PRESERVE AREA MANAGEMENT PLAN

MARTIN COUNTY
GROWTH MANAGEMENT DEPARTMENT
ENVIRONMENTAL DIVISION

FPL Sweetbay Solar Energy Center

PCNs# 193939000000000130, 303939000000000110
303939000000000101, 293939000000000504

Approved by/Date :

12/18/2018

APPROVED

DEV2018060010 — RECORD NUMBER

Shawn McCarthy — APPROVED BY

ECT Environmental Consulting & Technology, Inc.
3701 Northwest 98th Street, Gainesville, Florida 32606-5004

FPL Sweetbay Solar Energy Center

Martin County Preserve Area Management Plan

Tax Parcel Identification Numbers:	
193939000000000130	303939000000000110
303939000000000101	293939000000000504

Florida Power & Light Company
Juno Beach, Florida

November 2018
ECT No. 170590-0100

Document Review

The dual signatory process is an integral part of Environmental Consulting & Technology, Inc.'s (ECT's) Document Review Policy No. 9.03. All ECT documents undergo technical/peer review prior to dispatching these documents to any outside entity.

This document has been authored and reviewed by the following employees:

Jennifer S. Mathia	Jude F. Dawson
Author	Peer Review
	
Signature	Signature
November 13, 2018	November 13, 2018
Date	Date

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List of Acronyms and Abbreviations

AC	alternating current
DC	direct current
DHR	Division of Historical Resources
ERP	environmental resource permit
FDEP	Florida Department of Environmental Protection
FLEPPC	Florida Exotic Pest Plant Council
FLUCCS	Florida Land Use, Cover, and Forms Classification System
FNAI	Florida Natural Areas Inventory
FPL	Florida Power & Light Company
ft	foot
FWC	Florida Fish and Wildlife Conservation Commission
kg	kilogram
LDR	land development regulation
MW	megawatt
PAMP	preserve area management plan
RAI	request for additional information
Sweetbay	Sweetbay Solar Energy Center
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service

1.0 Introduction

1.1 Project Description

Florida Power & Light Company (FPL) is proposing to develop the Sweetbay Solar Energy Center (Sweetbay), a 74.5-megawatt (MW) photovoltaic solar energy center in Martin County, Florida. The proposed Sweetbay site is located on approximately 566 acres on the east side of Southwest Allapattah Road, approximately 7 miles south of Southwest Martin Highway, in Indiantown, Florida (Figure 1-1). The Sweetbay Solar Energy Center will create clean, renewable energy by converting sunlight via photovoltaic solar arrays into direct current (DC) electricity and converting it into alternating current (AC) using power inverters. The zero-emissions electricity is then carried to an onsite collector yard, where the voltage is boosted for transmission through the electrical grid.

Sweetbay has been designed to preserve and maintain natural wetland systems to the extent possible and avoid and minimize wetland and surface water impacts. Most of the subject property was previously converted to pasture, and FPL has restricted the footprint of the solar array to those portions of the site that have been previously disturbed by ranching activities. The site contains both natural and man-made surface water features. Natural wetlands will be protected in accordance with county and state regulations as much as possible and will include the provision of a minimum 50-foot (ft) upland buffer that will remain between preserved wetlands and the footprint of the solar array. Prior to construction, erosion and sediment control measures will be installed to prevent discharge of sediment to adjacent wetlands and surface waters.

The following sections provide an environmental assessment report and associated application and appendices that comprise the information necessary to satisfy the requirements of the Martin County Land Development Regulations (LDR) and Comprehensive Plan policies.

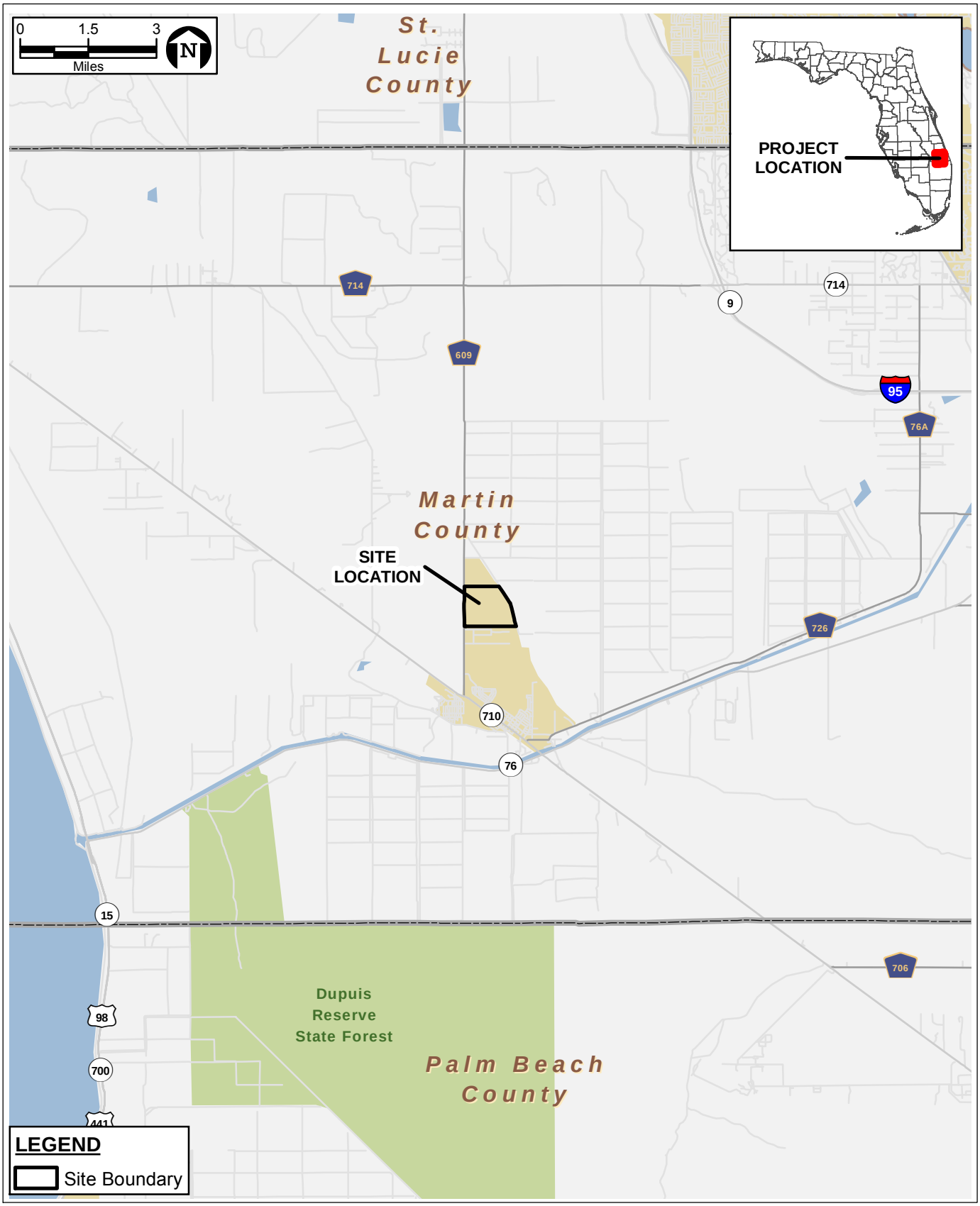

FIGURE 1-1.
SITE VICINITY
FPL SWEETBAY SOLAR ENERGY CENTER
MARTIN COUNTY, FLORIDA

Sources: FDOT, 2017; ESRI, 2016; ECT, 2018.

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1.2 General

The owner of the lands to be preserved and maintained by this preserve area management plan (PAMP) and the developer of Sweetbay Solar Energy Center successors and assigns, and their environmental consultants and contractors, will implement and comply with all portions of this PAMP.

Compliance with the terms of this PAMP includes submittal of monitoring reports on PAMP compliance throughout all phases of project construction and submittal of annual monitoring reports following completion of project construction, pursuant to Section 10.17 of the Martin County LDR. The owner of the lands to be preserved/maintained has ultimate responsibility for submittal of the monitoring reports, according to the format and schedule requirements of Section 6.5 of this PAMP.

This PAMP will not be altered or amended by either Martin County or the owner/developer of Sweetbay Solar Energy Center, except by an alteration or amendment agreed to by both the Martin County Environmental Planning Administrator and the owner/developer of Sweetbay Solar Energy Center. Such alterations and amendments must be inserted into the PAMP, and the final revised document must be recorded by the Martin County Clerk of Courts. The revised PAMP will be labeled with the appropriate official records book and page number. Three copies of the revised document must be provided to the Martin County Environmental Planning Administrator within 30 days of the recording date.

2.0 Environmental Assessment

2.1 Location

Sweetbay is located on approximately 566 acres on the east side of Southwest Allapattah Road, approximately 7 miles south of Southwest Martin Highway, in unincorporated Martin County within Indiantown, Township 39 south, and Range 39 east (Figure 2-1).

2.2 Soils

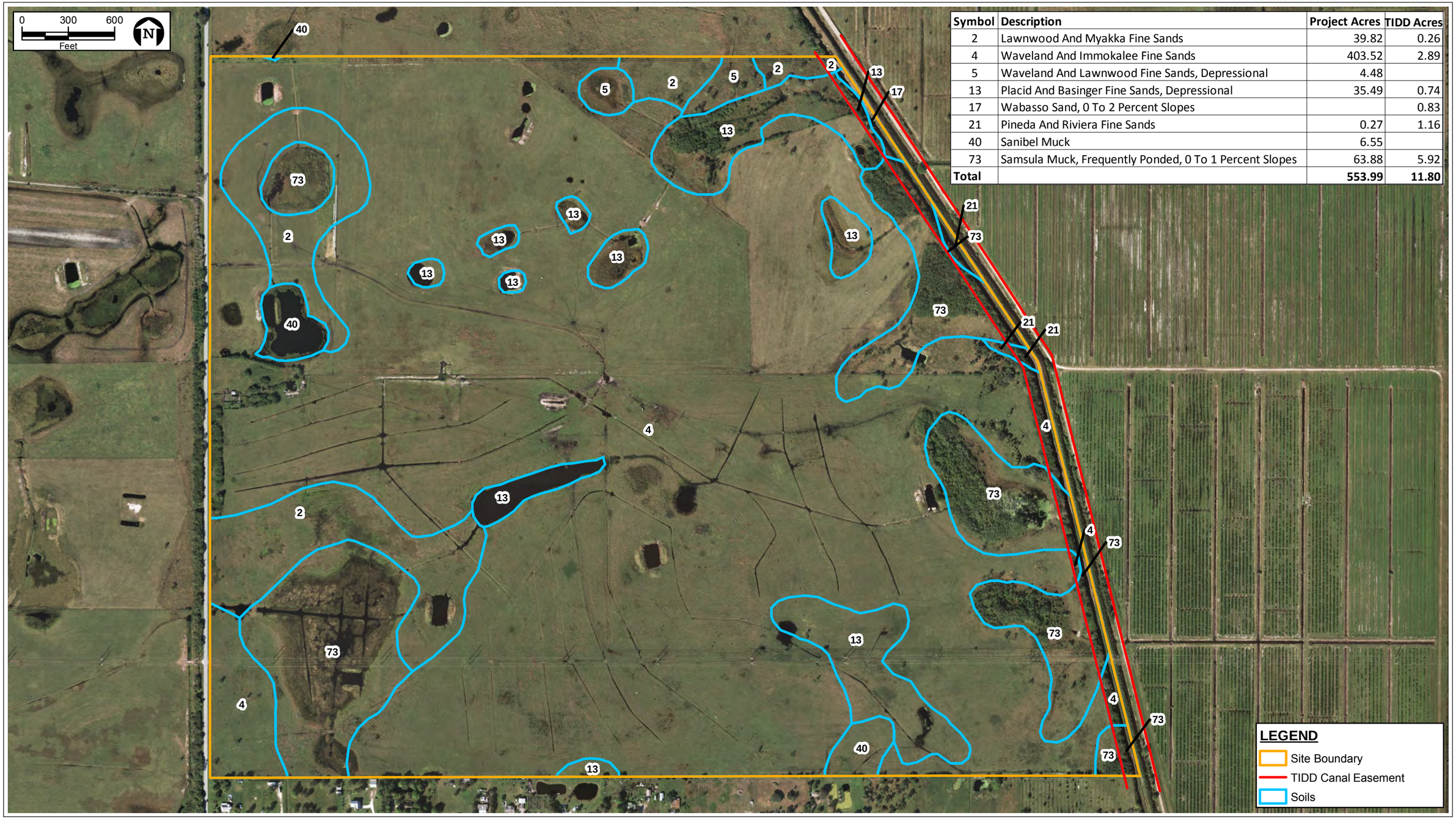
Soil types on the property were classified using the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service soil survey (Figure 2-1). According to USDA, eight soil types are found on the subject property. Following is a description of each soil type as provided in the Soil Survey of Martin County Area, Florida (McCollum, 1981).

2.2.1 2: Lawnwood and Myakka Fine Sands

This nearly level soil is poorly drained and found in broad areas of flatwoods. Areas where this soil is found, in general, range in size from approximately 10 to 200 acres. Slopes are smooth and range from 0 to 2 percent. The water table is at a depth of less than 10 inches for 2 to 4 months of the year and at a depth of 10 to 40 inches for 6 months or more.

2.2.2 4: Waveland and Immokalee Fine Sands

This soil is nearly level, poorly drained, and found in broad areas of flatwoods. Slopes are dominantly smooth and range from 0 to 2 percent. The water table is at a depth of less than 10 inches for 2 to 4 months of the year and within 40 inches for 6 months or more. This soil type makes up more than 70 percent of the soils found on the site.



Symbol	Description	Project Acres	TIDD Acres
2	Lawnwood And Myakka Fine Sands	39.82	0.26
4	Waveland And Immokalee Fine Sands	403.52	2.89
5	Waveland And Lawnwood Fine Sands, Depressional	4.48	
13	Placid And Basinger Fine Sands, Depressional	35.49	0.74
17	Wabasso Sand, 0 To 2 Percent Slopes		0.83
21	Pineda And Riviera Fine Sands	0.27	1.16
40	Sanibel Muck	6.55	
73	Samsula Muck, Frequently Ponded, 0 To 1 Percent Slopes	63.88	5.92
Total		**553.99**	**11.80**

FIGURE 2-1.
SOILS MAP
FPL SWEETBAY SOLAR ENERGY CENTER
MARTIN COUNTY, FLORIDA

Sources: USDA, 2016; FDOT, 2016; Martin County PA, 2017; ECT, 2018.

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2.2.3 5: Waveland and Lawnwood Fine Sands, Depressional

This poorly drained soil is found in depressions in flatwoods. The slopes are smooth to concave and range from 0 to 2 percent. This soil experiences ponding for 6 to 9 months or more in most years.

2.2.4 13: Placid and Basinger Find Sands, Depressional

This soil is nearly level, poorly drained, and found in wet depressions and drainageways in flatwoods. Areas where it is found range in size from a few to approximately 30 acres. The slopes are smooth to concave and range from 0 to 2 percent. Most areas that contain this soil are ponded for 6 months or more each year. The water table is at a depth of less than 10 inches for most of the rest of the year except in extended dry seasons.

2.2.5 17: Wabasso Sand, 0- to 2-Percent Slopes

This soil is nearly level, poorly drained, and found in broad, openland areas in flatwoods. The areas where this soil is generally found range in size up to approximately 1,000 acres. Slopes are smooth. The water table is at a depth of 10 to 40 inches for more than 6 months of most years and at a depth of less than 10 inches for 1 to 2 months.

2.2.6 21: Pineda and Riviera Fine Sands

The soil is nearly level, poorly drained, and found in low grassy flats in most parts of Martin County. Areas where this soil is found vary considerably in size, ranging from 5 to 1,000 acres. The slopes are smooth and predominately less than 1 percent but can range from 0 to 2 percent. The water table is at a depth of 10 inches for 2 to 6 months during wet seasons in most years and at 10 to 40 inches most of the remaining time.

2.2.7 40: Sanibel Muck

This soil is nearly level, very poorly drained, and found in marshes and swamps, depressions, and poorly defined drainageways. Its range varies from approximately 5 to 100 acres. The slopes are smooth to concave and less than 1 percent. The water table is at a depth of less than 10 inches for 6 to 12 months of most years. Water is ponded on the surface for 2 to 6 months during wet seasons.

2.2.8 73: Samsula Muck, Frequently Ponded, 0- to 1-Percent Slopes

This soil is nearly level, organic, and very poorly drained. It is found in depressions and freshwater swamps and marshes. Slopes are smooth to concave at 0 to 1 percent. This soil is ponded for 6 to 9 months or more in most years. The water table is less than 10 inches from the surface for the rest of the year.

2.3 Habitats

Vegetative community classifications were mapped based on the Florida Department of Transportation's Florida Land Use, Cover, and Forms Classification System (FLUCCS) (Figure 2-2). Field reconnaissance and aerial photograph interpretation were employed in the mapping effort. The site consists of a number of wetland habitats and less than 5 acres of native upland habitat (temperate hardwoods and cabbage palm communities), which constitute the basis of the PAMP.

2.3.1 Upland Communities

FLUCCS 221: Improved Pasture (450.23 acres)

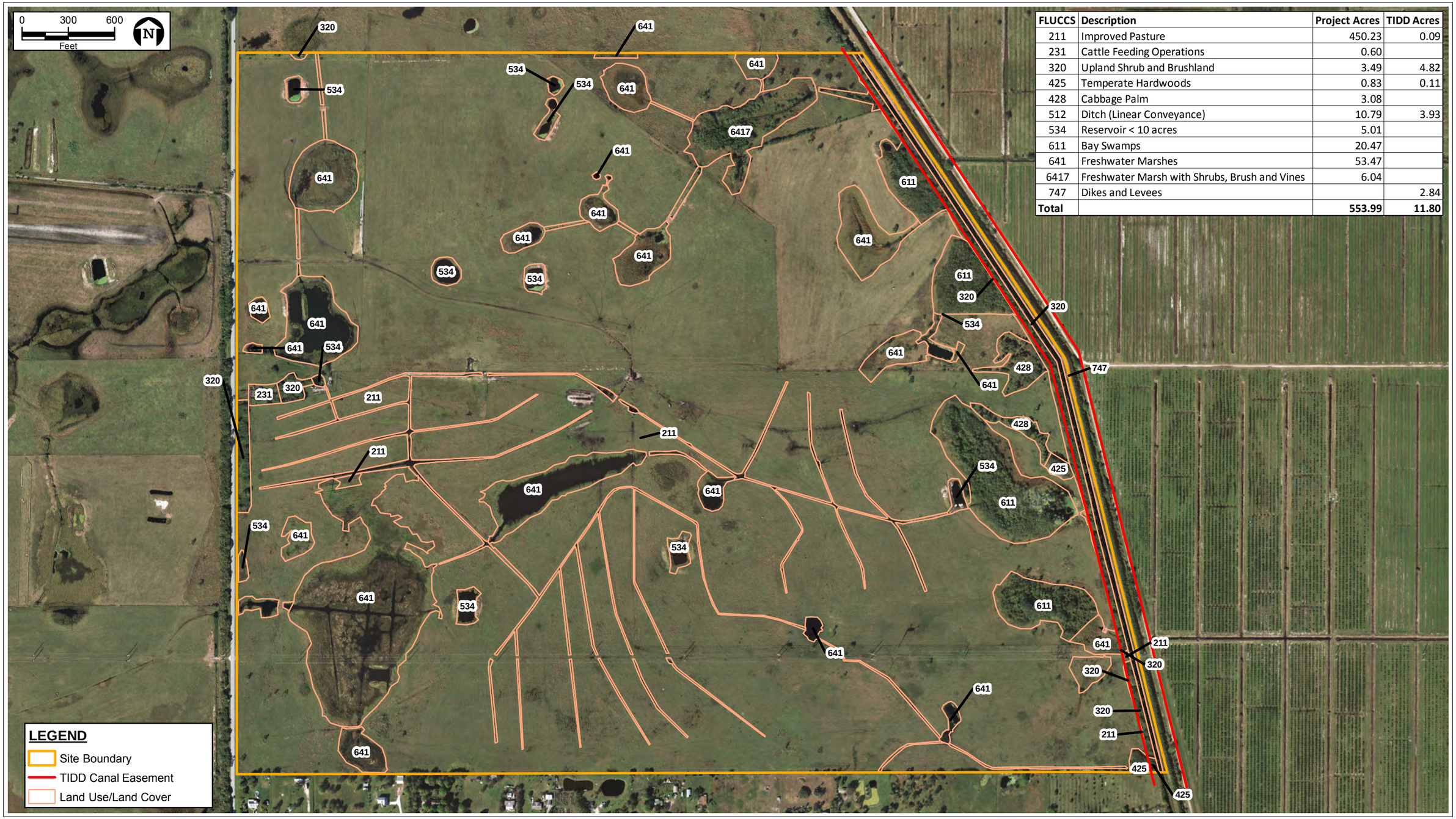
Most of the subject property has been previously converted to pasture for ranching activities. Vegetation consists primarily of Bahiagrass (*Paspalum notatum*) and torpedo grass (*Panicum repens*). Other species present include dog fennel (*Eupatorium capillifolium*), tropical soda apple (*Solanum viarum*), broomsedge (*Andropogon* sp.), nutsedge (*Cyperus* sp.), and thistle (*Cirsium* sp.). No canopy trees are present within the pasture.

FLUCCS 231: Cattle Feeding Operations (0.60 acres)

An old corral is present along the western edge of the property. Vegetation within this area consists primarily of Bahiagrass.

FLUCCS 320: Upland Shrub and Brushland (3.49 acres)

Areas of upland shrubland are found primarily near the corral along the western property boundary. Vegetation in these areas consists mostly of blackberry (*Rubus* sp.) and Brazilian pepper (*Schinus terebinthifolius*).



FLUCCS	Description	Project Acres	TIDD Acres
211	Improved Pasture	450.23	0.09
231	Cattle Feeding Operations	0.60	
320	Upland Shrub and Brushland	3.49	4.82
425	Temperate Hardwoods	0.83	0.11
428	Cabbage Palm	3.08	
512	Ditch (Linear Conveyance)	10.79	3.93
534	Reservoir < 10 acres	5.01	
611	Bay Swamps	20.47	
641	Freshwater Marshes	53.47	
6417	Freshwater Marsh with Shrubs, Brush and Vines	6.04	
747	Dikes and Levees		2.84
Total		**553.99**	**11.80**

FIGURE 2-2.
LAND USE / LAND COVER MAP
FPL SWEETBAY SOLAR ENERGY CENTER
MARTIN COUNTY, FLORIDA

Sources: FDOT, 2016; Martin County PA, 2017; ECT, 2018.

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FLUCCS 425: Temperate Hardwoods (0.83 acres)

Two clusters of temperate hardwood forest are found along the eastern property boundary. Vegetation in these areas consists of species such as live oak (*Quercus virginiana*), laurel oak (*Quercus laurifolia*), slash pine (*Pinus elliottii*), cabbage palm (*Sabal palmetto*), and Brazilian pepper. Understory species include saw palmetto (*Serenoa repens*) and blackberry. Because this upland habitat is recognized by Martin County as unique and rare, 100 percent of this area will be preserved.

FLUCCS 428: Cabbage Palm (3.08 acres)

Clusters of cabbage palm forest are found along the eastern property boundary. The canopy in these areas is almost exclusively cabbage palm with a smaller slash pine component in some areas. The understory is sparse with little shrubby vegetation. Because this upland habitat is recognized by Martin County as unique and rare, 100 percent of this area will be preserved.

2.3.2 Wetlands and Water Bodies

FLUCCS 512: Ditch (10.79 acres)

A network of man-made, agricultural ditches connects the wetlands and surface waters onsite. There are both vegetated and unvegetated ditches. The unvegetated ditches within this category have intermittent flow, little to no wetland vegetation, and sandy soils. The bottoms of these ditches are mostly bare. Along the banks, species such as Bahiagrass, torpedo grass, dog fennel, and tropical soda apple can be found.

The vegetated ditches include portions that contain wetland characteristics, including hydrophytic vegetation and muck presence in soils. Most of these ditches contain water year-round. Species present within the ditches includes pennywort (*Hydrocotyle* sp.), Asian pennywort (*Centella asiatica*), Mexican primrose-willow (*Ludwigia octovalvis*), and soft rush (*Juncus effusus*).

FLUCCS 534: Reservoir – Less Than 10 Acres (5.01 acres)

Several man-made farm ponds can be found throughout the pasture. These features hold water year-round, and many are surrounded by large, sandy berms. Most of the ponds contain little if

any vegetation. Where vegetated, species are mostly nuisance native species such as duckweed (*Lemna* sp.). Along the margins of the ponds, vegetation consists of a mixture of native and nonnative species such as torpedo grass, Bahiagrass, broomsedge, dog fennel, Caesarweed (*Urena lobata*), and tropical soda apple.

FLUCCS 611: Bay Swamps (20.47 acres)

The forested wetlands along the eastern edge of the property can be classified as bay swamps. Vegetation consists primarily of a mixture of young loblolly bay (*Gordonia lasianthus*), sweet bay (*Magnolia virginiana*), Brazilian pepper, and cabbage palm. Understory species include broomsedge, pennywort, Virginia chainfern (*Woodwardia virginica*), netted chainfern (*Woodwardia areolata*), and blackberry.

FLUCCS 641: Freshwater Marshes (53.47 acres)

Most of the wetlands within the project area can be classified as freshwater marshes. Vegetation consists of a mixture of species such as torpedo grass, maidencane (*Panicum hemitomon*), soft rush (*Juncus effusus*), broomsedge, pennywort, arrowhead (*Sagittaria* sp.), pickerelweed (*Pontederia cordata*), Mexican primrose-willow, and sparse Brazilian pepper.

FLUCCS 6417: Freshwater Marsh with Shrubs, Brush, and Vines (6.04 acres)

Wetland EN-WL12 can be classified as a shrub wetland community. While the canopy is largely absent in this wetland, a thick shrub layer consisting of Brazilian pepper, wax myrtle, and Mexican primrose-willow is present. Groundcover species include torpedo grass, maidencane, Virginia chainfern, and arrowhead.

FLUCCS 747: Dikes and Levees (2.84 acres)

The large berm along the western bank of the Troup-Indiantown Drainage District Relief Canal on the eastern property boundary falls within this category and, as such, is not included as part of this PAMP. This area is densely vegetated with Brazilian pepper.

2.4 Exotic Vegetation

Nonnative (also known as exotic) vegetation is found in every vegetation community onsite. Table 2-1 provides a list of the nonnative species observed. Four of these are included in the Florida Exotic Pest Plant Council's (FLEPPC's) 2017 List of Invasive Plant Species (Appendix A).

Table 2-1. Nonnative Species Observed on the Site

Scientific Name	Common Name	FLEPPC Listing
Paspalum notatum	Bahia grass	—
Panicum repens	Torpedo grass	Category I
Schinus terebinthifolia	Brazilian pepper	Category I
Solanum viarum	Tropical soda apple	Category I
Urena lobata	Caesarweed	Category I

Source: ECT, 2018.

Figure 2-3 illustrates the estimated exotic plant species percent composition of each vegetation community at the time of the surveys.

2.5 Protected Species

The status and potential for occurrence of wildlife species listed as endangered, threatened, or of special concern in the project areas were determined by literature survey, agency records, agency websites, the Florida Natural Areas Inventory (FNAI) database (November 2017), the U.S. Fish and Wildlife Service (USFWS) Information Planning and Conservation database (August 2017), and several field assessments.

Field assessments were conducted by qualified scientists on September 18 through 22, 2017, January 15 through 17, 2018, and in April 2018. During these surveys, listed species or signs thereof, such as tracks, scats, dens, burrows, nests, etc., were recorded.

Based on available data, a total of five federally listed wildlife species and one candidate species were identified as potentially occurring within the facility area: two reptiles and four birds. At

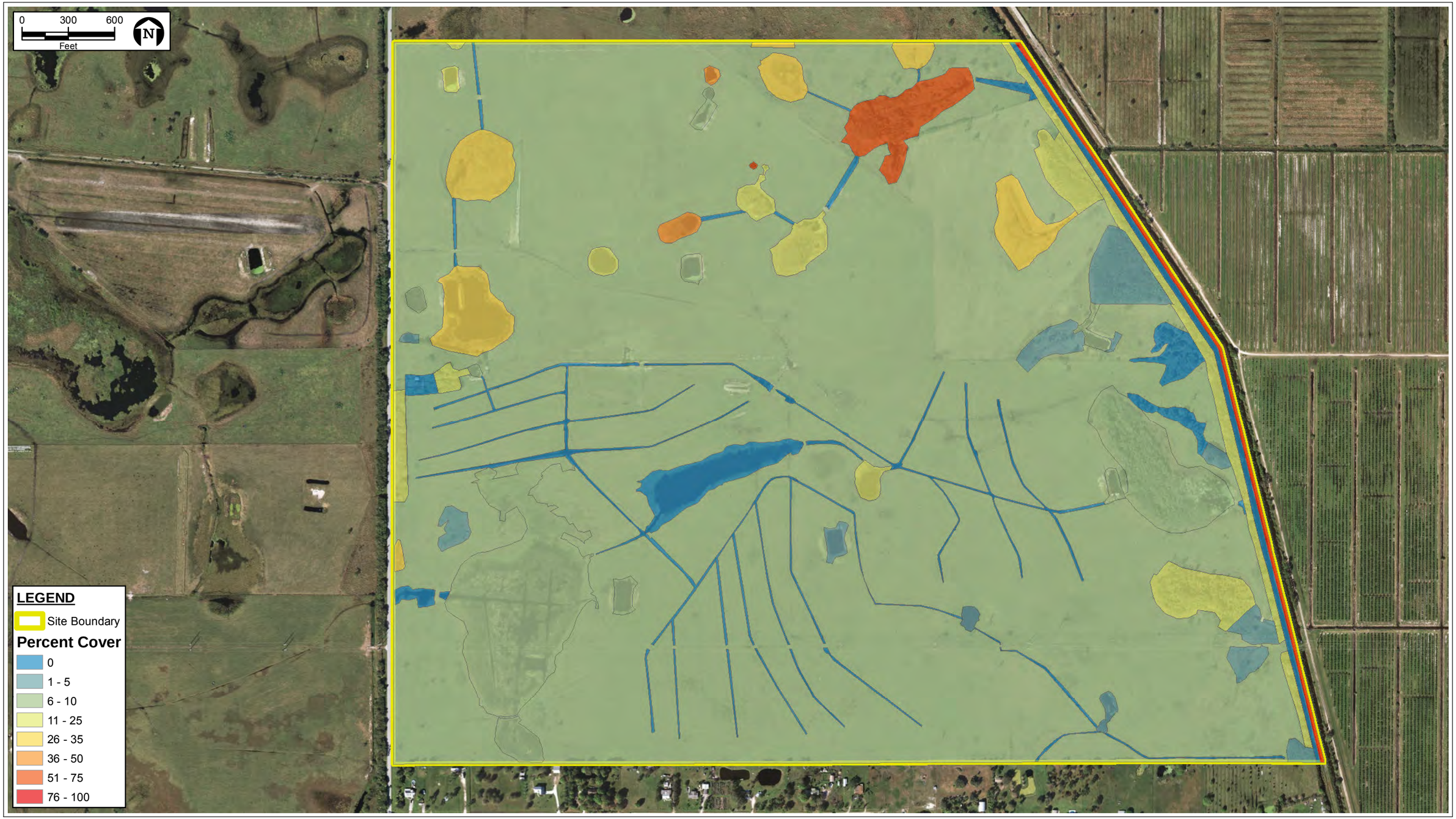

FIGURE 2-3.
NON-NATIVE SPECIES PERCENT COVER MAP
FPL SWEETBAY SOLAR ENERGY CENTER
MARTIN COUNTY, FLORIDA

Sources: SFWMD, 2016; FDOT, 2016; Martin County PA, 2017; ECT, 2018.

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the state level, there are an additional five avian species listed as threatened that have potential to occur within the facility area. Table 2-2 summarizes the status and likelihood of occurrence of these species. Listed species whose consultation area overlaps with, but no suitable habitat exists on, the facility area are not considered (e.g., red-cockaded woodpecker).

Table 2-2. Listed Species Potentially Occurring Within the Site

Scientific Name	Common Name	Status*		Likelihood of Occurrence
		Federal	State	
Ammodramus savannarum floridanus	Florida grasshopper sparrow	E	E	Low
Athene cunicularia floridana	Florida burrowing owl	N	T	Low
Drymarchon couperi	Eastern indigo snake	T	T	Moderate
Egretta caerulea	Little blue heron	N	T	Known
Egretta tricolor	Tricolored heron	N	T	Known
Falco sparverius paulus	Southeastern American kestrel	N	T	Low
Gopherus polyphemus	Gopher tortoise	C	T	Known
Grus canadensis pratensis	Florida sandhill crane	N	T	Known
Mycteria americana	Wood stork	T	T	Known
Polyborus plancus audubonii	Audubon's crested caracara	T	T	Known
Rostrhamus sociabilis plumbeus	Everglade snail kite	E	E	Low

*E = endangered. T = threatened. C = candidate. N = none.

Source: ECT, 2018.

2.5.1 Eastern Indigo Snake

The eastern indigo snake is listed as a threatened species by USFWS. This distinctive large, black snake can occur in suitable habitats throughout Florida. It has a wide range of habitat preferences and prey species and requires large tracts of land for survival. Often considered as a gopher tortoise commensal, it can be found in xeric habitats but also uses more mesic or wetland habitats for foraging. Suitable habitat is present for this species within the facility area. Placement of the solar array on the site will not preclude indigo snakes from using the facility, as groundcover vegetation will be maintained beneath the panels, and human presence will be minimal during passive facility operations. In addition, existing wetlands will be preserved onsite, and hydrologic connections (ditches and swales) will be maintained, thereby ensuring habitat connectivity is preserved after development of the project. USFWS's Standard Protection Measures for the eastern indigo snake will be implemented during project construction. If gopher

tortoise burrows are found within the facility area, their occupants will be evacuated prior to site manipulation, and snakes discovered inhabiting burrows will be allowed to leave the area on their own during relocation of tortoises, as is typical of gopher tortoise relocation efforts. These preconstruction surveys and standard protection measures will aid in minimizing adverse impacts to the eastern indigo snake within the facility area. As part of the federal wetland permitting process with the U.S. Army Corps of Engineers (USACE), formal consultation with USFWS has been completed resulting in a biological opinion that the project, as proposed, is not likely to jeopardize the continued existence of the indigo snake. As part of the conservation measures for the eastern indigo snake outlined in this biological opinion, FPL has committed to support the USFWS Eastern Indigo Snake Conservation Fund (Appendix B).

2.5.2 Audubon's Crested Caracara

Audubon's crested caracara is listed as a threatened species by USFWS. This large bird prefers habitats that contain largely short-stature vegetation with a low density of trees that can be used for nesting. Historically, caracaras inhabited native dry or wet prairies containing scattered cabbage palms, their preferred nesting tree. Because of the conversion of native prairie communities to pasture, caracaras now are known to occur primarily within pasture. Caracaras have been observed during field assessments; suitable foraging habitat is present within the facility area. Potential nesting habitat within the facility area is minimal and limited to the eastern and western property boundaries. FPL completed formal caracara surveys within suitable habitat in May 2018.

One caracara was found nesting within a critical distance (1,500 meters) of the facility (Figure 2-4). Development of the facility will not impact the nest tree directly. Because of the proposed facility design, no component of the solar array or ancillary facilities are proposed within 300 meters (primary protection zone) of the nest. There will be a borrow pit that will be located within the southeast corner that will be converted to a lake. Construction of the borrow pit will occur outside the nesting season (December to April). Modifications to ditches and surface waters are proposed within the secondary zone (300 to 1,500 meters from nest). These modifications are minor and will restore the hydrology and wetland connectivity of the site. USACE has determined the project may affect but is not likely to adversely affect caracara, and USFWS has concurred with this determination (Appendix B).

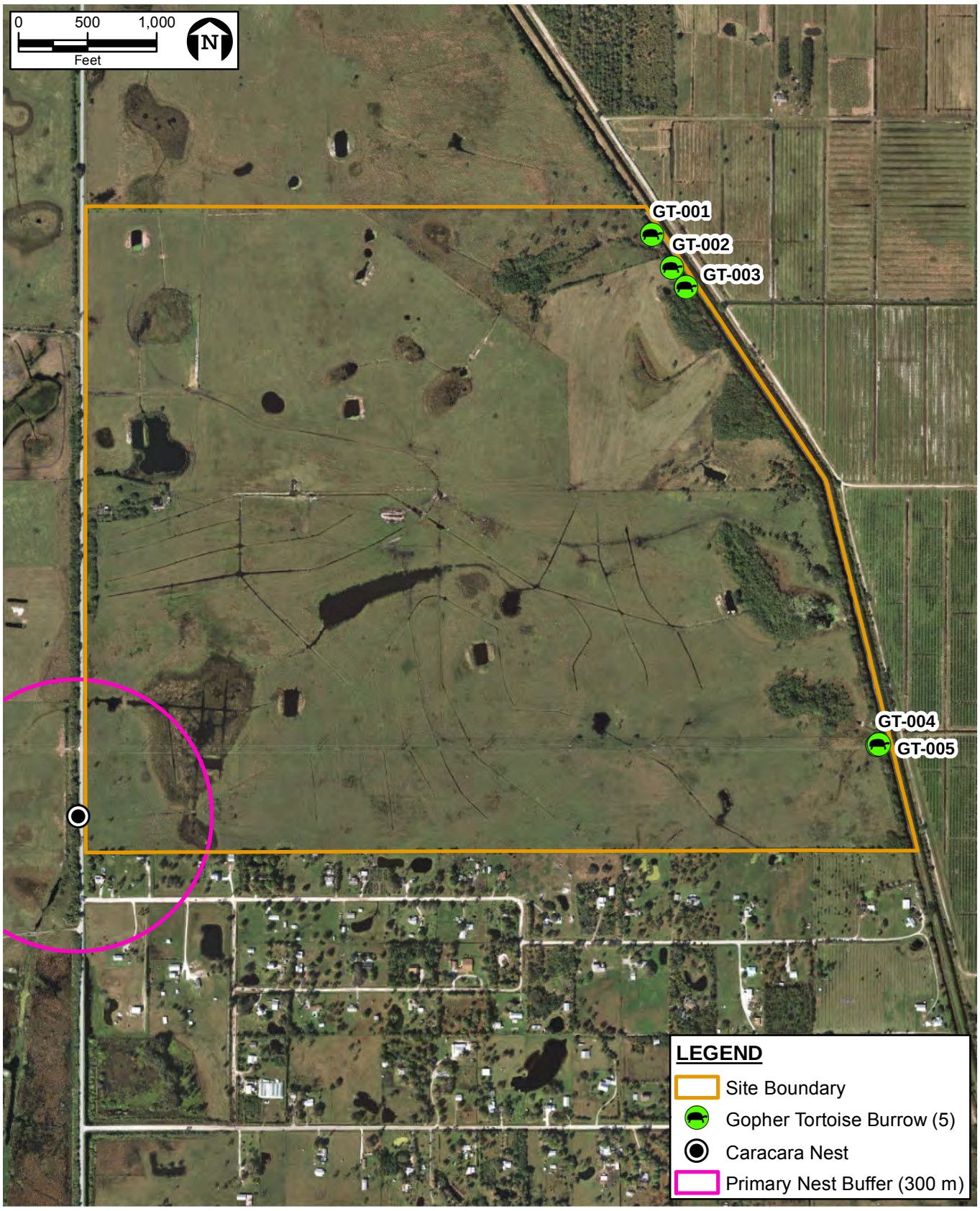

FIGURE 2-4.

OBSERVED LISTED SPECIES MAP
FPL SWEETBAY SOLAR ENERGY CENTER
MARTIN COUNTY, FLORIDA

Sources: FDOT, 2016; ECT, 2018.

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2.5.3 Gopher Tortoise

Gopher tortoises are listed as threatened species by the Florida Fish and Wildlife Conservation Commission (FWC) and a candidate species for listing by USFWS. They are typically found within upland habitats with well-drained, sandy soils. Gopher tortoise burrows are used by several other listed and nonlisted wildlife species. Five gopher tortoise burrows were found during the field assessments on the berms surrounding surface waters, and less than 15 burrows total are anticipated on the site (Figure 2-4). FPL proposes to conduct a formal burrow survey within suitable tortoise habitat prior to development. If necessary, tortoises that may be affected by the facility will be relocated to either an on- or offsite recipient area in accordance with FWC permitting guidelines. A permit from FWC would be obtained prior to construction for these activities, and compensatory mitigation provided.

2.5.4 Everglade Snail Kite

The Everglade snail kite is listed as an endangered species by USFWS. This raptor prefers habitats consisting of slow-moving water with emergent vegetation. Nesting typically occurs in long hydro-period wetland shrub communities separated from uplands by at least 500 ft. Although the facility area falls within the snail kite consultation area, it does not fall within designated critical habitat. No snail kites were observed during the field assessment. While the snail kite could potentially use the man-made ditches on this site as foraging habitat, nesting is unlikely because of the relatively small size of onsite wetlands and lack of suitable nesting substrate. No impacts to wetlands will occur as a result of the proposed project.

