION

Elements	Maximum
Carbon Residue	0.35 % on 10% Bottoms
Water and Sediment	0.05 %
Ash	0.01 %
Vanadium	0.5 ppm
Sodium and potassium	0.5 ppm
Lead	1 ppm
Calcium	2 ppm
Sulfur	0.0015 wt. %

Low Heating Value (LHV) = 18,400 Btu/lb; 129,900 Btu/gallon (approximate).
High Heating Value (HHV) = 19,500 Btu/lb; 137,700 Btu/gallon (approximate).

Note: ppm = parts per million.

TABLE 4.4.1-1A
STACK, OPERATING, AND EMISSION DATA FOR
THE COMBUSTION TURBINES/HRSGS AND DUCT BURNERS FOR
CCEC OPERATION—NATURAL GAS COMBUSTION, MPS 501G CLASS CT

		Operating and Emission Data[a] for Ambient Temperature							
		Combustion Turbine/ HRSG				Combustion Turbine/ HRSG/ Duct Burner			
Parameter		**35 °F**	**59 °F**	**75 °F**	**95 °F**	**35 °F**	**59 °F**	**75 °F**	**95 °F**
CT/HRSG Stack Data (feet)									
Height		149	149	149	149	149	149	149	149
Diameter		22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
100 Percent Load									
Temperature (^{o}F)		196	195	195	195	186	185	185	184
Velocity (ft/sec)		63.1	60.9	59.1	57.3	62.6	60.3	58.6	56.7
Maximum Hourly Emissions per Unit									
SO_2	lb/hr	15.6	15.0	14.5	14.0	18.3	17.6	17.1	16.6
PM/PM_{10}	lb/hr	8.1	7.4	7.2	6.9	11.7	11.0	10.8	10.5
NO_x	lb/hr	20.1	19.3	18.7	18.0	23.6	22.8	22.1	21.5
CO	lb/hr	25.1	24.1	24.0	23.0	54.5	52.7	52.0	50.3
VOC (as methane)	lb/hr	4.2	4.1	4.0	3.8	6.6	6.4	6.2	6.0
Sulfuric Acid Mist	lb/hr	3.0	2.9	2.8	2.7	4.0	3.8	3.7	3.6
75 Percent Load									
Temperature (^{o}F)		184	185	186	187	NA	NA	NA	NA
Velocity (ft/sec)		50.4	48.7	47.4	46.0	NA	NA	NA	NA
Maximum Hourly Emissions per Unit									
SO_2	lb/hr	12.0	11.5	11.1	10.6	NA	NA	NA	NA
PM/PM_{10}	lb/hr	6.2	6.0	5.9	5.8	NA	NA	NA	NA
NO_x	lb/hr	15.5	14.8	14.3	13.7	NA	NA	NA	NA
CO	lb/hr	48.0	45.5	44.0	42.0	NA	NA	NA	NA
VOC (as methane)	lb/hr	3.2	3.1	3.0	2.9	NA	NA	NA	NA
Sulfuric Acid Mist	lb/hr	2.34	2.23	2.16	2.06	NA	NA	NA	NA

[a] Refer to Appendix 10.2.5, Subappendix A for detailed information on basis of pollutant emission rates and operating data. Duct firing is assumed for 100% operating load. No duct firing is assumed for loads less than 100%.

Source: MPS, 2008 - CT Performance Data; Golder Associates, 2008.

TABLE 4.4.1-2A

STACK, OPERATING, AND EMISSION DATA FOR THE COMBUSTION TURBINES/HRSGS FOR CCEC OPERATION - ULTRA LOW SULFUR LIGHT OIL COMBUSTION, MPS 501G CLASS CT

		Operating and Emission Data[a] for Ambient Temperature Combustion Turbine/ HRSG			
Parameter		**35 °F**	**59 °F**	**75 °F**	**95 °F**
CT/HRSG Stack Data (feet)					
Height		149	149	149	149
Diameter		22	22	22	22
100 Percent Load					
Temperature (^oF)		359	357	355	354
Velocity (ft/sec)		79.4	75.6	72.9	69.6
Maximum Hourly Emissions per Unit					
SO_2	lb/hr	3.8	3.6	3.4	3.2
PM/PM_{10}	lb/hr	38.8	36.7	35.3	33.4
NO_x	lb/hr	77.1	72.6	69.6	65.9
CO	lb/hr	47.0	44.2	43.0	40.1
VOC (as methane)	lb/hr	20.1	18.9	18.1	17.2
Lead	lb/hr	0.033	0.031	0.029	0.028
Sulfuric Acid Mist	lb/hr	0.74	0.69	0.67	0.63
75 Percent Load					
Temperature (^oF)		350	348	346	345
Velocity (ft/sec)		75.9	73.0	70.9	68.2
Maximum Hourly Emissions per Unit					
SO_2	lb/hr	3.0	2.8	2.7	2.6
PM/PM_{10}	lb/hr	37.7	36.1	34.9	33.3
NO_x	lb/hr	60.0	57.0	54.9	52.5
CO	lb/hr	228.3	217.0	209.0	200.0
VOC (as methane)	lb/hr	26.1	24.8	23.9	22.8
Lead	lb/hr	0.025	0.024	0.023	0.022
Sulfuric Acid Mist	lb/hr	0.58	0.55	0.53	0.50

[a] Refer to Appendix 10.2.5, Subappendix A for detailed information on basis of pollutant emission rates and operating data.

Source: MPS, 2008 - CT Performance Data; Golder Associates, 2008.

TABLE 4.4.1-3A
SUMMARY OF MAXIMUM POTENTIAL ANNUAL EMISSIONS FOR CCEC OPERATION, MPS 501G CLASS CT

	CCEC Conversion Project Maximum Potential Annual Emissions (TPY)								Netting Calculations		
Pollutant	3 CTs/HRSGs with Duct Burners [b]	Auxiliary Boiler [c]	2 Emergency Generators	1 Natural Gas Heater	7 Gas Compressors	Fuel Oil Storage Tank	Fire Pump Engine	TOTAL	Maximum 2-Year Average from Existing Units [a] (TPY)	Change (TPY)	PSD Significant Emission Rate (TPY)
SO_2	208	0.14	0.01	0.24	1.74	NA	0.00014	210	11,140	-10,930	40
PM	157	0.17	0.45	0.08	3.10	NA	0.011	161	918	-757	25
PM_{10}	157	0.17	0.45	0.08	3.10	NA	0.011	161	918	-757	15
NO_x	349	1.2	7.8	4.15	135.9	NA	0.18	498	7,725	-7,228	40
CO	470	2.0	9.6	3.49	8.6	NA	0.069	494	703	-209	100
VOC (as methane)	85.8	0.13	1.13	0.23	14.0	2.40	0.026	104	68	35.4	40
Sulfuric Acid Mist	42.2	Neg.	Neg.	Neg.	Neg.	NA	Neg.	42.2	495	-453	7
Lead	0.046	Neg.	Neg.	Neg.	Neg.	NA	Neg.	0.046	0.11	-0.067	0.6

Source: Golder, 2008.

[a] Based on actual emissions from Annual Operating Reports from 2003-2007.

[b] Based on oil-firing for 1,000 hours.

[c] An auxiliary boiler is only required to supply steam to the MPS 501G1 CT during startup.

Note: Neg.= negligible; NA= not applicable

TABLE 4.4.1-1B
STACK, OPERATING, AND EMISSION DATA FOR
THE COMBUSTION TURBINES/HRSGS AND DUCT BURNERS
FOR CCEC OPERATION - NATURAL GAS COMBUSTION, SIEMENS H CT

		Operating and Emission Data[a] for Ambient Temperature							
		Combustion Turbine/ HRSG				Combustion Turbine/ HRSG/ Duct Burner			
Parameter		**35 °F**	**59 °F**	**75 °F**	**95 °F**	**35 °F**	**59 °F**	**75 °F**	**95 °F**
CT/HRSG Stack Data (feet)									
Height		149	149	149	149	149	149	149	149
Diameter		22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
100 Percent Load									
Temperature (^{o}F)		196	195	195	195	186	185	185	184
Velocity (ft/sec)		61.3	59.0	57.0	54.9	60.8	58.5	56.5	54.3
Maximum Hourly Emissions per Unit									
SO_2	lb/hr	15.1	14.4	13.9	13.3	17.7	17.1	16.5	16.0
PM/PM_{10}	lb/hr	13.3	13.0	12.2	11.7	17.0	16.4	15.8	15.3
NO_x	lb/hr	20.0	19.1	18.4	17.6	23.5	22.6	21.9	21.1
CO	lb/hr	30.0	29.0	28.0	27.0	49.0	48.0	47.0	46.0
VOC (as methane)	lb/hr	5.1	4.8	4.7	4.5	7.4	7.2	7.0	6.8
Sulfuric Acid Mist	lb/hr	2.9	2.8	2.7	2.6	3.8	3.7	3.6	3.5
75 Percent Load									
Temperature (^{o}F)		184	185	186	187	NA	NA	NA	NA
Velocity (ft/sec)		49.3	47.3	45.8	43.9	NA	NA	NA	NA
Maximum Hourly Emissions per Unit									
SO_2	lb/hr	12.1	11.4	10.9	10.2	NA	NA	NA	NA
PM/PM_{10}	lb/hr	11.0	11.0	9.9	9.4	NA	NA	NA	NA
NO_x	lb/hr	16.1	15.0	14.4	13.5	NA	NA	NA	NA
CO	lb/hr	49.0	46.0	44.0	41.0	NA	NA	NA	NA
VOC (as methane)	lb/hr	4.1	3.8	3.6	3.4	NA	NA	NA	NA
Sulfuric Acid Mist	lb/hr	2.36	2.21	2.11	1.99	NA	NA	NA	NA

[a] Refer to Appendix 10.2.5, Subappendix A for detailed information on basis of pollutant emission rates and operating data. Duct firing is assumed for 100% operating load. No duct firing is assumed for loads less than 100%.

Source: Siemens, 2008; CT Performance Data; Golder, 2008.

TABLE 4.4.1-2B
STACK, OPERATING, AND EMISSION DATA FOR
THE COMBUSTION TURBINES/HRSGS FOR CCEC OPERATION -
ULTRA LOW SULFUR LIGHT OIL COMBUSTION, SIEMENS H CT

		Operating and Emission Data[a] for Ambient Temperature			
		Combustion Turbine/ HRSG			
Parameter		**35 °F**	**59 °F**	**75 °F**	**95 °F**
CT/HRSG Stack Data (feet)					Gas
Height		149	149	149	Compressors
Diameter		22	22	22	22
100 Percent Load					
Temperature (^{o}F)		359	357	355	354
Velocity (ft/sec)		77.8	73.5	70.5	66.6
Maximum Hourly Emissions per Unit					
SO_2	lb/hr	3.9	3.7	3.5	3.3
PM/PM_{10}	lb/hr	0.0	0.0	0.0	0.0
NO_x	lb/hr	85.3	80.0	76.2	71.4
CO	lb/hr	65.0	61.0	58.0	54.0
VOC (as methane)	lb/hr	7.4	7.0	6.6	6.2
Lead	lb/hr	0.036	0.034	0.032	0.030
Sulfuric Acid Mist	lb/hr	0.77	0.72	0.69	0.64
75 Percent Load					
Temperature (^{o}F)		350	348	346	345
Velocity (ft/sec)		61.9	59.2	57.2	54.6
Maximum Hourly Emissions per Unit					
SO_2	lb/hr	3.2	3.0	2.9	2.7
PM/PM_{10}	lb/hr	30.0	30.0	30.0	30.0
NO_x	lb/hr	69.1	64.8	61.9	58.1
CO	lb/hr	53.0	49.0	47.0	44.0
VOC (as methane)	lb/hr	6.0	5.6	5.4	5.1
Lead	lb/hr	0.029	0.028	0.026	0.025
Sulfuric Acid Mist	lb/hr	0.63	0.59	0.56	0.53

[a] Refer to Appendix 10.2.5, Subappendix A for detailed information on basis of pollutant emission rates and operating data.

Source: Siemens, 2008; CT Performance Data; Golder, 2008.

TABLE 4.4.1-3B
SUMMARY OF MAXIMUM POTENTIAL ANNUAL EMISSIONS FOR CCEC OPERATION, SIEMENS H CTS

	CCEC Conversion Project Maximum Potential Annual Emissions (TPY)							Netting Calculations		
Pollutant	3 CTs/HRSGs with Duct Burners [b]	2 Emergency Generators	1 Natural Gas Heater	7 Gas Compressors	Fuel Oil Storage Tank	Fire Pump Engine	TOTAL	Maximum 2-Year Average from Existing Units [a] (TPY)	Change (TPY)	PSD Significant Emission Rate (TPY)
SO_2	201	0.01	0.24	1.74	NA	0.00014	203	11,140	-10,937	40
PM	185	0.45	0.08	3.10	NA	0.011	189	918	-729	25
PM_{10}	185	0.45	0.08	3.10	NA	0.011	189	918	-729	15
NO_x	358	7.8	4.15	135.9	NA	0.18	506	7,725	-7,220	40
CO	511	9.6	3.49	8.6	NA	0.069	533	703	-170.3	100
VOC (as methane)	77.1	1.13	0.23	14.0	2.40	0.026	95	68	26.6	40
Sulfuric Acid Mist	40.9	Neg.	Neg.	Neg.	NA	Neg.	40.9	495	-455	7
Lead	0.050	Neg.	Neg.	Neg.	NA	Neg.	0.050	0.11	-0.062	0.6

Source: Golder, 2008.

[a] Based on actual emissions from Annual Operating Reports from 2003-2007.

[b] Based on oil-firing for 1,000 hours.

Note: Neg.= negligible; NA= not applicable

TABLE 4.5.0-1
PROCESS / POTABLE DESIGN WATER QUALITY

Parameter	Value	Units
Calcium (Ca)	202.0	mg/L
Magnesium (Mg)	32.7	mg/L
Sodium (Na)	258.0	mg/L
Potassium (K)	2.18	mg/L
Sulfate (SO_4)	71.3	mg/L
Chloride (Cl)	340.0	mg/L
Phosphate (PO_4)	<0.10	mg/L
Nitrate (NO_3)	1.07	mg/L
Bicarb (HCO_3)	95.2	mg/L
Silica (SiO_2)	7.45	mg/L
Iron (Fe)	0.143	mg/L
Manganese (Mn)	0.015	mg/L
Free CO_2	5.2	mg/L
Fluoride (F)	<0.10	mg/L
pH	7.62	Std. Units
TOC (C)	6.60	mg/L
Turbidity	4.9	NTU
Aluminum (Al)	0.06	mg/L
Barium (Ba)	.016	mg/L
Conductivity	1053	umhos
Copper (Cu)	.010	mg/L
Strontium (Sr)	.986	mg/L
Total Hardness ($CaCO_3$)	234.7	mg/L
Zinc (Zn)	.025	mg/L

Source: USFilter Standard Water Analysis, 4711 Oak Fair Blvd, Tampa, FL 33610

Sample collected April 15, 2004.

TABLE 4.6.0-1
CCEC WASTE STREAMS, CHARACTERIZATION AND DISPOSAL METHOD (Page 1 of 2)

Waste Streams (Process Water Systems)	Non Hazardous Basis for Characterization	Hazardous Basis for Characterization	Disposal Management Process
Demineralized Water RO Reject	Based on analytical characterization of historical data	—	Disposed of depending upon source. Refer to Chapter 6.
Demineralization Wastewater	Based on analytical characterization of historical data	—	Disposed of by approved disposal contractor.
Heat Recovery Steam Generator Blowdown	Based on analytical characterization of historical data	—	Disposed of as industrial wastewater into the circulating water system (cooling water discharge).
Cooling System Water (Biocide Addition Chlorine, Scale Inhibitor, Pretreatment Chemicals	Based on analytical characterization by vendor supplying chemical	—	Disposed of as industrial wastewater into the circulating water system.
Steam Cycle Water Treatment (Hydrazine, Ammonia, Sodium Phosphate)	Based on analytical characterization by historical data	—	Chemicals breakdown in steam cycle, any residual chemicals are disposed of by HRSG blowdown into circulating water system (cooling water discharge).
Heat Recovery and Steam Generator as Well as Pre-boiler Piping Chemical Cleaning	Based upon analytical waste stream characterization.	Based upon analytical waste stream characterization	If non-hazardous, will be disposed into circulating water system. If hazardous, then disposed of by a licensed approved contractor.
Miscellaneous Drains	Based on analytical characterization of historical data	—	Disposed of as industrial wastewater into the circulating water system..

TABLE 4.6.0-1
CCEC WASTE STREAMS, CHARACTERIZATION AND DISPOSAL METHOD (Page 2 of 2)

Waste Streams (Construction and Operations)	Non Hazardous Basis for characterization	Hazardous Basis for characterization	Disposal Management Process
Construction-Related Waste Water (e.g., ammoniated process water for hydrostatic testing and backfilling, groundwater from dewatering and steam blow quench water, etc.)	Based on historical data	—	Disposed of depending on source. Refer to Chapter 5.
Water Pretreatment Solid Waste	Based on analytical results	—	Disposed of by an approved disposal contractor.
Rags	As per EPA in 40 CFR 279	—	Recycled via laundering by FDEP-approved vendor or disposed of in landfill.
Punctured Aerosol Cans	As per EPA characterization letter	—	Disposed of by an approved scrap metal contractor.
Captured Paint Residuals from Punctured Aerosol Cans	—	Analytical data from waste characterization	As hazardous waste in accordance with 40 CFR, Part 261.
X-ray Weld Testing	—	—	Process does not generate waste chemicals onsite. Vendor is responsible for their waste generation.
Florescent Bulbs and Batteries	—	As per 40 C.F.R. 273 EPA determination	Recycled as universal waste.
Oily Separated Waste Water	Based on analytical results	—	Separated water is routed to onsite ponds. Oil is disposed of by an approved waste disposal contractor
Oily Solid Wastes	As per EPA in 40 CFR 279	—	Disposed of by an approved waste disposal contractor.

Note: Wastes during dismantlement of Units 1 and 2 are discussed in Section 5.1.

TABLE 4.7.0-1
FPL GENERAL WASTE HANDLING GUIDELINES (Page 1 of 2)

GENERAL WASTE HANDLING GUIDELINES

1. All effort should be taken to reduce and/or eliminate waste generation.
2. All effort should be taken to reuse and/or recycle wastes.
3. Label all containers so that contents can easily be determined and products used.
4. If waste is hazardous due to a hazardous constituent in the original product, try to substitute with a non-hazardous product, if feasible.
5. If waste is generated, see attached list for disposal options and instructions.
6. If waste is hazardous and is required to be placed into satellite accumulation drums, contact Environmental Plant Leader.
7. If waste cannot be identified, contact Environmental Plant Leader.

WASTE HANDLING INSTRUCTIONS
Recycling

1. Cardboard: flatten and place in designated area.
2. Pallets (poor condition) and scrap wood: place in designated area.
3. White paper and file stock: place in designated bin.
4. Aluminum cans: place in designated bin marked "Aluminum Cans".
5. Metal scrap: place in "metal" designed dumpster.
6. Empty drums (poor condition): empty, crush and place in "metal" dumpster.
7. Fluorescent bulbs (intact): place into original box and store in Universal Waste Storage Area.
8. Lead acid batteries: place on pallet in Hazardous Waste Area.
9. Dry alkaline cell batteries: place in appropriate designated universal waste bin.
10. Ni Cad batteries (includes all communication type batteries, i.e., cell phone/pager batteries): place in appropriate bin.
11. Empty aerosol cans: puncture with can puncturing device and place can into scrap metal drum designated for this purpose. Residual materials in drum are managed as Hazardous Waste.

TABLE 4.7.0-1

FPL GENERAL WASTE HANDLING GUIDELINES (Page 2 of 2)

Recycling (continued)

12. Used oil filters: drain filters for at least 24 hours and place drained oil filters into appropriate drums. Do not put plastic bags into drum.
13. Metal shavings: place in designated scrap metal drum.
14. Mercury liquid: notify Environmental Plant Leader.

Non-Regulated Waste Disposal

1. Normal trash: minimize and dispose, place into Plant dumpster.
2. Used oil: place into Accumulation Area designated for this purpose.
3. Solid oily waste: place into Solid Oily Waste Dumpster designated for this purpose.
4. Parts cleaning solution: use parts cleaner for all parts cleaning. For special parts cleaning applications, see Environmental Plant Leader for instructions. Also contact Environmental Plant Leader when parts cleaning fluid is spent.

Hazardous Waste Disposal *

1. Solvent-contaminated rags: place into "Solvent Rag" Satellite Accumulation Drum Area. When full, place in Hazardous Waste Area unless rag laundering program has been implemented. Where rag laundering program has been implemented, place rags into designated bins.
2. Solid paint cleanup material: place into Satellite Accumulation Drum Area. When full, place in Hazardous Waste Area.
3. Laboratory waste: place in Satellite Accumulation Drum Area. This drum is for use by on-shift production personnel performing water chemistry. When full, place in Hazardous Waste Area.
4. Outdated lab chemicals: these chemicals will be lab packed by the Environmental Plant Leader.
5. Aerosol can waste (punctured and non-punctured): collect in Satellite Accumulation Drum Area. When full, place in Hazardous Waste Area.
6. Waste paint-related material: place in Satellite Accumulation Drum Area. When full, place in Hazardous Waste Area.
7. Bead blasting material: place in drum designated for this purpose. When full, place in Hazardous Waste Area.

*** When full, all hazardous waste drums must be labeled "Hazardous Waste" with the accumulation start date.**

LEGEND

- FPL Cape Canaveral Energy Center (To Be Certified)
- Sovereign Submerged Lands Lease (To Be Certified)
- Offsite Construction Laydown & Parking Area

REFERENCE

1. Cape Canaveral Energy Center Site Survey, Avirom & Associates Inc., 2008.
2. Imagery, National Image Mosaics, USGS, 2006.
3. Offsite Construction Laydown & Parking Area, FPL, 2008.
4. Sovereign Submerged Lands Lease, FPL CAD Drawing No. CC042096, 1998

0 375 750 1,500 Feet

PROJECT

FPL
CAPE CANAVERAL ENERGY CENTER PROJECT

TITLE

SITE AND OFF-SITE CONSTRUCTION AREAS

PROJECT No. 083-87633			FILE No. 08387633CA033	REV. 2
DESIGN	KK	12/12/08	SCALE AS SHOWN	
GIS	NRL	12/12/08	FIGURE 4.1.0-1	
CHECK	RCM	12/12/08		
REVIEW	KFK	12/12/08		

FPL

Map Document: P:\GIS\PROJECTS\2008\083-87633_FPL_CCEC_RBEC_Conversion\Canaveral\CA_SCA\ActiveMapDocuments\08387633CA033_Rev1_CNSTRCTLYDWN.mxd / Modified 12/5/2008 4:04:46 PM / Plotted 12/5/2008 4:04:46 PM by rlamar

SYMBOL LEGEND (FPL)

BUILDINGS
ROADS
SIDEWALK
CULVERT, BRIDGE, & HEADWALL STRUCTURE
RAILROAD
WALLS
GUARDRAIL
STREAM OR SHORE LINE
LAKE OR POND
WOODED AREA
BRUSH AREA
FENCE

TANK
UTILITY POLE
LIGHT POLE
DOUBLE LIGHT POLE
TRAFFIC LIGHT POLE
TRANSMISSION POWER POLE
ANTENNEA
MANHOLE/
C.B. = CATCH BASIN
UTILITY OBJECT
FIRE HYDRANT (F.H.)
POST
SIGN
CURRENT LAND USE BOUNDARY
PAVEMENT
CONCRETE
WATER
GRASS
GRAVEL

SYMBOL LEGEND (GOLDER)

CERTIFIED SITE BOUNDARY

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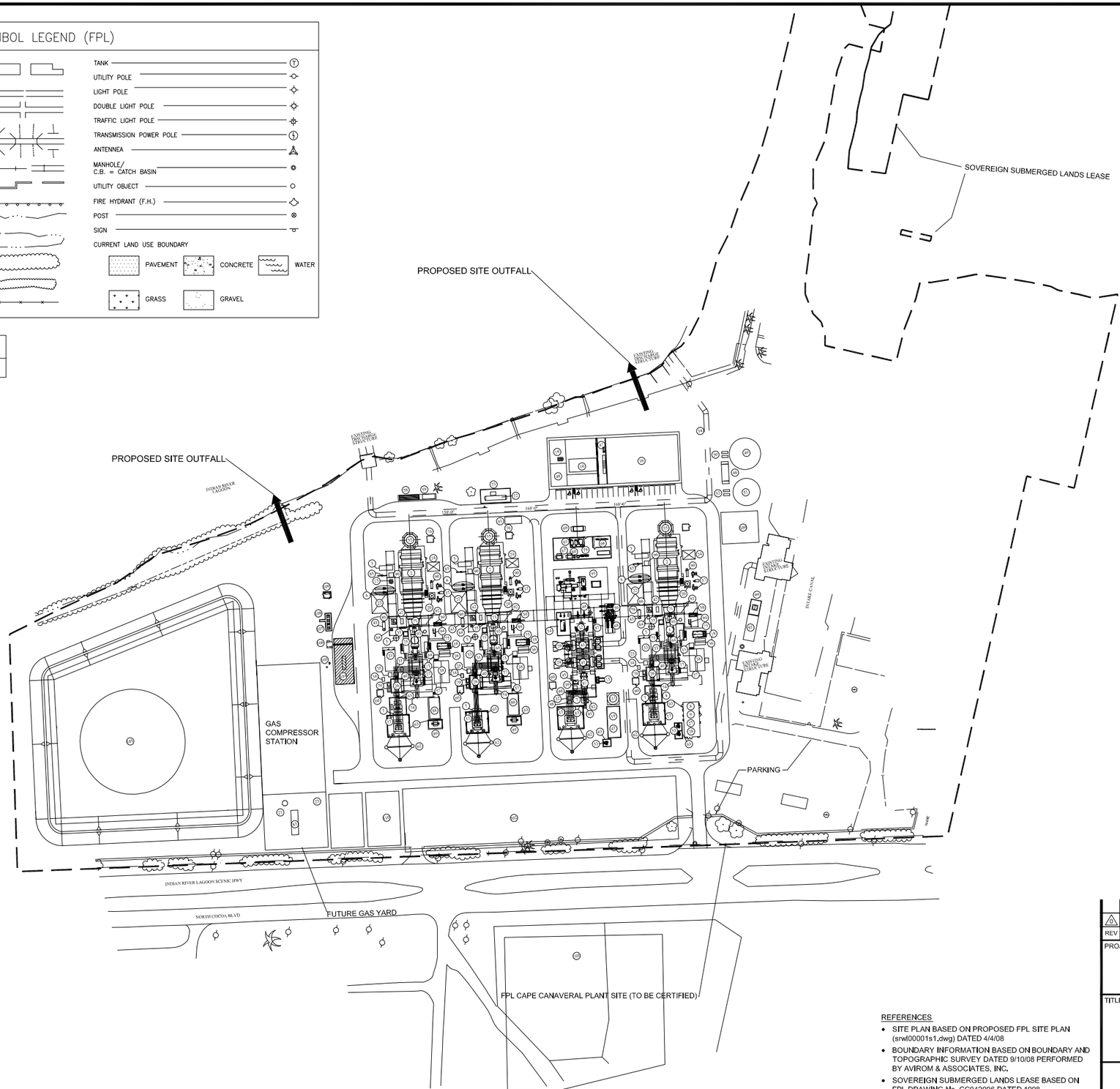
Scale 1" = 100' (34 x 22 Sheet)
Scale 1" = 200' (17 x 11 Sheet)
FEET



LEGEND

1. GAS TURBINE AND GENERATOR
2. HRSG
3. BOILER FEEDWATER PUMP
4. UNIT AUX TRANSFORMER
5. COMBUSTION TURBINE TCA COOLER
6. FUEL GAS PERFORMANCE HEATER
7. ISOPHASE BUS DUCT
8. ELECTRICAL EQUIPMENT BUILDING
9. BATTERY ROOM
10. ADMINISTRATION BUILDING
11. GT WASHWATER SUMPS
12. STEAM TURBINE
13. HRSG BLOWDOWN TANK
14. STEAM LUBE OIL UNIT
15. CONDENSATE PUMPS
16. WAREHOUSE BUILDING
17. GENERATOR STEP-UP TRANSFORMER
18. CT LIQUID FUEL ATOMIZING AIR MODULE (LFAA)
19. DCS EQUIPMENT
20. AIG SKID
21. FUEL GAS DRAINS TANK (FUTURE)
22. MAINTENANCE LAYDOWN AREA
23. FUEL GAS YARD (FUTURE)
24. SCR REMOVAL AREA
25. CT GENERATOR EXCITATION TRANSFORMER
26. COMBUSTION TURBINE EXCITATION COMPARTMENT
27. 480v SWITCHGEAR TRANSFORMER
28. 480v SWITCHGEAR
29. CONDENSER TUBE REMOVAL AREA
30. CAUSTIC FEED TANK
31. ELECTRIC FUEL OIL HEATER
32. ST EXCITATION TRANSFORMER
33. COMBUSTION TURBINE ELECTRICAL PACKAGE
34. COMBUSTION TURBINE SURGE PT & SA CUBICLE
35. COMBUSTION TURBINE 2C COOLER
36. GT CO2 FIRE PROTECTION SKID
37. AMMONIA DILUTION AIR FANS
38. GT LUBE OIL UNIT
39. ST GENERATOR SEAL OIL UNIT
40. NGR CUBICLE
41. STEAM TURBINE CONDENSER
42. GT WASH UNIT
43. WASH WATER DRAINS TANK
44. STEAM TURBINE AREA BLOWDOWN TANK
45. STEAM JET AIR EJECTOR
46. FIRE PUMPS
47. 4160v/480v DRY TYPE TRANSFORMER/MCC/SWITCHGEAR
48. CONTROL ROOM
49. RAW WATER STORAGE TANK
50. RAW WATER PUMPS
51. DEMINERALIZED WATER STORAGE TANK
52. DEMINERALIZED WATER PUMPS
53. 4160v/480v S.U.S. TRANSFORMER
54. CIRCULATING WATER LINES
55. STACK
56. ACW CLOSED CYCLE COOLING WATER PUMPS
57. GT AIR INLET FILTER
58. HYDROGEN BULK STORAGE
59. CO2 STORAGE CYLINDERS
60. DILUGE HOUSE
61. OIL/WATER SEPARATOR
62. DEADEND STRUCTURE
63. FIREWALL
64. FUEL OIL INLET FILTER
65. CYCLE CHEMICAL FEED EQUIPMENT
66. CHEMICAL LAB/SAMPLE PANEL
67. AIR COMPRESSORS
68. ACW CLOSED CYCLE COOLING WATER HEAT EXCHANGERS
69. EMERGENCY DIESEL GENERATOR
70. EXCITATION PACKAGE COOLING UNIT
71. CT ENCLOSURE VENT FAN
72. AMMONIA TANK
73. AMMONIA VAPORIZING SKID
74. CT ROTOR REMOVAL
75. CT TURBINE ENCLOUSRE
76. CEMS
77. CT SEAL OIL UNIT
78. PIPE RACK
79. AIR DRYERS
80. AIR RECEIVER
81. STEAM TURBINE GENERATOR
82. ST STATOR COOLING UNIT
83. FUEL GAS METERING (FUTURE)
84. FUEL GAS FILTER/SEPARATOR
85. START UP GAS HEATER
86. FUEL GAS COALESCING FILTER
87. EHC UNIT
88. COMBUSTION TURBINE SFC
89. COMBUSTION TURBINE SFC TRANSFORMER
90. DUCT BURNER MANAGEMENT SKID
91. ST ROTOR REMOVAL AREA
92. EXPANSION JOINT REMOVAL
93. COMBUSTION TURBINE PURGE AIR RECEIVER
94. FUEL OIL MANAGEMENT SPOOL PIECE
95. AUXILIARY BOILER
96. HRSG BLOWDOWN SUMP
97. CIRCULATING WATER CHEMICAL FEED
98. STEAM TURBINE EXCITATION PACKAGE
99. SULFURIC ACID STORAGE TANK
100. DEMINERALIZER WATER TRAILER AREA
101. EXISTING FUEL OIL TANK
102. 138kv SWITCHYARD
103. 230 kv SWITCHYARD
104. FUEL OIL UNLOADING STATION
105. FUEL OIL LEAK DETECTION
106. FUEL OIL AREA SUMP
107. FUEL OIL UNLOADING PUMPS
108. FUEL OIL FORWARDING PUMPS
109. FOAM SUPPRESSION SYSTEM
110. EXISTING GAS YARD
111. CIRCULATING WATER DISCHARGE CHEM FEED TANK

REFERENCES

- SITE PLAN BASED ON PROPOSED FPL SITE PLAN (srwl00001s1.dwg) DATED 4/4/08
- BOUNDARY INFORMATION BASED ON BOUNDARY AND TOPOGRAPHIC SURVEY DATED 9/10/08 PERFORMED BY AVIROM & ASSOCIATES, INC.
- SOVEREIGN SUBMERGED LANDS LEASE BASED ON FPL DRAWING No. CC042096 DATED 1998
- STORMWATER BASED ON BOYLE ENGINEERING CORP. POST DEVELOPMENT DETENTION AREA SITING EXHIBIT, DATED 9/3/08

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
0	01/01/01	XXX	REV_DESC	XXX		

PROJECT

FPL
CAPE CANAVERAL ENERGY CENTER

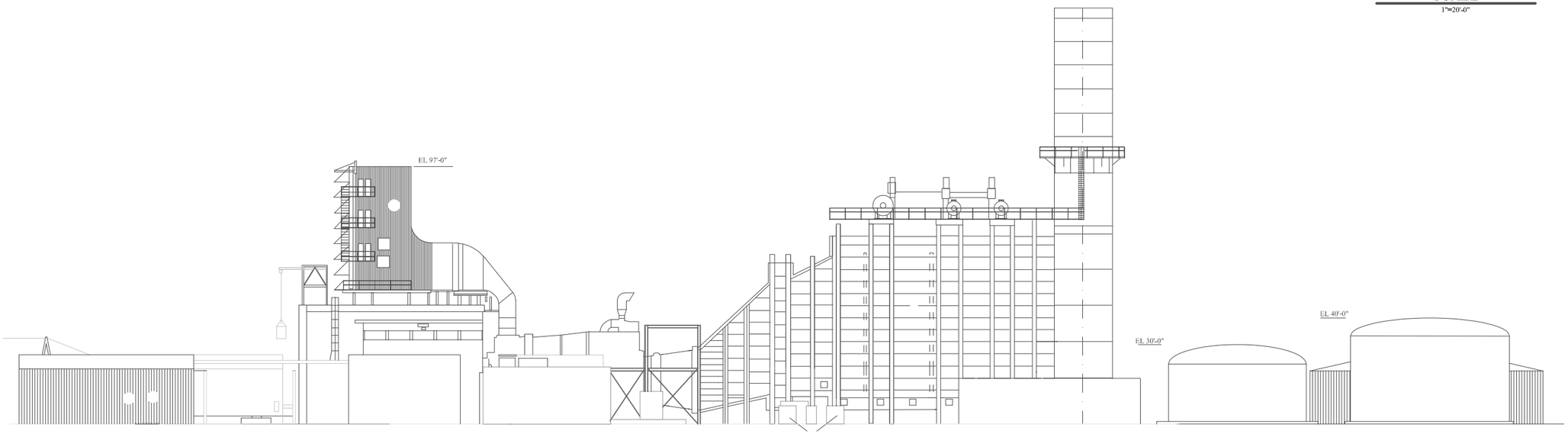
TITLE

FACILITY PLOT PLAN

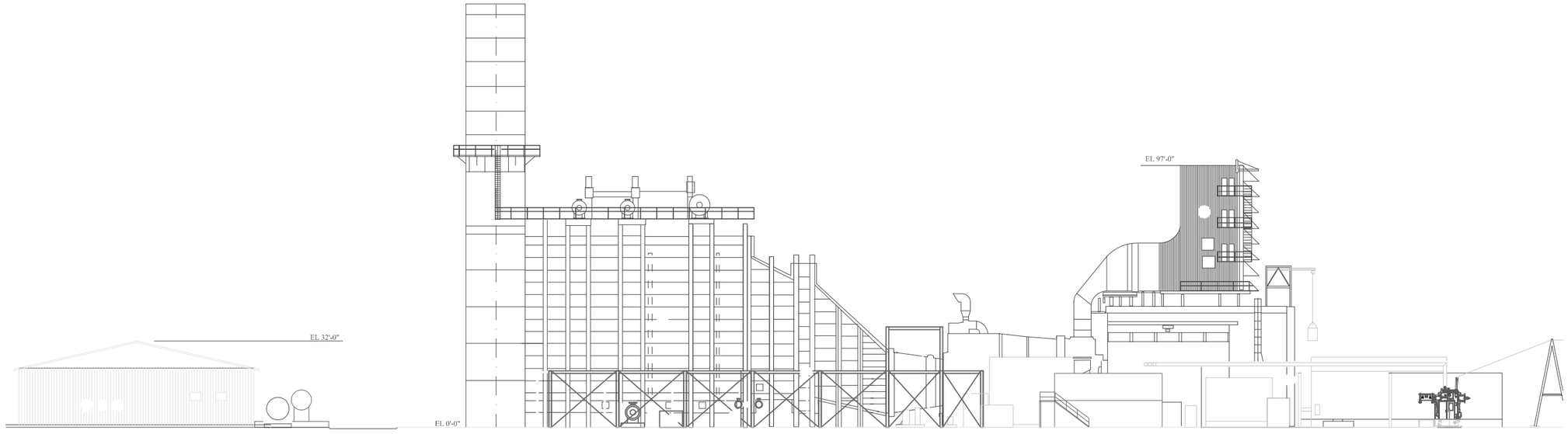
FPL

PROJECT No.		083-87633	FILE No.		08387633A037
DESIGN	-	-	SCALE	AS SHOWN	REV. 1
CADD	NRL	12/15/08			
CHECK	RCM	12/15/08			
REVIEW	KFK	12/15/08			

FIGURE 4.2.0-1



SOUTH ELEVATION
LOOKING NORTH



NORTH ELEVATION
LOOKING SOUTH

20 0 10 20 30 40

SCALE
1"=20'-0"

GENERAL NOTES

1. ALL SIZES AND ELEVATIONS ARE APPROXIMATE.
2. ANTICIPATED STACK HEIGHT NOT TO EXCEED 200', AS DETERMINED BY ENVIRONMENTAL REGULATIONS.

REFERENCE DRAWINGS

1. SITE RELATED WORK - 3x1 COMBINED CYCLE - 501G GENERAL ARRANGEMENT - PLAN D013454-SRWL00001 SH01
2. SITE RELATED WORK - 3x1 COMBINED CYCLE - 501G EAST/WEST ELEVATIONS D013454-SRWL00004 SH01
3. SITE RELATED WORK - 3x1 COMBINED CYCLE - M501G NORTH/SOUTH ELEVATIONS D013454-SRWL00004 SH01

FPL

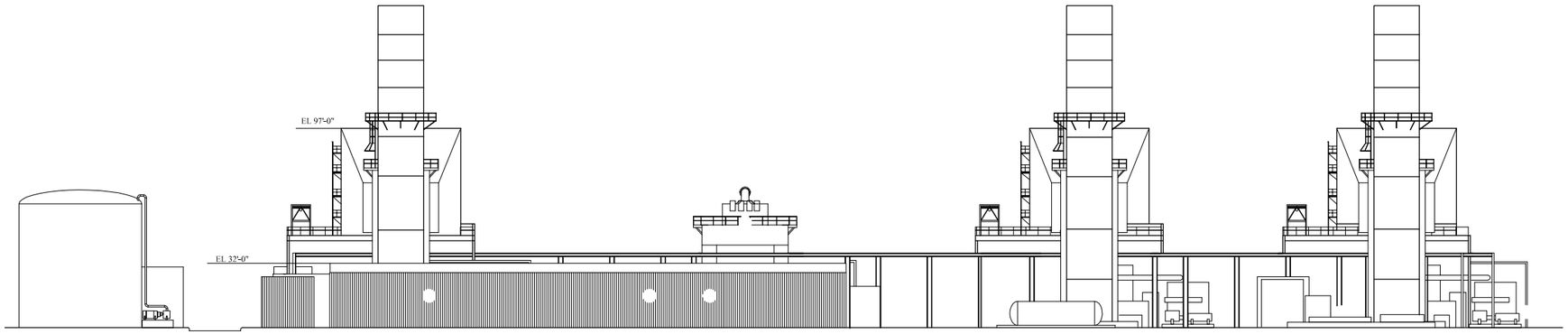
PROJECT
FPL
CAPE CANAVERAL ENERGY CENTER

TITLE
NORTH / SOUTH ELEVATIONS
(TYPICAL PROFILES FOR THE COMBINED CYCLE TECHNOLOGIES CONSIDERED)

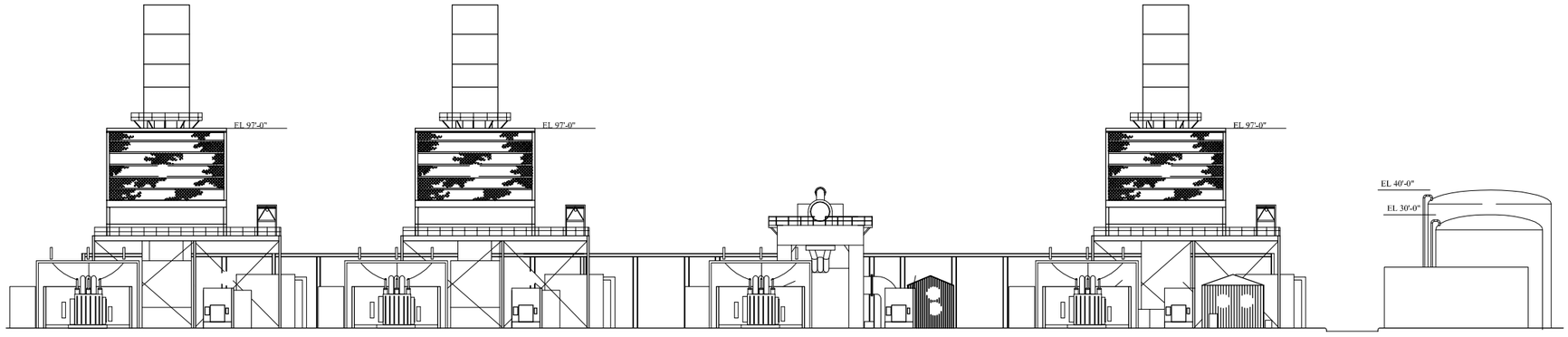
PROJECT No. 083–87633		
FILE No. 08387633CA035		
REV. 0	SCALE AS_SHOWN	
DESIGN	–	–
CADD	NRL	10/16/08
CHECK	RCM	10/23/08
REVIEW	KFK	12/09/08

FIGURE 4.2.0-2

Drawing file: 08387633CA035_NSElevation.dwg Oct 16, 2008 - 11:03am



EAST ELEVATION
LOOKING WEST



WEST ELEVATION
LOOKING EAST

GENERAL NOTES

1. ALL SIZES AND ELEVATIONS ARE APPROXIMATE.
2. ANTICIPATED STACK HEIGHT NOT TO EXCEED 200'; AS DETERMINED BY ENVIRONMENTAL REGULATIONS.

