NATURAL RESOURCE EVALUATION

Florida Department of Transportation

District Seven

MCINTOSH ROAD FROM SOUTH OF US 92 TO NORTH OF I-4

Limits of Project: McIntosh Road from South of US 92 to North of I-4

Hillsborough County, Florida

Financial Management Number: 447157-1

ETDM Number: 14469

Date: August 2024

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by the Florida Department of Transportation (FDOT) pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated May 26, 2022 and executed by the Federal Highway Administration and FDOT.

McIntosh Road

From South of US 92 to North of I-4

Project Development & Environment (PD&E) Study

Natural Resource Evaluation

McIntosh Road from South of US 92 to North of I-4 PD&E Study

Hillsborough County, Florida

Work Program Item Segment No. 447157-1

ETDM Project No. 14469

Hillsborough County, Florida

Florida Department of Transportation

District Seven

In cooperation with

Hillsborough County, Public Works Department

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Prepared for:

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District Seven

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August 2024

EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) District 7 is conducting a Project Development and Environment (PD&E) study for the proposed 1.03-mile reconstruction of McIntosh Road from south of United States (US) Highway 92/State Road (SR) 600 to north of Interstate (I)-4. McIntosh Road is an undivided local rural roadway located in Hillsborough County, Florida. McIntosh Road is primarily a two-lane facility with unpaved flush shoulders and open drainage within the project limits. The proposed project improvements will include widening of McIntosh Road to provide a four-lane divided roadway with shared use path on both sides from south of US 92/SR 600 to north of I-4, with intersection improvements at the I-4 interchange. The I-4 ramps will be improved or given additional turn lanes that will be continued for a distance along the I-4 mainline. This segment of McIntosh Road is within the limits of a heavy freight corridor.

This Natural Resources Evaluation (NRE) was prepared to document the natural resources analysis performed to support decisions related to the evaluation of the project preferred alternative and to summarize potential impacts to wetlands, surface waters, federal and state protected species. Measures considered to avoid, minimize, and mitigate for potential impacts resulting from the proposed project are also discussed. This NRE was conducted in accordance with the FDOT *PD&E Manual* and State and Federal natural resources regulations. This report provides documentation of these processes to supplement the Type 2 Categorical Exclusion (CE).

Protected Species and Habitat

The project study area was evaluated for the presence of federal and state protected species and their suitable habitat in accordance with *50 Code of Federal Regulations (CFR) Part 402 of the Endangered Species Act of 1973 (ESA)*, as amended, *Chapter 5B-40 Florida Administrative Code (F.A.C.): Preservation of Native Flora of Florida, Chapter 68A-27 F.A.C.: Rules Relating to Endangered or Threatened Species*, and the FDOT PD&E Manual. Literature reviews, agency database searches, and field reviews were conducted to assess federal and state-protected species presence, their habitat, and designated critical habitat occurring or potentially occurring within the project study area. A total of 34 species (12 federally listed, 20 State listed, 1 federally protected, 1 State protected) were evaluated based on species ranges including Hillsborough County.

USFWS Critical Habitat

The study area was evaluated for Critical Habitat in accordance with *50 CFR 17* and the FDOT PD&E Manual. Review of the U.S. Fish and Wildlife Service's (USFWS) available geographic information system (GIS) data resulted in the identification of no Critical Habitat within the study area. Any future modifications to the project design are subject to revaluation of critical habitat in the area.

Potential Faunal Species Effect Determinations

Species	Common Name	State Status (FWC)	Federal Status (USFWS)	Effect Determination	Potential for Occurrence
REPTILES					
Drymarchon corais couperi	Eastern indigo snake	FT	T	MANLAA	Moderate
Pituophis melanoleucus mugitus	Florida pine snake	ST	--	No adverse effect anticipated	Low
Gopherus polyphemus	Gopher tortoise	ST	--	No adverse effect anticipated	Low
Lampropeltis extenuata	Short-tailed snake	ST	--	No adverse effect anticipated	Low
BIRDS					
Haematopus palliates	American oystercatcher	ST	--	No effect anticipated	None
Caracara cheriway	Audubon's crested caracara	FT	T	No effect	Low
Haliaeetus leucocephalus	Bald eagle[1]	--	--	--	Moderate
Rynchops niger	Black skimmer	ST	--	No effect anticipated	None
Laterallus jamaicensis jamaicensis	Eastern black rail	FT	T	No effect	None
Rostrhamus sociabilis plumbeus	Everglade snail kite	FE	E	No effect	None
Athene cunicularia	Florida burrowing owl	ST	--	No effect anticipated	None
Ammodramus savannarum floridanus	Florida grasshopper sparrow	FE	E	No effect	None
Antigone canadensis pratensis	Florida sandhill crane	ST	--	No adverse effect anticipated	Moderate
Aphelocoma coerulescens	Florida scrub jay	FT	T	No effect	None
Sternula antillarum	Least tern	ST	E*	No effect anticipated	None
Egretta caerulea	Little blue heron	ST	--	No adverse effect anticipated	Moderate
Egretta rufescens	Reddish egret	ST	--	No adverse effect anticipated	Moderate
Patalea ajaja	Roseate spoonbill	ST	--	No adverse effect anticipated	Moderate
Falco sparverius	Southeastern	ST	--	No effect anticipated	None

Species	Common Name	State Status (FWC)	Federal Status (USFWS)	Effect Determination	Potential for Occurrence
paulus	American kestrel				
Egretta tricolor	Tricolored heron	ST	--	No adverse effect anticipated	Moderate
Grus americana	Whooping crane	--	EXPN	No effect	Low
Mycteria americana	Wood stork	FT	T	MANLAA	Moderate
INSECTS					
Danaus plexippus	Monarch butterfly	--	C	--	Low
MAMMALS					
Ursus americanus floridanus	Florida black bear[2]	--	--	--	Low
Perimyotis subflavus	Tricolored bat	--	PE	--	Low

-- Not Listed; MANLAA: May Affect, Not Likely to Adversely Affect
C: Candidate Species, EXPN: Experimental population; Non-essential
E: Endangered in some states; FE: Federal Endangered; PE: Proposed Endangered; SE: State Endangered*
T: Threatened; FT: Federal Threatened; PT: Proposed Threatened; ST: State-Designated Threatened
[1] Protected under the Bald and Golden Eagles Protection Act (16 U.S.C. 668-668c)
[2] Protected under the Florida Black Bear Conservation Rule (68A-4.009, F.A.C.)

Potential Floral Species Effect Determinations

Species	Common Name	State Status (FWC)	Federal Status (USFWS)	Effect Determination	Potential for Occurrence
Matelea floridana	Florida spiny-pod	SE	--	No adverse effect anticipated	Low
Schizachyrium niveum	Pinescrub (scrub) bluestem	SE	--	No adverse effect anticipated	Low
Chionanthus pygmaeus	Pygmy fringe-tree	FE	E	No effect	Low
Zephyranthes simpsonii	Redmargin (Simpson's) zephyrlily	ST	--	No adverse effect anticipated	Low
Centrosema Arenicola	Sand butterfly-pea	SE	--	No adverse effect anticipated	Low
Lechea cernua	Scrub (nodding) pinweed	ST	--	No adverse effect anticipated	Low
Pecluma plumula	Swamp plume polypody	SE	--	No adverse effect anticipated	Low
Glandularia tampensis	Tampa mock vervain	SE	--	No adverse effect anticipated	Low

Species	Common Name	State Status (FWC)	Federal Status (USFWS)	Effect Determination	Potential for Occurrence
Thelypteris serrata	Toothed lattice-vein fern	SE	--	No adverse effect anticipated	Low

-- Not Listed; MANLAA: May Affect, Not Likely to Adversely Affect
C: Candidate Species, EXPN: Experimental population; Non-essential
E: Endangered in some states; FE: Federal Endangered; PE: Proposed Endangered; SE: State Endangered*
T: Threatened; FT: Federal Threatened; PT: Proposed Threatened; ST: State-Designated Threatened

Wetlands and Other Surface Waters

Pursuant to *Executive Order (EO) 11990*: *Protection of Wetlands* (May 1977), the US Department of Transportation (USDOT) developed a policy, USDOT *Order 5660.1A*: *Preservation of the Nation's Wetlands* (August 24, 1978), which requires all federally-funded highway projects to protect wetlands to the fullest extent possible. In accordance with this policy, and the FDOT PD&E Manual, the project preferred alternative was assessed to determine potential wetland impacts associated with its construction.

The boundaries of all wetlands and other surface waters within the study area were approximated using both a desktop and field review. Based on the evaluation completed, approximately 36.64 acres of wetlands and other surface waters occur within the study area. Of these 36.64 acres, 3.69 acres will be impacted by the roadway preferred alternative. Direct impact to wetlands accounts for only 1.63 acres with the rest being impacts to manufactured other surface waters.

Potential Wetland and Other Surface Waters Impacts

	Type of Wetland or Other Surface Water (NWI/USFWS)		Project Impact Acreage	Functional Loss
Project Totals	Palustrine Freshwater Forested Broad-Leaved Deciduous	PFO1	1.63	0.761
	Total Wetlands		1.63	0.761
	Palustrine Unconsolidated Bottom Excavated Surface Water	PUBx	0.40	--
	Seasonally Flooded Unconsolidated Bottom Excavated Surface Water	R4UBx	1.66	--
	Total Other Surface Water		2.06	
	Total Wetland and Surface Water Impact		3.69	0.761

Transportation safety standards for additional lanes and widths, side slopes, turn radius, clear zone, sight distance and stormwater treatment requirements necessitate these impacts. The habitat functions of impacted wetlands were quantitatively and qualitatively assessed using the

Uniform Mitigation Assessment Method (UMAM) as per *Chapter 62-345, F.A.C*. The roadway preferred alternative evaluation resulted in an estimated UMAM functional loss of 0.761 units.

Wetland impacts which will result from the construction of this project will be mitigated pursuant to *Section 373.4137, Florida Statutes (F.S.)*, to satisfy all mitigation requirements of *Part IV of Chapter 373, F.S.*, and *33 United States Code (U.S.C.) §1344*. Wetland mitigation options include purchase of wetland mitigation credits through an approved mitigation bank, or creation, restoration, or enhancement of wetlands within the project watersheds. The project anticipates using commercially available mitigation credits from agency-approved banks with an appropriate geographic service area to provide compensatory mitigation sufficient to offset unavoidable project impacts to wetlands and wetland-dependent species habitat. The mitigation banks within the Hillsborough River Basin include the Hillsborough River Mitigation Bank, Wiggins Prairie Mitigation Bank, Fox Branch Ranch, Two Rivers Mitigation Bank, and the North Tampa Mitigation Bank. Although credit availability among these banks will likely change in the time between this PD&E study's conclusion and the project's future environmental permitting efforts, sufficient mitigation credits are available to offset the impacts from the proposed improvements. The exact impact acreage and number of mitigation credits required to fully offset the lost value of functions resulting from the project's wetland impacts will be determined during the design phase and in coordination with the state and federal environmental permitting agencies. With compensatory mitigation completed within the same watershed where the impacts are incurred, the project will not result in cumulative impacts.

In accordance with *EO 11990: Protection of Wetlands* and *USDOT 5660.1A: Preservation of the Nation's Wetlands*, and based on the documentation of existing wetland conditions as presented in the NRE, and in consideration of the Preferred Alternative and its effects on wetlands, it is hereby determined that:

- Measures have been taken to minimize harm to wetlands. Wetland impacts are primarily being avoided and minimized. In order to do this, design variations for border width, median width, and/or side slopes are being sought.
- Through the implementation of compensatory mitigation, the proposed project will have no significant short-term or long-term adverse impacts to wetlands.
- There is no practicable alternative to construction in wetlands.

Essential Fish Habitat

This study was evaluated for EFH in accordance with the requirements of the Magnuson-Stevens Fishery Conservation and Management Act of 1996 (MSA) and the FDOT PD&E Manual. No EFH is located within the study area; therefore, there will be no involvement with EFH for this project.