2.5.5 Wood Stork

The wood stork is listed as a threatened species by USFWS. This large bird is primarily associated with freshwater and estuarine habitats for nesting, roosting, and foraging. Wood storks typically construct their nests in medium to tall trees that occur in stands located either in swamps or on islands surrounded by relatively broad expanses of open water. They are found across much of peninsular Florida. Wood storks tend to use the same colony sites over many years as long as the sites remain undisturbed and sufficient feeding habitat remains in the surrounding wetlands. There are no known nesting colonies within 2,500 ft of the facility area, so the facility will not directly affect wood stork nesting colonies.

In southern Florida, the wood stork core foraging area is an 18.6-mile radius around active nesting colonies where storks may likely forage. According to data provided by USFWS, the facility area falls within the core foraging area of two nesting colonies: the North Fork St. Lucie River colony and the Cypress Creek Bluefield Road colony. Four wood storks were observed foraging in one of the herbaceous wetlands onsite. No impacts to herbaceous wetlands are proposed, and these wetlands will be protected by a 50-ft upland buffer per Martin County LDR guidelines. A wood stork foraging habitat analysis was conducted as part of the USACE standard permit application (Appendix B). The analysis follows the USFWS Wood Stork Foraging Habitat Assessment Methodology (2012) and identified an approximate loss of 21.7 kilograms (kg) of wood storage forage biomass due to permanent surface water impacts. However, the removal of exotic species in the wetlands to be preserved will result in a gain of 45.9 kg of wood storage forage biomass, which more than offsets the losses. Overall, the proposed project will result in a net gain of 24.2 kg of wood stork biomass, and no compensatory mitigation for loss of habitat is proposed. USACE has determined the project may affect but is not likely to adversely affect wood storks, and USFWS has concurred with this determination.

2.5.6 Florida Grasshopper Sparrow

The Florida grasshopper sparrow is listed as an endangered species by USFWS. This sparrow typically inhabits dry prairie relatively open and low in stature, consisting of treeless, relatively poorly drained grasslands that have a history of frequent fires. The prairie vegetative community is typically dominated by saw palmetto and dwarf oaks. The proposed project is outside the historical range and current distribution of the sparrow (FWC, 2018). The vegetative communities found onsite do not provide suitable habitat for this species. No Florida grasshopper sparrows were observed or heard during the field assessments.

2.5.7 Little Blue Heron and Tricolored Heron

These wading bird species, listed as threatened by FWC, can be found in suitable wetland habitats throughout Florida. Foraging occurs in shallow freshwater, brackish, and saltwater habitats. These herons breed in colonial nesting sites with other wading and water bird species. There are several freshwater marshes within the facility area that may be used for foraging by these species. One little blue heron and one tricolored heron were observed foraging in

freshwater marsh. Although these birds could also potentially forage in the man-made ditches on the site, the ditches provide poor-quality foraging habitat and do not contain water during the dry season. The FWC Breeding Atlas does not contain records of these birds breeding within 1 mile of the property. These birds could use the site as foraging habitat but are unlikely to nest there. No dredging or filling of freshwater marsh habitat is proposed.

2.5.8 Florida Sandhill Crane

The Florida sandhill crane is listed as a threatened species by FWC. This nonmigratory bird inhabits freshwater marshes, prairies, and pastures throughout peninsular Florida. Nesting occurs within shallow freshwater marshes during the winter and spring, and there is little to no nest site fidelity. Sandhill cranes have been observed foraging onsite during field assessments. While this species may forage within the limits of the project, the project will not affect suitable nesting habitat, since no wetlands will be permanently impacted.

2.5.9 Southeastern American Kestrel

The Southeastern American kestrel is listed as a threatened species by FWC. This raptor primarily inhabits woodlands, sandhills, and fire-maintained savannah pine habitats but will also use alternative habitats such as pastures and open fields. This species was not observed during the field assessment, and it is unlikely the facility will have adverse impacts to this species, as it is generally lacking in nesting substrate.

2.5.10 Florida Burrowing Owl

The Florida burrowing owl is listed as a threatened species by FWC. This owl inhabits dry, open prairies with minimal understory vegetation. Burrowing owls are known to occur approximately 6 miles north of the facility area. However, habitat within the facility area is marginal, and no burrowing owls were observed during the field assessments. It is unlikely the facility will have adverse impacts to this species.

2.6 Previous Impacts

Historical aerial photographs indicate the site has been used for cattle grazing since at least 1966 (Figure 2-5). Between 1966 and 1974, a series of drainage ditches were constructed on a portion

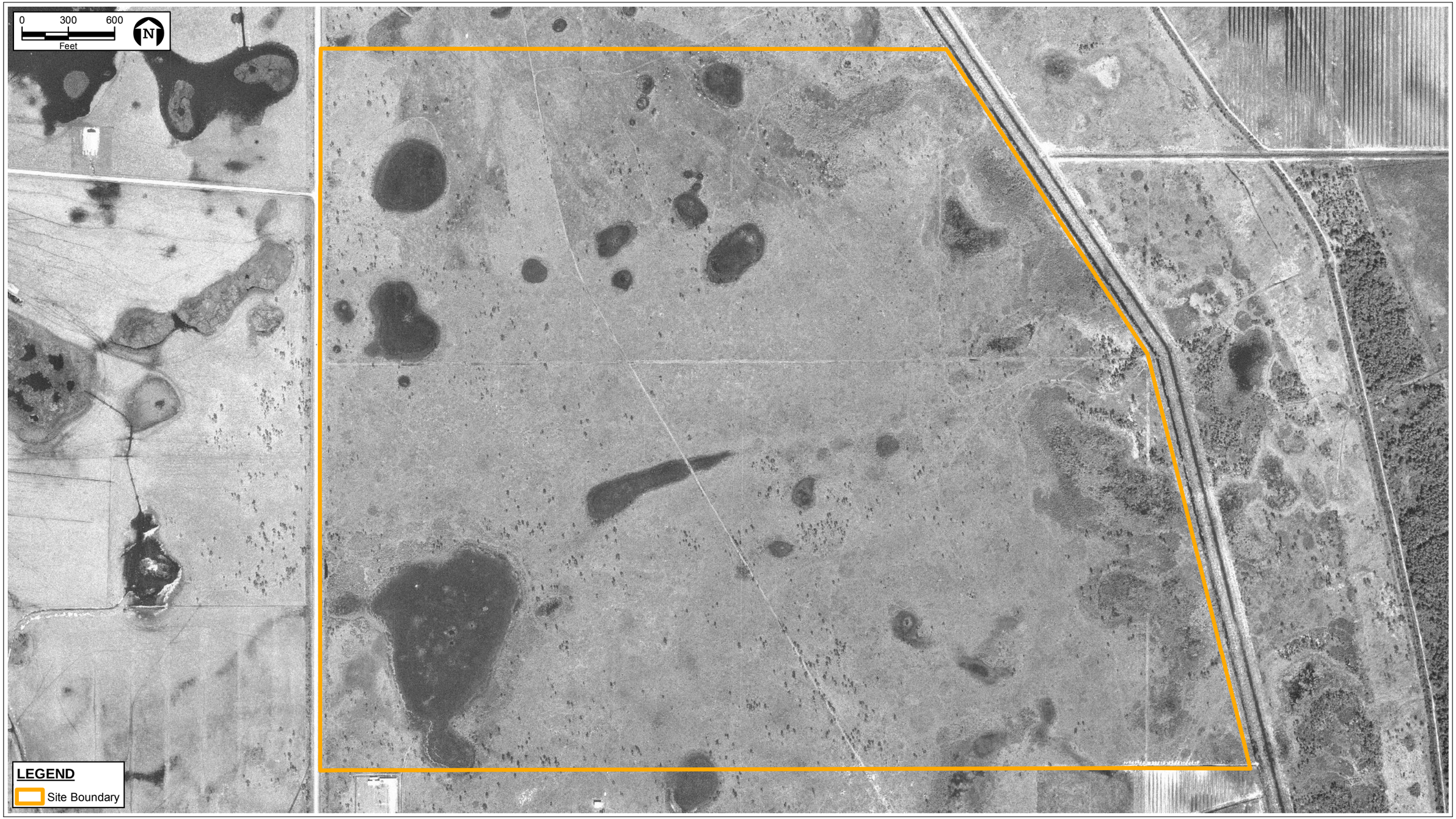

FIGURE 2-5.
AERIAL MAP FLY DATE 01/31/66
FPL SWEETBAY SOLAR ENERGY CENTER
MARTIN COUNTY, FLORIDA

Sources: FDOT, 1966; Martin County PA, 2017; ECT, 2018.

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of the site that connected the existing natural and man-made surface water features (Figure 2-6). Since 1974, little has changed on the site except for natural secession of the unmaintained vegetation communities and minor additions to the structures (pole barn) on the site (Figure 2-7).

Creation of the Troup-Indiantown Water Control Canal along the eastern boundary of the site has acted to artificially drain the natural wetlands along that boundary. The hydroperiod of these wetlands have been altered; however, the proposed final site plan includes control berms both internal to the site and within the Troup-Indiantown Water Control District easement to restore the hydroperiod of those wetlands.

2.7 Agency Correspondence

FPL commissioned SEARCH, Inc., to conduct a reconnaissance survey as due diligence for the Site. SEARCH submitted a request for review of the survey report to the Department of State, Florida Division of Historical Resources (DHR). DHR responded by letter dated February 14, 2018, stating that report was found to be complete and sufficient in accordance with Chapter 1A-46, Florida Administrative Code. However, since the project was not yet subject to permitting requirements from a state or federal agency as the time of the letter, DHR abstained from supplying determination of effects. On behalf of FPL, SEARCH then conducted additional surveys of the proposed laydown area to the west of Allapattah Road that had not been previously surveyed. On March 16, 2018, DHR abstained from supplying a determination of effects. Appendix C provides copies of the correspondence regarding this exchange.

On February 14, 2018, FPL submitted an application for a standard permit from USACE for the proposed Sweetbay Solar Energy Center. USACE sent a request for additional information (RAI) on March 2, 2018, for which FPL then provided a response on March 31, 2018. USACE requested additional information on wood storks to help make the determination of effects. FPL then completed a wood stork foraging habitat assessment for Sweetbay and included it in the response to the RAI. Following this response, pursuant to Section 7 of the federal Endangered Species Act of 1973, USACE reviewed the proposed project and, by use of programmatic concurrence letters issued to USACE by USFWS, issued a public notice on April 27, 2018, for

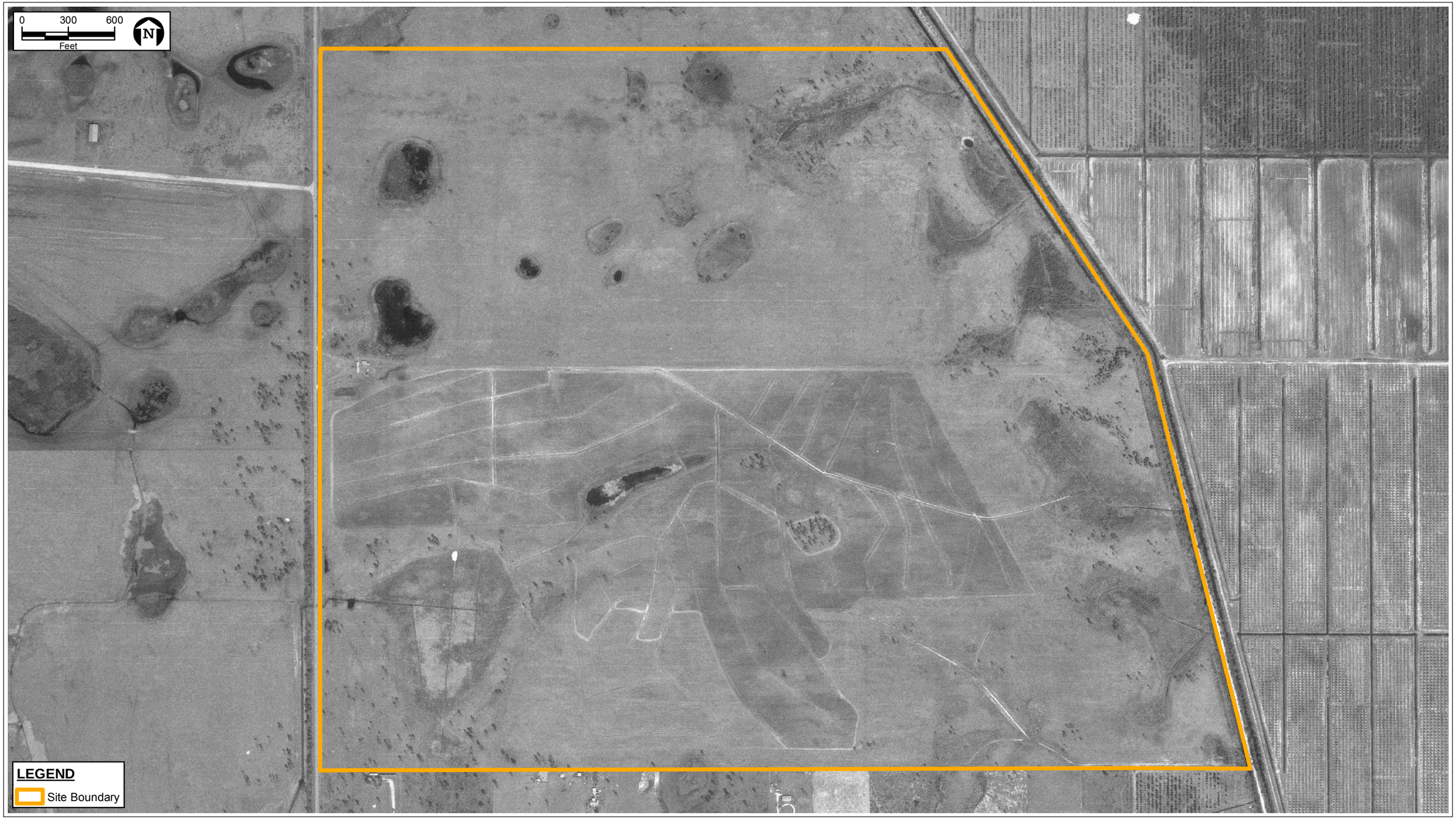

FIGURE 2-6.
AERIAL MAP FLY DATE 02/14/74
FPL SWEETBAY SOLAR ENERGY CENTER
MARTIN COUNTY, FLORIDA

Sources: FDOT, 1974; Martin County PA, 2017; ECT, 2018.

ECT Environmental Consulting & Technology, Inc.

FIGURE 2-7.
AERIAL MAP
FPL SWEETBAY SOLAR ENERGY CENTER
MARTIN COUNTY, FLORIDA

Sources: FDOT, 2016; Martin County PA, 2017; ECT, 2018.

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the project (SAJ-2017-03238). The public notice reviewed the potential effect of the proposed activity on federally listed species and determined the project may affect the eastern indigo snake and may affect but is not likely to adversely affect the wood stork and Audubon's crested caracara. USACE then initiated formal consultation on April 26, 2018, for the eastern indigo snake with USFWS pursuant to Section 7 of the federal Endangered Species Act of 1973. Appendix B contains copies of this correspondence. On May 2, 2018, the Nation Oceanic Atmospheric Administration's National Marine Fisheries' Service provided a response to USACE indicating Sweetbay would not occur in the vicinity of essential fish habitat and thus offers no conservation recommendations pursuant to the Magnuson-Stevens Fishery Conservation and Management Act of the Fish and Wildlife Coordination Act. On May 23, 2018, USACE, FPL, ECT, and USFWS conducted a field review of the project site. USACE submitted an additional request for information via email on May 29, 2018, requiring a detailed alternatives analysis, final caracara survey, and additional archaeology investigations. FPL completed and submitted the documents to USACE, including the final cultural resources assessment survey on September 21, 2018. FPL received the biological opinion from USFWS indicating concurrence with USACE determination of impacts on August 23, 2018. Formal correspondence with USACE can be found in Appendix B.

A preapplication meeting to discuss the project with the Florida Department of Environmental Protection (FDEP) was held on December 12, 2017. FPL presented the design concepts of Sweetbay and how it relates to hydrology. An informal wetlands determination was conducted by FDEP, and a preliminary jurisdictional determination was obtained from USACE, both agreeing to the same wetlands boundaries onsite. Appendix B provides a copy of the FDEP-approved informal wetlands determination. On April 12, 2018, FPL submitted an environmental resource permit (ERP) application to FDEP for Sweetbay. On June 12, 2018, FDEP forwarded the response from FWC regarding the ERP application. FDEP issued an ERP permit (Permit No: 43-0360733-002-EI) to FPL on September 21, 2018. Appendix B contains a copy of the formal correspondence with FDEP.

2.8 Sheet-flow Patterns

In general, water sheet-flows from west to east via pasturelands into abutting wetlands and agricultural ditches. These features are interconnected and ultimately discharge to the Troup-Indiantown Drainage District Relief Canal. One exception to this general flow pattern is within the southwestern corner of the site, where water flows toward wetland LK-WL23, which collects the flow and discharges offsite through a 48-inch culvert that passes under Southwest Allapattah Road (Appendix D). This ditch ultimately discharges to the Troup-Indiantown Drainage District Relief Canal.

The design concepts of Sweetbay use the natural contours of the land by restoring overland sheet-flow into the site's existing wetlands system to restore the hydrology to preagricultural conditions. Wetland control structures are being proposed to regulate the wetlands' water elevations and will discharge into flow-ways. These flow-ways will carry the water downstream into wetlands and then to proposed project outfalls. Sweetbay has been designed such that the post-development stormwater discharges are less than pre-development conditions through increased infiltration accomplished by conversion of pasture to grasslands and the wetland control structures.

4.0 Site Plan

4.1 Site Plan Description

Appendix D contains a copy of the approved final site plan.

As previously described, the site is a total of approximately 566 acres consisting of approximately 60 acres of freshwater marsh, 20 acres of bay swamps, 16 acres of other surface waters (man-made reservoirs and ditches), 454 acres of disturbed uplands, 4 acres of native uplands, and more than 11 acres within the Trout-Indiantown Drainage District Relief Canal easement.

The natural wetlands require 50-ft-wide wetland buffers that total 45.22 acres based on FDEP's approved wetlands delineation limits. The native upland habitat onsite will be preserved in their entirely. The final site plan (Appendix D) and Figure 4-1 provide the location of the native uplands, wetlands, and wetland buffers that will constitute the preserve areas. The wetlands buffer will require some restoration to native upland habitat through removal of exotic vegetation and natural recruitment or replanting with native species as described in Section 6.2.

4.2 Preserve Areas

The final site plan shows the preserve areas, rights-of-way, and easements. Figure 4-1 includes a summary of the wetland preservation acreage and wetland buffer under preservation, the upland preserve area and acreage, and total acreage of the site.

The final site plan contains the notation, "Preserve areas are not to be altered without written permission of the Martin County Board of County Commissioners."

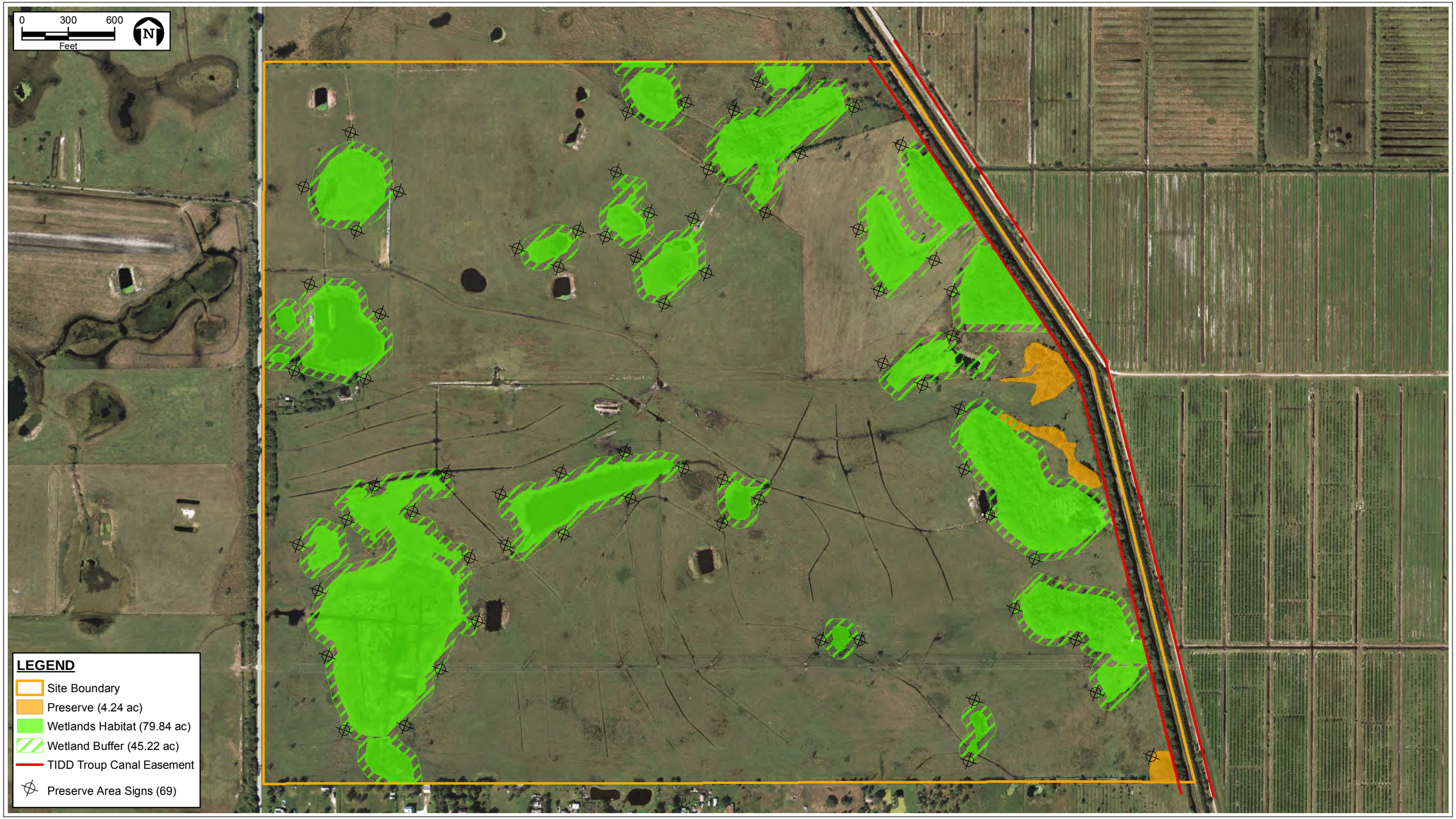

FIGURE 4-1.
WETLANDS PRESERVE PROPOSED SIGNAGE MAP
FPL SWEETBAY SOLAR ENERGY CENTER
MARTIN COUNTY, FLORIDA

Sources: SFWMD, 2016; FDOT, 2016; Martin County PA, 2017; ECT, 2018.

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Prohibited activities in the preserve areas include, but are not limited to:

- Constructing or placing of building materials on or above the ground.
- Dumping or placing soil or other substances, such as garbage, trash, and cuttings.
- Removing or destroying native trees, shrubs, or other native vegetation.
- Planting within the preserve areas without prior approval from the Martin County Environmental Planning Administrator.
- Excavating, dredging, or removing soil materials.
- Diking or fencing.
- Vehicular traffic, including use by nonmotorized vehicles and off-road vehicles.
- Permanent irrigation.
- Trimming and pruning of nonnative species or fertilization.
- Performing other activities detrimental to drainage, flood control, water conservation, erosion control, or fish and wildlife conservation and preservation.

No healthy native plant material will be removed from the preserve areas without prior written approval from the Martin County Environmental Planning Administrator. Dead or diseased plant material may be removed if the material creates a safety hazard to facility infrastructure, or if the material detracts from the continued health of the preserve area. If dead plant material and debris is removed from preserve areas, it must be disposed of in a Martin County-approved recycling facility.

Onsite fuel tanks will not be located within 50 ft of a preserve area and will be removed upon completion of construction work. Development activities, such as the construction of building pads for inverters or substations, access paths, or culverts for surface water management, will not alter the hydrology of adjacent preserve areas, nor will activities increase non-point source pollution in the preserves.

It is the responsibility of FPL to inform its contractors of these preserve area requirements. Failure to comply with these requirements is considered a violation of site plan approval. Further work on the project may be stopped until compliance with the preserve area requirements is

achieved, and the owner or developer may be required to appear before a codes enforcement board.

4.2.1 Barricading Requirements

FPL will protect the preserve areas with physical barriers (silt fence plus barricade fence) during clearing and construction activities in accordance with the following guidelines (land clearing plan):

- Barricades (not including silt fencing) will consist of high-visibility orange safety fence with a final height of at least 4 ft above the ground. Barricades will not be attached to vegetation.
- Barricades and silt fencing will be upright and maintained intact for the duration of construction.
- Native vegetation (not approved for removal as part of development plans) will be retained in an undisturbed state and will be barricaded at or outside the drip line of the trees (if applicable).

Barricades will be inspected by Martin County Environmental Division staff prior to proceeding with clearing and earthwork activities on the site. Removal of barricade materials will be performed upon authorization from appropriate Martin County staff.

4.2.2 Preserve Area Signs

Preserve areas will be posted with permanent signs (Figure 4-1). Signs will be at least 11 by 14 inches (Figure 4-2) in size and will be posted in conspicuous locations along the preserve area boundary. Signs will be approved by the Martin County Environmental Planning Administrator.

FIGURE 4-2.

PRESERVE AREA SIGN DETAIL

Source: ECT, 2018.

ECT Environmental Consulting & Technology, Inc.

5.0 Land Clearing/Erosion Control Plan

Preserve areas will be barricaded and protected from overland flow/sedimentation through use of silt fencing. At the project outfall control structures, turbidity curtains will be installed to limit migration of turbid waters from the site.

5.1 Temporary Preserve Area Impacts

Wetland control structures will be installed in the buffer and at the fringe of 11 existing wetlands onsite, as shown on the final site plan. Outfall control structures will be installed at five locations on the site. Flow-ways and berms will be created within the wetland buffers to improve the connectivity between wetlands and restore the natural hydroperiod of the wetlands. These culverts, control structures, and flow-ways will result in the temporary disturbance of these areas.

Once construction of the culverts, flow-ways, and control structures is completed, the preserve areas will be restored in accordance with Section 6.0 and the Temporary Preserve Area Impact Restoration Plan (Appendix F).

5.2 Heavy Machinery Use

Use of heavy machinery in the preserve area will be limited to removal of existing water management structures (berm scrape-down, ditch filling, and regrading), removal of large debris (concrete pieces), construction of the perimeter berm, and installation of the water control structures. Areas disturbed by the use of heavy machinery will be restored in accordance with Section 6.0 and the Temporary Preserve Area Impact Restoration Plan (Appendix F).

6.0 Restoration and Mitigation Planting Plan

Impacts to natural wetlands and other surface waters were eliminated or reduced to the extent practicable by:

- Restricting the footprint of the solar array to the portion of the site that has already been disturbed by ranching activities.
- Using existing roads and culverted crossings for access to the greatest extent practicable. New unpaved access paths were confined to those areas absolutely necessary for proper site access and security.
- Implementing best management practices and effective soil erosion control measures, including routine inspections during construction and until soil stabilization has occurred. These procedures are intended to minimize the extent and duration of project-related disturbance on wetlands and water bodies, control erosion and sedimentation, and enhance revegetation.
- Analyzing the proposed stormwater design to provide prevention of adverse effects to wetland and surface water functions.

Except for approved wetland restoration and maintenance activities, preserve areas will be left undisturbed. Maintenance of preserve areas will be in accordance with this PAMP. As stated at Section 4.7.B.2 of the Martin County LDR, maintenance and management activities will be performed by or under the supervision of a qualified environmental professional and must be approved by the Martin County Environmental Planning Administrator. The following restoration and maintenance activities may be allowed within preserve areas with prior written approval from the Martin County Environmental Planning Administrator: exotic plant removal, revegetation or planting native vegetation, and removal of dead, diseased, or safety hazard plant material.

6.1 Nuisance and Exotic Vegetation Removal

Exotic vegetation in the preserve areas will be removed by the least ecologically damaging method available. Such methods include roller chopping, hand pulling, hand spading, chainsaw use, and/or treatment with appropriate herbicide. No debris, such as plant clippings or wood scraps, will be left in the preserve areas. Exotic species will be removed or treated in accordance with the project's vegetation removal permit. Exotic species will be managed in perpetuity, as necessary. Exotic vegetation includes Category I and II pest plants on the most recently available FLEPPC list (see Appendix A).

As required by Section 4.2.G.2.h of the Martin County LDR, FPL will establish a bond for 100 percent of the cost of exotic vegetation removal, replanting, maintenance, and monitoring for a period of 2 years from the date the planting is completed.

6.2 Revegetation

Natural recruitment and/or supplemental planting will be performed of wetland buffers that have been heavily impacted by ranching activities and no longer support a native plant community. Natural recruitment and/or supplemental planting will also be performed within those areas temporarily impacted by project construction activities. Supplemental planting may also be performed pursuant to voluntary environmental enhancement activities if success criteria described below are not met. In either circumstance, this will consist of native plant species indicative of the existing adjacent plant communities. If no adjacent reference community is present, native plants will be chosen that are appropriate for the existing site conditions to maintain appropriate plant associations. At a minimum, areas devoid of native vegetation will be seeded with a native seed mix. Temporary preserve area impacts will be restored in accordance with the Temporary Preserve Area Impact Restoration Plan (Appendix F). The borrow pit will be managed as a lake per the lake littoral detail in the landscape plan (Appendix G) and lake management plan (Appendix H).

The Martin County LDR, vegetative success criteria for the restoration areas includes the requirement for 80-percent survival of the installed vegetation after the first year, 80-percent coverage of desirable vegetation after the first year, coverage of exotic vegetation at 0 percent

immediately following maintenance activities (5-percent coverage by exotic vegetation will be considered threshold for additional maintenance), and nuisance vegetation limited to 5 percent or less.

If native vegetation has not achieved 80-percent coverage after the 1-year period for any 0.25-acres portion of the proposed preserve area, a replanting plan will be submitted to Martin County, and supplemental vegetation will be planted in areas that remain below the 80-percent vegetation coverage criteria.

Table 6-1 presents the proposed schedule of restoration activities in the first 2 years of the project.

Table 6-1. Proposed Preserve Maintenance and Monitoring Schedule

Activity	Date
Complete exotic plant removal/restoration activities	December 2020
Submit baseline monitoring report	January 2021
Year 1 Monitoring	
Conduct dry season sampling	May 2021
Conduct wet season sampling	November 2021
Submittal annual report	January 2022
Year 2 Monitoring	
Conduct dry season sampling	May 2022
Conduct wet season sampling	November 2022
Submit annual report	January 2023

Source: ECT, 2018.

6.3 Hydrology

Previous or potential drainage impacts will be corrected to the extent technically feasible. Wetlands and water bodies on adjacent properties will be protected from adverse impacts.

6.4 Regrading

The property exhibits old water management structures (man-made berms, ditches, and farm ponds). These features work to alter the natural hydro-period of the site. Artificial farm ponds and ditches that negatively impact preserve areas will be filled to meet grade of the surrounding area. These features will be removed (scraped down and/or filled) with the use of heavy machinery and replanted with appropriate native vegetation in accordance with Section 6.2. Excess soil material, if any, will be removed from the preserve areas. Mounded soils that currently exist between WL23A and WL23B will be removed to restore the historical connection between these two wetlands.

6.5 Monitoring

As stated in Section 4.7.B.2. of the Martin County LDR, monitoring of the restoration efforts in the preserve areas and associated buffers will be conducted as detailed in Section 6.2 for a minimum of 2 years. The results of the monitoring will be reported to the Martin County annually. The South Florida Water Management District Environmental Monitoring Report Guidelines may be referenced in developing the annual report as recommended by Section 4.2.G.2.f of the LDR.

Monitoring will cease upon satisfaction of the success criteria stated in Section 6.2 following the mandatory minimum 2 years and upon approval by Martin County.

7.0 Professional Certification

The attached application form, Part 4, presents the declaration of certification pursuant to Section 4.2.H.3.m and 4.36.B.p. of the Martin County LDR.

8.0 References/Bibliography

Florida Fish and Wildlife Conservation Commission (FWC). 2018. Florida's Resident Grasshopper Sparrow. http://myfwc.com/research/wildlife/birds/florida-grasshopper-sparrow/information/. Accessed May 3, 2018.

McCollum, S.H. 1981. Soil Survey of Martin County Area, Florida. U.S. Department of Agriculture, Soil Conservation Service. pp 204.

Appendix A

Florida Exotic Pest Plant Council's 2017 List of Invasive Plant Species

CATEGORY II (continued)

Scientific Name**	Common Name	Gov. List	Zone
Tradescantia spathacea (*Rhoeo spathacea, Rhoeo discolor*)	oyster plant		C, S
Tribulus cistoides	puncture vine, burr-nut		N, C, S
Vitex trifolia	simple-leaf chaste tree		C, S
Washingtonia robusta	Washington fan palm		C, S
Wisteria sinensis	Chinese wisteria		N, C
Xanthosoma sagittifolium	malanga, elephant ear		N, C, S

Recent changes to plant names

Old Name	New Name
Aleurites fordii	*Vernicia fordii*
Aristolochia littoralis	*Aristolochia elegans*
Brachiaria mutica	*Urochloa mutica*
Hibiscus tiliaceus	*Talipariti tiliaceus*
Macfadyena unguis-cati	*Dolichandra unguis-cati*
Melaleuca viminalis	*Callistemon viminalis*
Panicum maximum	*Urochloa maxima*
Phymatosorus scolopendria	*Microsorum grossum*
Sapium sebiferum	*Triadica sebifera*
Wedelia trilobata	*Sphagneticola trilobata*

Current nomenclature can be found at **florida.plantatlas.usf.edu**

**Plant names are those published in "Guide to Vascular Plants of Florida Third Edition." Richard P. Wunderlin and Bruce F. Hansen. University of Florida Press. 2011. Plant names in parentheses are synonyms or misapplied names that have commonly occurred in the literature and/or indicate a recent name change. Not all synonyms are listed.

For more information on invasive exotic plants, including links to related web pages, visit www.fleppc.org

FLEPPC List Definitions: **Exotic** – a species introduced to Florida, purposefully or accidentally, from a natural range outside of Florida. **Native** – a species whose natural range includes Florida. **Naturalized exotic** – an exotic that sustains itself outside cultivation (it is still exotic; it has not "become" native). **Invasive exotic** – an exotic that not only has naturalized, but is expanding on its own in Florida native plant communities.

Abbreviations: **Government List (Gov. List):** Possession, propagation, sale, and/or transport of these plants is regulated by: F=Florida Department of Agriculture and Consumer Services; U=United States Department of Agriculture

Zone: **N** = north, **C** = central, **S** = south, referring to each species' general distribution in regions of Florida (not its potential range in the state). Please refer to the adjacent map.

Citation example

FLEPPC. 2017. List of Invasive Plant Species. Florida Exotic Pest Plant Council. Internet: www.fleppc.org

Daniel F. Austin and Daniel B. Ward

Daniel F. Austin (2015) and Daniel B. Ward (2016) recently passed away. Both Dans were instrumental in maintaining, managing, and providing insight into Florida's many invasive plants. They first volunteered for this effort before it was even formalized as the FLEPPC, participating from that beginning through retirement. Their sage comments and wit are missed.

The 2017 list was prepared by the FLEPPC Plant List Committee

Patricia L. Howell, Chair 2012-2017, Broward County Parks, Natural Resources and Land Management Section, phowell@broward.org

Stephen H. Brown, UF / IFAS Lee County Extension, Parks and Recreation Division, brownsh@leegov.com

Janice Duquesnel, Florida Park Service, Florida Department of Environmental Protection, janice.duquesnel@dep.state.fl.us

David W. Hall, Private Consulting Botanist and Author, tolkos@aol.com

Roger L. Hammer, Retired Naturalist and Author, kaskazi44@comcast.net

Colette C. Jacono, Florida Museum of Natural History, colettej@ufl.edu

Kenneth A. Langeland, Interim Chair, 2017, Professor Emeritus, University of Florida / IFAS, Center for Aquatic and Invasive Plants, gator8@ufl.edu

Chris Lockhart, Habitats Specialist, Inc., chris@lockharts.org

Jean McCollom, Natural Ecosystems, jeanm@naples.net

Gil Nelson, Professor Emeritus, Florida State University / iDigBio, gnelson@bio.fsu.edu

Jimi L. Sadle, Everglades National Park, jimi_sadle@nps.gov

Jessica Spencer, US Army Corp of Engineers, jessica.e.spencer@usace.army.mil

Arthur Stiles, Florida Park Service, Florida Department of Environmental Protection, arthur.stiles@dep.state.fl.us

Daniel B. Ward, Professor Emeritus, University of Florida Department of Botany (Deceased)

Richard P. Wunderlin, Professor Emeritus, University of South Florida, Institute for Systematic Botany, rwunder@usf.edu

Florida Exotic Pest Plant Council's 2017 List of Invasive Plant Species

*The mission of the **Florida Exotic Pest Plant Council** is to support the management of invasive exotic plants in Florida's natural areas by providing a forum for the exchange of scientific, educational and technical information.* ***www.fleppc.org***

Note: The FLEPPC List of Invasive Plant Species is not a regulatory list. Only those plants listed as Federal Noxious Weeds, Florida Noxious Weeds, Florida Prohibited Aquatics Plants, or in local ordinances are regulated by law.