REFERENCE DRAWINGS

1. SITE RELATED WORK - 3x1 COMBINED CYCLE - 501G GENERAL ARRANGEMENT - PLAN D013454-SRWL00001 SH01
2. SITE RELATED WORK - 3x1 COMBINED CYCLE - 501G EAST-WEST ELEVATIONS D013454-SRWL00004 SH01
3. SITE RELATED WORK - 3x1 COMBINED CYCLE - M501G NORTH/SOUTH ELEVATIONS D013454-SRWL00004 SH01

30 0 15 30 45 60
SCALE
1"=30'-0"

FPL

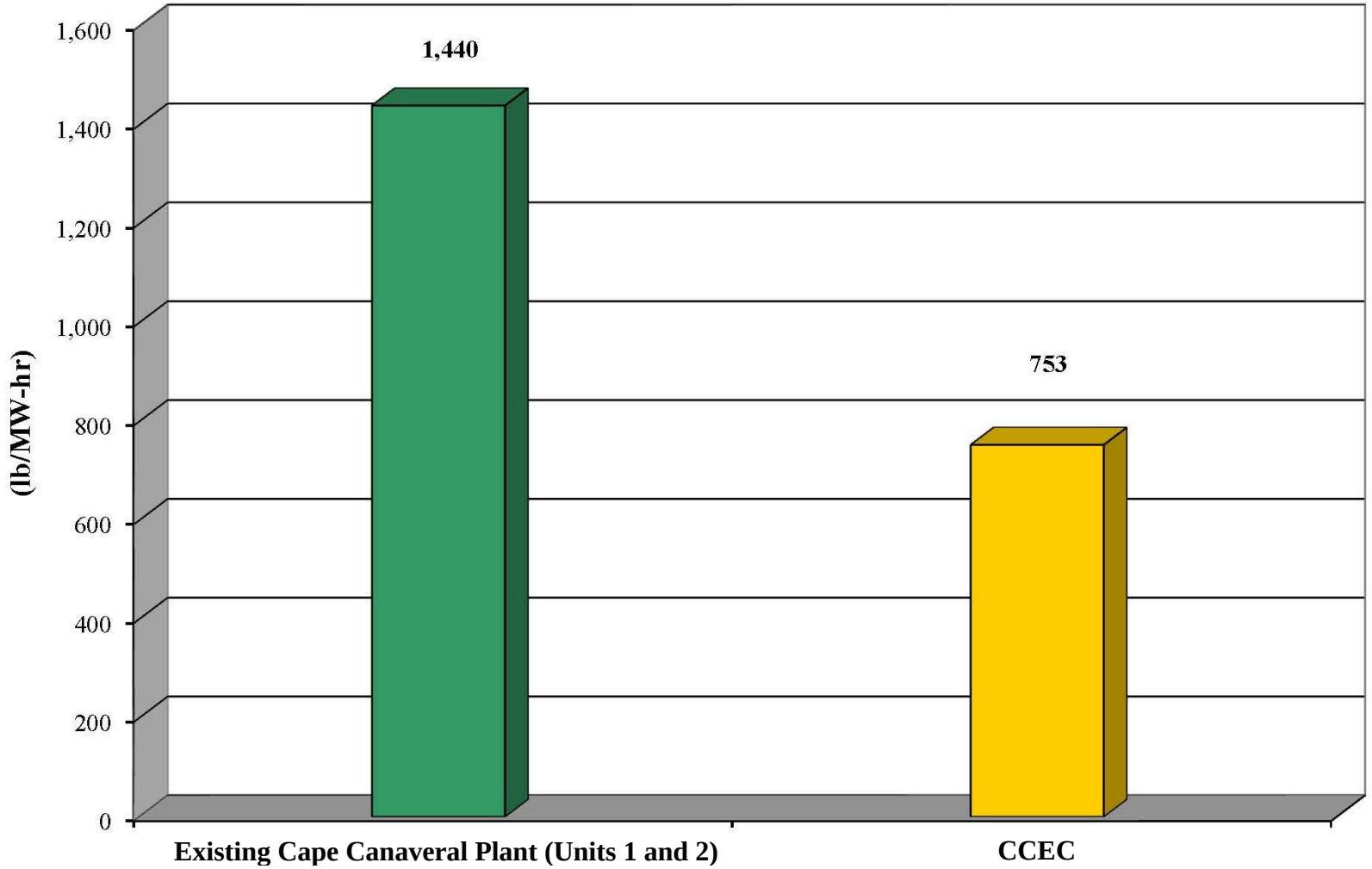
PROJECT
FPL
CAPE CANAVERAL ENERGY CENTER

TITLE
EAST / WEST ELEVATIONS
(TYPICAL PROFILES FOR THE COMBINED CYCLE TECHNOLOGIES CONSIDERED)

PROJECT No. 083-87633		
FILE No. 08387633CA036		
REV. 0	SCALE AS_SHOWN	
DESIGN	–	–
CADD	NRL	10/23/08
CHECK	RCM	10/23/08
REVIEW	KFK	12/09/08

FIGURE 4.2.0-3

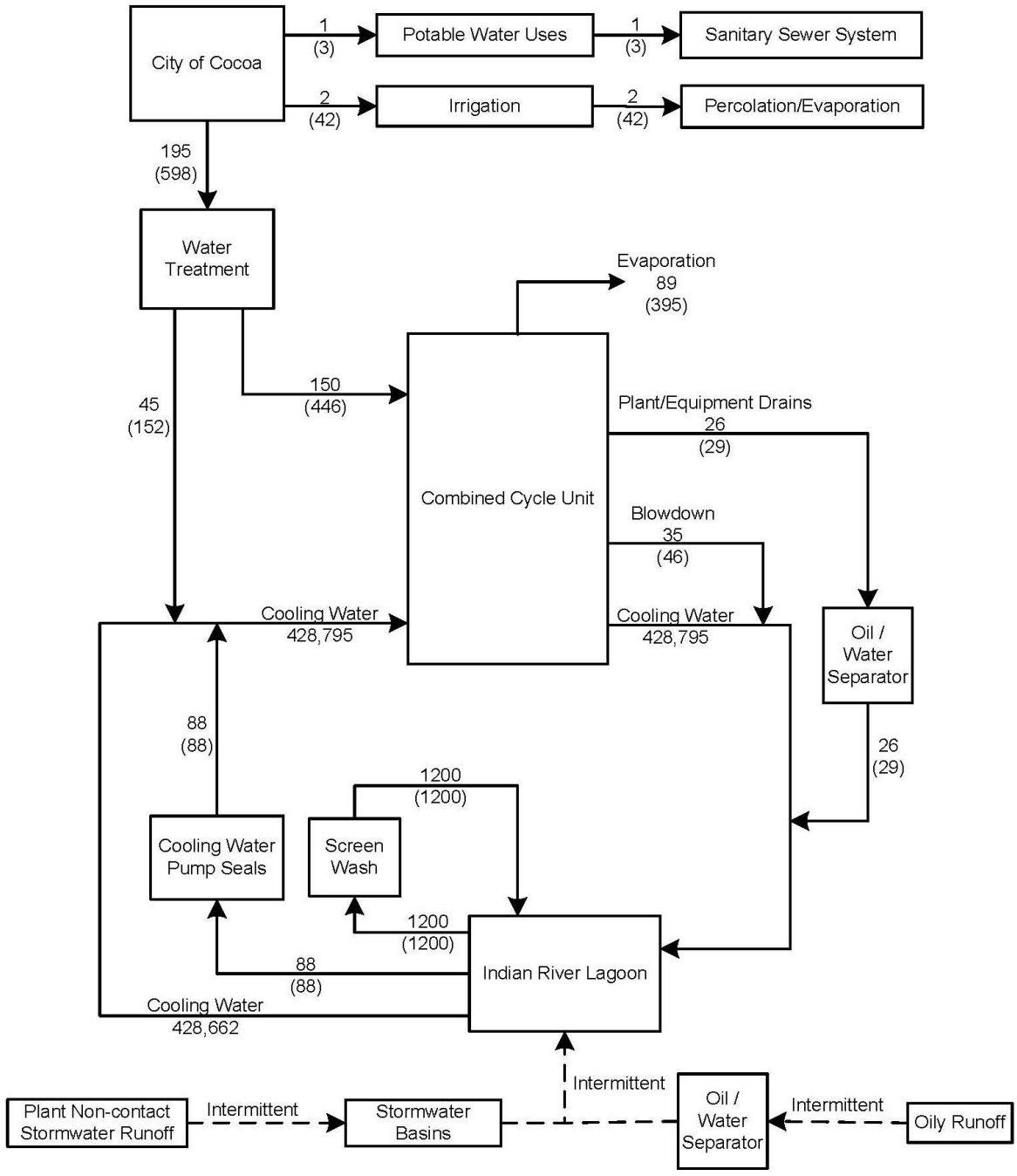
Drawing file: 08387633CA036_EWElevation.dwg Oct 16, 2008 - 11:45am



Notes: Existing Cape Canaveral based on 2003 and 2004 operation (50.1% capacity factor). Emission rate in lb/MW-hr based on gross generation.
Conversion based on 90% capacity factor on natural gas and light oil; 7,760 hours on gas and 1,000 hours of oil at full load. Based on FDEP permitted performance and emission limits.
Nominal Capacity: existing = 3-on-1 = 1,250 MW

Figure 4.4.2-1
Comparison of CO_2 Emission Rates (lb/MW-hr) for the Existing Cape Canaveral Plant and CCEC
Figure 4.4.2-1.docx

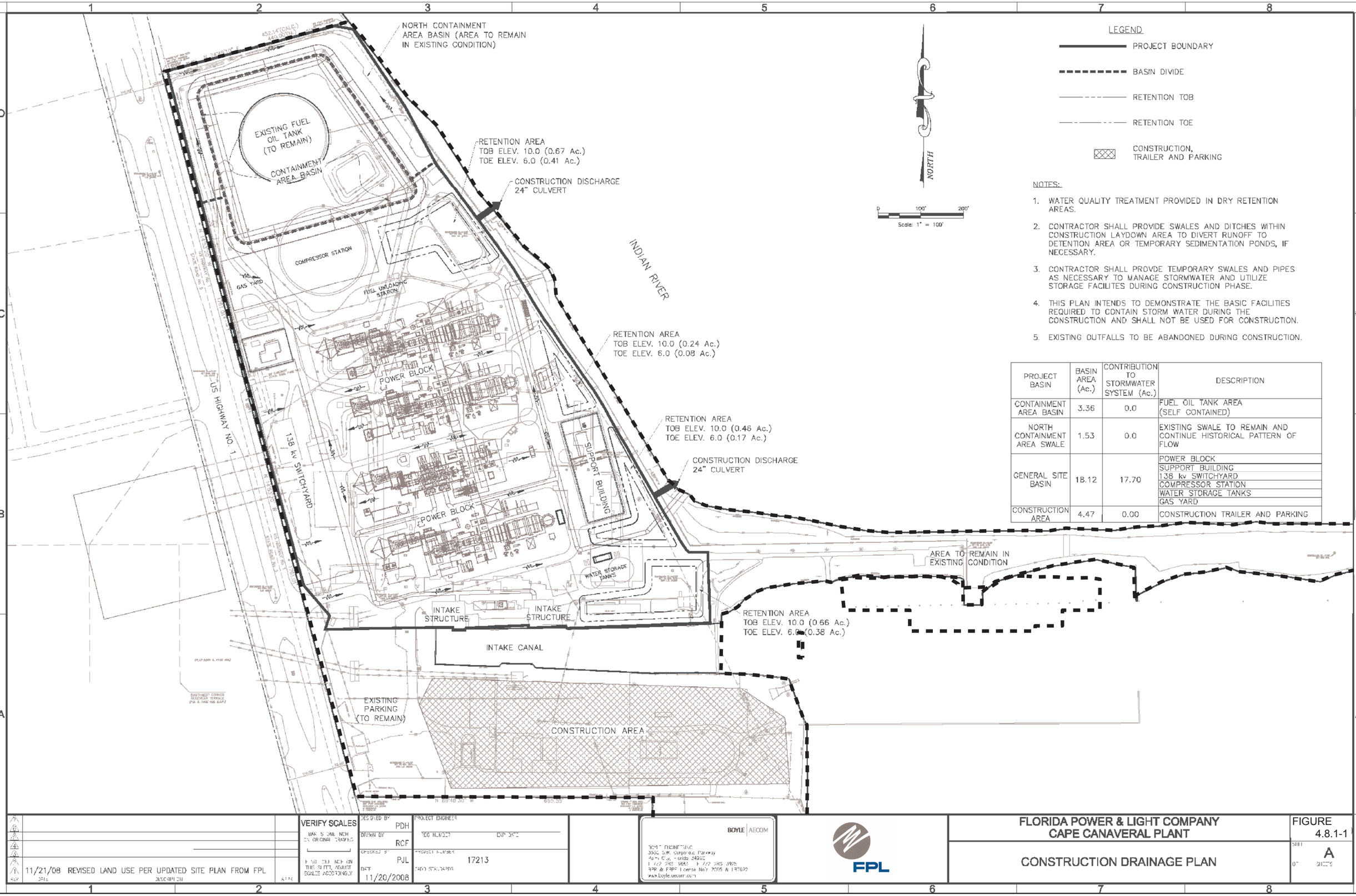
Source: Golder, 2008.



Notes:
1. Flows are in gallons per minute unless otherwise noted.
2. Flows shown with no () are based on average daily water use.
3. Numbers in () are peak intermittent flows.
4. Dashed lines indicate intermittent flows.

Figure 4.5.0-1
Water Balance for CCEC
Figure 4.5.0-1.docx

Source: Golder, 2008.



LEGEND

- PROJECT BOUNDARY
- BASIN DIVIDE
- RETENTION TOB
- RETENTION TOE
- CONSTRUCTION, TRAILER AND PARKING

NOTES:

1. WATER QUALITY TREATMENT PROVIDED IN DRY RETENTION AREAS.
2. CONTRACTOR SHALL PROVIDE SWALES AND DITCHES WITHIN CONSTRUCTION LAYDOWN AREA TO DIVERT RUNOFF TO DETENTION AREA OR TEMPORARY SEDIMENTATION PONDS, IF NECESSARY.
3. CONTRACTOR SHALL PROVDE TEMPORARY SWALES AND PIPES AS NECESSARY TO MANAGE STORMWATER AND UTILIZE STORAGE FACILITES DURING CONSTRUCTION PHASE.
4. THIS PLAN INTENDS TO DEMONSTRATE THE BASIC FACILITIES REQUIRED TO CONTAIN STORM WATER DURING THE CONSTRUCTION AND SHALL NOT BE USED FOR CONSTRUCTION.
5. EXISTING OUTFALLS TO BE ABANDONED DURING CONSTRUCTION.

PROJECT BASIN	BASIN AREA (Ac.)	CONTRIBUTION TO STORMWATER SYSTEM (Ac.)	DESCRIPTION
CONTAINMENT AREA BASIN	3.36	0.0	FUEL OIL TANK AREA (SELF CONTAINED)
NORTH CONTAINMENT AREA SWALE	1.53	0.0	EXISTING SWALE TO REMAIN AND CONTINUE HISTORICAL PATTERN OF FLOW
GENERAL SITE BASIN	18.12	17.70	POWER BLOCK SUPPORT BUILDING 138 kv SWITCHYARD COMPRESSOR STATION WATER STORAGE TANKS GAS YARD
CONSTRUCTION AREA	4.47	0.00	CONSTRUCTION TRAILER AND PARKING

REV	DATE	DESCRIPTION	APP'D
1	11/21/08	REVISED LAND USE PER UPDATED SITE PLAN FROM FPL	

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

DESIGNED BY PDH
DRAWN BY RCF
CHECKED BY PJL
DATE 11/20/2008

PROJECT ENGINEER
DEC NUMBER EXP DATE
PROJECT NUMBER 17213
CADD SPECIFICATION

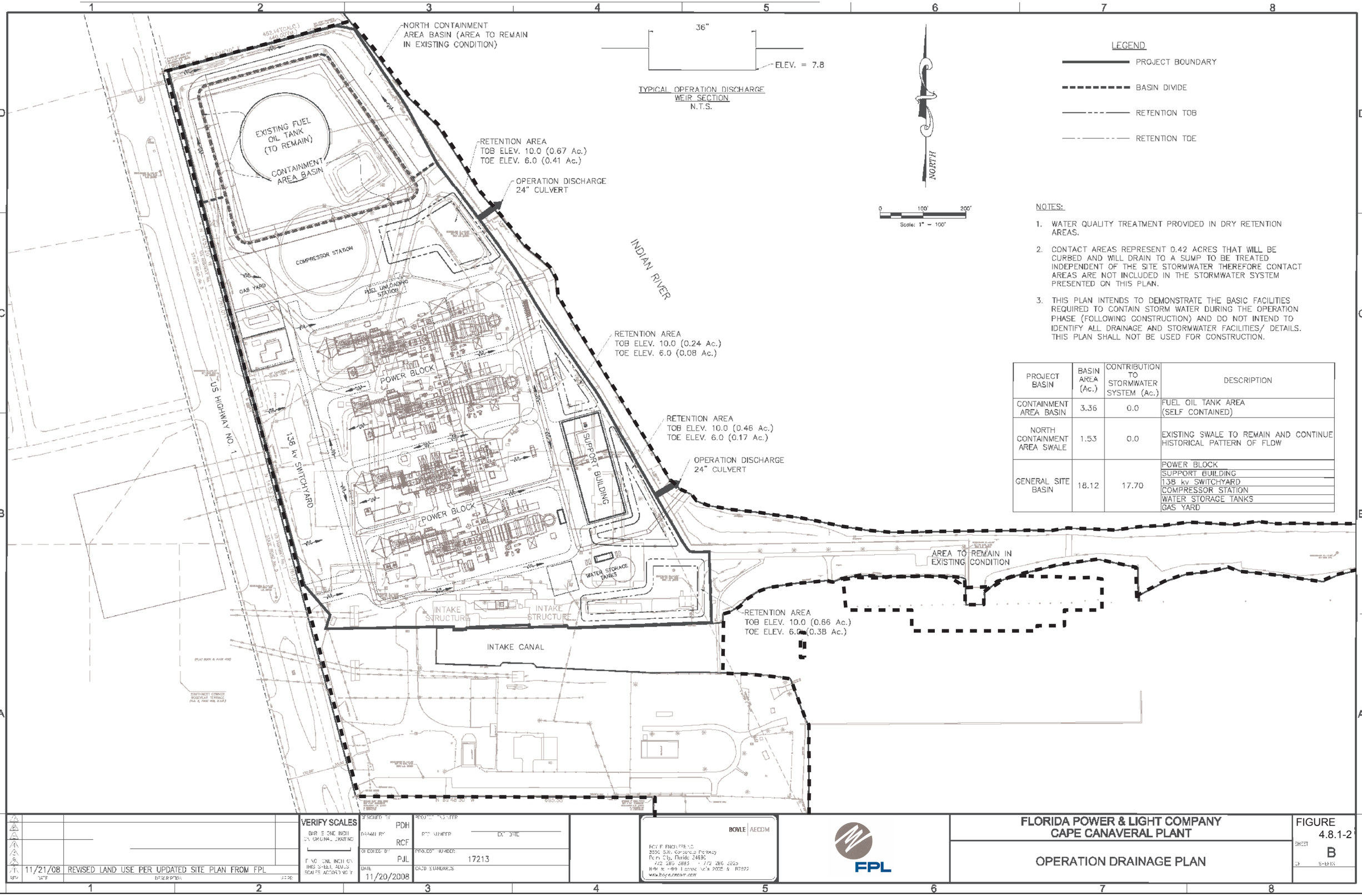
BOYLE | AECOM
BOYLE ENGINEERING
3535 S.W. Corporate Parkway
Palm City, Florida 34990
T 772 283 9840 F 772 283 9926
EB & EBPE License No's 2005 & 137022
www.boyle.aecom.com

FPL

FLORIDA POWER & LIGHT COMPANY
CAPE CANAVERAL PLANT

CONSTRUCTION DRAINAGE PLAN

FIGURE 4.8.1-1
SHT A OF SHEETS



NOTES:

1. WATER QUALITY TREATMENT PROVIDED IN DRY RETENTION AREAS.
2. CONTACT AREAS REPRESENT 0.42 ACRES THAT WILL BE CURBED AND WILL DRAIN TO A SUMP TO BE TREATED INDEPENDENT OF THE SITE STORMWATER THEREFORE CONTACT AREAS ARE NOT INCLUDED IN THE STORMWATER SYSTEM PRESENTED ON THIS PLAN.
3. THIS PLAN INTENDS TO DEMONSTRATE THE BASIC FACILITIES REQUIRED TO CONTAIN STORM WATER DURING THE OPERATION PHASE (FOLLOWING CONSTRUCTION) AND DO NOT INTEND TO IDENTIFY ALL DRAINAGE AND STORMWATER FACILITIES/ DETAILS. THIS PLAN SHALL NOT BE USED FOR CONSTRUCTION.

PROJECT BASIN	BASIN AREA (Ac.)	CONTRIBUTION TO STORMWATER SYSTEM (Ac.)	DESCRIPTION
CONTAINMENT AREA BASIN	3.36	0.0	FUEL OIL TANK AREA (SELF CONTAINED)
NORTH CONTAINMENT AREA SWALE	1.53	0.0	EXISTING SWALE TO REMAIN AND CONTINUE HISTORICAL PATTERN OF FLOW
GENERAL SITE BASIN	18.12	17.70	POWER BLOCK
			SUPPORT BUILDING
			138 kv SWITCHYARD
			COMPRESSOR STATION
			WATER STORAGE TANKS
			GAS YARD

REV	DATE	DESCRIPTION	ACRE
SPV	11/21/08	REVISED LAND USE PER UPDATED SITE PLAN FROM FPL	

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

DESIGNED BY PDH
DRAWN BY RCF
CHECKED BY PJL
DATE 11/20/2008
PROJECT NUMBER 17213
CADD STANDARDS

BOYLE | AECOM
BOYLE ENGINEERING
3330 SW Corporate Parkway
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FPL

FLORIDA POWER & LIGHT COMPANY
CAPE CANAVERAL PLANT

OPERATION DRAINAGE PLAN

FIGURE 4.8.1-2
SHEET B OF SHEETS

5.0 ENVIRONMENTAL EFFECTS OF SITE PREPARATION AND PLANT AND ASSOCIATED FACILITIES CONSTRUCTION

The following sections address the environmental effects of site preparation and plant and construction of the converted Plant, dismantlement of the existing Plant, including the offsite parking and laydown area. The environmental effects are discussed with respect to their impacts on land, surface water, groundwater, ecology, air quality, solid waste, landmarks and sensitive areas, and impacts on archaeological and historic sites. It is important to note that during this approximately 3-year construction period, the existing Cape Canaveral Plant facilities will no longer be in operation. Therefore, while the Project construction activities will have the impacts discussed in the following sections, impacts of the existing Plant will not occur during this period.

5.1 Land Impacts

5.1.1 General Construction Impacts

5.1.1.1 Site

Many of the existing Cape Canaveral Plant facilities, including, but not limited to: the steam generators, steam turbines, electric generators, condensers, stacks, and associated equipment will be dismantled prior to the start of construction of the converted Plant. Construction and demolition materials will be either recycled or disposed.

Dismantlement activities will include dismantling of mechanical and electrical equipment and may include explosive dismantlement of certain structures. Facilities such as the steam turbines, electric generators, and mechanical, electrical, and instrumentation equipment may be manually dismantled prior to any use of explosives. Dismantlement will involve the use of cranes, robotic demolition machines, jackhammers, loaders, and dump trucks. Demolition debris will be transported offsite for recycling for beneficial reuse or disposed of in a licensed landfill. As necessary, to protect the public during Project dismantlement work, appropriate protective enclosures will be installed along the perimeter of the Site or as appropriate at other Site locations.

During decommissioning and prior to dismantlement, all insulation and hazardous materials will be removed from the structures. Utility and fuel systems, including water, sewer, oil, gas, and electrical systems will be disconnected and isolated.

The stacks will be pre-washed and evaluated for hazardous materials, and all insulation will be removed prior to being dismantled. As required for the converted Plant construction, underground piping, pilings, and tanks will be excavated, drained, and removed.

Controlled explosive techniques may be used to dismantle large structures. Explosives would be used to implode portions of the structure to safely lower structures for subsequent removal from the Site. The large structures where explosives may be used include the steam generator buildings, steam turbine/electric generator pedestals, and other large concrete components. Explosive charges would be placed by experienced contractors to weaken the supporting structures and foundations to lower the infrastructure to the ground. The controlled, directed explosions would be of extremely short duration, lasting only seconds.

The use of explosives will be coordinated with local authorities to minimize any potential impacts to traffic on U.S. Highway 1 and nearby residents and businesses. Appropriate and timely notice will be given to nearby residences and business prior to the use of explosives.

Structures to be dismantled by explosives will be prepared by removing materials that can cause fugitive emissions. Water will be used to control fugitive emissions during the use of explosives or other dismantlement activities that would generate fugitive emissions.

Waste material (e.g., concrete, scrap metal) will be recycled, or disposed of in accordance with local and State requirements (see Table 5.1.1-1). Structural material such as concrete may be used as fill. Material that cannot be recycled will be disposed of in an approved landfill [i.e., a construction and demolition (C&D) or municipal solid waste (MSW) Class I landfill, as appropriate]. Any hazardous waste will be managed according to applicable rules and regulations (see Table 5.1.1-1).

Similar dismantlement techniques have been used for the FPL Lauderdale, Fort Myers, and Sanford Repowering Projects. In these Projects, the steam generators, associated mechanical and electrical equipment, and stacks were removed. Based on this experience, only localized impacts are expected to occur during this phase of construction, which will occur for about 1 year.

The Site is occupied by an operating power generation facility and contains minimum vegetation. The area used for Project construction, including onsite construction laydown and parking, will be cleared of such minimal vegetation as necessary. The Site soils are generally suitable for the

development of the CCEC, obviating the need for substantial filling. Unsuitable soils will be removed and fill added, as necessary.

5.1.1.2 Offsite

Offsite construction laydown and parking area will be located on FPL-owned property west of U.S. Highway 1 and adjacent to the existing FPL switchyard (see Figure 4.1.0-1), referred to as the offsite construction laydown and parking area. This area, which is about 45 acres may be stabilized with rock, limestone, and shell. Other more lightly used areas may be seeded or sodded with grass to prevent erosion. FPL will comply with the applicable landscaping requirements of Brevard County.

5.1.2 Roads

Access to the Site and the offsite construction laydown and parking area is by public roads. U.S. Highway 1, a four-lane divided highway, is located immediately west of the Site and east of the offsite construction laydown and parking area. The existing Cape Canaveral Plant entrances (Gate 1, Main Gate, and Contractor's Gate) are connected to U.S. Highway 1 and will be used for access to the Site. The offsite construction laydown and parking area is also connected to U.S. Highway 1 by Clearview Drive (See Figure 3.1.0-3).

The construction workforce for the Project is expected to average approximately 290 workers. Dismantlement of the existing Plant facilities is anticipated to commence in the spring of 2010 and Project construction is anticipated to conclude in the summer of 2013. Peak construction is estimated at approximately 650 workers in mid-2012. Subsection 5.7.2 presents the traffic analysis performed for the construction of the Project.

Fugitive dust generation from traffic will be minimized through paving roads and the use of water sprinkling or other dust-suppressant techniques.

5.1.3 Flood Zones

5.1.3.1 Site

The vast majority of the Site is within Zone X and is not within the 100-year floodplain. The eastern portion (shoreline) of the Site is shown on the current FEMA flood zone map as being within the Special Flood Hazard Area and within Zone AE (within the 100-year floodplain). No structures will be constructed within Zone AE.

5.1.3.2 Offsite

The entire offsite construction laydown and parking area is within Zone X and not within the 100-year floodplain.

5.1.4 Topography and Soils

5.1.4.1 Site

The existing grade of the Site is nominally 20 ft-msl. The finished grade of the Site, which includes the Power Block and equipment for CCEC, will remain at the existing nominal site elevation of 20 ft-msl. After dismantling Units 1 and 2, site preparation will be minimal due to the existing industrial nature of the Site. As necessary for structural stability, material will be backfilled for foundations of structures and piping. Areas will be graded and some amounts of rock fill will be used to help support the Plant foundations, piping, electrical duct banks, trenches, and manholes. Foundations required to support heavy loads (e.g., building columns, CTs, generators) are expected to be spread foundations supported by pilings or stone columns.

Dewatering will be required for equipment foundations and maintenance, repair and refurbishment of the existing once-through cooling water system. Such dewatering will be localized and last for less than 1 year. Impacts of dewatering on surficial groundwater are addressed in Section 5.3. There will be no impacts on the underlying deeper aquifers because excavation and dewatering activities will be limited to the Site.

Current topographic features for the vicinity of the Cape Canaveral Plant reflect the historic power plant activities of the Site. No adverse impact is anticipated to soil stability or bearing strength because spread foundations, pilings, or stone columns will be used; therefore, overall settling of the land area will be negligible. Slight settling may take place in areas of construction, but this will be minor and localized in extent due to the existing Site conditions.

Elevations of the land surface during construction will be approximately the same as the existing Site elevation. As a result, no significant changes in topography will be observable from offsite locations and site topography will not be affected by construction-related activities. The structures associated with the construction of CCEC will include temporary construction cranes for use in construction of three new 149-foot-tall exhaust stacks. The existing Plant stacks are about 400 feet high and the existing boiler structures are about 150 feet high (see Section 7.9 regarding aesthetics of the CCEC

when complete). Since the construction cranes will be temporary and lower in height than the existing structures, the impacts of construction on viewshed will not be significant.

Groundwater levels will not be significantly affected by modifications to soil percolation from the construction activities at the Site due to the proximity of surface water and the interconnection between these surface water bodies and the surficial aquifer. Slight changes in percolation rates will have negligible impacts on water levels, because the surface infiltration will affect only localized areas within the Site and offsite construction laydown and parking area.

5.1.4.2 Offsite

The offsite construction laydown and parking area will remain at its existing elevation. Mobile cranes and forklifts will be used in this area to offload and move equipment and materials. As described in Section 4.9.1, limestone and aggregate will be used as necessary for stabilization.

5.2 Impact on Surface Water Bodies and Uses

5.2.1 Impact Assessment

5.2.1.1 Construction Water Use

Site

Water used during Project construction will be obtained from the City of Cocoa. Construction water uses include hydrostatic testing, chemical cleaning, steam blows and fugitive dust control.

The hydrostatic testing of HRSGs, piping, and tank systems will be contained onsite after such testing is completed. Chemicals such as ammonia may be added to the water used for hydrostatic testing to meet manufacturer's specifications for pH control. If no chemicals are added, hydrostatic test water will be either routed to the stormwater ponds or allowed to percolate and/or evaporate onsite.

Chemical cleaning of the HRSG and steam piping systems will be performed near the end of the construction period (Section 4.6). The steam blow process involves cleaning steam-piping systems to remove accumulated weld spatter, slag, filings, and other debris. If this material is not removed prior to steam turbine operation, the steam turbine may be damaged by the metal particles, which would strike the blades and steam path at very high velocities. Blowing through the piping system with steam removes this material, along with rust, grease, and other fabrication and construction residues prior to commencement of combined cycle operation. The steam blow process requires treated water for a short time period. The proposed auxiliary boiler for CCEC or a temporary boiler will be used to

generate steam for cleaning. Non-hazardous wastewaters chemical cleaning of HRSG and steam piping will be routed to the Brevard County POTW or other approved facility. During construction, the construction labor force will use portable chemical toilets and/or permitted holding tanks. A licensed contractor will pump all sanitary sewage from the portable toilets and holding tanks as needed and transport the waste to an approved disposal facility. A temporary connection to the existing POTW may be used during construction.

Potable water for consumption during construction will be obtained from the existing City of Cocoa potable water connection or contractor-supplied potable water. Potable water for emergency eyewash and shower stations during construction will be obtained from the existing City of Cocoa potable water connection or contractor-supplied potable water.

As necessary, water from the City of Cocoa will be used to mitigate fugitive dust emissions.

Offsite

Water use for the offsite construction laydown and parking area will be required only for minimizing fugitive dust. Water from the City of Cocoa that is available at the Site will be used.

5.2.1.2 Stormwater

Site

The potential for onsite Project construction activities to impact offsite aquatic systems will be minimized through the use of appropriate construction techniques to control erosion, sedimentation, and surface runoff. Runoff in excess of the design water quality treatment volume (25 year, 24-hour storm) may be discharged to the Indian River Lagoon. Stormwater collected during the construction period will be discharged only if runoff exceeds the design water quality treatment volume. Silt fences at the perimeter of active construction areas will be maintained during construction.

The existing stormwater management system for the Site will be modified to accommodate construction and operation of CCEC. Stormwater runoff from construction activities, including the offsite construction laydown and parking area, will be routed to stormwater management ponds. Offsite impacts will be prevented and controlled through proper design and placement of runoff control features. Erosion during construction will be controlled by grading, construction of ditches and embankments, maintenance of relatively flat grades, and other appropriate erosion control techniques. Sedimentation will be controlled during construction by use of additional sediment

control basins and traps, filter berms, silt fence, straw bales, and other applicable devices as appropriate.

Runoff collected in the stormwater management ponds will be allowed to percolate or evaporate. No adverse impacts to surface waters are anticipated.

Effluent from onsite dewatering will be discharged to the Indian River Lagoon in accordance with applicable standards. Other construction wastewaters, such as flush water or hydrostatic testing water, will be disposed of offsite (POTW or other approved facility), or treated as necessary and routed to the stormwater ponds or otherwise allowed to percolate or evaporate.

Impacts from the use of chemicals for cleanup of chemical, oil, or grease spillage will be minimized through proper handling and disposal practices. Construction contractors will be required to implement environmental control practices to minimize any spills, e.g., by designating specific areas for fueling and maintenance. These areas will be located so that any spills, if they do occur, will not be adjacent to any surface waters. If any spills occur, cleanup will be expedited with ultimate disposal of collected material in an approved facility. When appropriate, such materials will be handled in accordance with FPL's Spill Prevention, Control, and Countermeasure (SPCC) Plans and FPL's Waste Management Guidelines (see Table 4.7.0-1). In addition, FPL will require construction-specific procedures to be developed and implemented by individual contractors.

Offsite

As described in Subsection 4.8.2, the offsite construction laydown and parking area will be provided with temporary sedimentation ponds, swales, ditches, silt fences, and hay bales, as necessary, to minimize stormwater impacts and to meet all local, State and federal stormwater management requirements. FPL will develop a SWPPP and submit this as part of the NOI for a Generic Permit. Through the SWPPP, stormwater impacts to the surrounding areas will be minimized. The handling and disposal practices used by contractors for the offsite construction laydown and parking area will be the same as those used for onsite construction. As a result of the stormwater management practices, no adverse impacts from surface water from stormwater generated on the offsite construction laydown and parking area will occur.

5.2.1.3 Construction Dewatering

Site

During construction of CCEC, dewatering activities will be required for various structures to be located at depths below the surficial groundwater table, including during excavations for major foundations, installation of underground circulating water pipe, and miscellaneous trenching activities. In order to meet regulatory requirements for release to the adjacent waterways, the dewatering effluent may require treatment for pH, turbidity and metals. Potential processes considered in the design of dewatering treatment system will be similar to those used to create high quality process water. The dewatering effluent treatment system will be designed to ensure that any discharge to surface waters will meet Class II water quality standards.

If necessary, chemical dosing and clarification will be the initial dewatering effluent treatment processes used. Coagulant and polymer will be added to the influent water to facilitate settling of the suspended particulate matter. Particulate matter will settle out of the water in the clarifier as a semi-solid. In order to create a disposable product, the semi-solid material may be further dewatered in a filter press, producing a solid with low moisture content.

If necessary, following clarification to remove the smaller particulate which does not settle out in the process, filtration will be employed. After the filtration process, testing will be performed to assess water quality. Ion exchange processes may be required to further remove selected ions from the effluent water before release to the existing intake or discharge areas. In the ion exchange process, elevated ions in concentrations exceeding surface water quality standards, will be replaced by sodium or hydrogen. The regeneration process will be performed off site by a contracted water treatment company.

Up to 1,750 gpm of groundwater could be produced during dewatering activities over several months of the project construction period. An onsite lined holding pond or a day tank would be provided to collect dewatering effluent from various locations routing the water to the dewatering effluent treatment processes. The dewatering effluent treatment process will continuously treat dewatering effluent before being released to the adjacent waterways. Solid waste produced from the dewatering effluent treatment process is estimated to average 600 lbs/hr and, depending upon its quality, will be placed onsite or disposed of at an approved facility.

Offsite

No dewatering activities will be required for the offsite construction laydown and parking area.

5.2.2 Measuring and Monitoring Programs

Discharge of treated stormwater associated with construction activities will be monitored as required under the applicable regulations.

5.3 Groundwater Impacts

5.3.1 Impact Assessment

Activities associated with the construction of CCEC are not expected to produce any significant changes to groundwater quality, quantity, or levels in the vicinity of the Site or offsite construction and parking area. Dewatering will be confined to localized onsite areas associated with construction on the Power Block and maintenance, repair and refurbishment of portions of the existing once-through cooling system. As a result, no impacts to groundwater resources or offsite wells will occur from dewatering activities.

As discussed in Subsection 5.2.1.1, construction contractors will be required to implement appropriate practices to minimize spills. Maintenance and refueling will be performed only in designated areas. Any spills will be cleaned up and wastes disposed of in accordance with applicable requirements.

5.3.2 Measuring and Monitoring Programs

During construction dewatering, applicable measuring and monitoring programs will be conducted, as appropriate.

5.4 Ecological Impacts

5.4.1 Impact Assessment

5.4.1.1 Terrestrial Systems

Fugitive dust generated by construction activities will be minimized through Best Management Practices (BMPs) (see Subsection 5.5.2). Any localized fugitive dust will not adversely affect the terrestrial systems in the vicinity of the Site, including the offsite construction laydown and parking area.

Noise from construction activities is not anticipated to significantly affect wildlife in the vicinity of the Site. Presently, the area experiences noise from U.S. Highway 1, human activity, and the operation of the existing Plant. Wildlife that occur in the vicinity of the Site are acclimated to such activities. No noise-sensitive wildlife is known to occur on the Site or in its vicinity since wildlife in the area would have been acclimated to noise associated with the existing Plant operations.

Site

The terrestrial systems on the entire Site were cleared and previously impacted in connection with the construction of Cape Canaveral Units 1 and 2 in the 1960s. Construction of the CCEC upon these previously impacted areas, which have been used for power plant operation for more than 40 years will not cause adverse ecological impacts.

The Site does not contain unique wildlife species and is not considered important wildlife habitat because of its disturbed nature (see Subsection 3.3.6.2, Pre-Existing Stresses, Terrestrial Systems).

No adverse impacts to federally or state-listed terrestrial plants and animals are expected in association with construction at the Site, due to the existing developed nature of the Site and lack of suitable onsite habitat for listed species.

Offsite

Federally- or state-listed terrestrial plants and animals inhabiting the offsite construction laydown and parking area are limited to the state-listed gopher tortoise and the state- and federally-listed scrub jay. Any impacts to the gopher tortoise will be avoided through relocation of individuals prior to initiation of work in this area, in consultation with the FFWCC. Similarly, any impacts to the scrub jay will be minimized and/or mitigated, in consultation with Brevard County, the FFWCC, and the USFWS. Listed species are discussed in detail in Subsection 5.4.1.3.

5.4.1.2 Aquatic Systems/Wetlands

Site

The construction of the CCEC will not impact any jurisdictional wetlands. Two small man-made depressional areas totaling 0.21 acre occur on the Site within the bermed containment area of the existing oil storage tanks. One stormwater pond retention pond approximately 0.10 acre in size is present on the Site west of the existing Power Block. Although these areas meet the criteria for a wetland (hydric soild, hydrophytic vegetation, hydrology), according to Chapter 62-340, Section 62-340.700, F.A.C., they do not require compensatory mitigation if impacted, since they are

part of a previously permitted spill containment system or stormwater management system and are less than 0.5 acre in combined area. Approximately 2.61 acres of mangrove-dominated shoreline adjacent to the Indian River Lagoon border the peninsula portion of the Site and will not be impacted by the Project.

The maintenance, repair, and refurbishment of equipment within the intake and discharge areas qualifies for an U.S. Army Corps of Engineers Nationwide Permit (NWP# 33, Temporary Construction, Access and Dewatering and/or NWP# 3, Maintenance). The replacement of equipment within the intake and discharge canals qualifies for an FDEP exemption for performance of maintenance dredging of existing manmade canals, channels, basins, berths, and intake and discharge structures. In accordance with Section 403.813(2)(f), F.S., FPL may also conduct maintenance dredging within the intake and discharge areas and barge slip during the Project construction period.

Construction activities related to maintenance, repair, and refurbishment of equipment will take place in the existing intake and discharge canals.

Offsite

The construction laydown and parking areas have been designed to avoid impacts to jurisdictional wetland areas.

5.4.1.3 Endangered and Threatened Species

Site

Manatees (*Trichechus manatus*), an endangered species protected under the Endangered Species Act and the Marine Mammal Protection Act, have regularly been observed in the vicinity of the existing Plant's cooling water intake and discharge system. Operation of the existing Plant will cease prior to dismantlement and construction activities associated with the conversion Project. Consequently, there will be a 3-year period until operation of CCEC commences, during which the normal warm water discharge will not occur. FPL has developed a plan, pursuant to the requirement of the Industrial Wastewater Permit for the Plant, to avoid potential impacts to manatees during this 3-year period.

FPL proposes to install a 30-MMBtu/hr electric heater to act as a temporary "manatee heating system" to discharge warm water while the Plant is offline for conversion to CCEC. The electric heater system will be located to discharge into the western end of the intake canal, where the water depth is approximately 11.5 to 14 feet deep. The intake for the system will be located approximately

1,000 feet east of the system discharge, along the north shore of the intake canal. Water will be pumped from the intake location through a temporary inlet pipe, then through the heater where it will undergo the temperature rise, and back through a temporary discharge pipe. Warm water will be discharged from November 15 through March 31 (to coincide with the time of greatest manatee abundance), if the ambient water temperature falls below 61°F. Because the heating system will warm the water in the existing intake canal, the ambient water temperature will be measured north of the peninsula, rather than at the Plant intake as indicated in the FPL Cape Canaveral Plant Manatee Protection Plan. The temporary heating system is predicted to provide approximately 2.05 acres of water at or above 68°F during conditions under which the present Manatee Protection Plan requests that FPL release heated water for manatee protection.

See Appendix 10.9 for additional information regarding the analysis of the comparative extent of the thermal plume for the temporary manatee heating system in comparison with that for the existing Plant.

Offsite

Gopher tortoises (*Gopherus polyphemus*), a state-listed threatened species, were identified at the offsite construction laydown and parking area during the ecological assessment in April and December 2008 (refer to Subsection 3.3.6.1). Gopher tortoises are protected under Chapter 68A-27.004, F.A.C. If a setback of 25 feet from gopher tortoise burrows cannot be maintained during construction activities, gopher tortoises must be relocated pursuant to FFWCC guidelines. FPL will comply with FFWCC guidelines. Tortoises recovered from these burrows will be relocated to an approved recipient site.

Florida scrub jays (Aphelocoma coerulescens), classified by both the USFWS and FFWCC as a threatened species, were observed within and adjacent to the offsite construction laydown and parking area in areas of upland scrub, pine, and hardwoods (FLUCFCS Code 436). Three scrub jays were observed outside of the proposed offsite construction laydown and parking area in April 2008, within an undeveloped scrub parcel immediately adjacent to the northern edge of the existing transmission line ROW. Three scrub jays were observed within the proposed offsite construction laydown and parking area during a survey in October 2008. To the extent practicable, impacts to scrub jay habitat will be minimized and/or avoided. Any unavoidable impacts to scrub jay habitat will be addressed in consultation with the USFWS, FFWCC, and Brevard County, and mitigation provided in accordance with regulatory agency guidelines. Under the Endangered Species Act, impacts to occupied scrub jay

habitat require an incidental take permit from the USFWS, for the "taking" of occupied scrub jay habitat. An approved Habitat Conservation Plan (HCP) is required in order to obtain an incidental take permit. The HCP describes existing conditions, avoidance/minimization efforts, impact assessment, alternatives, and proposed mitigation to offset the loss of scrub jay habitat. Mitigation for the loss of scrub jay habitat may be provided through habitat preservation, purchase of credits from a scrub-jay conservation bank, or payment to a scrub-jay land acquisition fund. The Brevard County Scrub Conservation and Development Plan (SCDP) is a HCP for scrub and Florida scrub-jays in Brevard County. If unavoidable impacts to occupied scrub jay habitat occur, FPL will prepare a HCP in association with an incidental take permit in consultation with the USFWS, FFWCC, and Brevard County SCDP, prior to utilization of the laydown and parking area for the construction activities associated with CCEC.

5.4.2 Measuring and Monitoring Programs

5.4.2.1 Terrestrial Systems

No monitoring programs are needed at the Site due to the lack of habitat for protected species.

Prior to ground-disturbing activities, gopher tortoise surveys will be conducted at the offsite construction laydown and parking area pursuant to FFWCC guidelines to identify impacted burrows. A recorded call playback survey will also be conducted in this area to quantify scrub jays utilization of this area.

5.4.2.2 Aquatic Systems/Wetlands

All maintenance, repair, and refurbishment activities (including any maintenance dredging) within the intake and discharge structures and barge slip will be performed in accordance with the Standard Manatee Conditions for In-water Work (USFWS, 2005) or the *Standard Manatee Construction Conditions for Artificial Warm Water Refugia During the Period of November 15 Through March 31* (as outlined in the FPL Cape Canaveral Plant Manatee Protection Plan approved by the FDEP on August 8, 2000) as appropriate for the season.

5.5 Air Impact

5.5.1 Air Emissions

Construction activities will result in the generation of fugitive PM_{10} emissions and vehicle exhaust emissions. Fugitive PM_{10} emissions will result primarily from vehicular travel over paved and unpaved roads. Vehicular traffic will include heavy-equipment traffic and traffic due to construction

workers entering and leaving the Site. Construction personnel and equipment will enter the Site and offsite construction laydown and parking area primarily over surfaced roadways. Exposed land areas may also generate fugitive dust due to wind erosion.

5.5.1.1 Site

Emissions of fugitive PM_{10} from these activities are extremely difficult to quantify because of their variable nature. They can only be estimated since emissions are dependent upon a number of factors, including specific activities conducted, level of activity, meteorological conditions, and control measures utilized.

The structures being dismantled by explosives will be prepared by removing materials that can cause fugitive emissions. Water will be used to control fugitive emissions during the use of explosives.

Table 5.5.1-1 shows the estimated maximum air emissions during dismantlement and construction of CCEC including use of the offsite construction laydown and parking area.

Fugitive PM_{10} emissions may occur from wind erosion from open areas. The areas subject to wind erosion will generally be small due to the nature of construction activities and control measures taken, such as seeding. Fugitive PM_{10} emissions from wind erosion have been estimated to be a total of 1.2 tons during the construction period.

Fugitive PM_{10} emissions will also result from construction traffic. Based on the average construction workforce, PM_{10} emissions from paved and unpaved roads have been estimated to be a total of 0.7 ton during the construction period. Reasonable precautions pursuant to FDEP Rule 62.296.320(4)(c)3. F.A.C., will be used to limit the amount of fugitive emissions from paved and unpaved roads (e.g., watering) onsite and in the offsite construction laydown and parking area.

Emissions will also result from construction equipment operating with diesel and gasoline engines including cranes, trucks, compressors, etc. This equipment will produce emissions of CO, NO_x, VOC, PM, and SO_2. Exhaust emissions were based on EPA emission factors (AP-42) for diesel engines. Based on the EPA emission factors and the estimated maximum number of vehicles, the CO, NO_x, VOC, PM_{10}, and SO_2 emissions are estimated to be 2.99, 3.10, 0.34, 0.17, and 0.19 TPY, respectively, over the construction period. These levels of emissions will not cause significant impacts to air quality in the vicinity of the Site.

A temporary boiler may be used during construction for chemical cleaning and steam blow activities. A description of the temporary boiler is contained in Appendix 10.2.5. The maximum emissions from the temporary boiler are less than 1 ton/year for CO, NO_x, VOC, PM_{10}, and SO_2.

5.5.1.2 Offsite

Table 5.5.1.1 included emission estimates for construction activities at the offsite construction laydown and parking area. Reasonable precautions pursuant to FDEP Rule 62-296.320(4)(c)3. F.A.C., would be used to minimize fugitive particulate emissions.