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Acronyms

BGEPA	Bald and Golden Eagle Protection Act
BMPs	Best Management Practices
CFA	Core Foraging Area
CFR	Code of Federal Regulations
CRAS	Cultural Resource Assessment Survey
DOA	Department of Agriculture
DRA	Drainage Retention Area
EB	Eastbound
EFH	Essential Fish Habitat
EO	Executive Order
EPA	Environmental Protection Agency
ERP	Environmental Resource Permit
ESA	Endangered Species Act
EST	Environmental Screening Tool
ETAT	Environmental Technical Advisory Team
ETDM	Efficient Transportation Decision Making
F.A.C.	Florida Administrative Code
FDACS	Florida Department of Agriculture and Consumer Services
FDACS-DPI	Florida Department of Agriculture and Consumer Services Division of Plant Industry
FDEP	Florida Department of Environmental Protection
FDOA	Florida Department of Agriculture
FDOT	Florida Department of Transportation
FE	Federally Endangered
FLUCCS	Florida Land Use, Cover and Forms Classification System
FNAI	Florida Natural Areas Inventory
FNPS	Florida Native Plant Society

FPC	Floodplain Compensation Site
F.S.	Florida Statutes
FT	Federally Threatened
FWC	Florida Fish and Wildlife Conservation Commission
FY	Fiscal Year
GIS	Geographic Information System
HAPC	Habitat Areas of Particular Concern
IPaC	Information for Planning and Conservation
ISMP	Imperiled Species Management Plan
MANLAA	May Affect Not Likely to Adversely Affect
MB	Mitigation Bank
MBTA	Migratory Bird Treaty Act
MPH	Miles per Hour
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NB	Northbound
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
NRE	Natural Resources Evaluation
NWI	National Wetlands Inventory
OEM	Office of Environmental Management
OSW	Other Surface Waters
PD&E	Project Development and Environment
PED	Preliminary Environmental Discussion
PSSR	Programming Screen Summary Report
ROW	Right-of-Way
SFH	Suitable Foraging Habitat
SHCA	Strategic Habitat Conservation Areas

SMF	Stormwater Management Facility
SMU	Suburban Mixed Use
SSURGO	Soil Survey Geographic
ST	State Threatened
SWFWMD	Southwest Florida Water Management District
SWPPP	Stormwater Pollution Prevention Plan
TPO	Transportation Planning Organization
US 301	U.S. Highway 301
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USDA	United States Department of Agriculture
USDOT	U.S. Department of Transportation
UMAM	Uniform Mitigation Assessment Method
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
WB	Westbound
WL	Wetland

SECTION 1 INTRODUCTION

The objective of the Project Development and Environment (PD&E) study is to assist the Florida Department of Transportation's (FDOT) Office of Environmental Management (OEM) in reaching a decision on the type, location, and conceptual design of the proposed improvements for the widening of McIntosh Road. The PD&E study documents the need for the improvements as well as the procedures utilized to develop and evaluate various improvements, including elements such as proposed typical sections, preliminary horizontal alignments, and intersection enhancements. The PD&E study satisfies all applicable requirements, including the National Environmental Policy Act (NEPA), to qualify for federal-aid funding of subsequent development phases (design, right of way acquisition, and construction).

1.1 PROJECT DESCRIPTION

This project will reconstruct McIntosh Road to widen the roadway to accommodate future capacity needs including shared use paths on both sides from south of US 92 to north of I-4, and operational improvements at the I-4 interchange. McIntosh Road is a County Road and within the project area is currently a two-lane undivided facility functionally classified as an urban major collector. The posted and design speed along the corridor is 45 mph from the southern terminus to US 92. From US 92 to the northern terminus the posted and design speed is 40 mph. Five stormwater management facility (SMF) sites were identified as preferred, with one preferred site already existing. Additionally, five floodplain compensation (FPC) sites were identified as preferred.

This project was screened through the FDOT's Efficient Transportation Decision Making (ETDM) process as ETDM Project No. 14469. The ETDM Programming Screen Summary Report was published on October 15, 2021, containing comments from the Environmental Technical Advisory Team (ETAT) on the project's effects on various natural, physical, and social resources. A Type 2 Categorical Exclusion is the class of action for this PD&E study.

1.2 EXISTING FACILITY AND PROPOSED IMPROVEMENTS

1.2.1 Existing Facility

Within the project area, McIntosh Road is currently a two-lane undivided facility functionally classified as an urban major collector. The posted and design speed along the corridor is 45 mph from the southern terminus to US 92. From US 92 to the northern terminus the posted and design speed is 40 mph.

McIntosh Road is owned and maintained by Hillsborough County. The roadway has one 10-foot lane in each direction with turn lanes at major intersections. There are no shoulders or dedicated bicycle lanes. There is a 5-foot sidewalk in parts of the corridor such as outside of the Tampa East RV Park. Sidewalks that are present are generally between Gore Road and SR 600. The existing right-of-way (ROW) along McIntosh Road varies. At its narrowest, the ROW is 44 feet wide, but this widens out to more than 70 feet closer to the I-4 interchange. The existing typical section is

provided in **Figure 1-1**. There is one existing SMF within the project corridor, FDOT Pond 7, which lies between Muck Pond Road and I-4.

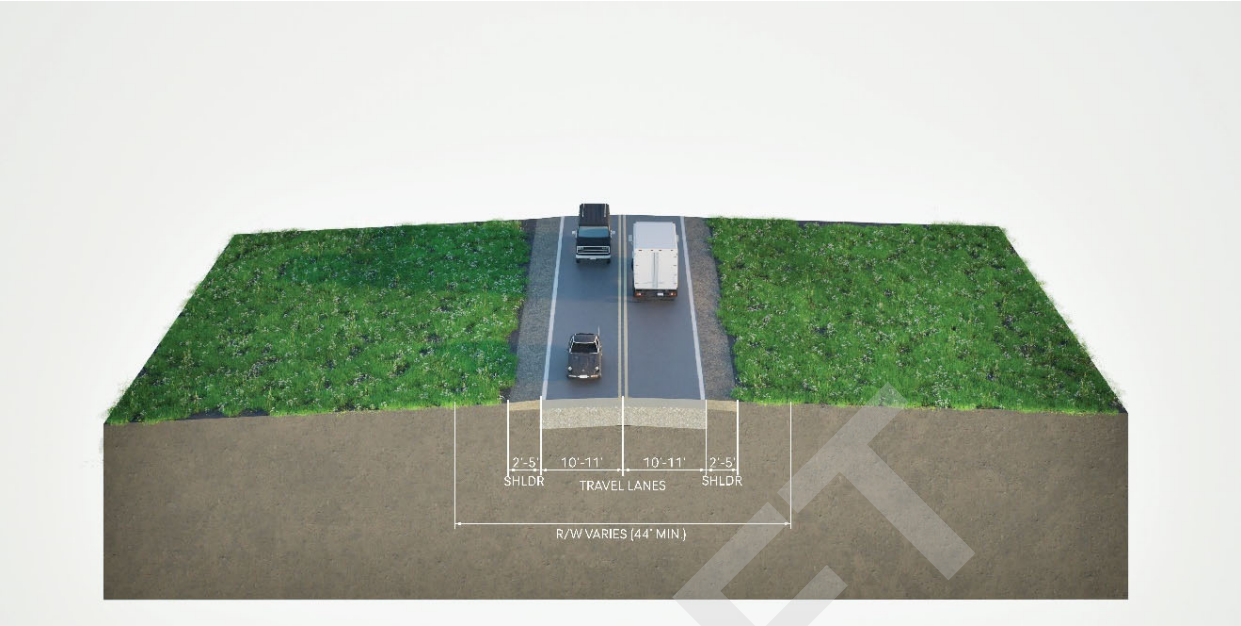

Figure 1-1 Existing Facility Typical Section

1.2.2 Proposed Improvements

The proposed typical section includes widening McIntosh Road to accommodate future capacity needs. Shared use paths are also proposed from south of US 92 to north of I-4, and operational improvements are proposed at the I-4 interchange.

The proposed alternative along McIntosh Road consists of a four-lane urban curb and gutter facility within 140-foot wide of ROW with a 35 mph design speed. There will be two (2) 11-foot wide travel lanes in each direction separated by a 22-foot wide raised median. A 10-foot wide shared use path is included in each direction. **Figure 1-2** shows the proposed typical section along McIntosh Road.

The proposed alternative includes ramp improvements at I-4 which tie into existing projects (FPID 446133-1, 441084-1 and 443319-1). The limits of the proposed improvements at the EB and WB ramps are from McIntosh Road to the gore areas of I-4, no changes are proposed on the I-4 mainline. The proposed improvements consist of adding turn lanes to each ramp which merge into the existing ramp lanes. Ramp improvements consist of one-way 12-foot wide travel lanes with a 12-foot wide outside shoulder (10-foot paved) and an 8-foot wide inside shoulder (4-foot paved). The EB and WB on-ramps are proposed to be two-lane, flush-shoulder ramps within a variable width (61-foot minimum) limited access ROW. The EB and WB off-ramps are proposed to be three-lane ramps within a limited access ROW that varies in width (51-foot minimum).

Conceptual design plans can be found in **Appendix L** for more details.

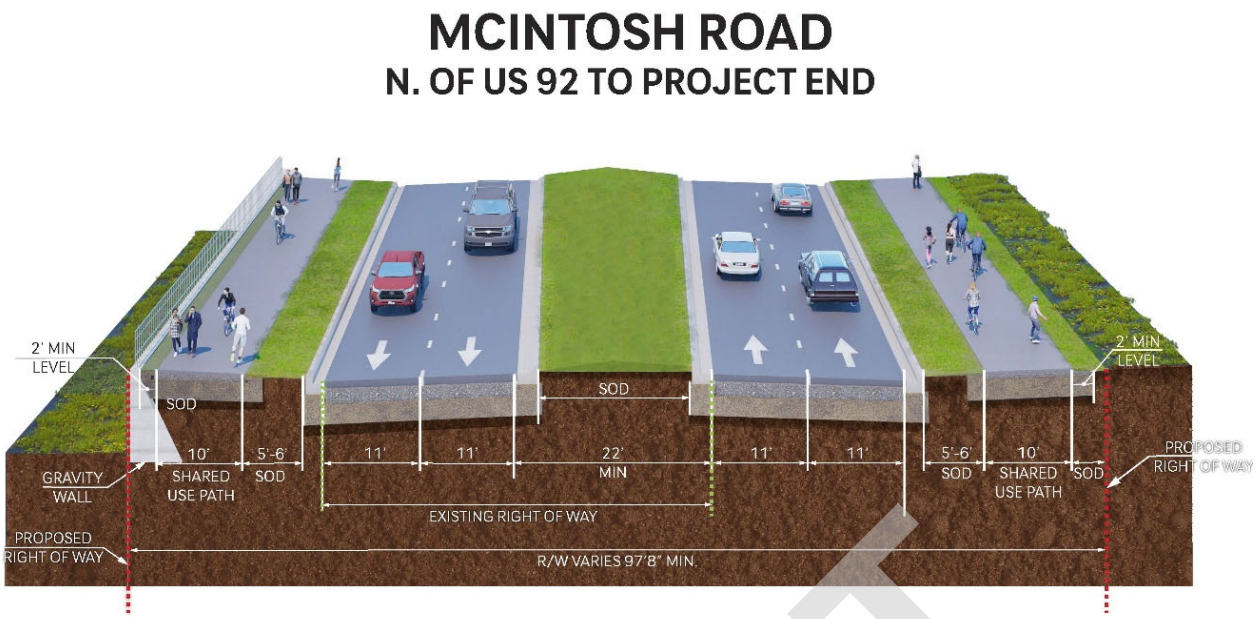

Figure 1-2 Proposed McIntosh Road Typical Section

1.2.3 Preferred Pond Sites and Floodplain Compensation Sites

In the proposed condition, roadway runoff will be collected via closed storm sewer systems and treated in offsite SMFs. The required water quality treatment and water quantity attenuation will be met via the construction of offsite detention SMFs which will require the acquisition of additional ROW. Due to the high groundwater table in the area, the SMFs will be wet detention ponds. The existing condition was comprised of six drainage basins; however, it was necessary to combine Basins 1 and 7 to reduce the number of pond sites since both basins discharge to Baker Creek Tributary 2. Therefore, the proposed condition will have five basins. Each basin will be treated in a separate pond for a total of five ponds. As part of the PD&E process ten SMFs have been identified as alternatives for this project: two for Basins 1-3, one for Basin 4, and three for Basin 5.

FPC sites are used to offset functional loss to wetlands or other important waterways in a project area. After review of the FPC Site 1, FPC 1-1 was chosen as the only viable alternative and its size has increased based in updated SHGW elevations. At FPC Site 2, FPC 2-1 is the preferred alternative based on lower costs, less contamination risk, and fewer relocations. At FPC Site 3, FPC 3-2 was recommended as the preferred alternative based on lower ROW costs and similar contamination risk and potential species impacts to other options. At FPC Site 4, FPC 4-1 will be the preferred and only viable alternative. At FPC Site 5, FPC 5-1 is recommended as the preferred based on lower cost and fewer relocations. Overview maps included in **Appendix C** and detailed mapping of all SMF and FPC sites are included in **Appendix M**.

1.3 REPORT PURPOSE

This *Natural Resources Evaluation* (NRE) documents existing federal and state listed and protected faunal and floral species resources and habitat types found within the study area, and the potential for occurrences of these species and their suitable habitat, in accordance with *50 CFR Part 402 of the ESA*, as amended, *Chapters 5B-40 and 68A-27, F.A.C.*, and the FDOT *PD&E Manual*. Potential impacts to protected habitats that may support these species are also addressed in this report.

This report also documents the proposed project's involvement with wetlands and other surface waters. Pursuant to Presidential *EO 11990*: *Protection of Wetlands*, (May 1977) the U.S. Department of Transportation (USDOT) has developed a policy, *USDOT Order 5660.1A*: *Preservation of the Nation's Wetlands*, (August 24, 1978), which requires all federally funded highway projects to protect wetlands to the fullest extent possible. In accordance with this policy, as well as the FDOT *PD&E Manual* a No-Build and Preferred Alternative were assessed to determine potential impacts to wetlands and other surface waters associated with each alternative.

1.4 STUDY AREA

The project study area includes a buffer of 500 feet from the centerline of McIntosh Road and the footprint of preferred SMFs and FPC sites. The limit of disturbance for the proposed improvements, including the preferred SMFs and FPC sites, is referred to as the project action area, as defined by *50 CFR §402.02,* for all listed species analysis throughout the report.