Purpose of the List

To provide a list of plants determined by the Florida Exotic Pest Plant Council to be invasive in natural areas of Florida and to routinely update the list based on information of newly identified occurrences and changes in distribution over time. Also, to focus attention on –

- the adverse effects exotic pest plants have on Florida's biodiversity and native plant communities,
- the habitat losses in natural areas from exotic pest plant infestations,
- the impacts on endangered species via habitat loss and alteration,
- the need for pest-plant management,
- the socio-economic impacts of these plants (e.g., increased wildfires or flooding in certai areas),
- changes in the severity of different pest plant infestations over time,
- providing information to help managers set priorities for research and control programs.

www.fleppc.org

CATEGORY I

Invasive exotics that are altering native plant communities by displacing native species, changing community structures or ecological functions, or hybridizing with natives. *This definition does not rely on the economic severity or geographic range of the problem, but on the documented ecological damage caused.*

Scientific Name**	Common Name	Gov. List	Zone
Abrus precatorius	rosary pea	F	C, S
Acacia auriculiformis	earleaf acacia		C, S
Albizia julibrissin	mimosa, silk tree		N, C
Albizia lebbeck	woman's tongue		C, S
Ardisia crenata	coral ardisia	F	N, C, S
Ardisia elliptica	shoebutton ardisia	F	C, S
Asparagus aethiopicus (*A. sprengeri*, *A. densiflorus*)	asparagus-fern		N, C, S
Bauhinia variegata	orchid tree		C, S
Bischofia javanica	bishopwood		C, S
Calophyllum antillanum (*C. calaba*)	Santa Maria, mast wood		S
Casuarina equisetifolia	Australian-pine	F	N, C, S
Casuarina glauca	suckering Australian-pine	F	C, S
Cinnamomum camphora	camphor tree		N, C, S
Colocasia esculenta	wild taro		N, C, S
Colubrina asiatica	lather leaf	F	S
Cupaniopsis anacardioides	carrotwood	F	C, S
Deparia petersenii	Japanese false spleenwort		N, C
Dioscorea alata	winged yam	F	N, C, S
Dioscorea bulbifera	air-potato	F	N, C, S
Eichhornia crassipes	water-hyacinth	F	N, C, S
Eugenia uniflora	Surinam cherry		C, S
Ficus microcarpa (*F. nitida* and *F. retusa* var. *nitida*)[1]	laurel fig		C, S
Hydrilla verticillata	hydrilla	F, U	N, C, S
Hygrophila polysperma	green hygro	F, U	N, C, S
Hymenachne amplexicaulis	West Indian marsh grass		N, C, S
Imperata cylindrica	cogon grass	F, U	N, C, S
Ipomoea aquatica	water-spinach	F, U	C
Jasminum dichotomum	Gold Coast jasmine		C, S
Jasminum fluminense	Brazilian jasmine		C, S
Lantana camara (*L. strigocamara*)	lantana, shrub verbena		N, C, S
Ligustrum lucidum	glossy privet		N, C
Ligustrum sinense	Chinese privet	F[3]	N, C, S
Lonicera japonica	Japanese honeysuckle		N, C, S
Ludwigia hexapetala	Uruguay waterprimrose		N, C
Ludwigia peruviana	Peruvian primrosewillow		N, C, S
Lumnitzera racemosa	black mangrove		S
Luziola subintegra	tropical American watergrass		S
Lygodium japonicum	Japanese climbing fern	F	N, C, S
Lygodium microphyllum	Old World climbing fern	F, U	N, C, S
Macfadyena unguis-cati (*Dolichandra unguis-cati*)	catclawvine		N, C, S
Manilkara zapota	sapodilla		S
Melaleuca quinquenervia	melaleuca, paper bark	F, U	C, S
Melinis repens (*Rhynchelytrum repens*)	Natal grass		N, C, S
*Microstegium vimineum**	Japanese stiltgrass,		N
Mimosa pigra	catclaw mimosa	F, U	C, S
Nandina domestica	nandina, heavenly bamboo		N, C
Nephrolepis brownii (*N. multiflora*)	Asian sword fern		C, S
Nephrolepis cordifolia	sword fern		N, C, S
Neyraudia reynaudiana	Burma reed	F	S
Nymphoides cristata	crested floating heart	F	C, S
Paederia cruddasiana	sewer vine	F	S
Paederia foetida	skunk vine	F	N, C, S
Panicum repens	torpedo grass		N, C, S
Pennisetum purpureum	Napier grass, elephant grass		N, C, S
Phymatosorus scolopendria (*Microsorum grossum*)	serpent fern, wart fern		S
Pistia stratiotes	water-lettuce	F	N, C, S
Psidium cattleianum (*P. littorale*)	strawberry guava		C, S
Psidium guajava	guava		C, S
Pueraria montana var. *lobata*	kudzu	F	N, C, S
Rhodomyrtus tomentosa	downy rose-myrtle		C, S
Ruellia simplex[2]	Mexican-petunia		N, C, S
Salvinia minima	water spangles		N, C, S
Sapium sebiferum (*Triadica sebifera*)	popcorn tree, Chinese tallow tree		N, C, S
Scaevola taccada (*S. sericea*, *S. frutescens*)	half-flower, beach naupaka		N, C, S
Schefflera actinophylla (*Brassaia actinophylla*)	schefflera, Queensland umbrella tree		C, S
Schinus terebinthifolius	Brazilian-pepper	F	N, C, S
Scleria lacustris	Wright's nutrush		C, S
Senna pendula var. *glabrata*	Christmas cassia, Christmas senna		C, S
Solanum tampicense	wetland nightshade	F, U	C, S
Solanum viarum	tropical soda apple	F, U	N, C, S
Sporobolus jacquemontii (*S. indicus* var. *pyramidalis*)	West Indian dropseed		C, S
Syngonium podophyllum	arrowhead vine		N, C, S
Syzygium cumini	Java-plum		C, S
Tectaria incisa	incised halberd fern		S
*Thelypteris opulenta**	jeweled maiden fern		S
Thespesia populnea	seaside mahoe		C, S
Tradescantia fluminensis	small-leaf spiderwort		N, C
Urena lobata	Caesar's weed		N, C, S
Urochloa mutica (*Brachiaria mutica*)	para grass		N, C, S
Vitex rotundifolia	beach vitex		N

CATEGORY II

Invasive exotics that have increased in abundance or frequency but have not yet altered Florida plant communities to the extent shown by Category I species. *These species may become ranked Category I if ecological damage is demonstrated.*

Scientific Name**	Common Name	Gov. List	Zone
Adenanthera pavonina	red sandalwood		S
Agave sisalana	sisal hemp		C, S
Aleurites fordii (*Vernicia fordii*)	tung-oil tree		N, C
Alstonia macrophylla	devil tree		S
Alternanthera philoxeroides	alligator-weed	F	N, C, S
Antigonon leptopus	coral vine		N, C, S
Ardisia japonica	Japanese ardisia		N
Aristolochia littoralis (*A. elegans*)	elegant Dutchman's pipe, calico flower		N, C, S
Asystasia gangetica	Ganges primrose		C, S
Begonia cucullata	wax begonia		N, C, S
Broussonetia papyrifera	paper mulberry		N, C, S
Bruguiera gymnorhiza	large-leaved mangrove		S
Callistemon viminalis (*Melaleuca viminalis*)	bottlebrush		C, S
Callisia fragrans	inch plant, spironema		C, S
Casuarina cunninghamiana	Australian-pine	F	C, S
Cecropia palmata	trumpet tree		S
Cestrum diurnum	day jessamine		C, S
Chamaedorea seifrizii	bamboo palm		S
Clematis terniflora	Japanese clematis		N, C
Cocos nucifera	coconut palm		S
Crassocephalum crepidioides	redflower ragleaf, Okinawa spinach		C, S
Cryptostegia madagascariensis	rubber vine		C, S
Cyperus involucratus (*C. alternifolius*)	umbrella plant		C, S
Cyperus prolifer	dwarf papyrus		C, S
Dactyloctenium aegyptium	Durban crowfoot grass		N, C, S
Dalbergia sissoo	Indian rosewood, sissoo		C, S
Elaeagnus pungens	silverthorn, thorny olive		N, C
Elaeagnus umbellata	silverberry, autumn olive		N
Epipremnum pinnatum cv. *Aureum*	pothos		C, S
Eulophia graminea	Chinese crown orchid		C, S
Ficus altissima	false banyan, council tree		S
Flacourtia indica	governor's plum		S
Hemarthria altissima	limpo grass		C, S
Heteropterys brachiata	red wing, Beechey's withe		S
Hyparrhenia rufa	jaragua		N, C, S
Ipomoea carnea ssp. *fistulosa* (*I. fistulosa*)	shrub morning-glory	F	C, S
*Kalanchoe x houghtonii**	mother-of-millions		N, C, S
Kalanchoe pinnata (*Bryophyllum pinnatum*)	life plant		C, S
Koelreuteria elegans	flamegold tree		C, S
Landoltia punctata	spotted duckweed		N, C, S
Leucaena leucocephala	lead tree	F	N, C, S
Limnophila sessiliflora	Asian marshweed	F, U	N, C, S
Livistona chinensis	Chinese fan palm		C, S
Macroptilium lathyroides	phasey bean		N, C, S
Melia azedarach	Chinaberry		N, C, S
Melinis minutiflora	molasses grass		C,S
Merremia tuberosa	wood-rose		C, S
Mikania micrantha	mile-a-minute vine	F, U	S
Momordica charantia	balsam apple		N, C, S
Murraya paniculata	orange-jessamine		S
Myriophyllum spicatum	Eurasian water-milfoil	F	N, C, S
Panicum maximum (*Urochloa maxima*)	Guinea grass		N, C, S
Passiflora biflora	two-flowered passion vine		S
Pennisetum setaceum	green fountain grass		S
*Pennisetum polystachion** (*Cenchrus polystachos*)	mission grass, West Indian Pennisetum		C, S
Phoenix reclinata	Senegal date palm		C, S
Phyllostachys aurea	golden bamboo		N, C
Pittosporum pentandrum	Taiwanese cheesewood		S
*Platycerium bifurcatum**	common staghorn fern		S
Praxelis clematidea	praxelis		C
Pteris vittata	Chinese brake fern		N, C, S
Ptychosperma elegans	solitaire palm		S
Richardia grandiflora	large flower Mexican clover		N, C, S
Ricinus communis	castor bean		N, C, S
Rotala rotundifolia	roundleaf toothcup, dwarf Rotala, redweed		S
Ruellia blechum (*Blechum brownei*)	green shrimp plant, Browne's blechum		N, C, S
Sansevieria hyacinthoides	bowstring hemp		C, S
Sesbania punicea	rattlebox		N, C, S
*Sida planicaulis**	mata-pasto		C, S
Solanum diphyllum	two-leaf nightshade		N, C, S
Solanum torvum	turkeyberry	F, U	N, C, S
Spermacoce verticillata	shrubby false buttonweed		C, S
Sphagneticola trilobata (*Wedelia trilobata*)	wedelia, creeping oxeye		N, C, S
Stachytarpheta cayennensis (*S. urticifolia*)	nettle-leaf porterweed		S
Syagrus romanzoffiana (*Arecastrum romanzoffianum*)	queen palm		C, S
Syzygium jambos	Malabar plum, rose-apple		N, C, S
Taliparíti tiliaceum (*Hibiscus tiliaceus*)	mahoe, sea hibiscus		C, S
Terminalia catappa	tropical-almond		C, S
Terminalia muelleri	Australian-almond		C, S

continued

[1]Does not include *Ficus microcarpa* subsp. *fuyuensis*, which is sold as "Green Island Ficus"

[2]Many names are applied to this species in Florida because of a complicated taxonomic and nomenclatural history. Plants cultivated in Florida, all representing the same invasive species, have in the past been referred to as *Ruellia brittoniana, R. tweediana, R. caerulea*, and *R. simplex*.

[3]Chinese privet is a FLDACS Noxious Weed except for the cultivar 'Variegatum'

*Added to the FLEPPC List of Invasive Plant Species in 2017

**Plant names are those published in "Guide to Vascular Plants of Florida Third Edition." Richard P. Wunderlin and Bruce F. Hansen. University of Florida Press. 2011. Plant names in parentheses are synonyms or misapplied names that have commonly occurred in the literature or indicate a recent name change. Not all synonyms are listed.

Appendix B

Wood Stork Foraging Analysis

Florida Power & Light Company
Sweetbay Solar Energy Center
SAJ-2017-03238

Wood Stork Foraging Habitat Assessment

The Florida Power & Light Company (FPL) Sweetbay Solar Energy Center is located on an approximately 580-acre property and contains both man-altered and natural wetland and surface water habitats that could potentially be used by wood storks as foraging habitat. The U.S. Fish & Wildlife Service (USFWS) Wood Stork Programmatic Key (2010) defines suitable foraging habitat (SFH) as wetlands that typically have shallow, open water areas that are relatively calm and have a permanent or seasonal water depth between 2 to 15 inches deep, as well as shallow nonwetland water bodies. SFH can include freshwater marshes, ponds, seasonally flooded ditches and pastures, tidal creeks and pools, managed impoundments, and depressions in cypress heads and swamp sloughs. The facility area also falls within the core foraging area (CFA) of two wood stork colony sites: the North Fork St. Lucie River colony and the Cypress Creek Bluefield Road colony.

While the natural wetlands within the facility area will be preserved, approximately 3.43 acres of agricultural ditches (linear wetlands) and 3.97 acres of farm ponds will be permanently impacted. Of these impacts, approximately 3.75 acres of ponds and 1.94 acres of linear wetlands will be permanently filled, resulting in the loss of SFH. The remaining impacts are regrading impacts and the affected features will be preserved. USFWS uses their Wood Stork Programmatic Key to determine project-related effects to this species. Because the project involves more than 5 acres of impacts to wetlands and surface waters, FPL has prepared the following wood stork foraging habitat assessment to assess the value of SFH to be impacted and determine appropriate habitat compensation.

METHODOLOGY

The USFWS Wood Stork Foraging Habitat Assessment Methodology (2012) identifies four parameters used to estimate wood stork prey biomass within SFH. These parameters include density of exotic vegetation, wetland hydroperiod, prey size, and competition with other wading bird species.

HYDROPERIOD CLASS, PREY SIZE, AND COMPETITION FACTOR

The USFWS Wood Stork Foraging Habitat Assessment Methodology uses the hydroperiod class of a wetland or surface water to estimate total fish and crayfish biomass available, with more biomass available in wetlands with longer hydroperiods. The total biomass for each hydroperiod class is corrected for prey availability within the appropriate 1- to 9-centimeter (cm) size range for the wood stork and is adjusted by a competition factor of 0.325 to account for loss in biomass availability due to competition with other wading bird species. Table 1 summarizes hydroperiod classes with adjusted total biomass values.

Table 1. Hydroperiod Classes with Adjusted Total Biomass Values

Hydroperiod Class	Days Inundated	Adjusted Total Biomass (g/m^2)
Class 1	0 to 60	0.1008
Class 2	60 to 120	0.2015
Class 3	120 to 180	0.4290
Class 4	180 to 240	0.7605
Class 5	240 to 300	0.9523
Class 6	300 to 330	1.0920
Class 7	330 to 365	1.1798

Note: g/m^2 = gram per square meter.

EXOTIC VEGETATION DENSITY

USFWS has developed a foraging suitability index based on numbers of wetlands-dependent birds observed foraging in areas of different percent cover of exotic vegetation. Table 2 summarizes the foraging suitability index.

Table 2. Wood Stork Foraging Suitability Indices

Exotic Plants (percent coverage)	Foraging Suitability Index
0 to 25	1.00
26 to 50	0.64
51 to 75	0.37
76 to 100	0.03

SFH ASSESSMENT FOR PERMANENT FILL IMPACTS

Hydroperiod classes and foraging suitability indices of the affected surface waters were determined through observations by qualified field scientists during field assessments in September 2017 and January 2018, as well as review of aerial imagery.

Based on observations and review of aerial imagery, the agricultural ditches (linear wetlands) appear to be flooded year-round. Most of the ditches contained a mixture of native and exotic species, such as torpedo grass (*Panicum repens*), bahiagrass (*Paspalum notatum*), pennywort (*Hydrocotyle* sp.), Asian pennywort (*Centella asiatica*), soft rush (*Juncus effusus*), and Mexican primrose-willow (*Ludwigia octovalvis*). In some areas, broomsedge (*Andropogon* sp.), dog fennel (*Eupatorium capillifolium*), and tropical soda apple (*Solanum viarum*) are present at the top of the bank. The features range from approximately 25- to 50-percent cover by exotic species and were assigned a foraging suitability index value of 0.64.

The farm ponds also appeared to be flooded year-round and contained little, if any, vegetation. Where vegetated, species were mostly native nuisance species, such as duckweed (*Lemna* sp.). Around the margins, species were a mixture of native and nonnative species, such as torpedo grass, bahiagrass, broomsedge, dog fennel, Caesar weed, and tropical soda apple. Although exotic species were present, they covered less than 25 percent of the ponds, so these features were assigned a foraging suitability index of 1.00.

To calculate the total loss of forage biomass due to loss of SFH, each feature's total size (in square meters [m^2]) was multiplied by the adjusted total biomass and forage suitability index value. Table 3 summarizes the total loss of biomass due to impacting each feature.

Table 3. Total Loss of Forage Biomass from Permanent Fill

Feature ID	Area of Impact	Adjusted Total Biomass	Foraging Suitability Index	Loss of Biomass
Linear Wetlands (EN-D23B, LK-D29A, LK-D30, LK-D31)	7,851 m^2 (1.94 acres)	0.7605 g/m^2	0.64	3,821 g
Farm Ponds (EN-SW2, EN-SW3, EN-SW4, LK-WB8, LK-WB9, LK-WB15A, EN-SW19, EN-SW20)	15,176 m^2 (3.75 acres)	1.1798 g/m^2	1.00	17,905 g
			Total	**21,726 g or 21.7 kg**

Note: g = gram.
g/m^2 = gram per square meter.
kg = kilogram
m^2 = square meter.

The USFWS Wood Stork Foraging Habitat Assessment Methodology estimates 201 kilograms (kg) of forage was needed for a successful wood stork nest. Therefore, a total biomass loss of 21.7 kg represents the loss of 0.11 wood stork nest.

SFH ASSESSMENT PERMANENT REGRADING IMPACTS

Approximately 0.22 acre of farm ponds and 1.49 acres of agricultural ditches (linear wetlands) will be permanently regraded to improve and maintain hydrology onsite. Currently, these features are flooded year-round. The agricultural ditches (linear wetlands) have an estimated exotic species cover of 25 to 50 percent, while the farm ponds have estimated exotic species cover of 0 to 25 percent. After regrading is complete, these features will continue to hold water year-round, thereby remaining in hydroperiod Class 7. While vegetation will be lost during regrading, these features will be allowed to revegetate naturally once regrading is complete. It is likely the species within these areas will consist of herbaceous, early-colonizing vegetation, similar to what is currently present. Therefore, not net loss of SFH for wood storks is anticipated due to regrading impacts.

SFH ASSESSMENT FOR WETLAND ENHANCEMENT

Per guidelines of Martin County's Land Development Code (LDC), Section 4.2.G., FPL proposes to conduct removal of exotic invasive species within the wetlands to remain onsite. Wetland types within the facility area include freshwater marsh, freshwater marsh with shrubs and brush, and bay swamps.

Based on field observations and review of aerial imagery, approximately half of the wetlands are inundated year-round and were therefore assigned an adjusted total biomass value of 1.1798 grams per square meter (g/m^2). Most of the other wetlands within the facility area appear to be inundated for roughly half the year and were assigned an adjusted total biomass value of 0.7605 g/m^2. One of the freshwater marsh wetlands, EN-WL21, appears to contain surface water much of the time but was dry during the latest site visit on March 22, 2018, and in some of the aerial photographs reviewed. This wetland was assigned an adjusted total biomass value of 1.0920 g/m^2. A few of the wetlands, LK-WL10B, EN-WL25, and EN-WL26, appear to be inundated infrequently after large rainfall events. These wetlands were assigned an adjusted total biomass value of 0.1008 g/m^2. Hydroperiods will remain unchanged after construction.

While the wetlands within the facility area contain exotic vegetation, most of the wetlands contain less than 25-percent cover by exotic species and were assigned a present foraging suitability index value of 1.00. Wetlands EN-WL12, EN-WL13A, EN-WL14A, EN-WL14B, EN-WL14C, EN-WL15, EN-WL16A, and EN-WL16B had between 25- and 50-percent cover by exotic species, primarily Brazilian pepper (*Schinus terebinthifolia*) and Mexican primrose-willow (*Ludwigia octovalvis*) and were assigned a present foraging suitability index value of 0.64. Two of the wetlands, LK-WL1 and LK-WL10B, were heavily invaded by exotic species and were assigned a present foraging suitability index value of 0.37.

Since vegetation enhancement activities required by Martin County for preserved wetlands will result in removal of exotic species from the wetlands, the wetlands were assigned a future foraging suitability index value of 1.00. The change in foraging suitability index for each wetland was used to calculate the gain in biomass available to wood storks. Table 4 summarizes the gain in biomass available to wood storks due to wetland enhancement activities.

Table 4. Total Gain in Forage Biomass from Wetland Enhancement

Feature ID	Area of Impact	Adjusted Total Biomass (g/m^2)	Present Foraging Suitability Index	Future Foraging Suitability Index	Change in Foraging Suitability Index	Gain in Foraging Biomass (g)
LK-WL1	15,419 m^2 (3.81 acres)	1.1798	0.37	1.00	0.63	11,460
EN-WL5	3,359 m^2 (0.83 acre)	1.1798	1.00	1.00	0	0
LK-WL6	4,249 m^2 (1.05 acres)	1.1798	1.00	1.00	0	0
LK-WL7	8,741 m^2 (2.16 acres)	1.1798	1.00	1.00	0	0

Feature ID	Area of Impact	Adjusted Total Biomass (g/m^2)	Present Foraging Suitability Index	Future Foraging Suitability Index	Change in Foraging Suitability Index	Gain in Foraging Biomass (g)
LK-WL10A	6,799 m^2 (1.68 acres)	1.1798	1.00	1.00	0	0
LK-WL10B	890 m^2 (0.22 acre)	0.1008	0.37	1.00	0.63	57
EN-WL11	3,359 m^2 (0.83 acre)	0.7605	1.00	1.00	0	0
EN-WL12	24,443 m^2 (6.04 acres)	0.7605	0.64	1.00	0.36	6,692
EN-WL13A	13,962 m^2 (3.45 acres)	0.7605	0.64	1.00	0.36	3,822
EN-WL13B	11,088 m^2 (2.74 acres)	0.7605	1.00	1.00	0	0
EN-WL14A	6,758 m^2 (1.67 acres)	0.7605	0.64	1.00	0.36	1,850
EN-WL14B	16,107 g (3.98 acres)	0.7605	0.64	1.00	0.36	4,410
EN-WL14C	526 g (0.13 acre)	0.7605	0.64	1.00	0.36	144
EN-WL15	38,728 g (9.57 acres)	0.7605	0.64	1.00	0.36	10,603
EN-WL16A	16,916 g (4.18 acres)	0.7605	0.64	1.00	0.36	4,631
EN-WL16B	8,256 g (2.04 acres)	0.7605	0.64	1.00	0.36	2,260
LK-WL17	1,700 g (0.42 acre)	0.7605	1.00	1.00	0	0
LK-WL18	1,335 g (0.33 acre)	0.7605	1.00	1.00	0	0
LK-WL21	3,399 g (0.84 acre)	1.092	1.00	1.00	0	0
LK-WL22	21,246 g (5.25 acres)	1.1798	1.00	1.00	0	0
LK-WL23A	5,989 g (1.48 acres)	1.1798	1.00	1.00	0	0
LK-WL23B	84,417 g (20.86 acres)	1.1798	1.00	1.00	0	0
EN-WL25	3,885 g (0.96 acre)	0.1008	1.00	1.00	0	0
EN-WL26	607 g (0.15 acre)	0.1008	1.00	1.00	0	0
EN-WL27	19,789 g (4.89 acres)	1.1798	1.00	1.00	0	0
LK-WL29	1,497 g (0.37 acre)	0.7605	1.00	1.00	0	0
EN-WL30	162 g (0.04 acre)	0.7605	1.00	1.00	0	0

Feature ID	Area of Impact	Adjusted Total Biomass (g/m^2)	Present Foraging Suitability Index	Future Foraging Suitability Index	Change in Foraging Suitability Index	Gain in Foraging Biomass (g)
					Total	**45,930 g or 45.9 kg**

The USFWS Wood Stork Foraging Habitat Assessment Methodology estimates that 201 kg of forage was needed for a successful wood stork nest. Therefore, a total biomass loss of 21.7 kg represents the gain of 0.23 wood stork nest.

CONCLUSION

Based on the wood stork SFH assessment, approximately 21.7 kg of wood stork forage biomass will be lost due to permanent fill impacts. Regrading impacts will have no effect on wood stork forage biomass. Removal of exotic species in wetlands to be preserved will result in a gain of 45.9 kg of wood stork forage biomass, which will more than offset the loss of biomass due to project impacts. Overall, the proposed project will result in a net gain of 24.2 kg of wood stork biomass. Therefore, compensatory mitigation for loss of wood stork SFH is not proposed.

Appendix C

Agency Correspondence

FLORIDA DEPARTMENT of STATE

RICK SCOTT
Governor

KEN DETZNER
Secretary of State

Mr. Michael Arbuthnot
SEARCH
12443 San Jose Blvd., Suite 204
Jacksonville, Florida 32223

February 14, 2018

RE: DHR Project File No.: 2018-0099, Received by DHR: January 23, 2018
Reconnaissance Survey for the 563.4-Acre Indiantown Dairy Solar Facility Project, Martin County, Florida

Dear Mr. Arbuthnot:

We note that in December 2017, SEARCH conducted the above referenced reconnaissance survey as due diligence on behalf of Florida Power and Light (FPL). Our office proceeded to review this report with the expectation that FPL will be engaging in permitting processes that will require this office to comment on possible adverse impacts to cultural resources listed or eligible for listing in the *National Register of Historic Places (NRHP)*, or otherwise of historical, architectural, or archaeological significance. We recommend at the time such actions are taken, a copy of this letter be forwarded to the permitting agency(ies) with the application. This letter does not constitute a review under Section 106 of the *National Historic Preservation Act.*

SEARCH encountered no cultural resources within the area of potential effect (APE) during their reconnaissance level investigation which involved limited subsurface testing and pedestrian survey. SEARCH did clarify that the one (1) historic structure in the APE, 8MT00528, is misplotted and provided documentation for the Florida Master Site File to correct this mapping error. SEARCH recommends the proposed solar facility project will have no effect on cultural resources listed, or eligible for listing in the NRHP, or otherwise of archaeological, historical, or architectural significance within the survey area. SEARCH recommends no further investigation of the project area.

Based on the information provided, our office finds the submitted reconnaissance report complete and sufficient in accordance with Chapter 1A-46, *Florida Administrative Code*. Because this project is not yet subject to permitting requirements from a state or federal agency, our office abstains from supplying a determination of effects until such time that permitting agencies (and associated permit requirements) are identified for this project. Further, due to limited subsurface testing and abbreviated report content, reconnaissance surveys do not typically fulfill the requirements of a Phase I Cultural Resource Assessment Survey (CRAS) should one be requested.

If I can be of any further help, or if you have any questions about this letter, please feel free to contact me at *LindsayRothrock@dos.myflorida.com*.

Sincerely,

Jason Aldridge
For

Timothy A. Parsons, Ph.D., RPA
Director, Division of Historical Resources
and State Historic Preservation Officer

FLORIDA DEPARTMENT of STATE

RICK SCOTT
Governor

KEN DETZNER
Secretary of State

Mr. Michael Arbuthnot
SEARCH
12443 San Jose Blvd., Suite 204
Jacksonville, Florida 32223

March 16, 2018

RE: DHR Project File No.: 2018-0099-B, Received by DHR: February 22, 2018
Addendum to Reconnaissance Survey for the 563.4-Acre Indiantown Dairy Solar Facility Project, Martin County, Florida

Dear Mr. Arbuthnot:

We note that in February 2018, SEARCH conducted additional survey efforts of a laydown area of potential effect (APE) to supplement the above referenced reconnaissance survey as due diligence on behalf of Florida Power and Light (FPL). Our office proceeded to review this report with the expectation that FPL will be engaging in permitting processes that will require this office to comment on possible adverse impacts to cultural resources listed or eligible for listing in the *National Register of Historic Places (NRHP)*, or otherwise of historical, architectural, or archaeological significance. We recommend at the time such actions are taken, a copy of this letter be forwarded to the permitting agency(ies) with the application. This letter does not constitute a review under Section 106 of the *National Historic Preservation Act.*

SEARCH encountered no cultural resources within the laydown APE during their supplemental investigation which involved low-probability subsurface testing and pedestrian survey. Following this additional work, SEARCH maintains their previous recommendation that the proposed solar facility project will have no effect on cultural resources listed, or eligible for listing in the NRHP, or otherwise of archaeological, historical, or architectural significance within the survey area. SEARCH recommends no further investigation of the project area.

Based on the information provided, our office finds the submitted addendum report complete and sufficient in accordance with Chapter 1A-46, *Florida Administrative Code*. Because this project is not yet subject to permitting requirements from a state or federal agency, our office abstains from supplying a determination of effects until such time that permitting agencies (and associated permit requirements) are identified for this project. As previously stated, due to limited subsurface testing and abbreviated report content, reconnaissance surveys do not typically fulfill the requirements of a Phase I Cultural Resource Assessment Survey (CRAS) should one be requested.

If I can be of any further help, or if you have any questions about this letter, please feel free to contact me at *LindsayRothrock@dos.myflorida.com*.

Sincerely,

Jason Aldridge
For

Timothy A. Parsons, Ph.D.
Director, Division of Historical Resources
and State Historic Preservation Officer

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
POST OFFICE BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

April 26, 2018

REPLY TO ATTENTION OF

Regulatory Division
Jacksonville Permits Section
FPL Permitting Group, Palm Beach Gardens Office
SAJ-2017-03238 (Sweetbay Solar Energy Center)

Mr. Jose Rivera, Field Supervisor
South Florida Ecological Services Field Office
US Fish and Wildlife Service
1339 20th Street
Vero Beach, Florida 32960-3559

Dear Mr. Rivera:

Florida Power and Light Company (FPL) has applied for a Department of the Army permit to construct a 74.5-megawatt solar photovoltaic energy center on 573.88-acres of pasture land. The proposed project site is located on an undeveloped parcel, on the east side of SW Allapattah Road, approximately 1.6-miles north of the intersection of SW Allapattah Road and SW Warfield Boulevard, within Sections 19, 29, and 30, Township 39 South, Range 39 East, in Indiantown, Martin County, Florida. The application has been assigned the file number SAJ-2017-03238.

The U.S. Army Corps of Engineers (Corps) has completed an evaluation of the impacts the work may have on Federally listed species as outlined below. The Corps hereby requests initiation of formal consultation pursuant to Section 7 of the Endangered Species Act. In accordance with guidance provided in the Endangered Species Consultation Handbook, the Corps requests that you initiate consultation upon receipt of this request or provide a response within 30 days of receipt of this request stating what information is necessary to meet the requirements of 50 CFR §402.14(c). Upon your initiation of formal consultation, please provide this office with an expected completion date so that we may inform the applicant of the associated timeframes. The following information is provided in accordance with 50 CFR §402.14(c):

Description of the activity: The project is as described on the enclosed advance copy of the public notice/coordination letter/pre-construction notification for the project.

a. Area affected: Approximately 573.88-acres of pasture lands.

b. Listed species affected: The Corps has made the following determinations on species believed to be within the vicinity of the project site:

   Eastern indigo snake (*Drymarchon corais couperi*) – may affect
   Audubon's crested caracara (*Polyborus plancus audubonii*) – may affect, not likely to adversely affect
   American wood stork (*Mycteria americana*) – may affect, not likely to adversely affect

Florida panther (*Felis concolor coryi*) – no effect
Southeastern beach mouse (*Peromyscus polionotus niveientris*) – no effect
West Indian manatee (*Trichechus manatus*) – no effect
Everglades snail kite (*Rostrhamus sociabilis plumbeus*) – no effect
Florida grasshopper sparrow (*Ammodramus savannarum floridanus*) – no effect
Florida scrub-jay (*Aphelocoma coerulescens*) – no effect
Ivory-billed woodpecker (*Campephilus principalis*) – no effect
Kirtland's warbler (*Setophaga kirtlandii*) – no effect
Piping plover (*Charadrius melodus*) – no effect
Red knot (*Calidris canutus rufa*) – no effect
Red-cockaded woodpecker (*Picoides borealis*) – no effect
Hawksbill sea turtle (*Eretmochelys imbricata*) – no effect
Leatherback sea turtle (*Dermochelys coriacea*) – no effect
Loggerhead sea turtle (*Caretta caretta*) – no effect
Florida leafwing butterfly (*Anaea troglodyte floridalis*) – no effect
Miami blue butterfly (*Cyclargus thomasi*) – no effect
Beach jacquemontia (*Jacquemontia reclinata*) – no effect
Four-petal pawpaw (*Asimina tetramera*) – no effect
Lakela's mint (*Dicerandra immaculata*) – no effect
Tiny polygala (*Polygala smallii*) – no effect
Florida perforate cladonia (*Cladonia perforata*) – no effect

c. Analysis: The above determinations were made by the Corps based on the following analysis.

Eastern indigo snake (may affect): The project site contains more than 25-acres of suitable habitat for the snake and, per the species specific key (*Consultation Key for the Eastern Indigo Snake – Revised*, dated August 1, 2017), the proposed project results in a may affect determination. The key path is as follows: A-B-C; the project will affect more than 25-acres or more of eastern indigo snake habitat (e.g., sandhill, scrub, pine flatwoods, pine rocklands, scrubby flatwoods, high pine, dry prairie, coastal prairie, mangrove swamps, tropical hardwood hammocks, edges of freshwater marshes, agricultural fields (including sugar cane fields and active, inactive, or abandoned citrus groves), and coastal dunes). Therefore, the Corps determined that the proposed project may affect the Eastern indigo snake.

Audubon's crested caracara (may affect, not likely to adversely affect): The preferred habitat for the species, specifically open pasture lands, does exist on the project site. According to GIS data available to the Corps, there are three known nest locations adjacent to the project site towards the southwest. One nest is located directly across from the southwest portion of the project site across SW Allapattah Road, while the other two nests are located approximately 500-feet south of the southwestern corner of the project site. The Corps is aware that the nest across SW Allapattah Road is active, but has no information regarding the two nests to the south. The applicant conducted a formal caracara survey, which is on-going through the end of April 2018. No active or inactive nest trees were found on-site. Caracara's were observed on-site during surveys in 2018, as suitable foraging habitat does exist on the project site. The applicant has stated that potential nesting habitat within the project area is limited to the eastern and western property boundaries. At this time, the Corps has determined that the proposed

project may affect, not likely to adversely affect, the Audubon's crested caracara; however, the Corps could change their determination based on the final survey results. The final results of the survey will be forwarded to the Service when received by the Corps.

American wood stork (may affect, not likely to adversely affect): The project site is located within the outer edges of two core-foraging area buffers for the wood stork (Cypress Creek Bluefield Road and N. Fork St. Lucie River Colonies). On-site freshwater marshes, open water areas, and agricultural ditches may provide suitable foraging habitat for the wood stork. Four wood storks were observed foraging in on-site emergent wetlands. No impacts are proposed to on-site marshes, but the linear wetlands (agricultural ditches) and open water/cattle ponds are proposed to be filled and/or graded. In addition, on-site wetlands, except for linear wetlands, will be buffered from the proposed development with a 50-foot upland buffer. Some of the open-water cattle ponds are relatively deep, but may provide suitable foraging habitat for wood storks as water levels drop. Most of the ponds on-site are proposed to be filled. The Corps utilized the species specific key (dated May 18, 2010) to determine effects to the species. Use of the key results in a may affect, not likely to adversely affect, determination for the wood stork. The key path is as follows: A-B-C-D-E; project provides SFH compensation in accordance with the CWA Section 404(b)(1) guidelines and is not contrary to the HMG; habitat compensation is within the appropriate CFA or within the service area of a Service approved mitigation bank; and habitat compensation replaces foraging value, consisting of wetland enhancement or restoration matching the hydro-period of the wetlands affected, and provides foraging value similar to, or higher than, that of impacted wetlands. A foraging analysis was conducted by the applicant and is attached. The Corps determined that the project may affect, but is not likely to adversely affect, the wood stork.

Florida panther (no effect): The project area is not located within any designated Panther Focus Area, including the dispersal zones/pathways. Use of the panther specific key (*Florida Panther Effect Determination Key*, dated February 19, 2007) resulted in a no effect to the species. The key path is as follows: A-B; the project will have no increase and/or change in vehicle traffic patterns or other identifiable effects to panthers or their habitat. A review of the key states that a project located outside of the panther focus area, such as the proposed, can still have an effect on the species. A review of available panther telemetry data (up to June 2017) shows that there have been no panthers identified within 2-miles of the project site. Therefore, the Corps determined that the project would have no effect on the Florida panther.

Southeastern beach mouse (no effect): This mouse is a subspecies of the oldfield mouse with a range of approximately 80-kilometers of coastline of Volusia and Broward Counties. The essential habitat for this beach mouse is the sea oats zone of primary coastal dunes, but can also be found in the transition zone between the foredune inland plant community, although they will not survive there. The proposed project is located in far inland Martin County. The project site does not contain preferred nesting or foraging habitat for the species. Therefore, the Corps determined that the proposed project will have no effect on the southeastern beach mouse.

West Indian manatee (no effect): The manatee ranges freely between marine and freshwater habitats. Specific habitat types/use areas include foraging and drinking sites, resting areas, travel corridors and others. The project site does not contain the preferred habitat for the manatee as the site is entirely land-locked, is not located along the coast, and is not accessible by manatees. Therefore, the Corps determined that the project would have no effect on the manatee.

Everglades snail kite (no effect): The habitat for the species consists of freshwater marshes and shallow vegetated edges of lakes where apple snails, the snail kites major food source, can be found. Suitable foraging habitat generally consists of a combination of clear, calm, low profile (<3-meters) marsh with shallow (up to 1.3-meters) open water. The project site is located within the consultation area for the snail kite, but outside of any designated critical habitat for the species. Snail kites were not observed on-site during listed species surveys. Freshwater marshes located on the project site may be sufficient for the species main food source, the apple snail (*Pomacea paludosa*) or the exotic apple snail (*Pomacea insularum*), especially the larger marsh areas in the southwest corner. The on-site cattle ponds/open waters and linear wetlands (agricultural ditches) do not support the suitable habitat for the snail kite's main food source, whether that be an absence of the preferred vegetation (open waters/ponds) or hydro-period (linear wetlands). All on-site marshes will be preserved and include a 50-foot upland buffer for added protection. Therefore, the Corps determined that the project would have no effect on the Everglades snail kite.

Florida grasshopper sparrow (no effect): The project site is located within the consultation area for the grasshopper sparrow, but outside of any known sites for the species. This sparrow is endemic to dry prairies, dependent on large treeless, relatively poorly-drained grasslands with a frequency of fire. This particular sparrow has been documented to successfully reproduce in ungrazed or overgrown pastures. No individuals were observed on-site and the applicant determined that the site did not contain suitable habitat. Based on similar field reviews for solar sites, the FWS determined a site does not provide suitable conditions for the sparrow when there's a lack of open, treeless conditions, the presence of cattle, and lack of preferred groundcover vegetation and shrub structure. Taking those factors into consideration, and the on-going cattle grazing operations on the project site, the Corps determined that the proposed project would have no effect on the Florida grasshopper sparrow.

Florida scrub-jay (no effect): The scrub-jay is a relict species of fire-dominated oak scrub habitat in well drained sandy soils. The habitat for this species is extremely specific, being endemic to Florida's ancient dune systems or scrubs, specifically open xeric oak scrub, that occur on well-drained to excessively well-drained sandy soils. It was determined that the project site does not contain suitable foraging or nesting habitat for the species. Habitats on-site consist mainly of active cattle grazing lands, emergent and forested wetlands, and agricultural ditches. The preferred relatively open, sandy, xeric scrub-oak habitat of the species does not exist on site. Therefore, the Corps determined that the project would have no effect on the Florida scrub-jay.

Ivory-billed woodpecker (no effect): The woodpecker occurs in old-growth, lowland, deciduous forests and pinelands, utilizing forests adjacent to swamps and hardwood hammocks, dominated by bald cypress with black gum, red maple, red bay, sweet bay,

laurel oak, elm, palmetto, and longleaf and slash pines. The species is believed to be extinct in the U.S. These habitats do not exist on-site and the forested areas that do remain are small patchwork areas consisting of secondary or even tertiary growth as the lands have been cleared for some form of agricultural use for decades. Therefore, the Corps determined that the project would have no effect on the ivory-billed woodpecker.

Kirtland's warbler (no effect): A pair of warblers requires at least 8-acres of dense young jack pine forest to nest, with 30- to 40-acres to raise young. The warblers nest on the ground near lower branches and in large stands of young jack pines that are 5- to 20-feet tall and 6 to 22 years old with enough spacing to let light through to the ground. The bird is a migrant to the east coast of Florida in the fall and spring on their way to wintering habitat in the Bahamas, where they winter in scrub thickets. The Kirtland's warbler has been observed in migratory stopover habitats consisting of woodlands, scrub thickets, orchards, parks, and residential areas. The project site consists predominantly of pasture land, emergent and forested wetlands, and agricultural ditches. The small wooded areas on-site may contain suitable habitat for the species; however, the project will avoid the forested wetland areas. As a result, the Corps has determined that the proposed project will have no effect on the Kirtland's warbler.

Piping plover (no effect): The plover is a migratory bird that winters in Florida. Habitat for the plover consists of wide, flat, open, sandy beaches with very little grass or vegetation for nesting and foraging; nesting territories often include small creeks or wetlands. Critical habitat for the plover has been designated in Florida along several coastal beaches and a consultation area has been established as well. The project site is located in far inland Martin County away from preferred or designated critical habitat for the species. As a result, the Corps determined that the proposed project will have no effect on the piping plover or its designated critical habitat.

Red knot (no effect): The *rufa* species breeds in central Canadian Arctic tundra and winters at the tip of South America, in northern Brazil, the Caribbean, and along the Atlantic and Gulf coasts of the U.S. Nests of the species are typically built on dry, rocky arctic tundra at high elevations. The bird is most commonly found in brackish to marine coastal ecosystems, including tidal flats, beaches, and rocky shores, where it feeds on small clams, mussels, snails, and other invertebrates. The project site is located in far inland Martin County away from preferred habitat for the species. As a result, the Corps determined that the proposed project will have no effect on the red knot.

Red-cockaded woodpecker (no effect): The RCW depends on open mature pine woodlands and savannahs with large old trees for foraging and nesting, preferring to nest in trees 80 to 120 years old, while stands older than 30 years provide suitable foraging habitat. The RCW has a very large foraging territory requiring vast areas of open pine habitat. Suitable foraging habitat consists of large mature pines, little to no mid-story, and an abundant ground cover of native bunchgrasses and forbs. Depending on habitat quality, the RCW needs from 75 to 200 acres of contiguous foraging habitat with a history of fire. The project area is located outside of the species' consultation area and approximately 7.8-miles to the northwest of the nearest known occurrence of an individual. On-site forested areas do not contain the preferred foraging or nesting habitat for the species, as most of the forested areas are of either dense secondary or

tertiary growth. As a result, the Corps determined that the proposed project will have no effect on the red-cockaded woodpecker.

Hawksbill sea turtle (no effect): This turtle frequents rocky areas, coral reefs, shallow coastal areas, lagoons, oceanic islands, and narrow creeks and passes. They are rarely seen in water deeper than 65-water. Nesting habitat is usually on any undisturbed, low to high energy, deep-sand beach in the tropics, while hatchlings can be found floating amongst masses of sea plants. Critical habitat has been established for the species in Puerto Rico only. The project area is not accessible to any sea turtle, as it is located in inland Martin County far removed from the coast. As a result, the Corps determined that the proposed project will have no effect on the hawksbill sea turtle or its designated critical habitat.

Leatherback sea turtle (no effect): The leatherback is the largest, deepest diving, and most migratory, pelagic, and wide ranging of all sea turtles. Jellyfish are the main staple of its diet, but it is also known to feed on sea urchins, squid, crustaceans, tunicates, fish, blue-green algae, and floating seaweed. The species is distributed worldwide in tropical and temperate waters of the Atlantic, Pacific, and Indian Oceans. Adult females require sandy nesting beaches backed with vegetation and sloped sufficiently so the distance to dry sand is limited, with preferred beaches having a proximity to deep water and generally rough seas. Critical habitat has been designated for the species around St. Croix within the U.S. Virgin Islands. The project area is not accessible to any sea turtle, as it is located in inland Martin County far removed from the coast. As a result, the Corps determined that the proposed project will have no effect on the leatherback sea turtle or its designated critical habitat.