The offsite construction laydown and parking area has vegetation that will be cleared. The vegetation may be removed from this area by open burning and removal of remaining debris. Any open burning will be conducted according to Chapter 62-256, F.A.C. Open burning will be conducted after notification of the Florida Division of Forestry and conducted under the requirements of Rule 62-256.300(3), F.A.C. After the offsite construction laydown and parking area is cleared of all vegetation, the area will be stabilized by shell or rock. Watering will be used, as necessary, to minimize the emissions of fugitive dust.

5.5.2 Control Measures

A number of control measures will be implemented during the construction period to minimize air emissions and potential impacts pursuant to FDEP Rule 62-296.320(4)(c)3. F.A.C. The Site consists of compacted soils that are difficult for wind to pick up, thereby reducing air emissions due to wind. After grading, the untraveled or lightly used areas will be either paved or vegetated to minimize fugitive PM and wind erosion. Heavily traveled unpaved construction laydown areas and unpaved roads may be stabilized with rock. Watering on an as-needed basis will control fugitive dust from highly traveled areas.

5.6 Solid Wastes

Solid waste materials generated during Project construction will be disposed of in accordance with applicable rules and regulations. Construction and dismantlement wastes, such as scrap wood and metal, will be transferred to a specified storage area on the Site where they will be separated and stockpiled for salvage and recycling. General waste materials (i.e., typical of municipal solid wastes) will be collected in appropriate waste collection containers for disposal at an approved offsite location. Solid wastes from dismantlement will be managed according to Table 5.1.1-1.

As described in Section 4.6 and listed in Table 4.6.0-1, there are a variety of potential solid waste streams resulting from the construction and operation of CCEC. During construction, the solid waste streams will be managed as presented in Table 4.6.0-1. Solvent rags will be collected and recycled or disposed of in a landfill. Residual waste from punctured aerosol cans will be collected and managed as hazardous waste. Paint waste, PVC cleaner, and PVC cement wastes will be minimized by implementation of programs requiring use of all material prior to issuance of additional material. All hazardous wastes will be stored onsite and disposed of by a licensed hazardous waste contractor. All non-hazardous waste will be managed according to the Waste Handling Guidelines identified in Table 4.7.0-1 with appropriate modifications to accommodate the construction of the Project.

Used oil from construction vehicles and equipment will be collected in appropriate containers and transported offsite for recycling or disposal at an approved facility. The approved disposal facility will be an existing facility that has been previously permitted for commercial recycling or disposal of used oils.

Individual contractors will be responsible for handling any hazardous materials. This responsibility includes the proper recordkeeping, transportation, storage, handling, and offsite disposal of such wastes. Contractors will be required to coordinate with FPL and provide documentation of all activities related to hazardous material and/or wastes.

5.7 Impact on Human Populations

Construction projects can affect human populations by altering demographic patterns, by placing demands on infrastructure elements such as housing, transportation, and educational facilities by contributing noise to the environment, and by creating inconveniences due to the movement of workers, materials, and machinery. Due to the likely patterns of local employment and daily commuting, the Project's potential impact upon the human population or residents and potential visitors in the project area is expected to be small. Chapter 7.0 of this SCA provides information on income, employment, tax revenue, and service needs associated with the construction workforce. This section is, therefore, limited to a discussion of workforce requirements and the impacts of construction-related traffic, housing, education, and noise.

5.7.1 Construction Workforce

The construction workforce for the Project is expected to average approximately 290 workers. Dismantlement of the existing Plant is anticipated to commence in the spring of 2010 and Project construction to conclude in the summer of 2013. Peak construction employment for the Project is estimated at approximately 650 workers in mid-2012. The construction workforce trade categories (by percentage) for the Project will be approximately as follows:

Estimated Construction Workforce

Trade Category	Percent	Trade Category	Percent
Laborers	12	Pipefitters	19
Carpenters	6	Insulators	2
Operators	5	Electricians	22
Ironworkers	4	Painters	1
Millwrights	10	Supervision	13
Boilermakers	6	**Total**	**100**

FPL will promote employment of local workers by distributing Project information to the community, including the benefits to the community, information about types of jobs and skills required, and local training opportunities. Notice of Project employment opportunities will appear in local media and FPL will sponsor or participate in area job fairs. Contractors will be solely responsible for hiring the construction workforce.

The majority of the construction workers are expected to commute to the Site from within a commuting distance of up to 100 miles, primarily from locations within Brevard, Orange, and Seminole Counties. A more detailed discussion of the workforce, payrolls, and economic impacts of the workforce is found in Chapter 7.0.

5.7.2 Transportation

Traffic associated with the Project construction will affect area roadways on a temporary basis for the duration of the construction period. Subsection 3.2.7.2 presents the existing traffic conditions. This section presents a summary of the construction traffic analysis.

The construction workforce for the Project is expected to average approximately 290 workers. Dismantlement is anticipated to commence in the spring of 2010 and Project construction conclude in the summer of 2013. Peak construction is estimated at approximately 650 workers in mid-2012.

Assuming a trip generation rate of 1.3 workers per vehicle, approximately 500 vehicles are anticipated during the peak construction period. This peak construction would occur during the morning peak hour and during the evening peak hour.

The trip distribution and traffic assignment was based on the existing traffic patterns and examination of the surrounding street system. The morning peak hour is listed below (evening peak hour would be in the opposite direction):

- 35 percent to and from the north via U.S. Highway 1; and
- 65 percent to and from the south via U.S. Highway 1.

In order to develop year 2012 traffic volumes for the peak construction period, a growth rate of approximately 1 percent compounded annually was used. This growth rate, in combination with a seasonal factor, represents a 13-percent increase in traffic. The peak construction traffic was then added to the year 2012 background traffic to develop 2012 peak construction period traffic conditions.

The analysis indicates that up to 200 vehicles (equivalent to up to 260 workers, based on a 1.3 vehicle occupancy) can be accommodated within the Site and between 300 vehicles (equivalent to 390 workers, based on a 1.3 vehicle occupancy) can be accommodated on the offsite construction laydown and parking area with certain potential roadway improvements to U.S. Highway 1 and Clearview Drive. Potential roadway improvements and traffic control measures are listed below:

- Traffic control personnel at the Main Gate (during PM peak period).
- Traffic control personnel at Clearview Drive (during AM and PM peak periods) to allow construction traffic to safely enter U.S. Highway 1.
- Provide a U.S. Highway 1 northbound left-turn lane at Clearview Drive.
- Construct one additional eastbound lane on Clearview Drive approaching U.S. Highway 1 in order to provide two lanes (one for left-turning vehicles and the other for right-turning traffic.)
- Provide a safe pedestrian path from the parking areas (offsite construction laydown and parking area) to U.S. Highway 1. A temporary pedestrian crossing should be provided to safely cross U.S. Highway 1 near Clearview Drive. The safety features associated with the subject pedestrian crossing will be coordinated with the Florida Department of Transportation and Brevard County.

Discussions and coordination with the FDOT and Brevard County will be pursued to ensure compliance with roadway regulations and to develop necessary improvements within the vicinity of the Site that will avoid significant impacts to the transportation system. The safety features associated with the subject pedestrian crossing will be discussed and coordinated with the FDOT and Brevard County.

5.7.3 Housing

An average of 290 construction workers will be required during Project construction, with a peak of 650 workers. Many of these workers will be employed for only a portion of the construction period due to the changing skill requirements Project construction. There is a significant labor pool of construction workers in Brevard, Orange, and Seminole Counties, estimated at over 80,000 (UF/BEBR, 2007). A portion of the construction labor will be specialized and come from areas outside these three counties. These workers will stay in local accommodations. There are abundant lodging accommodations (over 200,000 public lodging units) in Brevard, Orange, and Seminole Counties (UF/BEBR, 2007) to accommodate these specialized construction workers.

5.7.4 Education

Because of the short duration of employment, few workers are anticipated to relocate with their families. As a result, there will be little in-migration of school-aged children resulting from Project construction. No significant adverse effects on local elementary, middle, or high school enrollment are anticipated.

5.7.5 Construction Noise Impacts

The impacts of noise on human populations are dependent upon the proximity of institutional and residential land uses to construction activities and the type and extent of noise sources. The nearest residential location that could potentially be impacted by noise from construction are south and west of the Site and north of the offsite construction laydown and parking area.

Construction will require installation of foundations and erection of major components of the combined cycle unit such as the CTs, HRSGs, steam turbines, and refurbishment of the once-through cooling system. The use of construction equipment, such as dump trucks, cranes, bulldozers, graders, front-end loaders, and air compressors will be required. These sources have maximum noise levels ranging from about 70 to 90 dBA (measured at a distance of 50 feet).

The evaluation of noise impacts from Project construction activities was performed using previous results from noise propagation computer programs to estimate noise source levels (CadnaA). Noise source levels are entered as octave band SPLs. The user can specify coordinates, either rectangular or polar. All noise sources are assumed to be point sources; line sources can be simulated by several point sources. Sound propagation is calculated by accounting for hemispherical spreading and three other user-identified attenuation options: atmospheric attenuation, path-specific attenuation, and barrier attenuation. Atmospheric attenuation is calculated using International Organization for Standards, ISO 9613-1, Attenuation of Sound During Propagation Outdoors – Part 1: Calculation of the Absorption of Sound by the Atmosphere. Path-specific attenuation can be specified to account for the effects of vegetation, foliage, and wind shadow. Direction source characteristics and reflection can be simulated using path-specific attenuation. Attenuation due to barriers can be calculated using the coordinates and height of the barrier. Barrier attenuation is calculated by assuming an infinitely long barrier perpendicular to the source-receptor path. Total and A-weighted SPLs (filtered to approximate human hearing) are calculated. Background noise levels can be incorporated into the program and are used to calculate overall SPLs.

The model was performed to predict the maximum noise levels produced by a combination of likely noise sources with and without background noise levels. A conservative estimate of the number and types of construction equipment was assumed to calculate construction noise levels.

Table 5.7.5-1 lists the major categories of equipment that will be used during the construction of CCEC and their associated noise characteristics. A total of 14 noise sources were used to predict maximum SPLs from construction at the Site. This included a full array of construction equipment from bulldozers to trucks that would be used for Site preparation to cranes and welders used to assemble Plant components. For the offsite construction laydown and parking area, five noise sources were used. The construction activities within the offsite construction laydown and parking area would primarily be associated with moving equipment and welding smaller components before transfer to the Site. For the purpose of the construction noise impact analyses, all of the equipment was conservatively assumed to be operating simultaneously at peak power. These heavy construction activities are expected to occur during the daytime hours. Most of the heavy construction activities will occur during the first 6 to 8 months after dismantlement of Cape Canaveral Plant Units 1 and 2.

The noise levels resulting from these combinations of equipment were input as multiple sources to the model. Octave bands were estimated from *Noise from Construction Equipment and Operations,*

Building Equipment, and Home Appliances (EPA, 1971). It is unlikely that all the equipment would be operating simultaneously and continuously; therefore, this impact assessment is conservative. Background SPL values were incorporated into the model to calculate impacts at the residential location identified in Subsection 3.3.8. Only the atmospheric attenuation option was enabled during the noise modeling runs.

Figure 5.7.5-1 presents the maximum predicted noise levels associated with the construction of CCEC. This figure represents the maximum SPLs with all the construction equipment operating at the same time, which results in a conservative prediction of impacts. The maximum noise level resulting from construction of the Project is predicted to be 71 dBA at Site 8, not including contributions from background noise. As presented in Subsection 3.3.8, the background SPLs used in the impact analyses ranged from 58.1 to 71.4 dBA depending upon location. The background values were used with the modeled values to calculate the total noise levels and are presented in Table 5.7.5-2. This table presents the results with and without pile drivers operating. The noise from pile drivers is not continuous but intermittent with peak noise predicted by the model. Pile drivers also have the lowest utilization of any construction equipment over the course of construction. As shown in Table 5.7.5-2, SPLs are reduced from about 3 to 8 dBA when the peak noise from the pile drive is not occurring. The total noise levels during the construction of the Project are predicted to range from about 65 to 71 dBA at the nearest residential land use during the daytime when the loudest construction activities will occur (Table 5.7.5-2). It should be noted that the baseline noise levels in the vicinity of U.S. Highway 1 is 70 dBA or higher as a result of the existing traffic (Sites 2 and 4).

The construction activities associated with the Project will be required to meet the requirements under the Brevard County Land Development Regulations Chapter 62, Section 62-2271, Noise. Under Section 62-2271(e) "Exemptions", construction activities are exempt from the numerical standards in Section 62-2771(c) "Maximum permissible sound levels" as long as such activities occur between 7:00 a.m. to 10:00 p.m. Noise from construction activities during the hours of 10 p.m. to 7 a.m. will have to meet the established numerical standards for the nighttime hours, which limit noise to 55 dBA at the residential and commercial land uses. Heavy construction activities associated with the Project, as represented by the predicted noise concentrations, are expected to occur only during the daytime hours. Certain deliveries and mechanical and electrical installation activities may occur at night; however, these activities have noise levels much lower than those predicted in Table 5.7.5-2.

Taking together the baseline noise levels (dominated by traffic on U.S. Highway 1) and the construction time periods, estimated construction noise levels are not expected to adversely impact the residential and commercial land use areas identified in the vicinity of the Site. The modeled noise level estimates are conservative and include only atmospheric attenuation. The actual or measured noise levels due to construction are expected to be lower than modeled.

The potential use of explosives and the resulting noise will cause elevated noise levels for a very short duration (several seconds). Such activities will occur during specified times after coordination with local authorities. Nearby residences and business will receive appropriate prior notice of such activities. During the initial startup of the Project, steam blows will be conducted to clean piping. Steam blows used during construction to clean out new piping and equipment will result in elevated noise levels for short durations (i.e., minutes) over several weeks. Prior to these events, notification will be made to those locations that may be able to notice elevated noise levels.

5.8 Impact on Landmarks and Sensitive Areas

Construction-related impacts to landmarks and sensitive areas will not result in any changes to accessibility or use. Impacts due to noise and air emissions during construction are expected to be negligible. The closest landmark or sensitive area within a 5-mile radius of the Site and the construction laydown and parking area (refer to Subsection 3.2.6) are the Merritt Island NWR, St. John's NWR, and Pine Island Conservation Area. These areas will not experience any significant changes in air quality, noise level, water quality, or visual characteristics perceptible to their users.

No use-related impacts are anticipated at any other public recreational facilities since these areas are a considerable distance from the Site.

Occasional construction noise may be heard at the Robert Nicol Park during the Project construction period if pile drivers are used. The noise is anticipated to be infrequent, of short duration and at or near existing noise levels. Visual impacts will be minor since the construction equipment such as cranes will be lower in height and less visible than the existing Units 1 and 2. Temporary cranes may be visible offsite from some vantage points.

5.9 Impact on Archaeological and Historic Sites

Results from a search of the Florida Master Site File conducted for the Project concluded that there are no previously recorded archeological sites or historic structures on or adjacent to (within 500 feet of) the Site or the offsite construction laydown and parking area.

Information on the Site has been provided to the Division of Historical Resources (DHR). If, based on the DHR review of this information and this SCA, a cultural resource assessment survey of the Site and the offsite construction laydown and parking area is requested by DHR, such a survey will be conducted using procedures identified by DHR. If the requested survey then reveals any significant sites, the sites will be avoided if possible during the construction of the Project. If avoidance is not possible, a salvage excavation plan will be developed by a professional archaeologist. The survey and any salvage excavation plan recommendations will be submitted to DHR for review and approval. Upon DHR concurrence with any recommendations for excavations, the sites will be excavated, findings analyzed, and a report submitted to DHR.

If historical or archaeological artifacts are discovered during construction, the FDEP Central District Office, the Bureau of Historic Preservation, and DHR, will be notified.

5.10 Special Features

There will be no unusual products, raw materials, solid waste disposal, incinerator effluents, or residues produced during construction of the Project that will have adverse influences on the environment or ecological systems of the Site or adjacent areas.

5.11 Benefits from Construction

The construction phase of the Project will contribute both short- and long-term economic benefits to the surrounding region. Construction benefits will include construction employment that will average 290 workers over the 3-year construction period. Construction wages will increase the demand for goods and services in the region. Direct purchases of construction materials will have both direct and indirect economic benefits. This includes construction materials (e.g., concrete and steel for foundations), rental equipment (e.g., construction cranes, pumps), food services, and transportation services. Chapter 7.0 provides more detail on the social and economic benefits of the Project.

TABLE 5.1.1-1

POTENTIAL DISMANTLEMENT MATERIAL AND DISPOSAL OPTIONS

Potential Material	Potential Media and Location	Management Options
Asbestos	Buildings, tiles, cables and lines.	10-day notification to Brevard County and FDEP of intent to remove and dispose of asbestos.
Lead Paint	Buildings, tanks, handrails and miscellaneous structures.	Paint chips will be cut and drummed for characterization, if necessary, and proper disposal.
Tanks/Structure andWashwater	Tanks and structures on site that require washing prior to dismantling.	Decontaminated tanks cut for disposal as solid waste. Washwater characterized and disposed by an approved contractor.
Special with polychlorinated biphenyl (PCB) Materials	PCB-containing ballasts, transformers, electrical equipment, caulk, concrete joints, cable insulation, flow meters, etc.	Characterized and disposed of in accordance with state/federal requirements.
Soil and Other Contaminated Media	No current knowledge of contamination.	Soil excavation (if required) will be conducted in accordance with FPL's spill response procedures and FDEP Bureau of Waste Cleanup requirements.
Ash, Concrete, Scrap Metal	Buildings, structures, etc.	Material will be recycled or disposed of in an approved construction and demolition (C&D) or MSW landfill as appropriate.
Hazardous / Universal Wastes and Hazardous Materials	Multiple types of unused or spent media including batteries, lamps, thermostats and pesticides.	Recycled or reused, or stored and managed in accordance with FPL's waste management procedures and applicable regulations.

TABLE 5.5.1-1
MAXIMUM ESTIMATED AIR EMISSIONS DURING CONSTRUCTION OF FPL CCEC

Construction Activity	Type Operation	Amount	Units	Pollutant	Emissions	Units	Controls
Open Areas	Wind Erosion	10	acres	PM_{10}	1.2	tons	Watering
Vehicle Traffic	Paved Roads	16,295	VMT	PM_{10}	0.2	tons	Watering as necessary
	Unpaved Roads	16,295	VMT	PM_{10}	0.5	tons	Watering
Installation	IC Engines	55,210	gallons/yr	PM_{10}	0.17	tons/yr	EPA Non-Road Tier 3
				NO_x	3.10	tons/yr	EPA Non-Road Tier 3
				SO_2	0.19	tons/yr	EPA Non-Road Tier 3
				CO	2.99	tons/yr	EPA Non-Road Tier 3
				VOC	0.34	tons/yr	EPA Non-Road Tier 3

Note: VMT = vehicle miles traveled; acres based on open areas at any one time.

Sources: USEPA, 1992 Fugitive Dust Background and Technical Information Document for Best Available Control Measures; Section 2.3.1.3.3, Wind Emissions from Continuously Active Piles.
USEPA, 2004; Exhaust and Crankcase Emissions Factors for Nonroad Engine Modeling-Compression Ignition.

Table 5.7.5-1

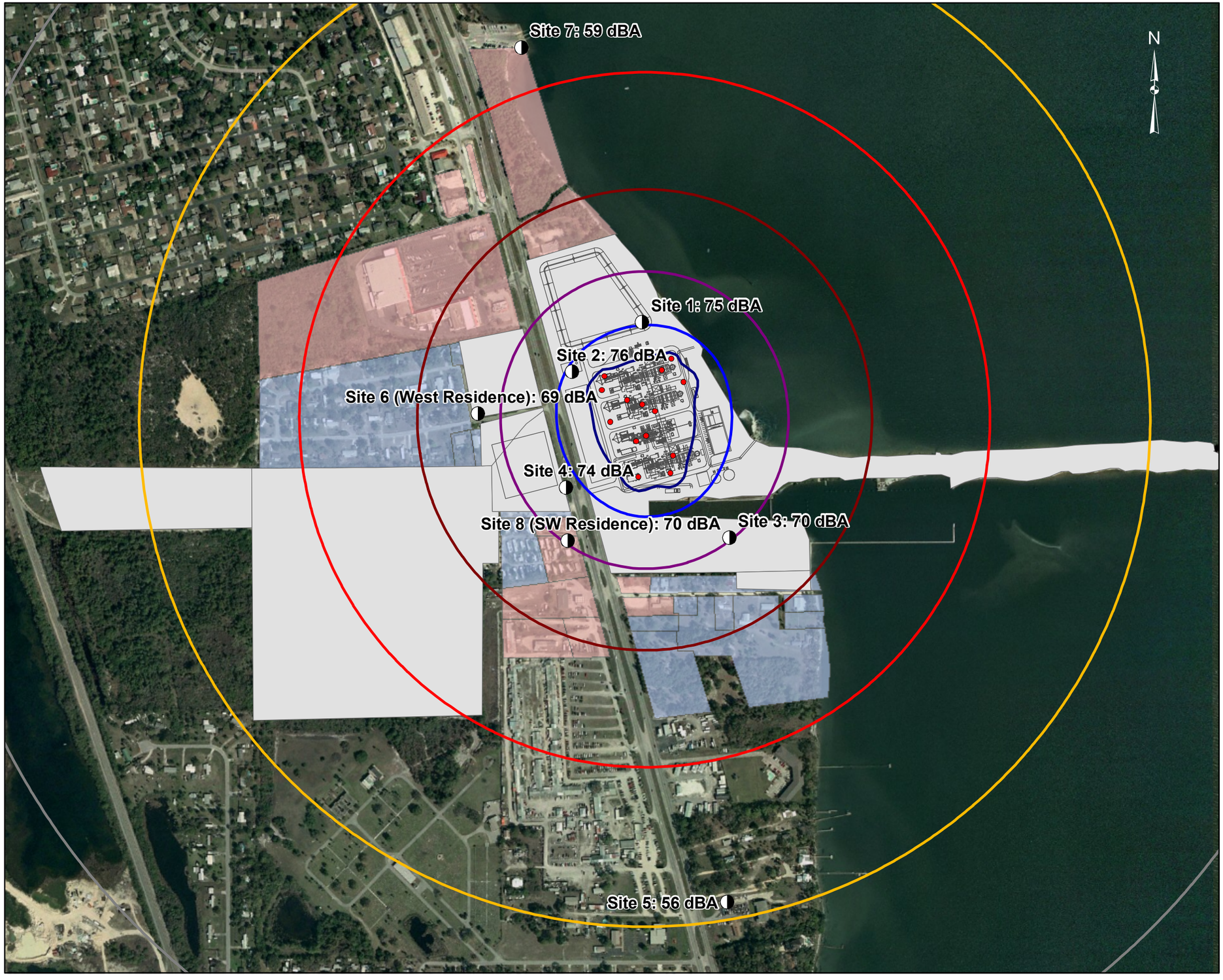
SUMMARY OF NOISE SOURCE DATA USED TO PREDICT SOUND PRESSURE DURING THE CONSTRUCTION OF CCEC

Sources	Source Height (m)	Sound Power Level (dB) for Octave Band Center Frequency (Hz)									Overall Sound Power Level (dBA)
		31.5	63	125	250	500	1000	2000	4000	8000	
Onsite											
Bulldozer 1	2	0	106.6	103.6	101.6	102.6	99.6	96.6	94.6	96.6	105.3
Bulldozer 2	2	0	106.6	103.6	101.6	102.6	99.6	96.6	94.6	96.6	105.3
Crane 1	2	0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	115.6
Crane 2	2	0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	115.6
Front End Loader 1	2	0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	115.6
Front End Loader 2	2	0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	115.6
Truck 1	2	0	0.0	118.6	116.1	113.1	109.6	106.1	102.1	0.0	115.3
Truck 2	2	0	0.0	118.6	116.1	113.1	109.6	106.1	102.1	0.0	115.3
Welder 1	2	0	102.6	110.6	105.6	98.6	98.6	93.6	88.6	84.6	103.6
Welder 2	2	0	102.6	110.6	105.6	98.6	98.6	93.6	88.6	84.6	103.6
Welder 3	2	0	102.6	110.6	105.6	98.6	98.6	93.6	88.6	84.6	103.6
Welder 4	2	0	102.6	110.6	105.6	98.6	98.6	93.6	88.6	84.6	103.6
Pile Driver 2	2	130.6	131.6	126.6	115.6	118.6	121.6	123.6	116.6	109.6	127.5
Pile Driver 1	2	130.6	131.6	126.6	115.6	118.6	121.6	123.6	116.6	109.6	127.5
Offsite											
Welder 1	2	0	102.6	110.6	105.6	98.6	98.6	93.6	88.6	84.6	103.6
Welder 2	2	0	102.6	110.6	105.6	98.6	98.6	93.6	88.6	84.6	103.6
Truck 1	2	0	0.0	118.6	116.1	113.1	109.6	106.1	102.1	0.0	115.3
Truck 2	2	0	0.0	118.6	116.1	113.1	109.6	106.1	102.1	0.0	115.3
Crane 1	2	0	111.6	118.6	116.6	114.6	109.6	104.6	98.6	92.6	115.6

TABLE 5.7.5-2
PREDICTED SOUND PRESSURE LEVELS FOR THE CONSTRUCTION OF CCEC

Site	Sound Levels (dBA) with Pile Drivers			Sound Levels (dBA) w/o Pile Drivers		
	Baseline	Modeled	Predicted	Baseline	Modeled	Predicted
1: Onsite North of Power Block near used oil storage area	58.7	75.0	75.1	58.7	67.7	68.2
2: Onsite at main gate to the Tank Yard	71.2	76.1	77.3	71.2	70.0	73.7
3: Onsite South of the Power Block in grass parking lot	66.9	70.6	72.1	66.9	62.9	68.4
4: Gate to Switch Yard off of U.S. Highway 1	71.4	76.6	77.7	71.4	73.9	75.8
5: Frontenac Baptist Church parking lot	64.2	56.2	64.8	64.2	49.6	64.3
6: Corner of Clearview Rd and Codner Lane	58.1	70.0	70.3	58.1	65.4	66.1
7: Port St. John Boat Ramp	58.6	59.1	61.9	58.6	52.0	59.5
8: At used car dealership west of the main gate	66.8	71.4	72.7	66.8	66.0	69.4

Source: Golder, 2008



LEGEND

- Receptor Locations

Noise Impact Contours

- > 30 dB
- > 35 dB
- > 40 dB
- > 45 dB
- > 50 dB
- > 55 dB
- > 60 dB
- > 65 dB
- > 70 dB
- > 75 dB
- > 80 dB
- > 85 dB

- Source Locations
- FPL Property

Zoning

- Residential
- Commercial

REFERENCE

Based on conceptual design information.
Aerial Express, 2006; Brevard County Planning and Zoning Office GIS Dept.
Projection: Transverse Mercator Datum: NAD 83 Coordinate System: UTM Zone 17

500 0 500 Feet

PROJECT

FPL CAPE CANAVERAL ENERGY CENTER

TITLE

NOISE MODELING CONTOURS FOR CONSTRUCTION

Golder Associates
Gainesville, Florida

PROJECT No. 083-87556			SCALE AS SHOWN	REV. 0
DESIGN	AB	08 Oct. 2008	FIGURE	
GIS	AB	08 Oct. 2008		
CHECK	DB	08 Oct. 2008	5.7.5-1	
REVIEW	BM	08 Oct. 2008		

6.0 EFFECTS OF PLANT OPERATION

As discussed in this chapter, operation of CCEC will comply with all applicable regulatory standards, and impacts will be minimized through available and reasonable methods.

6.1 Effects of the Operation of the Heat Dissipation System

6.1.1 Temperature Effect on Receiving Body of Water

The converted Plant's once-through cooling system will be connected to the existing Plant's intake and discharge structures.

The steam generating capacity of CCEC will be less than that of the existing Plant. The full-load discharge heat rejection rate for the existing Plant is 3.95 billion British thermal units per hour (BBtu/hr), while the full-load discharge heat rejection rate for the converted Plant will be about 2.95 BBtu/hr. Because the discharge heat rejection rate will be reduced, the discharge flow rate will also be reduced to maintain approximately the same full-load overall temperature rise across the condenser of about 14.2°F. The total discharge flow rate for the converted Plant is estimated to be 428,795 gpm or about 25 percent less than the existing Plant.

As described in Section 4.5.1, during atypical steam turbine bypass or "Bypass Operation," the thermal energy of the bypassed steam entering the condenser may be greater than the design full load thermal energy discharged to the condenser under some conditions. During Bypass Operations where the thermal energy of the bypassed steam entering the condenser is greater than the full load design thermal energy, all four once-through cooling water pumps may be placed in service to maintain the cooling water temperature rise at approximately the same level as the CCEC full load design temperature rise. CCEC Bypass Operation will be infrequent and the maximum heat rejection rate to the Indian River Lagoon during Bypass Operation will be similar to the full load design heat rejection rate of the existing Plant.

The existing Cape Canaveral Plant thermal discharge existed on July 1, 1972, and thus is subject to the thermal surface water criteria established by Rule 62-302.520(1), F.A.C. Conversion of the existing Plant will not increase the potential thermal loading to the Indian River Lagoon compared to the potential thermal loading from the existing Plant. Consequently, the thermal surface water criteria for existing power plants will be applicable to the thermal discharge from CCEC.

A comparative analysis of the areal extent of the thermal plume for both the existing Plants and CCEC was performed for four cases:

Case 1	Existing Plant	100% Capacity Factor	Winter
Case 2	Existing Plant	100% Capacity Factor	Summer
Case 3	Converted Plant	100% Capacity Factor	Winter
Case 4	Converted Plant	100% Capacity Factor	Summer

The results of the analysis are presented in Appendix 10.9 and provide details regarding the analysis of the extent of the thermal plume from the converted Plant in comparison with the thermal plume from the existing Plant. This comparative thermal analysis demonstrates that the areal extent of the full load thermal discharge plume for the converted Plant is smaller than that for the existing Plant. Moreover, the maximum thermal loading to the Indian River Lagoon from the converted Plant will be less than the thermal loading authorized in the current FDEP Industrial Wastewater Facility Permit for the existing Plant discharge. This authorization was established after review of comprehensive ecological studies in the vicinity of the existing Plant discharge. The CCEC discharge will continue to comply with the applicable thermal surface water criteria.

The Indian River Lagoon east of the Plant is a designated manatee protection area, and a significant number of manatees use this area as a thermal refuge during the winter. While the maximum extent of the thermal plume will be less for the converted Plant, the converted Plant will run at a higher capacity factor. Consequently, the converted Plant will continue to provide a wintertime thermal refuge for manatees.

The proposed temporary "manatee heating system" (see Subsection 5.4.1.3) will provide a thermal refuge for manatees during the Project construction period if the ambient water temperature falls below 61°F. During these conditions, the heating system will provide a warm water refuge (approximately 2.05 acres) at or above 68°F, in compliance with the Manatee Protection Plan established pursuant to the existing Plant's Industrial Wastewater Facility Permit.

6.1.2 Effects on Aquatic Life

The cooling water flow rate for the converted Plant will be reduced by using three out of the four existing pumps within the existing pump wells (the fourth pump will serve as a backup). The effect for the converted Plant will be a reduction in the design flow rate. The through-screen velocity at the

cooling water intake, however, will remain the same. The design flow rate with CCEC will be about 25 percent less than for the existing Plant. Because the converted Plant will operate at a higher utilization, the annual average flow rate will remain about the same as for the existing Plant. Consequently, impingement mortality and entrainment from CCEC should be about the same as for the existing Plant. Additionally, the converted Plant will continue to provide a wintertime thermal refuge for manatees. With the converted Plant having a higher capacity factor than the existing Plant, the thermal refuge will be more consistent than the existing Plant and will continue long into the future.

6.1.3 Biological Effects of Modified Circulation

Because the cooling water flow for the converted Plant will be withdrawn from the same intake structure and the cooling water discharge will be via the existing discharge structures, the circulation patterns will not change significantly. However, as noted in Subsection 6.1.2 above, the design flow rate will be reduced by about 25 percent with the converted Plant.

6.1.4 Effects of Off-stream Cooling

There will be no adverse effects of off-stream cooling with CCEC because off-stream cooling will not be utilized.

6.1.5 Measurement Program

The existing measurement program associated with the Industrial Wastewater Facility Permit (see Appendix 10.6) will continue to be adequate for measuring the physical and chemical parameters of waters that may be affected by operation of the converted Plant.

6.2 Effects of Chemical and Biocide Discharges

6.2.1 Industrial Wastewater Discharges

CCEC will discharge two other wastewater streams in addition to the once-through cooling water. There will be an estimated 35 gpm average (46 gpm peak) of HRSG blowdown, which is relatively pure water as described in Section 4.6. There will also be an estimated 45 gpm (88 gpm peak) of R.O. reject/demineralizer regeneration water which will have a relatively high total dissolved solid (TDS) content and is described in Section 4.6. The combined peak discharge of 134 gpm will be mixed with the once-through cooling water discharge, resulting in a significant dilution ranging from approximately 1,000 to 1 up to 3,000 to 1. At these dilution rates, these small flows will have a negligible effect on the Indian River Lagoon, and thus do not require further degradation analysis.

6.2.2 Cooling Tower Blowdown

CCEC will have no cooling towers; therefore, there will be no cooling tower blowdown.

6.2.3 Measurement Programs

Because the characteristics of the industrial wastewater discharges will be essentially the same for the converted Plant, the existing measurement program associated with the Industrial Wastewater Facility Permit (see Appendix 10.6) will be adequate for measuring the physical and chemical parameters of waters that may be affected by operation of CCEC. FPL proposes to continue the measurement programs required under the current Industrial Wastewater Facility Permit with the exception of groundwater monitoring requirements, which will no longer be necessary because of the elimination of the existing onsite evaporation/percolation ponds.

6.3 Impacts on Water Supplies

6.3.1 Surface Water

Operation of CCEC will not cause any significant changes in hydrologic or water quality conditions due to diversion, interception, or additions to surface water flow compared to those from the existing Plant. Surface water from the Indian River Lagoon will continue to provide cooling water for the converted Plant, much as it is used today for the existing Plant.

6.3.2 Groundwater

Cooling water for the pump seals will continue to be withdrawn from the surficial aquifer through pumps located within the intake structure.

As part of the Plant conversion, the onsite evaporation/percolation ponds will be eliminated. Therefore, these discharges to groundwater will be eliminated.

FPL's existing offsite surficial aquifer wells located west of U.S. Highway 1 will not be required for operation of CCEC. They will be abandoned according to the rules of the SJRWMD.

6.3.3 Drinking Water

CCEC will continue to use municipal potable water from the City of Cocoa to provide drinking water for employees and to provide makeup to the HRSGs, much as the existing Plant uses it to provide boiler makeup. The average annual municipal water demand will increase by approximately

15 percent to 283,680 gpd. Since the only wastewater discharges will be to the Indian River Lagoon and the sanitary sewer, there will be no impact to drinking water sources from the CCEC discharge.

6.3.4 Leachate and Runoff

Operation of the CCEC will not generate leachate and the stormwater management system has been designed to prevent direct discharge to surface waters. All contact stormwater will be routed through an oil/water separator and then routed to the stormwater retention ponds. Non-contact stormwater runoff will be collected and routed to stormwater retention ponds. The stormwater retention system will be designed to meet applicable standards. Therefore, no significant impact to water supplies is expected due to runoff or leachate from CCEC.

6.3.5 Measurement Programs

Withdrawals associated with the surface water intake structure will continue to be measured and reported to the SJRWMD as required by that agency's permitting rules and regulations.

6.4 Solid/Hazardous Waste Disposal Impacts

As discussed in Section 4.7, the potential solid and hazardous waste associated with the operation of CCEC will be handled according to the waste handling guidelines presented in Table 4.7.0-1.

6.4.1 Solid Waste

The operation of CCEC will generate only minor amounts of solid wastes (e.g., used turbine inlet filters, municipal solid waste, and water pretreatment solids). As explained in Section 4.7, all solid wastes generated during Plant operation of CCEC will be disposed of in appropriately licensed offsite landfills or by other approved methods. There will be no adverse impacts resulting from solid waste generated by the converted Plant.

6.4.2 Hazardous Waste

The handling of any hazardous wastes resulting from the operation of CCEC is described in Section 4.7. FPL will contract with an approved disposal company to transport and dispose of small quantities of hazardous waste at licensed facilities in a manner that complies with all federal, State, and local environmental regulations. Therefore, no adverse environmental impacts are anticipated from hazardous wastes generated from the operation of the converted Plant.

6.5 Sanitary and Other Waste Discharges

Sanitary wastes from operation of CCEC will be routed using the existing connection to the Brevard County wastewater system for treatment and disposal. Quantities will remain approximately the same as they historically have been for the existing Plant. Therefore, no adverse environmental impacts are expected from sanitary wastes generated by CCEC.

6.6 Air Quality Impacts

In general, CCEC will significantly improve air quality in the vicinity of the Site. CCEC will reduce emissions of air pollutants by more than 19,000 TPY compared to recent Plant operation, or more than a 90-percent reduction.

As shown in Table 6.6.0-1, the maximum total air quality impacts for both the existing Plant and CCEC are predicted to be well below the AAQS and, therefore, comply with the AAQS. Total air quality impacts include the maximum impacts predicted for the existing Plant or CCEC, added to background concentrations. Background concentrations are based on the maximum measured concentration from representative air quality data in the vicinity of the Site (see Subsection 3.3.7).

For SO_2, the predicted maximum total impacts for the existing Plant are 40 percent or less of the AAQS. By comparison, the predicted maximum total impacts for CCEC will be less than 10 percent of the AAQS.

For PM_{10}, the predicted maximum total impacts for the existing Plant are 40 percent or less of the AAQS. By comparison, the predicted maximum total impacts for CCEC will be 35 percent or less of the AAQS. As shown in Table 6.6.0-1, the predicted maximum impacts for CCEC are less than 50 percent of those from the existing Plant. Background concentrations are the major contributors to the maximum total air quality impacts.

For NO_2 and CO, the predicted maximum total air quality impacts are also primarily due to background concentrations. For both the existing Plant and CCEC, the predicted maximum total NO_2 impacts are 25 percent or less of the AAQS. The maximum NO_2 impacts for CCEC are predicted along the Site boundary nearest the gas compressor station, with more than 60 percent due to background concentration. The predicted maximum total CO impacts for CCEC are 30 percent or less of the AAQS, with more than 95 percent due to background concentration.

The following sections present a summary of the air quality modeling methodology for the air quality impact analyses for the Project. Detailed information is contained in Appendix 10.2.5, Air Construction Permit Application.

6.6.1 Impact Assessment

6.6.1.1 Regulatory Applicability

The emission reductions resulting from the retirement of the existing Units 1 and 2 classify CCEC as a minor modification of a major source. Since the existing Plant units will be permanently retired before the converted Plant begins operation, PSD review is not applicable to CCEC; the net changes in emissions do not exceed the PSD significant emission rates (see Tables 4.4.1-3A to 4.4.1-3B).

Consequently, an air quality impact analysis is not required under FDEP air regulations. Nonetheless, air quality impacts were estimated for the existing Cape Canaveral Plant and CCEC in the vicinity of the Site for comparison with the AAQS. The general modeling approach followed EPA and FDEP modeling guidelines.

6.6.1.2 Analysis Approach and Assumptions

General Modeling Approach

The AAQS analysis performed for the Project is a source impact analysis that evaluates whether the predicted concentrations from air emission sources will comply with the AAQS. These concentrations include the modeled impacts from sources at the Site added to a background concentration. The background concentration accounts for sources not included in the modeling analysis.

Air Quality Models

The selection of air quality models to calculate air quality impacts for the existing Cape Canaveral Plant and CCEC must be based on the models' ability to simulate impacts in the vicinity of the Site. The American Meteorological Society and EPA Regulatory Model (AERMOD) dispersion model was used to evaluate the pollutant impacts due to the proposed sources at CCEC. AERMOD (Version 07026) is available on the EPA's Internet website, Support Center for Regulatory Air Models (SCRAM), within the Technology Transfer Network (TTN).

The EPA and FDEP recommend that AERMOD be used to predict pollutant concentrations at receptors located within 50 km from a source. AERMOD calculates hourly concentrations based on

hourly meteorological data. AERMOD is applicable for most analyses since it is recognized as containing the latest scientific algorithms for simulating plume behavior in all types of terrain.

AERMOD was used to predict the maximum pollutant concentrations due to the existing Plant and converted Plant in nearby areas surrounding the Site.

Meteorological Data

Meteorological data used in AERMOD to determine air quality impacts consisted of a concurrent 5-year period of hourly surface weather observations and upper air sounding data collected from the National Weather Service (NWS) stations located at the Daytona Beach (KDAB) and Jacksonville International Airports, respectively. The 5-year period of the meteorological data was from 2001 through 2005. The NWS office at KDAB is located approximately 80 km (50 miles) north-northwest of the Site and is the closest primary weather station to the study area considered to have meteorological data representative of the Site.

Emission Inventory

Existing FPL Units- The emissions and stack parameters for the existing Units 1 and 2 at the Cape Canaveral Plant are presented in Appendix 10.2.5. Units 1 and 2 will be retired before CCEC begins operation.

The short-term emission rates were based on the maximum rate allowed by the permit for each unit (Permit No. 090006-003-AV), EPA AP-42 emission factors for combustion of fuel oil, or, in the case of SO_2, the maximum historical sulfur content of 1 percent used over the last 5 years. It should be noted that the existing units are authorized to use fuel oil with a maximum sulfur content of 2.5 percent.

CCEC Sources- Summaries of the criteria pollutant emission rates, physical stack and stack operating parameters for the combined cycle units for CCEC that were used in the air modeling analysis are presented in Tables 4.4.1-1A to 4.4.1-2A for the MPS ”G” Class CTs for natural gas-firing and fuel oil-firing, respectively. Similarly, summaries are presented in Tables 4.4.1-1-B to 4.4.12-B for the Siemens “H” Class CTs for natural gas-firing and fuel oil-firing, respectively.

The maximum air quality impacts for CCEC were predicted for a range of possible operating conditions. The emission and stack operating parameters are presented for two operating loads and 35°F, 59°F, and 95°F ambient temperatures for the CTs firing both natural gas and oil. A total of

12 modeling scenarios were considered for combined cycle configurations with the CTs operating in the following conditions:

- CTs firing natural gas for ambient temperatures of 35°F, 59°F, and 95°F at:
  - 100 percent operating load, including duct-firing
  - 75 percent operating load
- CTs firing oil for ambient temperatures of 35°F, 59°F, and 95°F at:
  - 100 percent operating load
  - 75 percent operating load

For these analyses, as a conservative estimate of impacts during natural gas-firing, the pollutant emissions at 100 percent load included duct-firing for every hour in the year even though duct firing will be limited to 2,880 hr/yr.

The load analysis was performed using the exit gas operating data for the MPS "G" Class CT and the Siemens "H" Class CT. Once the worst-case operating condition was determined for each CT, subsequent analyses were performed with exit gas operating data specific to each CT vendor.

Additional analyses were performed for SO_2, NO_x, PM_{10}, and CO emissions to address the combined impact of the CTs and other CCEC sources. Detailed descriptions of the other CCEC sources are presented in Appendix 10.2.5.

The proposed combined cycle unit will have HRSG stack heights of 149 feet. Because the proposed stack heights are less than GEP, building downwash effects were included in the modeling analysis. In addition, since the stack heights for the other CCEC sources are also less than GEP, building downwash effects were included in the modeling analysis for these sources.

Receptor Locations

To determine the maximum impact for all pollutants and averaging times in the vicinity of the Site, concentrations were predicted at receptors located in detailed receptor grids centered on the proposed combined cycle unit, the modeling origin, and extended from the Site boundary out 5 km. More than 3,000 receptors were used in the analysis to determine the maximum impacts for the existing Plant and the converted Plant.

Background Concentrations

Background concentrations are necessary to determine total predicted ambient air concentrations for comparison with the AAQS. Background concentrations are defined as concentrations due to sources (natural and anthropogenic) other than those specifically included in the modeling analysis. For all pollutants, background would include other point sources not included in the modeling, fugitive emission sources, and natural background sources. The maximum measured pollutant concentrations from monitoring data, representative of air quality near the Site and presented in Table 3.3.7-1, were used for this purpose.

Greenhouse Gas Emissions (CO_2)

The use of natural gas combined with the most efficient combined cycle technology available through the MPS Frame G or Siemens H CTs will result in one of the lowest greenhouse gas emissions (GHG) emitting fossil fuel-fired generating units in the United States. Indeed, the emissions on a pound per megawatt-hour (lb/MW-hr) basis will be about 30 percent lower than the proposed California standard. With the addition of CCEC, CO_2 emissions will decrease in FPL's system (see Section 3.4). Nuclear additions (uprates for existing nuclear units and new nuclear units) are also part of FPL's GHG emission reduction strategy. A discussion of FPL Group's and FPL's commitment to lower GHG emissions and the strategy to meet Florida's goals are presented in Appendix 10.8.

6.6.2 Monitoring Programs

6.6.2.1 Ambient Air Quality Monitoring

FDEP has air monitoring stations that measure air quality in Brevard County and surrounding areas (see Table 3.3.7-7). The air quality concentrations measured at these stations comply with, and are anticipated to continue to comply with, all applicable ambient standards with the converted Plant as demonstrated in the previous sections.

6.6.2.2 Air Emissions Monitoring

The CTs for the converted Plant, along with the duct burners, will be subject to NSPS and the acid rain program (40 CFR 75). Continuous monitoring will be required pursuant to applicable NSPS and the acid rain program. Monitoring of fuel sulfur content will also be performed pursuant to these programs. Initial performance testing of the CTs for SO_2 and NO_x emissions will be conducted as required by Subpart KKKK.