The project extends from approximately where McIntosh Road crosses Baker Creek to approximately 1000 feet south of the US-92/McIntosh Road intersection including the on-ramps for I-4 and additional extents of approximately 300 feet east and west along US-92 at the McIntosh Road intersection. The project study area is relatively rural with a majority of the land uses consisting of low density residential, commercial properties along McIntosh Road, and uplands. The following sections discuss the land uses/cover types and soil present within the project study area. The project study area is shown in **Figure 1-3**.

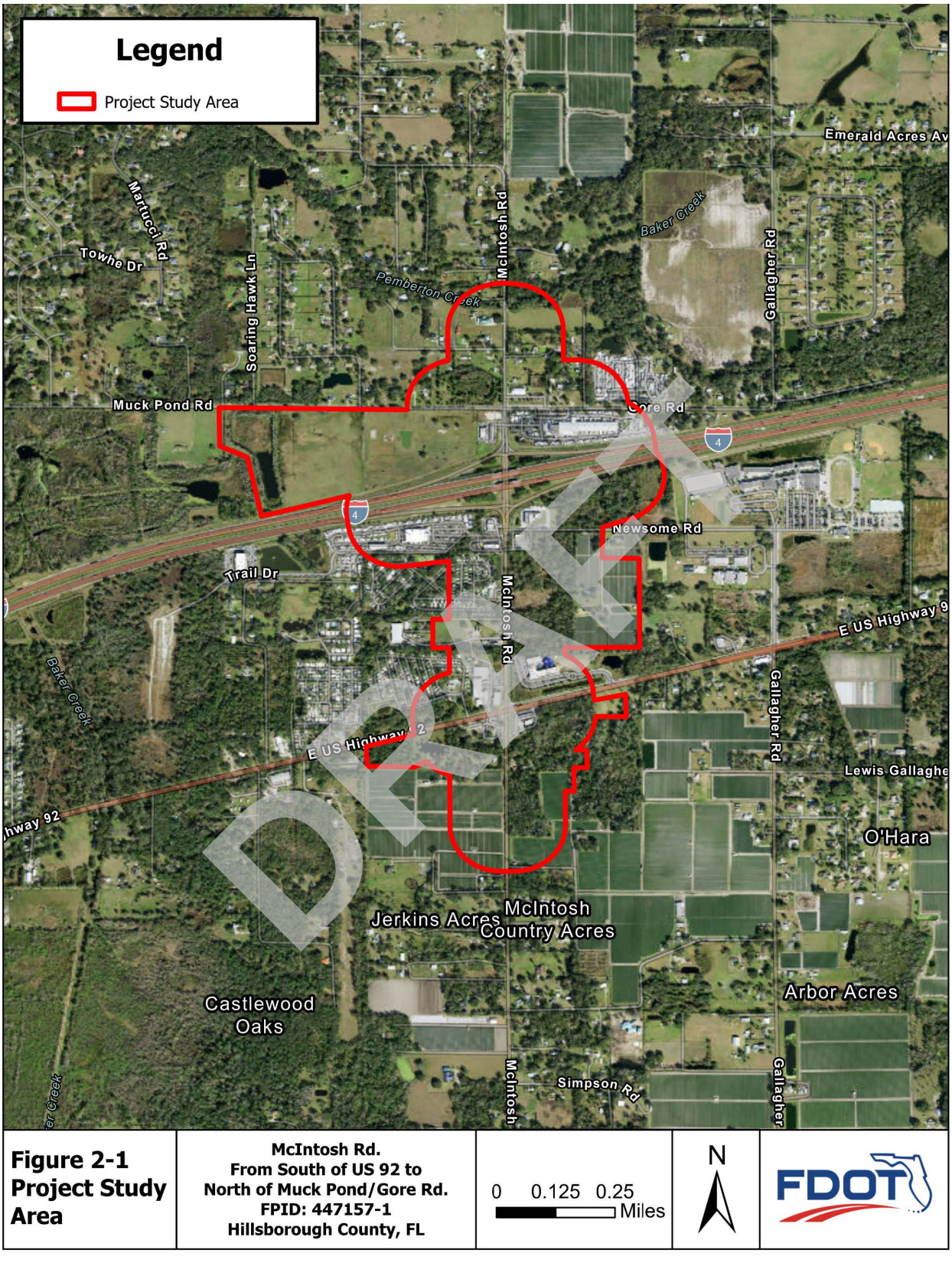

Figure 1-3 Project Study Area

SECTION 2 EXISTING CONDITIONS

The project extends from approximately where McIntosh Road crosses Baker Creek to approximately 1000 feet south of the US-92/McIntosh Road intersection including the on-ramps for I-4 and additional extents of approximately 300 feet east and west along US-92 at the McIntosh Road intersection. The project study area is relatively rural with a majority of the land uses consisting of low density residential, commercial properties along McIntosh Road, and uplands. The following sections discuss the land uses/cover types and soil present within the project study area.

2.1 EXISTING LAND USE

Existing land use and vegetative cover types within the project study area were evaluated and quantified using the Florida Land Use, Cover, and Forms Classification System (FLUCCS) data (SWFWMD 2024, FDOT 1999). The approximate land use boundaries were referenced onto true color aerial imagery using ArcGIS Pro 3.1.1 software. The land uses and habitat types were noted during the field visit on January 11, 2024. The land use and cover types are shown in **Table 2-1** and **Appendix A**. A brief description of each land use and cover type is in the following subsection.

The study area, located in Hillsborough County is mostly developed as Commercial and Services (Florida Land Use Cover and Forms Classification System [FLUCCS] 1400), Transportation (FLUCCS 8100), and Residential Low Density (FLUCCS 1100).

Table 2-1 Land Use and Cover within Project Study Area

Land Use or Cover Type	FLUCCS Code[1]	Total Acres	Percent of Study Area
Uplands and Developed Lands			
Residential Low Density	1100	34.91	11.42
Residential High Density	1300	15.26	4.99
Commercial and Services	1400	56.61	18.51
Industrial	1500	12.75	4.17
Institutional	1700	1.28	0.42
Open Land	1900	3.78	1.24
Cropland and Pastureland	2100	59.23	19.37
Row Crops	2140	32.12	10.50
Nurseries and Vineyards	2400	0.28	0.09
Upland Hardwood – Coniferous Mix	4340	20.79	6.80
Transportation	8100	30.45	9.96
Uplands Sub-Totals		*267.46*	*87.46*
Wetlands and Other Surface Waters			
Reservoirs	5300	4.29	1.40
Stream and Lake Swamps (Bottomland)	6150	26.57	8.69
Vegetated Non-Forested Wetlands	6400	1.89	0.62
Freshwater Marshes	6410	3.14	1.03
Emergent Aquatic Vegetation	6440	2.46	0.80
Wetlands Sub-Totals		*38.35*	*12.54*
	Total	**305.81**	

(FDOT 1999, SWFWMD 2014)

2.1.1 EXISTING UPLAND HABITATS

Land uses that cover more than ten percent of the study area include Commercial and Services (FLUCCS 1400), Transportation (8100), Residential Low Density (FLUCCS 1100), Row Crops (FLUCCS 2140) and Cropland and Pastureland (FLUCCS 2100). The upland communities are classified according to FLUCCS. Field reviews confirmed vegetation community types and the presence or potential for occurrence of protected plant and wildlife species. The major upland communities identified within and directly adjacent to the project study area are described below.

Open Land (FLUCCS 190)

These land use types include undeveloped land and inactive land with street patterns but without structures found within urban areas. These areas were generally cleared of canopy and shrub species and maintained low growing forbs and grass species. The species include but are not limited to, Bahia grass (*Paspalum notatum var. saurae)*, switch grass (*Panicum virgatum*), and broomsedge (*Andropogon spp.*). This land use type likely provides habitat for the state listed southeastern American kestrel (*Falco sparverius paulus*) and grazing areas for the state listed gopher tortoise (*Gopherus polyphemus*).

Urban and Built-Up (FLUCCS 100 Series)

Urban and Built-up land consists of "areas of intensive use with much of the land occupied by man-made structures," including residential, commercial, recreational, industrial, and institutional developments (FDOT 1999). Urban and built-up land uses within the study area account for 120.81 acres (approximately 39.5% of the study area) and transportation uses account for 30.45 acres (about 9.96% of the study area). These land uses generally do not provide suitable habitat for protected species.

Agriculture (FLUCCS 200 Series)

Agricultural lands are those which provide crops or livestock. Cropland and Pastureland (FLUCCS 2100) and Row Crops (FLUCCS 2140) are the agricultural land uses that occur within the project study area.

Cropland and Pastureland is the most common land use within the project study area accounting for 29.96% of the study area covering 91.63 acres. This land use occurs only in the northwest portion of the project study area. Within the project study area, these lands are typically treeless and contain upland grass species such as Bahia grass (*Paspalum notatum*), Bermuda grass (*Cynodon dactylon*), vaseygrass (*Paspalum urvellei*), smutgrass (*Sprorobolus indicus*), Johnson grass (*Sorghum halepense*), St. Augustine grass (*Stenotaphrum secundatum*) and various upland sedges (*Carex sp.*) as they are primarily used for grazing cattle, goats, horses, and other livestock species. These lands occasionally include individuals of live oak (*Quercus virginiana*), slash pine (*Pinus elliottii*), and cabbage palm (*Sabal palmetto*).

Row Crops occur in one location in the southwest of the project study area. This land use is characterized by fruit and vegetable crops that include strawberries. Row Crops are actively maintained and managed. This area totals 32.12 acres (10.50% of the project study area). It contains dirt driveways and, at the time of the field visit, rows of strawberry plants.

Upland Forests (FLUCCS 400 Series)

Upland Forests are areas which support a tree canopy closure of at least ten percent. Upland Forests within the study area consist only of Upland Hardwood – Coniferous Mix (FLUCCS 4340).

Upland Hardwood – Coniferous Mix totals 20.79 acres (6.80% of the project study area). This cover type is typically found in uncleared/unmaintained areas adjacent to pasture, planted pine, and residential areas. The largest contiguous area of this cover type is located east of the intersection of US-92 and McIntosh Road as well as east of the strawberry row crops along McIntosh Road. The canopy of these areas is typically dominated by slash pine and live oak, typically resembling an oak hammock with few midstory species. Understory species typically include caesarweed (*Urena lobata*), sweet gum (*Liquidambar styraciflua*), elderberry (*Sambucus nigra*), philodendron (*Philodendron Schott*), ardisia (*Ardisia japonica*) and cat briar (*Smilax glauca*). In moister conditions, red maple (*Acer rubrum*) was also observed.

Hardwood Coniferous Mix (FLUCCS 434)

Hardwood conifer mixed forests consist of well-developed, closed canopy forests dominated by deciduous and evergreen hardwood trees, mixed with conifer trees, on mesic soils with gently sloping terrain in areas sheltered from fire. This community type contains a diverse assemblage of deciduous and evergreen species in the canopy and mid-story, shade tolerant shrubs and sparse ground cover. Observed canopy species include southern live oak (*Quercus virginiana*), laurel oak *(Quercus laurifolia)*, and longleaf pine (*Pinus palustris*). Observed mid-story species include saw palmetto *(Serenoa repens)* and cabbage palm. Gallberry (*Ilex glabra*), winged sumac (*Rhus copallinum*), pawpaw (*Asimina triloba*), bracken fern (*Pteridium* spp.) and wiregrass (*Aristida stricta*) characterize the understory. No listed or protected species were observed within this land use type; however, this land use type provides potential habitat for the eastern indigo snake *(Drymarchon couperi)*, Florida black bear *(Ursus americanus floridanus)*, and potential nesting for the bald eagle (*Haliaeetus leucocephalus*).

Transportation, Communication, and Utilities (FLUCCS 800 Series)

Within the project study area, Transportation, Communication, and Utilities land uses consist only of Roads and Highways (FLUCCS 810). Roads and Highways account for 30.45 acres (9.96% of the project study area). The Roads and Highways land use includes the entire existing ROW of I-4 within the project study area. This land use does not include areas where wetlands or other surface waters occur within roadway ROW.

2.1.2 EXISTING WETLAND AND OTHER SURFACE WATER HABITATS

Wetlands and other surface waters were identified adjacent to or within the ROW, as well as all SMF and FPC sites evaluated, **Table 2-2**. The majority of the wetlands are forested systems consisting of Bottomlands (FLUCCS 6440). Wetlands and other surface waters that have the potential to be impacted by the proposed project improvements have been classified by the FLUCCS codes as well as the USFWS's Wetlands and Deepwater Habitats Classifications. Representative site photographs can be found in **Appendix B**, and a detailed wetland and other surface water map depicting the anticipated impacts, which includes the preferred SMF and FPC sites, can be found in **Appendix C**.