Loggerhead sea turtle (no effect): The loggerhead occurs throughout the temperate and tropical regions of the Atlantic, Pacific, and Indian Oceans; however, the majority of loggerhead nesting is at the western rims of the Atlantic and Indian Oceans. It may be found hundreds of miles out to sea, as well as inshore areas such as bays, lagoons, salt marshes, creeks, ship channels, and the mouths of large rivers. Coral reefs, rocky places, and ship wrecks are often used as feeding areas. Nesting occurs mainly on open beaches or along narrow bays having suitable sand, and it is often in association with other species of sea turtles. The terrestrial critical habitat areas include 88 nesting beaches in coastal counties located in North Carolina, South Carolina, Georgia, Florida, Alabama, and Mississippi. The project area is not accessible to any sea turtle, as it is located in inland Martin County far removed from the coast. As a result, the Corps determined that the proposed project will have no effect on the loggerhead sea turtle or its designated critical habitat.

Florida leafwing butterfly (no effect): The preferred habitat for this butterfly is pine rocklands whose only known host plant is the pineland croton. The project site consists of a mix of active pasture lands, forested and emergent wetlands, and agricultural ditches; the preferred habitat for the species does not exist on site. The Corps determined that the proposed project will have no effect on the Florida leafwing butterfly.

Miami blue butterfly (no effect): This butterfly is known to feed primarily on balloonvine, gray nickerbean, and blackbead, and females lay their eggs on these host plants. This butterfly inhabits tropical hardwood hammocks, tropical pine rocklands, and beachside

scrub. The species was once found as far north as Hillsborough and Volusia Counties but disappeared from the mainland by the 1980s. The project site is located in far inland Martin County and consists of a mix of active pasture lands, forested and emergent wetlands, and agricultural ditches; the preferred habitat for the species does not exist on site. The Corps determined that the proposed project will have no effect on the Miami blue butterfly.

Beach jacquemontia (no effect): This is a perennial vine found along southeast coastal beaches of Florida in Palm Beach, Broward, and Miami-Dade Counties. The species requires open areas typically found on stable crests and lee sides of dunes. In addition, the species may invade and re-stabilize maritime hammocks or coastal strand communities disturbed by storms and fires. The project site is located in far inland Martin County and consists of a mix of active pasture lands, forested and emergent wetlands, and agricultural ditches; the preferred habitat for the species does not exist on site. The Corps determined that the proposed project will have no effect on the beach jacquemontia.

Four-petal pawpaw (no effect): This is an aromatic shrub that stands up to 9.8-feet tall. This shrub has historically occurred in sand pine and scrub oak habitat, in coastal dune systems, of the Paola and St. Lucie soil series, in Martin, St. Lucie, and northern Palm Beach Counties. The project site is located in far inland Martin County and consists of a mix of active pasture lands, forested and emergent wetlands, and agricultural ditches; the preferred habitat for the species does not exist on site. The Corps determined that the proposed project will have no effect on the four-petal pawpaw.

Lakela's mint (no effect): This a small fragrant shrub inhabiting a very limited area along the Atlantic coastal Ridge. The species prefers light shade or clearings in scrub with varying degrees of ground litter, from partly covered to bare sand. It has been found growing in the following soil series: Astatula, Paola, and St. Lucie. The project site is located in far inland Martin County and consists of a mix of active pasture lands, forested and emergent wetlands, and agricultural ditches; the preferred habitat or the soil series for the species does not exist on site. The Corps determined that the proposed project will have no effect on the Lakela's mint.

Tiny polygala (no effect): This is a short-lived herb with only eleven known populations, all found within 9.7-kilometers of the Atlantic coast within Miami-Dade, Broward, Palm Beach, Martin, and St. Lucie Counties. The species is found within four distinct habitats: pine rocklands, scrub, high pine, and open coastal spoils, all of which are extremely dry and prone to periodic fire. The habitat varies depending on the county, in Martin County it occurs in two populations: one in turkey oak sandhill habitat and the other in a disturbed north-facing slope of Paola Sand. The project site is located in far inland Martin County, approximately 34-kilometers from the coast, and consists of a mix of active pasture lands, forested and emergent wetlands, and agricultural ditches; the preferred habitat for the species does not exist on site. The Corps determined that the proposed project will have no effect on the tiny polygala.

Florida perforate cladonia (no effect): This lichen occurs in high, well-drained sands of rosemary scrub habitat found on high sand dune in the Atlantic Coastal and Lake Wales Ridges. Approximately 27 sites are known in Okaloosa, Martin, Palm Beach, and

Manatee Counties. It typically occurs within the open patches of sand between shrubs in areas of sparse or no herbaceous vegetation. The project site is located in far inland Martin County and consists of a mix of active pasture lands, forested and emergent wetlands, and agricultural ditches; the preferred habitat for the species does not exist on site. The Corps determined that the proposed project will have no effect on the Florida perforate cladonia.

d. Relevant reports: Please reference the enclosed documents related to the species listed above. Please contact the Corps PM for a copy of the permit application as the file size is too large to include as an attachment.

e. Other relevant information: All relevant information has been attached to this email, please contact the Corps project manager for a full copy of the permit application, which was not attached due to the large file size.

If you have any questions regarding this correspondence, please contact Mr. John Policarpo at the letterhead address, by telephone at 561-472-3518, or by email at John.N.Policarpo@usace.army.mil.

Sincerely,

Susan R. Kaynor
Chief, Jacksonville Permits Section

Enclosures:
On-Site Habitat Assessment
Listed Species Survey
Wood Stork Foraging Analysis
Waters of the U.S. Impact Map

Copies Furnished:
Mr. Brady Walker, FPL (via email) (w/o enclosures)
Mr. Matthew Goff, ECT (via email) (w/o enclosures)

From: Policarpo, John N CIV USARMY CESAJ (US) <John.N.Policarpo@usace.army.mil>
Sent: Friday, April 27, 2018 10:35 AM
To: Walker, Brady <Brady.Walker@fpl.com>
Cc: Matthew D. Goff <mgoff@ectinc.com>
Subject: SAJ-2017-03238 Indiantown Solar Energy Center

Morning Brady,

The Public Notice for Martin County Solar Center went out today. Here's the link:

http://www.saj.usace.army.mil/Missions/Regulatory/Public-Notices/Article/1505180/saj-2017-03238-sp-jnp/

I have also attached a copy of the letter to the FWS initiating consultation; I don't remember if I sent this to you or not.

Let me know if you have any questions.

Thanks
John

John N. Policarpo
FP&L Liaison
US Army Corps of Engineers
Jacksonville District, Palm Beach Gardens
561-472-3518

United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecological Services Office
1339 20th Street
Vero Beach, Florida 32960

August 23, 2018

Jason A. Kirk, Colonel
U.S. Army Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

Service Consultation Code: 04EF2000-2018-F-0660
Date Received: April 26, 2018
Consultation Initiation Date: May 5, 2018
Project: Sweetbay Solar Energy Center
Corps Permit Application Number: SAJ-2017-03238 (SP-JNP)
County: Martin

Dear Colonel Kirk:

The U.S. Fish and Wildlife Service (Service) has received the U.S. Army Corps of Engineers' (Corps) request for consultation dated April 26, 2018, for Florida Power and Light's (Applicant; FPL) proposed Sweetbay Solar Energy Center (Project). This document transmits the Service's biological opinion based on our review of the proposed Project located in Martin County, Florida, and its effects on the threatened eastern indigo snake (*Drymarchon corais couperi*; indigo snake). It also includes and summarizes our concurrences for the Corps' determinations for the federally threatened Audubon's crested caracara (*Polyborus plancus audubonii*; caracara) and the threatened wood stork (*Mycteria americana).* This document is submitted in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C. 1531 *et seq.*).

This Biological Opinion is based on the biological assessment provided to the Corps by Environmental Consulting and Technology, Inc. (Consultant; ECT), correspondence, telephone conversations, emails, and other sources of information. As of July 15, 2018, the Service has received all the Project information necessary for initiation of formal consultation on the indigo snake, as required in the regulations governing interagency consultations (50 CFR § 402.14). A complete record of this consultation is on file at the South Florida Ecological Services Office in Vero Beach, Florida.

Consultation History

In a letter to the Service dated April 26, 2018, the Corps submitted a request for consultation, including a description of Project impacts, species assessments, and information to support a determination of "may affect" for the eastern indigo snake and "may affect, not likely to adversely affect" wood stork and crested caracara.

On April 27, 2018, the Corps issued a Public Notice for the proposed Sweetbay Solar Energy Center Project under Corps application number SAJ-2017-03238 (SP-JNP).

In an email to the Corps and Applicant dated May 8, 2018, the Service made a request for additional information. The email asked for a more detailed plan of construction and operation of the center. The email also requested a site visit.

In an email to the Corps and Service dated May 8, 2018, the Applicant submitted a response to the Service's request for additional information. The construction plans were submitted to the Service and a date for the site visit was set.

On May 23, 2018, the Service, along with representatives of the Corps, ECT, and Applicant conducted a field review of the Project site.

The Applicant submitted the final caracara report via email on June 29, 2018.

In an email to the Corps and Service dated July 15, 2018, the Applicant submitted a response to the Service's request for additional information. The email stated a commitment to provide $16,000 to the Service's Eastern Indigo Snake Conservation Fund.

As of July 15, 2018, the Service received all the information necessary for initiation of formal consultation on the indigo snake for this Project as required in the regulations under the ESA.

BIOLOGICAL OPINION

This Biological Opinion provides the Service's opinion as to whether the proposed Project is likely to jeopardize the continued existence of the indigo snake. There is no designated critical habitat for the indigo snake; therefore, this Biological Opinion will not address destruction or adverse modification of critical habitat.

ANALYTICAL FRAMEWORK FOR THE JEOPARDY DETERMINATIONS

Jeopardy Determination

Section 7(a)(2) of the Endangered Species Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. "Jeopardize the continued existence of" means to engage in an action that reasonably would will be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 Code of Federal Regulations 402.02).

The jeopardy analysis in this Biological Opinion relies on four components: (1) the Status of the Species, which describes the range-wide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the Environmental Baseline, which analyzes the condition of the species in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the Effects of the Action, which determine the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the species; and (4) the Cumulative Effects, which evaluate the effects of future, non-Federal activities in the action area on the species.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of the current status of the species, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the species in the wild.

DESCRIPTION OF PROPOSED ACTION

FPL's proposed Sweetbay Solar Energy Center (Sweetbay) will create clean, renewable energy by converting sunlight via photovoltaic (PV) arrays into direct current electricity and further converting it into alternating current using power inverters. The zero-emissions electricity produced travels through transformers, and the voltage is boosted for transmission through the electric grid, where it is distributed to homes and businesses. Power generated by the facility is fed into FPL's electrical grid, where it can be used by their customers. The facility will have a generating capacity of up to 74.5 megawatts. Sweetbay is located on the east side of Southwest Allapattah Road, approximately 7 miles (mi) south of Southwest Martin Highway, in Indiantown, Florida.

The facility will be situated on a 566-acre (ac) site, and the Project also includes an 8-ac laydown area on the western side of Allapattah Road. The Project area includes approximately 458 ac of improved pasture; 53.47 ac of freshwater marshes; 20.47 ac of bay swamps; 14.72 ac of ditches; 8.31 ac of upland shrub and brushland; 6.04 ac of freshwater marsh with shrubs, brush, and vines; 5.01 ac of reservoirs; 3.08 ac of cabbage palm; 2.84 ac of dikes and levees; less than 1 ac of temperate hardwoods, and less than 1 ac of cattle feeding operations.

The entire facility property will be surrounded by a security fence, including the solar PV fields, substation, and areas required during construction for equipment laydown and staging to the west of Allapattah Road. Approximately 130 ac of the property will be designated as preserve areas. These areas consist of native wetland and upland habitats as well as a 50-foot (ft) upland buffer to the wetlands. Wetland buffers will be enhanced with native plantings and removal of exotic vegetation. These areas will experience temporary disturbance for the addition of water level control structures. No components of the facility will encroach into the preserve areas.

Project construction will result in permanent fill impacts of 7.4 ac of man-made, agricultural ditches that contain wetland characteristics (linear wetlands) and surface waters (farm ponds). Minimal land disturbance will occur during construction, and groundcover vegetation will be allowed to regenerate following construction. The solar panels are assembled onsite using racks supported by metal "U" beams driven into the ground. No footers or casings are required. The solar panels are approximately 2 ft off the ground and 6 ft in height. The panels are non-reflective, produce no noise or odors, and require no hazardous substances for operation.

Electricity is distributed from the inverters to a switchyard via insulated lines, where the voltage is raised to match the existing adjacent transmission grid. Other facility improvements include unpaved internal access paths, inverter pads, stormwater swales, and perimeter fencing. The facility will tie in to FPL's existing Indiantown-Martin #1 230-kilovolt transmission line, which bisects the facility.

The facility will be unmanned during operations. The only vehicular traffic to the site will be for occasional maintenance of facility components and vegetation management. Except for the collector switchyard, the facility will not be lighted. The collector switchyard lighting will be used for maintenance only and will be turned off when not in use.

Minimization and Conservation Measures

The Project will result in unavoidable permanent impacts to 7.4 ac of agricultural ditches (linear wetlands) and surface waters. In accordance with the Florida Department of Environmental Protection's Uniform Mitigation Assessment Method, the loss of wetland functions associated with Project construction will be mitigated through purchase of an appropriate number of wetland credits from the Bluefield Ranch Mitigation Bank, located in the same drainage basin as the Project. Exotic vegetation within the project's security fence will be removed and maintained per Martin County requirements. FPL is proposing to include upland native vegetation plantings that include pollinator and wildlife friendly species as recommended by Audubon Florida.

In an effort to minimize adverse effects to the indigo snake, the Applicant proposes the following protection measures:

1. Implement the Standard Protection Measures for the Eastern Indigo Snake (SPM; Service 2013).

2. Follow the Gopher Tortoise Permitting Guidelines (FWC 2017) to locate and excavate gopher tortoise burrows, if needed.

Conservation Contribution

The Applicant proposes to contribute $16,000 to the Eastern Indigo Snake Conservation Fund as a conservation measure to mitigate for unavoidable impacts from proposed actions to indigo snakes and their habitat. The fund is used to implement actions that benefit indigo snakes. This donation will be made and the Service will be notified of the deposit prior to

ground breaking or within 60 days of receipt of the Service's Biological Opinion, whichever is sooner.

Action area

The action area is defined as all areas to be affected directly or indirectly by the Federal action. For this Project, the Service has identified the action area as the entire 566 ac Project construction footprint.

SPECIES NOT LIKELY TO BE ADVERSELY AFFECTED BY THE PROPOSED ACTION

Caracara

The Project occurs within the geographic range of the caracara. The preferred habitat for the species, specifically open pasturelands, does exist on the Project site. The Project site is lacking nesting trees. Most of the site is without trees except a few pine trees scattered throughout the interior and a few clumps of cabbage palms (*Sabal palmetto*) located on the eastern boundary. According to GIS data available to the Corps, there are three known nest locations adjacent to the Project site towards the southwest. One nest is located directly across from the southwest portion of the Project site across SW Allapattah Road, while the other two nests are located approximately 500 ft south of the southwestern corner of the Project site. The Corps is aware that the nest across SW Allapattah Road is active, but has no information regarding the two nests to the south. The only work that would take place near the offsite SW Allapattah Road nest will be the possible use of a borrow pit. If this area is utilized as a borrow pit, the area will only be used for a one month period. The borrow pit is planned to be used only outside of caracara nesting time (December to April [Service1999]). The Applicant conducted a formal caracara survey in 2018. No active or inactive nest trees were found on-site. Caracara's were observed on-site during surveys in 2018, as suitable foraging habitat does exist on the Project site. The Applicant has stated that potential nesting habitat within the Project area is limited to the eastern and western property boundaries. The loss of 566 ac of foraging habitat represents approximately 19 percent an average caracara territory. This amount of loss is not likely to significantly impair caracara behavioral patterns. The Corps determined the Project may affect, but is not likely to adversely affect the caracara. Based on the information provided, the Service concurs with this determination.

Wood stork

The Project site is located within the outer edges of two core-foraging area buffers for the wood stork (Cypress Creek Bluefield Road and N. Fork St. Lucie River Colonies). On-site freshwater marshes, open water areas, and agricultural ditches may provide suitable foraging habitat for the wood stork. Four wood storks were observed foraging in on-site emergent wetlands. No impacts are proposed to on-site marshes, but the linear wetlands (agricultural ditches) and open water/cattle ponds are proposed to be filled and/or graded. In addition, on-site wetlands, except for linear wetlands, will be buffered from the proposed development with a 50-ft upland buffer.

Some of the open-water cattle ponds are relatively deep, but may provide suitable foraging habitat for wood storks as water levels drop. Most of the ponds on-site are proposed to be filled. The Corps utilized the species specific key (dated May 18, 2010) to determine effects to the species. Use of the key results in a may affect, not likely to adversely affect, determination for the wood stork. The key path is as follows: A-B-C-D-E; project provides suitable foraging habitat (SFH) compensation in accordance with the CWA Section 404(b)(1) guidelines and is not contrary to the Habitat Management Guidelines; habitat compensation is within the appropriate Core Foraging Area or within the service area of a Service approved mitigation bank; and habitat compensation replaces foraging value, consisting of wetland enhancement or restoration matching the hydro-period of the wetlands affected, and provides foraging value similar to, or higher than, that of impacted wetlands. The Applicant conducted a foraging analysis. Based on the wood stork SFH assessment, approximately 21.7 kilogram (kg) of wood stork forage biomass will be lost due to permanent fill impacts. Regrading impacts will have no effect on wood stork forage biomass. Removal of exotic species in wetlands to be preserved will result in a gain of 45.9 kg of wood stork forage biomass, which will more than offset the loss of biomass due to project impacts. Overall, the proposed Project will result in a net gain of 24.2 kg of wood stork biomass. The Service concurs with the Corps determined that the project may affect, but is not likely to adversely affect, the wood stork.

STATUS OF THE SPECIES

Please see the attached Enclosure for the Status of the Species for the indigo snake.

Summary of threats to the species

The modification and destruction of natural upland and freshwater wetland communities in South Florida were a primary consideration in listing the indigo snake as threatened. Another threat to the snake is loss of habitat converted to other uses, such as citrus orchard and canals. However, indigo snakes are very adaptable and can colonize agricultural areas and canal banks after conversion. Additionally, habitat degradation due to lack of management, including prescribed fire, is a threat to indigo snakes. The proposed action has the potential to adversely affect indigo snake adults, juveniles, nests, and hatchlings within the proposed Project area. Potential effects include injury, mortality, habitat loss or degradation, and disturbance resulting from the construction of the proposed Project. The Project's adverse effects to indigo snakes will be discussed in the remainder of this Biological Opinion.

ENVIRONMENTAL BASELINE

Status of the species within the action area

While no indigo snakes were observed during an initial field assessment by the Applicant's consultant for listed species, the Service considers the snake a habitat generalist with a large home range (Layne and Steiner 1996, Service 1999) which has been known to use most of the habitat types found within the 566-ac Project footprint. Except for the approximately 5.01 ac of reservoir, the Service considers the remaining 560.99 ac suitable habitat for

indigo snakes. Therefore, the Project planned actions may affect the indigo snake in the form of habitat conversion and loss.

The nearest records of indigo snakes found in the Service's Geographic Information System database were located approximately 2 mi northeast of the Project on a decommissioned citrus farm. Thirty-five indigo snakes have been observed at this citrus farm (Mortellaro and Nester; unpublished data). This would indicate that indigo snakes are reasonably certain to occur on the Project site. Indigo snakes are known to use gopher tortoise burrows for refugia (Moler 1985). Results of the Consultant's partial gopher tortoise survey have found only two burrows. There burrows are located out of the active construction area, and they will be avoided. A full gopher tortoise survey and coordination with FWC's gopher tortoise program will take place before construction.

Additionally, indigo snakes are known to use mammal burrows, brush and rock piles, and drainage pipes for refugia (Moler 1985, Jackson 2013). There are ten manmade structures on the Project site that could serve as potential refugia for indigo snake. There are several culverts along the powerline running through the property. These culverts were flooding during the site visit and are likely to only be usable during the dry season. Many of the culverts have collapsed and would not be suitable for indigo snakes. There is a cattle corral on the east side of the property. The corral is mostly made of wood and a small concrete pad that is now buried. Most of the corral structure is a series of fences and would provide little refugia.

It is difficult to estimate the density of indigo snakes in the total impacted suitable habitat due to a general lack of existing data and reliable survey methods. Therefore, data from other indigo snake studies in Florida were used to estimate snake density on the Project site. A 26-year study conducted by Layne and Steiner (1996) at Archbold Biological Station (ABS), Lake Placid, Florida, determined the average home range size for a female was approximately 46 ac and that of a male was 184 ac. Considering overlap between the sexes we estimate there could be up to 3 males and 12 females or 15 snakes total within the 560.99-ac impact area. Because 12 female snakes are expected to be present, we also estimate 12 nests with eggs could also be within the action area during breeding season.

Factors affecting the species environment within the action area

Indigo snakes within the action area are vulnerable to habitat loss due to the intense development pressures from South Florida's growing human population. Between 2010 and 2070, Florida's population is projected to increase by 79 percent to 33.7 million people. Assuming a similar pattern of development at current gross urban densities for each county, this translates into the need to convert an additional 5.4 million ac of undeveloped and agricultural land into urban uses (Zwick and Carr 2016).

Remaining indigo snake habitats are also threatened by degradation resulting from fire exclusion and lack of management. Most upland and some wetland habitats in which the indigo snake has been documented require periodic fire to maintain optimal habitat. The need to protect agricultural, residential, and commercial development has resulted in the

suppression of wildfires. The Service is unaware of any recent fires within the action area. Naturally fire maintained habitats lacking periodic fire or management become overgrown and less suitable to indigo snakes. Over time, indigo snakes will diminish in abundance and eventually may be extirpated. The designated preservation areas within the proposed Project area will be difficult to burn and are also likely too small and isolated to allow usage by the indigo snake.

Climate change

Our analyses under the Act include consideration of observed or likely environmental effects related to ongoing and projected changes in climate. As defined by the Intergovernmental Panel on Climate Change (IPCC), "climate" refers to average weather, typically measured in terms of the mean and variability of temperature, precipitation, or other relevant properties over time; thus "climate change" refers to a change in such a measure which persists for an extended period, typically decades or longer, due to natural conditions (*e.g.*, solar cycles) or human-caused changes in the composition of the atmosphere or inland use (IPCC 2013, page 1450). Detailed explanations of global climate change and examples of various observed and projected changes and associated effects and risks at the global level are provided in reports issued by the IPCC (2014 and citations therein). Information for the United States at national and regional levels is summarized in the National Climate Assessment (Melillo et al. 2014 entire and citations therein; see Melillo et al. 2014, pages 28-45 for an overview). Because observed and projected changes in climate at regional and local levels vary from global average conditions, rather than using global scale projections, we use "downscaled" projections when they are available and have been developed through appropriate scientific procedures, because such projections provide higher resolution information that is more relevant to spatial scales used for analyses of a given species and the conditions influencing it (See Melillo et al. 2014, Appendix 3, pages 760-763 for a discussion of climate modeling, including downscaling). In our analysis, we use our expert judgment to weigh the best scientific and commercial data available in our consideration of relevant aspects of climate change and related effects.

Climate change may result in an increase in the intensity or frequency of tropical storms and hurricanes in Florida. The Atlantic Multi-decadal Oscillation (AMO) influences rain patterns in Florida. We are currently in an AMO warm phase that is predicted to persist through 2020 (Miller 2010). The increased rainfall associated with both of these factors could reduce our ability to effectively use prescribed burning to manage habitat in optimal conditions for indigo snakes and their prey. Increased rainfall could increase the amount of area covered with standing water or the duration of inundation of seasonally wet areas, which could reduce the number of suitable refugia for indigo snakes.

It is difficult to estimate, with any degree of precision, if a species will be affected by climate change or exactly how they will be affected. The Service will use Strategic Habitat Conservation planning, an adaptive science-driven process that begins with explicit trust resource population objectives, as the framework for adjusting our management strategies in response to climate change (Service 2006).

EFFECTS OF THE ACTION

Adverse effects

Land clearing and site preparation

Habitat clearing, earth moving, and surface grading have the potential to crush indigo snakes, their nests and eggs. Snakes can also be buried in their burrows and other refugia, leading to mortality. It is difficult to estimate the density of indigo snakes in the action area due to a general lack of existing data. Therefore, data from other indigo snake studies in Florida were used to estimate an approximate snake density on the Project area. A 26-year study conducted by Layne and Steiner (1996) at ABS, determined the average home range size for a female was 46 ac and that of a male was 184 ac. Considering overlap between the sexes, there could be up to 3 male and 12 females, or 15 snakes total within the 560.99 ac of the Project area to be impacted. Because 12 female snakes are estimated to be present, we also estimate 12 nests with eggs could be present during nesting season (April to July).

The SPMs require the Applicant to develop a protection and education plan for all construction personnel to follow. On-site personnel should be familiar with the physical description of the snake and what to do if a snake is observed during any phase of construction activities. An indigo snake must be allowed to leave the area on its own accord and must not be harassed in any way. However, the loss of habitat within the Project footprint may force indigo snakes to leave the Project area and establish new home ranges. These individuals would be more vulnerable to predation and intraspecific aggression as they attempt to establish new home ranges. The loss of habitat (home range) would be expected to impair their ability to feed, breed, and shelter until new home ranges are established.

Increased vehicular traffic during land clearing activities has the potential to increase the risk of snake mortality. Because SPM conditions require the education of contractors and equipment operators, posting of speed limit signs on all roadways during Project construction and operation, on-site signs explaining the penalties of intentionally running over snakes, and that construction will cease if snakes are observed, we anticipate the risk of injury or death on the access roads to be low.

Vehicular Traffic

Noise and vibration disturbance from personnel and equipment during land clearing activities could adversely affect indigo snakes by causing them to leave the action area. Leaving the area may result in missed foraging and mating opportunities and these individuals may be more vulnerable to predation, starvation, and intraspecific aggression. Disturbed indigo snakes may also hide in temporary refugia (piles, rutting, burrows, etc.) on site. These individuals may miss foraging and mating opportunities and may be more vulnerable to injury or mortality during subsequent land clearing or burrow excavation.

Increased vehicular traffic during Project construction activities has the potential to increase the risk of snake mortality. Because the SPMs require the education of contractors and equipment operators, posting of speed limit signs on all roadways during Project construction and operation, on-site signs explaining the penalties of intentionally running over snakes, and that construction will cease if snakes are observed, we anticipate the risk of injury or death on the access roads to be low.

Construction

The Project will result in a loss of 560.99 ac of indigo snake habitat, through habitat destruction, fragmentation, and isolation that could result in the loss of up to 15 indigo snakes and up to12 nests. Further research is needed to determine if land impacted during Project construction will be permanently lost as indigo snake habitat. Potential refugia may be present in undisturbed areas and most of the action area is likely to remain accessible to foraging snakes.

A single row of pile-driven supports will provide the foundations for the solar array framework. Because pile driving will not require any excavation, we anticipate the risk of direct injury or mortality to be low during installation of the solar array; however the associated noise and vibration could adversely affect indigo snakes by causing them to leave the action area. Leaving the area may result in missed foraging and mating opportunities and these individuals may be more vulnerable to predation, starvation, and intraspecific aggression.

Operations after construction

During operations, human presence on the Project site will be restricted, with only maintenance or security personnel entering the facility. Vegetation within the solar array will be maintained so as not to shade the solar panels. This will be achieved by occasional mowing (approximately 3 to 4 times per year) and/or by grazing animals (*e.g.*, sheep), and/or occasional herbicide application. Mowing could cause direct injury or mortality of indigo snakes. Because the SPMs require the education of contractors and equipment operators, posting of speed limit signs on all roadways during Project operation, onsite signs explaining the penalties of intentionally running over snakes, we anticipate the risk of injury or death to be low.

Interrelated and interdependent actions

An interrelated activity is an activity that is part of the proposed action and depends on the proposed action for its justification. An interdependent activity is an activity that has no independent utility apart from the action under consultation. Interrelated or interdependent actions are not expected to result from the Project.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, Tribal, local, or private actions reasonably certain to occur in the action area considered in this Biological Opinion. Future Federal actions unrelated to the proposed action are not considered in this section because

they require separate consultation pursuant to section 7 of the Act. The action area does not extend beyond the Project area. Therefore, cumulative effects to the indigo snake are not expected to occur from the Project.

CONCLUSION

After reviewing the current status of the indigo snake, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the Project, as proposed, is not likely to jeopardize the continued existence of the indigo snake. We have reached this conclusion because: (1) the Project will permanently destroy a maximum of 560.99 ac of suitable habitat; however, this represents a small portion of the combined acreage of all habitats usable by indigo snakes throughout their range in Florida and Georgia; (2) the level of expected mortality (15 individuals and up to 12 nests with eggs) is a small fraction of the number of indigo snakes that potentially occupy the suitable habitat throughout this species' range; and (3) the Applicant will implement the SPMs for the indigo snake during land clearing, construction and operation of the proposed Project, which should reduce mortality caused by vehicles, equipment, or if a snake is encountered by workers.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4 (d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.

Under the terms of section 7(b)(4) and section 7(o)(2), taking, that is incidental to and not intended as part of the agency action, is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The terms and conditions described below are non-discretionary, and must be undertaken by the Corps so they become binding conditions of any grant or permit issued to the Applicant, as appropriate, for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps (1) fails to assume and implement the terms and conditions or (2) fails to require the Applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Corps must report

the progress of the action and its impact on the species to the Service as specified in the Incidental Take Statement. [50 CFR § 402. 1 4(i)(3)].

AMOUNT OR EXTENT OF TAKE

The Service has reviewed the biological information for the indigo snake, information presented by the Applicant's consultant, and other available information relevant to this action. The Service anticipates 15 indigo snakes and 12 indigo snake nests with eggs could be taken as a result of this proposed action. Because indigo snakes are difficult to detect and rarely seen, take will be quantified by the permanent or functional loss of 560.99 ac of suitable indigo snake habitat within the Project action area. In addition, because indigo snakes are difficult to detect, if more than three indigo snakes are found injured or dead during Project activities this would be considered an atypical situation and likely indicative of a greater abundance of snakes within the Project footprint than evaluated in this Biological Opinion. Thus, take will also be considered exceeded if more than three dead or injured snakes are found during Project construction or maintenance activities. If, during the course of this action, this level of take is exceeded, such take would represent new information requiring review of the reasonable and prudent measures provided. The Federal agency must immediately reinitiate consultation with the Service.

EFFECT OF TAKE

In the accompanying Biological Opinion, the Service determined this level of anticipated take is not likely to result in jeopardy to the indigo snake.

REASONABLE AND PRUDENT MEASURES

When providing an incidental take statement, the Service is required to give reasonable and prudent measures it considers necessary or appropriate to minimize the take along with terms and conditions that must be complied with, to implement the reasonable and prudent measures. The Service believes the following reasonable and prudent measure is necessary and appropriate to minimize effects of the proposed Project on the indigo snake:

1. Implementation of the Project as proposed and outlined in the "Description of the Proposed Action" section of this Biological Opinion.

MONITORING AND REPORTING REQUIREMENTS

Pursuant to 50 402.14(i)(3), the Applicant must provide adequate monitoring and reporting to determine if the amount or extent of take is approached or exceeded. A monitoring report (electronic is sufficient) must be submitted to the South Florida Ecological Service Office within 60 days of Project construction completion for each phase. The report should detail if indigo snakes were observed during the land clearing and identify the final site design and total number of acres that were permanently lost.

DISPOSITION OF DEAD OR INJURED SPECIMENS

Upon locating a dead, injured, or sick threatened or endangered species, initial notification must he made to the nearest Service Law Enforcement Office; Fish and Wildlife Service; 20501 Independence Boulevard, Groveland, Florida 34736-8573; 352-429-1037. Secondary notification should be made to FWC; South Region; 8535 Northlake Blvd; West Palm Beach, Florida; 33412; 1-800-282-8002. Care should be taken in handling sick or injured specimens to ensure effective treatment and care or in the handling of dead specimens to preserve biological material in the best possible state for later analysis as to the cause of death. In conjunction with the care of sick or injured panthers or caracaras, or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions provided by Law Enforcement to ensure evidence intrinsic to the specimen is not unnecessarily disturbed.

CONSERVATION RECOMMENDATIONS

Section 7(a) (1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The Service recommends the Corps continue to closely coordinate with the Service on the implementation of their Federal Clean Water Act Section 404 permit program in areas where indigo snakes may be affected, so that, where applicable, compensation can be designed in such a manner that it provides benefits to this species. Additional guidance can be found in the Eastern Indigo Snake Programmatic Effect Determination Key (Service 2017).

Although take of caracara is not anticipated, the Project does fall within the species' consultation area and contains suitable habitat for the caracara. Research is ongoing to study the effects of land cover conversions, such as those that will occur as a result of this Project, on habitat use, movements, and demography of caracaras. To further this effort, we recommend voluntary contribution to the Fish and Wildlife Foundation of Florida's caracara conservation fund. This fund is dedicated to caracara recovery including protection of caracara habitat.

The Applicant has suggested that following construction, solar power generation sites in Florida are likely to be utilized by federally listed species and their prey. The Service is unaware of any data or research supporting this presumption. Because of Florida Power and Light's continuing expansion of solar power generating capacity, we recommend exploring the opportunity to incorporate wildlife surveys and/or monitoring into solar project management plans.

REINITIATION NOTICE

This concludes formal consultation on the action(s) outlined in the Project consultation request. As written in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary the Corps' involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded if more than 560.99 ac of suitable habitat for indigo snake is destroyed or three dead indigo snake are found; (2) new information reveals effects of the Corps' action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the Corps' action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease until reinitiation. Thank you for your cooperation in the effort to protect fish and wildlife resources. For further coordination please contact Lindsay Nester by email at Lindsay_nester@fws.gov or by phone at 772-469-4226.

Sincerely yours,

Roxanna Hinzman
Field Supervisor
South Florida Ecological Services Office

Enclosure

cc: electronic only
Corps, Palm Beach Gardens, Florida (John Poliocarpo)
EPA, West Palm Beach, Florida (Ron Miedema)
FPL, Juno Beach, Florida (Danielle Hall)
FWC, Tallahassee, Florida (FWC-CPS)

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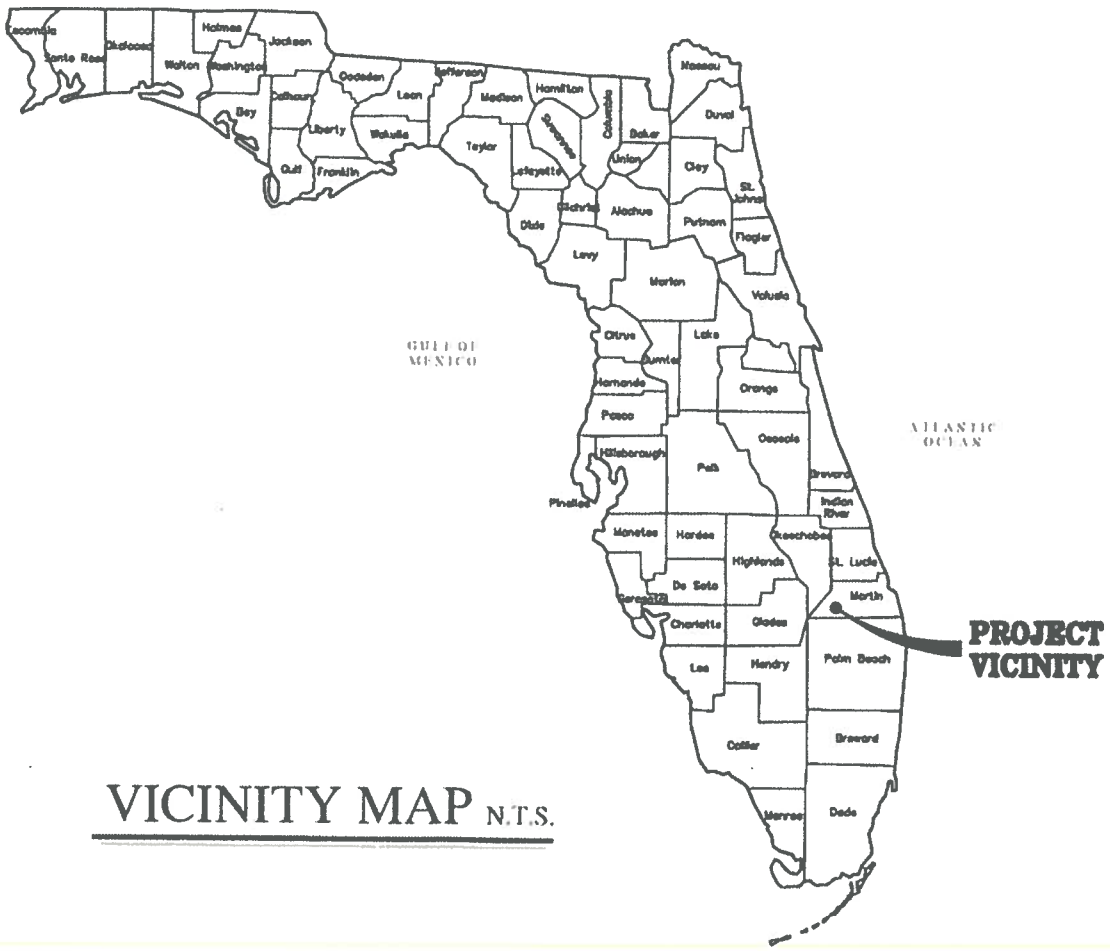

Figure 1. Sweetbay Solar Energy Center project location in Martin County, Florida.

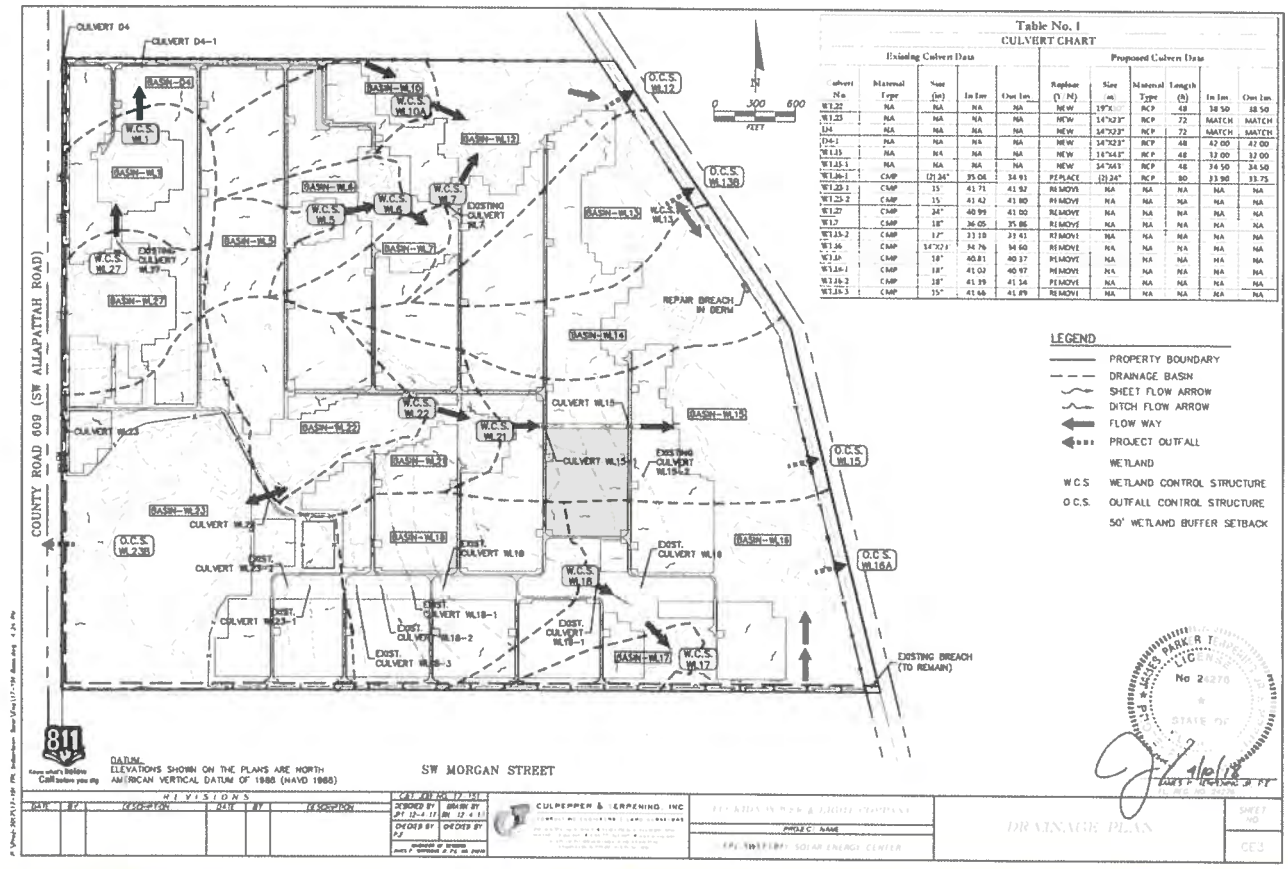

Figure 2. Proposed plans of the Sweetbay Solar Energy Center, Martin County.