Continuous emission monitoring (CEM) for SO_2 and NO_x is required for gas- and oil-fired affected units in accordance with the provisions of 40 CFR 75. SO_2 emissions may be determined using

procedures established in Appendix D, 40 CFR Part 75. CO_2 emissions must also be determined either through CEM (e.g., as a diluent for NO_x monitoring) or calculation. Alternate procedures, test methods, and quality assurance/quality control (QA/QC) procedures for CEM are specified (Part 75 Appendices A through I). The Part 75 CEM requirements, including QA/QC procedures are, in general, more stringent than those specified in the NSPS for Subpart KKKK. New units are required to meet the requirements not later than 90 days after the unit commences commercial operation. The CCEC Unit will be required either to install CEMs for NO_x or otherwise meet the Part 75 requirements.

Initial and periodic compliance testing of pollutants emitted by CCEC will be conducted pursuant to the FDEP requirements as specified in the FDEP Air Construction Permit Application (Appendix 10.2.5).

6.7 Noise Impacts

Sound propagation involves three principal components: a noise source, a person or a group of people, and the transmission path. While two of these components, the noise source and the transmission path, are easily quantified (i.e., direct measurements or through predictive calculations), the effects of noise upon humans is the most difficult to determine due to the varying responses of humans to the same or similar noise patterns. The perception of sound (noise) by humans is very subjective, and just like odors and taste, is very difficult to predict a response from one individual to another.

The noise predictions for CCEC operation were developed using the CadnaA computer model (Computer Aided Noise Abatement), a computerized software program for calculation, presentation, assessment and prediction of environmental noise (DataKustik, 2008).

CadnaA is an environmental noise propagation computer program that was developed to assist with noise propagation calculations for major noise sources and projects. Noise sources are entered as octave band sound power levels, L_w. Locations of the noise sources, buildings, and receptors are input directly on the base map and can be edited throughout the modeling process. All noise sources are assumed to be a point, line, area or vertical area source, and can be specified by the user. Sound propagation is calculated by accounting for hemispherical spreading and three other user-identified attenuation options: atmospheric attenuation, path-specific attenuation, and barrier attenuation.

Atmospheric attenuation is calculated using International Organization for Standards, ISO 9613-1 Attenuation of Sound During Propagation Outdoors -- Part 1: Calculation of the Absorption of Sound by the Atmosphere. The CadnaA path-specific attenuation can be specified to account for the effects of soil, vegetation, foliage, and wind shadow. Directional source characteristics and reflection can be simulated using path-specific attenuation. Barrier attenuation is calculated by assuming an infinitely long barrier perpendicular to the source-receptor path. Total and A-weighted SPLs are calculated.

The noise impacts of the CCEC operation were evaluated using the sound power levels (L_w) for the various equipment associated with the CCEC. The sound pressure levels (SPLs) represent far-field SPLs that the vendors guaranteed for other similar projects. The location of each noise source was based on its location in the computerized site plan (see Figure 4.2.0-1). The computerized drawing was imported into the CadnaA model for the noise analysis. The heights of the major building were also input into CadnaA developing a three dimensional representation of the units. Sources were input as point, area and vertical areas sources with appropriate dimensions.

The design of CCEC includes components that reduce noise levels emitted to the surrounding environment. The majority of the noise sources associated with CCEC, such as the CTs, steam turbine/electric generator, and gas compressors are located within enclosures or buildings that reduce the sound levels. The noise from many sources such as boiler feed pumps and electric transformers is partially shielded by other structures that also mitigate noise.

The sound power levels used in the analysis are presented in Table 6.7.0-1. A total of 19 point sources, 8 line sources, 3 area sources, and 17 vertical area sources were input to CadnaA. Noise sources such as the boiler feed pumps and transformers were input as point sources. Sources that generate noise over a linear distance, such as the CT exhaust ducts were input as line sources. Large sources, such as the HRGSs, CTs, and steam turbine/gas generators were input as area sources that are horizontal. The vertical area noise sources represent sides of structures or buildings from which noise can be emitted. The atmospheric attenuation was set at the CadnaA default value, which is 10ºC (50ºF) and 70-percent relative humidity. For Florida, the default value would produce conservative results. The ground attenuation for the area was set to be equivalent to porous soil. The existing wall along the northern, western and southern boundaries of the Site were included as barriers in the model.

Figure 6.7.0-1 presents the predicted noise levels for CCEC operation. Table 6.7.0-2 presents the measured baseline ambient SPLs with the existing Cape Canaveral Plant offline and online as discussed in Subsection 3.3.8. This table also presents the predicted noise impact at each noise monitoring location. As shown in the table, the predicted sound levels for CCEC for locations onsite are lower than the existing measured sound levels with the exception of monitoring site 1. The predicted sound levels are only slightly higher at monitoring site 1 due to CCEC Power Block being closer to this site than the existing units. The predicted sound levels from CCEC are lower than the measured baseline ambient sound levels with the existing Plant either offline or operating. As indicated in Subsection 3.3.8, traffic on U.S. Highway 1 contributes significantly to baseline ambient sound levels at locations near the highway.

There are no State of Florida noise regulations that are applicable for the operation of CCEC. The maximum predicted sound levels from CCEC were evaluated to assess compliance with Section 62-2271(c), Maximum Permissible Sound Levels, in Chapter 62 of Brevard County's Land Development Regulations. The maximum permissible sound levels are applicable to the "predicted or actual sound pressure levels emitted by the proposed use". The most restrictive permissible sound level in Section 62-2271(c) is 55 dBA, which applies to residential and commercial receiving land uses and are applicable from 10:00 p.m. to 7:00 a.m.

Based on Brevard County's interpretation of its noise ordinance (August 13, 2008 letter from Ms. Robin M. Sobrino, AICP, Director of Brevard County Planning and Zoning Office, to Philip F. Nohrr, included in Appendix 10.7.3), ambient noise is not included in the determination of compliance with the maximum permissible sound levels. As shown in Table 6.7.0-2 and Figure 6.7.0-1, the highest predicted SPLs (i.e., 65, 75, and 85 dBA) occur within the Site, or close to the sources of sound. The 55 dBA contour is located at or near the Site boundary. Predicted SPLs beyond the 55-dBA contour, or farther away from the proposed CCEC, are less than 55 dBA. Based on the locations of the 55-dBA contour, the predicted SPLs emitted by the CCEC will not exceed 55 dBA for residential or commercial land uses.

Based on the results of the computerized noise modeling analysis, it is concluded that the maximum sound levels predicted to be emitted from CCEC operation will not exceed the maximum permissible sound levels in Section 62-2271(c) of Brevard County's Land Development Regulations.

No noise-sensitive wildlife is known to occur in or near the Site or vicinity. Since wildlife in the area has been acclimated to noise associated with the existing Cape Canaveral Plant and other background sources, noise from operation of CCEC will not adversely affect wildlife in the vicinity of the Site.

Intermittent noise sources during routine startup, testing and maintenance, and emergency conditions may include steam venting. Such activities would not normally occur simultaneously and would last for a short duration.

6.8 Changes in Non-Aquatic Species Populations

6.8.1 Impacts

No adverse impacts to non-aquatic species are anticipated during the operation of CCEC. The existing Site has been disturbed during prior construction of the existing facilities and used continuously over the last 40 years of Plant operation. Vegetative communities were removed, topography was graded, and hydrology has been altered over that time period. The Site does not provide critical habitat for non-aquatic wildlife; therefore, the operation of the CCEC is not anticipated to result in the reduction of any populations of non-aquatic species.

No adverse impacts to federal- or State-listed terrestrial plants or animals are expected during CCEC operations, due to the existing developed nature of the Site. No long-term change in the populations of any non-aquatic threatened or endangered species is anticipated as a result of the operation of CCEC.

No changes in wildlife populations, including listed species populations, are anticipated as a result of the operation of CCEC. The noise and lighting impacts associated with the converted Plant will be reduced when compared to the existing Plant. Operation of CCEC is not anticipated to deter the continued use by wildlife of undeveloped areas in the vicinity of the Site.

6.8.2 Monitoring

Because no significant impacts to non-aquatic species populations are anticipated, no monitoring program is proposed.

6.9 Other Plant Operation Effects

6.9.1 Operations Traffic

The operational workforce for CCEC is expected to be comparable to the current conditions as described in Subsection 3.2.7.

Since the number of employees is anticipated to be similar to the current conditions, the existing number of trips (57) is not anticipated to increase. That is, during normal operation, the daily number of trips is projected to be approximately 57 vehicles, and the morning and evening peak hour trips are estimated at approximately six vehicles per hour (vph) (see Appendix 10.7.3). Because the number of daily and peak hour trips will not increase as a result of the operation of CCEC, no adverse impacts on traffic are anticipated.

6.9.2 Lighting

The existing Cape Canaveral Plant lighting will be dismantled and new outdoor area lighting will be provided for CCEC. Outdoor lighting will be necessary to satisfy OSHA requirements for worker safety, including lighting walkways, parking areas and various equipment areas. Lighting is also necessary and required for security. Unconstrained lighting can cause light pollution and light trespass. Light pollution or sky glow is the term used to describe sky brightness caused by scattering of light in the atmosphere. Light trespass is the term used to describe light that strays from its intended purpose and becomes an annoyance.

The impact of lighting due to CCEC will be much less than the existing Cape Canaveral Plant lighting. The reasons for this are twofold. First, the profile of CCEC will be much lower than the profile of the existing Cape Canaveral Plant. The existing Cape Canaveral Plant stacks and boiler structures are about 400 feet and about 150 feet high, respectively. The existing lighting causes these structures to be visible from considerable distances due to their height. In contrast, the profile of CCEC is much lower. The stacks associated with CCEC will be about 150 feet high and the tallest structures will be less than about 100 feet high. Necessary lighting will therefore be less visible.

Second, light pollution and light trespass will be addressed when designing the outdoor lighting systems. Guidelines specifically addressing potential lighting issues are available from the Illuminating Engineering Society of North America. These guidelines will be incorporated into the outdoor lighting design to the extent possible while meeting OSHA and security requirements. Typical features to be incorporated are: minimize upward light from luminaries, minimize upward

light in general so that light reaches its intended target, turn off lighting not needed for safety and security between 11:00 p.m. and sunrise, contain light within its intended target area by suitable choice of luminaries for light distribution, by selection of mounting height and physical location, and by minimizing glare in the horizontal or vertical directions. These features will result in lower lighting impacts from CCEC and much lower visibility of CCEC than the existing Cape Canaveral Plant.

6.10 Archaeological Sites

No sites of historic or archaeological significance will be directly or indirectly impacted due to operation of CCEC. No sites listed or eligible for listing in the *National Register of Historic Places* are located in close proximity to the existing Site. No direct or indirect impacts are anticipated from the operation of CCEC. FPL will coordinate with the DHR/SHPO to determine the appropriate scope of work to meet pertinent (applicable) federal and state guidelines.

6.11 Resources Committed

The major irreversible and irretrievable commitments of national, State, and local resources due to CCEC are the continued use of the existing Site, the continued consumptive use of water for Plant cooling and processes, and the continued use of fuels that include natural gas and ultra low-sulfur light oil. The continued use of these resources is offset by the higher efficiency of CCEC and the additional generating capacity provided by the converted Plant (800 MW versus 1,250 MW).

CCEC will be located on the existing Site. The entire Site has already been significantly impacted by previous and continuing power plant operation. CCEC will provide beneficial reuse of the existing Site while minimizing impacts to the environment.

The consumption of water by the proposed CCEC units will be for condenser cooling, pollution control equipment (NO_x control when firing ultra low-sulfur light oil), other process water requirements, and potable water.

Natural gas and light oil will be consumed during the operation of CCEC. With the use of advanced combined cycle technology, the use of fossil fuels will be lower (approximately 33 percent less) than the existing Plant for the same amount of electricity generated.

Ammonia will be required for the operation of the CCEC's SCR system. While ammonia will be consumed, emissions of NO_x will be substantially reduced (greater than 80 percent) as a result.

CCEC will effectively utilize national, State, and local resources, given the production of efficient electric power, low environmental impacts, and the use of an existing and previously impacted site.

6.12 Variances

No variances from any applicable standards of any State, regional, or local government agencies are being requested as part of this application.

TABLE 6.6.0-1
SUMMARY OF PREDICTED POLLUTANT CONCENTRATIONS
FOR THE EXISTING CAPE CANAVERAL PLANT AND CCEC
COMPARED TO AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	Maximum Concentration (ug/m^3)		Total Concentration (ug/m^3) including Background [a]		Ambient Air Quality Standard (AAQS) ($\mu g/m^3$)
		Existing Units 1&2 Only	CCEC Only [b]	Units 1&2	CCEC [b]	
SO_2	Annual	14.9	0.4	18.0	3.5	60
	24-Hour	90.0	3.1	103	16.2	260
	3-Hour	221	12.2	284	75.0	1,300
PM_{10}	Annual	1.7	0.5	17.3	16.1	50
	24-Hour	10.2	4.7	58.2	52.7	150
NO_2	Annual	2.7	8.9	18.9	25.1	100
CO	8-Hour	5.1	70.4	2,980	3,045	10,000
	1-Hour	10.9	124	8,936	9,049	40,000

[a] Background concentration based on the maximum measured concentration from representative air quality data for the Site.

[b] CCEC sources include the 3 CTs/HRSGs, fuel heater, and gas compressors.

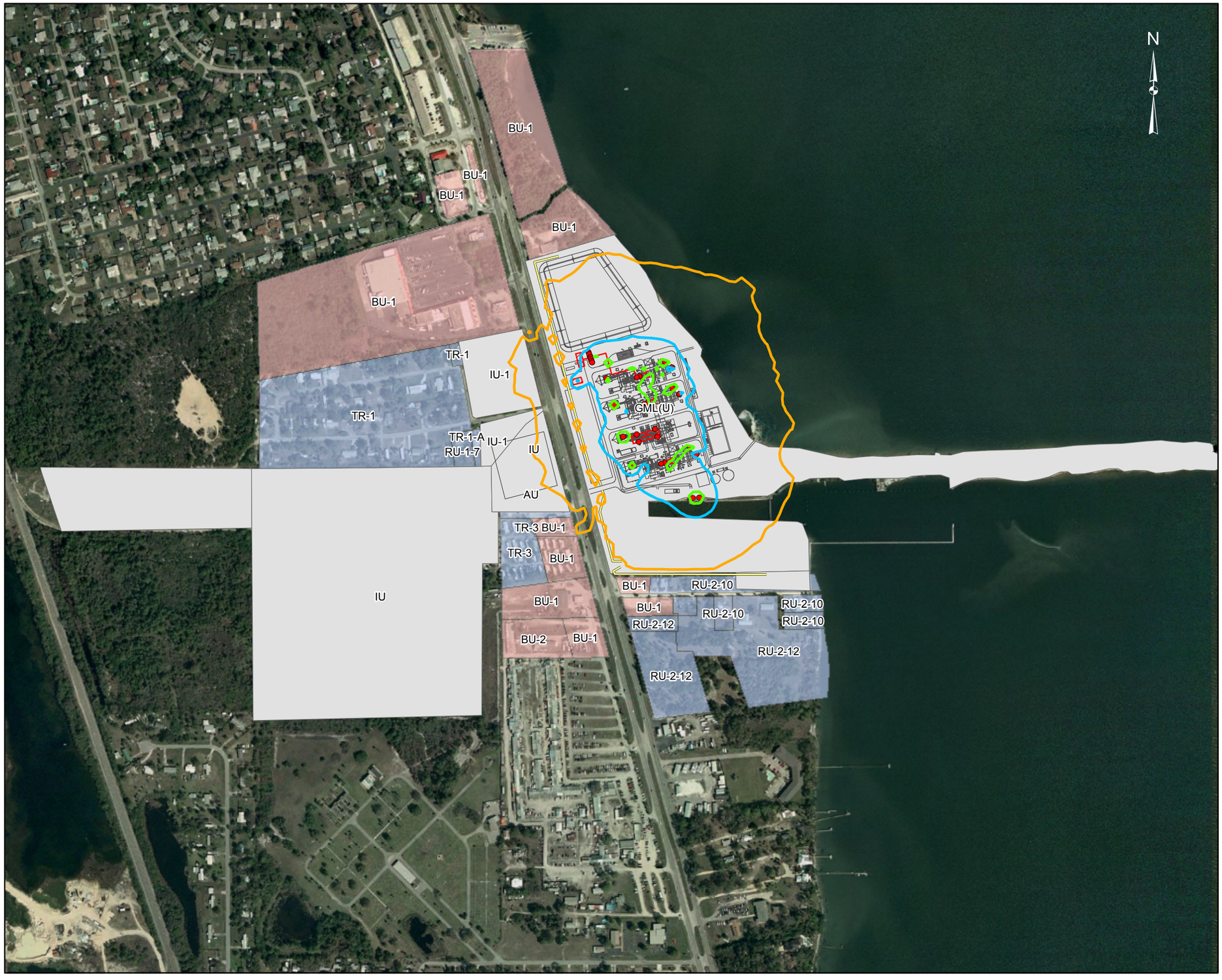
TABLE 6.7.0-1
SOUND PRESSURE LEVELS FOR NOISE SOURCES ASSOCIATED WITH FPL CCEC

Sources	Interior Noise Source	Source Type	Number of Sources	Source Height (m)	Sound Pressure Level (dB) for Octave Band Center Frequency (Hz)									Overall Sound Pressure Level (dBA)
					31.5	63	125	250	500	1000	2000	4000	8000	
1A HRSG Stack	No	Point	1	47.00	49.0	55.0	68.0	71.0	80.0	106.5	100.0	74.0	56.0	107.6
1B HRSG Stack	No	Point	1	47.00	49.0	55.0	68.0	71.0	80.0	106.5	100.0	74.0	56.0	107.6
1C HRSG Stack	No	Point	1	47.00	49.0	55.0	68.0	71.0	80.0	106.5	100.0	74.0	56.0	107.6
1A CT Transformer	No	Point	1	2.00	96.0	102.0	104.0	103.0	99.0	93.0	88.0	83.0	76.0	100.1
1B CT Transformer	No	Point	1	2.00	96.0	102.0	104.0	103.0	99.0	93.0	88.0	83.0	76.0	100.1
1C CT Transformer	No	Point	1	2.00	96.0	102.0	104.0	103.0	99.0	93.0	88.0	83.0	76.0	100.1
1A Boiler Feed Pump	No	Point	1	2.00	103.0	100.0	97.0	96.0	97.0	96.0	97.0	89.0	77.0	101.7
1B Boiler Feed Pump	No	Point	1	2.00	103.0	100.0	97.0	96.0	97.0	96.0	97.0	89.0	77.0	101.7
1C Boiler Feed Pump	No	Point	1	2.00	103.0	100.0	97.0	96.0	97.0	96.0	97.0	89.0	77.0	101.7
Unit 1 STG Transformer	No	Point	1	2.00	99.0	105.0	107.0	106.0	102.0	96.0	91.0	86.0	79.0	106.1
Turbine Vent Fan 1A1	No	Point	1	14.33	104.0	104.0	109.0	102.0	99.0	93.0	104.0	106.0	107.0	111.2
Turbine Vent Fan 1B1	No	Point	1	14.33	104.0	104.0	109.0	102.0	99.0	93.0	104.0	106.0	107.0	111.2
Turbine Vent Fan 1C1	No	Point	1	14.33	104.0	104.0	109.0	102.0	99.0	93.0	104.0	106.0	107.0	111.2
Load Comp Vent Fan 1A	No	Point	1	6.50	102.0	103.0	103.0	99.0	94.0	92.0	95.0	91.0	84.0	100.2
Load Comp Vent Fan 1B	No	Point	1	6.50	102.0	103.0	103.0	99.0	94.0	92.0	95.0	91.0	84.0	100.2
Load Comp Vent Fan 1C	No	Point	1	6.50	102.0	103.0	103.0	99.0	94.0	92.0	95.0	91.0	84.0	100.2
Circulating Water Pump	No	Point	2	2.00	96.0	103.0	101.0	101.0	98.0	97.0	96.0	95.0	91.0	103.1
STG Ventilation Fan	No	Point	4	23.00	95.0	95.0	91.0	87.0	84.0	82.0	80.0	76.0	76.0	87.8
Gas Compessor Exhaust	No	Point	7	12.19	125.0	113.0	119.4	119.7	116.4	119.1	118.1	118.7	114.0	90.7
Unit 1A Exhaust Duct North	No	Line	1	6.62 - 22.47	113.0	110.0	108.0	101.0	100.0	98.0	96.0	95.0	92.0	104.0
Unit 1A Exhaust Duct South	No	Line	1	6.62 - 22.47	113.0	110.0	108.0	101.0	100.0	98.0	96.0	95.0	92.0	104.0
Unit 1B Exhaust Duct North	No	Line	1	6.62 - 22.47	113.0	110.0	108.0	101.0	100.0	98.0	96.0	95.0	92.0	104.0
Unit 1B Exhaust Duct South	No	Line	1	6.62 - 22.47	113.0	110.0	108.0	101.0	100.0	98.0	96.0	95.0	92.0	104.0
Unit 1C Exhaust Duct North	No	Line	1	6.62 - 22.47	113.0	110.0	108.0	101.0	100.0	98.0	96.0	95.0	92.0	104.0
Unit 1C Exhaust Duct South	No	Line	1	6.62 - 22.47	113.0	110.0	108.0	101.0	100.0	98.0	96.0	95.0	92.0	104.0
Unit 1 Condenser	No	Line	1	12.00	115.0	116.0	115.0	113.0	114.0	108.0	103.0	98.0	94.0	114.1
Gas Compressor Piping	No	Line	1	1.50	108.0	106.0	105.0	104.0	102.0	100.0	98.0	96.0	92.0	105.6
Unit 1 Steam Turbine Generator	No	Area	1	24.00	81.0	86.8	98.2	91.6	82.4	82.5	81.7	78.8	76.3	89.7
Gas Yard	No	Area	1	0.00	96.3	100.6	95.2	88.5	86.0	87.7	90.7	86.6	87.9	95.6
Gas Compressor Enclosure Area Roof	Yes	Area	1	6.11	99.0	94.0	93.0	86.0	81.0	85.0	100.0	104.0	103.0	83.3
Unit 1A Air Inlet	No	Vert_Area	1	29.60	96.0	100.0	93.0	88.0	80.0	72.0	68.0	76.0	71.0	84.7
Unit 1B Air Inlet	No	Vert_Area	1	29.60	96.0	100.0	93.0	88.0	80.0	72.0	68.0	76.0	71.0	84.7
Unit 1C Air Inlet	No	Vert_Area	1	29.60	96.0	100.0	93.0	88.0	80.0	72.0	68.0	76.0	71.0	84.7
Unit 1A HRSG North	No	Vert_Area	1	23.47	111.0	116.0	112.0	104.0	94.0	93.0	81.0	61.0	31.0	100.7
Unit 1A HRSG South	No	Vert_Area	1	23.47	111.0	116.0	112.0	104.0	94.0	93.0	81.0	61.0	31.0	100.7
Unit 1B HRSG North	No	Vert_Area	1	23.47	111.0	116.0	112.0	104.0	94.0	93.0	81.0	61.0	31.0	100.7
Unit 1B HRSG South	No	Vert_Area	1	23.47	111.0	116.0	112.0	104.0	94.0	93.0	81.0	61.0	31.0	100.7
Unit 1C HRSG North	No	Vert_Area	1	23.47	111.0	116.0	112.0	104.0	94.0	93.0	81.0	61.0	31.0	100.7
Unit 1C HRSG South	No	Vert_Area	1	23.47	111.0	116.0	112.0	104.0	94.0	93.0	81.0	61.0	31.0	100.7
Unit 1 Steam Turbine Generator	No	Vert_Area	4	24.00	81.0	86.8	98.2	91.6	82.4	82.5	81.7	78.8	76.3	89.7
Gas Compressor Enclosure Area	Yes	Vert_Area	4	6.10	99.0	94.0	93.0	86.0	81.0	85.0	100.0	104.0	103.0	81.6

TABLE 6.7.0-2
MEASURED BASELINE AMBIENT SOUND PRESSURE LEVELS AND PREDICTED IMPACT OF CCEC

Site	Time	Sound Levels (dBA)		
		Existing Plant Off line L_{eq}	Existing Plant On Line L_{eq}	CCEC Maximum Impact
1: Onsite North of Power Block near used oil storage area	Daytime	56	59	63
	Nighttime	53	57	63
2: Onsite at main gate to the Tank Yard	Daytime	60	71	68
	Nighttime	60	68	68
3: Onsite South of the Power Block in grass parking lot	Daytime	59	67	58
	Nighttime	56	69	58
4: Gate to Switch Yard off of U.S. Highway 1	Daytime	71	71	57
	Nighttime	65	68	57
5: Frontenac Baptist Church parking lot	Daytime	62	64	41
	Nighttime	58	60	41
6: Corner of Clearview Rd and Codner Lane	Daytime	60	58	53
	Nighttime	56	54	53
7: Port St. John Boat Ramp	Daytime	57	59	45
	Nighttime	53	--	45
8: At used car dealership west of the main gate	Nighttime	--	67	55
Brevard County, Residential Receiving Land Maximum Allowable Sound Pressure Levels		Daytime		60
		Nighttime		55
Brevard County, Commercial Receiving Land Maximum Allowable Sound Pressure Levels		Daytime		60
		Nighttime		55

Source: Golder, 2008.



LEGEND

Predicted Sound Pressure Levels

- > 55 dB
- > 65 dB
- > 75 dB
- > 85 dB
- Source Locations
- Wall
- FPL Property

Zoning

- Residential
- Commercial

REFERENCE

Based on conceptual design information.
Aerial Express, 2006; Brevard County Planning and Zoning Office GIS Dept.
Projection: Transverse Mercator Datum: NAD 83 Coordinate System: UTM Zone 17

500 0 500 Feet

PROJECT

FPL CAPE CANAVERAL ENERGY CENTER

TITLE

Predicted Sound Pressure Levels for CCEC Operation

PROJECT No. 083-87633			SCALE AS SHOWN		REV. 0
DESIGN	AB	24 Oct. 2008	**FIGURE**		
GIS	AB	24 Oct. 2008			
CHECK	BM	24 Oct. 2008	**6.7.0-1**		
REVIEW	KFK	24 Oct. 2008			

FPL

7.0 ECONOMIC AND SOCIAL EFFECTS OF PLANT CONSTRUCTION AND OPERATION

The purpose of this chapter is to identify the direct and indirect economic and social benefits and costs of the Project based on a temporary (construction) and long-term (operation) time period, with emphasis on effects not directly concerned with the use of electricity.

Socioeconomic impacts may occur when a project directly or indirectly changes a population, housing stock, or economic activities within a given area. Construction activities could also have temporary direct and indirect impacts, as well. In addition, an indirect effect upon a project area could result from the potential significant impacts involving land use/neighborhood character, traffic, and noise.

Direct effects are those that are the result of the construction or operation of the Project. Indirect effects are those that are the result of changes in the livelihood of the people and business interests in the vicinity of the Project who, because of their proximity to the Site, may experience changes in their local environment, such as increased spending by the Project construction and operational personnel. Many of these effects are difficult to measure and qualitative assumptions are often made to assess the relative values of anticipated costs and benefits.

This chapter is divided into two parts: benefits and costs. Section 7.1 addresses the economic and social benefits of the Project that includes an analysis of the direct and indirect effects of the construction and operational aspects of the project. Section 7.2 addresses the economic and social costs of the Project and includes an analysis of the temporary and long-term indirect costs involving the dismantlement and construction and operational aspects of the Project. All cost and benefits are based on 2008 dollar values.

7.1 Economic and Social Benefits

7.1.1 Direct Economic and Social Benefits

The Project is anticipated to benefit the economies of Brevard County and the State of Florida. Direct benefits from construction will include construction workforce jobs and sales of equipment and materials. Direct operational benefits from the Project include the capital expenditures, operation and maintenance expenditures, employment, and property tax revenues.

FPL estimates that the total Project costs will be approximately $1,115 million. Principal components include the Power Block ($963 million), transmission, interconnection and integration ($33 million), and allowance for funds used during construction ($119 million).

Dismantlement is anticipated to begin in the spring of 2010 and Project construction to conclude in the Summer of 2013. During the dismantlement of the existing Plant, workers will be employed that are specialized in removing recyclable materials and dismantling equipment, removing insulation, preparing structures for demolition and material removal.

The peak construction workforce (mid-2012) is estimated to be approximately 650 people, with an average construction workforce estimated at 290 people. The categories of workers anticipated over the construction period of CCEC are presented in Table 7.1.1-1. The construction payroll for the Project is estimated to be $18 million during 2012 and $8.7 million during 2011 and 2013.

TABLE 7.1.1-1
ANTICIPATED CONSTRUCTION WORKFORCE

Category	Percent	Category	Percent
Laborers	12	Pipefitters	19
Carpenters	6	Insulators	2
Operators	5	Electricians	22
Ironworkers	4	Painters	1
Millwrights	10	Supervision	13
Boilermakers	6	Total	100

CCEC will become operational in mid-2013. The total direct employment for operation of the converted Plant will be similar to the existing Cape Canaveral Plant at approximately 46 full-time jobs. With the existing Plant employing approximately 46 full-time employees, the labor demands associated with the operation of CCEC will not create a labor shortage. The annual operational payroll of CCEC will be approximately $3 million. Other fixed operational costs of CCEC, excluding fuel costs, are estimated to be approximately $300,000 annually.

Due to the proximity of the Site to the large labor markets in the Orlando Metropolitan Area, the labor demand for both construction and operation is anticipated to be met by workers living in this area as well as skilled labor from elsewhere outside the area. Population and housing impacts from construction and operation will not have an adverse impact on Brevard County or surrounding counties. Potentially affected local governments have sufficient resources to accommodate the

anticipated temporary increase in workers and the potential demand for governmental services during the construction period.

The operation of CCEC is expected to generate $184.8 million in property tax revenue over the expected life of the Plant. This is comprised of $79.6 million to Brevard County, $88.9 million to the school district, and $16.3 million to other taxing authorities.

7.1.2 Indirect Economic Benefits

Project construction activities will require skilled labor. It is anticipated that the majority of wages paid by the Project will be spent within Brevard County and the surrounding region. These wages will create additional demands for goods and services. As this money is spent, it will create a multiplier effect within the area, thereby generating additional jobs and earnings. These earnings are indirect or secondary benefits of the Project, which will be enjoyed by other businesses whose sales will increase as a result of the Project. For example, sales could increase for commercial services including gas stations, convenience stores, and restaurants. If construction workers were to frequent businesses during, before, or after their workday, it would result in increased business to the area merchants. During the 3-year construction period, area suppliers could also benefit by supplying needed materials such as concrete, stone, drainage piping, and other building materials that are normally manufactured or produced in the region. In addition, construction equipment may be rented locally.

Using an economic multiplier for this effect, wages paid directly to Project construction workers could indirectly generate up to $8.4 million in indirect earnings during peak construction in 2012. A total indirect economic benefit is estimated to be $47.2 million for the 3-year construction period from 2011 through 2013. With CCEC in operation, the anticipated indirect earnings will average approximately $2.8 million annually over the expected life of the converted Plant. The total indirect economic benefit will be $7.9 million annually during operation of CCEC.

7.1.3 Fiscal Benefits

The net economic impact of the Project on Brevard County and other governmental entities, for the life of the Project, is the difference between the total benefits and costs. Operating revenues to government entities include *ad valorem* tax revenue, occupational licenses, building permit fees, utility taxes, State revenue proceeds, charges for services (e.g., potable water and wastewater disposal), paid by FPL. Services are required for all residents who are working in the county. As a result, Brevard County will incur costs for these services related to the Project and its employees. To

estimate these costs, a weighting procedure was used based on the full-time equivalent population of Brevard County.

Operating costs to government entities include costs for services such as financial and administrative expenses, emergency and disaster relief, legislative and executive expenses, and comprehensive planning. The cost of these services is estimated to be about $0.4 million to Brevard County.

The county government also earns capital revenues and pays capital expenses. Capital revenues are based on impact fees and capital expenses are costs related to purchases for roads, fire rescue, law enforcement, etc. For the Project, the annual property taxes will accrue to Brevard County, the school district, and other taxing authorities. These funds are then distributed to the various entities within the governmental jurisdiction. The total benefit in revenue to Brevard County of the Project is $79.9 million.

Together, the total benefits and total costs result in a net benefit/cost of the Project. The net fiscal benefit of the Project to Brevard County is estimated to be $79.5 million.

7.1.4 Overall Economic Benefits

The CCEC Project will have significant economic benefits in Brevard County. During construction the average annual economic benefit will be $55.3 million. During operation the total direct and indirect economic benefits will be $534.2 million over the expected life of the Plant. This consists of a total direct economic benefit during the operational period of $320 million and an indirect economic benefit of $214.2 million.

7.1.5 Environmental Benefits

Construction and operation of the Project will not cause any adverse environmental impacts or impacts to the recreational values of the area. Environmental impacts of Project construction will be minimized.

Most importantly, the CCEC Project allows for the beneficial reuse of an existing power plant site while increasing generating capacity by about 54 percent. Indeed, this conversion Project will result in increased power generation without using additional land, water sources, or transmission line rights-of-way. The conversion Project will have a much lower profile, with the height of the tallest structure (i.e., stacks) being less than 40 percent of the height of the existing stacks. The converted Plant will reduce actual air emissions by more than 90 percent and will reduce the rate of CO_2

emissions at the facility by about 50 percent. During the operation of CCEC, from years 2013 to 2040, the CO_2 reduction in FPL's system with CCEC will be about 8 million tons. In addition, the administration/control room/warehouse building will feature rooftop solar panels to help power the facilities and the building itself will be certified under the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) rating system.

The existing Cape Canaveral Plant has been a refuge for the endangered manatee during the wintertime since it began operation in the 1960s. With the completion of CCEC, the Site will continue to serve as a refuge for this important Florida species long into the future. During the dismantlement and construction period, FPL will continue to provide a warm water refuge for the manatees during the winter consistent with the Manatee Protection Plan established pursuant to the existing Plant's Industrial Wastewater Facility Permit.

7.2 Economic and Social Costs

7.2.1 Temporary External Costs

Over 75,000 construction workers reside within the region, with the majority of these in Brevard, Orange, and Seminole Counties (UF/BEBR, 2007). Ample labor supply exists within commuting distance and thus a labor surplus exists within the region. As is typical with shorter construction projects, it is not anticipated that most workers will permanently relocate to the immediate area and alter the demands on public facilities and services.

As is typical with some construction projects, some skilled workers from outside the region may commute from longer distances and may choose to live in transient accommodations (motels, hotels) on a weekly basis, returning to their permanent homes and families on weekends. Transient accommodations are plentiful in the area.

Since workers will predominately commute and not relocate permanently into the region, it is not anticipated that construction will create new or unusual impacts or demands on public facilities or services.

Labor demands associated with the construction and operation of the Project are not anticipated to create any labor shortages. Expenditures for equipment and materials and consumption by construction workers will boost incomes in Brevard County and surrounding counties. Population

and housing impacts associated with the Project will be slight due to minimal in-migration expected into the area.

Temporary external costs include the generation of construction traffic and noise from delivery trucks. Project construction will last approximately 3 years with a peak period of about 12 months (mid-2012). The roadways utilized for the construction traffic associated with the Project will continue to operate at an acceptable level of service with appropriate roadway improvements identified as necessary which may include using traffic management specialists and certain roadway/driveway improvements.

Construction-related activities that will be outside of the existing Site will consist of an offsite construction laydown and parking area that will be used for the temporary laydown of equipment and materials, construction worker parking, and delivery of construction-related equipment and materials. To minimize construction-related impacts upon the environment, the following actions will be implemented:

- Construction-related activities will be kept on property currently owned by FPL;
- BMPs will be used for stormwater in the offsite construction laydown and parking area;
- Upward light spill and glare will be minimized with outdoor lighting plans that incorporate lighting standards and fixtures; and
- Washdown of equipment and materials will be conducted to prevent the transfer of materials and dust onto roadways when leaving the Site and the offsite construction laydown and parking area.

Construction of CCEC will not significantly impact residential, commercial, or recreational values and will improve the visual qualities in the vicinity of the Site.

Although the local community may experience some temporary impacts during the construction period, overall socioeconomic impacts associated with the construction of the Project will be favorable. Most importantly, the CCEC will provide about 1,250 MW of needed electric generating capacity in Florida using highly efficient natural gas combined cycle technology at an existing site.

7.2.2 Long-Term External Costs

The external cost impacts of CCEC operation will be minimal and localized. The Site is located near an existing FPL transmission system, which will minimize the interconnection requirements to FPL's

electric transmission and distribution system. There will be no adverse impacts to public or private facilities used for recreational purposes. The operation of CCEC will not cause any impairment to recreational values, result in any deterioration of aesthetic and scenic values, or restrict access to areas of scenic value.

The operational workforce for the converted Plant is anticipated to be about the same as the existing Plant. As a result, potential adverse impacts of the operation of CCEC upon local services (e.g., schools, police, transportation) are not anticipated. CCEC will result in modifications of the existing property value that will in turn increase the *ad valorem* revenue. These long-term taxes paid to Brevard County, the school district, and other taxing authorities will be significantly greater than current allocations.

FPL will minimize CCEC's impacts on the environment and the community, and the CCEC design incorporates features that reduce the visual and other impacts. These major features include the lower visual profile, noise attenuation, and air pollution control equipment.

8.0 SITE AND DESIGN ALTERNATIVES

This optional Chapter of the SCA will not be submitted as part of this application because it is not anticipated that an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) would be required for the Project.

9.0 ELECTRICAL TRANSMISSION LINES

The Project will not require certification of associated electrical transmission lines. Therefore, Chapter 9 is not necessary for this application.

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APPENDIX 10.1

COORDINATION

APPENDIX 10.1

COORDINATION

State, regional, and local governmental agencies were contacted by FPL representatives to inform these agencies about the Cape Canaveral Energy Center and to solicit input regarding the Project. The Agency staff contacted is listed below:

Florida Department of Environmental Protection, Siting Office (Tallahassee)

Michael Halpin
Cindy Mulkey
Ann Seiler

Florida Department of Environmental Protection, Wastewater Section (Tallahassee)

Marc Harris
Bala Nori
Michael Hatcher

Florida Department of Environmental Protection, Bureau of Air Regulations (Tallahassee)

Teresa Heron
Al Linero

Florida Department of Environmental Protection, Central District Office (Orlando)

James Bradner
Caroline Shine
Garry Kuberski
Anil Desai
Tom Lubozynski
Lisa Prather
Kimberly Eisele
David Herbster
Leonardo Anglero
Ali Kazi
Randall Cunningham
Wanda Parker-Garvin
Allen Rainey
John Turner

Florida Fish and Wildlife Conservation Commission (Tallahassee/Vero Beach)

Mary Ann Poole
Carol Knox
Leslie Ward
Ron Mezich
Tom Reinert
Kipp Frohlich
Steve Lau

Florida Department of Community Affairs (Tallahassee)

Dr. Barbara Lenczewski

Florida Department of Transportation (Tallahassee)

Connie Mitchell

St. Johns River Water Management District (Palatka)

Mary Ellen Winkler

U.S. Fish and Wildlife Service (Jacksonville)

Dave Flemming
Dawn Jennings
Jim Valade
Kalani Cairns
Dave Hankla

Brevard County (Viera)

Mel Scott
Debbie Coles
Rick Enos
Christine Lepore
Ernie Brown
Cindy Fox
Terry Talbert
Tony Vitale
Rich Szpyrka
Doug Carter
Frank Scates
Martha Daniher
Edward Lyon
Tad Calkins
Dan Vangenechten
Mark Reagan
Lydia Evans
Rebecca Ragain

East Central Florida Regional Planning Council (Maitland)

Tara McCue

Environmental Protection Agency (Atlanta)

Karrie-Jo Shell

APPENDIX 10.2

FEDERAL PERMIT APPLICATIONS OR APPROVALS

APPENDIX 10.2.1

316 DEMONSTRATIONS

NOTE: FPL performed 316 studies for the Cape Canaveral Plant over a 29-month period from June 1978 through October 1980. The field program associated with these studies was conducted from September 1, 1978 through August 31, 1979. These 316(a) and 316(b) studies culminated in a comprehensive report submitted to affected agencies including the Environmental Protection Agency and the predecessor of the Florida Department of Environmental Protection. During the course of these studies, the field programs, methodology and draft report were submitted to U.S. Environmental Protection Agency (EPA) and other agencies for technical input. The final report (dated October 1980) is titled "Biological and Environmental Studies at the Florida Power & Light Company Cape Canaveral Plant and the Orlando Utilities Commission Indian River Plant", prepared by Applied Biology, Inc., and Ray L. Lyerly & Associates. The objective of the study was to evaluate the biological and technical aspects of Sections 316(a) and 316(b) of the Clean Water Act for the Cape Canaveral Plant and Indian River Plant, individually and collectively. The data and conclusions of this report formed the technical basis for the 316(a) and 316(b) decisions by EPA. This report is voluminous and is available upon request. Summarized below is information related to 316(a) and (b).

316(a)

A 316(a) thermal variance was initially granted by EPA to the Cape Canaveral Plant on July 11, 1983, and subsequently issued on March 23, 1984. The continuation of the variance was granted by the FDEP with the issuance of all subsequent permits including the current wastewater permit. FPL requests that the 316(a) thermal variance be renewed with the modification of the current wastewater permit.

FDEP also determined that the facility is subject to the requirements of Rule 62-302.520(1)(a), F.A.C., which states that facilities with heated water discharges existing on July 1, 1972, "shall not increase the temperature of the receiving body of water (RBW) so as to cause substantial damage or harm to the aquatic life or vegetation therein or interfere with beneficial uses assigned to the RBW". As a thermal discharge that was in existence prior to July 1, 1972, the existing Cape Canaveral Plant is not subject to numerical thermal and mixing zone limits.

316(b)

The U.S. Court of Appeals for the Second Circuit in January 2007 remanded most of the substantive provisions of the Phase II Rule requirements [40 CFR, Subpart J, as incorporated by reference at Rule 62-620.100(3)(v), F.A.C.]. Additionally, EPA's March 20, 2007 Memorandum to all Regional Administrators confirmed that the Phase II Rule "should be considered suspended", and advised that during the interim period intake considerations shall be evaluated based on Best Professional Judgment.

FPL will revisit the 316(b) demonstration when EPA revises the rule; and follow the assessment, evaluation, and Best Technology Available (BTA) selection process as appropriate under the revised rule.

APPENDIX 10.2.2

The Cape Canaveral Plant is currently authorized to operate under Industrial Wastewater Facility Permit No. FL0001473, which expires on August 19, 2010 (see Attachment A).

In accordance with Rule 62.620.200 (26), FPL is seeking a "modification" to the Industrial Wastewater Facility Permit to authorize the conversion of the Cape Canaveral Plant as described in the SCA and operation of the CCEC. The Industrial Wastewater Facility Permit modification application (Forms 1, 2CS, and 2F) and the revised water balance are provided in Attachment B.

Form 2CS Attachment 1

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III E: NA

III F: See Water Balance – Attachment B-1

III G: FPL requests the continuation of the 316(a) variance.

IV A: See Water Balance – Attachment B-1

IV B: See Attachment B-2

Form 2CS Attachment B-2

FPL intends to convert the existing Cape Canaveral Plant into a modern, highly efficient, lower-emission next-generation clean energy center using the latest combined cycle technology. The two existing generating units will be replaced with CCEC, a nominal 1,250-MW combined cycle natural gas-fired plant. The existing units will be dismantled with the exception of the once-through cooling water (OTCW) intake and discharge structures. The converted plant's OTCW system will be connected to the existing intake and discharge structures.

Cooling Water System

Condenser cooling is accomplished using the existing OTCW system with intake from and discharge to the Indian River Lagoon. The existing OTCW system is authorized to operate under FDEP Industrial Wastewater Facility Permit FL0001473 (major) and a Consumptive Use Permit (#10652) from the St. Johns River Water Management District (SJRWMD). The OTCW system uses two circulating water pumps per unit [design rating for each pump is 137,500 gallons per minute (gpm)]. The plant has two intake structures (one per unit), and each structure has two intake bays, with one circulating water pump per bay. Each intake bay also has an auxiliary equipment cooling water pump and a screen wash pump. The total design OTCW flow for each unit of the existing plant is 396 MGD. Auxiliary equipment cooling is performed with a once-through system with a design flow of 30 MGD for both units combined. The total design capacity for the existing plant is 822 MGD. The converted plant will use operate three of the four existing intake bays at a given time and have a total design intake flow capacity of 619 MGD. Consequently, the maximum cooling water flow of the converted Plant will be 25 percent less than the design intake capacity of the existing plant.

Cooling water will continue to be withdrawn from the Indian River Lagoon through the existing intake canal, which varies from 11.5 to 14 ft depth on the centerline (ABI, 1980), and intake bays. The current intake for Unit 1 is approximately 470 ft from the intake canal opening to the Indian River Lagoon. The bottom of the intake structure opening is 14.5 ft below MLW and each pump bay is 11 feet 8 inches wide. The current intake for Unit 2 is located approximately 180 ft west of the Unit 1 intake structure.

Discharge from the cooling water system consists of two 78-inch outfall pipes for each unit, discharging through a single seal well. The two seal wells are set 550 feet apart. Discharge from the

auxiliary equipment cooling system is performed with a once-through system that has a single 22-inch outfall. The existing intake and discharge infrastructure will be used for the CCEC.

Design Circulation Flow and Heat Rejection Rate

CCEC will have a steam generating capacity that is less than that of the existing plant. The full-load discharge heat rejection rate for the existing plant is 3.95 billion British thermal units per hour (BBtu/hr), while the full-load discharge heat rejection rate for the converted plant will be about 2.95 BBtu/hr. Because the discharge heat rate will be reduced, the discharge flow rate will also be reduced to maintain approximately the same full-load overall temperature rise of about 14.2^{o}F. The total discharge flow rate for the converted plant is estimated to be 428,795 gpm or about 25 percent less than the existing plant. The predicted full-load thermal plume is smaller for the converted plant; however, the converted plant is expected to operate at higher capacity factors than the existing plant has historically operated, with a design flow rate approximately 25 percent less than the existing plant.