Table 2-2 Existing Wetlands within Project Study Area

Land Use or Cover Type	FLUCCS Code	Total Acres	Percent of Study Area
Reservoirs	5300	4.29	1.40
Stream and Lake Swamps (Bottomland)	6150	26.57	8.69
Vegetated Non-Forested Wetlands	6400	1.89	0.62
Freshwater Marshes	6410	3.14	1.03
Emergent Aquatic Vegetation	6440	2.46	0.80
Wetlands Totals		*38.35*	*12.54*

Reservoirs (FLUCCS 530)

Palustrine Unconsolidated Bottom Seasonally Flooded Excavated (PUBHx) and Palustrine Aquatic Bed Seasonally Flooded Excavated (PABHx)

This category of other surface water habitat consists of permanently flooded, excavated depressions for the purpose of storing water during floods, stormwater management, or the rainy season within the study area. Vegetation within these areas typically consists of water lily *(Nymphaea spp.)* and torpedo grass *(Panicum repens)*. No listed or protected species were observed in this habitat type during the field review; however, it may provide foraging habitat for the wood stork and other state listed wading birds.

Stream and Lake Swamps (Bottomland) (FLUCCS 615)

Palustrine Freshwater Forested Broad-Leaved Deciduous Seasonally Flooded (PFO1C)

Bottomlands or stream hardwoods are usually found on but not restricted to rivers, creeks, lake floodplain or overflow areas. This category has a wide variety of predominantly hardwood species of which include but are not limited to red maple, river birch, water oak, sweet gum *(Liquidambar styraciflua)*, willows *(Salix spp.)*, tupelos *(Nyssa spp.)*, water hickory *(Carya aquatica)*, bays *(Gordonia lasianthus, Magnolia spp., Persea spp.)*, water ash *(Fraxinus caroliniana)*, and buttonbush *(Cephalanthus occidentalis)*. Associated species include cypress *(Taxodium spp.)*, slash pine *(Pinus elliottii)* and loblolly pine *(Pinus taeda)*. Wetlands (WL) 2 through 8 are classified under this land use type. No listed or protected species were observed in this habitat type during

field reviews; however, it may provide foraging habitat for the wood stork and other state listed wading birds.

Freshwater Marsh (FLUCCS 641)

Palustrine Emergent Persistent (PEM1)

Freshwater marshes are vegetated herbaceous wetlands with no tree cover and minimal to no shrubs; however, many freshwater marshes can be surrounded by forested or scrub-shrub wetlands and/or uplands. These communities are usually confined to relatively level, low-lying areas. Freshwater marshes are usually dominated by one or more emergent vegetation species. Vegetation within the freshwater marsh systems typically include Carolina willow *(Salix caroliniana)*, pickerelweed (*Pontederia cordata*), arrowhead (*Sagittaria lancifolia*), Brazilian pepper, red ludwigia (*Ludwigia repens*), spadeleaf (*Centella asiatica*), Soft rush (*Juncus effusus*), duckweed (*Lemna spp.*), and water lily (*Nymphaea* spp.) Wetland (WL) 1 is classified under this land use type. This land use type within the study area may provide potential habitat for the federally listed wood stork *(Mycteria americana)* as well as other state listed wading birds.

Emergent Aquatic Vegetation (FLUCCS 644)

Emergent aquatic vegetation includes both floating vegetation and vegetation found partially or completely above the surface of the water. Some species in this series may include water lettuce (*Pistia stratiotes*), spatterdock (*Nuphar sp.*), water hyacinth (*Lemna sp.*), water lily (*Nympaeacea*), among others. This land cover typically occurs within stormwater ponds within the project study area.

2.2 SOILS

The US Department of Agriculture (DOA), Natural Resources Conservation Service (NRCS) Soil Survey Geographic (SSURGO) Database for Florida (2021) was reviewed to identify local soil types within the study area, especially hydric soils for the purposes of assessing wetland boundaries. Although a soil may be listed as hydric based on hydric soil criteria, nullifying factors include the inclusion of other non-hydric soil types, drainage activities and landscape position. Hydric soil identifications will be finalized during the permitting and design stage of this project. **Table 2-3** lists and details the total area of the soils map units present within the study area. Maps depicting the soil series within the study area are provided in **Appendix D**.

Basinger Holopaw, and Samsula soils, depressional *(Hydric)* (5) – This soil is nearly level and very poorly drained. These soils exist in swamps and depressions on the flatwoods. Characteristically, these soils are frequently ponded for long periods. In most years, these undrained soils are ponded for about six months. The natural vegetation consists of cypress *(Taxodium spp.)*, with an understory includes bluestem, maidencane *(Panicum hemitomon)*, Jamaica sawgrass *(Cladium mariscus spp. Jamaicense)*, and cutgrass *(Leersia spp.)*.

Table 2-3 Project Soils Series

Soil Series Name	Hydric Rating	Total Acres	Percent of Study Area
Basinger, Holopaw, and Samsula soils, depressional	Hydric	26.98	8.82
Immokalee fine sand, 0 to 2 percent slopes	Non-Hydric	17.43	5.70
Malabar fine sand, 0 to 2 percent slopes	Hydric	7.82	2.56
Myakka fine sand, 0 to 2 percent slopes	Non-Hydric	182.28	5.96
Ona fine sand, 0 to 2 percent slopes	Non-Hydric	16.01	5.24
Paisley fine sand, depressional	Hydric	13.00	4.25
Seffner fine sand, 0 to 2 percent slopes	Non-Hydric	17.11	5.59
St. Johns fine sand	Hydric	20.92	6.84
Winder fine sand, frequently flooded	Hydric	4.28	1.40
Total		**305.81**	
Hydric Soils Sub-Total		*232.82*	*76.13*
Non-Hydric Soils Sub-Total		*73.00*	*23.87*

Immokalee fine sand, 0 to 2 percent slopes (*Hydric*) – This soil is nearly level and very poorly drained. This soil series exists in sandy flatwoods and hammocks. Characteristically, these soils are very rarely flooded or ponded. The water table is below a depth of 6 to 18 inches. Natural vegetation consists of saw palmetto, gallberry, and wax myrtle *(Morella cerifera)*. **Malabar fine sand, 0 to 2 percent slopes (*Hydric*) –** This soil is nearly level and very poorly drained. This soil series exists in isolated sandy freshwater marshes and swamps. Characteristically, these soils are very rarely flooded or ponded. The water table is below a depth of 3 to 18 inches. Natural vegetation consists of wax myrtle, cabbage palm, and maidencane.

Myakka fine sand, 0 to 5 percent slopes (29) – This soil is nearly level to gently sloping on poorly drained soils. This soil has a moderate to high available water capacity in the upper six inches. The water table is below a depth of 6 to 18 inches. Natural vegetation consists of longleaf pine *(Pinus palustris)* and slash pine *(Pinus elliottii)*. The understory includes gallberry *(Ilex glabra)*, running oak *(Quercus pumila)*, saw palmetto, pineland three-awn *(Aristida stricta)* and wax myrtle.

Ona fine sand, 0 to 2 percent slopes – This soil is nearly level and very poorly drained. This soil series exists in sandy flatwoods and hammocks. Characteristically, these soils are very rarely flooded or ponded. The water table is below a depth of 6 to 18 inches. **Paisley fine sand, depressional –** This soil is nearly level and very poorly drained. This soil series exists in loamy and clayey freshwater isolated marshes and swamps. Characteristically, these soils are frequently ponded. Natural vegetation consists of wax myrtle, cabbage palm, and maidencane.

Seffner fine sand, 0 to 2 percent slopes (*Hydric*) – This soil is nearly level and somewhat poorly drained. This soil series exists on sandy soils on rises and knolls of mesic uplands. Characteristically, these soils are very rarely flooded or ponded. The water table is below a depth

of 18 to 42 inches. Natural vegetation consists of laurel oak, saw palmetto, and low panicums (*Panicum spp.*).

St. Johns fine sand (*Hydric*) – This soil is nearly level and poorly drained. This soil series exists in sandy freshwater isolated marshes and swamps. Characteristically, these soils are very rarely flooded or ponded. The water table is below a depth of 0 to 12 inches. Natural vegetation consists of saw palmetto, gallberry, and wax myrtle *(Morella cerifera)*.

Winder fine sand, frequently flooded (*Hydric*) (60) – This soil is nearly level and poorly drained. This soil exists on floodplains and may become flooded for long periods of time after intense rain. In most years, a seasonal high-water table fluctuates from the soil surface to a depth of about 10 inches for 2 to 6 months. Permeability is rapid in the surface and subsurface layers, slow or very slow in the subsoil, and rapid in the substratum. The available water capacity is moderate. In most areas, this Winder soil has been left idle in natural vegetation but has been observed in pasture use. The natural vegetation consists of Carolina willow (*Salix caroliniana*), red maple (*Acer rubrum*), cabbage palm (*Sabal palmetto*), and sweetgum (*Liquidambar styraciflua*).

2.3 PRESERVATION AREAS

No preservation areas are present within the project study area.

SECTION 3 PROTECTED SPECIES AND HABITAT

Federally-listed species are afforded protections under the Endangered Species Act of 1973, as amended, falling under the jurisdiction of the USFWS and National Marine Fisheries Service (NMFS). Within the state of Florida, federally-listed species are also afforded protection under *Chapter 68A-27, F.A.C.*, along with state-listed species. In Florida, state-protected animal species are under the jurisdiction of the Florida Fish and Wildlife Conservation Commission (FWC) while state-protected plant species are under the jurisdiction of the Florida Department of Agriculture and Consumer Services (FDACS) under *Rule 5B-40 F.A.C.* Additionally, in 2010, the FWC established an imperiled species rule which states that all species listed by the USFWS and the NMFS that occur within Florida are also included on the Florida Endangered and Threatened Species List as Federally-designated Endangered, Federally-designated Threatened, Federally-designated Due to Similarity of Appearance, or Federally-designated Non-Essential Experimental population species. The analysis of protected species occurring within the project area is consistent with the FDOT's PD&E Manual.

3.1 METHODOLOGY AND ASSESSMENT

Literature reviews, agency database searches, and preliminary field reviews were conducted to document the potential presence of federal and state-protected species, their habitat and critical habitat within the study area. Information sources and databases included the following and others as provided in References Section 8 of this report:

- Audubon Florida EagleWatch Nest Application (2023)
- Cornell Lab of Ornithology eBird Database (2023)
- Environmental Systems Research Institute (ESRI) World Imagery (ESRI 2022)
- ETDM Project #14469, Programming Screen Summary Report (PSSR), published 10/15/2021.
- FDACS Species Lists (2024)
- FDOT ETDM Environmental Screening Tool (EST) (ETDM 2021b)
- Florida Fish and Wildlife Conservation Commission (FWC) GIS Database(s)Florida Geographic Data Library (FGDL)
- Florida Geographic Information Office (FGIO)
- Florida Natural Areas Inventory (FNAI) Biodiversity Matrix (2024) (Appendix C)
- FNAI GIS Database(s)
- FWC Species Lists and Datasets (2024)

- FWC Strategic Habitat Conservation Areas (SHCA) (1994)
- Google Earth (2024)
- USFWS National Wetlands Inventory (NWI) GIS Data
- USFWS Species Lists and Datasets (2024) NRCS SSURGO Database (NRCS 2021, 2023)
- Soil Survey of Hillsborough County, Florida
- USFWS Critical Habitat for Threatened and Endangered Species
- USFWS GIS Database(s)
- USFWS Information for Planning and Conservation (IPaC)
- USFWS Species Lists and Datasets (2024)
- USFWS Wood Stork Colony Core Foraging Areas (CFA) 2010-2019 (15-mile radius)
- Southwest Florida Water Management District (SWFWMD) GIS Data

Based on the results of database searches and review of aerial photographs, field survey methods for specific habitat types and lists of target species were developed.

Field reconnaissance of the study area was conducted January 11, 2024. These efforts were conducted by a qualified field biologist and included pedestrian surveys of habitats within the study area. During these field reviews, areas of habitat were visually inspected for vegetative type and cover, level of disturbance, management techniques, and overall suitability to support protected species and general wildlife. A list of potentially occurring protected species was developed and each species was assigned a potential for occurrence of none, low, moderate, or high within habitats found in the study area. **Table 3-1** lists the federal and state protected wildlife and plant species as well as each species' potential for occurrence within the study area. Summary effect determinations area also provided for each species within this table.

None – Species is known to occur in Hillsborough County, no suitable habitat is present in the project action area and/or immediately adjacent areas, historic recorded occurrences were not indicated in the study area, surveys have confirmed a lack of presence, and/or the species is precluded from the area based on its habitat preferences or life history.

Low – Species is known to occur in Hillsborough County or the bioregion, but suitable habitat is limited within the study area, or the species is rare or has been extirpated.

Moderate – Species is known to occur in Hillsborough County or nearby counties, and for which suitable habitat is well represented within the study area, but no observations or positive indications exist to verify their presence.

High – Species is suspected within the study area based on known ranges and existence of sufficient suitable habitat within the vicinity of the project; known to occur adjacent to the study area; have been observed; or have been previously observed or documented in the vicinity.

The project study area does not extend into salt or brackish waterways of Hillsborough County. USFWS IPaC identified possible habitat in Hillsborough County for: the West Indian manatee (*Trichechus manatus*), hawksbill sea turtle (*Eretmochelys imbricata*), leatherback sea turtle (*Dermochelys coriacea*), and loggerhead sea turtle (*Caretta caretta*). The project area is exclusively uplands, and there is no potential for occurrence of these aquatic species.

The list of potentially occurring protected species was developed, with each species assigned a low, moderate, or high likelihood or probability for occurrence within the study area. **Table 3-1** lists the federal and state listed and protected floral and faunal species with the potential to occur within the study area, based on availability of suitable habitat and known ranges. A full list of state listed floral species listed for Hillsborough County, including those with no habitat in the project study area, are included **Appendix N**.