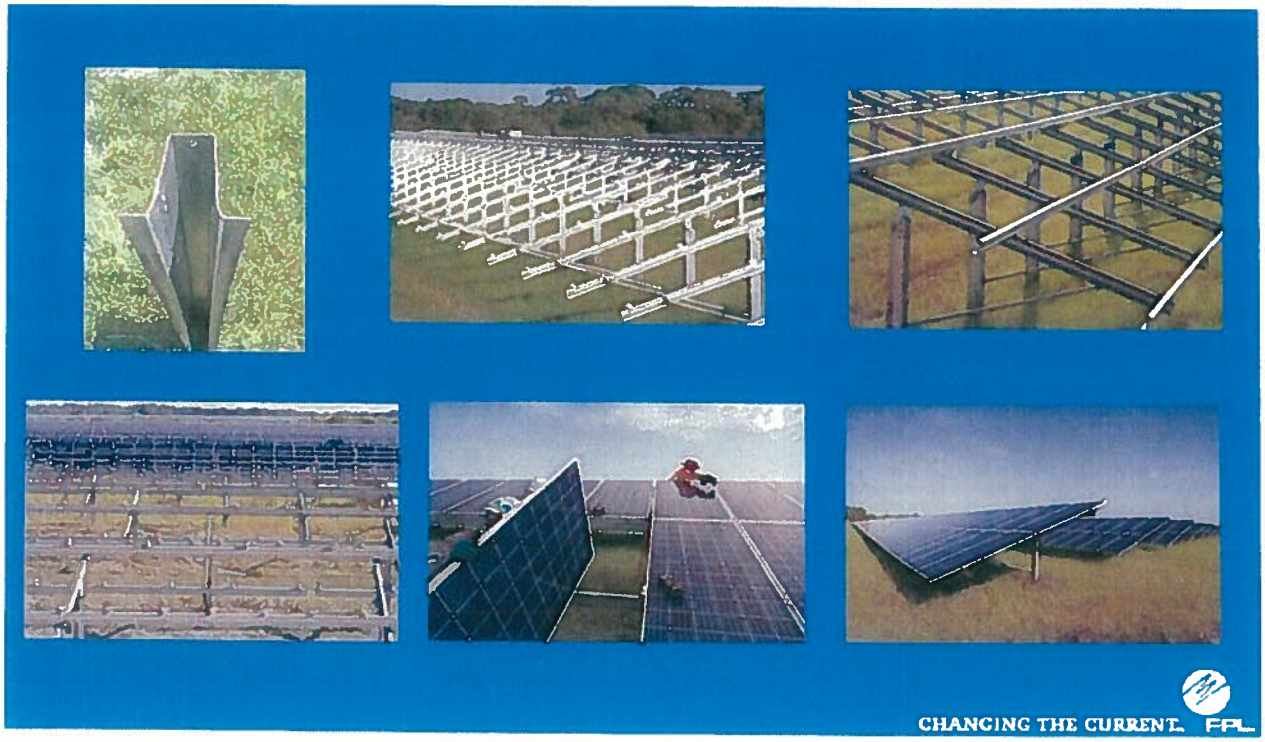

Figure 3. Typical structural components and configuration of a photovoltaic solar array.

STATUS OF THE SPECIES -Eastern indigo snake *(Drymarchon corais couperi)*

Legal Status - *threatened*

The U.S. Fish and Wildlife Service (Service) listed the eastern subspecies of indigo snake *(Drymarchon corais couperi)* as threatened under the Endangered Species Act of 1973, as amended (87 Stat. 884; 16 U.S.C. 1531 et seq.) in the Federal Register on January 31, 1978. The State of Florida recognizes the eastern indigo snake as federally-designated Threatened. There is no designated critical habitat.

Species Description

Appearance/Morphology

The eastern indigo snake is the largest native snake species in North America with a maximum recorded length of 8.5 feet (ft) in length (Moler 1992) and an unofficial record as having reached 10 ft long in the past (Holbrook 1842). Its color is uniformly lustrous-black, dorsally and ventrally, except for a red or cream-colored suffusion of the chin, throat, and sometimes cheeks. The head is small in proportion to the size of the body, slightly ovular, narrow, and flattened with an elongated snout. The eyes are large relative to the size of the head with black pupil and iris.The vertical plates, frontal plates, and superior orbital are broad with the former being pentagonal in shape. Its scales are large, hexagonal, and smooth in 17 scale rows at mid-body (the central 3 to 5 scale rows are lightly keeled in adult males). Its anal plate is undivided
(Holbrook 1842). In the Florida Keys, adult indigo snakes seem to have less red on their faces or throats compared to mainland specimens (Lazell 1989).

Taxonomy

Holbrook (1842) first described all indigo snakes of North America as a monotypic taxon within the Linnaean genus *CoLuber* (racers and whipsnakes), *Coluber couperi.* In 1843, Leopoldo Fitzinger moved indigo snakes from genus *Coluber* into their own genus, *Drymarchon.* Over time twelve subspecies of *Drymarchon corais* came to be recognized and at the time of listing the eastern indigo snake was considered one among these twelve subspecies *(Drymarchon corais couperi* [43 FR 4026 4029]). In 1991, Collins elevated this lineage to specific status based on allopatry and diagnosibility. Subsequent taxonomic work based on morphology has supported the designation of *Drymarchon couperi* as a distinct species within the genus (Wuster et al.2001). Currently, the eastern indigo snake *(Drymarchon couperi)* is accepted by the scientific community as one of three separate species in genus *Drymarchon* (Crother 2000).

Life History

The eastern indigo snake is an apex predator among snakes, eating any vertebrate it can overpower, especially other snakes (Keegan 1944; Belson 2000; Ernst and Ernst 2003; Stevenson et al. 2010). It is a generalized predator immune to the toxins of the venomous snakes it encounters and is only limited by its gape and ability to overpower its prey. Food items include fish, frogs, toads, snakes, lizards, turtles, turtle eggs, small alligators, birds, and small mammals (Keegan 1944; Babis 1949; Kochman 1978; Steiner et al. 1983).

In south-central Florida, indigo snake breeding extends from June to January, egg-laying occurs from April to July, and hatching occurs during mid-summer to early fall (Layne and Steiner 1996). Young hatch approximately 3 months after egg-laying and there is no evidence of parental care.
Indigo snakes in captivity take 3 to 4 years to reach sexual maturity (Speake and Smith 1987). It is possible female indigo snakes can store sperm and delay fertilization of eggs for significant periods of time or are parthenogenetic (Carson 1945). Carson (1945) concluded that sperm storage and delayed fertilization were the most likely explanation for the fertile eggs produced by an indigo snake that he had kept in captivity for more than 4 years. However, there have been several recent reports pathogenesis in other snakes, so it is possible sperm storage may not explain Carson's (1945) example. There is no information on indigo snake lifespan in the wild, although one captive individual survived 25 years, 11 months (Shaw 1959).

Habitat

Indigo snakes are active and spend a great deal of time foraging for food and searching for mates within their territories, with most activity occurring in the summer and fall (Moler 1985a; Speake and Smith 1987). Adult males have larger home ranges than adult females and juveniles; their home ranges average 554 ac, reducing to 390 ac in the summer (Moler 1985b). In contrast, a gravid female may use from 3.5 to 106 ac (Speake and Smith 1987). In Florida, home ranges for females and males range from 5 to 371 ac and 4 to 805 ac, respectively (Smith and Dyer 2003). At Archbold Biological Station, the average home range size for females was determined to be 46 ac, and overlapping male home range size determined to be 184 ac (Layne and Steiner 1996).

Relative to other snake species, adult eastern indigo snakes have very large activity ranges and can move considerable distances in short periods of time (Service 2008). Habitat use varies seasonally between upland and wetland areas, especially in the more northern parts of the species' range. In southern parts of their range eastern indigo snakes are habitat generalists which utilize most available habitat types. Movements between habitat types in northern areas of their range may relate to the need for thermal refugia (protection from cold and/or heat).

In northern areas of their range indigo snakes prefer an interspersion of tortoise-inhabited sandhills and wetlands. In these regions indigo snakes most often use forested areas rich with gopher tmioise burrows, hollowed root channels, hollow logs, or the burrows of rodents, armadillos, or land crabs as thermal refugia during cooler seasons (Lawler 1977; Moler 1985a; Layne and Steiner 1996). The eastern indigo snake in this region is typically classified as a longleaf pine savanna specialist because here, in the northern four-fifths of its range, the indigosnake is typically only found in the vicinity of xeric longleaf pine-turkey oak sandhills inhabited by the gopher tortoise (Means 2006).

In the milder climates of central and southern Florida comprising the remaining one fifth of its range, thermal refugia such as those provided by gopher tortoise burrows may not be as critical to survival of indigo snakes. Consequently, indigo snakes in these regions use a more diverse assemblage of habitats such as pine flatwoods, scrubby flatwoods, floodplain edges, sand ridges, dry glades, tropical hammocks, edges of freshwater marshes, muckland fields, coastal dunes, and xeric sandhill communities; with highest population concentrations of indigo snakes occurring in the sandhill and pineland regions of northern and central Florida (Service 1999). Indigo snakes have also been found in agricultural lands with close proximity to wetlands (Zeigler 2006).

In extreme south Florida *(i.e.,* the Everglades and Florida Keys), indigo snakes also utilize tropical hardwood hammocks, pine rocklands, freshwater marshes, abandoned agricultural land, coastal prairie, mangrove

swamps, and human-altered habitats. Though eastern indigo snakes have been found in all available habitats of south Florida it is thought they prefer hammocks and pine forests since most observations occur there and use of these areas is disproportionate compared to the relatively small total area of these habitats (Steiner et al. 1983).

Distribution

Historically, the eastern indigo snake occurred throughout Florida and in the coastal plain of Georgia, Alabama, and Mississippi (Loding 1922; Haltom 1931; Carr 1940; Cook 1954; Diemer and Speake 1983; Lohoefener and Altig 1983; Moler 1985a). Most, if not all, of the remaining viable populations of the eastern indigo snake occur in Georgia and Florida (Service 2008).

Population Dynamics

Due to their use of subterranean refugia and frequent long-distance dispersal, detectability of eastern indigo snakes is low and estimates of mortality difficult (Hyslop et al. 2012).
Consequently, the exact size and viability of the range wide population is unknown (Service 2008). However, there is no information indicating the range of eastern indigo snake has expanded or retracted, so it's presumed the population is stable.

Threats

Throughout the eastern indigo snake's range, expanding urban areas are creating barriers to the dispersal of individuals and gene flow between populations; and habitat loss and degradation are a threat to the species (Lawler 1977; Moler 1985b). In northern areas of its range in Georgia and peninsular Florida the species is impacted by a decline in longleaf pine forests, gopher tortoises, and gopher tortoise habitat (Van Lear et al. 2005). In central and southern Florida the eastern indigo snake is less dependent on any one habitat type, but does avoid developed areas (Lawler 1977; Moler 1985a; Hyslop 2007). Throughout Florida developed areas are expanding rapidly with population growth at the expense of wildlife habitat (Cerulean 2008).

At the time of listing, other threats to the eastern indigo snake included commercial collection for the pet trade and mortality during the gassing of gopher tortoise burrows by individualsattempting to drive rattlesnakes out for collection (43 FR 4026 4029). Since their listing additional potential threats to the species have expanded to include disease, road mortality, kills of indigo snakes by land owners and pets, and all-terrain vehicle use in gopher tortoise habitat (Service 2008).

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
http://sero.nmfs.noaa.gov

(Sent via Electronic Mail) May 2, 2018

Colonel Jason A. Kirk, Commander
USACE Jacksonville District
Jacksonville Permits Section
701 San Marco Boulevard
Jacksonville, FL 32232-0019

Dear Colonel Kirk:

NOAA's National Marine Fisheries Service (NMFS) reviewed the project described in the public notice listed below. Based on the information in the public notice, the proposed project would ***NOT*** occur in the vicinity of essential fish habitat (EFH) designated by the South Atlantic Fishery Management Council, Mid-Atlantic Fishery Management Council, or the NMFS. The NMFS anticipates any adverse effects occurring from the project to NOAA trust resources would be minimal. Consequently, the NMFS offers no EFH conservation recommendations pursuant to the Magnuson-Stevens Fishery Conservation and Management Act and no recommendations under the Fish and Wildlife Coordination Act.

Notice No.	**Applicant(s)**	**Notice Date**	**Comment Due Date**
SAJ-2017-03238 (SP-JNP)	Florida Power and Light; Sweetbay Solar Energy Center	April 27, 2018	May 29, 2018

Please note these comments do not satisfy consultation responsibilities under section 7 of the Endangered Species Act of 1973, as amended. If an activity "may effect" listed species or critical habitat under the purview of the NMFS, please initiate consultation with the Protected Resources Division at the letterhead address.

Sincerely,

Pace Wilber for

Virginia M. Fay
Assistant Regional Administrator
Habitat Conservation Division

Florida Department or Environmental Protection

SOUTHEAST DISTRICT OFFICE
3301 GUN CLUB ROAD, MSC 7210-1
WEST PALM BEACH, FL 33406
561-681-6600

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Noah Valenstein
Secretary

February 9, 2018

Florida Power & Light Company
c/o Brady Walker
700 Universe Boulevard JES/JB
Juno Beach, FL 33408
Brady.Walker@fpl.com

RE: Informal Wetland and Other Surface Waters Determination
Martin County Parcel ID: 193939000000000130, 303030000000000110, 303939000000000101, 293939000000000504
SW Allapattah Road
Indiantown, FL 34956
File No. 43-0360733-001-FD

Dear Mr. Walker:

DEP staff inspected the parcel site listed above on February 7, 2018 to review the flagged wetland and other surface waters boundaries for the property above by Liliana Kolluri and found:

> The wetland and other surface water boundaries reviewed in the field and depicted on the exhibit dated February 7, 2018 appear to be an accurate representation of the landward extent of the wetlands and other surface waters on the property described above pursuant to Section 62-340, Florida Administrative Code. **Development (i.e. dredging or filling) of these wetlands or other surface waters, will require a permit from the Department.** The aerial attached to this Informal Determination Verification letter represents the limits of wetlands and other surface waters within the area inspected. These limits are presented here to assist in the design of a project that minimizes impacts to wetlands. Areas that are not clearly labeled as wetlands, other surface waters, or upland on the aerial have not been inspected by Department staff and are not subject to this non-binding informal determination.

Important notes:

1) Other federal, state, or local land development restrictions may apply to your property.

2) This wetland and other surface waters determination review is informal and is for pre-application planning purposes only.
3) If you desire a binding jurisdictional determination, then you should petition the Department for a jurisdictional declaratory statement under 62-343.040, Florida Administrative Code, or you should apply to DEP for an Environmental Resource Permit.
4) DEP will consider this informal determination review to be valid for pre-application planning purposes for no longer than 5 years from the date of the site inspection February 7, 2018.
5) Construction activities of one or more acres of upland, will require a National Pollution Discharge Elimination System (NPDES) Permit. Construction can include soil disturbance, clearing, grading and excavation. Please contact the NPDES Stormwater Section at 850-245-7522 for assistance.

An Environmental Resource Permit application can be obtained on the Department's web site at http://www.dep.state.fl.us/water/wetlands/erp/forms.htm. Electronic applications for some permit and exemptions can be made using this electronic portal: http://www.fldepportal.com/go/

If you have any questions regarding this letter or permitting requirements, please contact Stacy Cecil by telephone at (561) 681-6629 or by e-mail at Stacy.Cecil@dep.state.fl.us.

Sincerely,

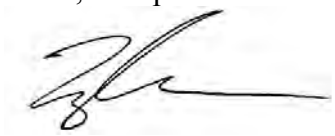
Monica Sovacool
Environmental Manager

Enclosures:
Map with approximate wetland area

CERTIFICATE OF SERVICE
The undersigned duly designated deputy clerk hereby certifies that this permit and all copies were sent on the filing date below to the following listed persons:

FDEP – Monica Sovacool, Stacy Cecil
Liliana Kolluri, Environmental Consulting & Technology, Inc. lkolluri@ectinc.com
Michael Sole, FPL, michael.sole@fpl.com

FILING AND ACKNOWLEDGMENT
FILED, on this date, pursuant to Section 120.52, F. S., with the designated Department Clerk, receipt of which is hereby acknowledged.

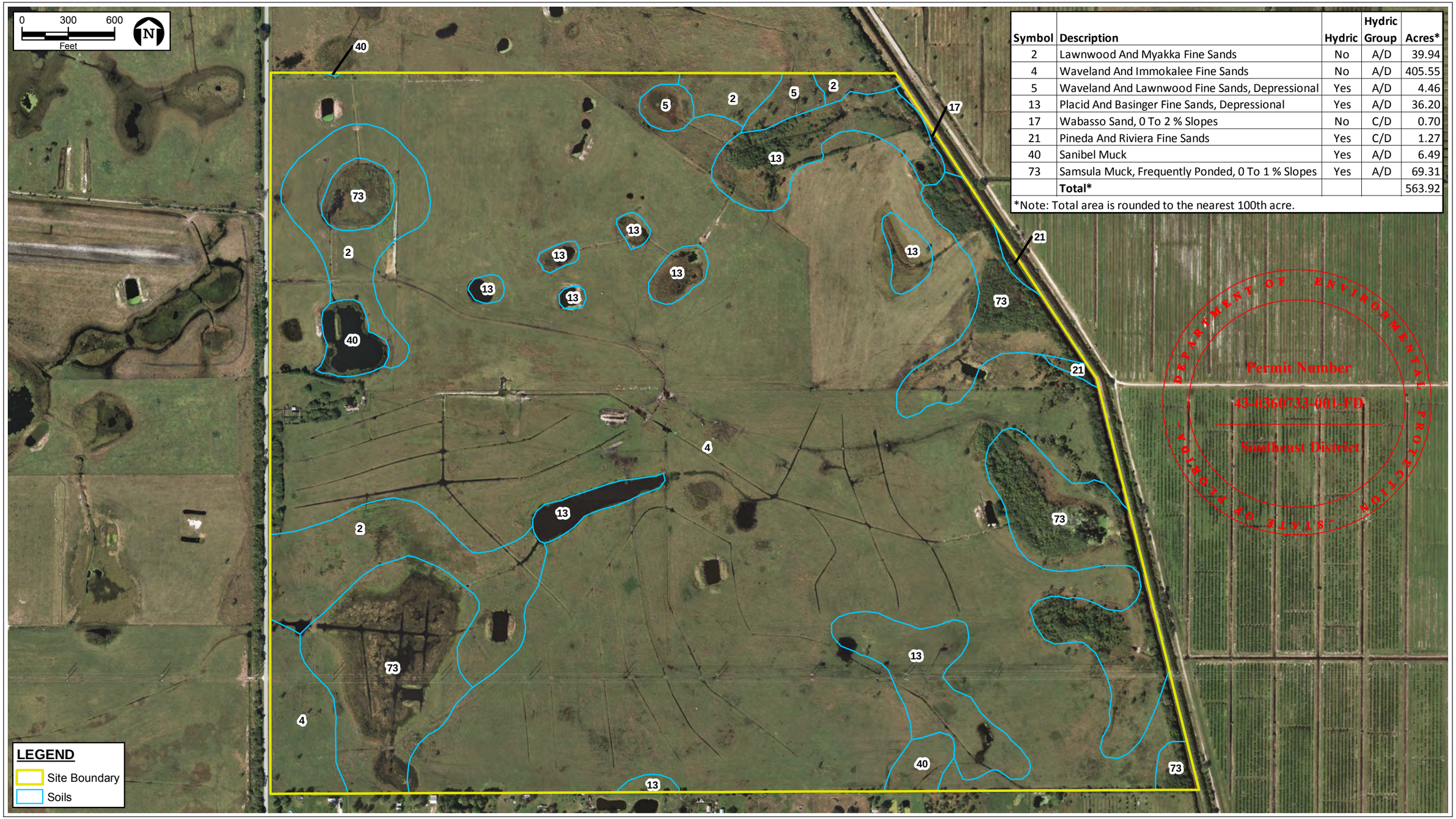


_____ _February 9, 2018
Clerk **Date**

FIGURE 1.
SITE MAP
INDIANTOWN DAIRY
MARTIN COUNTY, FLORIDA

Sources: FDOT, 2016; Martin County PA, 2017; ECT, 2017.

ECT Environmental Consulting & Technology, Inc.



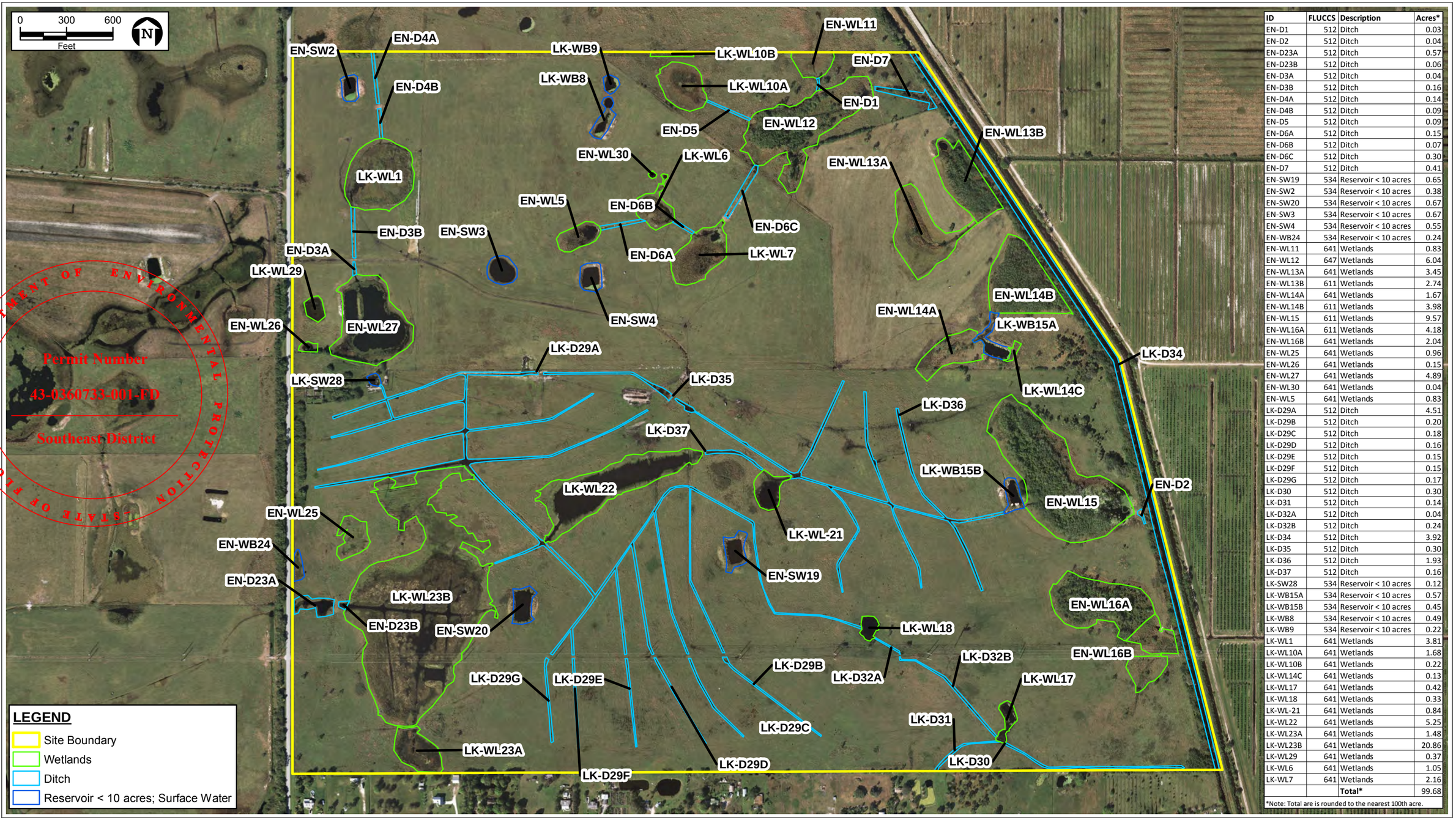
Symbol	Description	Hydric	Hydric Group	Acres*
2	Lawnwood And Myakka Fine Sands	No	A/D	39.94
4	Waveland And Immokalee Fine Sands	No	A/D	405.55
5	Waveland And Lawnwood Fine Sands, Depressional	Yes	A/D	4.46
13	Placid And Basinger Fine Sands, Depressional	Yes	A/D	36.20
17	Wabasso Sand, 0 To 2 % Slopes	No	C/D	0.70
21	Pineda And Riviera Fine Sands	Yes	C/D	1.27
40	Sanibel Muck	Yes	A/D	6.49
73	Samsula Muck, Frequently Ponded, 0 To 1 % Slopes	Yes	A/D	69.31
	Total*			563.92

*Note: Total area is rounded to the nearest 100th acre.

FIGURE 2.
SOILS MAP
INDIANTOWN DAIRY
MARTIN COUNTY, FLORIDA

Sources: USDA, 2016; FDOT, 2016; Martin County PA, 2017; ECT, 2018.

ECT Environmental Consulting & Technology, Inc.



ID	FLUCCS	Description	Acres*
EN-D1	512	Ditch	0.03
EN-D2	512	Ditch	0.04
EN-D23A	512	Ditch	0.57
EN-D23B	512	Ditch	0.06
EN-D3A	512	Ditch	0.04
EN-D3B	512	Ditch	0.16
EN-D4A	512	Ditch	0.14
EN-D4B	512	Ditch	0.09
EN-D5	512	Ditch	0.09
EN-D6A	512	Ditch	0.15
EN-D6B	512	Ditch	0.07
EN-D6C	512	Ditch	0.30
EN-D7	512	Ditch	0.41
EN-SW19	534	Reservoir < 10 acres	0.65
EN-SW2	534	Reservoir < 10 acres	0.38
EN-SW20	534	Reservoir < 10 acres	0.67
EN-SW3	534	Reservoir < 10 acres	0.67
EN-SW4	534	Reservoir < 10 acres	0.55
EN-WB24	534	Reservoir < 10 acres	0.24
EN-WL11	641	Wetlands	0.83
EN-WL12	647	Wetlands	6.04
EN-WL13A	641	Wetlands	3.45
EN-WL13B	611	Wetlands	2.74
EN-WL14A	641	Wetlands	1.67
EN-WL14B	611	Wetlands	3.98
EN-WL15	611	Wetlands	9.57
EN-WL16A	611	Wetlands	4.18
EN-WL16B	641	Wetlands	2.04
EN-WL25	641	Wetlands	0.96
EN-WL26	641	Wetlands	0.15
EN-WL27	641	Wetlands	4.89
EN-WL30	641	Wetlands	0.04
EN-WL5	641	Wetlands	0.83
LK-D29A	512	Ditch	4.51
LK-D29B	512	Ditch	0.20
LK-D29C	512	Ditch	0.18
LK-D29D	512	Ditch	0.16
LK-D29E	512	Ditch	0.15
LK-D29F	512	Ditch	0.15
LK-D29G	512	Ditch	0.17
LK-D30	512	Ditch	0.30
LK-D31	512	Ditch	0.14
LK-D32A	512	Ditch	0.04
LK-D32B	512	Ditch	0.24
LK-D34	512	Ditch	3.92
LK-D35	512	Ditch	0.30
LK-D36	512	Ditch	1.93
LK-D37	512	Ditch	0.16
LK-SW28	534	Reservoir < 10 acres	0.12
LK-WB15A	534	Reservoir < 10 acres	0.57
LK-WB15B	534	Reservoir < 10 acres	0.45
LK-WB8	534	Reservoir < 10 acres	0.49
LK-WB9	534	Reservoir < 10 acres	0.22
LK-WL1	641	Wetlands	3.81
LK-WL10A	641	Wetlands	1.68
LK-WL10B	641	Wetlands	0.22
LK-WL14C	641	Wetlands	0.13
LK-WL17	641	Wetlands	0.42
LK-WL18	641	Wetlands	0.33
LK-WL-21	641	Wetlands	0.84
LK-WL22	641	Wetlands	5.25
LK-WL23A	641	Wetlands	1.48
LK-WL23B	641	Wetlands	20.86
LK-WL29	641	Wetlands	0.37
LK-WL6	641	Wetlands	1.05
LK-WL7	641	Wetlands	2.16
		Total*	99.68

*Note: Total are is rounded to the nearest 100th acre.

FIGURE 3.
WETLANDS AND WATERBODIES MAP
INDIANTOWN DAIRY
MARTIN COUNTY, FLORIDA

Sources: FDOT, 2016; Martin County PA, 2017; ECT, 2018.

ECT Environmental Consulting & Technology, Inc.

FIGURE 3. MAP 1 OF 4
WETLANDS AND WATERBODIES MAP
INDIANTOWN DAIRY
MARTIN COUNTY, FLORIDA

Sources: FDOT, 2016; Martin County PA, 2017; ECT, 2018.

LEGEND

- Site Boundary
- Wetlands
- Ditch
- Reservoir < 10 acres; Surface Water

MAP INDEX

1	2
3	4

ECT Environmental Consulting & Technology, Inc.

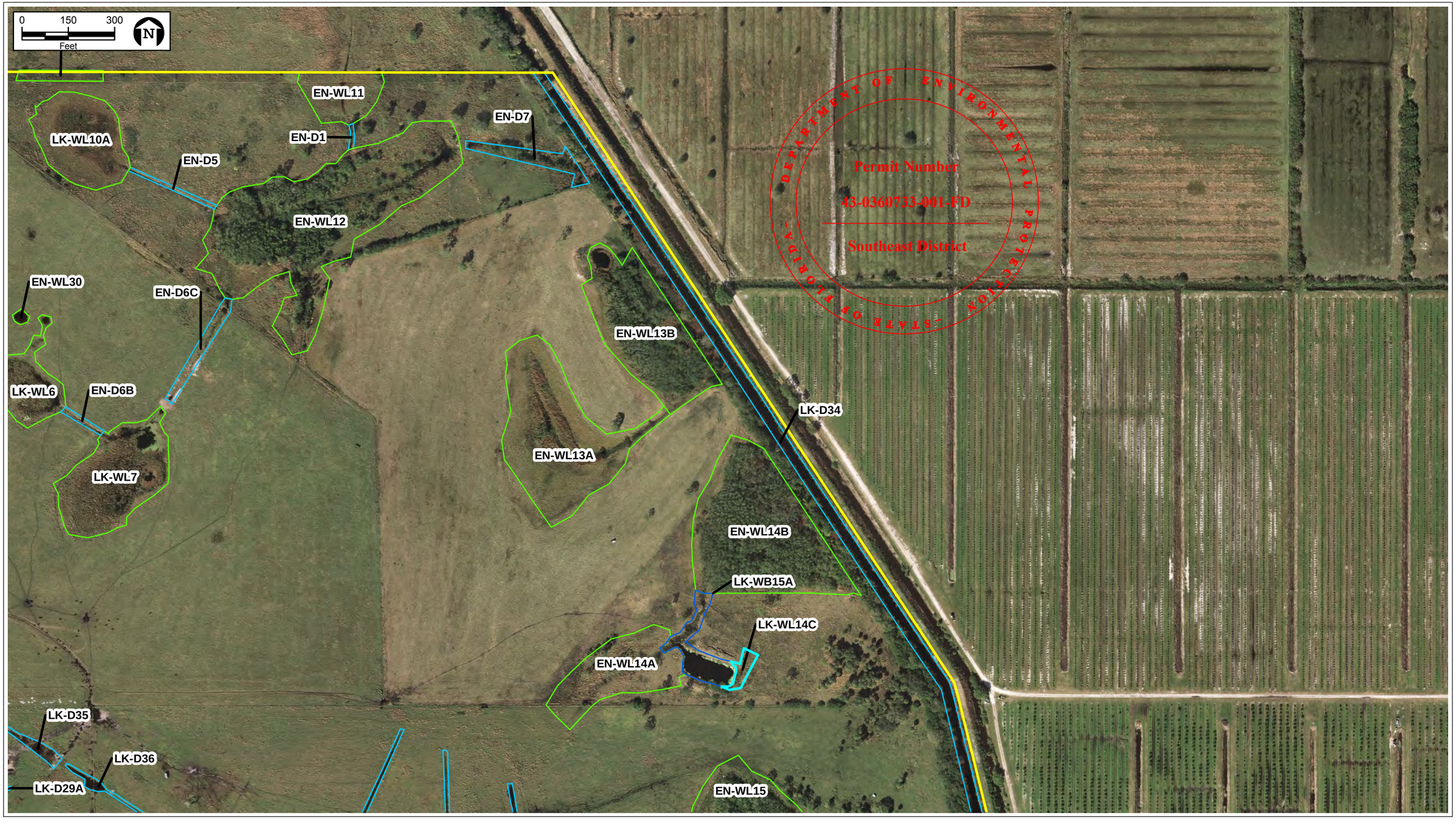


FIGURE 3. MAP 2 OF 4
WETLANDS AND WATERBODIES MAP
INDIANTOWN DAIRY
MARTIN COUNTY, FLORIDA

Sources: FDOT, 2016; Martin County PA, 2017; ECT, 2018.

LEGEND

- Site Boundary
- Wetlands
- Ditch
- Reservoir < 10 acres; Surface Water

MAP INDEX

1	2
3	4

ECT Environmental Consulting & Technology, Inc.

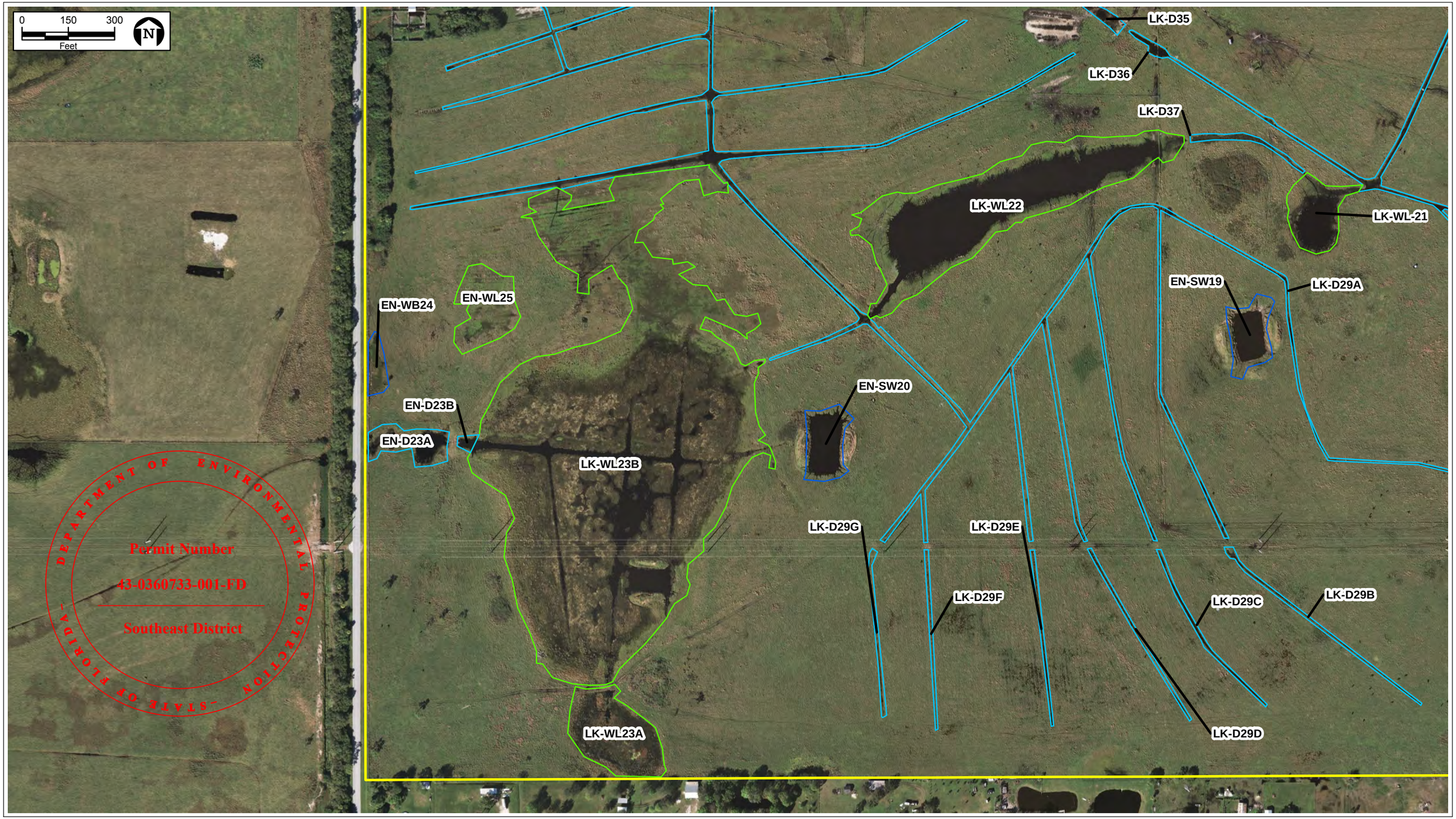


FIGURE 3. MAP 3 OF 4
WETLANDS AND WATERBODIES MAP
INDIANTOWN DAIRY
MARTIN COUNTY, FLORIDA

Sources: FDOT, 2016; Martin County PA, 2017; ECT, 2018.

LEGEND

- Site Boundary
- Wetlands
- Ditch
- Reservoir < 10 acres; Surface Water

MAP INDEX

1	2
3	4

ECT Environmental Consulting & Technology, Inc.

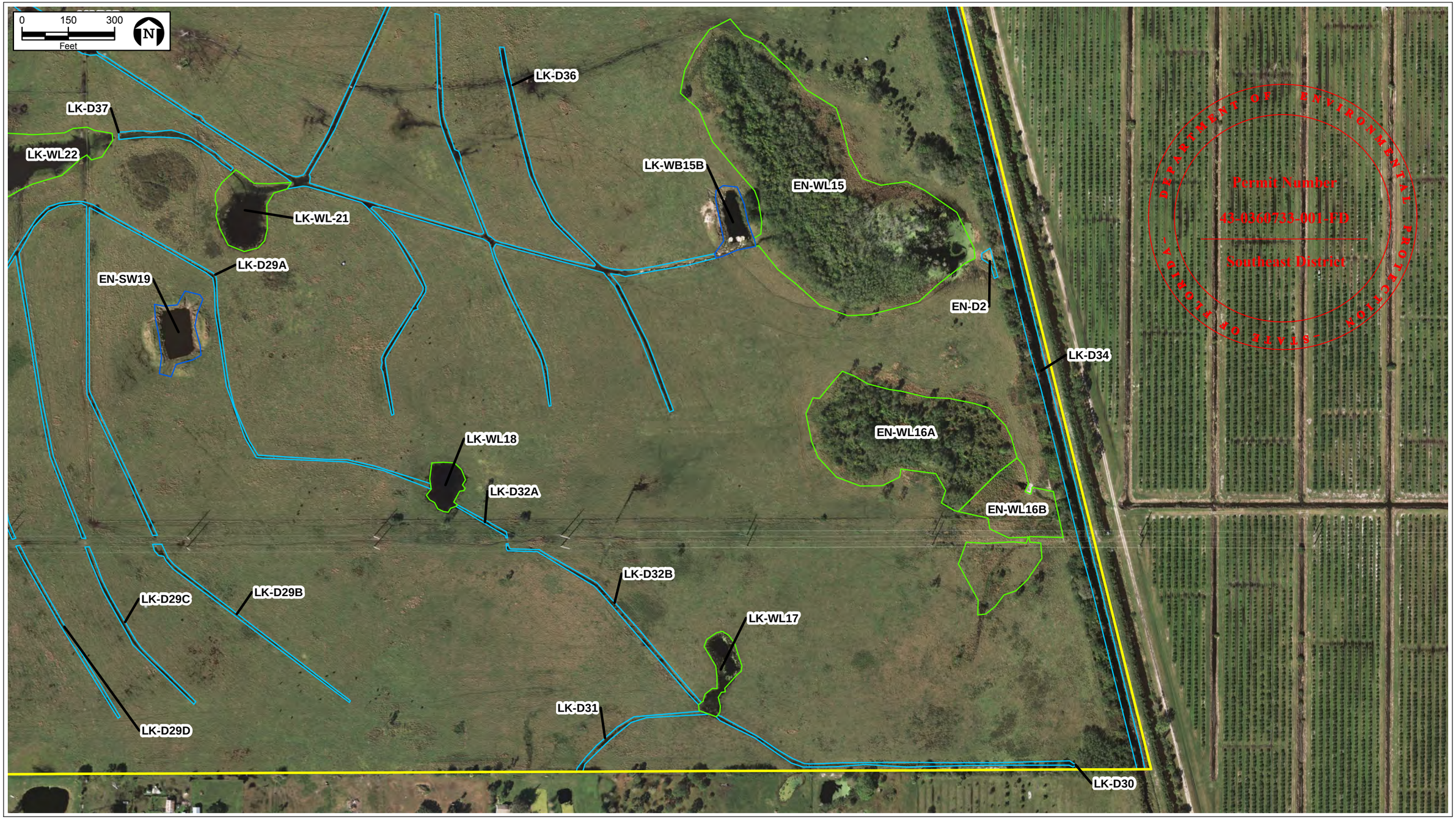


FIGURE 3. MAP 4 OF 4
WETLANDS AND WATERBODIES MAP
INDIANTOWN DAIRY
MARTIN COUNTY, FLORIDA

Sources: FDOT, 2016; Martin County PA, 2017; ECT, 2018.