The existing Cape Canaveral Plant thermal discharge existed on July 1, 1972, and, thus, is subject to the thermal surface water criteria established by Rule 62-302.520(1), F.A.C. Conversion of the existing Plant will not increase the potential thermal loading to the Indian River Lagoon compared to the potential thermal loading from the existing Plant. Consequently, the thermal surface water criteria for existing power plants will be applicable to the thermal discharge from CCEC.

The Indian River Lagoon east of the plant is a designated manatee protection area, and a significant number of manatees use this area as a thermal refuge during the winter. The converted plant will continue to provide a wintertime thermal refuge for manatees. See Appendix 10.9 for additional information regarding the analysis of the comparative extent of the thermal plume in comparison with the existing units.

Bypass Operation

Operation of CCEC during periods of plant startup and shutdown, steam turbine shutdowns, or other abnormal/emergency operating conditions where steam is being produced in the heat recovery steam generators and discharged directly into the condenser before passing through the steam turbine, is defined as steam turbine bypass or “Bypass Operation”. During the majority of the operating scenarios while in Bypass Operation, the thermal energy discharged to the condenser falls within the normal design full load thermal discharge. However, under certain conditions during Bypass

Operation, the thermal energy of the bypassed steam entering the condenser is greater than the design full load thermal energy discharged to the condenser. During operating scenarios where the thermal energy of the bypassed steam entering the condenser is greater than the full load design thermal energy, all four OTCW pumps will be placed in service to maintain the cooling water temperature rise at approximately the same level as the CCEC full load design temperature rise. CCEC Bypass Operation will be infrequent and the maximum heat rejection rate to the Indian River Lagoon during bypass operation will be similar to the full load design heat rejection rate of the existing plant.

Surface Water Discharge

CCEC will discharge three other wastewater streams in addition to the once-through cooling water. There will be an estimated 35 gpm average (46 gpm peak) of HRSG blowdown, which is relatively pure water as described in Section 4.6.2. There will also be an estimated 45 gpm (88 gpm peak) of R.O. reject water from the Water Treatment system which will have a relatively high total dissolved solids (TDS) content and is described in Section 4.6.4. There will also be an estimated 26 gpm average (29 gpm peak) of water miscellaneous drains within the plant, from which suspended solids and oil will be removed through the use of an oil/water separator. The miscellaneous drains wastewater is described in SCA Section 4.6.6. The combined peak discharge of 106 gpm average (163 gpm peak) will be mixed with the once-through cooling water discharge, resulting in a significant dilution ranging from approximately 2,600 to 1 up to 4,000 to 1. At these dilution rates, the effect of these wastewater streams at the point of discharge will be negligible for the converted plant, therefore, the antidegradation considerations specified in Section 403.088(2)(b) of the Florida Statutes are not applicable to the CCEC project.

CCEC will have no cooling towers; therefore, there will be no cooling tower blowdown.

The facility will continue to chlorinate and dechlorinate the once-through cooling water using sodium bisulfate prior to discharge. The auxiliary equipment cooling water may also be chlorinated using continuous low-level chlorination as currently authorized in the Industrial Wastewater Facility Permit.

FPL proposes to continue the measurement program required under the current Industrial Wastewater Facility Permit with the exception of groundwater monitoring requirements, which will no longer be necessary because of the elimination of the existing evaporation/percolation ponds.

Pollutant concentrations in the process wastewater discharge are not anticipated to contribute nitrogen or phosphorus above current permit limits, contribute to mercury loading or exceed the Class II marine water quality standards in the Indian River Lagoon.

Manatee Protection Plan

FPL currently operates under a Manatee Protection Plan (MPP) to minimize adverse cold water temperature impacts to the manatees that may congregate in the OTCW discharge area during operation of the existing Plant. FPL currently provides a warm water refuge for the manatees during the period from November 15 through March 31 of each year, in the event the ambient water temperature falls below 61°F (see Attachment C for the MPP).

The construction of CCEC will require temporary cessation of the once-through cooling system discharge to the Indian River Lagoon. During this 3-year period, FPL has developed a proposed method to avoid potential adverse cold water temperature impacts to manatees resulting from the absence of the normal warm water discharge during the construction of CCEC.

Specifically, FPL proposes to install a 30 million Btu per hour temporary electric heater system to discharge warm water, as needed, while the Plant is offline for the dismantlement of the existing units and construction of CCEC. The electric heater system will be located to discharge into the western end of the intake canal, where the water depth is approximately 11.5 to 14 feet deep. The intake will be located approximately 1,000 feet east of the warm water discharge, along the shore of the intake canal. Water will be pumped from the intake location through a temporary inlet pipe and then through the heater where it will undergo the temperature rise, and back through a temporary discharge pipe. Warm water will be discharged from November 15 through March 31, as needed, to coincide with the time of greatest manatee abundance, if the ambient water temperature falls below 61°F. Because the temporary heating system will warm the water in the existing intake channel, the ambient water temperature will be measured north of the peninsula, rather than at the plant intake, in accordance with the FPL Cape Canaveral Plant MPP. The temporary heating system is modeled to provide approximately 2.05 acres of water at or above 68^{o}F during conditions under which the present Manatee Protection Plan requests FPL release heated water for manatee protection.

See Appendix 10.9 for additional information regarding the analysis of the comparative extent of the thermal plume for the temporary heating system in comparison with the existing units.

Form 2F Attachment 1

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III: See CCEC Site Map – Proposed Development. Outfalls A and B are two separate outfalls that both equally discharge stormwater runoff from the General Site Basin to the Indian River Lagoon.

WASTEWATER FACILITY OR ACTIVITY PERMIT APPLICATION FORM 1 GENERAL INFORMATION

This form must be completed by all persons applying for a permit for a wastewater facility or activity under Chapter 62-620, F.A.C..
See Form 1 to determine which other application forms you will need.

DEP Form 62-620.910(1)
(Effective October 23, 2000)

DESCRIPTION OF PERMIT APPLICATION FORMS

Form 1 - General information. This booklet includes general information on applying for a permit for a wastewater facility or activity under Chapter 62-620, Florida Administrative Code (F.A.C.). **Form 1 is required for all permit applications.**

Form 2 - Specific information. This group of forms includes the specific information required for the type of wastewater facility or activity for which a permit is needed. Select the appropriate form(s) to be submitted with Form 1.

Form 2A - Domestic Wastewater Facilities.
Form 2B - Concentrated Animal Feeding Operations and Aquatic Animal Production Facilities.
Form 2CS -Industrial Wastewater Facilities (discharging process wastewater to surface waters).
Form 2CG -Industrial Wastewater Facilities (discharging process wastewater to ground water).
Form 2ES -Industrial Wastewater Facilities (discharging non-process wastewater to surface waters).
Form 2EG -Industrial Facilities (discharging non-process wastewater to ground water).
Form 2F - Stormwater Discharge Associated with Industrial Activity
Form 2CR -Non-Discharging/Closed Loop Recycle System.

SECTION A - GENERAL INSTRUCTIONS

Who Must Apply:

Persons who are or are going to discharge wastewater to waters of Florida or the United States must file for and be granted a permit under Sections 403.087, 403.088, or 403.0885, Florida Statutes (F.S.). Persons that discharge stormwater associated with industrial activity to surface waters of the state must file for and be granted a permit under Section 403.0885, F.S. There are severe penalties for discharging without a permit.

There are some exceptions to this requirement. Discharges of domestic sewage from vessels and discharges from properly operating marine engines are not required to have a permit under the laws listed above. However, discharges of rubbish, trash, garbage or other such materials discharged overboard do require permits. Vessels operated in a capacity other than as a means of transportation are required to have a permit if they are discharging to waters. These types include vessels used as an energy or mining facility, a storage facility, a seafood processing facility, or an anchored facility for the purpose of mineral or oil exploration or development.

The introduction of sewage, industrial wastes, or other pollutants into a domestic wastewater treatment facility does not need a permit under Sections 403.087, 403.088 or 403.0885, F.S. Persons discharging to permitted wastewater treatment facilities must comply with all applicable pretreatment standards. If a person has a plan or an agreement to switch from direct discharge into waters of the state to discharge to a domestic treatment facility, it does not relieve the person from obtaining a permit for the discharge until such time as the connection is made and the discharge is stopped.

Most discharges from agricultural and silvicultural activities to waters of the state do not require a permit under Sections 403.087, 403.088, or 403.0885, F.S. However, permits under those sections are required for discharges from concentrated animal feeding operations, concentrated aquatic animal production facilities, activities associated with approved aquaculture projects, and silvicultural point sources.

Where to Apply:

Permit applications must be filed with the Department of Environmental Protection (DEP) district office shown in Figure 1 for the county in which the wastewater facility or activity is located, except for permit applications for steam electrical generating power plants which are filed with the DEP office in Tallahassee. DEP offices are located at

Figure 1. State Map Showing DEP District Offices

NORTHWEST DISTRICT
160 Government Center, Ste 308
Pensacola, Florida 32501-5794
Phone No. (850) 595-8300

NORTHEAST DISTRICT
7825 Baymeadows Way, Suite B-200
Jacksonville, Florida 32256-7577
Phone No. (904) 448-4300

SOUTHWEST DISTRICT
3804 Coconut Palm Drive
Tampa, Florida 33619-8318
Phone No. (813) 744-6100

CENTRAL DISTRICT
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767
Phone No. (407) 894-7555

SOUTH DISTRICT
2295 Victoria Avenue, Suite 364
Fort Myers, Florida 33901
Phone No. (239) 332-6975

SOUTHEAST DISTRICT
400 North Congress Avenue
West Palm Beach, Florida 33401
Phone No. (561) 681-6600

When to Apply:

Applications must be filed with the appropriate DEP office 180 days before your current permit expires or 180 days before startup of a new or modified facility. If the submitted application is for a new facility or for a modification of an existing facility, the information required for describing the construction must be filed at least 90 days before construction begins. The DEP encourages applicants to file the materials describing the construction of a new facility or the modification of an existing facility as early as possible to avoid problems with delays in startup or facility redesign to achieve effluent limitations.

Federal regulations provide that a new source in the NPDES program may not be constructed or started to be constructed before the issuance of an operation permit. Because of this regulation, a permit application for a new source may need to be submitted well in advance of the required 180 days.

Fees:

Application fees are listed in Section 62-4.050, Florida Administrative Code (F.A.C.). An application will not be processed until the application fee has been paid. If the DEP determines that a permit should be issued for less than five years duration, the application fee will be pro rated.

If a permit is issued for a surface water discharge, the permittee will be assessed a regulatory and surveillance program fee annually. Those fees are listed in Section 62-4.052, F.A.C. Failure to pay the annual fee may result in revocation of the permit.

Availability of Information to the Public:

Information contained in these applications forms will, upon request, be made available to the public for inspection and copying. However, you may request confidential treatment for certain information which you may submit to supplement the information requested on these forms. Section 62-620.302, F.A.C., and 40 CFR 2 provide set forth the procedures for making the claim. No information on Forms 1 and 2A through 2EG may be claimed as confidential.

Completion of Forms:

Unless otherwise specified in instructions to the forms, each item in each form must be answered. To indicate that each item has been considered, enter "NA", for not applicable, if a particular item does not fit the circumstances or characteristics of your facility or activity.

If you have previously submitted information to the DEP which answers a question, you may either repeat the information in the space provided or attach a copy of the previous submission. DO NOT WRITE "ON FILE". Some items in the form require narrative explanation. If more space is necessary to answer a question, attach a separate sheet entitled "Additional Information."

SECTION B - FORM 1 LINE-BY-LINE INSTRUCTIONS

This form must be completed by all applicants.

Completing This Form:

Please type or print in the underlined areas only. Some items have a limited number of spaces or characters so that your response may be entered into a computer program. Please do not exceed this maximum number with your response. Abbreviate if necessary to stay within the number of characters allowed for each item. Use one space for breaks between words, but not for punctuation marks unless they are needed to clarify your response.

Item I

Space is provided at the upper right hand corner of Form 1 for insertion of your Facility Identification Number. If you have an existing facility, enter your identification number. If you don't know your identification number, please contact the appropriate DEP office which will provide you with your number. If your facility is new (not yet constructed), leave this item blank.

Item II

Answer each question to determine which supplementary forms you need to fill out. Be sure to check the glossary in Section C of these instructions for the legal definitions of any words you are not certain of their meaning.

If you answer "no" to every question, then you may not need a permit. However, you should call the appropriate district office to determine if you have made a correct determination. If you answer "yes" to any question, then you must complete and file the supplementary form by the deadline listed in Section A along with this form.

Item III

Enter the facility's official or legal name. Do not use a colloquial name.

Item IV

Give the name, title, and work telephone number of a person who is thoroughly familiar with the operation of the facility, with the facts reported in this application, and who can be contacted by reviewing offices if necessary.

Item V

Give the complete mailing address of the office where correspondence should be sent. This often is not the address used to designate the location of the facility or activity.

Item VI

Give the address or location of the facility identified in Item III of this form. If the facility lacks a street name or route number, give the most accurate alternative geographic information (for example, section number or quarter section number from county records or at intersection of Rts 426 and 22).

Item VII

List four, in descending order of significance, 4-digit standard industrial classification (SIC) codes which best describe your facility in terms of the principal products or services you produce or provide. Also, specify each classification in words. These classifications may differ from the SIC codes describing the operation generating the discharge from the facility.

SIC code numbers are descriptions which may be found in the "Standard Industrial Classification Manual" prepared by the Executive Office of the President, Office of Management and Budget, which is available from the Government Printing Office, Washington, D.C. Your local library may have a copy of this publication which you may use. Use the current edition of the manual. If you have any questions concerning the appropriate SIC code for your facility, please contact the appropriate DEP district office.

Item VIII-A

Give the name, as it is legally referred to, of the person, firm, public organization, or any other entity which operates the facility described in this application. This may or may not be the same name as the facility. The operator of the facility is the legal entity which controls the facility's operation rather than the plant or site manager. Do not use a colloquial name.

Item VIII-B

Indicate whether the entity which operates the facility also owns it by marking the appropriate box.

Item VIII-C

Enter the appropriate letter to indicate the legal status of the operator of the facility. Indicate "public" for a facility solely owned by a local government, such as a city, town, county, etc.

Items VIII-D through H

Enter the telephone number and address of the operator identified in Item VIII-A.

Item IX

Indicate whether the facility is located on Indian Lands.

Item X

Give the number of each presently effective wastewater and stormwater permit issued to the facility listed in this application. List relevant federal, state, and local permits. DO NOT LIST ALL YOUR PERMITS. LIST ONLY CURRENT ENVIRONMENTAL PERMITS RELATING TO THIS PROJECT.

Item XI

Provide a topographic map or maps of the area extending at least to one mile beyond the property boundaries of the facility which clearly show the following:

The legal boundaries of the facility;

The location and serial number of each of your existing and proposed intake and discharge structures;

All hazardous waste management facilities;

Each well where you inject fluids underground; and

All springs and surface water bodies in the area, plus all drinking water wells within 1/4 mile of the facility which are identified in the public record or otherwise known to you.

If an intake or discharge structure, hazardous waste disposal site, or injection well associated with the facility is located more than one mile from the plant, include it on the map, if possible. If not, attach additional sheets describing the location of the structure, disposal site, or well, and identify the U.S. Geological Survey (or other) map corresponding to the location.

On each map, include the map scale, a meridian arrow showing north, and latitude and longitude at the nearest whole second. On all maps of rivers, show the direction of the current, and in tidal waters, show the directions of the ebb and flow tides. Use a 7-1/2 minute series map published by the U.S. Geological Survey. If a 7-1/2 minute series map has not been published for your facility site, then you may use a 15 minute series map from the U.S. Geological Survey. If neither a 7-1/2 nor 15 minute series map has been published for your facility site, use a plat map or other appropriate map, including all the requested information; in this case, briefly describe land uses in the map area (for example, residential, commercial).

You may trace your map from a geological survey chart, or other map meeting the above specifications. If you do, your map should bear a note showing the number or title of the map or chart from which it was traced. Include the names of nearby towns, water bodies, and other prominent points.

You may obtain a topographic map from:

Eastern Mapping Center
National Cartographic Information Center
U.S. Geological Survey
536 National Center
Reston, VA 22092

Item XII

Briefly describe the nature of your business (for example, products produced or services provided).

Item XIII

Section 403.161, F.S., provides severe penalties for submitting false information on this application form or any reports or records required by a permit, if issued. There are both civil and criminal penalties, in addition to the revocation of the permit.

Rule 62-620.305, F.A.C., requires that the application and any reports required by the permit, if issued, to be signed as follows:

A. For a corporation, by a responsible corporate officer as described in Rule 62-620.305, F.A.C.;
B. For partnership or sole proprietorship, by a general partner or the proprietor, respectively; or
C. For a municipality, state, federal or other public facility, by a principal executive officer or elected official.

SECTION C - GLOSSARY

NOTE: This Glossary includes terms used in the instructions and in Forms 1, 2A through 2EG. If you have any questions concerning the meaning of any of these terms, please contact your DEP district office.

Activity means any action which results in a discharge of wastes into waters of the State or that is reasonably expected to be a source of water pollution.

Aliquot means a sample of specified volume used to make up a total composite sample.

Animal Feeding Operation means a lot or facility (other than an aquatic animal production facility) where the following conditions are met:

A. Animals (other than aquatic animals) have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12 month period; and

B. Crops, vegetation, forage growth, or post-harvest residues are not sustained in the normal growing season over any portion of the lot or facility.

Two or more animal feeding operations under common ownership are a single animal feeding operation if they adjoin each other or if they use a common area or system for the disposal of wastes.

Animal Unit means a unit of measurement for any animal feeding operation calculated by adding the following number: The number of slaughter and feeder cattle multiplied by 1.0; plus the number of mature dairy cattle multiplied by 1.4; plus the number of swine weighing over 25 kilograms (approximately 55 pounds) multiplied by 0.4; plus the number of sheep multiplied by 0.1; plus the number of horses multiplied by 2.0.

Application means the approved DEP standard forms for applying for a permit, including any approved additions, revisions, or modifications to the forms. Approved forms are numbered, Form 62-620.910, and have an effective date of October 1, 1994, or later.

Aquifer means a geological formation, group of formations, or part of a formation that is capable of yielding a significant amount of water to a well or spring.

Best Management Practices (BMP) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs include treatment requirements, operation procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Biological Monitoring Test means any test which include the use of aquatic algal, invertebrate, or vertebrate species to measure acute or chronic toxicity, and any biological or chemical measure of bioaccumulation.

Bypass means the intentional diversion of wastes from any portion of a treatment facility.

Concentrated Animal Feeding Operation means an animal feeding operation which meets the criteria set forth in Chapter 62-670, F.A.C.

Concentrated Aquatic Animal Production Facility means a hatchery, fish farm, or other facility which contains, grows or hold aquatic animals as set forth in Chapter 62-660, F.A.C.

Contact Cooling Water means water used to reduce temperature which comes into contact with a raw material, intermediate product, waste product other than heat, or finished product.

CWA means the Clean Water Act as amended, 33 U.S.C. 1251 et seq.

Dike means any embankment or ridge of either natural or manmade materials used to prevent the movement of liquids, sludges, solids, or other materials.

Discharge (of a Pollutant) means any addition of any pollutant or combination of pollutants to waters of the State from any point source; or any addition of any pollutant or combination of pollutants to the marine waters of the State from any point source other than a vessel or other floating craft which is being used as a means of transportation.

This definition includes discharges into waters of the State from surface runoff which is collected or channelled by man; discharges through pipes, sewers, or other conveyances owned by the State, a municipality, or other person which do not lead to POTWs; and discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works. This term does not include an addition of pollutants by any indirect discharge.

Effluent Limitation mean any restriction imposed by the DEP on quantities, discharge rates, and concentrations of pollutants which are discharged from point sources into waters of the State.

Effluent Limitation Guideline means a regulation published under Section 304(b) of the Clean Water Act to adopt or revise effluent limitations.

EPA means the United States Environmental Protection Agency.

Existing Source or Existing Discharger means any source which is not a new source or a new discharger.

Facility or wastewater facility means any facility which can reasonably be expected to be a source of pollution and includes any or all of the following: a collection and transmission system, a wastewater treatment works, a reuse or disposal system, and a residuals management facility.

Ground Water means water below the land surface in a zone of saturation.

Indirect Discharger means an industrial discharger introducing pollutants to a publicly owned treatment works.

Injection Well mean a well into which fluids are injected.

MGD means millions of gallons per day.

Municipality means a city, village, town, borough, county, district, association, or other public body created by or under State law and have jurisdiction over disposal of sewage, industrial wastes, or other wastes.

National Pollutant Discharge Elimination System (NPDES) means the national program for issuing, modifying, revoking and reissuing, termination, monitoring and enforcing permits and imposing and enforcing pretreatment requirements, under Sections 307, 318, 402, and 405 of the CWA. The term includes a State program which has been authorized by EPA under 40 CFR Part 123.

New Discharger mean any building, structure, facility, or installation: (A) from which there is or may be a new or additional discharge of pollutants at a site at which on October 18, 1972, it had never discharged pollutants; (B) which has never received a finally effective NPDES permit for discharges at that site; and (C) which is not a "new source." This definition includes an indirect discharger which commences discharging into water of the State. It also includes any existing mobile point source, such as an offshore oil drilling rig, seafood processing vessel, or aggregate plant that begins discharging at a location for which it does not have an existing permit.

New Source means any building, structure, facility, or installation from which there is or may be a discharge of pollutants, the construction of which commenced: (A) after promulgation of standards of performance under Section 306 of the CWA which are applicable to such source; or (B) after proposal of standards of performance in accordance with Section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with Section 306 within 120 days of their proposal.

Non-Contact Cooling Water means water used to reduce temperature which does not come into direct contact with any raw material, intermediate produce, waste product (other than heat), or finished product.

Off-Site means any site which is not "on-site."

On-Site means on the same or geographically contiguous property which may be divided by public or private right(s)-of-way, provided the entrance and exit between the properties is at a cross-roads intersection, and access is by crossing as opposed to going along, the right(s)-of-way. Non-contiguous properties owned by the same person, but connected by a right-of-way which the person controls and to which the public does not have access, is also considered on-site property.

Operator means the person responsible for the overall operation of a facility.

Outfall means a point source.

Owner means the person who owns a facility or part of a facility.

Permit means an authorization, license, or equivalent control document issued by the State to implement the requirements of 40 CFR 122, 123, and 124 and Chapter 403, F.S.

Point Source means any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture.

Pollutant means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical waste, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended), heat, wrecked or discarded equipment, rocks, sand, cellar dirt and industrial, municipal, and agriculture waste discharged into water. It does NOT mean: (A) sewage from vessels; or (B) water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well used either to facilitate production or for disposal purposes is approved by authority of the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.

Privately Owned Treatment Works means any device or system which is used to treat domestic wastewater from any facility which is not a POTW.

Process Wastewater means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

Publicly Owned Treatment Works (POTW) means any device or system used in the treatment (including recycling and reclamation) of domestic sewage or industrial wastes of a liquid nature which is owned by a State or municipality. This definition includes any sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment.

Residuals means the solid, semisolid, or liquid residue generated during the treatment of domestic wastewater. Not included are solids removed from pump stations and lift stations, and screenings and grit removed from the headworks of domestic wastewater treatment facilities. Also not included are other solids removed prior to treatment of the residuals to meet the stabilization standards of Chapter 62-640, F.A.C., or ash generated during the incineration of residuals.

Sewage From Vessels means human body wastes and the wastes from toilets and other receptacles intended to receive or retain body wastes that are discharged from vessels and regulated under Section 312 of the CWA.

Sewage Sludge means residuals.

Silvicultural Point Source means any discernable, confined and discrete conveyance related to rock crushing, gravel washing, log sorting, or log storage facilities which are operated in connection with silvicultural activities and from which pollutants are discharged into water of the State.

Stormwater Discharge Associated with Industrial Activity is as defined in 40 CFR 122.26(b)(14).

Surface Impoundment or Impoundment means a facility or part of a facility which is a natural topographic depression, manmade excavation, or diked area formed primarily of earthen materials (although it may be lined with manmade materials), which is designed to hold an accumulation of liquid wastes or wastes containing free liquids, and which is not an injection well. Examples of surface impoundments are holding, storage, settling, and aeration pits, ponds, and lagoons.

Toxic Pollutant means any pollutant listed as toxic under Section 307(a)(1) of the CWA.

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

Waters of the State means the waters defined in Section 403.031, F.S., and including waters of the United States to the seaward boundaries of the State.

WASTEWATER FACILITY OR ACTIVITY PERMIT
APPLICATION FORM 1
GENERAL INFORMATION

I IDENTIFICATION NUMBER:

Facility ID FL0001473

II CHARACTERISTICS:

INSTRUCTIONS: Complete the questions below to determine whether you need to submit any permit application forms to the Department of Environmental Protection. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the blank in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements. See Section B of the instructions. See also, Section C of the instructions for definitions of the terms used here.

SPECIFIC QUESTIONS	YES	NO	FORM ATTACHED
A. Is this facility a domestic wastewater facility which results in a discharge to surface or ground waters?		X	
B. Does or will this facility (either existing or proposed) include a concentrated animal feeding operation or aquatic animal production facility which results in a discharge to waters?		X	
C. Does or will this facility (other than those describe in A. or B.) discharge process wastewater, or non-process wastewater regulated by effluent guidelines or new source performance standards, to surface waters?	X		2-CS
D. Does or will this facility (other than those described in A. or B.) discharge process wastewater to ground waters?		X	
E. Does or will this facility discharge non-process wastewater, not regulated by effluent guidelines or new source performance standards, to surface waters?		X	
F. Does or will this facility discharge non-process wastewater to ground waters?		X	
G. Does or will this facility discharge stormwater associated with industrial activity to surface waters?	X		2-F
H. Is this facility a non-discharging/closed loop recycle system?		X	

III NAME OF FACILITY: (40 characters and spaces)

Cape Canaveral Plant

DEP Form 62-620.910(1)
(Effective October 23, 2000)

Facility ID FL0001473

IV FACILITY CONTACT: (A. 30 characters and spaces)

A. Name and Title (Last, first, & title)	B. Phone (area code & no.)
Randall R. LaBauve, Vice President	561-691-7001

V FACILITY MAILING ADDRESS: (A. 30 characters and spaces; B. 25 characters and spaces)

A. Street or P.O. Box: 700 Universe Blvd.		
B. City or Town: Juno Beach	State: FL	Zip Code: 33408

VI FACILITY LOCATION: (A. 30 characters and spaces; B. 24 characters and spaces; C. 3 spaces (if known); D. 25 characters and spaces; E. 2 spaces; F. 9 spaces)

A. Street, Route or Other Specific Identifier: 6000 North U. S. Highway 1		
B. County Name: Brevard	C. County Code (if known):	
D. City or Town: Cocoa	E. State: FL	F. Zip Code: 32927

VII SIC CODES: (4-digit, in order of priority)

1. Code #: 4911	(Specify)	2. Code #:	(Specify)
3. Code #:	(Specify)	4. Code #:	(Specify)

VIII OPERATOR INFORMATION: (A. 40 characters and spaces; B. 1 character; C. 1 character (if other, specify); D. 12 characters; E. 30 characters and spaces; F. 25 characters and spaces; G. 2 characters; H. 9 characters)

A. Name: Florida Power & Light Company		B. Is the name in VIII A. the owner? ☒Yes ☐No	
C. Status of Operator: F = Federal; S = State; P = Private; O = Other; M = Public (other than F or S)	(code) P	(specify) Utility	D. Phone No.:
E. Street or P. O. Box:			
F. City or Town: Cocoa		G. State: FL	H. Zip Code: 32927

IX INDIAN LAND: Is the facility located on Indian lands? ☐ Yes ☒ No

Facility ID FL0001473

X EXISTING ENVIRONMENTAL PERMITS:

A. NPDES Permit No.	B. UIC Permit No.	C. Other (specify)	D. Other (specify)
FL0001473			

XI MAP: Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

XII NATURE OF BUSINESS (provide a brief description)

Steam-electric generating facility.

XIII CERTIFICATION (see instructions)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Randall R. LaBauve, VP
A. Name (type or print)

B. Signature

Vice President
Official Title (type or print)

12/29/08
C. Date Signed

WASTEWATER APPLICATION FORM 2CS

PERMIT TO DISCHARGE PROCESS WASTEWATER
FROM NEW OR EXISTING
INDUSTRIAL WASTEWATER FACILITIES
TO SURFACE WATER

INSTRUCTIONS - FORM 2CS

This form must be completed by all applicants who check "yes" to Item II-C in DEP Form 62-620.910(1).

Public Availability of Submitted Information.

You may not claim as confidential any information required by this form or DEP Form 62-620.910(1), whether the information is reported on the forms or in an attachment. This information will be made available to the public upon request. Any information you submit to the Department which goes beyond that required by this form or DEP Form 62-620.910(1) you may claim as confidential, but claims for information which is effluent data will be denied. If you do not assert a claim of confidentiality at the time of submitting the information, the Department may make the information public without further notice to you. Claims of confidentiality must be in accordance with Rule 62-620.302, Florida Administrative Code.

Completeness

Your application will not be considered complete unless you answer every question on this form (DEP Form 62-620.910(5))and on Form 1 (DEP Form 62-620.910(1)). If an item does not apply to you, enter "NA" (for "not applicable") to show that you considered the question. Also, you may need a Plan of Study (POS) to develop Water Quality Effluent Limitations (WQBEL) required by Rule 62-650, F.A.C. Please contact the Department for information.

Follow-up Requirements (for New or Substantially Modified Facilities)

Although you are now required to submit estimated data on this form, please note that no later than six months after you begin discharging from the proposed or substantially modified facility, you must complete and submit items VII and VIII of this Form 2CS (DEP Form 62-620.910(5)). However, you need not complete those portions of Item V requiring test which you have already performed under the discharge monitoring requirements of your permit.

Definitions

All significant terms used in these instructions and in the form are defined in the glossary found in the General Instructions which accompany Form 1.

DEP ID Number

If you are applying for a renewal of an existing permit or for a substantial revision to an existing permit, fill in your DEP Identification Number at the top of each page of Form 2CS. You may copy this number directly from Item 1 of Form 1. If you are applying for a permit for a proposed facility, leave the DEP Identification Number blank. The Department will assign a number.

Item I

You may use the map you provided for Item XI of Form 1 to determine the latitude and longitude of each of your discharge locations.

Item II

Describe the design of each outfall, including construction materials used or to be used.

Item III

Describe the surface water body which will be or is receiving effluent from the wastewater facility.

Item IV

A. The line drawing should show generally the route taken by water in your facility from intake to discharge. Show all operations contributing wastewater, including process and production areas, sanitary flows, cooling water, and stormwater runoff. You may group similar operations into a single unit, labeled to correspond to the more detailed listing in Item III B. The water balance should show average flows. Show all significant losses of water to products, atmosphere, and discharge. You should use actual measurements whenever available; otherwise, use your best estimate.

B. List all sources of wastewater to each discharge point. Operations may be described in general terms (for example, "dye-making reactor" or "distillation tower"). You may estimate the flow contributed by each source if no data are available. For stormwater discharges you may estimate the average flow, but you must indicate the rainfall event upon which the estimate is based and the method of estimation. For each treatment unit, indicate its size, flow rate, and retention time, and describe the ultimate disposal of any solid or liquid wastes not discharged. Treatment units should be listed in order and you should select the proper code from Table 2CS-1 to fill in column 3-b for each treatment unit. Insert "XX" into column 3-b if no code corresponds to a treatment unit you list.

C. A discharge is intermittent unless it occurs without interruption during the operating hours of the facility, except for infrequent shut-downs for maintenance, process changes, or other similar activities. A discharge is seasonal if it occurs only during certain parts of the year. Fill in every applicable column in this item for each source of intermittent or seasonal discharges. Base your answers on actual data whenever available; otherwise, provide your best estimate. Report the highest daily value for flow rate and total volume in the "Max. Daily" columns (columns 4-a and 4-b). Report the average of all daily values measured during days when the discharge occurred within the last year in the "Long Term Avg." columns (columns 4-a and 4-b).

Item V

"Production" in this question refers to those goods which the proposed, substantially modified, or existing facility will produce or is producing, not to "wastewater" production. This information is only necessary where production-based new source performance standards (NSPS) or effluent guidelines apply to your facility. Your estimated production figures should be based on a realistic projection of actual daily production level (not design capacity) for each of the first three operating years of the facility. This estimate must be a long-term-average estimate (e.g., average production on an annual basis). If production will vary depending on long-term shifts in operating schedule or capacity, you may report alternate production estimates and the basis for the alternate estimates.

A. All NSPS and effluent guidelines promulgated by EPA appear in the Federal Register and are published annually in 40 CFR Subchapter N. A guideline applies to you if you have any operations contributing process wastewater in any subcategory covered by a BPT, BCT, or BAT guideline. If you are unsure whether you are covered by a promulgated NSPS or effluent guideline, check with your DEP district office (*Figure 1 in the Form 1 instructions*). You must check "yes" if an applicable NSPS or effluent guideline has been promulgated, even if the guideline limitations are being contested in court. If you believe that a promulgated NSPS or effluent guideline has been remanded for reconsideration by a court and does not apply to your operations, you may check "no."

B. An NSPS or effluent guideline is expressed in terms of production (*or other measure of operation*) if the limitation is expressed as mass of pollutant per operational parameter: for example, "pounds of BOD per cubic foot of logs from which bark is removed," or "pounds of TSS per megawatt hour of electrical energy consumed by smelting furnace." An example of a guideline not expressed in terms of a measure of operation is one which limits the concentration of pollutants.

C. This item must be completed only if you checked "yes" to Item V-B. The production information requested here is necessary to apply effluent guidelines to your facility and you cannot claim it as confidential. However, you do not have to indicate how the reported information was calculated. Report quantities in the units of measurement used in the applicable NSPS or effluent guideline. The production figures provided must be based on actual daily production and not on design capacity or on predictions of future operations. To obtain alternate limits under Rule 62-620.620(2)(b)3., F.A.C., you must define your maximum production capability and demonstrate to the Department that your actual production is substantially below maximum production capability and that there is a reasonable potential for an increase above actual production during the duration of the permit.

Item VI

A. If you check "yes" to this question, complete all parts of the chart, or attach a copy of any previous submission you have made to the Department containing the same information.

B. You are not required to submit a description of future pollution control projects if you do not wish to or if none is planned.

Item VII (*A, B, C, and D, including Tables VII-A, VII-B, and VII-C*)

This item requires you to collect and report data on the pollutants discharged from each of your discharge points. Each part of this item addresses a different set of pollutants and must be completed in accordance with the specific instructions for that part. The following general instructions apply to the entire item.

General Instructions

Part A requires you to report at least one analysis for each pollutant listed. Parts B and C require you to report analytical data in two ways. For some pollutants, you may be required to mark "X" in the "Testing Required" column (*column 2-a, Part C*), and test (*sample and analyze*) and report the levels of the pollutants in your discharge whether or not you expect them to be present in your discharge. For all other, you must mark "X" in either the "Believe Present" column or the "Believe Absent" column (*columns 2-a or 2-b, Part B, and Columns 2-b or 2-c, Part C*) based on your best estimate, and test for those which you believe to be present. (*See specific instructions on the form and below for Parts A through D.*) Base your determination that a pollutant is present in or absent from your discharge on your knowledge of your raw materials, maintenance chemicals, intermediate and final products and by-products, and any previous analyses known to you of your effluent or similar effluent. (*For example, if you manufacture pesticides, you should expect those pesticides to be present in contaminated stormwater runoff.*) If you would expect a pollutant to be present solely as a result of its presence in your intake water, you must mark "Believe Present" but you are not required to analyze for that pollutant. Instead, mark an "X" in the "Intake" column.

A. Reporting

All levels must be reported as concentration and as total mass. You may report some or all of the required data by attaching separate sheets of paper instead of filling out pages *VII*-1 to *VII*-10 if the separate sheets contain all the required information in a format which is consistent with pages *VII*-1 to *VII*-10 in spacing and in identification of pollutants and columns. (*For example, the data systems used in your GC/MS analysis may be able to print data in the proper format.*) Use the following abbreviations in the columns headed "Units" (*column 3, Part A, and Column 4, Parts B and C*).

Concentration
ppm - parts per million
mg/l - milligrams per liter
ppb - parts per billion
µg/l - micrograms per liter

Mass
lbs - pounds
ton - tons (English tons)
mg - milligrams
g - grams
kg - kilograms
T - tonnes (metric tons)

All reporting of values for metals must be in terms of "total recoverable metal," unless (1) an applicable, promulgated effluent limitation or standard specifies the limitation for the metal in dissolved, valent, or total form; or (2) all approved analytical methods for the metal inherently measure only its dissolved form (e.g., hexavalent chromium). If you measure only one daily value, complete only "Max. Daily Values" columns and insert "1" into the "Number of Analyses" column (*columns 2-a and 2-d, Part A, and column 3-a, 3-d, Parts B and C*). The Department may require you to conduct additional analyses to further characterize your discharges. For composite sample, the daily value is the total mass or average concentration found in a composite sample taken over the operating hours of the facility during a 24-hour period; for grab samples, the daily value is the arithmetic or flow-weighted total mass or average concentration found in a series of at least four grab samples taken over the operating hours of the facility during a 24-hour period. If you measure more than one daily value for a pollutant and those values are representative of your waste stream, you must report them. You must describe your method of testing and data analysis. You also must determine the average of all values within the last year and report the concentration and mass under the "Long Term Avg. Values" columns (*column 2-c, Part A, and column 3-c, Parts B and C*), and the total number of daily values under the "Number of Analyses" columns (*column 2-d, Part A, and columns 3-d, Parts B and C*). Also determine the average of all daily values taken during each calendar month, and report the highest average under the "Max. 30-day Values" columns (*column 2-c, Part A, and column 3-b, Parts B and C*).

B. Sampling

The collection of the samples for the reported analyses should be supervised by a person experienced in performing sampling of industrial wastewater. Any specific requirements contained in the applicable analytical methods should be followed for sample containers, sample preservation, holding times, the collection of duplicate samples, etc. The time when you sample should be representative of your normal operation, to the extent feasible, with all processes which contribute wastewater in normal operation, and with your treatment system operating properly with no system upsets. Samples should be collected from the center of the flow channel, where turbulence is at a maximum, at a site specified in your present permit, or at any site adequate for the collection of a representative sample. Sampling for metals that are hardness-dependent shall also include sampling for hardness.

For pH, temperature, cyanide, total phenols, residual chlorine, oil and grease, and fecal coliform, grab samples must be used. For all other pollutants 24-hour composite samples must be used. However, a minimum of one grab sample may be taken for effluents from holding ponds, or other impoundments with a retention period of greater than 24 hours. For stormwater discharges a minimum of one to four grab samples may be taken, depending on the duration of the discharge. One grab must be taken in the first hour (*or less*) of discharge, with one additional grab (*up to a minimum of four*) taken in each succeeding hour of discharge for discharges lasting four or more hours. The Department may waive composite sampling for any discharge point for which you demonstrate that use of an automatic sampler is infeasible and that a minimum of four grab samples will be representative of your discharge.

Grab and composite samples[1] are defined as follows:

> Grab sample: An individual sample or at least 100 milliliters collected at a randomly-selected time over a period not exceeding 15 minutes.

[1]Sampling requirements are periodically reviewed in light of recent research on testing methods. Upon completion of the review, changes to sampling requirements may be made. Before starting any required sampling or submitting past sampling to the Department, be sure that you have a current copy of 40 CFR Part 136 or Chapter 160, Florida Administrative Code.

Composite sample: A combination of at least 8 sample aliquots of a least 100 milliliters, collected at periodic intervals during the operating hours of a facility over a 24-hour period. The composite must be flow proportional; either the time interval between each aliquot or the volume of each aliquot must be proportional to either the stream flow at the time of sampling or the total stream flow since the collection of the previous aliquot. Aliquots may be collected manually or automatically. For GC/MS Volatile Organic Analysis (VOA), aliquots must be combined in the laboratory immediately before analysis. Four (4) (*rather than eight*) aliquots or grab samples should be collected for VOA. These four samples should be collected during actual hours of discharge over a 24-hour period and need not be flow proportioned. Only one analysis is required.

Data from samples taken in the past may be used if all data requirement are met; sampling was done no more than three years before submission; and all data are representative of the present discharge. Among the factors which would cause the data to be unrepresentative are significant changes in production level; changes in raw materials, processes, or final products; and changes in wastewater treatment. When EPA promulgates new analytical methods in 40 CFR Part 136, EPA will provide information as to when you should use the new methods to generate data on your discharges. The Department may promulgate new methods in Chapter 160, Florida Administrative Code, with the date when the new methods are to be used. Always be sure you have current copies of these two documents before you take samples or submit sampling data to the Department. If you have submitted data from past sampling, the Department may request additional information, including current quantitative data, if it is determined to be necessary to assess your discharges.

C. Analysis

You must use test methods promulgated in 40 CFR Part 136 or Chapter 160, Florida Administrative Code; however, if none has been promulgated for a particular pollutant, you may use any suitable method for measuring the level of the pollutant in your discharge if you submit a description of the method or a reference to a published method. Your description should include the sample holding time, preservation techniques, and the quality control measures which you used. If you have two or more substantially identical discharge points, you may request permission from the Department to sample and analyze only one point and submit the results of the analysis for other substantially identical points. If your request is granted by the Department, or a separate sheet attached to the application form identify which point you did test, and describe why the other points you did not test are substantially identical to the point which you did test.

D. Reporting of Intake Data

You are not required to report data under the "Intake" columns unless you wish to demonstrate your eligibility for a "net" effluent limitation for one or more pollutants, that is, an effluent limitation adjusted by subtracting the average level of the pollutant(s) present in your intake water. To demonstrate your eligibility, under the "Intake" columns report the average of the results of analyses on your intake water (*If your water is treated before use, test the water after it is treated.*), and discuss the requirements for a new limitation with the appropriate district office.

Part VII-A

Part VII-A must be completed by all applicants for all discharge points including discharges of non-contact cooling water or storm runoff. However, at your request, the Department may waive the requirement to test for one or more of these pollutants, upon a determination that available information is adequate to support issuance of the permit with less stringent reporting requirements for these pollutants. Use composite samples for all pollutants in this Part, except use grab samples for pH and temperature. See the discussion in General Instructions to item *VII* for definitions of the columns in Part A. The "Long Term Avg. Values" column (*column 2-c*) and "Max. 30-day Values" column (*column 2-b*) are not compulsory but should be filled out if data are available.

Part VII-B

Part VII-B must be completed by all applicants for all discharge points, including points containing only non-contact cooling water or storm runoff. You must report quantitative data if the pollutant(s) in question is limited in an effluent limitation either directly or indirectly but expressly through a limitation on an indicator (*e.g., use of TSS as an indicator to control the discharge of iron and aluminum*). For other discharged pollutants you must provide quantitative data or explain their presence in your discharge. The Department will consider a request to eliminate the requirement to test for pollutants for an industrial category or subcategory. Your request must be supported by data representative of the industrial category or subcategory in question. The data must demonstrate that individual testing for each applicant is unnecessary, because the facilities in the category or subcategory discharge substantially identical levels of the pollutant or discharge the pollutant uniformly at sufficiently low levels. Use composite samples for all pollutants you analyze for in this part, except use grab samples for residual chlorine, oil and grease, and fecal coliform. The "Long Term Avg. Values" column (*column 2-c*) and "Max. 30-day Values" column (*column 2-b*) are not compulsory but should be filled out if data are available.

Part VII-C

Table 2CS-2 at the end of these instructions lists 34 primary industry categories. For each discharge point, if any of your processes which contribute wastewater falls into one of those categories, you must mark "X" in "Testing Required" column (*column 2-a)* and test for (1) all of the toxic metals, cyanide, and total phenols; and (2) the organic toxic pollutants contained in Table 2CS-3 as applicable to your category. The organic toxic pollutants are listed by GC/MS fractions on pages *VII*-4 to *VII*-10 in Part *VII*-C. The inclusion of total phenols in Part VII-C is not intended to classify total phenols as a toxic pollutant. When you determine which industry category you are in to find your testing requirements, you are not determining your category for any other purpose and you are not giving up your right to challenge your inclusion in that category before your permit is issued. For all other cases (*secondary industries, non-process wastewater discharge points, and GC/MS fractions that are not required*), you must mark "X" in either the "Believed Present" column or the "Believed Absent" column for each pollutant.

You must report quantitative data as follows:

For every pollutant you know or have reason to believe is present in your discharge in concentrations of 10 ppb or greater;

For acrolein; acrylonitrile; 2,4 dinitrophenol; and 2-methyl-4,6 dinitrophenol where you expect these four pollutants to be discharged in concentrations of 100 ppb or greater; and

For every pollutant expected to be discharged in concentrations less that the thresholds specified above. For pollutants in this last category, in lieu of quantitative data, you may briefly describe the reasons the pollutant is expected to be discharged.

You are required to mark "Testing Required" for dioxin if you use or manufacture one of the following compounds:

(a) 2,4,5-trichlorophenoxy acetic acid, (2,4,5-T);
(b) 2-(2,4,5-trichlorophenoxy) propanoic acid, (Silvex, 2,4,5-TP);
(c) 2-(2,4,5-trichlorophenoxy) ethyl 2,2-dichloropropionate, (Erbon);
(d) 0,0-dimethyl 0-(2,4,5-trichlorophenyl) phosphorothioate, (Ronnel);
(e) 2,4,5-trichlorophenol, (TCP); or
(f) hexachlorophene, (HCP).

If you mark "testing Required" or "Believed Present," you must perform a screening analysis for dioxin, using gas chromatography with an electron capture detector. A TCDD standard for quantitation is not required. Describe the results of this analysis in the space provided: for example, "no measurable baseline deflection at the retention time of TCDD" or "a measurable peak within the tolerances of the retention time of TCDD." The Department may require you to perform a quantitative analysis if you report a quantitative analysis if you report a positive result.