Table 3-1 Potential for Occurrence for Federal and State Protected Species for the Project Study Area

Species	Common Name	State Status (FWC)	Federal Status (USFWS)	Effect Determination	Potential for Occurrence
REPTILES					
Drymarchon corais couperi	Eastern indigo snake	FT	T	MANLAA	Moderate
Pituophis melanoleucus mugitus	Florida pine snake	ST	--	No adverse effect anticipated	Low
Gopherus polyphemus	Gopher tortoise	ST	--	No adverse effect anticipated	Low
Lampropeltis extenuata	Short-tailed snake	ST	--	No adverse effect anticipated	Low
BIRDS					
Haematopus palliates	American oystercatcher	ST	--	No effect anticipated	None
Caracara cheriway	Audubon's crested caracara	FT	T	No effect	Low
Haliaeetus leucocephalus	Bald eagle[1]	--	--	--	Moderate
Rynchops niger	Black skimmer	ST	--	No effect anticipated	None
Laterallus jamaicensis jamaicensis	Eastern black rail	FT	T	No effect	None
Rostrhamus sociabilis plumbeus	Everglade snail kite	FE	E	No effect	None
Athene cunicularia	Florida burrowing owl	ST	--	No effect anticipated	None
Ammodramus	Florida	FE	E	No effect	None

Species	Common Name	State Status (FWC)	Federal Status (USFWS)	Effect Determination	Potential for Occurrence
savannarum floridanus	grasshopper sparrow				
Antigone canadensis pratensis	Florida sandhill crane	ST	--	No adverse effect anticipated	Moderate
Aphelocoma coerulescens	Florida scrub jay	FT	T	No effect	None
Sternula antillarum	Least tern	ST	E*	No effect anticipated	None
Egretta caerulea	Little blue heron	ST	--	No adverse effect anticipated	Moderate
Egretta rufescens	Reddish egret	ST	--	No adverse effect anticipated	Moderate
Patalea ajaja	Roseate spoonbill	ST	--	No adverse effect anticipated	Moderate
Falco sparverius paulus	Southeastern American kestrel	ST	--	No effect anticipated	None
Egretta tricolor	Tricolored heron	ST	--	No adverse effect anticipated	Moderate
Grus americana	Whooping crane	--	EXPN	No effect	Low
Mycteria americana	Wood stork	FT	T	MANLAA	Moderate
INSECTS					
Danaus plexippus	Monarch butterfly	--	C	--	Low
MAMMALS					
Ursus americanus floridanus	Florida black bear[2]	--	--	--	Low
Perimyotis subflavus	Tricolored bat	--	PE	--	Low
PLANTS					
Matelea floridana	Florida spiny-pod	SE	--	No adverse effect anticipated	Low
Schizachyrium niveum	Pinescrub (scrub) bluestem	SE	--	No adverse effect anticipated	Low
Chionanthus pygmaeus	Pygmy fringe-tree	FE	E	No effect	Low
Zephyranthes simpsonii	Redmargin (Simpson's) zephyrlily	ST	--	No adverse effect anticipated	Low
Centrosema Arenicola	Sand butterfly-pea	SE	--	No adverse effect anticipated	Low
Lechea cernua	Scrub (nodding)	ST	--	No adverse effect anticipated	Low

Species	Common Name	State Status (FWC)	Federal Status (USFWS)	Effect Determination	Potential for Occurrence
	pinweed				
Pecluma plumula	Swamp plume polypody	SE	--	No adverse effect anticipated	Low
Glandularia tampensis	Tampa mock vervain	SE	--	No adverse effect anticipated	Low
Thelypteris serrata	Toothed lattice-vein fern	SE	--	No adverse effect anticipated	Low

-- Not Listed; MANLAA: May Affect, Not Likely to Adversely Affect
C: Candidate Species, EXPN: Experimental population; Non-essential
E: Endangered in some states; FE: Federal Endangered; PE: Proposed Endangered; SE: State Endangered*
T: Threatened; FT: Federal Threatened; PT: Proposed Threatened; ST: State-Designated Threatened
[1] Protected under the Bald and Golden Eagles Protection Act (16 U.S.C. 668-668c)
[2] Protected under the Florida Black Bear Conservation Rule (68A-4.009, F.A.C.)

3.2 COORDINATION WITH RESOURCE AGENCIES

Agency coordination was conducted as part of the ETDM screening and Advanced Notification review process. The ETDM screening process was used to become aware of any issues noted by the commenting agencies. The ETDM process was conducted and included project limits from McIntosh Road from South of US 92 to North of I-4. The PSSR was published October 15, 2021, and is included in the project file. Regulatory agencies included in the Programming Screen were USFWS, FWC, FDACS, and SWFWMD. Much of the coordination for potential species occurrence was conducted electronically utilizing databases from USFWS, FWC, SWFWMD, and FNAI. A summary of the relevant agency comments during the ETDM screening is provided below:

3.2.1 U.S. Fish and Wildlife Service

The USFWS stated that the project corridor is located within the CFA of wood stork colonies and recommended that any lost foraging habitat resulting from the project be replaced. Moreover, wetlands provided as mitigation should adequately replace the wetland functions lost as a result of the action. To minimize adverse effects to the wood stork and other wetland dependent species, USFWS recommended that impacts to suitable foraging habitat be avoided. If avoidance is not possible, minimization measures should be employed and best management practices (BMPs) to avoid further degradation of the site. Mitigation for wetland impacts should be discussed with USFWS and will require further coordination. Please refer to the North Florida Field Office website for wood stork colony locations. Lastly, the USFWS commented that dependent upon the alternative(s) selected, the proposed project is expected to result in minimal to moderate involvement with wildlife and habitat resources.

3.2.2 Florida Fish and Wildlife Conservation Commission

FWC stated that based on range and preferred habitat type, the Project intersects the range of Audubon's crested caracara (Federally Threatened [FT]), the eastern indigo snake (FT), Florida grasshopper sparrow (Federally Endangered [FE]), Florida scrub jay (FT), wood stork (FT), Florida

sandhill crane (State Threatened [ST]), gopher tortoise (ST), little blue heron (ST), and tricolored heron (ST). Through the CLIP Potential Habitat Richness analysis, parts of the project study area fell within the two to four species range.

Additionally, FWC stated that the primary wildlife issues associated with the Project include potential loss of wildlife habitat from expanded roadway and drainage retention areas (DRAs) construction; increased traffic has the potential for increased vehicular mortality events; and potential water quality degradation as a result of additional stormwater runoff from the new roadway surface in nearby wetlands.

FWC stated that direct and indirect effects of the Project could be minimal if roadway construction is confined to the existing cleared ROW as much as possible, any new DRAs are not constructed within areas of natural habitat, and degradation of adjacent or downstream water quality is avoided via inclusion of BMPs in the Project's design. FWC also recommended measures for conserving fish and wildlife and habitat resources that may occur within and adjacent to the Project area in the EST and in the Programming Screen Summary Report.

FWC commented that there will need to be further coordination as the Project progresses.

3.2.3 Florida Department of Agriculture and Consumer Services

FDACS stated that resources that may be impacted by the Project's activities include: approximately 12 acres of dry prairie (G2/S2 FNAI ranking), approximately 42 acres of Priority 2 aquifer recharge areas; approximately 20 acres of Priority 2 surface water resources, approximately 25 acres of wetlands including freshwater marsh and freshwater swamp. The FDACS also stated that four species of endangered plants may be present within a 500-foot buffer of the Project including Brooksville bellflower, Florida bonamia, Florida golden aster, and pygmy fringe-tree. However, the Brooksville bellflower nor Florida bonamia were not identified by the USFWS or IPaC as having the potential to occur within the project area. The Florida golden aster has since been delisted from the ESA (*Docket No. FWS-R4-ES-2019-0071-0016*), but is still afforded protection as a state listed species pursuant to *Chapter 5B-40.0055, F.A.C.*

FDACS recommended use of BMPs including silt fencing to protect wetlands and significant surface waters from construction impacts. Surveys for rare and listed plants should be conducted and, if present, should be protected to the highest possible degree or translocated to a suitable alternative site by an organization such as the Florida Native Plant Society. Mitigation for lost wetlands may be required and efforts should be made to minimize or mitigate impacts to farmlands. Decontaminating equipment and machinery to prevent the spread of invasive, non-native plants is recommended.

3.2.4 National Marine Fisheries Service

NMFS stated there would be no direct or indirect impacts to NMFS trust resources. NMFS determined no involvement in this Project as resources for which they are responsible are not present in the Project area.

3.3 FIELD SURVEY RESULTS

Field reconnaissance of the study area was conducted January 11, 2024. These efforts were conducted by a qualified field biologist and included pedestrian surveys of habitats within the study area. During these field reviews, areas of habitat were visually inspected for vegetative type and cover, level of disturbance, management techniques, and overall suitability to support protected species and general wildlife. The study area is mostly developed as Commercial and Services (FLUCCS 1400), Transportation (FLUCCS 8100), and Residential Low Density (FLUCCS 1100). No protected species were observed during the field visit.

Appendix F provides an overview of the recent observations and historical occurrences of listed and protected species that have a potential to occur within or adjacent to the project action area. Descriptions are provided in the sections below for those species which have been observed within or have a potential to occur in habitats identified within the vicinity of the study area.

3.4 FEDERAL LISTED FAUNAL SPECIES

All federally listed species identified in the USFWS IPaC mapper were evaluated for potential presence within the project study area. Hawksbill Sea Turtle, Leatherback Sea Turtle, and Loggerhead Sea Turtle were excluded from further analysis as there are no habitat within 25 miles of the proposed project study area. Federally listed wildlife species which have been observed or determined as having potential for occurrence in the vicinity of the study area include: the eastern indigo snake, eastern black rail, whooping crane, everglades snail kite, monarch butterfly, wood stork and tricolored bat. The effect determinations for each of the species, provided below, are for the Preferred Alternative since there would be "**no effect"** on protected species or their habitat by the No Build alternative.

3.4.1 Audubon's Crested Caracara

The Audubon's crested caracara which is listed as threatened by the USFWS and FWC. The crested caracara inhabits large prairies and pastures in south-central Florida. It prefers nesting in cabbage palms but has also been reported to nest in other tree species. The project study area is in the USFWS' caracara consultation area. However, there are very few cabbage palms present, which are typically preferred for nesting. No crested caracaras or nests were observed during extensive project field reviews none have been documented in the vicinity of the project study area (FNAI 2023). Due to the geographic location of the project within the caracara consultation area, the lack of observations during project field reviews, and the distance of the project from documented observations and nests, the potential for occurrence of the caracara within the project study area is considered **low** and there is "**no adverse effect anticipated**" for this species.

3.4.2 Eastern Indigo Snake

The eastern indigo snake is listed as a threatened species by the USFWS. The species is distributed throughout the southeastern United States but is subject to loss and degradation of habitat and human intervention. The species is found in a variety of habitats including swamps (including mangroves), wet prairies, xeric pinelands, and scrub areas. It may utilize gopher tortoise burrows for shelter during the winter and to escape the heat during the summer. No individuals of this

species were observed during the field surveys; however, natural areas throughout the project study area provide suitable habitat for this species. No gopher tortoise burrows were observed in the project study area. Due to the lack of observation of the species in the project study area and no historic documented observation in the project vicinity, the potential for occurrence for this species within the project study area is considered to be **moderate**. The revised August 2013 Addendum to USFWS Concurrence Letter to U.S. Army Corps of Engineers Regarding Use of the Eastern Indigo Snake Programmatic Effect Determination Key (**Appendix H**) was used to provide a "**may affect, not likely to adversely affect**" determination for the eastern indigo snake assuming certain conservation measures are included on the project.

To avoid impacts to the eastern indigo snake, the following conservation measures will be implemented:

1) The most recent version of the USFWS Standard Protection Measures for the Eastern Indigo Snake (**Appendix G**) will be utilized during site preparation and construction.

2) If more than 25 gopher tortoise burrows, active or inactive, are identified to be impacted by the project, the FDOT will initiate ESA *Section 7* consultation with the USFWS.

3) All gopher tortoise burrows, active or inactive, will be evacuated prior to site manipulation in the vicinity of the burrow.

4) If an indigo snake is encountered, the snake must be allowed to vacate the area prior to additional site manipulation in the vicinity.

5) If excavating potentially occupied burrows, the excavation method should minimize the potential for injury of an indigo snake.

6) Holes, cavities, and snake refugia other than gopher tortoise burrows will be inspected each morning before planned site manipulation of a particular area, and, if occupied by an indigo snake, no work shall commence until the snake has vacated the vicinity of the proposed work.

3.4.3 Eastern Black Rail

The eastern black rail is listed as threatened by the USFWS. The eastern black rail may be found in salt and brackish marshes as well as densely vegetated upper tidal marshes along the Gulf coast from Florida to Texas. The species has been occasionally observed in inland marshes of the Florida peninsula, though prevalence is largely un-investigated. Suitable habitat is not present within the project area. No individuals were observed during field surveys, and there are no historical observations of the eastern black rail within the project area. Therefore, the probability of occurrence is none and an effect determination of **no effect** was made for the eastern black rail.