LEGEND

- Site Boundary
- Wetlands
- Ditch
- Reservoir < 10 acres; Surface Water

MAP INDEX

1	2
3	4

ECT Environmental Consulting & Technology, Inc.

From: Matthew D. Goff
To: Jennifer Mathia
Subject: FW: Electronic Notification of receipt/FPL SWEETBAY SOLAR/0360733-002-EI
Date: Tuesday, May 01, 2018 8:30:22 AM

Electronic notice of receipt for the permit application. FDEP has 30 days to either issue or submit an RAI, so we should hear something by May 14. BTW, Indar is the stormwater guy there, if its being managed by him hopefully that means there are few environmental issues.

The stormwater engineer for the project is Butch Terpening, his contact info is in the ERP application.

Matt

-----Original Message-----
From: epost_DWRM_Permits@dep.state.fl.us [mailto:epost_DWRM_Permits@dep.state.fl.us]
Sent: Monday, April 16, 2018 2:09 PM
To: Sole, Michael
Cc: indarjit.jagnarine@dep.state.fl.us
Subject: Electronic Notification of receipt/FPL SWEETBAY SOLAR/0360733-002-EI

CAUTION - EXTERNAL EMAIL

Applicant Name: MICHAEL SOLE
Applicant Company: FPL
Permit File Number: 0360733-002-EI
Application Received Date: 04/13/2018
Project Name/Description: FPL SWEETBAY SOLAR/
Site Address: SW ALLAPATTAH RD, INDIANTOWN, FL 34956

Dear Applicant:

Thank you for submitting your request for authorization to the Department regarding the above referenced project.

I am currently reviewing your request and will contact you as soon as possible. The Department values your time and wants you to know that we are working to streamline our review process and reduce the overall time needed to authorize activities.

If you did not include a full payment for this application's fees and would like to make an online payment for the outstanding balance, please visit the DEP Business Portal - https://www.fldepportal.com - and complete the online payment process for a submitted application. Please note that the following fee types may not be completed through this process:

* Payments for annual fees
* Payments processed by a local delegated program
* Partial payments for application balances

If you feel you have received this email in error or if you have any questions, please contact me at indarjit.jagnarine@dep.state.fl.us or 561-681-6640.

Thank you and I look forward to working with you.

Regards,

Indar Jagnarine

[Dep Customer Survey]<http://survey.dep.state.fl.us/?refemail=epost_DWRM_Permits@dep.state.fl.us>

Florida Fish and Wildlife Conservation Commission

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Bo Rivard
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Executive Staff
Eric Sutton
Executive Director

Thomas H. Eason, Ph.D.
Assistant Executive Director

Jennifer Fitzwater
Chief of Staff

Division of Habitat and Species Conservation
Kipp Frohlich
Interim Director

(850) 488-3831
(850) 921-7793 FAX

Managing fish and wildlife resources for their long-term well-being and the benefit of people.

620 South Meridian Street
Tallahassee, Florida
32399-1600
Voice: 850-488-4676

Hearing/speech-impaired:
800-955-8771 (T)
800 955-8770 (V)

MyFWC.com

June 12, 2018

Indar Jagnarine
Professional Engineer III, Southeast District Office
Florida Department of Environmental Protection
3301 Gun Club Road, MSC 7210-1
West Palm Beach, FL 33406
Indarjit.Jagnarine@dep.state.fl.us

RE: Florida Power & Light Company (FPL) Sweetbay Solar Energy Center, Florida Department of Environmental Protection (FDEP) Environmental Resource Permit (ERP) Application #43-360733-002, Martin County

Dear Mr. Jagnarine:

Florida Fish and Wildlife Conservation Commission (FWC) staff has reviewed the above-referenced permit application. We provide the following comments and recommendations as technical assistance during your review of the ERP application under Chapter 373, Florida Statutes (F.S.), and in accordance with FWC's authorities under Chapter 379, F.S.

Project Description

The applicant, FPL, is proposing to construct a solar facility and associated infrastructure on approximately 573.9 acres in central Martin County. The site is located on Southwest Allapattah Road, approximately 2.0 miles north of Southwest Warfield Boulevard. The dominant land covers on the site consist of 459 acres of improved pasture, 59.5 acres of freshwater marsh, 20.5 acres of bay swamp, 14.8 acres of ditches, 8.3 acres of upland shrub and brushland, 5.0 acres of reservoirs, 3.1 acres of cabbage palm, and 2.8 acres of dikes and levees. According to the construction plans and Section C of the application, the applicant plans to impact 4.0 acres of farm ponds, and 8.4 acres classified as ditches. The applicant is proposing the purchase of credits from Bluefield Ranch Mitigation Bank as mitigation.

Potentially Affected Resources

The applicant's consultant, Environmental Consulting & Technology, Inc. (ECT), provided wildlife survey information in Section C of the application. Field surveys were conducted in September 2017 for listed species with the potential to occur on the project site, which included: gopher tortoise (*Gopherus polyphemus*, State Threatened [ST]), Florida sandhill crane (*Antigone canadensis pratensis*, ST), state-listed wading birds, Florida burrowing owl (*Athene cunicularia floridana*, ST), and the southeastern American kestrel (*Falco sparverius paulus*, ST). FPL has also applied for a permit [Application SAJ-2017-03238 (SP-JNP)] from the U.S. Army Corps of Engineers (USACE). The USACE has determined that the project may affect the eastern indigo snake (*Drymarchon corais couperi*, Federally Threatened [FT]), and may affect, but is not likely to adversely affect, the wood stork (*Mycteria americana*, FT) and Audubon's

crested caracara (*Polyborus plancus audubonii*, FT). The USACE has requested the U.S. Fish and Wildlife Service's concurrence with this determination pursuant to Section 7 of the Endangered Species Act.

The listed species documented by ECT during site surveys included gopher tortoise, Florida sandhill crane, little blue heron (*Egretta caerulea*, ST), and tricolored heron (*Egretta tricolor,* ST). The applicant has indicated a commitment to conduct pre-construction surveys for the gopher tortoise and obtain a permit for any tortoises that may be affected by the facility. No wading bird nesting was observed. The wildlife assessment provided by ECT indicated that state-listed wading birds were unlikely to nest on the project site and no impacts are proposed to potential sandhill crane nesting habitat.

FWC staff conducted a geographic information system (GIS) analysis of the project area. Our analysis confirmed the information included in the application materials and found that the project area is located near, within, or adjacent to potential habitat for the Sherman's fox squirrel (*Sciurus niger shermani*, State Species of Special Concern).

Comments and Recommendations

Sherman's Fox Squirrel

Sherman's fox squirrels may occur where mature oak and pine trees are found in association with the pasture onsite. FWC staff recommends conducting pre-construction surveys in order to determine if they are present. Sherman's fox squirrels typically nest between October and February and from April to August. Fox squirrels are known to use more than one nest and that nest use can vary over time. Surveys should be conducted within 60 days of clearing or construction. If fox squirrel nests are found onsite, a 38-meter (125-foot) buffer distance from the nest should be maintained. If it will be necessary to remove a nest tree or work within 38 meters (125 feet) of a nest tree, the applicant should then coordinate with FWC staff to discuss permitting alternatives. Final Species Conservation Measures and Permitting Guidelines for the Sherman's fox squirrels can be found on the FWC website: http://myfwc.com/media/4105895/Final-Shermans-Fox-squirrel-Species-Guidelines-2016.pdf.

Florida Sandhill Crane

Florida sandhill cranes were observed foraging onsite during field assessments conducted by ECT. The freshwater marsh on the site may provide potential nesting habitat for this species. FWC staff recommends conducting surveys for nesting sandhill cranes prior to construction activities and during the December through August breeding season. If there is evidence of nesting during this period, we recommend that the nest site be buffered by 122 meters (400 feet) to avoid disturbance by human activities. If nesting is discovered after construction has begun, or during site maintenance activities or if maintaining the recommended buffer is not possible, we recommend that the applicant contact FWC staff identified below to discuss potential permitting needs. Florida sandhill cranes do not nest in the same location every year, so if construction occurs over several years, it may be necessary to determine if nesting is occurring each year during construction. Basic guidance for conducting wildlife surveys may be found in the

Sandhill Crane Species Conservation Measures and Permitting Guidelines (http://www.myfwc.com/media/4105886/Final-Florida-Sandhill-Crane-Species-Guidelines-2016.pdf).

Florida Burrowing Owl

The improved pasture found on the project site may also be suitable habitat for Florida burrowing owls. Burrowing owls typically occupy areas with short groundcover like agricultural fields and prairies. FWC staff recommends the applicant survey the property for burrowing owls prior to construction activities to ensure that no burrowing owl burrows occur onsite. If burrowing owls are observed onsite, please coordinate with the FWC staff identified at the close of this letter to discuss avoidance, minimization, and permitting options. Additional information can be found in the frequently asked questions document for the Florida burrowing owl (http://myfwc.com/media/4210360/BurrowingOwlFAQs.pdf).

Southeastern American Kestrel

Suitable nesting habitat for southeastern American kestrels may also be found within the proposed project area in snags and utility poles within and along the edges of the pasture. FWC staff recommends that the applicant conduct kestrel surveys during their nesting season (April to August) within suitable habitat areas. Surveys from May to July are ideal to avoid confusion with the migratory subspecies of American kestrel (*Falco sparverius*). Survey guidelines, reporting criteria, and habitat needs for the southeastern American kestrel can be found within the Florida Wildlife Conservation Guide (FWCG) at the following website: http://fwcg.myfwc.com/docs/American_Kestrel_Technical_Report.pdf. If surveys encounter active nest cavities, we recommend avoiding project activities within 150 meters (492 feet) of the nest tree during the breeding season (mid-March to mid-June). If nesting is discovered after construction has begun or if maintaining the recommended buffer is not possible, we recommend that the applicant contact FWC staff identified below to discuss potential permitting needs. In areas of suitable kestrel habitat, we recommend retaining snags whenever possible.

Avian Mortality

With the increase of utility-scale solar energy projects in Florida, FWC staff is coordinating with energy companies to learn more about potential injury and mortality of birds as a result of collisions with photovoltaic panels. For scientific purposes, FWC staff would appreciate submittal of any documentation of dead, injured, or stranded birds to FWC's Avian Conservation Coordinator, Craig Faulhaber at Craig.Faulhaber@MyFWC.com.

We appreciate the opportunity to review the proposed project and look forward to working with the applicant throughout the permitting process. If you need any further assistance, please do not hesitate to contact our office by email at

FWCConservationPlanningServices@MyFWC.com. If you have specific technical questions, please contact Jason Wagman at (941) 377-3722 ext. 6540 or by email at Jason.Wagman@MyFWC.com.

Sincerely,

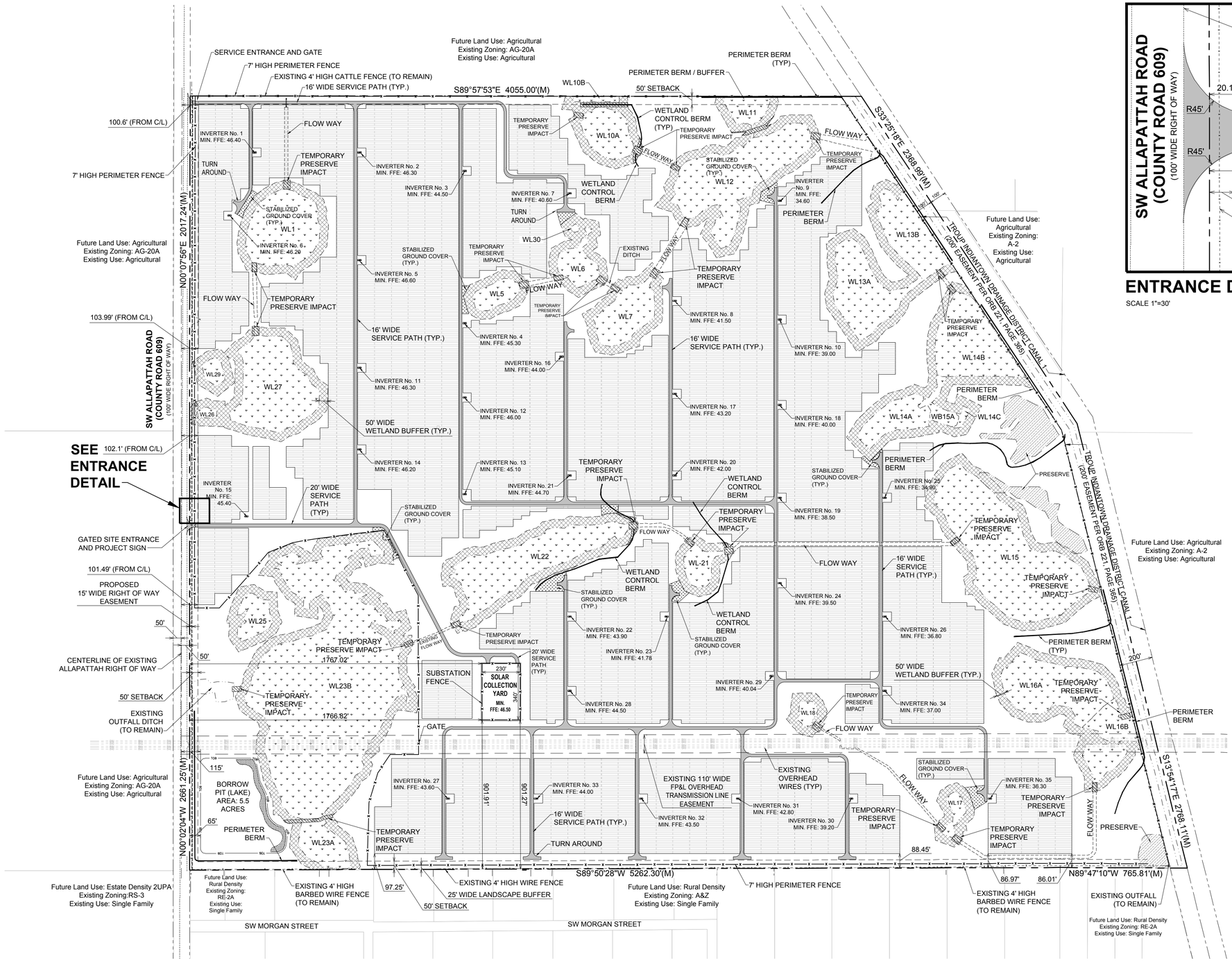
Kipp Frohlich, Acting Director
Division of Habitat and Species Conservation

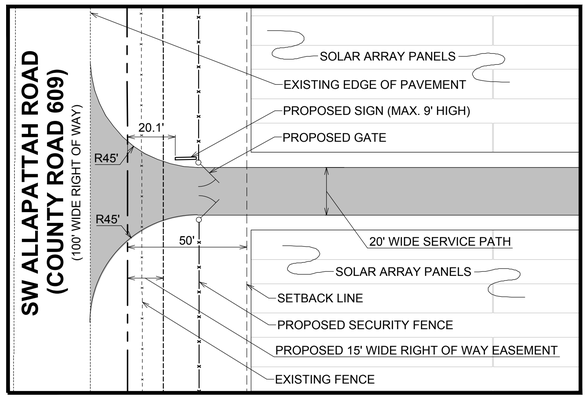
kf/jdw
ENV 1-2-2
FPL Sweetbay Solar Energy Center_36094_061218

cc: Brady Walker, Florida Power & Light Company, brady.walker@fpl.com
Butch Terpening, Culpepper & Terpening, Inc., bterpening@ct-eng.com
Jennifer Mathia, Environmental Consulting & Technology, Inc., jmathia@ectinc.com

Appendix D

Sweetbay Solar Energy Center Final Site Plan





ENTRANCE DETAIL

SCALE 1"=30'

Site Data:

Total Site Area:	24,645,562 sf.	(565.78 Ac.)	
Existing Zoning:	A-2 and AG-20A		
Future Land Use Designation:	Agricultural		
Existing Use:	Agriculture (Improved Pasture)		
Impervious Area:	4,854,958 sf.	(111.45 Ac.)	(19.7%)
Access Paths:	529,561 sf.	(12.16 Ac.)	
Substation Yard:	78,200 sf.	(1.80 Ac.)	
Inverter Pads:	15,750 sf.	(0.36 Ac.)	
Wetlands:	3,477,830 sf.	(79.84 Ac.)	
Troup Canal Easement:	514,037 sf.	(11.80 Ac.)	
Borrow Pit / Lake:	239,580 sf.	(5.50 Ac.)	
Open Space /Pervious Area:	19,790,604 sf.	(454.33 Ac.)	(80.3%)
Solar Array Panels:	11,818,578 sf.	(271.32 Ac.)	
Wetland Buffer:	1,969,783 sf.	(45.22 Ac.)	
Upland Preserve:	184,694 sf.	(4.24 Ac.)	
Other Open Space:	5,817,549 sf.	(133.55 Ac.)	

Building Data:

Project Sign Max.: 9'
Solar Panels Max.: 8'
Security Fencing:
- Perimeter fence shall be 7'-0" chain link.
- Substation fence shall be 7'-0" chain link with 3 strands of barbed wire on extension arms to make an overall total height of 8'-0".

General Notes:
- During construction activities, existing native vegetation shall be retained to act as buffers between adjacent land uses, and to minimize nuisance dust and noise. Barricades shall be used on site to preserve the vegetation to be retained.
- Proposed lakes within 200' of wetlands must demonstrate no potential wetland impacts.
- All exotic plant species shall be removed and all required landscaping shall be installed prior to December 31, 2020
- Refer to landscape plans for landscape details and specifications.
- Preserve areas may not be altered except in compliance with the preserve area management plan approved by Martin County.
- Wetland Buffer preserve areas and upland preserves shall be protected from encroachment, construction and other activities by providing a minimum 10' setback from all proposed structures. Excavation and fill activities must maintain a minimum five (5) feet setback from preserve areas. The maximum slope of fill adjacent to the setback shall not exceed one (1) foot vertical to four (4) feet horizontal.
- Preserve signs will be at least 11 x 14 inches in size and will be posted in conspicuous locations along the Preserve Area boundary, at a frequency of no less than one (1) sign per 500 feet.
- Refer to PAMP for Temporary Preserve Area Impact Restoration Plans and Preserve Sign locations and detail.
- Graded areas adjacent to preserve areas shall not exceed a slope of one foot vertical to four feet horizontal. All slopes shall be properly stabilized upon completion of construction to the satisfaction of the County Administrator.
- It shall be unlawful to alter the approved slopes, contours, or cross sections or to chemically mechanically, or manually remove, damage, or destroy any plants in the littoral or upland transition zone buffer areas of constructed lakes except upon the written approval of the Growth Management Director, as applicable. It is the responsibility of the owner or property owners association, its successors or assigns to maintain the required survivorship and coverage of the reclaimed upland and planted littoral and upland transition areas and to ensure ongoing removal of prohibited and invasive non-native plant species from these areas.
- Irrigation Source: Water Truck

LEGEND

- WETLAND PRESERVE - 79.84 ac
- WETLAND BUFFER - 45.22 ac
- UPLAND PRESERVE - 4.24 ac
- TEMPORARY PRESERVE IMPACT AREA
- SOLAR ARRAY PANELS
- DRAINAGE FLOW WAY
- STABILIZED GROUND COVER

lucido & associates

701 SE Ocean Blvd., Stuart, Florida 34994 (772) 220-2100, Fax (772) 223-0220

Owner / Applicant:
Florida Power & Light Company

Land Planner / Landscape Architect:
Lucido & Associates
701 E Ocean Blvd
Stuart, FL 34994
772-220-2100

Civil Engineer / Surveyor:
Culpepper & Terpening
2980 S. 25th Street
Fort Pierce, FL 34981
772-464-3537

Project Coordinator:
Gunster Law Firm
800 S.E Monterey Boulevard
Stuart, FL 34996
772-288-1982

FPL Sweetbay Solar Energy Center

Indiantown/ Martin County, Florida

Final Site Plan

Date	By	Description
06.21.2018	S.L.S.	Initial Submittal
10.04.2018	S.L.S.	1st Resubmittal
11.13.2018	S.L.S.	2nd Resubmittal

NORTH

SCALE: 1" = 300'

0 150' 300' 600'

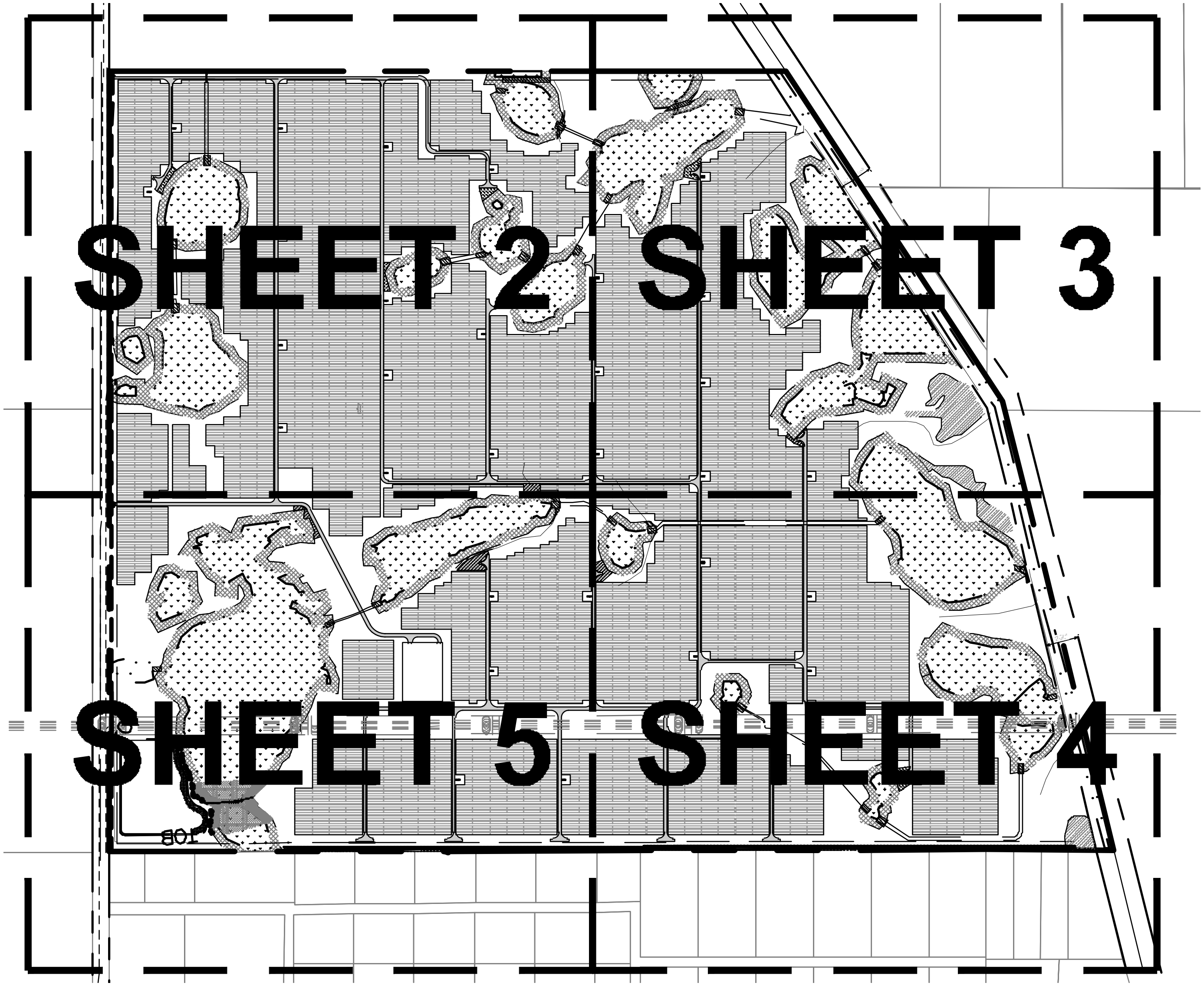
REG. # 1018
Thomas P. Lucido

Designer	---	Sheet
Manager	---	**1 of 1**
Project Number	---	
Municipal Number	---	
Computer File	17-626 FPL Sweetbay Solar.dwg	

Appendix F

Sweetbay Solar Energy Center Temporary Preserve Area Impact Restoration Plan

Drawing Name: J:\Projects Active\17-626 FPL Sweet Bay Solar\Landscape\ Nov 13, 2018 - 4:06pm 17-626 FPL Sweetbay Landscape Plan.dwg



lucido & associates

Key / Location:

Project Team:

Applicant:
Florida Power & Light Company

Land Planner / Landscape Architect:
Lucido & Associates
701 E Ocean Blvd.
Stuart, FL 34994
772-220-2100

Civil Engineer / Surveyor:
Culpepper & Terpening
2980 S. 25th Street
Fort Pierce, FL 34981
772-464-3537

FPL Sweetbay Solar Energy Center

Martin County, Florida

Temporary Preserve Area Impact - Restoration Plan

Date	By	Description
6.21.18	BW	Initial Submittal
10.04.18	BW	1st Resubmittal
11.14.18	BW	2nd Resubmittal

SCALE: 1" = 1000'

0 250' 500' 1000'

REG. # 1016
Thomas P. Lucido

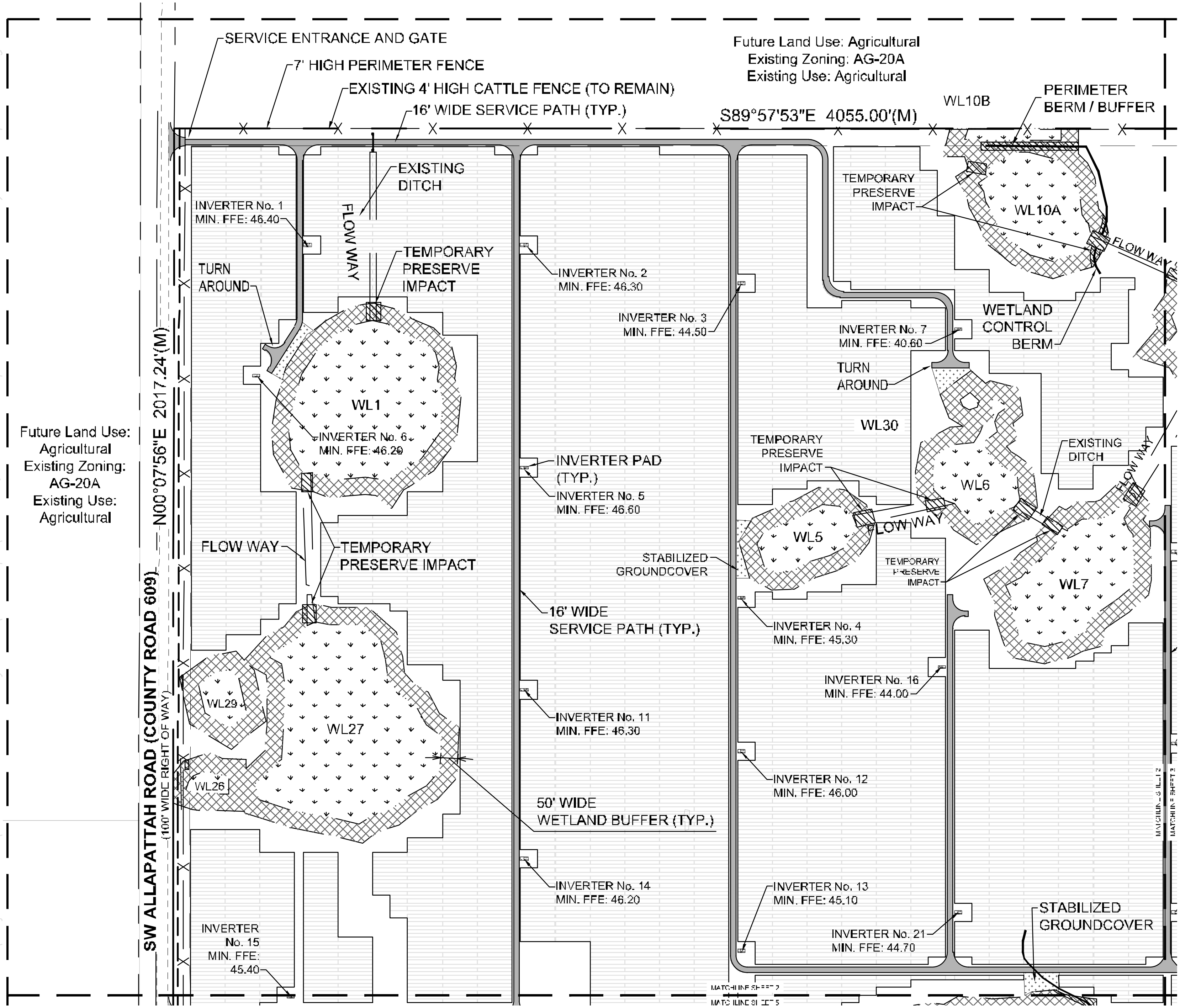
Designer	BW	Sheet
Manager	MC	1 OF 11
Project Number	17-626	
Municipal Number	—	
Computer File	17-626 FPL Sweetbay Landscape Plan.dwg	

Landscape Notes:

1. All planted areas to receive temporary irrigation for a minimum period of twelve months or until successful establishment.

2. Irrigation source: Water Truck.

Sheet Index:



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lucido & associates

701 E Ocean Blvd., Stuart, Florida 34994 (772) 220-2100, Fax (772) 223-0220

Key / Location:

Project Team:

Applicant:
Florida Power & Light Company

Land Planner / Landscape Architect
Lucido & Associates
701 E Ocean Blvd
Stuart, FL 34994
772-220-2100

Civil Engineer / Surveyor
Culpepper & Terpening
2980 S. 25th Street
Fort Pierce, FL 34981
772-464-3537

FPL Sweetbay Solar Energy Center

Martin County, Florida

Temporary Preserve Area Impact - Restoration Plan

Date	By	Description
6.21.18	BW	Initial Submittal
10.04.18	BW	1st Resubmittal
11.14.18	BW	2nd Resubmittal

NORTH

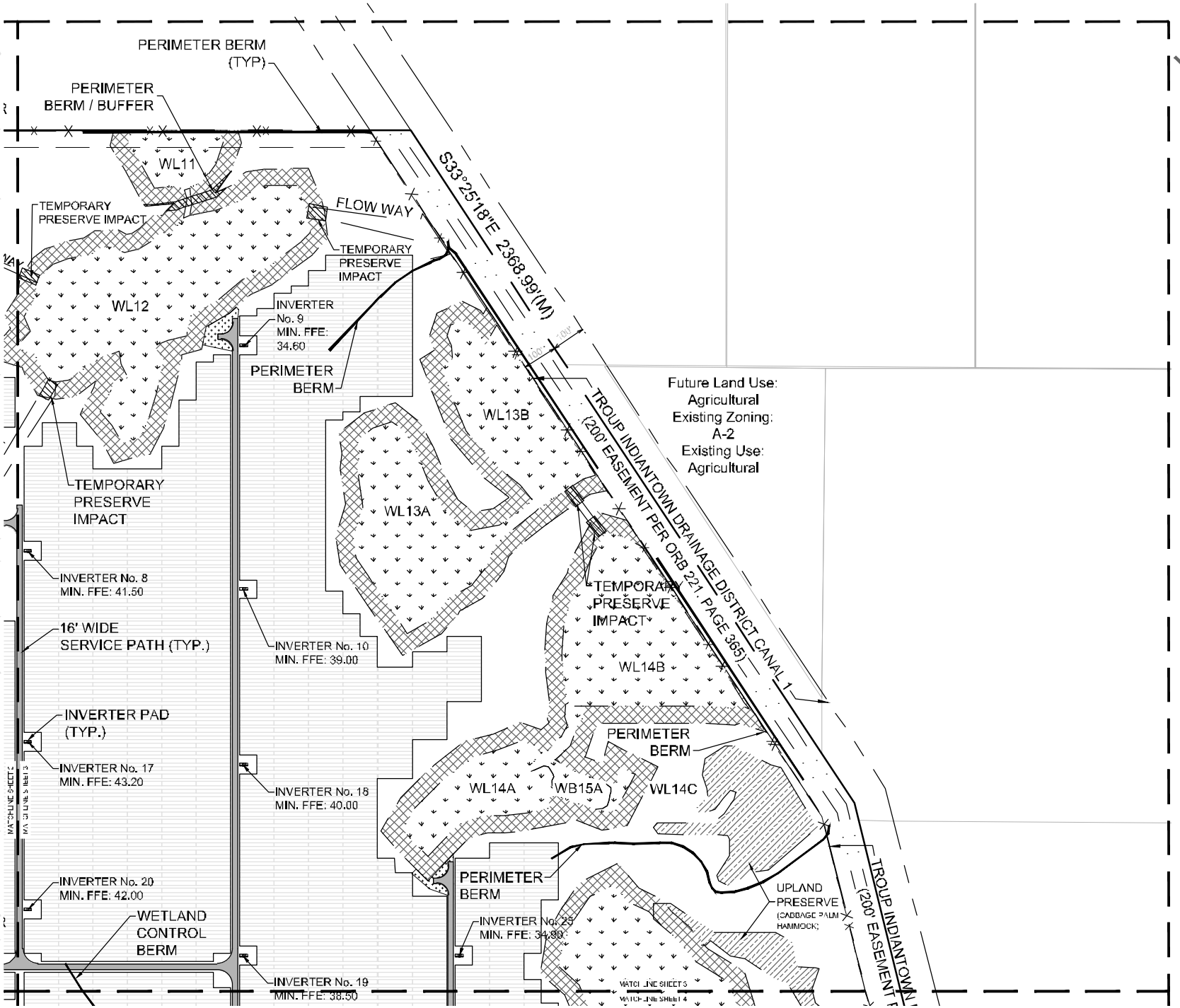
SCALE: 1" = 400'

0 100' 200' 400'

REG. # 1018
Thomas P. Lucido

Designer	BW	
Manager	MC	
Project Number	17-626	
Municipal Number	–	
Computer File	17-626 FPL Sweetbay Landscape Plan.dwg	

Sheet
2 OF 11



lucido & associates
[illegible]

Key / Location:

Project Team:

[illegible]

FPL Sweetbay Solar Energy Center

Martin County, Florida

Temporary Preserve Area Impact - Restoration Plan

Date	By	Description
6.21.18	BW	Initial Submittal
10.04.18	BW	1st Resubmittal
11.14.18	BW	2nd Resubmittal

NORTH

SCALE: 1" – 400'

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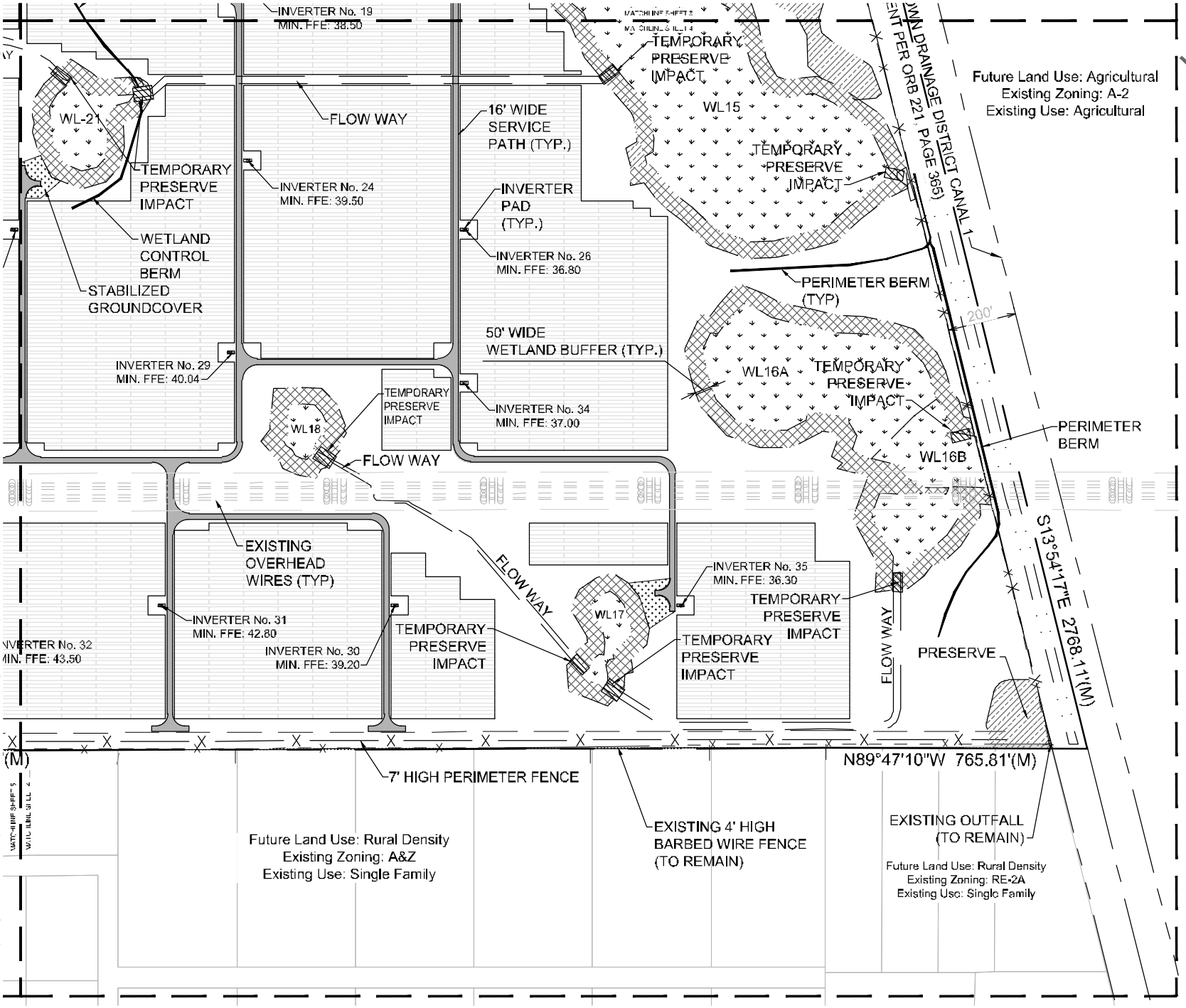
REG. # 1018
Thomas P. Lucido

Designer	BW	Sheet
Manager	MC	3 OF 11
Project Number	17-626	
Municipal Number	–	
Computer File	17-626 FPL Sweetbay Landscape Plan.dwg	



lucido & associates

Key / Location:

Project Team:

FPL Sweetbay Solar Energy Center

Martin County, Florida

Temporary Preserve Area Impact - Restoration Plan

Date	By	Description
6.21.18	BW	Initial Submittal
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11.14.18	BW	2nd Resubmittal

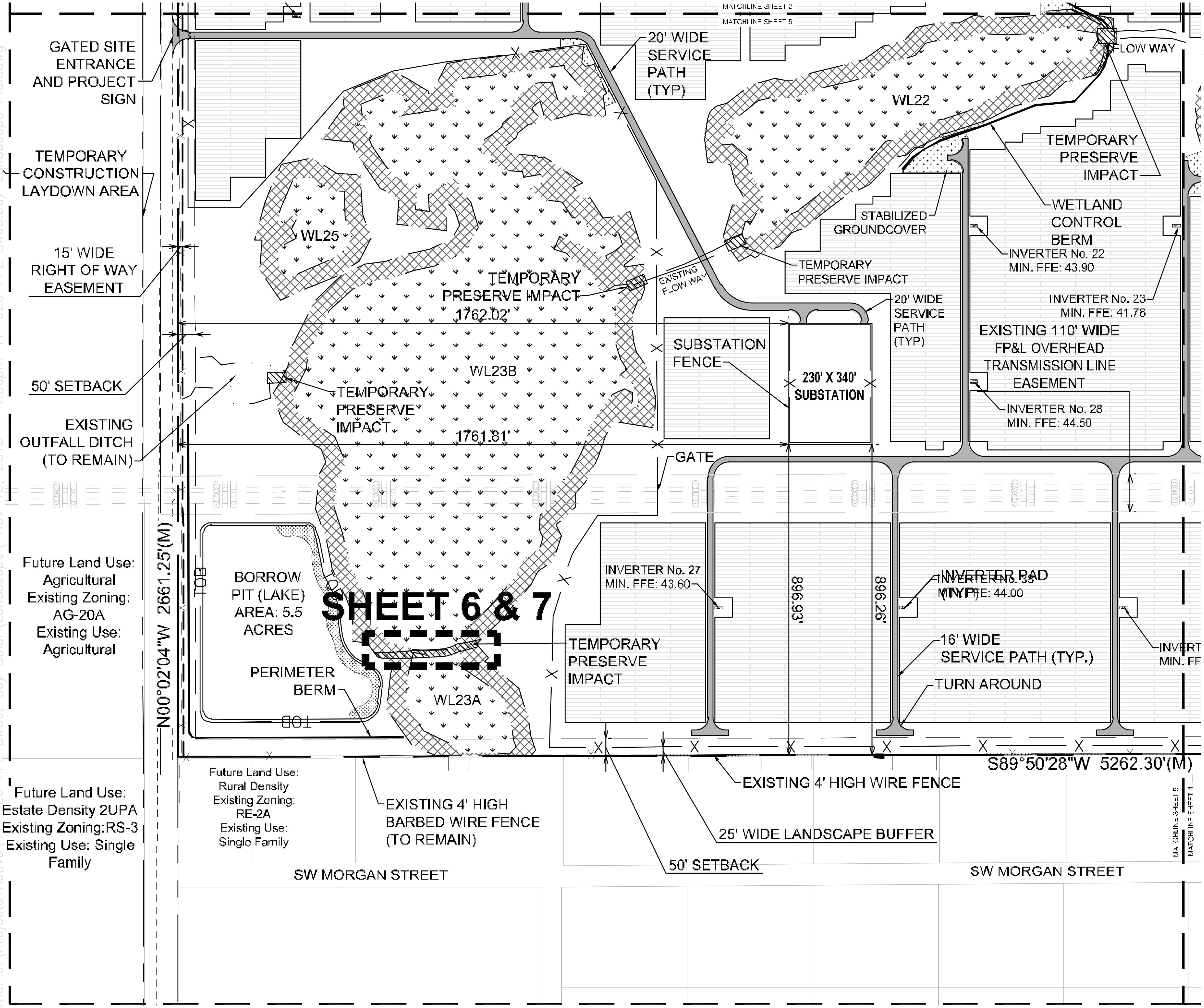
SCALE: 1" – 400'