Part VII-D

List any pollutants in Table 2CS-3 that you believe to be present and explain why you believe them to be present. No analysis is required, but if you have analytical data, you must report it. For discharges of the hazardous substances listed in Table 2CS-4, you may be exempt from the reporting requirements of section 311 of the Clean Water Act. Please contact the Department for information.

Item VIII

This requirement applies to current use or manufacture of a toxic pollutant as an intermediate or final product or by-product. The Department may waive or modify the requirement if you demonstrate that it would be unduly burdensome to identify each toxic pollutant and the Department has adequate information to issue your permit. You may not claim this information as confidential; however, you do not have to distinguish between use or production of the pollutants or list the amounts.

Item IX

This item is self explanatory.

Item X

This item is self explanatory.

Item XI

This item is self explanatory.

Item XII

There are severe penalties for submitting false information on this application form. Chapter 62-620, Florida Administrative Code, requires, in addition to the certification provided by a professional engineer, a certification from the owner or responsible authority of the facility as follows:

A. For a corporation: by a responsible corporate official. For purposes of this section, a responsible corporate official means (1) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation; or (2) the manager of one or more manufacturing, production or operating facilities employing more than 250 person or have gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

B. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

C. For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official. A principal executive officer includes the chief executive officer of the agency or a senior executive officer having

the responsibility for the overall operations of a principal geographic unit of the agency, for example, a regional or district administrator.

TABLE 2CS-1
CODES FOR TREATMENT UNITS

PHYSICAL TREATMENT PROCESSES			
1-A	Ammonia Stripping	1-N	Microstraining
1-B	Dialysis	1-O	Mixing
1-C	Diatomaceous Earth Filtration	1-P	Moving Bed Filters
1-D	Distillation	1-Q	Multimedia Filtration
1-E	Electrodialysis	1-R	Rapid Sand Filtration
1-F	Evaporation	1-S	Reverse Osmosis (Hyperfiltration)
1-G	Flocculation	1-T	Screening
1-H	Flotation	1-U	Sedimentation (Settling)
1-I	Foam Fractionation	1-V	Slow Sand Filtration
1-J	Freezing	1-W	Solvent Extraction
1-K	Gas-Phase Separation	1-X	Sorption
1-L	Grinding (Comminutors)	1-Y	Percolation Pond
1-M	Grit Removal		
CHEMICAL TREATMENT PROCESSES			
2-A	Carbon Adsorption	2-G	Disinfection (*Ozone*)
2-B	Chemical Oxidation	2-H	Disinfection (*Other*)
2-C	Chemical Precipitation	2-I	Electrochemical Treatment
2-D	Coagulation	2-J	Ion Exchange
2-E	Dechlorination	2-K	Neutralization
2-F	Disinfection (*Chlorine*)	2-L	Reduction
BIOLOGICAL TREATMENT PROCESSES			
3-A	Activated Sludge	3-E	Pre-Aeration
3-B	Aerated Lagoons	3-F	Spray Irrigation/Land Application

Table 2CS-1, Codes for Treatment Units contd.

3-C	Anaerobic Treatment	3-G	Stabilization Ponds
3-D	Nitrification-Denitrification	3-H	Trickling Filter
OTHER PROCESSES			
4-A	Discharge to Surface Water	4-C	Reuse/Recycle of Treated Effluent
4-B	Ocean Discharge Through Outfall	4-D	Underground Injection
SLUDGE TREATMENT AND DISPOSAL PROCESSES			
5-A	Aerobic Digestion	5-M	Heat Drying
5-B	Anaerobic Digestion	5-N	Heat Treatment
5-C	Belt Filtration	5-O	Incineration
5-D	Centrifugation	5-P	Land Application
5-E	Chemical Conditioning	5-Q	Landfill
5-F	Chlorine Treatment	5-R	Pressure Filtration
5-G	Composting	5-S	Pyrolysis
5-H	Drying Beds	5-T	Sludge Lagoons
5-I	Elutriation	5-U	Vacuum Filtration
5-J	Flotation Thickening	5-V	Vibration
5-K	Freezing	5-W	Wet Oxidation
5-L	Gravity Thickening		

TABLE 2CS-2
TESTING REQUIREMENTS FOR ORGANIC TOXIC POLLUTANTS INDUSTRY CATEGORY

INDUSTRY CATEGORY	GC/MS FRACTION[1]			
	Volatile	Acid	Base/Neutral	Pesticide
Adhesives and sealants	X	X	X	
Aluminum forming	X	X	X	
Auto and other laundries	X	X	X	X
Battery manufacturing	X		X	
Coal mining	X	X	X	X

Table 2CS-2, Testing Requirements for Organic Toxic Pollutants Industry Category contd.

Coil coating	X	X	X	
Copper forming	X	X	X	
Electric and electronic compounds	X	X	X	X
Electroplating	X	X	X	
Explosives manufacturing		X	X	
Foundries	X	X	X	
Gum and wood chemicals	X	X	X	X
Inorganic chemicals manufacturing	X	X	X	
Iron and steel manufacturing	X	X	X	
Leather tanning and finishing	X	X	X	X
Mechanical products manufacturing	X	X	X	
Nonferrous metals manufacturing	X	X	X	X
Ore mining	X	X	X	X
Organic chemicals manufacturing	X	X	X	X
Paint and ink formulation	X	X	X	X
Pesticides	X	X	X	X
Petroleum refining	X	X	X	X
Pharmaceutical preparations	X	X	X	
Photographic equipment and supplies	X	X	X	X
Plastic and synthetic materials manufacturing	X	X	X	X
Plastic processing	X			
Porcelain enameling	X		X	X
Printing and publishing	X	X	X	X
Pulp and paperboard mills	X	X	X	X
Rubber processing	X	X	X	
Soap and detergent manufacturing	X	X	X	
Steam electric power plants	X	X	X	
Textile mills	X	X	X	X
Timber products processing	X	X	X	X

[1]The pollutants in each fraction are listed in Item VII-C . X = Testing required.

TABLE 2CS-3
TOXIC POLLUTANTS AND HAZARDOUS SUBSTANCES
REQUIRED TO BE IDENTIFIED BY APPLICANTS
IF EXPECTED TO BE PRESENT

Toxic Pollutant

Asbestos

Hazardous Substances

Acetaldehyde
Allyl alcohol
Allylchloride
Amyl acetate
Aniline
Benzonitrile
Benzyl chloride
Butyl acetate
Butylamine
Captan
Carbaryl
Carbofuran
Carbon disulfide
Chlopyrifos
Coumpahos
Cresol
Crotonaldehyde
Cyclohexane
2,4-D (2,4-Dichlorophinoxyacetic acid)
Diazinon
Dicamba
Dichlobenil
Dichlone

Hazardous Substances

2,2 Dichloropropionic acid
Dichlorvos
Diethyl amine
Dimethyl amine
Dintrobenzene
Diquat
Disulfoton
Diuron
Epichlorohydrin
Ethion
Ethylene diamine
Formaldehyde
Furfural
Guthion
Isoprene
Isopropanolamine dodecylbenzenesulfonate
Kelthane
Kepone
Malathion
Mercaptodimethur
Methoxychlor
Methyl mercaptan
Methyl methacrylate
Methyl parathion
Mevinphos
Mexacarbate
Monoethyl amiine

Hazardous Substances

Monomethyl amine
Naled
Naphthenic acid
Nitrotoluene
Parathion
Phenolsulfonate
Phosgene
Propargite
Propylene oxide
Pyrethrins
Quinoline
Resorcinol
Strontium
Strychnine
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)
TDE (Terochlorodiphenyl ethane)
2,4,5-TP [2-(2,4,5-Trichlorophenoxyl)propanic acide]
Trichlorofon
Triethanolamine dodecylbenzenesulfonate
Triethylamine
Uranium
Vanadium
Vinyl acetate
Xylene
Xylenol
Zirconium

TABLE 2CS-4
HAZARDOUS SUBSTANCES

1. Acetaldehyde
2. Acetic acid
3. Acetic anhydride
4. Acetone cyanohydrin
5. Acetyl bromide
6. Acetyl chloride
7. Acrolein
8. Acrylonitrile
9. Adipic acid
10. Aldrin
11. Allyl alcohol
12. Alyll chloride
13. Aluminum sulfate
14. Ammonia
15. Ammonium acetate
16. Ammonium benzoate
17. Ammonium bicarbonate
18. Ammonium bichromate
19. Ammonium bifluoride
20. Ammonium bisulfite
21. Ammonium carbamate
22. Ammonium carbonate
23. Ammonium chloride
24. Ammonium chromate
25. Ammonium citrate
26. Ammonium fluoroborate
27. Ammonium fluoride
28. Ammonium hydroxide
29. Ammonium oxalate
30. Ammonium silicofluoride
31. Ammonium sulfamate
32. Ammonium sulfide
33. Ammonium sulfite
34. Ammonium tartrate
35. Ammonium thiocyanate
36. Ammonium thiosulfate
37. Amyl acetate
38. Aniline
39. Antimony pentachloride
40. Antimony potassium tartrate
41. Antimony tribromide
42. Antimony trichloride
43. Antimony trifluoride
44. Antimony trioxide
45. Arsenic disulfide
46. Arsenic pentoxide
47. Arsenic trichloride
48. Arsenic trioxide
49. Arsenic trisulfide
50. Barium cyanide
51. Benzene
52. Benzoic acid
53. Benzonitrile
54. Benzoyl chloride
55. Benzyl chloride
56. Beryllium chloride
57. Beryllium fluoride
58. Beryllium nitrate
59. Butylacetate
60. n-Butylphthalate
61. Butylamine
62. Butyric acid
63. Cadmium acetate
64. Cadmium bromide
65. Cadmium chloride
66. Calcium arsenate
67. Calcium arsenite
68. Calcium carbide
69. Calcium chromate
70. Calcium cyanide
71. Calcium dodecylbenzenesulfonate
72. Calcium hypochlorite
73. Captan
74. Carbaryl
75. Carbofuran
76. Carbon disulfide
77. Carbon tetrachloride
78. Chlordane
79. Chlorine
80. Chlorobenzene
81. Chloroform
82. Chloropyrifos
83. Chlorosulfonic acid
84. Chromic acetate
85. Chromic acid
86. Chromic sulfate
87. Chromous chloride
88. Cobaltous bromide
89. Cobaltous formate
90. Cobaltous sulfamate
91. Coumaphos
92. Cresol
93. Crotonaldehyde
94. Cupric acetate
95. Cupric acetoarsenite
96. Cupric chloride
97. Cupric nitrate
98. Cupric oxalate
99. Cupric sulfate
100. Cupric sulfate ammoniated
101. Cupric tartrate
102. Cyanogen chloride
103. Cyclohexane
104. 2,4-D acid (2,4-Dichlorophenoxyacetic acid)
105. 2,4-D esters (2,4-Dichlorophenoxyacetic acid esters)
106. DDT
107. Diazinon
108. Dicamba
109. Dichlobenil
110. Dichlone
111. Dichlorobenzene
112. Dichloropropane
113. Dichloropropene
114. Dichloropropene-Dichloropropane mix
115. 2,2-Dichloropropionic acid
116. Dichlorvos
117. Dieldrin
118. Diethylamine
119. Dimethylamine
120. Dinitrobenzene
121. Dinitrophenol
122. Dinitrotoluene
123. Diquat
124. Disulfoton
125. Diuron
126. Dodecylbenzesulfonic acid
127. Endosulfan
128. Endrin
129. Epichlorohydrin
130. Ethion
131. Ethylbenzene
132. Ethylenediamine
133. Ethylene dibromide
134. Ethylene dichloride
135. Ethylene Diaminetetracetic acid (EDTA)
136. Ferric ammonium citrate
137. Ferric ammonium oxalate
138. Ferric chloride
139. Ferric fluoride
140. Ferric nitrate

HAZARDOUS SUBSTANCES (contd.)

141. Ferric sulfate
142. Ferrous ammonium sulfate
143. Ferrous chloride
144. Ferrous sulfate
145. Formaldehyde
146. Formic acid
147. Fumaric acid
148. Furfural
149. Guthion
150. Heptachlor
151. Hexachlorocyclopentadiene
152. Hydrochloric acid
153. Hydrofluoric acid
154. Hydrogen cyanide
155. Hydrogen sulfide
156. Isoprene
157. Isopropanolamine dodecylbenzenesulfonate
158. Kelthane
159. Kepone
160. Lead acetate
161. Lead arsenate
162. Lead chloride
163. Lead fluoborate
164. Lead fluorite
165. Lead iodide
166. Lead nitrate
167. Lead stearate
168. Lead sulfate
169. Lead sulfide
170. Lead thiocyanate
171. Lindane
172. Lithium chromate
173. Malathion
174. Maleic acid
175. Maleic anhydride
176. Mercaptodimethur
177. Mercuric cyanide
178. Mercuric nitrate
179. Mercuric sulfate
180. Mercuric thiocyanate
181. Mercurous nitrate
182. Methoxychlor
183. Methyl mercaptan
184. Methyl methacrylate
185. Methyl parathion
186. Mevinphos
187. Mexacarbate
188. Monoethylamine
189. Monomethylamine
190. Naled
191. Naphthalene
192. Naphthenic acid
193. Nickel ammonium sulfate
194. Nickel chloride
195. Nickel hydroxide
196. Nickel nitrate
197. Nickel sulfate
198. Nitric acid
199. Nitrobenzene
200. Nitrogen dioxide
201. Nitrophenil
202. Nitrotoluene
203. Paraformaldehyde
204. Parathion
205. Pentachlorophenol
206. Phenol
207. Phosoene
208. Phosphoric acid
209. Phosphorus
210. Phosphorus oxychloride
211. Phosphorus pentasulfide
212. Phosphorus trichloride
213. Polychlorinated biphenyls (PCB)
214. Potassium arsenate
215. Potassium arsenite
216. Potassium bichromate
217. Potassium chromate
218. Potassium cyanide
219. Potassium hydroxide
220. Potassium permanganate
221. Propargite
222. Propionic acid
223. Propionic anhydride
224. Propylene oxide
225. Pyrethrins
226. Quinoline
227. Resorcinol
228. Selenium oxide
229. Silver nitrate
230. Sodium
231. Sodium arsenate
232. Sodium arsenite
233. Sodium bichromate
234. Sodium bifluoride
235. Sodium bisulfite
236. Sodium chromate
237. Sodium cyanide
238. Sodium dodecylbenzensulfonate
239. Sodium fluoride
240. Sodium hydrosulfide
241. Sodium hydroxide
242. Sodium hypochlorite
243. Sodium methylate
244. Sodium nitrate
245. Sodium phospate (dibasic)
246. Sodium phosphate (tribasic)
247. Sodium selenite
248. Strontium chromate
249. Strychnine
250. Styrene
251. Sulfuric acid
252. Sulfur monochloride
253. 2,4,5-T acid (2,4,5-Trichlorophenoxy acetic acid)
254. 2,4,5-T amines (2,4,5-Trichlorophenoxy acetic cid amines)
255. 2,4,5-T esters (2,4,5-Trichlorophenoxy acetic cid esters)
256. 2,4,5-T salts (2,4,5-Trichlorophenoxy acetic acid salts)
257. 2,4,5-TP acid (2,4,5-Trichlorophenoxy propanoic acid)
258. 2,4,5-TP acid esters (2,4,5-Trichlorophenoxy propanoic acid esters)
259. TDE (Tetrachlorodiphenyl ethane)
260. Tetraethyl lead
261. Tetraethyl pyrophosphate
262. Thallium sulfate
263. Toluene
264. Toxaphene
265. Trichlorofon
266. Trichloroethylene
267. Trichlorophenol
268. Triethanolamine dodecylbenzenesulfonate
269. Triethylamine
270. Trimethylamine
271. Uranyl acetate
272. Uranyl nitrate
273. Vanadium pentoxide
274. Vanadyl sulfate
275. Vinyl acetate
276. Vinylidene chloride
277. Xylene
278. Xylenol
279. Zinc acetate
280. Zinc ammonium chloride

HAZARDOUS SUBSTANCES (contd.)

281. Zinc borate
282. Zinc bromide
283. Zinc carbonate
284. Zinc chloride
285. Zinc cyanide
286. Zinc fluoride
287. Zinc formate
288. Zinc hydrosulfite
289. Zinc nitrate
290. Zinc phenolsulfonate
291. Zinc phosphide
292. Zinc silcofluoride
293. Zinc sulfate
294. Zirconium nitrate
295. Zirconium potassium fluoride
296. Zirconium sulfate
297. Zirconium tetrachloride

FORM
2CS

WASTEWATER APPLICATION FOR PERMIT TO DISCHARGE PROCESS WASTEWATER FROM NEW OR EXISTING INDUSTRIAL WASTEWATER FACILITIES TO SURFACE WATERS

Facility I.D. Number: FL0001473

Please print or type information in the appropriate areas.

I OUTFALL LOCATION For each outfall, list the X,Y coordinates and the name of the receiving water.
(latitude/longitude to the nearest 15 seconds)

A. Outfall No. (List)	B. Latitude			C. Longitude			D. Name of Receiving Water
	Deg.	Min.	Sec.	Deg.	Min.	Sec.	
D-011	28	28	11	80	45	46	Indian River
D-012	28	28	14	80	45	50	Indian River
D-015	28	28	12	80	45	48	Indian River
TBD							
TBD							
TBD							
TBD							

II OUTFALL DESIGN

A. Outfall No. (List)	B. Design Configuration and Construction Materials	C. Distance from shore	D. Diameter	E. Elevation of Discharge Invert (MSL)	F. Receiving Water Depth at POD (MSL)
D-011	Concrete seal well	0	10' by 12 '	-12.25	0
D-012	Concrete seal well	0	10' by 12'	-12.25	0
D-015	Concrete seal well	0	22"	NA	0

Facility I.D. Number: FL0001473

III RECEIVING WATER INFORMATION

For each surface water that will receive effluent, supply the following information:

A. Name of Receiving Water	B. Check One		C. Classification (See Ch. 62-302, F.A.C.)	D. Type of Receiving Water (canal, river, lake, etc.)
	Fresh	Salt or Brackish		
Indian River	☐	☒	Class II Marine	Lagoon/River
	☐	☐		
	☐	☐		
	☐	☐		
	☐	☐		
	☐	☐		

E. Minimum 7-day 10-year low flow of the receiving water at each outfall (if appropriate).

F. Identify and describe the flow of effluent from each outfall to a major body of water. A suitably marked map or aerial photograph may be used.

G. Do you request a mixing zone under Rule 62-4.244, F.A.C.? If yes, for what parameters or pollutants?

IV FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined (e.g., for certain mining activities), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.

B. For each outfall, provide a description of:

1. All operations contributing wastewater to the effluent; including process wastewater, sanitary wastewater, cooling water, and stormwater runoff;

2. The average flow contributed by each operation; and

3. The treatment received by the wastewater.

Use the space on the next page. Continue on additional sheets, if necessary.

(1)	(2) Operation(s) Contributing Flow		(3) Treatment		
Outfall No. (List)	(a) Operation (list)	(b) Avg. Flow & Units	(a) Description	(b) List Code from Table 2CS-1	
D-011	Once-through cooling water	309 MGD	Discharge to surface water	4A	
	Unit 1		Chlorination	2-F	
			Dechlorination	2-E	
D-012	Once-through cooling water	309 MGD	Discharge to surface water	4-A	
	Unit 2		Chlorination	2-F	
			Dechlorination	2-E	
D-015	Once-through cooling water	30 MGD	Discharge to surface water	4-A	
			Chlorination	2-F	
			Dechlorination	2-E	
TBD	HRSG Blowdown	35 gpm	Discharge to surface water	4-A	
TBD	R.O. reject, demineralizeer	45 gpm	Discharge to surface water	4-A	
	regeneration wastewaters				

C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal?
☐ Yes (complete the following table) ☒ No (go to D. below)

(1) Outfall No. (List)	(2)Operation(s) Contributing Flow(List)	(3) Frequency		(4) Flow				
		(a) Days per Week (specify avg.)	(b) Months per Yr. (specify avg.)	(a) Flow Rate (in mgd)		(b) Total Volume (specify with units)		(c) Duration (in days)
				Long Term Avg.	Max. Daily	Long Term Avg.	Max. Daily	

D. Describe practices to be followed to ensure adequate wastewater treatment during emergencies such as power loss and equipment failures causing shutdown of pollution abatement equipment of the proposed/permitted facilities.

E. List the method(s) and location(s) of flow measurement.

V PRODUCTION

A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility?

☒ Yes (complete Item V-B) ☐ No (go to Section VI)

B. Are the limitations in the applicable guideline expressed in terms of production (or other measure of operation)?

☐ Yes (complete Item V-C) ☒ No (go to Section VI)

C. If you answered "yes" to Item V-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.

1. AVERAGE DAILY PRODUCTION			2. Affected Outfalls
a. Quantity per Day	b. Units of Measure	c. Operation, Product, Materials, Etc. (specify)	(list outfall nos.)

VI IMPROVEMENTS

A. Are you now required by any Federal, State or local authority to meet any implementation schedule for the construction, upgrading or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement order, enforcement compliance schedule letter, stipulations, court orders, and grant or loan conditions.

☐ Yes (complete the following table) ☒ No (go to Item VI-B)

1. Identification of Condition, Agreement, Etc.	2. Affected Outfalls		3. Brief Description of Project	4. Final Compliance Date	
	a. No.	b. Source of Discharge		a. Required	B. Projected

B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs (or other environmental projects which may affect your discharges) you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction.

☐ Mark "X" if description of additional control programs is attached.

VII INTAKE AND EFFLUENT CHARACTERISTICS

A, B, & C: See instructions before proceeding--Complete one set of tables for each outfall -- Annotate the outfall number in the space provided. NOTE: Tables VII-A, VII-B, and VII-C are included on separate sheets number VII-1 through VII-9.

D. Use the space below to list any of the pollutants listed in Table 2CS-3 of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

1. Pollutant	2. Source	1. Pollutant	2. Source
Refer to 2CS data on file			

VIII POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item VII-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or by-product?

☐ YES (list all such pollutants below) ☒ NO (go to IX)

IX BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☐ YES (identify the test(s) and describe their purposes below) ☒ NO (go to Section X)

Whole Effluent Acute Effulent Toxicity Testing are not required in the current NPDES permit.

X CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported in Item VII performed by a contract laboratory or consulting firm?

☐ YES (list the name, address, telephone number, and certification number of, and pollutants analyzed by each such laboratory or firm below) ☐ NO (go to Section XI)

A. Name	B. Address	C. Telephone (area code & no.)	D. Pollutants Analyzed (list)

Facility I.D. Number: FL0001473

XI CONNECTION TO REGIONAL POTW

A. Indicate the relationship between this project and area regional planning for wastewater treatment. List steps to be taken for this industrial wastewater facility to become part of an area-wide wastewater treatment system.

No Relationship Exists

XII-A CERTIFICATIONS FOR NEW OR MODIFIED FACILITIES

This is to certify the engineering features of this pollution control project have been designed by me and found to be in conformity with sound engineering principles, applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules of the Department. It is also agreed that the undersigned, if authorized by the owner, will furnish the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

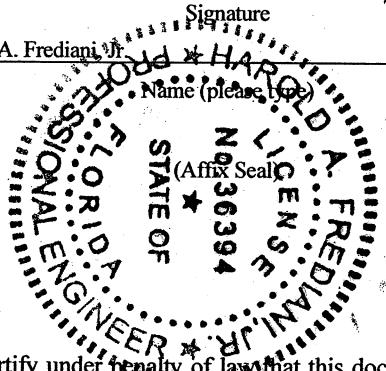
Harold A Frediani Jr

Signature

Harold A. Frediani, Jr.

Name (please type)

(Affix Seal)



Golder Associates Inc. Cert. of Auth. No: 1670

Company Name

Address 3730 Chamblee Tucker Road

Atlanta, Georgia 30341

Florida Registration No.: 36394

Telephone No:: ~~770-496-1893~~ 770-992-2533

Date 12/1/08

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Randall R. LaBauve, Vice President

Name & Official Title (Please type or print)

(561) 691-7001

Telephone No. (area code & No.)

Signature

12/29/08

Date Signed

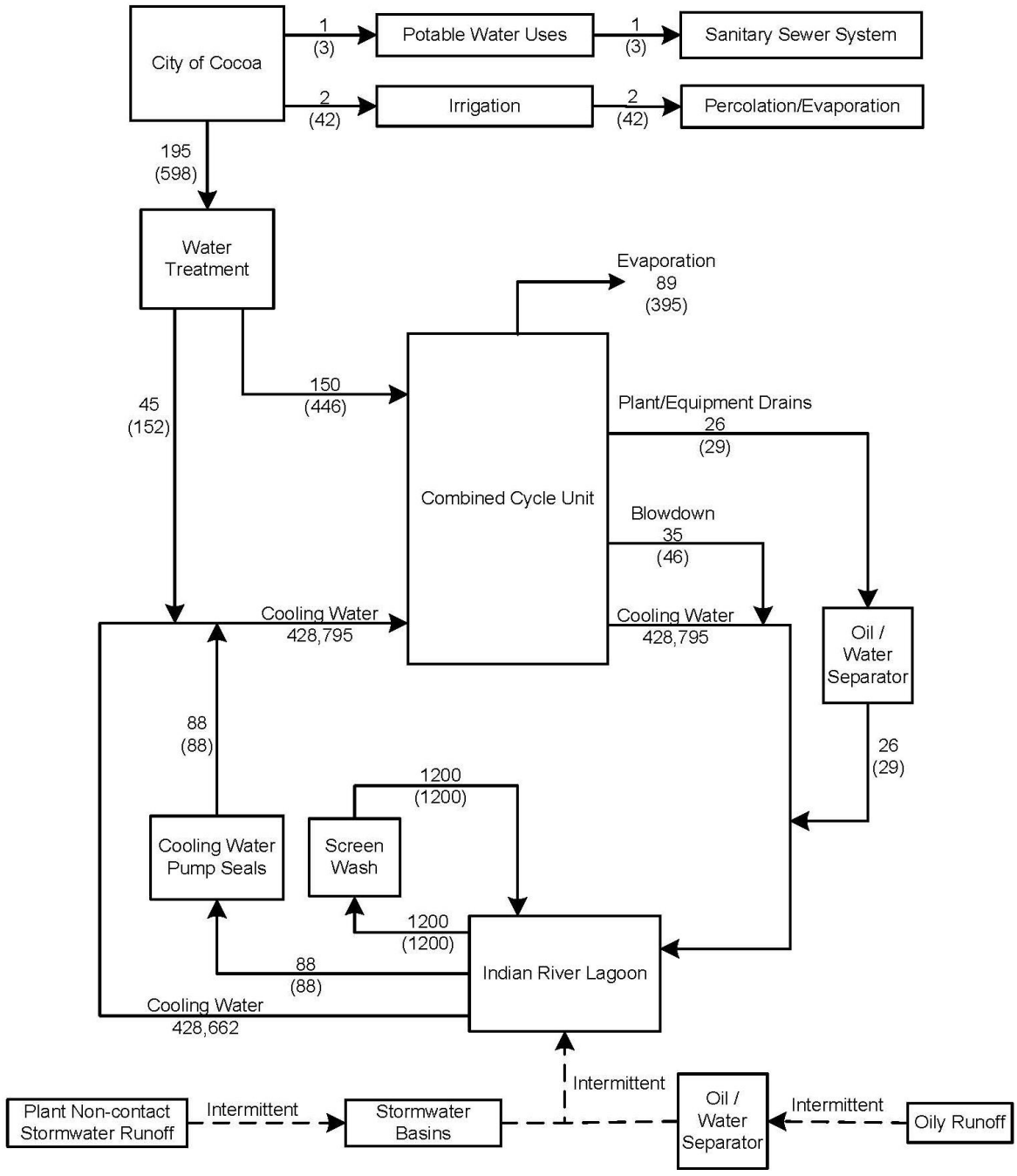
XII-B CERTIFICATIONS FOR PERMIT RENEWALS

This is to certify the engineering features of this pollution control project have been examined by me and found to be in conformity with sound engineering principles, applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules of the Department.

Signature	Company Name
Name (please type)	Address
(Affix Seal)	Florida Registration No.:
	Telephone No::
	Date

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name & Official Title (Please type or print)	Signature
Telephone No. (area code & No.)	Date Signed



Notes:
1. Flows are in gallons per minute unless otherwise noted.
2. Flows shown with no () are based on average daily water use.
3. Numbers in () are peak intermittent flows.
4. Dashed lines indicate intermittent flows.

Attachment B-1
Water Balance for CCEC
(4) Attachment B-1.docx

Source: Golder, 2008.

APPLICATION
FORM 2F

PERMIT TO DISCHARGE STORMWATER ASSOCIATED WITH INDUSTRIAL ACTIVITY

INSTRUCTIONS FOR FORM 2F

Who Must File Form 2F

DEP Form 62-620.910(8) (Form 2F) must be completed by owners or operators of facilities or activities that have stormwater discharge associated with industrial activity to surface waters of the state and for which such discharge is not otherwise covered by a State of Florida generic permit.

In addition to Form 2F,

a. owners or operators that have stormwater discharge associated with industrial activity at a facility which discharges process wastewater to surface water must complete and submit DEP Forms 62-620.910(1) and (5) (Forms 1 and 2CS). (See Rule 62-620.200, F.A.C., for a definition of process wastewater.)

b. owners or operators that have stormwater discharge associated with industrial activity at a facility which discharges process wastewater to ground water must complete and submit DEP Forms 62-620.910(1) and (4) (Forms 1 and 2CG).

c. owners or operators that have stormwater discharge associated with industrial activity at a facility which discharges non-process wastewater to surface water must complete and submit DEP Forms 62-620.910(1) and (7) (Forms 1 and 2ES). (See Rule 62-620.200, F.A.C., for a definition of non-process wastewater.)

d. owners or operators that have stormwater discharge associated with industrial activity at a facility which discharges non-process wastewater to ground water must complete and submit DEP Forms 62-620.910(1) and (6) (Forms 1 and 2EG).

e. owners or operators that have stormwater discharge associated with industrial activity from a domestic wastewater facility must complete and submit DEP Forms 62-620.910(1) and (2) (Forms 1 and 2A). (See Rule 62-620.200, F.A.C., for a definition of domestic wastewater facility.)

Where to File Applications

The application forms should be sent to the appropriate Department office listed in Form 1.

Completeness

Your application will not be considered complete unless you answer every question on this form and the other forms listed above. If an item does not apply to you, enter "NA" (for not applicable) to show that you considered the question.

Public Availability of Submitted Information

You may not claim as confidential any information required by this form or the other required forms, whether the information is reported on the forms or in an attachment. Chapter 119, F.S., requires that all permit applications be made available to the public upon request. Any information, except effluent data, you submit to the Department which goes beyond that required by the forms listed above may be claimed as confidential if the requirements of 40 CFR 2 are met. If you do not assert a claim of confidentiality at the time of submitting the information, the Department may make the information public without further notice to you.

Definitions

“Stormwater discharge associated with industrial activity” is as defined in 40 CFR 122.26(b)(14).

"Material handling activities" means the storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, finished product, by-product or waste product. The term excludes areas located on plant lands separate

from the industrial activities as long as the drainage from the excluded areas is not mixed with stormwater drained from the described areas.

"Significant materials" means raw materials, fuels, solvents, detergents, plastic pellets, finished materials, metallic products, raw materials used in food processing or production, hazardous substances designated under section 101(14) of CERCLA, any chemical the facility is required to report pursuant to section 313 of title III of SARA, fertilizers, pesticides, waste products, ashes, slag and sludge that have the potential to be released with stormwater discharges.

Additional significant terms used in these instructions and in the form are defined in the glossary found in Form 1 or in Chapters 62-600, 62-620, or 62-660, F.A.C.

ID Number

Fill in your identification number at the top of each odd-numbered page of Form 2F. You may copy this number directly from Form 1. If you are applying for the initial permit for your facility or activity and do not have an identification number, leave this item blank and the Department will assign a number.

Item I

Determine the latitude and longitude of each of your outfalls and the name of the receiving water. If your stormwater is combined with domestic, process or non-process industrial wastewater, indicate which of the outfalls identified on Form 2A, 2CS or 2ES will contain the combined wastewater.

Item II-A

If the answer to this question is yes, complete all parts of the chart, or attach a copy of any previous submission you have made to the Department containing the same information.

Item II-B

You are not required to submit a description of future pollution control projects if you do not wish to or if none is planned.

Item III

Attach a site map showing topography depicting the facility including:

each of its drainage and discharge structures;

the drainage area of each stormwater outfall;

paved areas and buildings within the drainage area of each stormwater outfall, each known past or present areas used for outdoor storage or disposal of significant materials, each existing structural control measure to reduce pollutants in stormwater runoff, materials loading and access areas, areas where pesticides, herbicides, soil conditioners and fertilizers are applied;

each of its hazardous waste treatment, storage or disposal facilities (including each area not required to have a RCRA permit which is used for accumulating hazardous waste for less than 90 days);

each well where fluids from the facility are injected underground; and

springs, and other surface water bodies which receive stormwater discharges from the facility.

Item IV-A

For each outfall, provide an estimate of the area drained by the outfall which is covered by impervious surfaces. For the purpose of this application, impervious surfaces are surfaces where stormwater runs off at rates that are significantly higher than background rates (for example, pre-development levels) and include paved areas, building roofs, parking lots, and roadways. Include an estimate of the total area, including all impervious and pervious areas, drained by each outfall. The site map required under Item III can be used to estimate the total area drained by each outfall.

Item IV-B

Provide a narrative description of significant materials that are currently or in the past three years have been treated, stored, or disposed in a manner to allow exposure to stormwater; method of treatment, storage or disposal of these materials; past and present materials management practices employed, in the last three years, to minimize contact by these materials with stormwater runoff; materials loading and access areas and the location, manner, and frequency in which pesticides, herbicides, soil conditioners, and fertilizers are applied. Significant materials should be identified by chemical name, form (powder, liquid, etc.), and type of container or treatment unit. Indicate any materials treated, stored, or disposed of together.

Item IV-C

For each outfall, structural controls include structures which enclose material handling or storage areas covering materials, berms, dikes, or diversion ditches around manufacturing, production, storage or treatment units, retention ponds, etc. Non-structural controls include practices such as spill prevention plans, employee training, visual inspections, preventive maintenance, and housekeeping measure that are used to prevent or minimize the potential for releases of pollutants.

Item V

Provide a certification that all outfalls that should contain stormwater discharge associated with industrial activity have been tested or evaluated for the presence of non-stormwater discharges which are not covered by an wastewater permit under Rule 62-620, F.A.C. Tests for such non-stormwater discharges may include smoke tests, fluorometric dye tests, analysis of accurate schematics, as well as other appropriate tests. Part B must include a description of the method used, the date of any testing, and the on-site drainage points that were directly observed during a test. All non-stormwater discharges must be identified in the appropriate form from the "Form 2" series which must accompany this application.

Item VI

Provide a description of existing information regarding the history of significant leaks or spills of toxic or hazardous pollutants at the facility in the last three years.

Item VII-A, B, and C

These items require you to collect and report data on the pollutants discharged for each of your outfalls. Each part of this item addresses a different set of pollutants and must be completed in accordance with the specific instructions for that part. The following general instructions apply to the entire item.

General Instructions for Item VII-A, B, and C

Part A requires you to report at least one analysis for each pollutant listed. Parts B and C requires you to report analytical data in two ways. For some pollutants addressed in Parts B and C, if you know or have reason to know that the pollutant is present in your discharge, you may be required to list the pollutant and test (sample and analyze) and report the levels of the pollutants in your discharge. For all other pollutants addressed in Parts B and C, you must list the pollutant if you know or have reason to know that the pollutant is present in the discharge, and either report quantitative data for the pollutant or briefly describe the reasons the pollutant is expected to be discharged. (See specific instructions on the form and below for Parts A through C.) Base your determination that a pollutant is present in or absent from your discharge on your knowledge of your

raw materials, material management practices, maintenance chemicals, history of spills and releases, intermediate and final products and by-products, and any previous analyses known to you of your effluent or similar effluent.

A. Sampling: The collection of the samples for the reported analyses shall be in accordance with 40 CFR 136 and Rule 62-160, F.A.C. Any specific requirements contained in the applicable analytical methods should be followed for sample containers, sample preservation, holding times, the collection of duplicate samples, etc. The time when you sample should be representative, to the extent feasible, of your treatment system operating properly with no system upsets. Samples should be collected from the center of the flow channel, where turbulence is at a maximum, at a site specified in your present permit, or at any site adequate for the collection of a representative sample.

For pH, temperature, cyanide, total phenols, residual chlorine, oil and grease, and fecal coliform, grab samples taken during the first 30 minutes, or as soon thereafter as practicable, of the discharge must be used. For all other pollutants both a grab sample collected during the first 30 minutes, or as soon thereafter as practicable, of the discharge and a flow-weighted composite sample must be analyzed. However, a minimum of one grab sample may be taken for effluents from holding ponds or other impoundments with a retention period of greater than 24 hours.

All samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches and at least 72 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. Where feasible, the variance in the duration of the event and the total rainfall of the event should not exceed 50 percent from the average or median rainfall event in that area.

A grab sample shall be taken during the first 30 minutes, or as soon thereafter as practicable, and a flow-weighted composite shall be taken for the entire event or for the first three hours of the event.

Grab and composite samples are defined as follows:

Grab sample: An individual sample of at least 100 milliliters collected during the first 30 minutes, or as soon thereafter as practicable, of the discharge. This sample is to be analyzed separately from the composite sample.

Flow-Weighted Composite sample: A flow-weighted composite sample may be taken with a continuous sampler that proportions the amount of sample collected with the flow rate or as a combination of a minimum of three sample aliquots taken in each hour of discharge for the entire event or for the first three hours of the event, with each aliquot being at least 100 milliliters and collected with a minimum period of 15 minutes between aliquot collections. The composite must be flow proportional; either the time interval between each aliquot or the volume of each aliquot must be proportional to either the stream flow at the time of sampling or the total stream flow since the collection of the previous aliquot. Aliquots may be collected manually or automatically. Where GC/MS Volatile Organic Analysis (VOA) is required, aliquots must be combined in the laboratory immediately before analysis. Only one analysis for the composite sample is required.

Data from samples taken in the past may be used, provided that all data requirements are met; sampling was done no more than three years before submission; and all data are representative of the present discharge.

Among the factors which would cause the data to be unrepresentative are significant changes in production level, changes in raw materials, processes, or final products, and changes in stormwater treatment. The Department may request additional information, including current quantitative data, if it is necessary to assess your discharges. The Department may allow or establish appropriate site-specific sampling procedures or requirements, including sampling locations, the season in which the sampling takes place, the minimum duration between the previous measurable storm event and the storm event sampled, the minimum or maximum level of precipitation required for an appropriate storm event, the protocols for collecting samples under 40 CFR 136 or Rule 62-160, F.A.C., and additional time for submitting data on a case-by-case basis.

B. Reporting: All levels must be reported as concentration and mass. Grab samples are reported in terms of concentration. You may report some or all of the required data by attaching separate sheets of paper instead of filling out pages VII-1 and VII-2 if separate sheets contain all the required information in a format which is consistent with pages VII-1 and VII-2 in spacing and identification of pollutants and columns. Use the abbreviations listed below in the columns headed "Units."

Concentration		Mass	
ppb	parts per billion	lbs	pounds
ppm	parts per million	ton	tons (English tons)
mg/L	milligrams per liter	mg	milligrams
ug/L	micrograms per liter	g	grams
		kg	kilograms
		T	tonnes (metric tons)

All reporting of values for metals must be in terms of "total recoverable metal," unless

(1) An applicable, promulgated effluent limitation or standard specifies the limitation for the metal in dissolved, valent, or total form; or

(2) All approved analytical methods for the metal inherently measure only its dissolved form; or

(3) The Department has determined that in establishing case-by-case limitations it is necessary to express the limitations on the metal in dissolved, valent, or total form to carry out the provision of the CWA. If you measure only one grab sample and one flow-weighted composite sample for a given outfall, complete only the "Maximum Values" columns and insert "1" into "Number of Storm Events Sampled" column. The Department may require you to conduct additional analyses to further characterize your discharges.

If you measure more than one value for a grab sample or a flow-weighted composite sample for a given outfall and those values are representative of your discharge, you must report them. You must describe your method of testing and data analysis. You also must determine the average of all values within the last year and report the concentration and mass under the "Average Values" columns, and the total number of storm events samples under the "Number of Storm Events Sampled" columns.

C. Analysis: You must use test methods promulgated in 40 CFR 136 or Rule 62-160, F.A.C.; however, if none has been promulgated for a particular pollutant, you may use any suitable method for measuring the level of pollutant in your discharge provided that you submit a description of the method or a reference to a published method. Your description should include the sample holding time, preservation techniques, and the quality control measures which you used. If you have two or more substantially identical outfalls, you may request permission to sample and analyze only one outfall and submit the results of the analysis for other substantially identical outfalls. If your request is granted by the Department, on a separate sheet attached to the application form, identify which outfall you did test, and describe why the outfalls which you did not test are substantially identical to the outfall which you did test.

Part VII-A

Part VII-A must be completed by all applicants for all outfalls who must complete Form 2F.

Analyze a grab sample collected during the first 30 minutes, or as soon thereafter as practicable, of the discharge and flow-weighted composite samples for all pollutants in this Part, and report the results except use only grab samples for pH and oil and grease. See discussion in General instructions to Item VII for definitions of grab sample collected during the first 30 minutes of discharge and flow-weighted composite sample. The "Average Values" column is not compulsory but should be filled out if data are available.

Part VII-B

List all pollutants that are limited in an effluent guideline which the facility is subject to or any pollutant listed in the wastewater permit for the facility if the facility is operating under an existing wastewater permit. Complete one table for each outfall. The "Average Values" column is not compulsory but should be filled out if data are available. Analyze a grab sample for all pollutants in this Part, and report the results, except as provided in the General Instructions.

Part VII-C

Part VII-C must be completed by all applicants for all outfalls which discharge stormwater associated with industrial activity. Use both a grab sample and a composite sample for all pollutants you analyze for in this part except use grab samples for residual chlorine and fecal coliform. The "Average Values" column is not compulsory but should be filled out if data are available. Part C requires you to address the pollutants in Table 2F-2, 2F-3, and 2F-4 for each outfall. Pollutants in each of these Tables are addressed differently.

Table 2F-2: For each outfall, list all pollutants in Table 2F-2 that you know or have reason to believe are discharged, except pollutants previously listed in Part VII-B. If a pollutant is limited in an effluent guideline limitation for the facility, the pollutant must be analyzed and reported in Part VII-B. If a pollutant in Table 2F-2 is indirectly limited by an effluent guideline limitation through an indicator (e.g., TSS used as an indicator to control the discharge of iron and aluminum), you must analyze for it and report the data in Part VII-B. For other pollutants listed in Table 2F-2, those not limited directly or indirectly by an effluent limitation guideline, that you know or have reason to believe are discharged, you must either report quantitative data or briefly describe the reasons the pollutant is expected to be discharged.

Table 2F-3: For each outfall, list all pollutants in Table 2F-3 that you know or have reason to believe are discharged. For every pollutant in Table 2F-3 expected to be discharged in concentrations of 10 ppb or greater, you must submit quantitative data. For acrolein; acrylonitrile; 2,4 dinitrophenol; and 2-methyl-4, 6 dinitrophenol, you must submit quantitative data if any of these four pollutants is expected to be discharged in concentrations 100 ppb or greater. For every pollutant expected to be discharged in concentrations less than 10 ppb (or 100 ppb for the four pollutants listed above), then you must either submit quantitative data or briefly describe the reasons the pollutant is expected to be discharged.

Table 2F-4: For each outfall, list any pollutant in Table 2F-4 that you know or believe to be present in the discharge and explain why you believe it to be present. No analysis is required, but if you have analytical data, you must report them. Certain discharges of hazardous substances may be exempted from the requirements of section 311 of the CWA which establishes reporting requirements. Please contact the Department for further information.

Part VII-D

If sampling is conducted during more than one storm event, you only need to report the information requested in Part VII-D for the storm event(s) which resulted in any maximum pollutant concentration report in Part VII-A, VII-B, or VII-C.

Provide flow measurements or estimates of the flow rate, and the total amount of discharge for the storm event(s) sampled, the method of flow measurement, or estimation. Provide the data and duration of the storm event(s) sampled, rainfall measurement, or estimates of the storm event which generated the sampled runoff and the duration between the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event.

Part VII-E

List any toxic pollutant listed in Tables 2F-2, 2F-3, or 2F-4 which you currently use or manufacture as an intermediate or final product or by-product. In addition, if you know or have reason to believe that 2,3,7,8 tetrachlorodibenzo-p-dioxin (TCDD) is discharged, or if you use or manufacture 2,4,5-trichlorophenoxy acetic acid (2,4,5,-T); 2-(2,4,5-trichlorophenoxy) propanoic acid (Silvex, 3,4,5,-TP); 2-(2,4,5-trichlorophenoxy) ethyl, 2,2-dichloropropionate (Erbon); O,O-dimethyl O-(2,4,5-trichlorphenyl) phosphorothicate (Ronnel); 2,4,5-trichlorophenol (TCP); or hexachlorophene (HCP); then list TCDD. The Department may waive or modify the requirement if you demonstrate that it would be unduly burdensome to identify each

toxic pollutant and the Department has adequate information to issue your permit. You may not claim this information as confidential; however, you do not have to distinguish between use or production of the pollutants or list the amounts.

Item VIII

Self explanatory. The Department may ask you to provide additional details after your application is received.

Item X

Chapter 403, F.S., provides for severe penalties for submitting false information on this application form. Rule 62-620.305, F.A.C., requires the certification in this item to be signed by an appropriate and responsible authority. If the certification is not signed in accordance with this rule, the application will be deemed incomplete and returned.