3.4.4 Everglade Snail Kite

The Everglade Snail Kite is a subspecies of snail kite that is designated by the USFWS as endangered. The Everglade snail kite is a medium-sized hawk with a wingspan of about 45 inches. A distinguishing feature is their long, curved bill used for picking apple snails (*Ampullariidae spp.*) from their shells. The breeding season varies widely from year to year as it is in response to seasonal water levels. Generally nesting occurs between January to May. Nest sites are over water in shrubs and low trees, usually 3-15 feet above water.

Suitable habitat for this species is not present within the study area and no individuals were observed during field surveys. Pursuant to the Snail Kite Management Guidelines, if a snail kite nest is identified within 1,640 feet of the active work area, work must stop while a report of the nest is provided to the construction project administrator and the nest site coordinated with the FDOT's office of environmental management. Due to lack of suitable habitat, no observations identified in historical records or project field surveys, potential for occurrence is **none**. Therefore, the project will have "**no effect**" on the Everglade snail kite.

3.4.5 Florida Grasshopper Sparrow

Florida grasshopper sparrows inhabit dry open prairies that contain bunch grasses, low shrubs, and saw palmetto. The native prairie habitat required by this species is not found within the project area. Any open grass land evaluated as part of this project is highly disturbed and commercially maintained as crop or landscaping purposes. With no habitat, the species occurrence was identified as **none** in the project area. the project will have "**no effect**" on the Florida Grasshopper Sparrow.

3.4.6 Florida Scrub Jay

The Florida scrub jay is similar in size and shape to the blue jay, but the scrub jay lacks the crest and white spotting on wings and tail. This species is listed as threatened by both the USFWS and the Florida's Endangered and Threatened Species Rule. Optimal scrub-jay habitat consists of low growing, scattered scrub canopy species with patches of bare sandy soil such as those found in sand pine scrub, xeric oak scrub, scrubby flatwoods, and scrubby coastal strand habitats. Within the project area, there is no suitable habitat for this species. With no habitat, potential for species occurrence identified in the project area is **none.** The project will have "**no effect**" on the Florida scrub jay.

3.4.7 Monarch Butterfly

The monarch butterfly was identified as a candidate species for protection under the *ESA* by the USFWS on May 3, 2022. It is not yet proposed for listing and does not have designated Critical Habitat. Within North America, the monarch butterfly is a highly migratory species. This species requires a diversity of blooming nectar resources but of particular importance is milkweed (*Asclepias spp.*) upon which eggs are laid and serves as forage for caterpillars. Swamp milkweed is typically found in wetland habitats, including wet ditches. However, swamp milkweed was not observed during field reviews of wetland areas in the project action area. Although there are some shallow roadside swales, there are no wet roadside ditches in the project action area, and

the roadside is largely mowed and maintained. Swamp milkweed was not observed in existing wetlands that would be connected to project outfalls. It is possible that milkweed may be present, but such would be limited individuals, and not a sought our ecosystem. Monarchs could forage on wildflowers within the project area, but due to maintenance activities these will be limited. Thus, the occurrence of monarchs is expected to be limited, and incidental to the species moving through the area, not of support to the species.

As this species is currently a candidate species and not currently proposed for listing, consultation for this species is not required at this time. Further impact assessment for the species and a formal federal effect determination for the monarch butterfly may be required in the future should it be listed.

3.4.8 Tricolored Bat

The tricolored bat was proposed for federal listing as endangered on September 14, 2022 [87 FR 56381]. It is the smallest bat found in Florida with an approximate nine-inch wingspan and a body length of up to two inches. The tricolored bat is distinguished by its unique tricolored fur that appears dark at the base, lighter in the middle and dark at the tip. Tricolored bats often appear yellowish, varying from pale yellow to nearly orange, but may also appear silvery-gray, chocolate brown or black. They are known to occur in most areas of Florida, except for the Keys, however they are rarely encountered and are considered uncommon in Florida.

Tricolored bats emerge early in the evening and forage at treetop level or above but may forage closer to ground later in the evening. This species of bat exhibits slow, erratic, fluttery flight, while foraging and are known to forage most commonly over waterways and forest edges. During the summer, tricolored bats form small maternity colonies in tree foliage and palm fronds and sometimes in manufactured structures such as sheds and barns. The females typically give birth to two pups May through June.

Bats are protected during their maternity season in Florida under 68A-4.001 FAC General Prohibitions and 68A-9.010 FAC Taking Nuisance Wildlife. Bat maternity season begins April 15th and runs through August 15th. No bats were observed during the field reconnaissance. However, FDOT will complete a bat occupancy survey of suitable habitat prior to construction and if bats are found, FDOT will develop a bat exclusion plan in accordance with 68A-4.001 FAC. And 68A-9.010 FAC.

Roost sites for the tricolored bat can occur anywhere there are trees with foliage, culverts, or other appropriate roosting structures. The project area does include fragmented forested habitat, however nighttime foraging will not be impacted, as there are expanses of foraging habitat adjacent to the project area. If the listing status of the tricolored bat is elevated by USFWS to Threatened or Endangered prior to construction and the Preferred Alternative is located within the consultation area, FDOT commits to initiating consultation with the USFWS to determine the appropriate survey methodology and to address USFWS regulations regarding the protection of the tricolored bat.

3.4.9 Whooping Crane

The whooping crane (*Grus americana*) in Florida is a Federally-designated non-essential experimental population which is defined as a population that has been established within its historical range under *Section 10(j)* of the ESA to aid in its recovery. The USFWS has determined a non-essential population is not necessary for the continued existence of the species. Whooping cranes utilize a variety of habitats including coast marshes and estuaries, inland marshes, lakes, open ponds, shallow bays, salt marsh, pastures and agricultural fields, and sand or tidal flats. Whooping cranes occurred naturally in the eastern United States until the mid-twentieth century with records of whooping cranes in Florida until the 1930s. However, the only natural whooping crane nesting population currently is located in Wood Buffalo National Park (Canada) that winters in Arkansas National Wildlife Refuge (Texas). The 2011 Five-Year Review of the Whooping Crane (USFWS) identified four populations of whooping cranes, two of which are in Florida. There is a non-migratory population in Central Florida that the FWC introduced between 1993 and 2005. This effort was stopped in 2008 due to survival and reproduction problems. The FWC Fish and Wildlife Research Institute (FWRI) is also involved in a multi-agency project to restore migratory whooping cranes to the eastern United States. Between 2001 and 2017, cranes were taught a migration route using ultra-light aircraft from Wisconsin to Florida. The USFWS IPaC listed the whooping crane as potentially occurring within the project study area. However, there are no historical observations of the whooping crane in the project action area.

The probability of whooping cranes being within the project action area is considered **low** based on these past sightings and nearest known populations. As per USFWS IPaC, for the purpose of consultation, non-essential experimental populations are treated as threatened species on National Wildlife Refuge and National Park land, requiring consultation under *Section 7(a)(2)* of the ESA. However, for non-federal lands, they are treated as proposed species that do not require consultation. Therefore, consultation of the whooping crane is not required at this time based on their status, low probability of occurrence, and lack of historical observations in the project action area. Therefore, the project will have **no effect** on the whooping crane.

3.4.10 Wood Stork

The wood stork is federally listed as threatened. Wood storks utilize freshwater and estuarine habitats for nesting, foraging, and roosting. Wood storks typically are colonial nesters and construct their nests in medium to tall trees located within wetlands or on islands. The project is located within the 15-mile CFA of one wood stork colony; however, the study area is not within 2,500 feet of a colony site (**Appendix I**). As defined by the USFWS, Suitable Foraging Habitat (SFH) for wood storks includes wetlands and other surface waters which have areas of water that are relatively calm, uncluttered by dense thickets of aquatic vegetation, and have permanent or seasonal water depth between two and 15 inches, with fish sized greater than 3 inches. Based upon these criteria, SFH is less than 0.50 acres (approximately 0.40 acres), resulting in a probability of occurrence as **low**. The project is anticipated to impact 0.761 acres of wetlands. Using the Wood Stork Key for Central and North Peninsular Florida (**Appendix J**) it has been determined the project "**may affect, not likely to adversely affect**" as project impacts to SFH are less than or equal to 0.5 acre.

3.5 FEDERAL LISTED FLORAL SPECIES

The study area was evaluated for the potential occurrence of federally listed plant species selected based upon previous documentation of occurrence within Hillsborough County and also identified by IPaC. No federally listed plant species were observed in the study area during field reviews although suitable habitat is present along and near the ROW. Design phase plant surveys will be conducted prior to construction.

3.5.1 Pygmy Fringe-Tree

The Pygmy fringe-tree is an endemic shrub native to the coarse, wind-deposited sands of central Florida. It is long-lived and can persist in areas that are burned once every 20 to 70 years. This species depends on fire to maintain the open, sandy patches it requires. This fringe-tree has above-ground stems buried and growing from their rootstalks, which allows it to resprout after the occasional fires that burn through its habitat (USFWS 1999). The site will be re-surveyed during the design phase and coordination will be conducted as needed with FWC. Because the species was not observed, potential for species occurrence is **low** and there is **no effect** for the pygmy fringe-tree.

3.6 USFWS CRITICAL HABITAT

The study area was evaluated for Critical Habitat in accordance with *50 CFR 17* and the FDOT *PD&E Manual*. Review of the USFWS's available GIS data resulted in the identification of no Critical Habitat within the study area; therefore, the project will result in no destruction or adverse modification of critical habitat. Any modifications to the project design are subject to a revaluation of critical habitat in the area.

3.7 STATE LISTED FAUNAL SPECIES

The species discussed in this section are listed by the FWC (2024) and included within the FWC's Imperiled Species Management Plan (ISMP). Additional species-specific action plans and permitting guidelines are summarized as applicable. In completing additional surveys for these species in support of future environmental permitting, the implementation of species-specific BMPs and regulatory agency permit conditions, and the implementation of the FDOT's *Standard Specifications for Road and Bridge Construction*, incidental take is not anticipated for these species.

3.7.1 American Oystercatcher

The American oystercatcher is a boldly patterned shorebird with red-yellow eyes and a vivid red-orange bill, American oystercatchers survive almost exclusively on shellfish—clams, oysters, and other saltwater mollusks. Because of this specialized diet, oystercatchers live only in a narrow ecological zone of saltmarshes and barrier beaches (USFWS 2024). American oystercatchers are numerous but sensitive to development and traffic on the beaches where they nest. Based on field assessments and literature reviews, the potential for the American oystercatcher is considered to be **none**, with no suitable habitat and no species occurrence identified in the project area. Therefore, "**no effect is anticipated**" to the American oystercatcher.

3.7.2 Florida Burrowing Owl

The Florida burrowing owl is state designated threatened by the FWC. This species may be found in native open prairies and cleared areas that offer short groundcover such as agricultural fields, pastures, golf courses, airports, and vacant lots in peninsular Florida. The owls usually dig their own burrows but are known to use armadillo or gopher tortoise burrows.

Wide open herbaceous cover is not represented within the study area. There are no documented occurrences within the vicinity, giving this species a probability of occurrence of **none**. No Florida burrowing owls were observed during field reviews. Therefore, an effect determination for the Florida burrowing owl is **no effect anticipated.**

3.7.3 Florida Pine Snake

The Florida pine snake is a state-designated threatened species whose habitat primarily includes scrub and open longleaf pine communities. Florida pine snakes usually construct their own burrows; however, the snakes are known to use gopher tortoise burrows. Suitable habitat for Florida pine snakes is poorly represented within the study area and minimal to no impacts to suitable habitat will occur by the proposed improvements. No individuals, or their sign, were observed during field reviews. Therefore, the probability of occurrence is **low** and "**no adverse effect anticipated**" for the Florida pine snake.

3.7.4 Florida Sandhill Crane

The Florida sandhill crane is listed as threatened. Two subspecies of sandhill crane occur in Florida. The Florida sandhill crane (*Antigone canadensis pratensis*) is a non-migratory year-round breeding resident. They are joined every winter by migratory greater sandhill cranes (*A. c. tabida*), the larger of the two subspecies. The greater sandhill crane winters in Florida but nests in the Great Lakes region. Sandhill cranes occur throughout peninsular Florida north to the Okefenokee Swamp in southern Georgia. This species utilizes shallow, non-forested wetlands to build its nest during late winter and spring on mats of vegetation about two feet in diameter and in shallow water. No natural wetlands that could provide suitable nesting habitat were observed during the field visit. The species uses a variety of wetland and uplands for foraging habitat, which may include open areas such as lawns and crop fields. The potential for occurrence of this species is therefore considered to be **moderate**. Avoidance and minimization measures to wetlands will be made during the design phase in accordance with the FWC Florida Sandhill Crane and Threatened Wading Birds Species Conservation Measures and Permitting Guidelines. Unavoidable wetland impacts will be mitigated pursuant to state and federal regulations. Additionally, the upland habitats that are proposed for impact which may provide foraging habitat are not unique or limited at either a regional or a local level. If nests are observed during future project phases, the FDOT will coordinate further with the FWC. Therefore, there is "**no adverse effect anticipated**" for the Florida sandhill crane.