0 100' 200' 400'

REG. # 1018
Thomas P. Lucido

Designer	BW
Manager	MC
Project Number	17-626
Municipal Number	–
Computer File	17-626 FPL Sweetbay Landscape Plan.dwg

Sheet
4 OF 11



lucido & associates

Key / Location:

Project Team:

FPL Sweetbay Solar Energy Center

Martin County, Florida

Temporary Preserve Area Impact - Restoration Plan

Date	By	Description
6.21.18	BW	Initial Submittal
10.04.18	BW	1st Resubmittal
11.14.18	BW	2nd Resubmittal

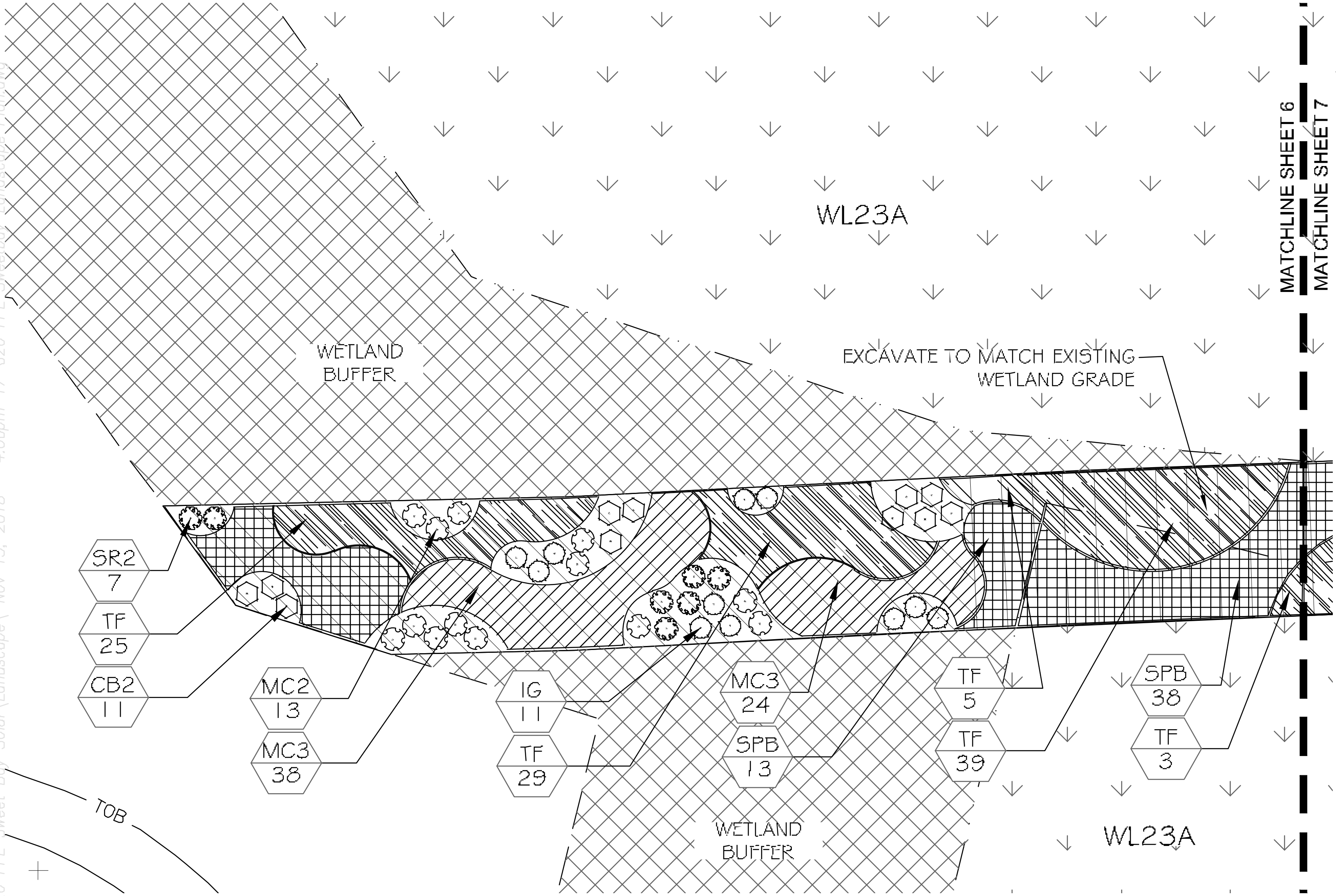
SCALE: 1" = 400'

0 100' 200' 400'

REG. # 1016 Thomas P. Lucido

Designer	BW	
Manager	MC	
Project Number	17-626	
Municipal Number	–	
Computer File	17-626 FPL Sweetbay Landscape Plan.dwg	

Sheet 5 OF 11



PLANT SCHEDULE WL23A RESTORATION

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SPECS
CB2	20	Callicarpa americana	American Beautyberry	3G, 24" OA, F.
IG	18	Ilex glabra	Gallberry	3G, 24" OA, F.
MC2	21	Myrica cerifera	Wax Myrtle	3G, 24" OA, F, SP
SR2	14	Serenoa repens	Saw Palmetto	3G, 18" OA, F

GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SPECS	SPACING
MC3	107	Muhlenbergia capillaris	Pink Muhly	1G, 18" OA, F	36" o.c.
SPB	200	Spartina bakeri	Sand Cordgrass	1G, 18" HT x 12" SPR, F	36" o.c.
TF	244	Tripsacum dactyloides	Fakahatchee Grass	1G, 18" OA, F	36" o.c.

lucido & associates

701 E Ocean Blvd., Stuart, Florida 34994 (772) 220-2100, Fax (772) 223-0220

Key / Location:

Project Team:

Applicant:
Florida Power & Light Company

Land Planner / Landscape Architect:
Lucido & Associates
701 E Ocean Blvd.
Stuart, FL 34994
772-220-2100

Civil Engineer / Surveyor:
Culpepper & Terpening
2980 S. 25th Street
Fort Pierce, FL 34981
772-464-3537

FPL Sweetbay Solar Energy Center

Martin County, Florida

Temporary Preserve Area Impact - WL23A Restoration Plan

Date	By	Description
6.21.18	BW	Initial Submittal
10.04.18	BW	1st Resubmittal
11.14.18	BW	2nd Resubmittal

NORTH

SCALE: 1" = 400'

0 100' 200' 400'

REG. # 1018
Thomas P. Lucido

Designer	BW
Manager	MC
Project Number	17-626
Municipal Number	–
Computer File	17-626 FPL Sweetbay Landscape Plan.dwg

Sheet
6 OF 11

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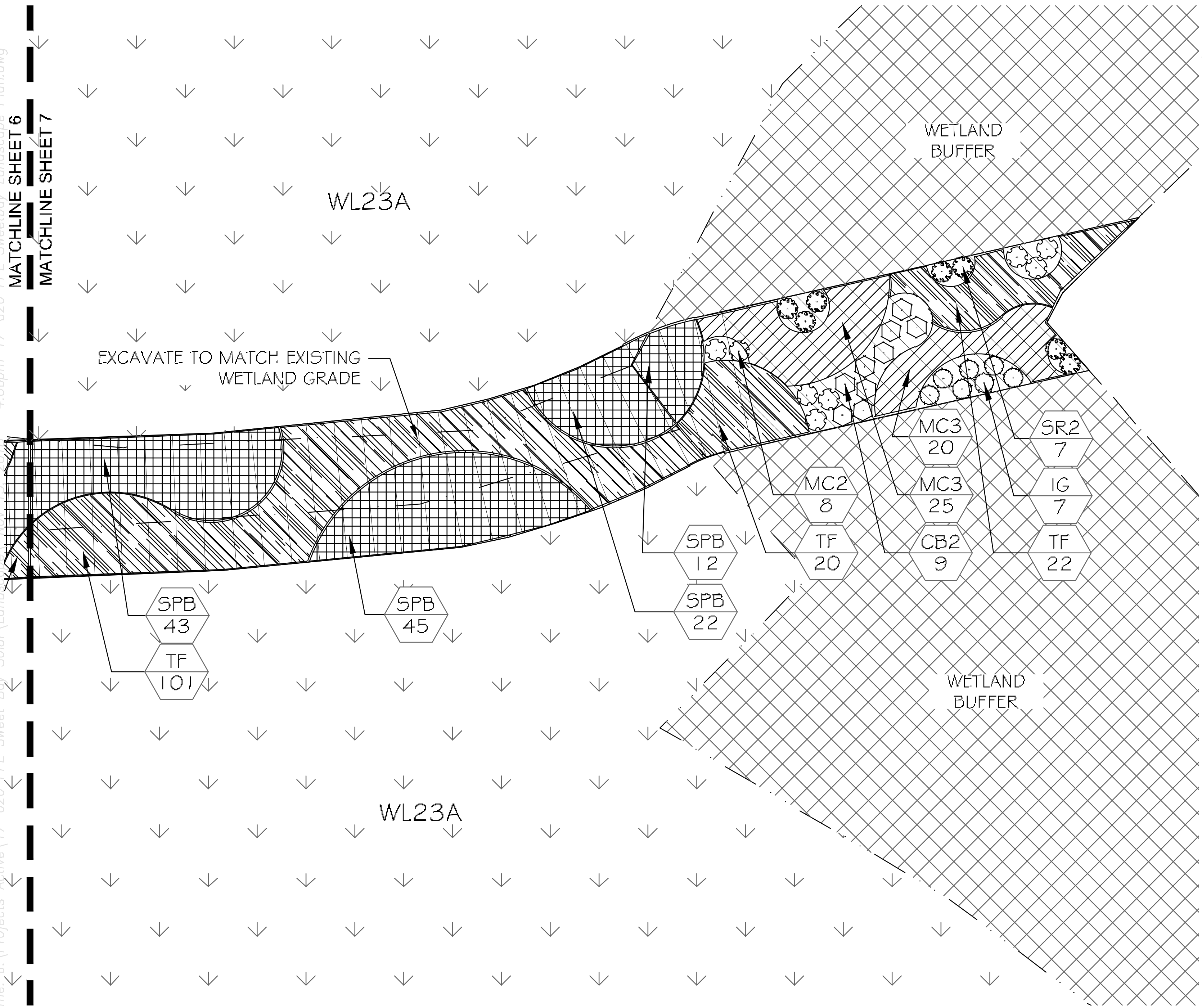

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lucido & associates

Key / Location:

Project Team:

Applicant:
Florida Power & Light Company

Land Planner / Landscape Architect
Lucido & Associates

Civil Engineer / Surveyor

FPL Sweetbay Solar Energy Center

Martin County, Florida

Temporary Preserve Area Impact - WL23A Restoration Plan

Date	By	Description
6.21.18	BW	Initial Submittal
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11.14.18	BW	2nd Resubmittal

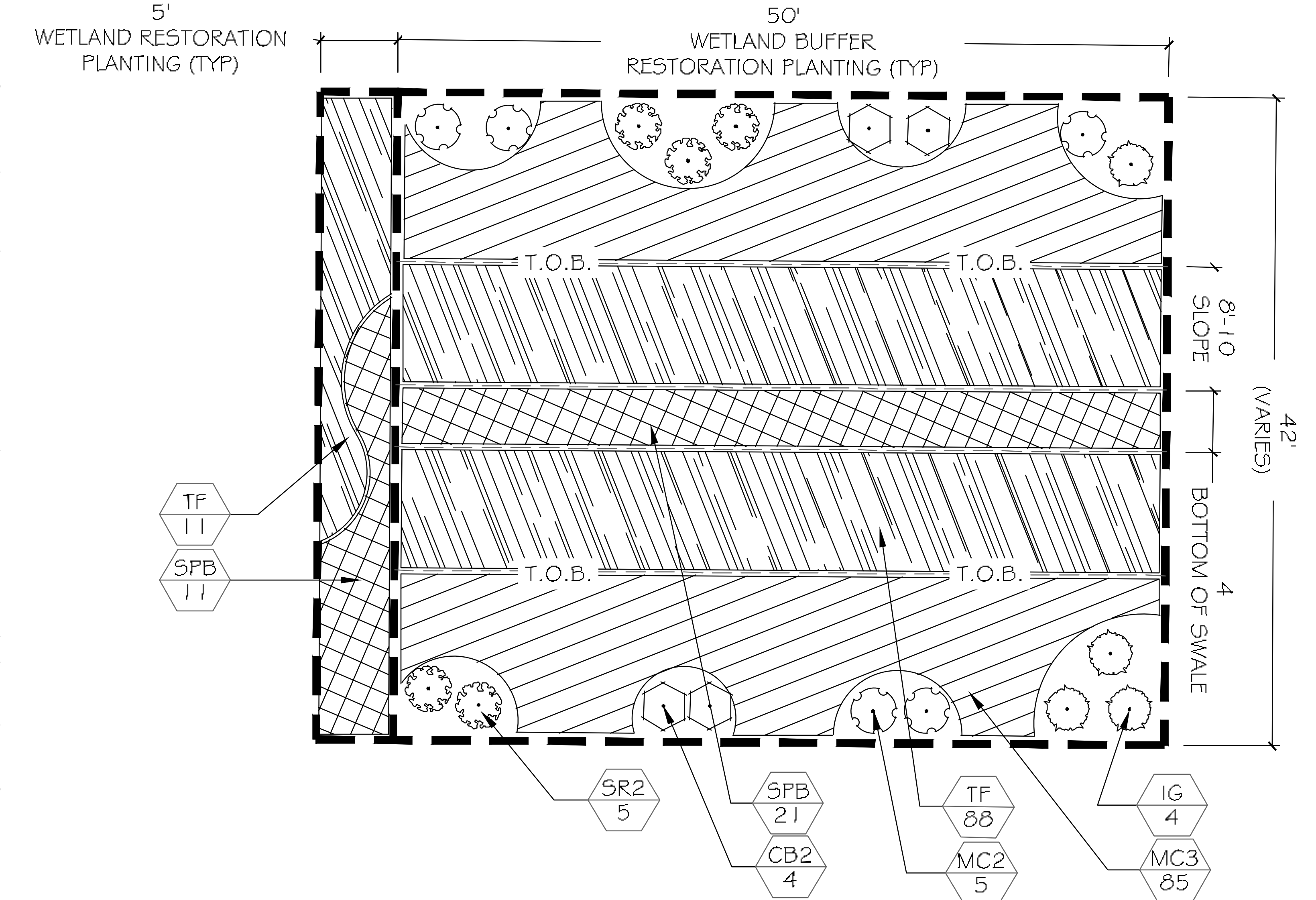
SCALE: 1" – 400'

0 100' 200' 400'

REG. # 1018
Thomas P. Lucido

Designer	BW
Manager	MC
Project Number	17-626
Municipal Number	–
Computer File	17-626 FPL Sweetbay Landscape Plan.dwg

Sheet
7 OF 11



TYPICAL BUFFER RESTORATION PLAN / FLOW WAY- 1650 sf
SCALE: 1"=10'

PLANT SCHEDULE WETLAND RESTORATION TYPICAL 150 sf

GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SPECS	SPACING
SPB	11	Spartina bakeri	Sand Cordgrass	G, 18" HT x 12" SPR, F	36" o.c.
TF	11	Tripsacum dactyloides	Fakahatchee Grass	G, 18" OA, F	36" o.c.

PLANT SCHEDULE WETLAND RESTORATION TOTAL - 5,930 sf

GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SPECS	SPACING
SPB	435	Spartina bakeri	Sand Cordgrass	G, 18" HT x 12" SPR, F	36" o.c.
TF	435	Tripsacum dactyloides	Fakahatchee Grass	G, 18" OA, F	36" o.c.

PLANT SCHEDULE WETLAND BUFFER RESTORATION TYPICAL - 1500 sf

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SPECS
CB2	4	Callicarpa americana	American Beautyberry	3G, 24" OA, F
IG	4	Ilex glabra	Gallberry	3G, 24" OA, F
MC2	5	Myrica cerifera	Wax Myrtle	3G, 24" OA, F, SF
SR2	5	Serenoa repens	Saw Palmetto	3G, 18" OA, F

GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SPECS	SPACING
MC3	85	Muhlenbergia capillaris	Pink Muhly	1G, 18" OA, F	36" o.c.
SPB	21	Spartina bakeri	Sand Cordgrass	1G, 18" HT x 12" SPR, F	36" o.c.
TF	88	Tripsacum dactyloides	Fakahatchee Grass	1G, 18" OA, F	36" o.c.

PLANT SCHEDULE WETLAND BUFFER RESTORATION TOTAL - 51,140 sf

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SPECS
CB2	136	Callicarpa americana	American Beautyberry	3G, 24" OA, F
IG	136	Ilex glabra	Gallberry	3G, 24" OA, F
MC2	170	Myrica cerifera	Wax Myrtle	3G, 24" OA, F, SF
SR2	170	Serenoa repens	Saw Palmetto	3G, 18" OA, F

GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SPECS	SPACING
MC3	2,896	Muhlenbergia capillaris	Pink Muhly	1G, 18" OA, F	36" o.c.
SPB	716	Spartina bakeri	Sand Cordgrass	1G, 18" HT x 12" SPR, F	36" o.c.
TF	3,000	Tripsacum dactyloides	Fakahatchee Grass	1G, 18" OA, F	36" o.c.

lucido & associates

Key / Location:

Project Team:

Applicant: Florida Power & Light Company

Land Planner / Landscape Architect: Lucido & Associates

Civil Engineer / Surveyor

FPL Sweetbay Solar Energy Center

Martin County, Florida

Temporary Preserve Area Impact - Restoration Plan

Date	By	Description
6.21.18	BW	Initial Submittal
10.04.18	BW	1st Resubmittal
11.14.18	BW	2nd Resubmittal

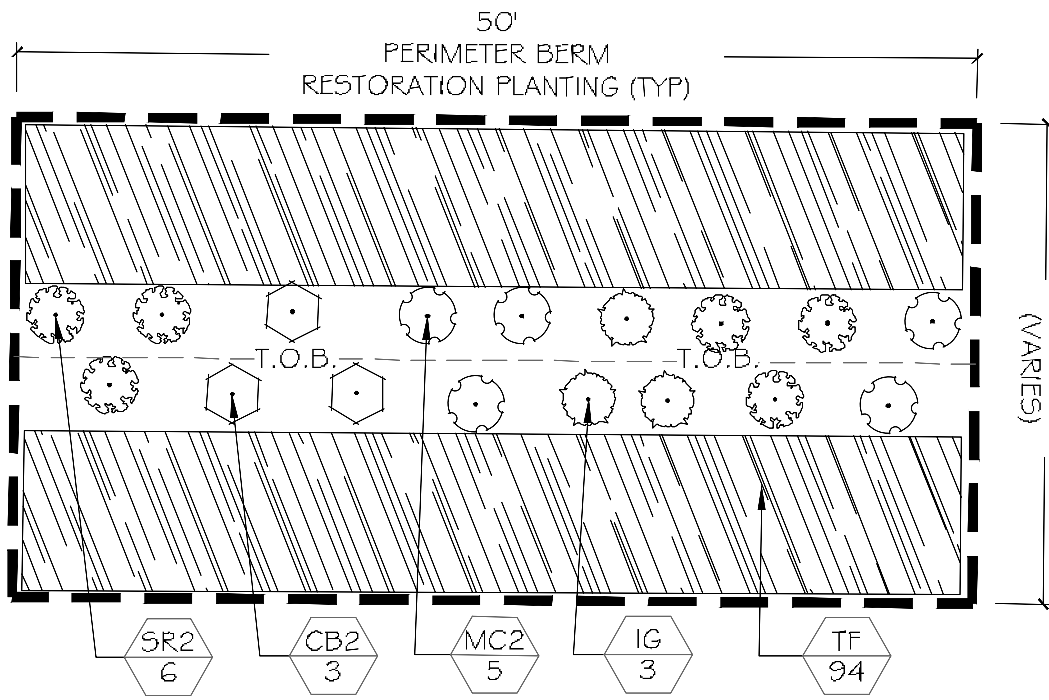
SCALE: 1" = 10'

0 2.5' 5' 20'

REG. # 1018 Thomas P. Lucido

Designer	BW	
Manager	MC	
Project Number	17-626	
Municipal Number	–	
Computer File	17-626 FPL Sweetbay Landscape Plan.dwg	

Sheet



TYPICAL BUFFER RESTORATION PLAN / PERIMETER BERM- 1250 sf
SCALE: 1"=10'

PLANT SCHEDULE PERIMETER BERM RESTORATION TYPICAL - 1250 SF

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SPECS
CB2	3	Callicarpa americana	American Beautyberry	3G, 24" OA, F
IG	3	Ilex glabra	Gallberry	3G, 24" OA, F
MC2	5	Myrica cerifera	Wax Myrtle	3G, 24" OA, F, SP
SR2	6	Serenoa repens	Saw Palmetto	3G, 18" OA, F

GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SPECS	SPACING
TF	94	Tripsacum dactyloides	Fakahatchee Grass	1G, 18" OA, F	36" o.c.

PLANT SCHEDULE PERIMETER BERM RESTORATION TOTAL - 6,189 SF

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SPECS
CB2	15	Callicarpa americana	American Beautyberry	3G, 24" OA, F
IG	15	Ilex glabra	Gallberry	3G, 24" OA, F
MC2	25	Myrica cerifera	Wax Myrtle	3G, 24" OA, F, SP
SR2	30	Serenoa repens	Saw Palmetto	3G, 18" OA, F

GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SPECS	SPACING
	465	Tripsacum dactyloides	Fakahatchee Grass	1G, 18" OA, F	36" o.c.

lucido & associates

Key / Location:

Project Team:

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Florida Power & Light Company

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701 E Ocean Blvd
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772-220-2100

Civil Engineer / Surveyor:
Culpepper & Terpening
2980 S. 25th Street
Fort Pierce, FL 34981
772-464-3537

FPL Sweetbay Solar Energy Center

Martin County, Florida

Temporary Preserve Area Impact - Restoration Plan

Date	By	Description
6.21.18	BW	Initial Submittal
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11.14.18	BW	2nd Resubmittal

NORTH

SCALE: 1" = 10'

0 2.5' 5' 20'

REG. # 1018
Thomas P. Lucido

Designer	BW	
Manager	MC	
Project Number	17-626	
Municipal Number	–	
Computer File	17-626 FPL Sweetbay Landscape Plan.dwg	

Sheet
9 OF 11

Drawing Name: J:\Projects Active\17-626 FPL Sweet Bay Solar\Landscape\ Nov 13, 2018 - 4:06pm 17-626 FPL Sweetbay Landscape Plan.dwg

Drawing Name: J:\Projects Active\17-626 FPL Sweet Bay Solar\Landscape\17-626 FPL Sweetbay Landscape Plan.dwg Nov 13, 2018 – 4:06pm

LANDSCAPE SPECIFICATIONS

PART 1: GENERAL CONDITIONS

1.01 SCOPE:
A. [illegible]

1.02 AGENCY STANDARDS:
A. [illegible]

1.03 SITE EXAMINATION:
A. [illegible]

1.04 ERRORS AND OMISSIONS:
A. [illegible]
B. [illegible]
C. [illegible]

1.05 EXECUTION OF THE WORK:
A. [illegible]
B. [illegible]
C. [illegible]

1.06 PROTECTION OF PUBLIC AND PROPERTY:
A. [illegible]

1.07 CHANGES AND EXTRAS:
A. [illegible]

1.08 GUARANTEE:
A. [illegible]
B. [illegible]

1.09 CARE AND MAINTENANCE:
A. [illegible]
B. [illegible]

1.10 SAFETY:
A. [illegible]
B. [illegible]

1.11 CONTRACTOR QUALIFICATION:
A. [illegible]

1.12 INSURANCE AND BONDING:
A. [illegible]
B. [illegible]

1.13 PERMITS AND CERTIFICATES:
A. [illegible]

PART 2: MATERIALS

2.01 PLANT MATERIALS:
A. [illegible]
B. [illegible]
C. [illegible]
D. [illegible]
E. [illegible]
F. [illegible]

2.02 INSPECTION
A. [illegible]

2.03 PROTECTION OF PLANT MATERIALS
A. [illegible]
B. [illegible]
C. [illegible]
D. [illegible]

2.04 STORAGE
A. [illegible]
B. [illegible]
C. [illegible]
D. [illegible]

2.05 [illegible]
A. [illegible]

2.07 [illegible]
A. [illegible]
B. [illegible]

PART 3 EXECUTION

3.01 DIGGING
A. [illegible]

3.02 STAKING
A. [illegible]
B. [illegible]

3.03 PLANTING
A. [illegible]

3.04 PRUNING
A. [illegible]
B. [illegible]

3.05 [illegible]
A. [illegible]
B. [illegible]
C. [illegible]
D. [illegible]

3.06 WATER
A. [illegible]
B. [illegible]

3.07 SOD
A. [illegible]
B. [illegible]
C. [illegible]
D. [illegible]
E. [illegible]
F. [illegible]
G. [illegible]
H. [illegible]

3.09 CLEANING UP
A. [illegible]

3.10 MAINTENANCE
A. [illegible]
B. [illegible]
C. [illegible]
D. [illegible]
E. [illegible]

3.11 COMPLETION, INSPECTION AND ACCEPTANCE
A. [illegible]
B. [illegible]
C. [illegible]
D. [illegible]
E. [illegible]

lucido & associates

Key / Location:

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SCALE: 1" – 0

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Thomas P. Lucido

Designer	BW	Sheet
Manager	MC	10 OF 11
Project Number	17-626	
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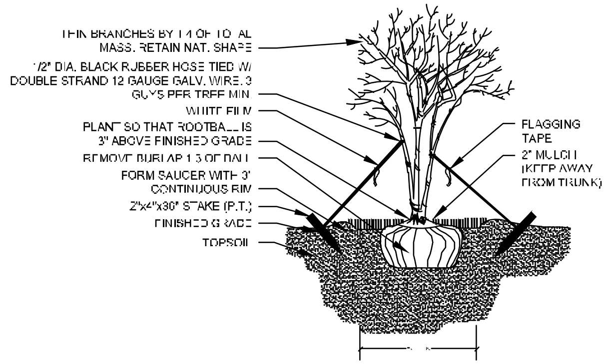
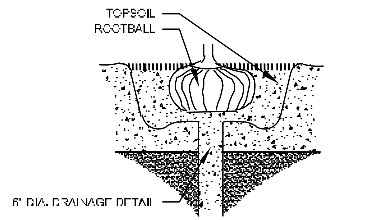


MULTI-TRUNK PLANTING & GUYING
NOT TO SCALE

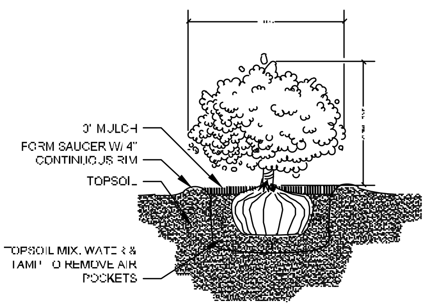


DRAINAGE TESTING DETAIL
NOT TO SCALE

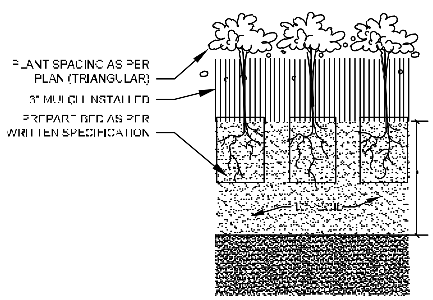
DRAINAGE TESTING/DRAINAGE CHANNEL REQUIREMENTS.

PRIOR TO PLANTING, ALL PLANTINGS PITS SELECTED FOR TESTING SHALL BE TESTED IN THE FOLLOWING MANNER.

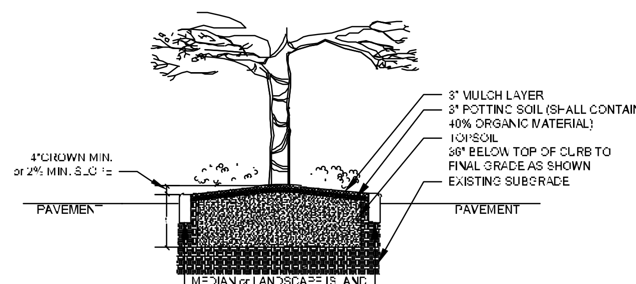
A. DIG EACH PLANTING PIT TO THE MINIMUM SPECIFIED SIZE.
B. FILL PLANTING PIT WITH TWELVE INCHES (12") OF WATER. IF THE WATER LEVEL DROPS FOUR (4") OR MORE WITHIN FOUR (4) HOURS, THE DRAINAGE IS SUFFICIENT AND A DRAINAGE CHANNEL IS NOT REQUIRED. IF THE WATER LEVEL DROPS LESS THAN FOUR INCHES (4") WITHIN THE FOUR (4) HOUR PERIOD, A DRAINAGE CHANNEL IS REQUIRED.
C. WHERE REQUIRED, THE DRAINAGE CHANNEL MUST EXTEND DOWN THROUGH THE NON POROUS SOIL AND INTO POROUS SOIL. (SEE DETAIL)
D. ALL MATERIAL REMOVED FROM THE DRAINAGE CHANNEL SHALL BE DISCARDED.
E. WHEN BACKFILLING PLANTING PITS WITH NATIVE TOPSOIL, CARE MUST BE TAKEN TO KEEP THE CONSISTENCY OF THE SOIL MIX THE SAME THROUGHOUT THE PLANTING PIT AND DRAINAGE CHANNEL.



SHRUB PLANTING
NOT TO SCALE



GROUNDCOVER PLANTING DETAIL
NOT TO SCALE



THIS DETAIL SHOWN DEPICTS A MEDIAN AND/OR LANDSCAPE ISLAND AND IS FOR GRAPHIC PURPOSES ONLY. SOIL PREPARATION SHALL APPLY TO ALL TREE, SHRUB, & GROUND COVER AREAS. THIS DOES NOT INCLUDE SOD AREAS.

LANDSCAPE AREA PREPARATION DETAIL
NOT TO SCALE

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Key / Location:

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FPL Sweetbay Solar Energy Center

Martin County, Florida

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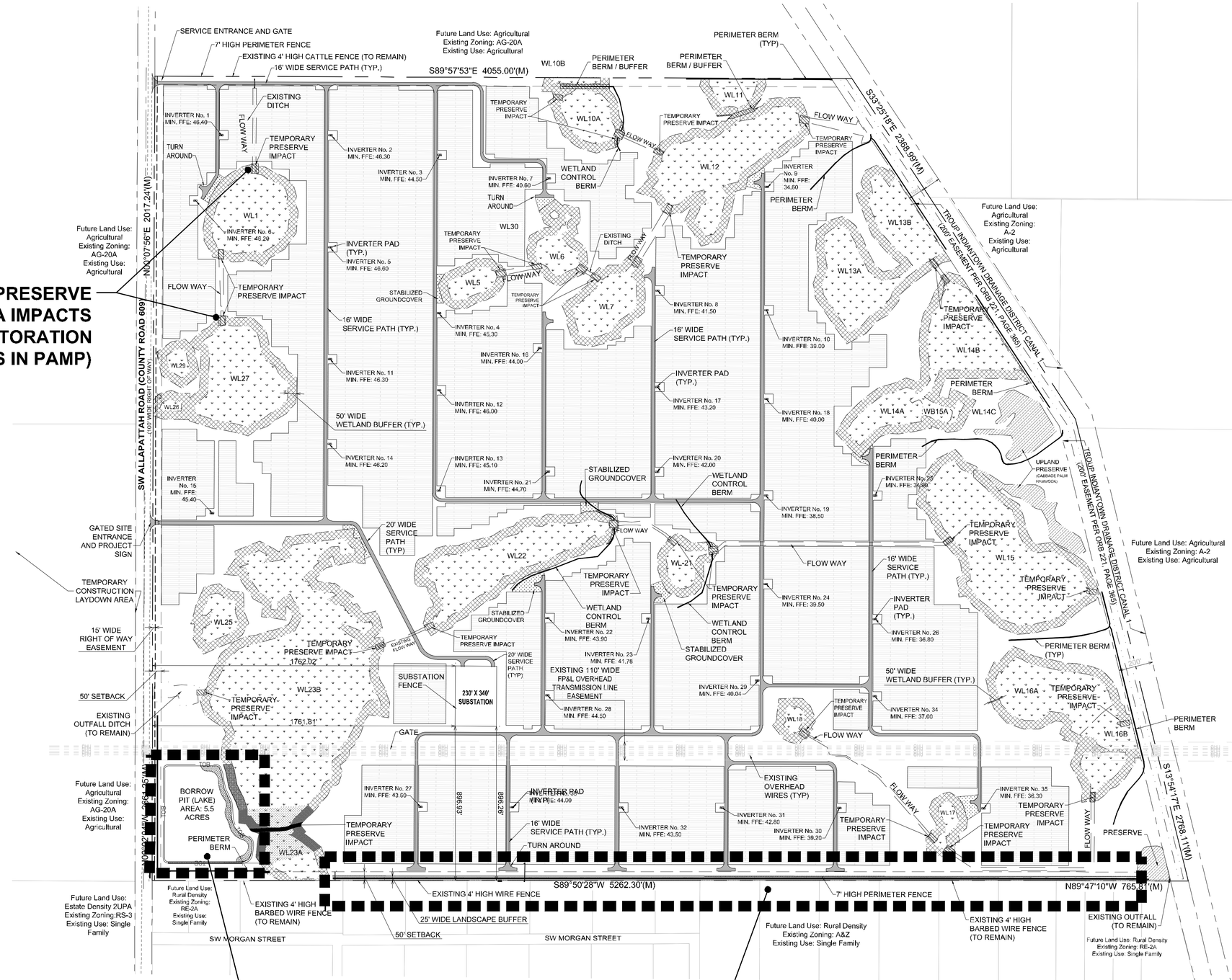
SCALE: 1" = 0

REG. # 1016
Thomas P. Lucido

Designer	BW	Sheet
Manager	MD	11 OF 11
Project Number	17-626	
Municipal Number	–	
Computer File	17-626 FPL Sweetbay Landscape Plan.dwg	

Appendix G

Sweetbay Solar Energy Center Landscape Plan



TEMPORARY PRESERVE AREA IMPACTS (SEE RESTORATION PLANS IN PAMP)

LAKE LITTORAL DETAIL (SEE SHEET 3)

SOUTH BUFFER DETAIL (SEE SHEET 2)

Note:

Required landscape materials with lake and south buffer shall be installed by December 31, 2020.

Sheet Index:

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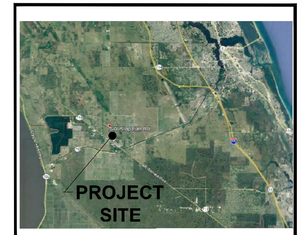
701 E Ocean Blvd., Stuart, Florida 34994 (772) 220-2100, Fax (772) 223-0220
100 Avenue A Suite 2A, Fort Pierce, Florida 34950 (772) 467-1301, Fax (772) 467-1303
827 North Thornton Avenue, Orlando, Florida 32803 (407) 898-5521, Fax (407) 898-9768

Key / Location:



Scale: N.T.S

Project Team:

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NORTH

SCALE: 1" = 300'

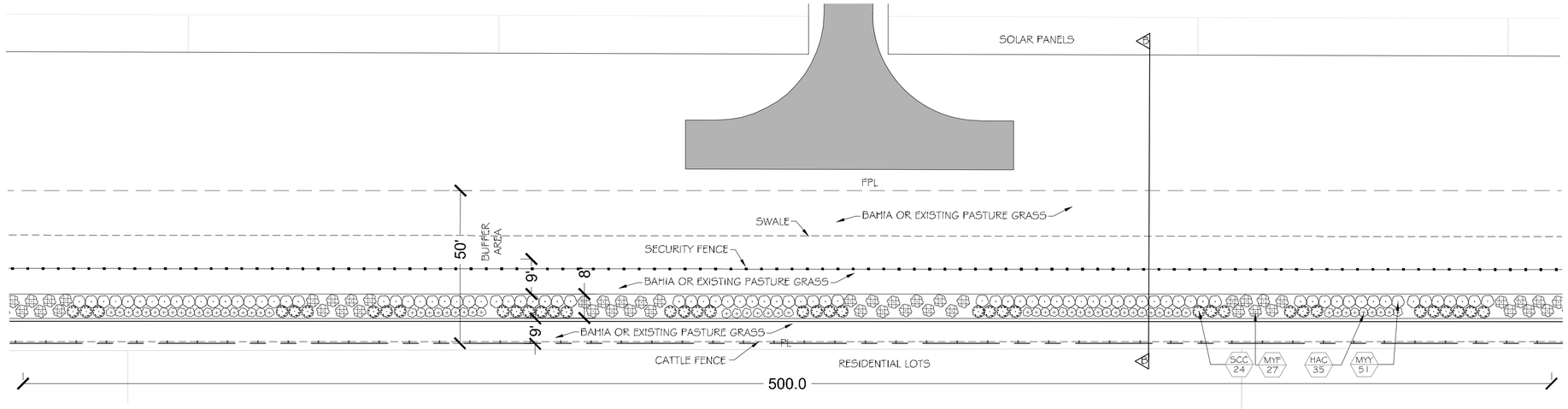
0 150' 300' 600'

REG. # 1018
Thomas P. Lucido

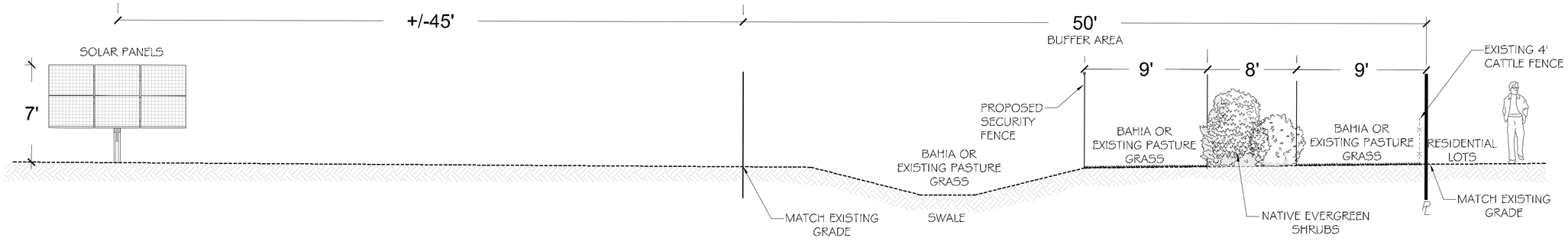
Designer	BW	Sheet
Manager	MC	1 OF 5
Project Number	17-626	
Municipal Number	--	
Computer File	17-626 FPL Sweetbay Landscape Plan.dwg	

PLANT SCHEDULE SOUTH BUFFER

SHRUBS	CODE	QTY	BOTANICAL NAME	COMMON NAME	SPECS
	HAC	555	Hamilia patens `Calusa`	Native Firebush	7G, 36" X24", F
	MYF	487	Myrcianthes fragrans	Simpson`s Stopper	7G, 4` HT, F
	MYY	775	Myrica cerifera	Wax Myrtle	7G, 36" OA, F
	SCC	366	Serenoa repens	Saw Palmetto	7G, 24" OA, F



A1 TYPICAL 500' SECTION LANDSCAPE PLAN
SCALE: 1"=20'



B2 TYPICAL LANDSCAPE SECTION
SCALE: 1/4"= 1'-0"

Landscape Notes:

1. All planted areas to receive temporary irrigation for a minimum period of twelve months or until successful establishment.
2. All planted areas to receive 3" of Pine Straw Mulch or approved equal.
3. Plantings should reach an average height of six feet within twelve to eighteen months.
4. Irrigation source: Water Truck.