TABLE 2F-1
CODES FOR TREATMENT UNITS

Physical Treatment Processes

1-A Ammonia Stripping
1-B Dialysis
1-C Diatomaceous Earth Filtration
1-D Distillation
1-E Electrodialysis
1-F Evaporation
1-G Flocculation
1-H Flotation
1-I Foam Fractionation
1-J Freezing
1-K Gas-Phase Separation
1-L Grinding (Comminutors)
1-M Grit Removal
1-N Microstraining
1-O Mixing
1-P Moving Bed Filters
1-Q Multimedia Filtration
1-R Percolation Pond
1-S Rapid Sand Filtration
1-T Reverse Osmosis (Hyperfiltration)
1-U Screening
1-V Sedimentation (Settling)
1-W Slow Sand Filtration
1-X Solvent Extraction
1-Y Sorption

Chemical Treatment Processes

2-A Carbon Adsorption
2-B Chemical Oxidation
2-C Chemical Precipitation
2-D Coagulation
2-E Dechlorination
2-F Disinfection (Chlorine)
2-G Disinfection (Ozone)
2-H Disinfection (Other)
2-I Electrochemical Treatment
2-J Ion Exchange
2-K Neutralization
2-L Reduction

Biological Treatment Processes

3-A Activated Sludge
3-B Aerated Lagoons
3-C Anaerobic Treatment
3-D Nitrification-Denitrification
3-E Pre-Aeration
3-F Spray Irrigation/Land Application
3-G Stabilization Ponds
3-H Trickling Filtration

Other Processes

4-A Discharge to Surface Water
4-B Ocean Discharge Through Outfall
4-C Reuse/Recycle of Treated Effluent
4-D Underground Injection

Sludge Treatment and Disposal Processes

5-A Aerobic Digestion
5-B Anaerobic Digestion
5-C Belt Filtration
5-D Centrifugation
5-E Chemical Conditioning
5-F Chlorine Treatment
5-G Composting
5-H Drying Beds
5-I Elutriation
5-J Flotation Thickening
5-K Freezing
5-L Gravity Thickening
5-M Heat Drying
5-N Heat Treatment
5-O Incineration
5-P Land Application
5-Q Landfill
5-R Pressure Filtration
5-S Pyrolysis
5-T Sludge Lagoons
5-U Vacuum Filtration
5-V Vibration
5-W Wet Oxidation

TABLE 2F-2
CONVENTIONAL AND NON-CONVENTIONAL POLLUTANTS REQUIRED TO BE TESTED BY EXISTING DISCHARGER IF EXPECTED TO BE PRESENT

Aluminum, Total
Barium, Total
Boron, Total
Bromide
Chlorine, Total Residual
Cobalt, Total
Color
Fecal Coliform
Fluoride
Iron, Total
Magnesium, Total
Molybdenum, Total
Manganese, Total
Nitrate-Nitrite
Nitrogen, Total Organic
Oil and Grease
Phosphorus, Total
Radioactivity
Sulfate
Sulfide
Sulfite
Surfactants
Tin, Total
Titanium, Total

TABLE 2F-3
TOXIC POLLUTANTS REQUIRED TO BE IDENTIFIED BY APPLICANT IF EXPECTED TO BE PRESENT

Toxic Pollutants and Total Phenol

Antimony, Total	Copper, Total	Phenols, Total
Arsenic, Total	Cyanide, Total	Selenium, Total
Beryllium, Total	Lead, Total	Silver, Total
Cadmium, Total	Mercury, Total	Thallium, Total
Chromium, Total	Nickel, Total	Zinc, Total

GC/MS Fraction Volatiles Compounds

Acrolein	Chloroform	Methylene Chloride
Acrylonitrile	Dichlorobromomethane	1,1,2,2-Tetrachloroethane
Benzene	1,1-Dichloroethane	Tetrachloroethylene
Bromoform	1,2-Dichloroethane	Toluene
Carbon Tetrachloride	1,1-Dichloroethylene	1,2-Trans,Dichloroethylene
Chlorobenzene	1,2-Dichloropropane	1,1,1-Trichloroethane
Chlorodibromomethane	1,3-Dichloropropylene	1,1,2-Trichloroethane
Chloroethane	Ethylbenzene	Trichloroethylene
2-Chloroethylvinyl Ether	Methyl Bromide	Vinyl Chloride
	Methyl Chloride	

Acid Compounds

2-Chlorophenol	2,4-Dinitrophenol	Pentachlorophenol
2,4-Dichlorophenol	2-Nitrophenol	Phenol
2,4-Dimethylphenol	4-Nitrophenol	2,4,6-Trichlorophenol
4,6-Dinitro-O-Cresol	p-Chloro-M-Cresol	

Base/Neutral

Acenaphthene	2-Chloronaphthalene	Fluroanthene
Acenaphthylene	4-Chlorophenyl Phenyl Ether	Fluorene
Anthracene	Chrysene	Hexachlorobenzene
Benzidine	Dibenzo(a,h)anthracene	Hexachlorobutadiene
Benzo(a)anthracene	1,2-Dichlorobenzene	Hexachloroethane
Benzo(a)pyrene	1,3-Dichlorobenzene	Indeno(1,2,3-cd)pyrene
3,4-Benzofluroranthene	1,4-Dichlorobenzene	Isophorone
Benzo(ghi)perylene	3,3-Dichlorobenzidine	Napthalene
Benzo(k)fluoranthene	Diethyl Phthalate	Nitrobenzene
Bis(2-chloroethoxy)methane	Dimethyl Phthalate	N-Nitrosodimethylamine
Bis(2-chloroethyl)ether	Di-N-Butyl Phthalate	N-Nitrosodi-N-Propylamine
Bis(2-chloroisopropyl)ether	2,4-Dinitrotoluene	N-Nitrosodiphenylamine
Bis(2-ethylyhexyl)phthalate	2,6-Dinitrotoluene	Phenanthrene
4-Bromophenyl Phenyl Ether	Di-N-Octylphthalate	Pyrene
Butylbenzyl Phthalate	1,2-Diphenylhydrazine (as Azobenzene)	1,2,4-Trichlorobenzene

Pesticides

Aldrin	Dieldrin	PCB-1242
Alpha-BHC	Alpha-Endosulfan	PCB-1254
Beta-BHC	Beta-Endosulfan	PCB-1221
Gamma-BHC	Endosulfan Sulfate	PCB-1232
Delta-BHC	Endrin	PCB-1248
Chlordane	Endrin Aldehyde	PCB-1260
4,4'-DDT	Heptachlor	PCB-1016
4,4'-DDE	Heptachlor Epoxide	Toxaphene
4,4'-DDD		

TABLE 2F-4
HAZARDOUS SUBSTANCES REQUIRED TO BE IDENTIFIED BY APPLICANT IF EXPECTED TO BE PRESENT

Toxic Pollutant

Asbestos

Hazardous Substances

Acetaldehyde	Dinitrobenzene	Parathion
Allyl alcohol	Diquat	Phenolsulfonate
Allyl chloride	Disulfoton	Phosgene
Amyl acetate	Diuron	Progargite
Aniline	Epichlorohydrin	Propylene oxide
Benzonitrile	Ethion	Pyrethrins
Benzyl chloride	Ethylene diamine	Quinoline
Butyl acetate	Ethylene dibromide	Resorcinol
Butylamine	Formaldehyde	Stronthium
Carbaryl	Furfural	Strychnine
Carbofuran	Guthion	Styrene
Carbon disulfide	Isoprene	2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)
Chlorpyrifos	Isopropanolamine	TDE (Tetrachlorodiphenyl ethane)
Coumaphos	Kelthane	2,4,5-TP (2-(2,4,5-Trichlorophenoxy)propanoic acid)
Cresol	Kepone	Trichlorofan
Crotonaldehyde	Malathion	Triethylamine
Cyclohexane	Mercaptodimethur	Trimethylamine
2,4-D (2,4-dichlorophenoxyacetic acid)	Methoxychlor	Uranium
Diazinon	Methylmercaptan	Vanadium
Dicamba	Methyl methacrylate	Vinyl acetate
Dichlobenil	Methyl parathion	Xylene
Dichlone	Mevinphos	Xylenol
2,2-Dichloropropionic acid	Mexacarbate	Zirconium
Dichorvos	Monoethyl amine	
Diethyl amine	Monomethyl amine	
Dimethyl amine	Naled	
	Napthenic acid	
	Nitrotoluene	

FORM

2F

APPLICATION FOR PERMIT FOR STORMWATER DISCHARGE ASSOCIATED WITH INDUSTRIAL ACTIVITY

Facility I.D. Number: FL0001473

Please type or print in black ink. If additional space is needed for your answer, use plain sheets and attach to the application form.

I. Outfall Location:

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

A. Outfall Number (list)	B. Latitude			C. Longitude			D. Receiving Water (Name)
A	28º	28'	15"N	80º	45'	50"W	Indian River Lagoon
B	28º	28'	9"N	80º	45'	46"W	Indian River Lagoon

II. Improvements:

A. Are you now required by any Federal, State, or local authority to meet any implementation schedule for the construction, upgrading or operation of stormwater or wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions?

1. Identification of	2. Affected Outfalls		3. Brief Description of Project	4. Final Compliance Date	
Conditions, Agreements	No.	Source of Discharge		a. required	b. projected
NA					

B. You may attach additional sheets describing any additional water pollution or other environmental projects which may affect your discharge that you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction.

III. Site Drainage Map:

Attach a site map showing topography depicting the facility including each of its intake and discharge structures; the drainage area of each stormwater outfall; paved areas and buildings within the drainage area of each stormwater outfall; each known past or present areas used for outdoor storage or disposal of significant materials; each existing structural control measure to reduce pollutants in stormwater runoff, materials loading and access areas, areas where pesticides, herbicides, soil conditioners and fertilizers are applied; each of its hazardous waste treatment, storage or disposal units; each well where fluids from the facility are injected underground; springs, and other surface water bodies which receive stormwater discharges from the facility. Show hazardous waste storage or disposal areas that do not require a RCRA permit separate from those which do require a permit.

IV. Narrative Description of Pollutant Sources:

A. For each outfall, provide an estimate of the area (include units) of impervious surfaces, including paved areas and building roofs, drained to the outfall, and an estimate of the total surface area drained by the outfall.

Outfall No.	Area of Impervious Surface (units)	Total Area Drained (units)	Outfall No.	Area of Impervious Surface (units)	Total Area Drained (units)
A & B	4.11	17.36			

B. Provide a narrative description of significant materials that are currently, or in the past three years have been, treated, stored or disposed in a manner that allows exposure to stormwater; method of treatment, storage, or disposal; past and present materials management practices employed to minimize contact with stormwater runoff; materials loading and access areas; and the location, manner, and frequency in which pesticides, herbicides, soil conditioners, and fertilizers are applied.

FPL currently utilizes Best Management Practices. FPL does not plan to store or dispose of significant materials in a manner that will allow exposure to stormwater runoff. Significant materials will be accumulated in covered buildings, sheds or in containment areas. Pesticides, herbicides, soild conditions and fertilizers, will be used (if required) in accordance with manufacturer's instructions and specificatios.

C. For each outfall, provide the location and a description of existing structural and nonstructural control measures to reduce pollutants in stormwater runoff; and a description of the treatment the stormwater receives, including the schedule and type of maintenance for control and treatment measures and the ultimate disposal of any solid or fluid wastes other than by discharge.

Outfall No.	Treatment	Table 2F-1 Code
A & B	Interconnected dry retention areas with control stuctures at the outfall prior to dischage to the Indian River	1-R, 1-V, 4-A

V. Non-stormwater Discharges:

A. I certify under penalty of law that the outfall(s) covered by this application have been tested or evaluated for the presence of non-stormwater discharges, and that all non-stormwater discharges from these outfall(s) are identified in either an accompanying DEP Form 62-620.910(5) or (7) (Forms 2CS or 2ES) application for the outfall.

Name and Official Title (type or print)	Signature	Date Signed

B. Provide a description of the method used, the date of any testing, and the onsite drainage points that were directly observed during a test.

VI. Significant Leaks or Spills:

Provide existing information regarding the history of significant leaks or spills of toxic or hazardous pollutants at the facility in the last three years, including the approximate date and location of the spill or leak, and the type and amount of material released.

VII. Discharge Information:

A, B, C, & D: See instructions before proceeding. Complete one set of tables for each outfall. Annotate the outfall number in the space provided. Tables VII-A, VII-B, and VII-C are included on separate sheets numbered VII-1 and VII-2.

E. Potential discharges not covered by analysis - is any toxic pollutant listed in Table 2F-2, 2F-3, or 2F-4, a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or by-product?

☐ Yes (list all such pollutants below) ☒ No (go to section VIII)

VIII. Biological Toxicity Testing Data

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☐ Yes (list results below) ☒ No (go to Section IX)

IX. Contract Analysis Information

Were any of the analysis reported in item VII performed by a contract laboratory or consulting firm?

☐ Yes (list the name, address, and telephone number of, and pollutants analyzed by each such laboratory or firm below) ☐ No (go to Section X)

A. Name	B. Address	C. Area Code & Phone No.	D. Pollutants Analyzed
NA			

Facility I.D. Number: FL0001473

X-A. CERTIFICATIONS FOR NEW OR MODIFIED FACILITIES

I certify that the engineering features of this pollution control project have been designed by me and found to be in conformity with sound engineering principles, applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules of the Department. It is also agreed that the undersigned, if authorized by the owner, will furnish the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

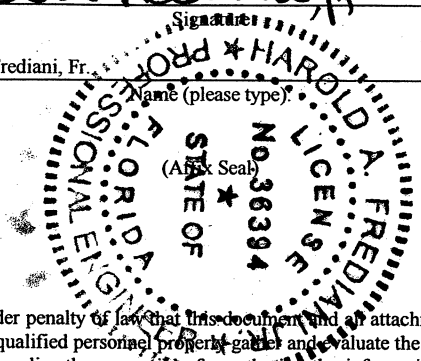
Harold A. Frediani

Signature

Harold A. Frediani, Fr.

Name (please type):

(Affix Seal)



Golder Associates Inc. (Certification of Authorization No. 1670)

Company Name:

Address: 3730 Chamblee Tucker Road
Atlanta, Georgia 30341

Florida Registration No.: 36394

Telephone No.: ~~770-496-1893~~ 770-992-2533

Date: 12/1/08

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name & Official Title (type or print)

Signature

Telephone No. (area code & no.)

Date Signed

X-B. CERTIFICATIONS FOR PERMIT RENEWALS

I certify that the engineering features of this pollution control project have been examined by me and found to be in conformity with sound engineering principles, applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules of the Department.

Signature

Company Name:

Name (please type):

Address:

(Affix Seal)

Florida Registration No.:

Telephone No.:

Date:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Randall R. LaBauve, Vice President

Name & Official Title (type or print)

Signature

561 - 691 - 7001

Telephone No. (area code & no.)

12/29/08

Date Signed

VII. Discharge Information (Continued from page 2F-15 of Form 2F)

Part A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number (if available)	Minimum Values (include units)		Average Values (include units)		# of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 30 Minutes	Flow-weighted Composite	Grab Sample Taken During First 30 Minutes	Flow-weighted Composite		
Oil and Grease		N/A				
Biochemical Oxygen Demand (BOD_5)						
Chemical Oxygen Demand (COD)						
Total Suspended Solids (TSS)						
Total Kjeldahl Nitrogen						
Nitrate + Nitrite Nitrogen						
Total Phosphorus						
pH	Minimum	Maximum	Minimum	Maximum		

Part B - List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's wastewater permit for its wastewater effluent if the facility is operating under an existing wastewater permit. Complete one table for each outfall. See instructions for additional details and requirements.

Pollutant and CAS Number (if available)	Minimum Values (include units)		Average Values (include units)		# of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 30 Minutes	Flow-weighted composite	Grab Sample Taken During First 30 Minutes	Flow-weighted Composite		

VII. Discharge Information (Continued from Table VII on page VII - 1 of Form 2F)

Part C - List each pollutant shown in Tables 2F-2, 2F-3, and 2F-4 that you know or have reasons to believe is present. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number (if available)	Minimum Values (include units)		Average Values (include units)		# of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 30 Minutes	Flow-weighted Composite	Grab Sample Taken During First 30 Minutes	Flow-weighted Composite		

Part D - Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event (in minutes)	3. Total rainfall during storm event (in inches)	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event (specify units)	6. Total flow from rain event (specify units)	7. Comments

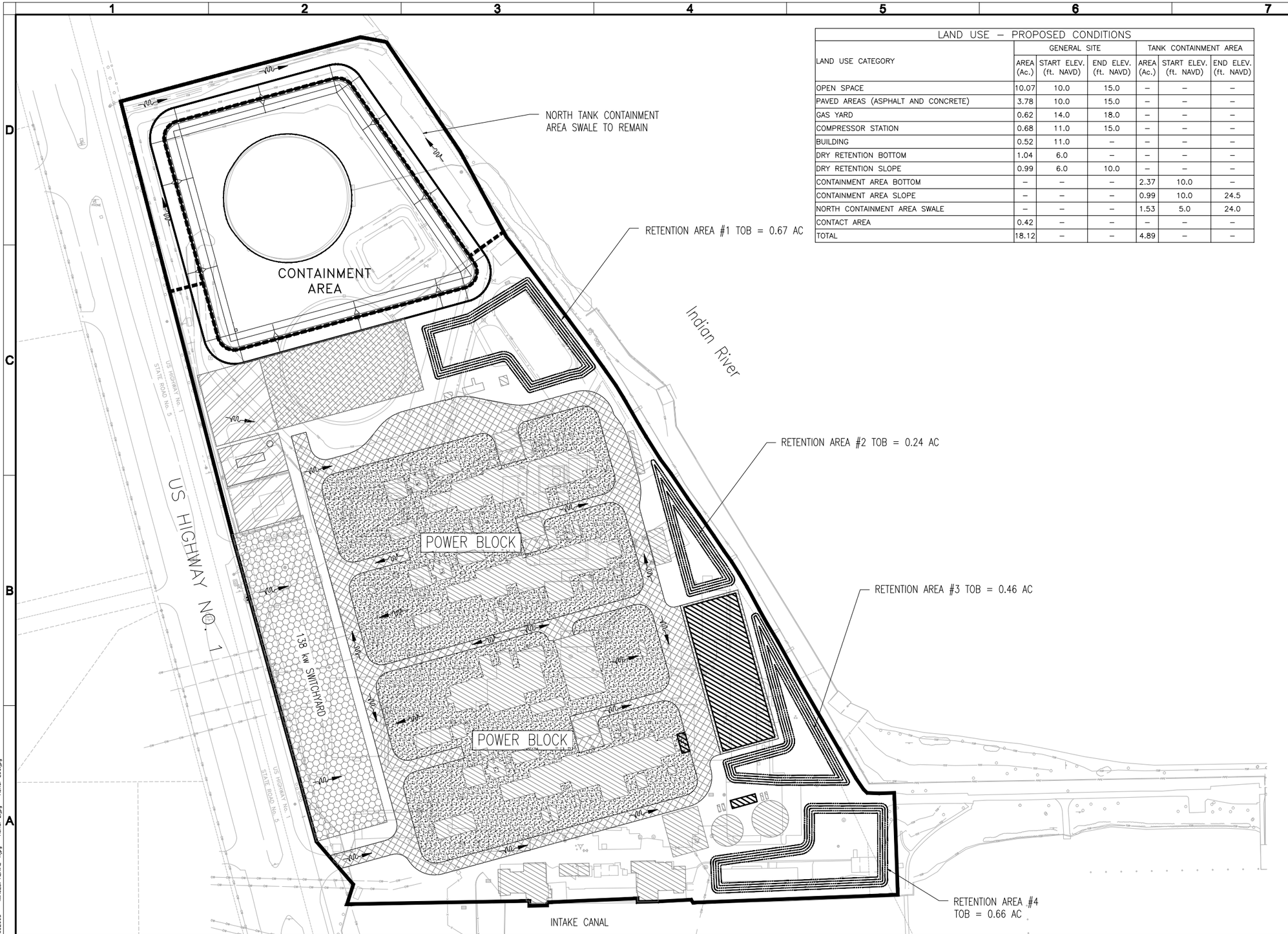
Provide a description of the method of flow measurement or estimate.

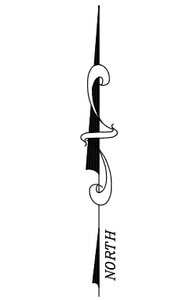
Form 2F Attachment 1

Page 2F - 17

III: See CCEC Site Map – Proposed Development. Outfalls A and B are two separate outfalls that both equally discharge stormwater runoff from the General Site Basin to the Indian River Lagoon.

LAND USE – PROPOSED CONDITIONS						
LAND USE CATEGORY	GENERAL SITE			TANK CONTAINMENT AREA		
	AREA (Ac.)	START ELEV. (ft. NAVD)	END ELEV. (ft. NAVD)	AREA (Ac.)	START ELEV. (ft. NAVD)	END ELEV. (ft. NAVD)
OPEN SPACE	10.07	10.0	15.0	–	–	–
PAVED AREAS (ASPHALT AND CONCRETE)	3.78	10.0	15.0	–	–	–
GAS YARD	0.62	14.0	18.0	–	–	–
COMPRESSOR STATION	0.68	11.0	15.0	–	–	–
BUILDING	0.52	11.0	–	–	–	–
DRY RETENTION BOTTOM	1.04	6.0	–	–	–	–
DRY RETENTION SLOPE	0.99	6.0	10.0	–	–	–
CONTAINMENT AREA BOTTOM	–	–	–	2.37	10.0	–
CONTAINMENT AREA SLOPE	–	–	–	0.99	10.0	24.5
NORTH CONTAINMENT AREA SWALE	–	–	–	1.53	5.0	24.0
CONTACT AREA	0.42	–	–	–	–	–
TOTAL	18.12	–	–	4.89	–	–





LEGEND

- CONCRETE
- BUILDING
- GRAVEL/GRASS
- ASPHALT
- SWITCHYARD
- OPEN SPACE
- GAS YARDS
- COMPRESSOR STATION AREA
- BASIN DIVIDE

REV	DATE	DESCRIPTION	APPR
1	11/21/08	REVISED LAND USE PER UPDATED SITE PLAN FROM FPL	

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

DESIGNED BY PDH
DRAWN BY RCF
CHECKED BY PL
DATE 1/20/2008
PROJECT ENGINEER
REG NUMBER EXP DATE
PROJECT NUMBER 17213
CADD STANDARDS

BOYLE ENGINEERING CORPORATION
3550 S.W. Corporate Parkway
Palm City, Florida 34990
Tel: 772-286-3883 Fax: 772-286-3925
BPR & FBPE License No's 2005 & 7622
WWW.BOYLEENGINEERING.COM

FLORIDA POWER & LIGHT COMPANY
CAPE CANAVERAL PLANT

POST-DEVELOPMENT BASIN MAP

DRAWING LANDUSE-POST-02
SHEET F-1
OF 1 SHEETS

DWG: P:\17213\Permit\SCA\Exhibits\POST-02\LANDUSE-POST-02.dwg Layout Name: POST-02 – Plotted by: Helms, Patrick Date: 12/11/2008 - 1:41 PM
XREFS: AVROM Survey Conroerel 08052008 IMAGES: AERIAL-1.jpg – Aerial-2.jpg – Aerial-LOC.jpg –
P:\17213\Permit\SCA\Exhibits\POST-02\LANDUSE-POST-02.dwg, POST-02, 12/11/2008 1:41:34 PM, HelmsP, LBFH Inc.

APPENDIX 10.2.3

HAZARDOUS WASTE DISPOSAL APPLICATION/PERMIT

NOTE: No Federal or State application or permit for hazardous waste disposal is required for the Project.

APPENDIX 10.2.4

SECTION 10 OR 404 APPLICATIONS/PERMITS

NOTE: No Section 10 or 404 permit under the Rivers and Harbors Act and Clean Water Act is required for the Project. The Project may require maintenance dredging of the barge canal and intake canal areas. This activity has been authorized for the Cape Canaveral Plant by the U.S. Army Corps of Engineers as a nationwide permit [see attached permit verification number 199504192(NW-IS)]. No other dredging will be required.

ERP 199504192 (NW–1S)

DEPARTMENT OF THE ARMY
MAINTENANCE DREDGING OF BARGE CANAL AND PLANT INTAKE CANAL AREAS

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P. O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

ORIGINAL

REPLY TO
ATTENTION OF

September 1, 1995

Regulatory Division
Atlantic Permits Branch
199504192(NW-IS)
NW-35

RECEIVED
SEP - 5 1995
ENVIRONMENTAL AFFAIRS

Florida Power and Light Company
Attention: Jim Brawner
11770 U.S. Highway one
4th Floor
North Palm Beach, Florida 33408

Dear Mr. Brawner:

Reference is made to your Department of the Army permit application, submitted on behalf of "Florida Power and Light Company", concerning the maintenance dredging of approximately 49,450 cubic yards of sediment from the barge canal and plant intake canal areas. The proposed activity is located at Section 19, Township 23 South, Range 36 East, Cape Canaveral Plant, Brevard County, Florida. The permit verification has been assigned number 199504192(NW-IS). **Please refer to this number in future correspondence.**

This verifies that your proposal is authorized by Nationwide Permit number 35 in accordance with the enclosed copy of our regulations as stated in **33 CFR Part 330, Appendix A**. This verification is valid until this nationwide permit is modified, reissued or revoked. All the nationwide permits are scheduled to be modified, reissued, or revoked prior to January 22, 1997. It is incumbent on you to remain informed of changes in the nationwide permits. We will issue a public notice announcing the changes when they occur. Activities which have commenced (i.e, are under construction) or are under contract to commence in reliance on this nationwide permit will remain authorized provided the activity is completed within twelve months of the date the nationwide permit expires, is modified, or is revoked.

In accordance with the interagency agreement with the U.S. Fish and Wildlife Service additional special conditions have been added to the permit in order to provide proper protection for the West Indian Manatee. As discussed in your proposed application **no dredging will take place from November 1 thru March 31. In addition the standard manatee conditions for use during construction of the project are enclosed.**

ORIGINAL

Be advised that this permit is not valid unless the project has been issued State Water Quality Certification or an exemption thereof. You should check State permitting requirements with your local Department of Environmental Protection agency (DEP) or your local Water Management District.

A separate Department of the Army permit is not required providing the work is done in accordance with the enclosed drawings/information submitted, the conditions listed in **33 CFR Part 330, Appendix A, Subparagraph C**, any appropriate regional conditions (copy enclosed).

This letter does not obviate the requirement to obtain any State or local permits which may be necessary for your proposed work. You should check State permitting requirements with the Florida Department of Environmental Protection (DEP).

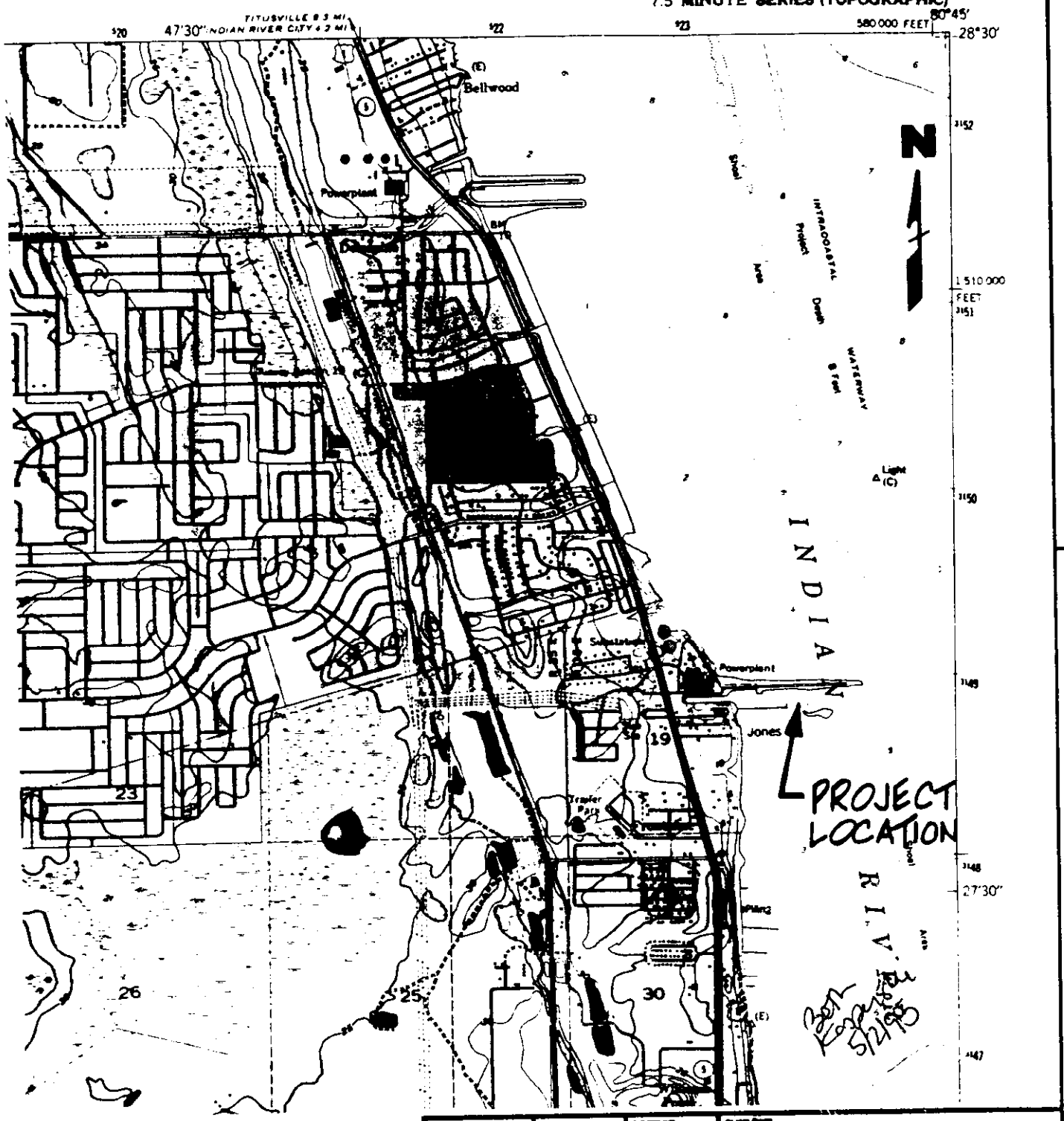
Thank you for your cooperation with our regulatory program.

Sincerely,

For Bertil Heimer
Chief, Atlantic Permits Branch

Enclosures

ORIGINAL



FPL	SYSTEM ZZ	DISCIPLINE C	PLANT/SITE CAPE CANAVERAL PLANT
	SCALE N/A	CAD FILE NAME	TITLE PROPOSED BARGE CANAL & INTAKE CANAL DREDGING IN SECTION 19, T23S, R36E, BREVARD CO.
	DRAWING SIZE A (8.5X11)	FPL ARCHIVE NAME	
	DRAWING NUMBER PCC1-C0202-ZZ/RTS-PCC-J-019-94	SHEET 1 OF 3	REV 0

REV	DATE	REVISION DESCRIPTION	BY	CH	COR	APR	ORG
0	5/1/96	ISSUED FOR PERMIT	PHS	ROT		BK	

ORG | BY | DATE — ENGINEERING ORGANIZATION

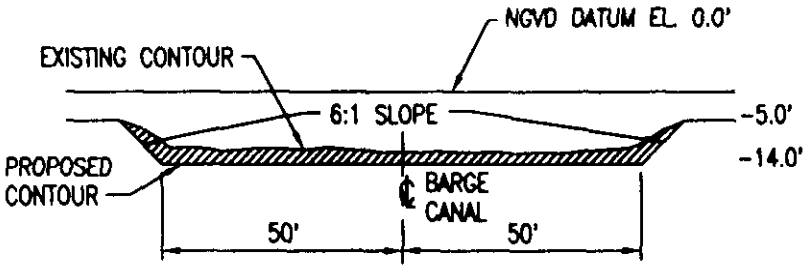
ORG | BY | DATE — AS-BUILT INFORMATION

AR CODE

IDRAWALS MUST NOT EXCEED

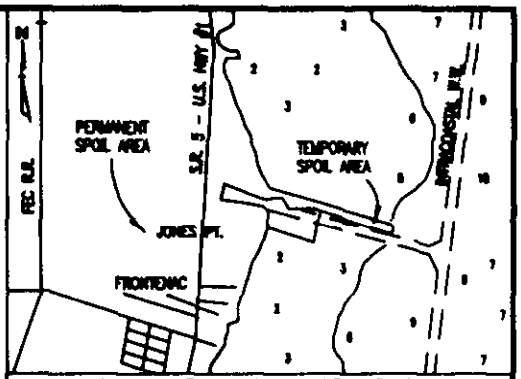
14. MAXIMUM ANNUAL SURFACE WATER WITH

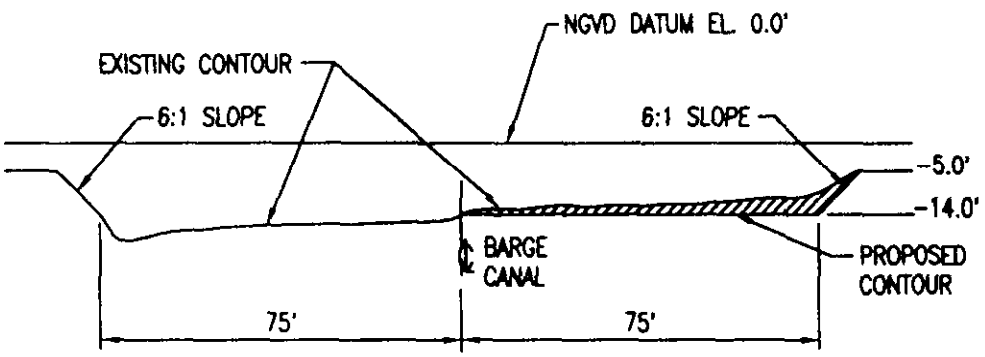
ORIGINAL



SECTION A-A

SCALE: HORIZ. 0' 20' 40'

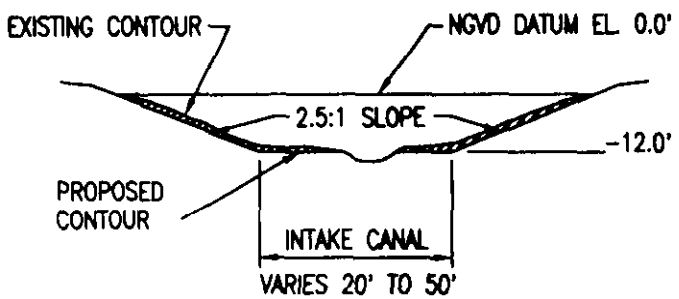




SECTION B-B

SCALE: HORIZ. 0' 20' 40'

Beth Kopanski 5/2/95



SECTION C-C

NTS

NOTES:

1. DATUM IS NGVD. M.L.W. = -0.10
   M.H.W. = 0.22
2. DREDGE QUANTITIES:
   INTAKE CANAL 450 CUBIC YARDS
   BARGE CANAL 49,000 CUBIC YARDS
3. SPOIL MATERIAL TO BE ULTIMATELY DISPOSED OF AT AN APPROVED LANDFILL.

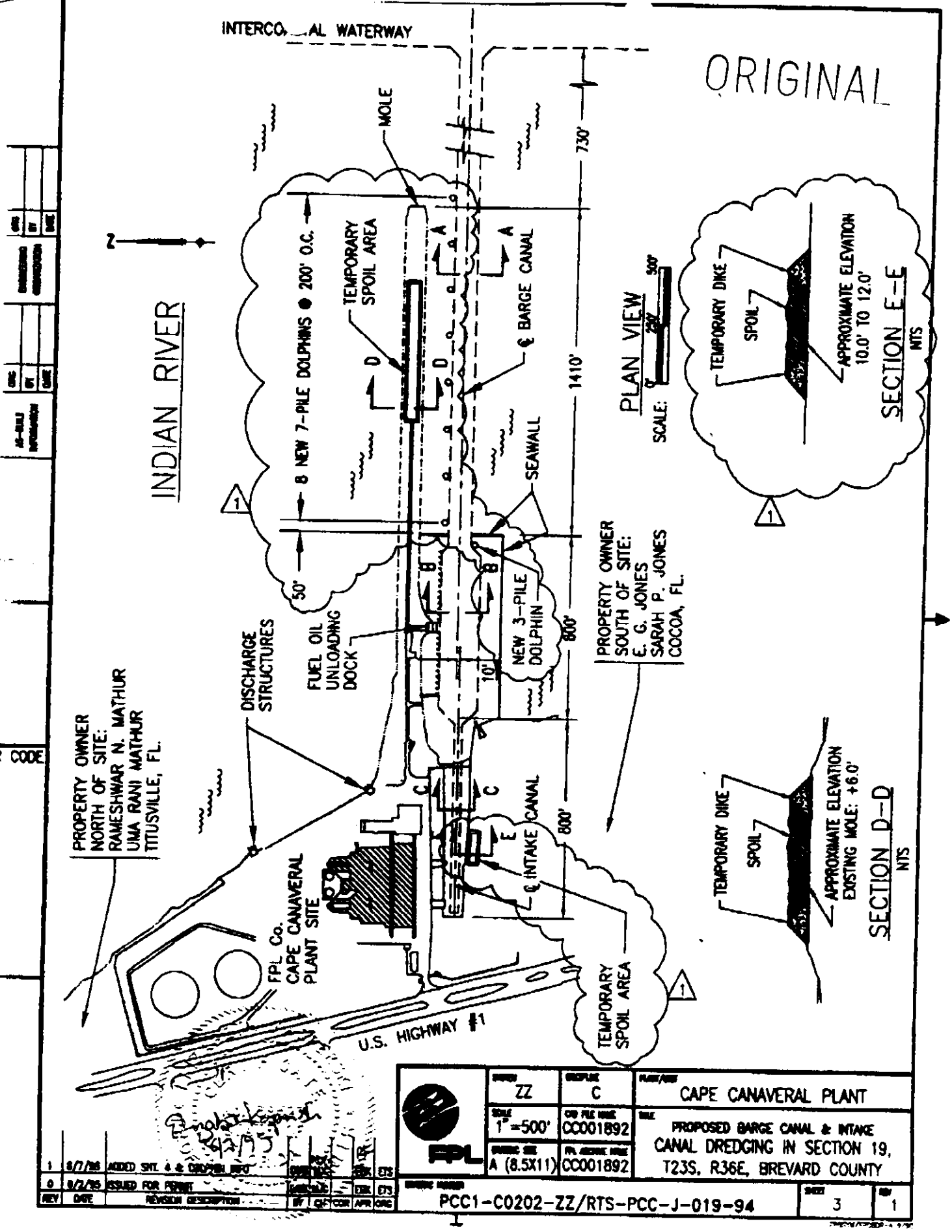
REV	DATE	REVISION DESCRIPTION	DMB BY	MJG CH	COR	EBK APR	ETS ORG
0	5/2/95	ISSUED FOR PERMIT					

SYSTEM ZZ	DISCIPLINE C	PLANT/AREA CAPE CANAVERAL PLANT	
SCALE 1"=40'	CAD FILE NAME CC001874	TITLE PROPOSED BARGE CANAL & INTAKE CANAL DREDGING IN SECTION 19, T23S, R36E, BREVARD COUNTY	
DRAWING SIZE A (8.5X11)	FPL ARCHIVE NAME CC001874		
DRAWING NUMBER PCC1-C0202-ZZ/RTS-PCC-J-019-94		SHEET 2	REV 0

ENGINEERING ORGANIZATION | DRG | BY | DATE
AS-BUILT INFORMATION | DRG | BY | DATE
R CODE

SAMPLES MUST BE COLLECTED IMMEDIATELY FOLLOWING AN EVENT

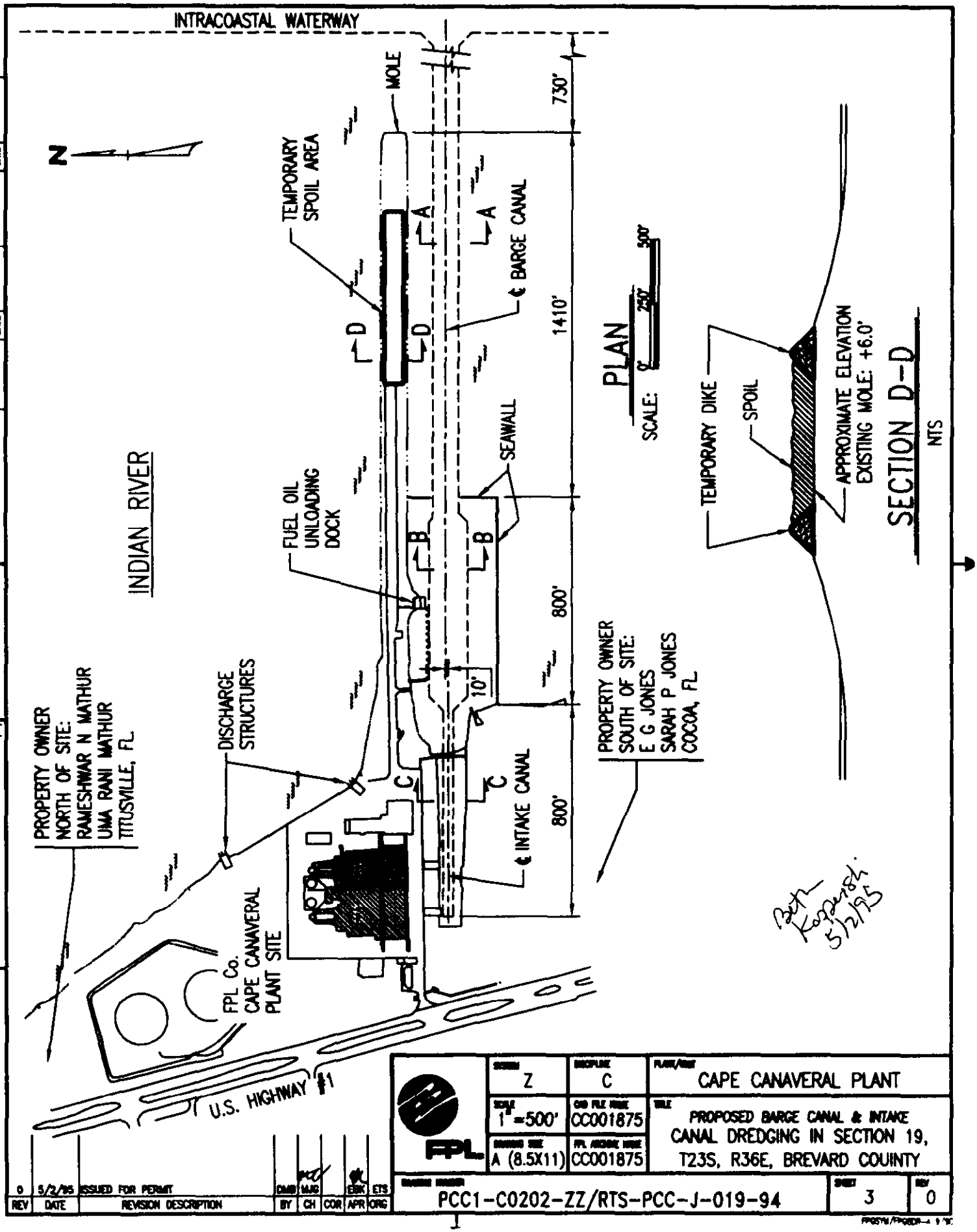
ORIGINAL



REV	DATE	REVISION DESCRIPTION	BY	CK	COR	APR	ORIG
1	8/7/95	ADDED SHT. 4 & DREDGING INFO				DSK	ETS
0	8/2/95	ISSUED FOR PERMIT				DSK	ETS

DESIGN ZZ	DISCIPLINE C	PLANT/AREA CAPE CANAVERAL PLANT	
SCALE 1"=500'	CAD FILE NAME CC001892	TITLE PROPOSED BARGE CANAL & INTAKE CANAL DREDGING IN SECTION 19, T23S, R36E, BREVARD COUNTY	
DRAWING SIZE A (8.5X11)	FPL ASSIGNED NUMBER CC001892		
DRAWING NUMBER PCC1-C0202-ZZ/RTS-PCC-J-019-94		SHEET 3	REV 1

ORIGINAL



changes when they occur. Received

ORIGINAL

STANDARD MANATEE CONDITIONS FOR USE DURING
CONSTRUCTION OF A PROJECT

The permittee shall ensure that:

1. The contractor instructs all personnel associated with the project of the potential presence of manatees and the need to avoid collisions with manatees.

2. All construction personnel will be advised that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act of 1972, the Endangered Species Act of 1973, and the Florida Manatee Sanctuary Act of 1978. The permittee and/or contractor may be held responsible for any manatee harmed, harassed, or killed as a result of construction activities.

3. Siltation barriers will be made of material in which manatees cannot become entangled, are properly secured, and are regularly monitored to avoid manatee entrapment. Barriers must not block manatee entry to or exit from essential habitat.

4. All vessels associated with the project will operate at "no wake/idle" speeds at all times while in water where the draft of the vessel provides less than four feet clearance from the bottom and that vessels will follow routes of deep water whenever possible.

5. If manatees are seen within 100 yards of the dredging area, all appropriate precautions shall be implemented to ensure protection of the manatees. These precautions shall include operating all equipment in such a manner that moving equipment does not come any closer than 50 feet of any manatee. Operation of any equipment closer than 50 feet to a manatee shall necessitate immediate shutdown of that equipment.

6. Any collision with and/or injury to a manatee will be reported immediately to the "Manatee Hotline" (1-800-DIAL FMP) and to the U.S. Fish and Wildlife Service, Jacksonville Field Office (904-791-2580) for north Florida and to the Vero Beach Field Office (407-562-3909) for south Florida.