3.7.5 Gopher Tortoise

The gopher tortoise currently is listed as a candidate species with the USFWS and as threatened by the FWC. This species occurs throughout Florida and requires well-drained and loose sandy

soils for burrowing and low-growing herbs and grasses for foraging. The gopher tortoise is found in a wide variety of habitats including scrub, xeric oak hammocks, dry prairies, pine flatwoods, pastures, and lawns. This species was not observed during project field reviews but was listed as a likely species in the FNAI Biodiversity Matrix (2024). Most of the uplands within the project study area are forested or have dense vegetation not optimal for gopher tortoise. Therefore, the potential for occurrence of this species within the project study area is considered to be **low**.

Current FWC guidelines require a gopher tortoise relocation permit for any ground disturbance activity occurring within 25 feet of a potentially occupied gopher tortoise burrow. The project limits will be resurveyed again in accordance with FWC's survey requirements for the species prior to construction to ensure the number and location of affected burrows and tortoises. Following permitting activities and the payment of mitigation fees, potentially impacted tortoises will be relocated to an available FWC-approved/permitted tortoise recipient site by an authorized gopher tortoise agent prior to construction commencement. The FDOT will coordinate further with the FWC as applicable during future project phases. Considering these conservation measures and adherence to FWC guidelines, there is "**no adverse effect anticipated**" for the gopher tortoise.

3.7.6 Least Tern and Black Skimmer

The least tern and black skimmer are listed as threatened by the FWC. Least terns are found along the U.S. Atlantic Coast, mid-Atlantic states, and in Central and South America. Black skimmers can be found from the coasts of the northeastern U.S., down to Mexico, and over to the Gulf Coast of Florida. In Florida, these species can be found throughout most coastal areas inhabiting areas along estuaries and bays. These species are most commonly found on beach and coastal dune habitats, but they are known to nest on gravel areas, including building rooftops. The project area does not contain any primary/intertidal beach or coastal dune habitat; however, the least tern and black skimmer are addressed herein due to their known presence in Hillsborough County. No least terns or black skimmers were observed during project field reviews and these species were not documented within the FNAI Biodiversity Matrix. Due to the lack of observations and lack of suitable natural habitat, the potential for occurrence of these species is considered to be **none**. As such, there is **"no effect anticipated"** for the least tern and black skimmer.

3.7.7 Short-Tailed Snake

The short-tailed snake is a state-designated threatened species and proposed federally threatened species, endemic to Florida. It primarily inhabits areas with well-drained sandy soils, particularly longleaf pine/xeric oak sandhills, but also scrub and xeric hammock habitats. It is fossorial and spends most of its time burrowed in sand. Areas dominated by longleaf pine and xeric oak are present within the study area; however, these areas only account for 7.6% of the study area. No individuals, or sign, were observed during the field survey. Therefore, the probability of occurrence is **low** and "**no adverse effect anticipated**" for the short-tailed snake.

3.7.8 Southeastern American Kestrel

The southeastern American kestrel is a state-designated threatened species. It is a non-migratory subspecies of kestrel found in open pine savannahs, sandhills, prairies, and pastures in Florida. Kestrels nest in cavities within large dead trees. Foraging habitat for the southeastern American kestrel is large open herbaceous dominated landscapes. There are small patches of mowed grass adjacent to the project area; however, these mowed areas do not offer suitable size or contiguous connections to provide suitable habitat and no impacts to these mowed areas are anticipated. No kestrels were observed within the study area during the field survey. Nesting habitat for the southeastern American kestrel is not present within the project action area. Due to lack of nesting and foraging habitat, the probability of occurrence is **none**. Therefore, "**no effect is anticipated**" to the southeastern American kestrel.

3.7.9 Wetland Dependent Avian Species

This category includes state listed wetland dependent avian species that have a potential to occur. These include the protected wading birds: the little blue heron, tricolored heron, reddish egret, and roseate spoonbill. These four species are state designated threatened by the FWC.

The little blue heron, reddish egret, roseate spoonbill, and tricolored heron are listed as threatened by the FWC. In Florida, the little blue heron and tricolored heron can be found in inland freshwater, estuarine and coastal wetlands. Roseate spoonbills have a similar distribution but tend to use inland freshwater wetlands somewhat less commonly. These species utilize shallow herbaceous or shrub-dominated wetlands for both nesting and foraging habitat. A review of the FWC's Water Bird Locator database (2024) does not show any current or former wading bird colonies or rookeries within or adjacent to the project limits. Although little blue heron, reddish egret, roseate spoonbill, and tricolored heron were not observed, the potential for occurrence of these species is considered to be moderate due to the presence of suitable habitat. The proposed improvements will result in impacts to wetlands and other surface water habitats that may be used by these species for foraging and nesting.

The project is anticipated to impact 1.63 acres of wetlands and 2.06 acres of other surface waters. Avoidance and minimization measures to wetlands will be made during the design phase in accordance with the FWC *Florida Sandhill Crane and Threatened Wading Birds Species Conservation Measures and Permitting Guidelines.* Wetland impacts will be mitigated pursuant to state and federal regulations. Impacts to other surface water features will likely be compensated for within the preferred FPC sites. Additionally, nest surveys for the Florida sandhill crane will be conducted during nesting season and prior to construction, as necessary. FDOT will coordinate with FWC to determine appropriate avoidance and minimization measure during construction.

The project's implementation of wetland impact avoidance and minimization measures, as well as compensatory mitigation to offset project impacts are anticipated to reduce impacts to these species. Therefore, it is expected that there is "**no adverse effect anticipated**" from the project on the little blue heron, reddish egret, roseate spoonbill, and tricolored heron.

3.8 STATE LISTED FLORAL SPECIES

The Regulated Plant Index from *Chapter 5B-40.0055, F.A.C.*, was used to assist in the identification of regulated plants within the State of Florida. Potential species within the study area include the Florida spiny-pod, pinescrub (scrub) bluestem, pygmy fringe-tree, redmargin (Simpson's) zephyrlily, sand butterfly-pea, scrub (nodding) pinweed, swamp plume polypody, Tampa mock vervain, and toothed lattice-vein fern.

FDOT has determined only limited areas of potential habitat for these species are anticipated to be impacted by the proposed project, and that the project will not be detrimental to the long-term viability of the identified species. Descriptions of the potential species and their habitats, as well as the anticipated effect determinations follow. State listed floral species with a probability of occurrence of "none" and an effect determination of "no effect anticipated" are not described further. A full list of state listed floral species listed for Hillsborough County, including those with no habitat in the project study area, are included **Appendix N**.

3.8.1 Florida Spiny-Pod

The Florida spiny-pod is a perennial, twining vine with large opposite leaves. The plant exudes a milky sap when injured. Flowers are produced in auxiliary clusters along the vine. The flower petals are maroon with black corona and fruits are spiny follicles the open to release seeds. The habitat requirements of the Florida spiny-pod include upland pine sandhills and dry hammocks. While suitable habitat for this species is located within the project study area, the Florida spiny-pod was not observed. However, the field visits occurred outside of the recommended survey season of late spring to summer. The site will be re-surveyed during the design phase and coordination will be conducted as needed with FWC. Because the species was not observed, potential for species occurrence is **low** and there is **no adverse effect anticipated** for the Florida spiny-pod.

3.8.2 Pinescrub (Scrub) Bluestem

The pinescrub bluestem is listed as endangered by the State of Florida. This plant is a native endemic plant verified to occur in Hillsborough County. This species is a tufted grass with leaves 2.5-4 inches long, and very narrow and flat. The flowing stalk reaches up to 2.5 feet tall with 1 inflorescence at the tip of each branch. It is very similar in presence to little and common bluestem with the main distinguishing factors being smaller height and single inflorescence as opposed to 2 on the others. Suitable habitat is present for the pinescrub bluestem; however, it was not observed during field surveys and no known occurrences exist within the project study area. The site will be re-surveyed during the design phase and coordination will be conducted as needed with FWC. Because the species was not observed, potential for species occurrence is **low** and there is **no adverse effect anticipated** for the pinescrub bluestem.

3.8.3 Redmargin (Simpson's) Zephyrlily

The redmargin zephyrlily, also known as Simpson's zephyr-lily, is a geophytic perennial herb native to the southeastern United States. It typically grows up to 10 inches (25 cm) tall and features dull green leaves. The flowers are a highlight, with an erect, funnel-shaped perianth

ranging from 4 to 10 cm (1.6 to 3.9 in). The perianth is mostly white proximally, often with pink or purple distally. This species blooms from February to May and thrives in peaty-sandy soil, coastal plains, and occasionally piedmont habitats at elevations of 0 to 100 meters above sea level. It typically occurs in wet flatwoods and meadows and is occasionally found in ditches. Impacts to suitable habitat are limited to the wet ditches throughout the study area. No observations of this species were noted during the field reviews and no known occurrences exist within the area. The site will be re-surveyed during the design phase and coordination will be conducted as needed with FWC. Because the species was not observed, potential for species occurrence is **low** and there is **no adverse effect anticipated** for the redmargin zephyrlily.

3.8.4 Sand Butterfly-Pea

The sand butterfly-pea is listed as endangered by the State of Florida. This species is endemic to central Florida where it has been recorded in thirteen counties, including Hillsborough. The habitat requirements of the sand butterfly-pea include open areas in slash pine-turkey oak sandhills and scrubby flatwoods. This perennial herb has a vining nature with compound leaves composed of three leaflets each elliptical or oval in shape. The flowers are light lavender with on fused petals that bloom from summer to fall. Very few plants have been documented in protected areas and overall, there have been few documented sightings in the last two decades. Surveys are most accurate when done when flowering occurs from June to October. Suitable habitat for this species is located in the study area; however, sand butterfly-pea was not observed within the study area during field surveys. The site will be re-surveyed during the design phase and coordination will be conducted as needed with FWC. Because the species was not observed, potential for species occurrence is **low** and there is **no adverse effect anticipated** for the sand butterfly-pea.

3.8.5 Scrub (Nodding) Pinweed

The Scrub pinweed is listed as threatened by the State of Florida. The plant is a native endemic to Florida, with verified occurrences in Hillsborough County. This is a perennial herb that grows to about one-foot tall. The blooms are red and green and last from about March to May, producing a capsule fruit. Habitats include dry, open sand-scrub and flatwood margins. Survey season is best from summer to fall, flowering from July to October, fruits persist from October to March. The distinctive basal rosettes of unbranched, leafy vegetation remain in the winter months. The Scrub pinweed was not observed within the study area during field surveys and no historical observations are within the project area. The site will be re-surveyed during the design phase and coordination will be performed as needed with FWC. Because the species was not observed, potential for species occurrence is **low** and there is **no adverse effect anticipated** for the nodding pinweed.

3.8.6 Swamp Plume Polypody

The Florida spiny-pod is a fern with erect or arching fronds; blade 10 - 35 inches long, tapering at top and bottom, cut nearly to the midrib into 20 - 25 pairs of narrow, lance-shaped leaflets, each with a dark midvein. Lowest leaflets gradually reduced to small segments; sori on undersides of leaflets, oval. Leaf stalks are typically brown. Similar species to note are the resurrection fern and

the ebony spleenwort. The habitat most associated with this species includes strand swamps, wet woods, and rock-land hammocks. These ferns are typically found on tree bases and fallen logs within these swamp complexes. Suitable habitat for this species is located within the project study area, however no occurrences of the fern were observed. The site will be re-surveyed during the design phase and coordination will be performed as needed with FWC. Because the species was not observed, potential for species occurrence is **low** and there is **no adverse effect anticipated** for the swamp plume polypody.

3.8.7 Tampa Mock Vervain

The Tampa mock vervain is listed as endangered by the State of Florida, with verified documentation in Hillsborough County. This perennial herb species is endemic to Florida, where it occurs in open moist hammocks, live oak-cabbage palm hammocks and pine-palmetto flatwoods. It stands out with its small, violet-blue flowers that form dense clusters. The species was not observed during the field surveys. The site will be re-surveyed during the design phase and coordination will be conducted as needed with FWC. Because the species was not observed in initial site surveys, potential for species occurrence is **low** and there is **no adverse effect anticipated** for the Tampa mock vervain.

3.8.8 Toothed Lattice-Vein Fern

The toothed lattice-vein fern is a large fern with green fronds reaching up to 6 feet in length, leaflets 4 to 10 inches long and 1.5 inches wide, with hairy veins, sharply hook-toothed margins, and sori in many, parallel rows between veins on the underside of leaflets. This fern is listed as endangered in Florida and is commonly found in cypress swamps, troughs, and floodplains. The species typically prefers habitats that are consistently moist but not submerged. Throughout the project area, there is suitable habitat for this species. No occurrences of the species were observed during field. The site will be re-surveyed during the design phase and coordination will be conducted as needed with FWC. Because the species was not observed, potential for species occurrence is **low** and there is **no adverse effect anticipated** for the toothed lattice-vein fern.

3.9 OTHER PROTECTED SPECIES

This section discusses species that are no longer listed by USFWS or FWC but are otherwise afforded protection. Species that have the potential to exist within the project area include the bald eagle and Florida black bear.