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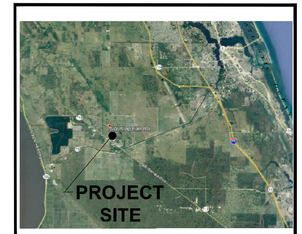

Scale: N.T.S

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NORTH

SCALE: 1" = 20'

0 10' 20' 40'

REG. # 1018
Thomas P. Lucido

Designer	BW	Sheet
Manager	MC	2 OF 5
Project Number	17-626	
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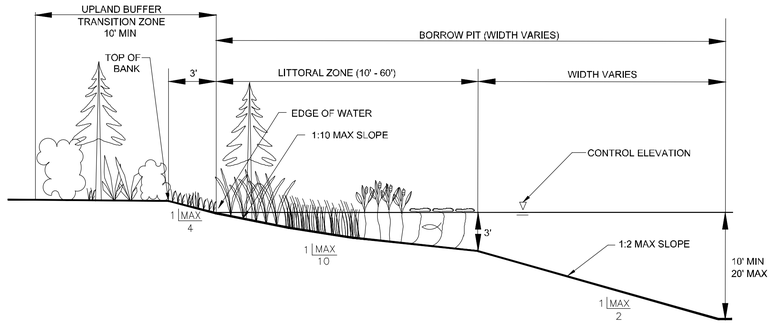
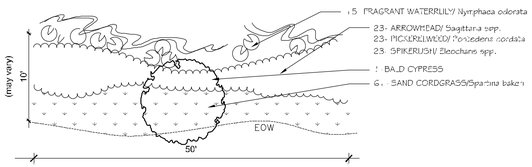


UPLAND BUFFER TRANSITION & LITTORAL ZONES TYPICAL SECTION

N.T.S.

QTY	COMMON NAME	Botanical Name
15	FRAGRANT WATERLILY	Nymphaea odorata
23	ARROWHEAD	Sagittaria spp.
23	PICKERELWEED	Pontedena cordata
23	SPIKERUSH	Eleochans interstincta
61	SAND CORDGRASS	Spartina bakeri
1	BALD CYPRESS	Taxodium distichum

TYPICAL 10'x50' LITTORAL PLANT SCHEDULE

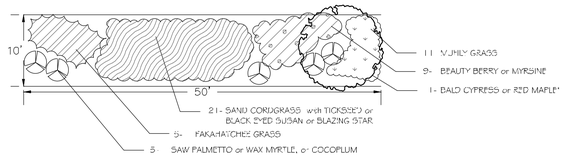


TYPICAL 10'x50' SECTION - LITTORAL PLAN

N.T.S.

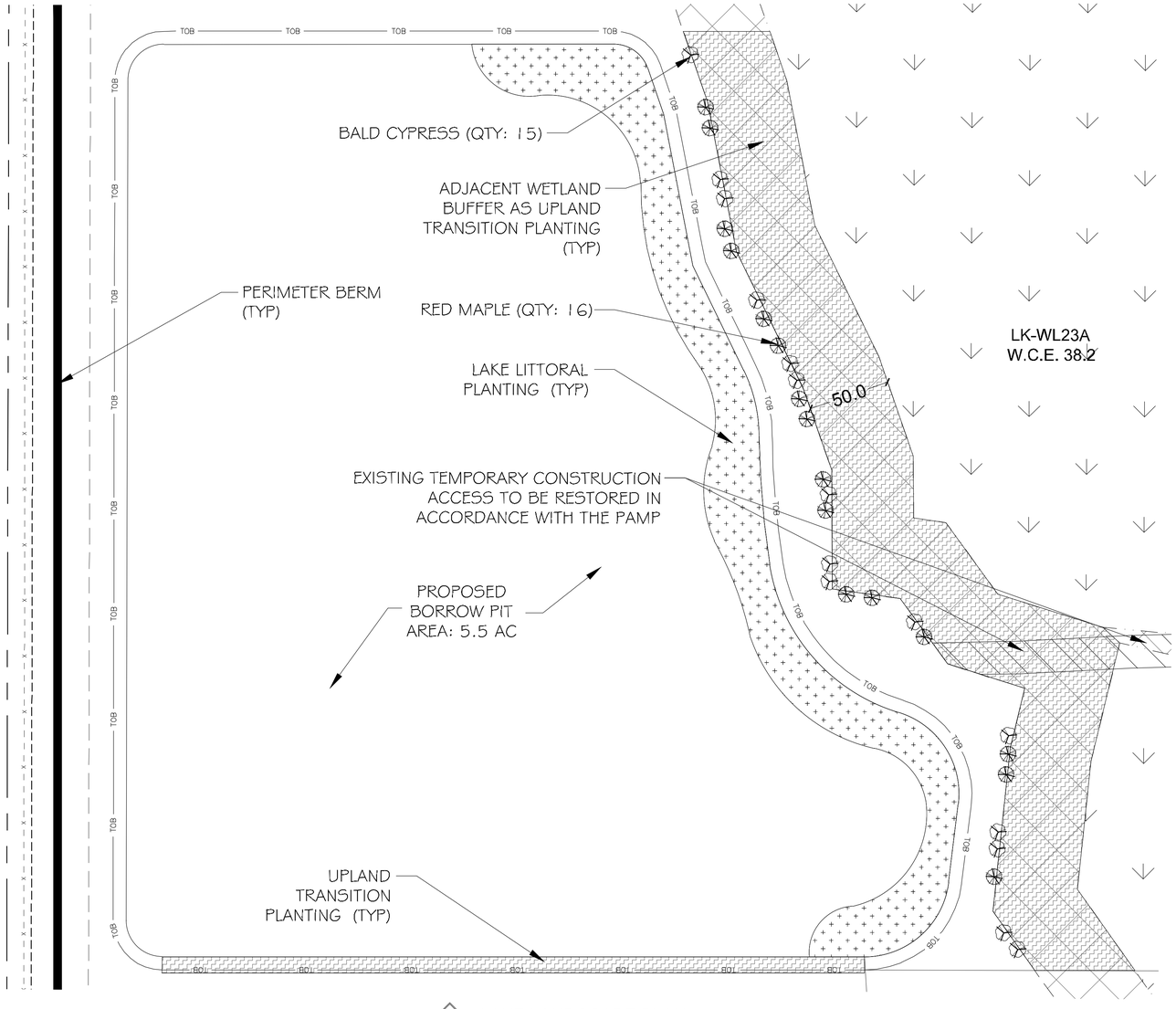
QTY	COMMON NAME	Botamcal name
1	RED MAPLE	Acer rubrum
	BALD CYPRESS	Taxodium distichum
5	WAX MYRTLE	Myrica cenfera
	SAW PALMETTO	Serenoa repens
5	FAKAHATCHEE GRASS	Tnpsacum dactyloides
9	BEAUTY BERRY	Callicarpa americana
	MYRSINE	Myrsine guianensis
21	SAND CORDGRASS	Spartina bakeri
11	MUHLY GRASS	Muhlienbergia capillans

TYPICAL 10'x50' UPLAND BUFFER PLANT SCHEDULE

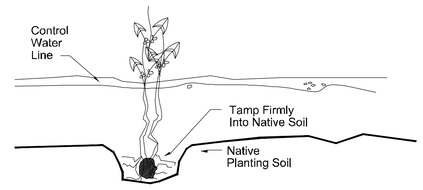


TYPICAL 10'x50' SECTION - UPLAND BUFFER PLAN

N.T.S. *Actual tree spacing may vary, see total plant quantities in lake plant schedules below.



A/3 LAKE LANDSCAPE PLAN
SCALE: 1"=40'



TYPICAL LITTORAL DETAIL

N.T.S.

LITTORAL AND UPLAND TRANSITION ZONE AREA CALCULATIONS

Lake Perimeter (Shoreline):	1,954 linear feet (lf)
Required littoral zone area (10 sf x 1,954 lf):	19,954 sf (0.46 ac.)
Required transition zone area (10 sf x 1,954 lf):	19,954 sf (0.46 ac.)
Provided littoral zone area (10 sf x 1,954 lf):	19,954 sf (0.46 ac.)
Provided transition zone area - (10 sf x 430 lf)*:	4,300 sf (0.10 ac.)
Provided wetland buffer as transition zone (50 sf x 681.11 lf)*:	34,055.5 sf (0.78 ac.)

Note: (430 + 681.11'lf = 1,111.11 LF = 57% shoreline)

LAKE - LITTORAL & UPLAND BUFFER PLANTING

LITTORAL ZONE PLANT SCHEDULE:

1,954 lf. shoreline / 50' typ. section = 39 (multiply x material in typical plant schedule above)

COMMON NAME/Botanical Name	Specifications
585 FRAGRANT WATERLILY/Nymphaea odorata	24'root, BR, clean, free of weeds, 2' o.c., 2'-3' depth
897 ARROWHEAD/Sagittaria spp.	24'ht., BR, clean, free oi weeds, 2' o.c., 6"-2' depth
897 PICKERELWEED/Pontedena cordata	24'ht., BR, clean, free oi weeds, 2' o.c., 6"-2' depth
897 SPIKERUSH/Eleochans interstincta	BR, clean,free of weeds, 2' o.c., 6"-18'depth
2379 SAND CORDGRASS/Spartina bakeri	4' liner, 2 o.c., shoreline-6' depth
39 BALD CYPRESS/Taxodium distichum	10' ht. X 5' sprd., 2" cal., FG

UPLAND BUFFER PLANT SCHEDULE:

430 lf. upland / 50 typ. section = 8.6 (multiply x material in typical plant schedule above)

Note: (430 lf. Provided + 681.11 lf. Adjacent Wetland Buffer = 1,111.11 LF = 57% Shoreline)

QTY	COMMON NAME	Botanical name	Specifications
9	RED MAPLE	Acer rubrum	10' ht. X 5' sprd., 2" cal., FG
	BALD CYPRESS	Taxodium distichum	
16	RED MAPLE*	Acer rubrum	10' ht. X 5' sprd., 2" cal., FG
15	BALD CYPRESS*	Taxodium distichum	
43	WAX MYRTLE	Myrica cenfera	36" ht. X 20" sprd., 5' o.c.
	SAW PALMETTO	Serenoa repens	
43	FAKAHATCHEE GRASS	Tnpsacum dactyloides	36" ht. X 20" sprd., 3 gal., 4' o.c.
77	BEAUTY BERRY	Callicarpa americana	30" ht. X 18" sprd., 3 gal., 4' o.c.
	MYRSINE	Myrsine guianensis	
181	SAND CORDGRASS	Spartina bakeri	18" ht. X 18" sprd., 1 gal., 36" o.c.
95	MUHLY GRASS	Muhlienbergia capillans	18" ht. X 18" sprd., 1 gal., 36" o.c.

*PLANTED ALONG ADJACENT WETLAND BUFFER, SHOWN ON LAKE LANDSCAPE PLAN.

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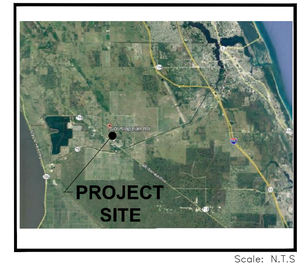

Scale: N.T.S

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NORTH

SCALE: 1" = 20'

0 10' 20' 40'

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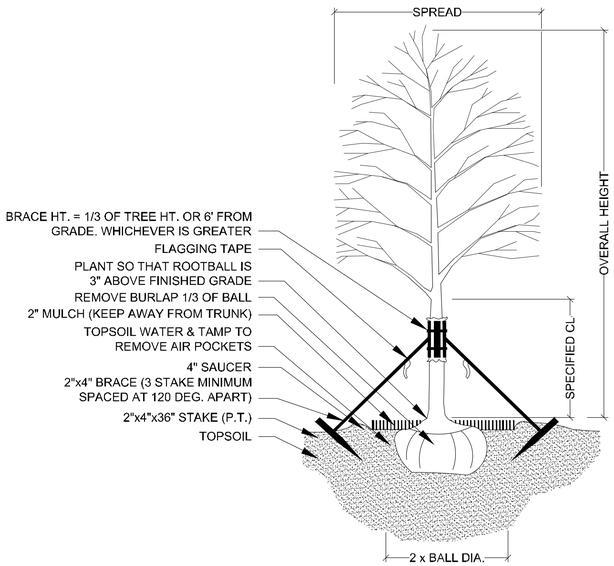
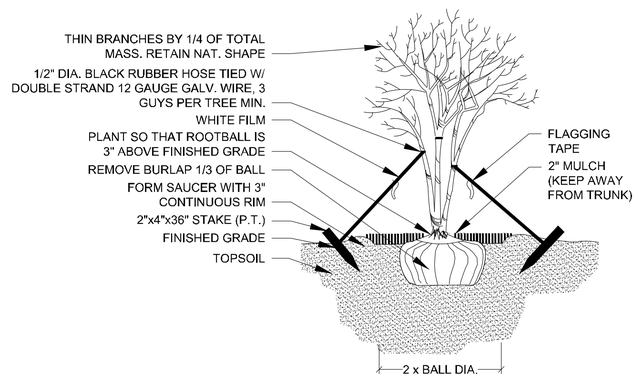


TREE PLANTING & STAKING

NOT TO SCALE



MULTI-TRUNK PLANTING & GUYING

NOT TO SCALE

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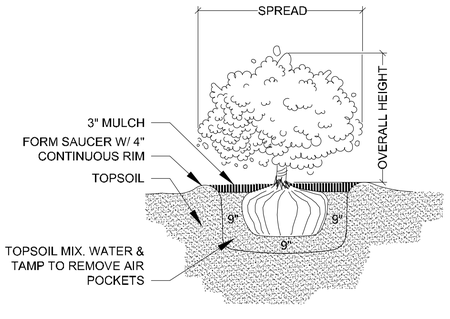
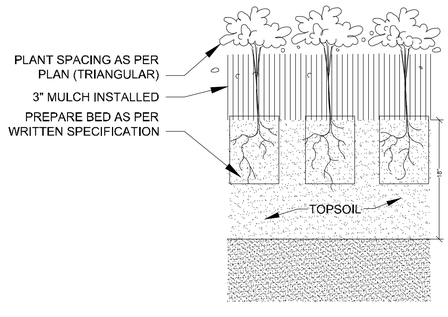


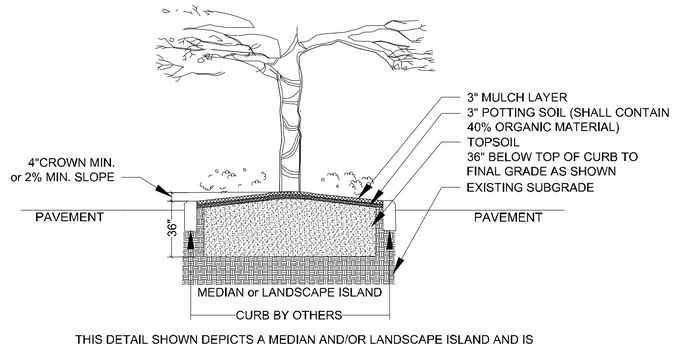
SHRUB PLANTING

NOT TO SCALE



GROUNDCOVER PLANTING DETAIL

NOT TO SCALE

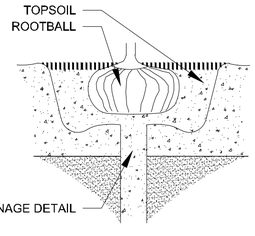


THIS DETAIL SHOWN DEPICTS A MEDIAN AND/OR LANDSCAPE ISLAND AND IS FOR GRAPHIC PURPOSES ONLY; SOIL PREPARATION SHALL APPLY TO ALL TREE, SHRUB, & GROUND COVER AREAS. THIS DOES NOT INCLUDE SOD AREAS

LANDSCAPE AREA PREPARATION DETAIL

NOT TO SCALE

- "TOPSOIL SHALL BE NATURAL, FRIABLE, FINE LOAMY SOIL POSSESSING CHARACTERISTICS OF REPRESENTATIVE TOPSOIL IN THE VICINITY OF THE PROJECT SITE THAT PRODUCES HEAVY GROWTH.
- TOPSOIL SHALL HAVE A PH RANGE OF 5.5-7.4, FREE FROM SUBSOIL, WEEDS, LITTER, SODS, CLAY, STONES, STUMPS, ROOTS, TRASH, HERBICIDES, TOXIC SUBSTANCES, OR ANY OTHER MATERIAL WHICH MAY BE HARMFUL TO PLANT GROWTH, OR HINDER PLANTING OPERATIONS.
- TOPSOIL SHALL CONTAIN A MINIMUM OF 3% ORGANIC MATERIAL.
- TOPSOIL MUST PERCOLATE WATER AT A RATE OF 1" PER HOUR (SEE ALSO DRAINAGE TESTING DETAIL FOR TREES)
- LANDSCAPE AREA SOILS SHALL BE APPROVED BY LANDSCAPE ARCHITECT/OWNER PRIOR TO PLANTING



DRAINAGE TESTING DETAIL

NOT TO SCALE

lucido & associates

701 E Ocean Blvd., Stuart, Florida 34994 (772) 220-2100, Fax (772) 223-0220
100 Avenue A Suite 2A, Fort Pierce, Florida 34950 (772) 467-1301, Fax (772) 467-1303
827 North Thornton Avenue, Orlando, Florida 32803 (407) 898-9521, Fax (407) 898-9768

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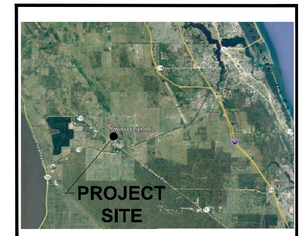

Scale: N.T.S

Project Team:

Applicant:
Florida Power & Light Company

Land Planner / Landscape Architect:
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772-220-2100

Civil Engineer / Surveyor:
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FPL Sweetbay Solar Energy Center

Martin County, Florida

Planting Details

Date	By	Description
6.21.18	BW	Initial Submittal
10.04.18	BW	1st Resubmittal
11.14.18	BW	2nd Resubmittal

NORTH

SCALE: 1" = 0

0 0 0 0

REG. # 1018
Thomas P. Lucido

Designer	BW	Sheet
Manager	MC	4 OF 5
Project Number	17-626	
Municipal Number	--	
Computer File	17-626 FPL Sweetbay Landscape Plan.dwg	

LANDSCAPE SPECIFICATIONS

PART 1: GENERAL CONDITIONS

1.01 SCOPE:
A. The landscape contract includes the supplying and planting of all trees, shrubs, vines, and ground cover together with all necessary labor, equipment, tools and materials needed for the successful completion, execution and maintenance of the landscape plans.

1.02 AGENCY STANDARDS:
A. Grades and standards of plant materials to be used shall be true to name, size, condition and graded Florida #1 or better as stated in: Grades and Standards of Florida Plant Materials published by the State of Florida Department of Agriculture, Tallahassee, Florida.

1.03 SITE EXAMINATION:
A. The Landscape Contractor shall personally examine the site and fully acquaint him/herlself with all of the existing conditions in order that no mis-understanding may afterwards arise as to the character or extent of the work to be performed, and, additionally, in order to acquaint him/herself with all precautions to be taken in order to avoid injury to property or persons. No additional compensation will be granted because of any unusual difficulties which may be encountered in the execution or maintenance of any portion of the work.

1.04 ERRORS AND OMISSIONS:
A. The plant list is a part of the drawings and is furnished as a convenience. The plant list indicates the name, size and quantities of specific plant materials as called for and is located on the drawings. The Landscape Contractor is responsible for his/her own quantity count, and any discrepancy between drawings and plant list shall be considered as correct on the drawings.

B. The Landscape Contractor shall not take advantage of errors or omissions in the specifications or contract drawings. Full instruction will be given if such errors are discovered. Upon the discovery of any discrepancies in, or omissions from the drawings or documents, or should the Landscape Contractor be in doubt as to their meaning, the Landscape Architect shall be notified and will determine the actions necessary to each query.

C. If plans and specifications are found to disagree after the contract is awarded, the Landscape Architect shall be the judge as to which was intended.

1.05 EXECUTION OF THE WORK:
A. The Landscape Contractor shall have his labor crews controlled and directed by a Foreman well versed in plant materials, planting methods, reading plans, and coordination between job and nursery in order to execute installation correctly and in a timely manner.

B. The Landscape Contractor shall provide a competent English-speaking Foreman on the project at all times, who shall be fully authorized as the Contractor's agent on the work. The Foreman shall be capable of reading and thoroughly understanding the Plans, Specifications and other Contract Documents. If the Superintendent is deemed incompetent by the Landscape Architect, he (the superintendent) shall be immediately replaced.

C. The Landscape Contractor shall be available for any meetings with the Owner and/or Landscape Architect during implementation of the job. Any additional work or changes received as a result of failure to communicate with the Owner or Landscape Architect during implementation will be the responsibility of the Landscape Contractor.

1.06 PROTECTION OF PUBLIC AND PROPERTY:
A. The Landscape Contractor shall protect all materials and work against injury from any cause and shall provide and maintain all necessary safeguards for the protection of the public. He shall be held responsible for any damage or injury to persons or property which may occur as a result of his fault or negligence in the execution of the work, i.e. damage to underground pipes or cables.

1.07 CHANGES AND EXTRAS:
A. The Contractor shall not start work on any changes or "extras" in the project until a written agreement setting forth the adjusted prices has been executed by the Owner and the Contractor. Any work performed on changes or "extras" prior to execution of a written agreement may or may not be compensated for by the Owner at his discretion.

1.08 GUARANTEE:
The Landscape Contractor shall furnish a written guarantee warranting all materials, workmanship and plant materials, except sod, for a period of 18 MONTHS from the time of completion and acceptance by the Landscape Architect and Owner. Sod shall be guaranteed to 90 calendar days after acceptance by the Landscape Architect and Owner. All plant material shall be alive and in satisfactory condition and growth for each specific kind of plant at the end of the guarantee period. The guaranteeing of plant material shall be construed to mean complete and immediate replacement with plant material of the same variety, type, size, quality and grade as that of the originally specified material. During the guarantee period it shall be the Landscape Contractor's responsibility to immediately replace any dead or unhealthy material as determined by the Landscape Architect. The guarantee will be null and void if plant material is damaged by lightning, hurricane force winds, or any other acts of God, as well as vandalism or lack of proper maintenance.

B. At the end of the specified guarantee period, any plant required under this contract that is dead or not in satisfactory condition, as determined by the Landscape Architect, shall be replaced. The Landscape Contractor shall be responsible for the full replacement cost of plant materials for the first replacement and share subsequent replacement (s) costs equally with the Owner, should the replacement plant fail to survive.

1.09 CARE AND MAINTENANCE:
A. The Landscape Contractor shall be responsible for the care and maintenance of all plant materials and irrigation when applicable until final acceptance by the Owner or Landscape Architect.

B. The Owner agrees to execute the instructions for such care and maintenance.

1.10 SAFETY:
A. It shall be the responsibility of the Landscape Contractor to protect all persons from injury and to avoid property damage. Adequate warning devices shall be placed and maintained during the progress of the work.

B. It shall be the contractor's responsibility to conform to all local, state, and federal safety laws and codes including the Federal Occupational Safety And Health Act (O.S.H.A.).

1.11 CONTRACTOR QUALIFICATION:
A. The Owner may require the apparent contractor (s) to qualify him/herself to be a responsible entity by furnishing any or all of the following documentary data:
1. A financial statement showing assets and liabilities of the company current to date.
2. A listing of not less than (3) completed projects of similar scope and nature.
3. Permanent name and address of place of business.
4. The number of regular employees of the organization and length of time the organization has been in business under the present name.

1.12 INSURANCE AND BONDING:
A. The contractor (s) shall submit proof of insurance for this job for the time period that the work is done. The minimum amount of insurance shall be $300,000.00 per person and $300,000.00 per aggregate or as required by owner and agreed to in the contract. The successful bidder shall be required to have this coverage in effect before beginning work on the site.

B. The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

1.13 PERMITS AND CERTIFICATES:
A. All contractors shall secure and pay for all permits and certificates required for his/her class of work.

PART 2: MARTERIALS

2.01 PLANT MATERIALS:
A. A complete list of plants is shown on the drawings, including a schedule of quantities, sizes, and such other requirements deemed necessary. In the event discrepancies occur, the specifications on the drawings shall govern.

B. Substitutions: Substitutions of plant materials or changes in size or spacing of materials will be permitted ONLY upon written authorization by the Owner or the Landscape Architect. If plant material is not of sufficient size to meet applicable codes, a letter of variance from the appropriate agency must be obtained by the Contractor prior to issuance of any change order. If material of smaller size is to be accepted, the quantity of material shall be increased, at no additional cost to the Owner, to meet the intent of the drawings.

C. All plant materials shall have a habit of growth that is normal for the species and shall be healthy, vigorous and equal to or exceed the measurements specified in the plant list, which are the minimum acceptable sizes. Plants shall be measured before pruning with branches in normal position. Any necessary pruning shall be done at the time of planting.

D. All plant materials shall be nursery grown, unless otherwise noted, Florida #1 or better and shall comply with all required inspections, grading standards and plant regulations as set forth by the Florida Department of Agriculture's Grades and Standards for Nursery Plants, most current addition and Grades and Standards for Nursery Plants, most current addition.

E. Plants that do not have the normal balance of height and spread typical for the respective plant shall not be acceptable.

F. The Landscape Contractor shall install each plant to display its best side. Adjustments may be required if plants are not installed properly and/or approved by the Landscape Architect at no additional cost to owner.

2.02 INSPECTION

A. The Landscape Architect and Owner may inspect trees and shrubs at place of growth or at site before planting, for compliance with requirements for genus, species, variety, size and quality. The Landscape Architect and Owner retain the right to further inspect trees and shrubs for size and condition of balls and root systems, insects, injuries and latent defects, and to reject unsatisfactory or defective material at any time during progress of work. Rejected plant materials shall be immediately removed from project site.

2.03 PROTECTION OF PLANT MATERIALS:
A. Balled and burlapped plants (B & B) shall be dug with firm natural balls of earth of sufficient diameter and depth to encompass the fibrous and feeding root system necessary for full recovery of the plant. Balls shall be firmly wrapped with burlap similar materials and bound with cord, rope, or wire mesh. All collected plants shall be balled and burlapped.

B. Plants with broken, damaged or insufficient rootballs will be rejected.

C. All plant material shall be protected from possible bark injury or breakage of branches. All plants transported by open trucks shall be adequately covered to prevent windburn, drying or damage to plants.

D. Plants which cannot be planted immediately on delivery to the site shall be covered with moist soil, mulch or other protection from the drying of wind and sun. All plants shall be watered as necessary by the Landscape Contractor until planted.

2.04 STORAGE
A. All plant materials shall be stored on the site in designated areas, specified by the Landscape Architect or Owner's agent.

B. No plant material shall be stored longer than seventy-two (72) hours unless approved by Landscape Architect and/or owner.

C. The Landscape Architect reserves the right to reject any plant materials not in conformance with these specifications.

D. All rejected material shall be immediately removed from the site and replaced with acceptable material at no cost to the Owner.

2.05 PROTECTION DURING PLANTING:
A. Trees moved by winch or crane shall be thoroughly protected from chain marks, girdling or bark slippage by means of burlap, wood battens or other approved methods. Battens shall NOT be attached to the tree with nails

2.06 TOP SOIL:
A. Planting soil for all plantings shall consist of topsoil and be natural, friable, fertile, fine loamy soil possessing characteristics of representative topsoil in the vicinity of the project site that produces heavy growth. Topsoil shall have a PH range of 5.5-7.4, free from subsoil, weeds, litter, sods, clay, stones, stumps, roots, trash, herbicides, toxic substances, or any other material which may be harmful to plant growth, or hinder planting operations. Topsoil shall contain a minimum of 3% organic material. Topsoil must percolate water at a rate of 1" per hour (See also drainage testing detail for trees)

B. Landscape Area Preparation. The intent of this section is to ensure a healthy growing environment for all planting material in all landscaped areas. Landscape Contractor to examine existing soils prior to planting to ensure conformance to all definitions of "Topsoil" (seeLandscape Area Preparation Detail); In addition, a 3" layer of high organic (min 40%) potting soil shall be added to the topsoil and mixed in at time of planting. *East Coast Recycling Inc.* is a recommended source for imported Topsoil (if needed) as well as the top 3" layer of potting soil.

Existing soils must meet all definitions of 'Topsoil' as described above in all planting areas throughout the site. If existing soils do not meet all definitions of Topsoil, please refer to the 'Landscape Area Preparation' detail. Examination may require existing soils to be tested by an accredited testing laboratory. Should a soil test be necessary, Contractor shall contact soil testing lab directly to confirm such lab's soil collection and transmittal protocol; all costs if any shall be borne by the Contractor. Contractor shall provide to Landscape Architect for review the results of the soil test if conducted. Contractor shall schedule an on-site meeting with Landscape Architect to review existing and/or imported soils prior to planting. The Landscape Area Preparation is the responsibility of the Landscape Contractor. He/she shall except all responsibility of planting soils and shall honor all guarantee items in section 1.08.

Large tubs, wire baskets, grow bags, and balled and burlapped material shall have 1 tablet for each 1/2 inch of trunk diameter (measured 3 feet from ground) or for each foot of height or spread of larger shrub material. The Landscape Architect reserves the right to inspect and review the application of fertilizer.

2.08 MULCH:
A. Native pine straw mulch to be used for all landscape areas. Mulch material shall be clean, dry, free of weeds, seeds and pests, moistened at the time of application to prevent wind displacement. Cypress &/or Red mulch is prohibited.

B. All trees and shrub beds shall receive 3" mulch immediately after planting and thoroughly watered. Apply 2" max on tree & palm rootballs, keep 6" away from tree & palm trunks or as required by local jurisdiction.

PART 3 EXECUTION
3.01 DIGGING:
A. The Landscape Contractor shall exercise care in digging and other work so as not to damage existing work, including overhead wires, underground pipes and cables and the pipes and hydrants of watering systems. Should such overhead or underground obstructions be encountered which interfere with planting, the Owner shall be consulted and contractor will adjust the location of plants to clear such obstruction. The Contractor shall be responsible for the immediate repair of any damage caused by his work.

3.02 GRADING:
A. Grading for drainage, swales, etc. to within 4 inches of the finished grade to be provided by others.

B. It shall be the responsibility of the Landscape Contractor to provide the final grading during the course of landscape installation so as to bring sod and planting areas to their proper elevations in relation to walks, paving, drain structures, and other site conditions. The site grading plan must be checked prior to installation of sod to insure that drainage and other conditions will NOT be modified.

3.03 PLANTING:
A. Planting shall take place during favorable weather conditions.

B. The Contractor shall call for utility locates and ascertain the location of all utilities and easements so proper precautions can be taken not to damage or encroach on them.

C. Tree Planting shall be located where it is shown on the plan. No planting holes shall be dug until the proposed locations have been staked on the ground by the Contractor.

D. Excavation of holes shall extend to the required subgrades as specified on the planting diagrams located in the landscape plans. Plant pits shall be circular in outline and shall have a profile which conforms to the aforementioned "Tree and Shrub Planting Diagrams".

E. A representative number of planting pits (a minimum of one in every 25 feet throughout the entire site) shall be tested for proper drainage. See Landscape Details for complete testing methods and requirements.

F. Planting pits shall be excavated to the following dimensions and backfilled with Topsoil- see Landscape Area Preparation Detail;
1 Gallon material (1 gal.): 12" x 12" x 12" min.
3 Gallon material (3 gal.): 20" x 20" x 18" min.
Lerio material (7 gal.): 30" x 30" x 24" min.
Field grown material and trees: 1-1/2 times width of ball and depth of ball plus 12" min.

G. No planting or laying of sod shall be initiated until the area has been cleaned of existing sod or other plant materials, rough grass, weeds, debris, stones etc. and the ground has been brought to an even grade, with positive drainage away from buildings and towards drain inlets and swales and approved by Landscape Architect or owner's rep.

H. Each plant shall be planted in an individual hole as specified for trees, shrubs, and vines.

I. All plants shall be set to ultimate finished grade. No filling will be permitted around trunks or stems. All ropes, wire, stakes, etc., shall be removed from sides and top of the ball and removed from hole before filling in.

J. All flagging ribbon shall be removed from trees and shrubs before planting.

K. Excess excavation (fill) from all holes shall be removed from the site, at no additional expense to Owner.

3.04 PRUNING:
A. Remove dead and broken branches from all plant material. Prune to retain typical growth habit of individual plants with as much height and spread as possible in a manner which will preserve the plant's natural character.

B. Make all cuts with sharp instruments flush with trunk or adjacent branch, in such a manner as to insure elimination of stubs. Cuts made at right angles to line of growth will not be permitted.

C. Trees shall not be poled or topped.

D. Remove all trimming from site.

3.05 GUYING:

A. All trees over six (6') feet in height shall, immediately after setting to proper grade, be guyed with three sets of two strands, No. 12 gauge malleable galvanized iron, in tripod fashion. See Detail.

B. Wires shall not come in direct contact with the tree but shall be covered with an approved protection device at all contact points. Wires shall be fastened in such a manner as to avoid pulling crotches apart.

C. Stake & Brace all trees larger than 12' oa. See detail. Stakes shall be 2" x 2" lumber of sufficient length to satisfactorily support each tree.

D. Turnbuckles for guying trees shall be galvanized or cadmium plated and shall be of adequate size and strength to properly maintain tight guy wires.

3.06 WATER:
A. Each plant or tree shall be thoroughly watered in after planting. Watering of all newly installed plant materials shall be the responsibility of the Landscape Contractor until final acceptance by the Landscape Architect.

B. Prior to installing any irrigation system components, the contractor shall obtain a water sample from the proposed water supply and conduct a particle size and count analysis on the sample using the services of a reputable lab certified in such analysis. Submit the test results to the owner/owner's representative for review and approval. Do not proceed further with system installation until given written approval to do so.

3.07 SOD:
A. The Landscape Contractor shall sod all areas indicated on the drawings.

B. It shall be the responsibility of the Landscape Contractor to fine grade all landscape areas, eliminating all bumps, depressions, sticks, stones, and other debris.

C. The sod shall be firm, tough texture, having a compacted growth of grass with good root development. It shall contain no noxious weeds, or any other objectionable vegetation, fungus, insects, or disease. The soil embedded in the sod shall be good clean earth, free from stones and debris.

D. Before being cut and lifted, the sod shall have been mowed at least three times with a lawn mower, with the final mowing not more than seven days before the sod is cut. The sod shall be carefully cut into uniform dimensions.

E. 6-6-6 fertilizer with all trace elements is to be applied at the rate of 40 lbs. per 1,000 sq. ft. prior to laying sod.

F. Solid sod shall be laid with closely abutting, staggered joints with a tamped or rolled, even surface.

G. The finished level of all sod areas after settlement shall be one (1") inch below the top of abutting curbs, walks, paving and wood borders to allow for building turf.

H. If in the opinion of the Landscape Architect, top dressing is necessary after rolling, clean yellow sand will be evenly applied over the entire surface and thoroughly washed in.

3.09 CLEANING UP:
A. The contractor shall at all times keep the premises free from accumulations of waste materials or rubbish caused by his employees or work. He shall leave all paved areas "broom clean" when completed with his work.

3.10 MAINTENANCE:
A. Maintenance shall begin immediately after each plant is installed and shall continue until all planting has been accepted by the Owner or Landscape Architect. Maintenance shall include watering, weeding, removal of dead materials, resetting plants to proper grades or upright positions, spraying, restoration of planting saucer and/or any other necessary operations.

B. Proper protection to lawn areas shall be provided and any damage resulting from planting operations shall be repaired promptly.

C. Replacement of plants during the maintenance period shall be the responsibility of the Contractor, excluding vandalism or damage on the part of others, lighting, or hurricane force winds, until final acceptance.

D. In the event that weeds or other undesirable vegetation become prevalent, it shall be the Contractor's responsibility to remove them.

E. Trees or other plant material which fall or are blown over during the maintenance period will be reset by the Contractor at no additional expense to the Owner, the only exception being hurricane force winds.

3.11 COMPLETION, INSPECTION AND ACCEPTANCE:
A. Completion of the work shall mean the full and exact compliance and conformity with the provisions expressed or implied in the Drawings and in the Specifications, including the complete removal of all trash, debris, soil or other waste created by the Landscape Contractor.

B. Inspection of work to determine completion of contract, exclusive of the possible replacement of plants, will be made by the Owner and/or Landscape Architect at the conclusion of all planting and at the request of the Landscape Contractor.

C. All plant material shall be alive and in good growing condition for each specified kind of plant at the time of acceptance. The rating of each plant according to Florida Grades and Standards shall be equal to or better than that called for on the plans and in these Specifications at the time of final inspection and acceptance.

D. After inspection, the Landscape Contractor will be notified by the Owner of the acceptance of all plant material and workmanship, exclusive of the possible replacement of plants subject to guarantee.

E. All trees & shrubs shall be straight and in correct position per the landscape plans, details and specifications. All nursery, shipping and identification tags & ribbons shall be removed from trees & shrubs immediately after planting.

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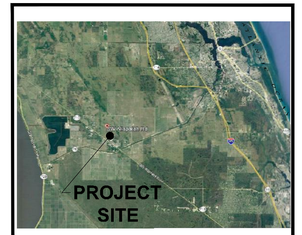

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FPL Sweetbay Solar Energy Center

Martin County, Florida

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REG. # 1018
Thomas P. Lucido

Designer	BW	Sheet
Manager	MC	5 OF 5
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Appendix H

Sweetbay Solar Energy Center Lake Management Plan

lucido&associates
Land Planning / Landscape Architecture

FPL SWEETBAY SOLAR ENERGY FACILITY

Lake Management Plan
October 1, 2018

The following Lake Management Plan is provided as an appendix to the Preserve Area Management Plan (PAMP) for the FPL Sweetbay Solar Energy Facility located east of SW Allapattah Road in Indiantown, Florida. It is provided pursuant to Section 4.348.B.7. of the Martin County Land Development Code and is intended to regulate the planting and maintenance of the required littoral and upland transition zone plantings associated with the approximately 5-acre borrow pit lake located in the southwest corner of the property.

Installation of Plant Material

The lake littoral zone and upland transition zone within and adjacent to the constructed lake shall be planted with the native plant materials identified on the approved landscape plans. The approved plans may not be revised without written permission from the Martin County Growth Management Department or their assigns.

To maximize habitat value, the littoral zone planting area has been expanded on the east side of the lake (adjacent to preserved wetland and upland buffer habitat) to cover a minimum of 50% of the lake perimeter. Except for plantings along the south bank of the lake, the upland transition zone requirement is met by the adjacent wetland buffer.

The proposed plant materials consist of a variety of native species that can easily adapt and thrive within the existing soil conditions and the proposed hydrological zones identified on the approved plan. Plantings shall be installed within 45 days of the completion of the lake excavation and grading of the slopes. Irrigation shall be supplied by a water truck or a temporary irrigation system will be utilized if necessary to ensure successful establishment of the plant materials. An environmental professional familiar with lake restoration ecology shall oversee the installation of all lake littoral and upland transition zone plants and conduct bi-annual monitoring for a minimum of 2 years following installation.

Maintenance of Littoral and Upland Transition Zone Areas

Littoral and upland transition zone planting areas as shown on the approved final site plan and landscape plans shall be kept free of nuisance and exotic vegetation as listed by the Florida Exotic Pest Plant Council. Exotic plant removal shall be conducted through manual removal or the selective application of appropriate herbicides. All herbicide application will be conducted under the supervision of a Florida Department of Agriculture (FDA) licensed applicator, licensed for the application of aquatic herbicides. All manual eradication will be conducted through hand clearing and non-native materials will be disposed of off-site. The criterion for eradication will be 100% removal of viable

701 S.E. Ocean Boulevard Stuart, Florida 34994
tel: 772.220.2100 fax: 772.223.0220 web: www.lucidodesign.com

exotic vegetation after the maintenance is performed. Exotic plant removal shall be conducted twice per year or as necessary to limit exotic plant coverage to no more than 5% between maintenance events. Transportation of exotic vegetation out of the maintenance area will be conducted in a fashion that minimizes the distribution of seeds.

The vegetative success criteria for the lake littoral and upland transition zones is 80% aerial coverage of desirable native vegetation by the end of the second year (after installation), 0% coverage with exotic vegetation, and 5% aerial coverage with nuisance species.

After installation and certification of compliance, it shall be unlawful to alter the approved slopes, contours, or cross sections or to chemically mechanically, or manually remove, damage, or destroy any desirable native plants in the littoral or upland transition zone buffer areas of constructed lakes except upon the written approval of the Growth Management Director, as applicable. It is the perpetual responsibility of the owner or property owners' association, its successors or assigns to maintain the required survivorship and coverage of the reclaimed upland and planted littoral and upland transition zone areas and to ensure ongoing removal of prohibited and invasive non-native plant species from these areas.

Water Management

To ensure the continued viability and health of the littoral and upland transition zone planting areas, the lake will be maintained at or near the control elevation prescribed in the Florida Department of Environmental Protection (FDEP) Environmental Resource Permit (ERP). As per Florida's Storm Water Regulatory Program, Best Management Practices (BMPs) will be employed both during and after construction to minimize erosion and sedimentation. Areas of the lake without littoral or upland transition zone plantings will be stabilized with grass sod, or seed and mulch, as applicable. The lake will be operated and maintained by the owner, its successor, or assigns in perpetuity and in accordance with the Environmental Resource Permit and this plan.