7. A minimum of ___ 3-feet by 4-feet temporary manatee awareness construction signs labeled "Manatee Habitat - Idle Speed In Construction Area" shall be installed and maintained at prominent locations within the construction area/docking facility prior to initiation of construction. One temporary sign will be located prominently adjacent to the construction permit and, if required, a second temporary construction sign will be installed in a location prominently visible to water related construction crews. A temporary construction sign criteria sheet is enclosed. Temporary signs will be removed by the permittee upon completion of construction.

STANDARD MANATEE CONDITIONS FOR USE
DURING CONSTRUCTION OF A PROJECT (CONT'D)

8. The contractor will maintain a log detailing sightings, collisions, or injuries to manatees should they occur during the contract period. Following project completion, a report summarizing incidents and sightings will be submitted to the Florida Department of Natural Resources (DNR) Marine Mammal Section, 100 Eighth Avenue, Southeast, St. Petersburg, Florida 33701-5095, the U.S. Fish and Wildlife Service, Jacksonville Field Office, 3100 University Boulevard, South, Suite 120, Jacksonville, Florida 32216 for north Florida and the U.S. Fish and Wildlife Service Office, P.O. Box 2676, Vero Beach, Florida 32930 for south Florida.

Revised 12/8/92

MANATEE SIGN SUPPLIERS AND SPECIFICATIONS DNR APPROVED

Manatee signs which meet the Department of Natural Resources requirements are available through the companies listed below. Additional suppliers of these signs may be available through local sources. Any signs utilized must meet exact DNR specifications as per attached. Signs supplied by other than the companies listed here or that differ in any way from specifications must be approved by the Florida Department of Natural Resources, by submitting art work and specifications to William Camery, Construction Control Specialist, Protected Species Management, Division of Marine Resources. Florida Department of Natural Resources, Room 321, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399 (904-922-4330).

APPROVED SIGN COMPANIES
Regulatory & Informational Signs

Cape Coral Signs & Designs Inc.
1311 Del Prado Boulevard
Cape Coral, Florida 33990
-800-226-3982
813-772-9992
FAX 813-772-9251

JADCO Signing Inc.
708 Commerce Way
Post Office Box 911
Jupiter, Florida 33458
1-800-432-3404
407-747-1065
FAX 407-744-2985

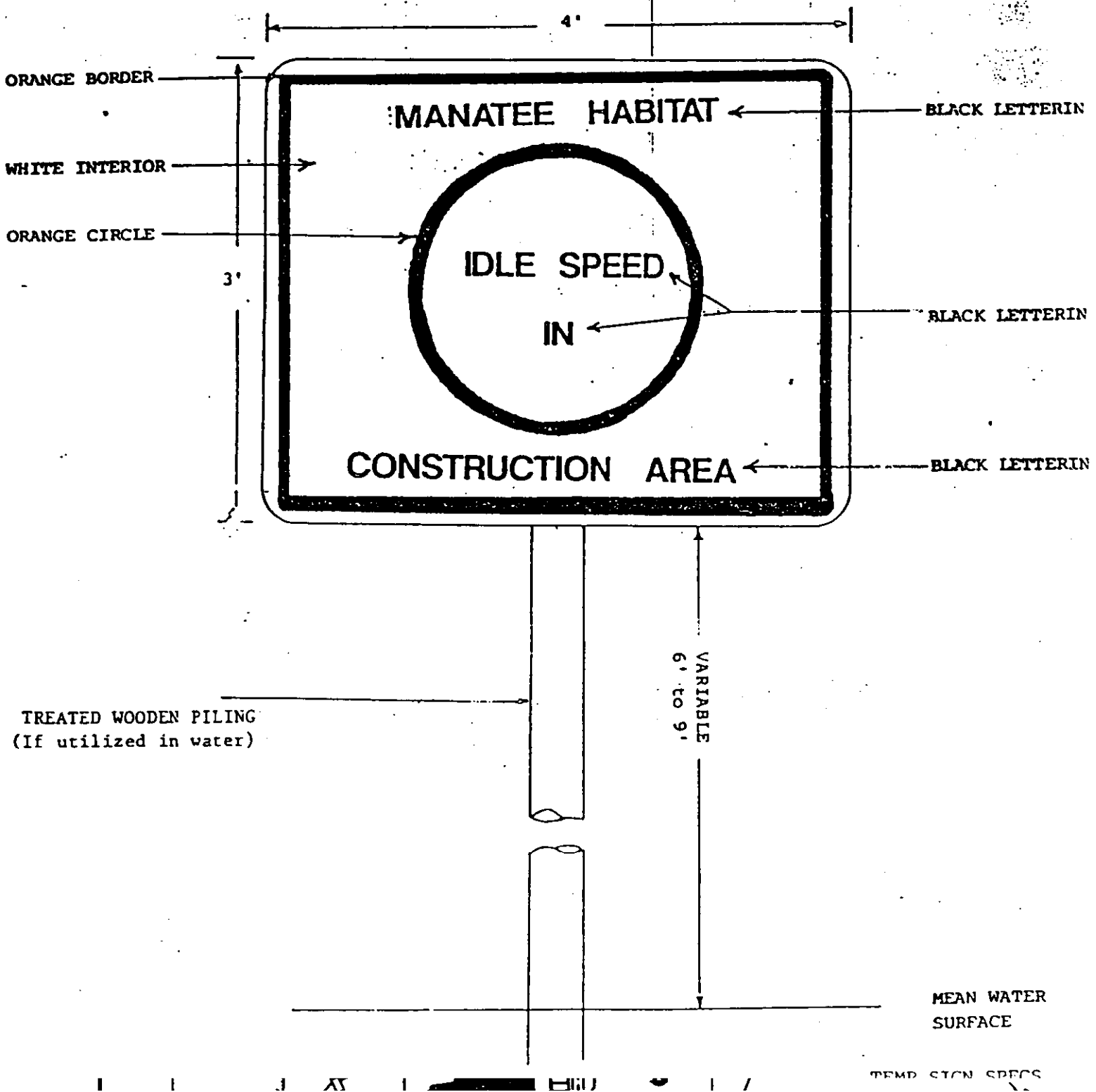
Municipal Supply and Sign Company
Post Office Box 17
Naples, Florida 33939-1765
1-800-329-5366
813-262-4639
FAX 813-262-4645

The Suppliers listed above manufacture regulatory, caution and informational signs ("West Indian Manatee Fact Sheet", "Manatee Basics For Boaters"). Permit/lease holders, marinas, and boat docking/launching facilities should contact sign companies directly to arrange for shipping and billing.

Information Signs(only)

New City Sign Company
2245 Central Avenue
St. Petersburg, Florida 33713
813-323-1897
813-323-7897
FAX 813-323-1897

...PORARY CONSTRUCTION SIGN



include a statement that the verification will remain valid for the specified period of time. If during that time period, the NWP authorization is reissued without modification or the activity complies with any subsequent modification of the NWP authorization. Furthermore, the response should include a statement that the provisions of § 330.6(b) will apply, if during that period of time, the NWP authorization expires, or is suspended or revoked, or is modified, such that the activity would no longer comply with the terms and conditions of an NWP. Finally, the response should include any known expiration date that would occur during the specified period of time. A period of time less than two years may be used if deemed appropriate.

(iii) For activities where a state has denied 401 water quality certification and/or did not agree with the Corps consistency determination for an NWP the DE's response will state that the proposed activity meets the terms and conditions for authorization under the NWP with the exception of a state 401 water quality certification and/or CZM consistency concurrence. The response will also indicate the activity is denied without prejudice and cannot be authorized until the requirements of §§ 330.4(c)(3), 330.4(c)(5), 330.4(d)(3), and 330.4(d)(6) are satisfied. The response will also indicate that work may only proceed subject to the terms and conditions of the state 401 water quality certification and/or CZM concurrence.

(iv) Once the DE has provided such verification, he must use the procedures of 33 CFR 330.5 in order to modify, suspend, or revoke the authorization.

(b) *Expiration of nationwide permits.* The Chief of Engineers will periodically review NWPs and their conditions and will decide to either modify, reissue, or revoke the permits. If an NWP is not modified or reissued within five years of its effective date, it automatically expires and becomes null and void. Activities which have commenced (i.e. are under construction) or are under contract to commence in reliance upon an NWP will remain authorized provided the activity is completed within twelve months of the date of an NWP's expiration, modification, or revocation, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend, or revoke the authorization in accordance with 33 CFR 330.4(e) and 33 CFR 330.5 (c) or (d). Activities completed under the authorization of an NWP which was in effect at the time the activity was completed continue to be authorized by that NWP.

(c) *Multiple use of nationwide permits.* Two or more different NWPs can be combined to authorize a "single and complete project" as defined at 33 CFR 330.2(i). However, the same NWP cannot be used more than once for a single and complete project.

(d) *Combining nationwide permits with individual permits.* Subject to the following qualifications, portions of a larger project may proceed under the authority of the NWPs while the DE evaluates an individual permit application for other portions of the same project, but only if the portions of the project qualifying for NWP authorization would have independent utility and are able to function or meet their purpose independent of the total project. When the functioning or usefulness of a portion of the total project qualifying for an NWP is dependent on the remainder of the project, such that its construction and use would not be fully justified even if the Corps were to deny the individual permit, the NWP does not apply and all portions of the project must be evaluated as part of the individual permit process.

(1) When a portion of a larger project is authorized to proceed under an NWP, it is with the understanding that its construction will in no way prejudice the decision on the individual permit for the rest of the project. Furthermore, the individual permit documentation must include an analysis of the impacts of the entire project, including related activities authorized by NWP.

(2) NWPs do not apply, even if a portion of the project is not dependent on the rest of the project, when any portion of the project is subject to an enforcement action by the Corps or EPA.

(e) *After-the-fact authorizations.* These authorizations often play an important part in the resolution of violations. In appropriate cases where the activity complies with the terms and conditions of an NWP, the DE can elect to use the NWP for resolution of an after-the-fact permit situation following a consideration of whether the violation being resolved was knowing or intentional and other indications of the need for a penalty. For example, where an unauthorized fill meets the terms and conditions of NWP 13, the DE can consider the appropriateness of allowing the residual fill to remain, in situations where said fill would normally have been permitted under NWP 13. A knowing, intentional, willful violation should be the subject of an enforcement action leading to a penalty, rather than an after-the-fact authorization. Use of after-the-fact NWP authorization must be consistent with the terms of the Army/EPA Memorandum of Agreement on Enforcement. Copies are available from each district engineer.

Appendix A to Part 330—Nationwide Permits and Conditions

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B. Nationwide Permits

1. *Aids to Navigation.* The placement of aids to navigation and regulatory markers which are approved by and installed in accordance with the requirements of the U.S. Coast Guard. (See 33 CFR part 66, chapter I, subchapter C). (section 10)

2. *Structures in Artificial Canals.* Structures constructed in artificial canals within principally residential developments where the connection of the canal to a navigable water of the United States has been previously authorized (see 33 CFR 322.5(g)). (section 10)

3. *Maintenance.* The repair, rehabilitation, or replacement of any previously authorized, currently serviceable, structure or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3, provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area including those due to changes in materials, construction techniques, or current construction codes or safety standards which are necessary to make repair, rehabilitation, or replacement are permitted, provided the environmental impacts resulting from such repair, rehabilitation, or replacement are minimal. Currently serviceable means useable as is or with some maintenance, but not so degraded as to essentially require reconstruction. This nationwide permit authorizes the repair, rehabilitation, or replacement of those structures destroyed by storms, floods, fire or other discrete events, provided the repair, rehabilitation, or replacement is commenced or under contract to commence within two years of the date of their destruction or damage. In cases of catastrophic events, such as hurricanes or tornadoes, this two-year limit may be waived by the District Engineer, provided the permittee can demonstrate funding, contract, or other similar delays. Maintenance dredging and beach restoration are not authorized by this nationwide permit. (sections 10 and 404)

4. *Fish and Wildlife Harvesting, Enhancement, and Attraction Devices and Activities.* Fish and wildlife harvesting devices and activities such as pound nets, crab traps, crab dredging, eel pots, lobster traps, duck blinds, clam and oyster digging, and small fish attraction devices such as open water fish concentrators (sea kites, etc). This nationwide permit authorizes shellfish seeding provided this activity does not occur in wetlands or vegetated shallows. This nationwide permit does not authorize artificial reefs or impoundments and semi-impoundments of waters of the United States for the culture or holding of motile species such as lobster. (sections 10 and 404)

5. *Scientific Measurement Devices.* Staff gages, tide gages, water recording devices, water quality testing and improvement devices and similar structures. Small weirs and flumes constructed primarily to record water quantity and velocity are also authorized provided the discharge is limited to 25 cubic yards and further for discharges of 10 to 25 cubic yards provided the permittee notifies the district engineer in accordance with "Notification" general condition. (sections 10 and 404)

6. *Survey Activities.* Survey activities including core sampling, seismic exploratory operations, and plugging of seismic shot holes and other exploratory-type bore holes. Drilling and the discharge of excavated material from test wells for oil and gas exploration is not authorized by this nationwide permit; the plugging of such wells is authorized. Fill placed for roads, pads and other similar activities is not authorized by this nationwide permit. The discharge of drilling muds and cuttings may require a permit under section 402 of the Clean Water Act. (sections 10 and 404)

7. *Outfall Structures.* Activities related to construction of outfall structures and associated intake structures where the effluent from the outfall is authorized, conditionally authorized, or specifically exempted, or are otherwise in compliance with regulations issued under the National Pollutant Discharge Elimination System program (section 402 of the Clean Water Act), provided that the nationwide permittee notifies the district engineer in accordance with the "Notification" general condition. (Also see 33 CFR 330.1(e)). Intake structures per se are not included—only those directly associated with an outfall structure. (sections 10 and 404)

8. *Oil and Gas Structures.* Structures for the exploration, production, and transportation of oil, gas, and minerals on the outer continental shelf within areas leased for such purposes by the Department of the Interior, Minerals Management Service. Such structures shall not be placed within the limits of any designated shipping safety fairway or traffic separation scheme, except temporary anchors that comply with the fairway regulations in 33 CFR 322.5(l). (Where such limits have not been designated, or where changes are anticipated, district engineers will consider asserting discretionary authority in accordance with 33 CFR 330.4(e) and will also review such proposals to ensure they comply with the provisions of the fairway regulations in 33 CFR 322.5(l)). Such structures will not be placed in established danger zones or restricted areas as designated in 33 CFR part 334; nor will such structures be permitted in EPA or Corps designated dredged material disposal areas. (section 10)

9. *Structures in Fleeting and Anchorage Areas.* Structures, buoys, floats, and other devices placed within anchorage or fleeting areas to facilitate moorage of vessels where such areas have been established for that purpose by the U.S. Coast Guard. (section 10)

10. *Mooring Buoys.* Non-commercial, single-boat, mooring buoys. (section 10)

11. *Temporary Recreational Structures.* Temporary buoys, markers, small floating docks, and similar structures placed for recreational use during specific events such as water skiing competitions and boat races or seasonal use provided that such structures are removed within 30 days after use has been discontinued. At Corps of Engineers reservoirs, the reservoir manager must approve each buoy or marker individually. (section 10)

12. *Utility Line Backfill and Bedding.* Discharges of material for backfill or bedding for utility lines, including outfall and intake structures, provided there is no change in preconstruction contours. A "utility line" is defined as any pipe or pipeline for the transportation of any gaseous, liquid, liquefiable, or slurry substance, for any purpose, and any cable, line, or wire for the transmission for any purpose of electrical energy, telephone and telegraph messages, and radio and television communication. The term "utility line" does not include activities which drain a water of the United States, such as drainage tile, however, it does apply to pipes conveying drainage from another area. Material resulting from trench excavation may be temporarily sidecast (up to three months) into waters of the United States provided that the material is not placed in such a manner that it is

dispersed by currents or other forces. The DE may extend the period of temporary side-casting up to 180 days, where appropriate. The area of waters of the United States that is disturbed must be limited to the minimum necessary to construct the utility line. In wetlands, the top 6" to 12" of the trench should generally be backfilled with topsoil from the trench. Excess material must be removed to upland areas immediately upon completion of construction. Any exposed slopes and streambanks must be stabilized immediately upon completion of the utility line. The utility line itself will require a Section 10 permit if in navigable waters of the United States. (See 33 CFR part 322). (section 404)

13. *Bank Stabilization.* Bank stabilization activities necessary for erosion prevention provided:

a. No material is placed in excess of the minimum needed for erosion protection;

b. The bank stabilization activity is less than 500 feet in length;

c. The activity will not exceed an average of one cubic yard per running foot placed along the bank below the plane of the ordinary high water mark or the high tide line;

d. No material is placed in any special aquatic site, including wetlands;

e. No material is of the type or is placed in any location or in any manner so as to impair surface water flow into or out of any wetland area;

f. No material is placed in a manner that will be eroded by normal or expected high flows (properly anchored trees and treetops may be used in low energy areas); and,

g. The activity is part of a single and complete project.

Bank stabilization activities in excess of 500 feet in length or greater than an average of one cubic yard per running foot may be authorized if the permittee notifies the district engineer in accordance with the "Notification" general condition and the district engineer determines the activity complies with the other terms and conditions of the nationwide permit and the adverse environmental impacts are minimal both individually and cumulatively. (sections 10 and 404)

14. *Road Crossing.* Fills for roads crossing waters of the United States (including wetlands and other special aquatic sites) provided:

a. The width of the fill is limited to the minimum necessary for the actual crossing;

b. The fill placed in waters of the United States is limited to a filled area of no more than ⅓ acre. Furthermore, no more than a total of 200 linear feet of the fill for the roadway can occur in special aquatic sites, including wetlands;

c. The crossing is culverted, bridged or otherwise designed to prevent the restriction of, and to withstand, expected high flows and tidal flows, and to prevent the restriction of low flows and the movement of aquatic organisms;

d. The crossing, including all attendant features, both temporary and permanent, is part of a single and complete project for crossing of a water of the United States; and,

e. For fills in special aquatic sites, including wetlands, the permittee notifies the district engineer in accordance with the "Notification" general condition. The notification must also include a delineation of affected special aquatic sites, including wetlands.

Some road fills may be eligible for an exemption from the need for a Section 404 permit altogether (see 33 CFR 323.4). Also, where local circumstances indicate the need, district engineers will define the term "expected high flows" for the purpose of establishing applicability of this nationwide permit. (sections 10 and 404)

15. *U.S. Coast Guard Approved Bridges.* Discharges of dredged or fill material incidental to the construction of bridges across navigable waters of the United States, including cofferdams, abutments, foundation seals, piers, and temporary construction and access fills provided such discharges have been authorized by the U.S. Coast Guard as part of the bridge permit. Causeways and approach fills are not included in this nationwide permit and will require an individual or regional section 404 permit. (section 404)

16. *Return Water From Upland Contained Disposal Areas.* Return water from an upland, contained dredged material disposal area. The dredging itself requires a section 10 permit if located in navigable waters of the United States. The return water from a contained disposal area is administratively defined as a discharge of dredged material by 33 CFR 323.2(d) even though the disposal itself occurs on the upland and thus does not require a section 404 permit. This nationwide permit satisfies the technical requirement for a section 404 permit for the return water where the quality of the return water is controlled by the state through the section 401 certification procedures. (section 404)

17. *Hydropower Projects.* Discharges of dredged or fill material associated with (a) small hydropower projects at existing reservoirs where the project, which includes the fill, is licensed by the Federal Energy Regulatory Commission (FERC) under the Federal Power Act of 1920, as amended; and has a total generating capacity of not more than 5000 KW; and the permittee notifies the district engineer in accordance with the "Notification" general condition; or (b) hydropower projects for which the FERC has granted an exemption from licensing pursuant to section 408 of the Energy Security Act of 1980 (16 U.S.C. 2705 and 2708) and section 30 of the Federal Power Act, as amended; provided the permittee notifies the district engineer in accordance with the "Notification" general condition. (section 404)

18. *Minor Discharges.* Minor discharges of dredged or fill material into all waters of the United States provided:

a. The discharge does not exceed 25 cubic yards;

b. The discharge will not cause the loss of more than 1/10 acre of a special aquatic site, including wetlands. For the purposes of this nationwide permit, the acreage limitation includes the filled area plus special aquatic sites that are adversely affected by flooding and special aquatic sites that are drained so that they would no longer be a water of the United States as a result of the project;

c. If the discharge exceeds 10 cubic yards or the discharge is in a special aquatic site, including wetlands, the permittee notifies the district engineer in accordance with the "Notification" general condition. For discharges in special aquatic sites, including wetlands, the notification must also include a delineation of affected special aquatic sites, including wetlands. (Also see 33 CFR 330.1(e)); and

d. The discharge, including all attendant features, both temporary and permanent, is part of a single and complete project and is not placed for the purpose of stream diversion. (sections 10 and 404)

19. *Minor Dredging.* Dredging of no more than 25 cubic yards below the plane of the ordinary high water mark or the mean high water mark from navigable waters of the United States as part of a single and complete project. This nationwide permit does not authorize the dredging or degradation through siltation of coral reefs, submerged aquatic vegetation, anadromous fish spawning areas, or wetlands or, the connection of canals or other artificial waterways to navigable waters of the United States (see 33 CFR 322.5(g)). (section 10)

20. *Oil Spill Cleanup.* Activities required for the containment and

lity of the submersed aquatic vegetation,

cleanup of oil and hazardous substances which are subject to the National Oil and Hazardous Substances Pollution Contingency Plan, (40 CFR part 300), provided that the work is done in accordance with the Spill Control and Countermeasure Plan required by 40 CFR 112.3 and any existing State contingency plan and provided that the Regional Response Team (if one exists in the area) concurs with the proposed containment and cleanup action. (sections 10 and 404)

21. *Surface Coal Mining Activities.* Activities associated with surface coal mining activities provided they are authorized by the Department of the Interior, Office of Surface Mining, or by states with approved programs under Title V of the Surface Mining Control and Reclamation Act of 1977 and provided the permittee notifies the district engineer in accordance with the "Notification" general condition. For discharges in special aquatic sites, including wetlands, the notification must also include a delineation of affected special aquatic sites, including wetlands. (Also see 33 CFR 330.1(e)). (sections 10 and 404)

22. *Removal of Vessels.* Temporary structures or minor discharges of dredged or fill material required for the removal of wrecked, abandoned, or disabled vessels, or the removal of man-made obstructions to navigation. This nationwide permit does not authorize the removal of vessels listed or determined eligible for listing on the National Register of Historic Places unless the district engineer is notified and indicates that there is compliance with the "Historic Properties" general condition. This nationwide permit does not authorize maintenance dredging, shoal removal, or river bank snagging. Vessel disposal in waters of the United States may need a permit from EPA (see 40 CFR 229.3). (sections 10 and 404)

23. *Approved Categorical Exclusions.* Activities undertaken, assisted, authorized, regulated, funded, or financed, in whole or in part, by another Federal agency or department where that agency or department has determined, pursuant to the Council on Environmental Quality Regulation for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR part 1500 et seq.), that the activity, work, or discharge is categorically excluded from environmental documentation because it is included within a category of actions which neither individually nor cumulatively have a significant effect on the human environment, and the Office of the Chief of Engineers (ATTN: CECW–OR) has been furnished notice of the agency's or department's application for the categorical exclusion and concurs with that determination. Prior to approval for purposes of this nationwide permit of any agency's categorical exclusions, the Chief of Engineers will solicit public comment. In addressing these comments, the Chief of Engineers may require certain conditions for authorization of an agency's categorical exclusions under this nationwide permit. (sections 10 and 404)

24. *State Administered Section 404 Program.* Any activity permitted by a state administering its own section 404 permit program pursuant to 33 U.S.C. 1344(g)–(l) is permitted pursuant to section 10 of the Rivers and Harbors Act of 1899. Those activities which do not involve a section 404 state permit are not included in this nationwide permit, but certain structures will be exempted by section 154 of Public Law 94–587, 90 Stat. 2917 (33 U.S.C. 591) (see 33 CFR 322.3(a)(2)). (section 10)

25. *Structural Discharge.* Discharges of material such as concrete, sand, rock, etc. into tightly sealed forms or cells where the material will be used as a structural member for standard pile supported structures, such as piers and docks; and for linear projects, such as bridges, transmission line footings, and walkways. The NWP does *not* authorize filled structural members that would support buildings, homes, parking areas, storage areas and other such structures. Housepads or other building pads are also not included in this nationwide permit. The structure itself may require a section 10 permit if located in navigable waters of the United States. (section 404)

26. *Headwaters and Isolated Waters Discharges.* Discharges of dredged or fill material into headwaters and isolated waters provided:

a. The discharge does not cause the loss of more than 10 acres of waters of the United States;

b. The permittee notifies the district engineer if the discharge would cause the loss of waters of the United States greater than one acre in accordance with the "Notification" general condition. For discharges in special aquatic sites, including wetlands, the notification must also include a delineation of affected special aquatic sites, including wetlands. (Also see 33 CFR 330.1(e)); and

c. The discharge, including all attendant features, both temporary and permanent, is part of a single and complete project.

For the purposes of this nationwide permit, the acreage of loss of waters of the United States includes the filled area plus waters of the United States that are adversely affected by flooding, excavation or drainage as a result of the project. The ten-acre and one-acre limits of NWP 26 are absolute, and cannot be increased by any mitigation plan offered by the applicant or required by the DE.

Subdivisions: For any real estate subdivision created or subdivided after October 5, 1984, a notification pursuant to subsection b. of this nationwide permit is required for any discharge which would cause the aggregate total loss of waters of the United States for the entire subdivision to exceed one (1) acre. Any discharge in any real estate subdivision which would cause the aggregate total loss of waters of the United States in the subdivision to exceed ten (10) acres is not authorized by this nationwide permit; unless the DE exempts a particular subdivision or parcel by making a written determination that: (1) The individual and cumulative adverse environmental effects would be minimal and the property owner had, after October 5, 1984, but prior to January 21, 1992, committed substantial resources in reliance on NWP 26 with regard to a subdivision, in circumstances where it would be inequitable to frustrate his investment-backed expectations, or (2) that the individual and cumulative adverse environmental effects would be minimal, high quality wetlands would not be adversely affected, and there would be an overall benefit to the aquatic environment. Once the exemption is established for a subdivision, subsequent lot development by individual property owners may proceed using NWP 26. For purposes of NWP 26, the term "real estate subdivision" shall be interpreted to include circumstances where a landowner or developer divides a tract of land into smaller parcels for the purpose of selling, conveying, transferring, leasing, or developing said parcels. This would include the entire area of a residential, commercial or other real estate subdivision, including all parcels and parts thereof. (section 404)

27. *Wetland and Riparian Restoration and Creation Activities.* Activities in waters of the United States associated with the restoration of altered and degraded non-tidal wetlands and creation of wetlands on private lands in accordance with the terms and conditions of a binding wetland restoration or creation agreement between the landowner and the U.S. Fish and Wildlife Service (USFWS) or the Soil Conservation Service (SCS); or

activities associated with the restoration of altered and degraded non-tidal wetlands, riparian areas and creation of wetlands and riparian areas on U.S. Forest Service and Bureau of Land Management lands, Federal surplus lands (e.g., military lands proposed for disposal), Farmers Home Administration inventory properties, and Resolution Trust Corporation inventory properties that are under Federal control prior to being transferred to the private sector. Such activities include, but are not limited to: Installation and maintenance of small water control structures, dikes, and berms; backfilling of existing drainage ditches; removal of existing drainage structures; construction of small nesting islands; and other related activities. This nationwide permit applies to restoration projects that serve the purpose of restoring "natural" wetland hydrology, vegetation, and function to altered and degraded non-tidal wetlands and "natural" functions of riparian areas. For agreement rest ration and creation projects only, this nationwide permit also authorizes any future discharge of dredged or fill material associated with the reversion of the area to its prior condition and use (i.e., prior to restoration under the agreement) within five years after expiration of the limited term wetland restoration or creation agreement, even if the discharge occurs after this nationwide permit expires. The prior condition will be documented in the original agreement, and the determination of return to prior conditions will be made by the Federal agency executing the agreement. Once an area is reverted back to its prior physical condition, it will be subject to whatever the Corps regulatory requirements will be at that future date. This nationwide permit does not authorize the conversion of natural wetlands to another aquatic use, such as creation of waterfowl impoundments where a forested wetland previously existed. (sections 10 and 404)

28. *Modifications of Existing Marinas.* Reconfigurations of existing docking facilities within an authorized marina area. No dredging, additional slips or dock spaces, or expansion of any kind within waters of the United States are authorized by this nationwide permit. (section 10)

29. Reserved

30. Reserved

31. Reserved

32. *Completed Enforcement Actions.* Any structure, work or discharge of dredged or fill material undertaken in accordance with, or remaining in place in compliance with, the terms of a final Federal court decision, consent decree, or settlement agreement in an enforcement action brought by the United States under section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act of 1899. (sections 10 and 404)

33. *Temporary Construction, Access and Dewatering.* Temporary structures and discharges, including cofferdams, necessary for construction activities or access fills or dewatering of construction sites; provided the associated permanent activity was previously authorized by the Corps of Engineers or the U.S. Coast Guard, or for bridge construction activities not subject to Federal regulation. Appropriate measures must be taken to maintain near normal downstream flows and to minimize flooding. Fill must be of materials and placed in a manner that will not be eroded by expected high flows. Temporary fill must be entirely removed to upland areas following completion of the construction activity and the affected areas restored to the pre-project conditions. Cofferdams cannot be used to dewater wetlands or other aquatic areas so as to change their use. Structures left in place after cofferdams are removed require a section 10 permit if located in navigable waters of the United States. (See 33 CFR part 322). The permittee must notify the district engineer in accordance with the "Notification" general condition. The notification must also include a restoration plan of reasonable measures to avoid and minimize impacts to aquatic resources. The district engineer will add special conditions, where necessary, to ensure that adverse environmental impacts are minimal. Such conditions may include: limiting the temporary work to the minimum necessary; requiring seasonal restrictions; modifying the restoration plan; and requiring alternative construction methods (e.g. construction mats in wetlands where practicable). This nationwide permit does not authorize temporary structures or fill associated with mining activities or the construction of marina basins which have not been authorized by the Corps. (sections 10 and 404)

34. *Cranberry Production Activities:* Discharges of dredged or fill material for dikes, berms, pumps, water control structures or leveling of cranberry beds associated with expansion, enhancement, or modification activities at existing cranberry production operations provided:

a. The cumulative total acreage of disturbance per cranberry production operation, including but not limited to, filling, flooding, ditching, or clearing, does not exceed 10 acres of waters of the United States, including wetlands;

b. The permittee notifies the District Engineer in accordance with the notification procedures; and

c. The activity does not result in a net loss of wetland acreage.

This nationwide permit does not authorize any discharge of dredged or fill material related to other cranberry production activities such as warehouses, processing facilities, or parking areas. For the purposes of this nationwide permit, the cumulative total of 10 acres will be measured over the period that this nationwide permit is valid. (section 404)

35. *Maintenance Dredging of Existing Basins.* Excavation and removal of accumulated sediment for maintenance of existing marina basins, canals, and boat slips to previously authorized depths or controlling depths for ingress/egress whichever is less provided the dredged material is disposed of at an upland site and proper siltation controls are used. (section 10)

36. *Boat Ramps.* Activities required for the construction of boat ramps provided:

a. The discharge into waters of the United States does not exceed 50 cubic yards of concrete, rock, crushed stone or gravel into forms, or placement of pre-cast concrete planks or slabs. (Unsuitable material that causes unacceptable chemical pollution or is structurally unstable is not authorized);

b. The boat ramp does not exceed 20 feet in width;

c. The base material is crushed stone, gravel or other suitable material;

d. The excavation is limited to the area necessary for site preparation and all excavated material is removed to the upland; and

e. No material is placed in special aquatic sites, including wetlands.

Dredging to provide access to the boat ramp may be authorized by another NWP, regional general permit, or individual permit pursuant to section 10 if located in navigable waters of the United States. (sections 10 and 404)

37. *Emergency Watershed Protection and Rehabilitation.* Work done by or funded by the Soil Conservation Service qualifying as an "exigency" situation (requiring immediate action) under its Emergency Watershed Protection Program (7 CFR part 624) and work done or funded by the Forest Service under its Burned-Area Emergency Rehabilitation Handbook (FSH 509.13) provided the district engineer is notified in accordance with the notification general

condition. (Also see 33 CFR 330.1(e)). (sections 10 and 404)

38. *Cleanup of Hazardous and Toxic Waste.* Specific activities required to effect the containment, stabilization or removal of hazardous or toxic waste materials that are performed, ordered, or sponsored by a government agency with established legal or regulatory authority provided the permittee notifies the district engineer in accordance with the "Notification" general condition. For discharges in special aquatic sites, including wetlands, the notification must also include a delineation of affected special aquatic sites, including wetlands. Court ordered remedial action plans or related settlements are also authorized by this nationwide permit. This nationwide permit does not authorize the establishment of new disposal sites or the expansion of existing sites used for the disposal of hazardous or toxic waste. (sections 10 and 404)

39. Reserved

40. *Farm Buildings.* Discharges of dredged or fill material into jurisdictional wetlands (but not including prairie potholes, playa lakes, or vernal pools) that were in agricultural crop production prior to December 23, 1985 (i.e., farmed wetlands) for foundations and building pads for buildings or agricultural related structures necessary for farming activities. The discharge will be limited to the minimum necessary but will in no case exceed 1 acre (see the "Minimization" section 404 only condition). (section 404)

C. Nationwide Permit Conditions

General Conditions: The following general conditions must be followed in order for any authorization by a nationwide permit to be valid:

1. *Navigation.* No activity may cause more than a minimal adverse effect on navigation.

2. *Proper maintenance.* Any structure or fill authorized shall be properly maintained, including maintenance to ensure public safety.

3. *Erosion and siltation controls.* Appropriate erosion and siltation controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills must be permanently stabilized at the earliest practicable date.

4. *Aquatic life movements.* No activity may substantially disrupt the movement of those species of aquatic life indigenous to the waterbody, including those species which normally migrate through the area, unless the activity's primary purpose is to impound water.

5. *Equipment.* Heavy equipment working in wetlands must be placed on mats or other measures must be taken to minimize soil disturbance.

6. *Regional and case-by-case conditions.* The activity must comply with any regional conditions which may have been added by the division engineer (see 33 CFR 330.4(e)) and any case specific conditions added by the Corps.

7. *Wild and Scenic Rivers.* No activity may occur in a component of the National Wild and Scenic River System; or in a river officially designated by Congress as a "study river" for possible inclusion in the system, while the river is in an official study status. Information on Wild and Scenic Rivers may be obtained from the National Park Service and the U.S. Forest Service.

8. *Tribal rights.* No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

9. *Water quality certification.* In certain states, an individual state water quality certification must be obtained or waived (see 33 CFR 330.4(c)).

10. *Coastal zone management.* In certain states, an individual state coastal zone management consistency concurrence must be obtained or waived. (see 33 CFR 330.4(d)).

11. *Endangered Species.* No activity is authorized under any NWP which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act, or which is likely to destroy or adversely modify the critical habitat of such species. Non-federal permittees shall notify the district engineer if any listed species or critical habitat might be affected or is in the vicinity of the project and shall not begin work on the activity until notified by the district engineer that the requirements of the Endangered Species Act have been satisfied and that the activity is authorized. Information on the location of threatened and endangered species and their critical habitat can be obtained from the U.S. Fish and Wildlife Service and National Marine Fisheries Service. (see 33 CFR 330.4(f))

12. *Historic properties.* No activity which may affect Historic properties listed, or eligible for listing, in the National Register of Historic Places is authorized, until the DE has complied with the provisions of 33 CFR 325, appendix C. The prospective permittee must notify the district engineer if the authorized activity may affect any historic properties listed, determined to be eligible, or which the prospective permittee has reason to believe may be eligible for listing on the National Register of Historic Places, and shall not begin the activity until notified by the District Engineer that the requirements of the National Historic Preservation Act have been satisfied and that the activity is authorized. Information on the location and existence of historic resources can be obtained from the State Historic Preservation Office and the National Register of Historic Places (see 33 CFR 330.4(g)).

13. *Notification.* (a) Where required by the terms of the NWP, the prospective permittee must notify the District Engineer as early as possible and shall not begin the activity:

(1) Until notified by the District Engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) If notified by the District or Division engineer that an individual permit is required; or

(3) Unless 30 days have passed from the District Engineer's receipt of the notification and the prospective permittee has not received notice from the District or Division Engineer. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) The notification must be in writing and include the following information and any required fees:

(1) Name, address and telephone number of the prospective permittee;

(2) Location of the proposed project;

(3) Brief description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause; any other NWP(s), regional general permit(s) or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity;

(4) Where required by the terms of the NWP, a delineation of affected special aquatic sites, including wetlands; and

(5) A statement that the prospective permittee has contacted:

(i) The USFWS/NMFS regarding the presence of any Federally listed (or proposed for listing) endangered or threatened species or critical habitat in the permit area that may be affected by the proposed project; and any available information provided by those agencies. (The prospective permittee may contact Corps District Offices for USFWS/NMFS agency contacts and lists of critical habitat.)

those due to changes in materials,

nationwide permit; the plugging of such

(ii) The SHPO regarding the presence of any historic properties in the permit area that may be affected by the proposed project; and the available information, if any, provided by that agency.

(c) The standard individual permit application form (Form ENG 4345) may be used as the notification but must clearly indicate that it is a PDN and must include all of the information required in (b) (1)–(5) of General Condition 13.

(d) In reviewing an activity under the notification procedure, the District Engineer will first determine whether the activity will result in more than minimal individual or cumulative adverse environmental effects or will be contrary to the public interest. The prospective permittee may, at his option, submit a proposed mitigation plan with the predischarge notification to expedite the process and the District Engineer will consider any optional mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects of the proposed work are minimal. The District Engineer will consider any comments from Federal and State agencies concerning the proposed activity's compliance with the terms and conditions of the nationwide permits and the need for mitigation to reduce the project's adverse environmental effects to a minimal level. The district engineer will upon receipt of a notification provide immediately (e.g. facsimile transmission, overnight mail or other expeditious manner) a copy to the appropriate offices of the Fish and Wildlife Service, State natural resource or water quality agency, EPA, and, if appropriate, the National Marine Fisheries Service. With the exception of NWP 27, these agencies will then have 5 calendar days from the date the material is transmitted to telephone the District Engineer if they intend to provide substantive, site-specific comments. If so contacted by an agency, the District Engineer will wait an additional 10 calendar days before making a decision on the notification. The District Engineer will fully consider agency comments received within the specified time frame, but will provide no response to the resource agency. The District Engineer will indicate in the administrative record associated with each notification that the resource agencies' concerns were considered. Applicants are encouraged to provide the Corps multiple copies of notifications to expedite agency notification. If the District Engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects are minimal, he will notify the permittee and include any conditions he deems necessary. If the District Engineer determines that the adverse effects of the proposed work are more than minimal, then he will notify the applicant either: (1) That the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; or (2) that the project is authorized under the nationwide permit subject to the applicant's submitting a mitigation proposal that would reduce the adverse effects to the minimal level. This mitigation proposal must be approved by the District Engineer prior to commencing work. If the prospective permittee elects to submit a mitigation plan, the DE will expeditiously review the proposed mitigation plan, but will not commence a second 30-day notification procedure. If the net adverse effects of the project (with the mitigation proposal) are determined by the District Engineer to be minimal, the District Engineer will provide a timely written response to the applicant informing him that the project can proceed under the terms and conditions of the nationwide permit.

(e) *Wetlands Delineations:* Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic site. There may be some delay if the Corps does the delineation. Furthermore, the 30-day period will not start until the wetland delineation has been completed.

(f) *Mitigation:* Factors that the District Engineer will consider when determining the acceptability of appropriate and practicable mitigation include, but are not limited to:

(1) To be practicable the mitigation must be available and capable of being done considering costs, existing technology, and logistics in light of overall project purposes;

(2) To the extent appropriate, permittees should consider mitigation banking and other forms of mitigation including contributions to wetland trust funds, which contribute to the restoration, creation, replacement, enhancement, or preservation of wetlands.

Furthermore, examples of mitigation that may be appropriate and practicable include but are not limited to: reducing the size of the project; establishing buffer zones to protect aquatic resource values; and replacing the loss of aquatic resource values by creating, restoring, and enhancing similar functions and values. In addition, mitigation must address impacts and cannot be used to offset the acreage of wetland losses that would occur in order to meet the acreage limits of some of the nationwide permits (e.g. 5 acres of wetlands cannot be created to change a 6 acre loss of wetlands to a 1 acre loss; however, the 5 created acres can be used to reduce the impacts of the 6 acre loss).

Section 404 Only Conditions

In addition to the General Conditions, the following conditions apply only to activities that involve the discharge of dredged or fill material and must be followed in order for authorization by the nationwide permits to be valid:

1. *Water supply intakes.* No discharge of dredged or fill material may occur in the proximity of a public water supply intake except where the discharge is for repair of the public water supply intake structures or adjacent bank stabilization.

2. *Shellfish production.* No discharge of dredged or fill material may occur in areas of concentrated shellfish production, unless the discharge is directly related to a shellfish harvesting activity authorized by nationwide permit 4.

3. *Suitable material.* No discharge of dredged or fill material may consist of unsuitable material (e.g., trash, debris, car bodies, etc.) and material discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

4. *Mitigation.* Discharges of dredged or fill material into waters of the United States must be minimized or avoided to the maximum extent practicable at the project site (i.e. on-site), unless the DE has approved a compensation mitigation plan for the specific regulated activity.

5. *Spawning areas.* Discharges in spawning areas during spawning seasons must be avoided to the maximum extent practicable.

6. *Obstruction of high flows.* To the maximum extent practicable, discharges must not permanently restrict or impede the passage of normal or expected high flows or cause the relocation of the water (unless the primary purpose of the fill is to impound waters).

7. *Adverse impacts from impoundments.* If the discharge creates an impoundment of water, adverse impacts on the aquatic system caused by the accelerated passage of water and/or the restriction of its flow shall be minimized to the maximum extent practicable.

8. *Waterfowl breeding areas.* Discharges into breeding areas for

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wetlands.

migratory waterfowl must be avoided to the maximum extent practicable.

9. *Removal of temporary fills.* Any temporary fills must be removed in their entirety and the affected areas returned to their preexisting elevation.

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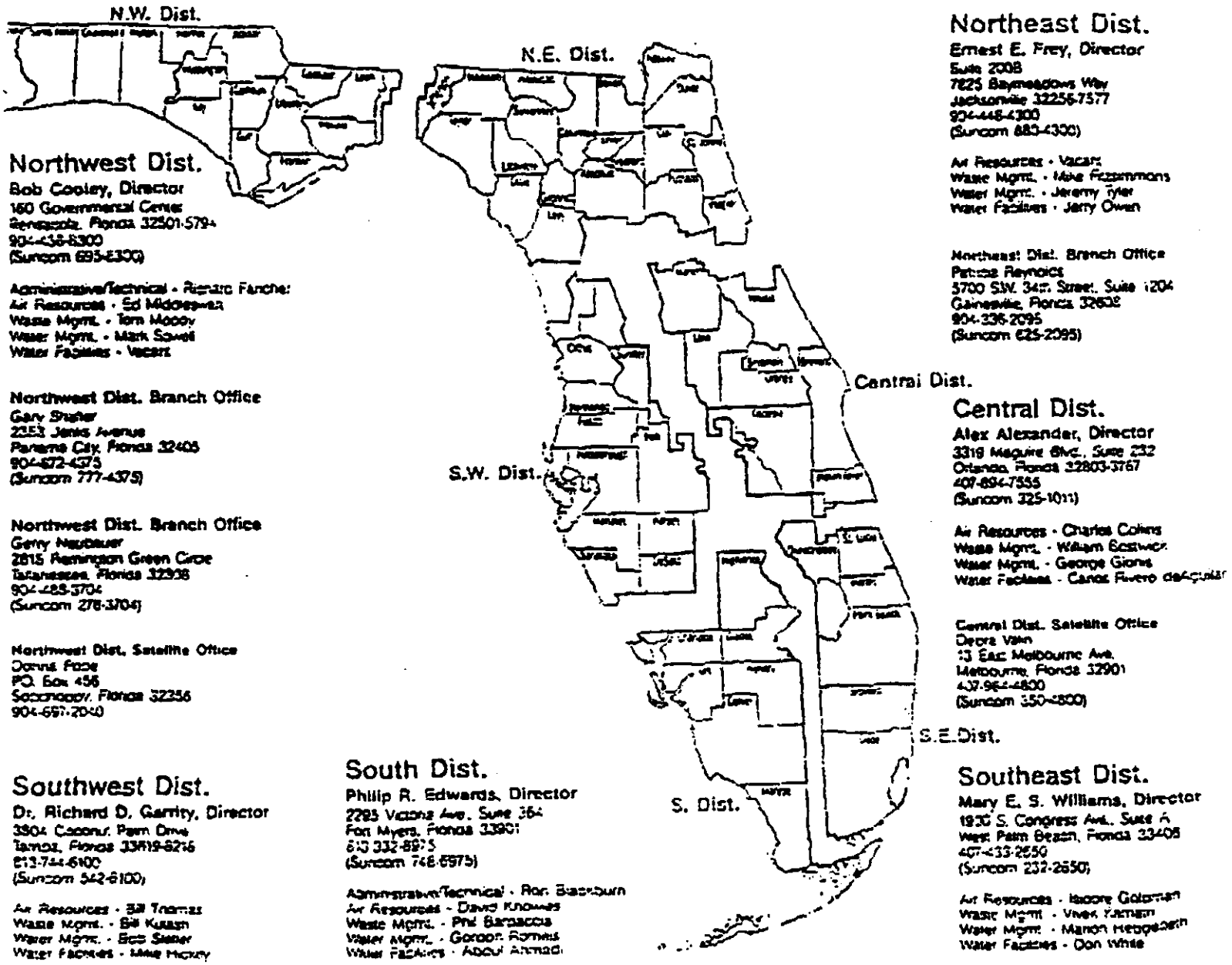

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