3.9.1 Bald Eagle

The bald eagle is no longer listed under the ESA; however, it remains protected under the *Federal Bald and Golden Eagle Protection Act (16 U.S.C. §668 et seq.*) and the *Migratory Bird Treaty Act (16 U.S.C. §703 et seq.)*. A review of the Audubon EagleWatch Program (EagleWatch2023) showed the nearest documented occurrence of a bald eagle nest to be nest HL070 approximately 0.5 miles west of the project. This nest was found active and had a successful nesting season in 2023. No bald eagles were seen/heard during project field reviews and this species was listed as likely to be found within the FNAI Biodiversity Matrix (2024). Surveys and Audubon Florida data reviews to update locations of active bald eagle nest sites will be conducted during the permitting

phase of the project, and monitoring will take place pursuant to the USFWS Bald Eagle Monitoring Guidelines if new nests are identified within 660 feet of proposed construction activities. Therefore, **no impacts** to the bald eagle are anticipated.

3.9.2 Florida Black Bear

The Florida black bear is no longer a state-listed species but is still afforded protection by the *Bear Conservation Rule (68A-4.009, F.A.C.)*. Black bears prefer habitats with a dense understory such as forested wetlands and uplands, natural pinelands, hammocks, scrub, and shrub lands, but will use just about every habitat type in Florida, including swamps. The project occurs within the "occasional" range of the FWC's South Central Bear Management Unit (FWC 2024). No bears or bear tracks were observed during field reviews. There have been two black bear nuisance reports documented within 1 mile of the project study area in 2007. No black bear mortalities have been documented within 1 mile the project study area. Suitable habitat is present within the project study area including forested wetlands and uplands. However, these habitats are small in size and fragmented. The probability of occurrence for the Florida black bear is **low** and **no impacts** to the Florida black bear are anticipated.

3.10 AVOIDANCE AND MINIMIZATION

Avoidance and minimization of wetlands and other surface waters impacts will be made during the design phase. Environmental controls installations and implementation of BMPs will help ensure no effects to, protected species and their habitats. Although these areas are not likely to provide optimal suitable habitat for the species listed above, the potential to impact habitat for protected species still exists. Protected species conservation measures will be implemented during construction to further reduce or eliminate potential impacts. Further opportunities to avoid and minimize impacts to listed species and habitat will continue to be evaluated during the Design Phase of the project. Additional protected species surveys will be completed prior to construction as appropriate.

SECTION 4 WETLANDS AND OTHER SURFACE WATERS

The locations, limits, types, nature, and functions of all surface waters, including wetlands within the project limits were assessed for the NRE as part of compliance with *EO 11990: Protection of Wetlands* and *USDOT Order 5660.1A: Preservation of the Nation's Wetlands*. These federal policies require avoidance of long and short-term impacts and avoidance of direct and indirect support of new construction in wetlands to the fullest extent practicable.

4.1 METHODOLOGY AND ASSESSMENT

Wetland and other surface water boundaries were evaluated by desktop and field evaluation in conformance with the federal and state criteria promulgated in the *Corps of Engineers Wetlands Delineation Manual* (USACE 1987), the *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region: Version 2* (USACE 2010), and the *Florida Wetlands Delineation Manual* (*Florida Department of Environmental Protection's (FDEP) Delineation of the Landward Extent of Wetlands and Surface Waters (1995) (Chapter 62-340, F.A.C.*). Background research conducted to identify the wetland communities occurring within the study area included review of the USFWS NWI (2024), Land Use and Cover data from the SWFWMD (2014), SSURGO Database for Florida (NRCS 2021, 2024), and aerial photography interpretation (ESRI 2024 & Google Earth 2024). Data verification was conducted during field visit January 11, 2024, by a professional wetland scientist. The approximate boundaries of all wetland and other surface water features occurring within the study area were mapped, assigned an identification number, and categorized in accordance with the USFWS NWI GIS data (2024), the FLUCCS designation (SWFWMD 2024), and methods documented in the U.S. Army Corps of Engineer's (USACE) Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (2010). Dominant vegetative strata, plant species (Tobe et. al 1998), hydrologic indicators, and soil characteristics were assessed and documented. Wetland and other surface water features were designated based upon their status, hydrology, and soils. Vegetated wetland systems were designated as wetlands (WL) and occur throughout the southernmost half of the study area on the east side of McIntosh Road.

Several parcels south of I-4 and east of McIntosh Road have received binding jurisdictional determinations from SWFWMD within the previous three years. Wetland boundary flag coordinates were extracted from the binding jurisdictional determinations (47195.000 [October 11, 2023] and 45376.000 [September 13, 2021]) and used to create wetland boundaries for those parcels. All other wetland boundaries were based on a combination of field observations, field-based GPS data collection, and aerial photointerpretation.

Maps depicting wetlands and other surface water features occurring within the study area are shown in **Figure 4-1** and provided in **Appendix C.** Site photos are available in **Appendix B**.

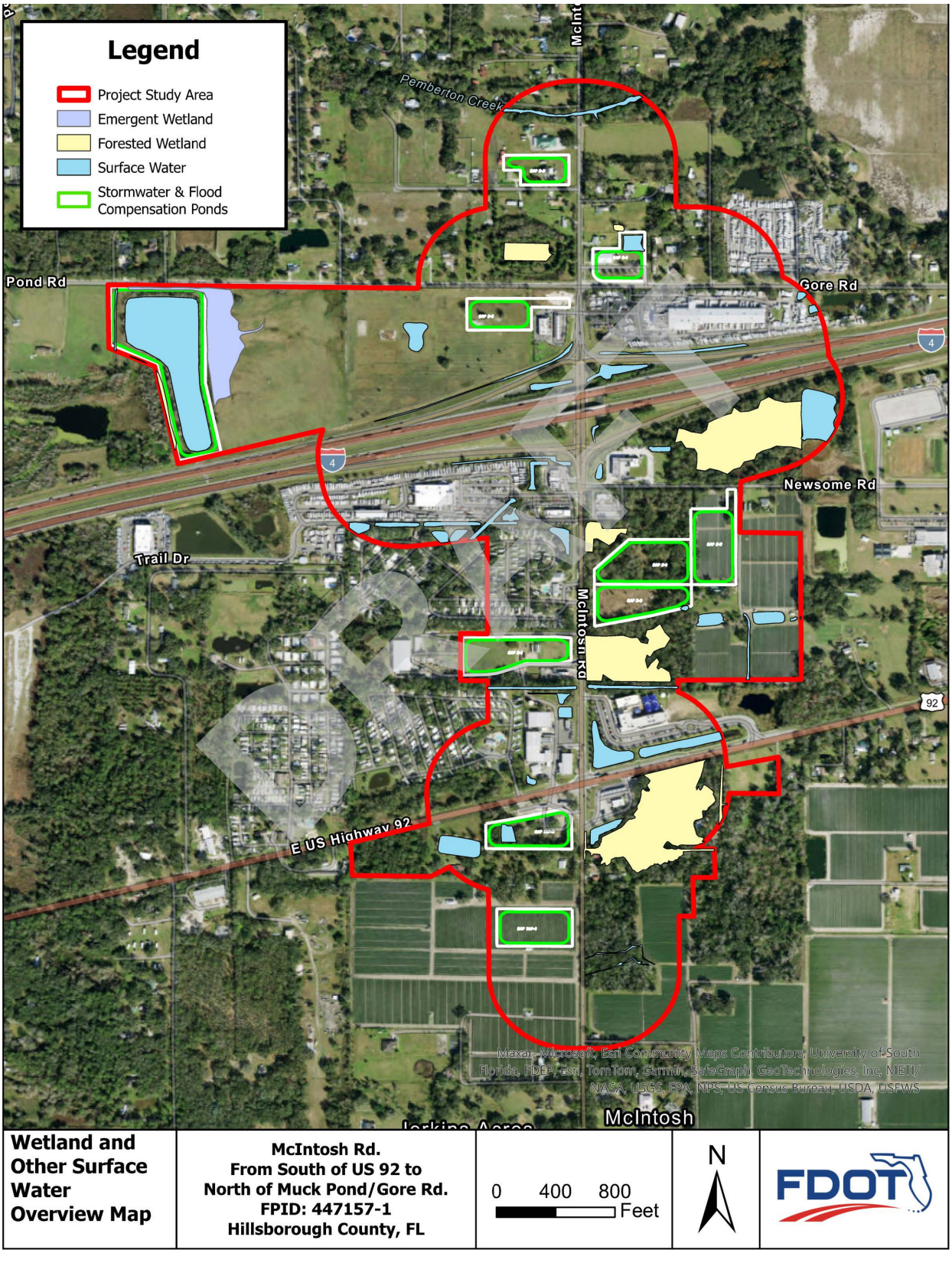

Figure 4-1 Wetlands and Other Surface Waters Overview Map

The existing conditions of all surface waters (including wetlands) within the study area were assessed using GIS data resources and field verification. These systems are further described in the following section and **Table 4-1** which includes the acreage of the systems occurring within the project study area, each system's FLUCCS description (FDOT 1999), as well as the NWI classification. Potential wetland impacts were assessed using the *Uniform Mitigation Assessment Method* (UMAM), *Chapter 62-345, F.A.C.* The extents of all wetland sites identified in the field were imported into GIS to perform measurements and acreage calculations. Representative site photographs can be found in **Appendix B.** The project study area is within the Hillsborough River Basin.

Table 4-1 Wetlands and Other Surface Waters within Study Area

Feature ID	NWI/USFWS	FLUCCS	Wetland Description	Acreage within Study Area
Wetlands				
WL-1	PEM	6400	Herbaceous Wetland	3.01
WL-2	PFO1	6150	Stream and Lake Swamps (Bottomland)	0.62
WL-3	PFO1	6150	Stream and Lake Swamps (Bottomland)	5.08
WL-4	PFO1	6150	Stream and Lake Swamps (Bottomland)	3.26
WL-5	PFO1	6150	Stream and Lake Swamps (Bottomland)	6.80
WL-6	PFO1	6150	Stream and Lake Swamps (Bottomland)	0.22
WL-7	PFO1	6150	Stream and Lake Swamps (Bottomland)	0.74
WL-8	PFO1	6150	Stream and Lake Swamps (Bottomland)	0.06
Surface Waters				
P-1	PUBx	5300	Freshwater Pond/Reservoir	0.28
P-2	PUBx	5300	Freshwater Pond/Reservoir	0.43
P-3	PUBx	5300	Freshwater Pond/Reservoir	0.33
P-4	PUBx	5300	Freshwater Pond/Reservoir	0.28
P-5	PUBx	5300	Freshwater Pond/Reservoir	0.08
P-6	PUBx	5300	Freshwater Pond/Reservoir	6.27
P-7	PUBx	5300	Freshwater Pond/Reservoir	0.14
P-8	PUBx	5300	Freshwater Pond/Reservoir	0.13
P-9	PUBx	5300	Freshwater Pond/Reservoir	0.69
P-10	PUBx	5300	Freshwater Pond/Reservoir	0.20
P-11	PUBx	5300	Freshwater Pond/Reservoir	0.76
P-12	PUBx	5300	Freshwater Pond/Reservoir	0.69
P-13	PUBx	5300	Freshwater Pond/Reservoir	0.10
P-14	PUBx	5300	Freshwater Pond/Reservoir	0.03
P-15	PUBx	5300	Freshwater Pond/Reservoir	0.17

Feature ID	NWI/USFWS	FLUCCS	Wetland Description	Acreage within Study Area
P-16	PUBx	5300	Freshwater Pond/Reservoir	0.24
P-17	PUBx	5300	Freshwater Pond/Reservoir	1.44
P-18	PUBx	5300	Freshwater Pond/Reservoir	0.11
P-19	PUBx	5300	Freshwater Pond/Reservoir	0.10
P-20	PUBx	5300	Freshwater Pond/Reservoir	0.18
P-21	PUBx	5300	Freshwater Pond/Reservoir	0.14
P-22	PUBx	5300	Freshwater Pond/Reservoir	0.06
P-23	PUBx	5300	Freshwater Pond/Reservoir	0.28
SW-1	R4UBx	5100	Upland Cut Ditch	0.08
SW-2	R4UBx	5100	Upland Cut Ditch	0.07
SW-3	R4UBx	5100	Roadside Ditch/Swale	0.20
SW-4	R4UBx	5100	Roadside Ditch/Swale	0.40
SW-5	R4UBx	5100	Roadside Ditch/Swale	0.36
SW-6	R4UBx	5100	Roadside Ditch/Swale	0.33
SW-7	R4UBx	5100	Roadside Ditch/Swale	0.05
SW-8	R4UBx	5100	Roadside Ditch/Swale	0.25
SW-9	R4UBx	5100	Roadside Ditch/Swale	0.09
SW-10	R4UBx	5100	Roadside Ditch/Swale	0.24
SW-11	R4UBx	5100	Roadside Ditch/Swale	0.25
SW-12	R4UBx	5100	Roadside Ditch/Swale	0.14
SW-13	R4UBx	5100	Roadside Ditch/Swale	0.02
SW-14	R4UBx	5100	Roadside Ditch/Swale	0.00
SW-15	R4UBx	5100	Roadside Ditch/Swale	0.18
SW-16	R4UBx	5100	Roadside Ditch/Swale	0.22
SW-17	R4UBx	5100	Roadside Ditch/Swale	0.30
SW-18	R4UBx	5100	Roadside Ditch/Swale	0.12
SW-19 (Baker Creek)	R4UBx	5100	Stream	0.46

4.2 COORDINATION WITH AGENCIES

NMFS, USFWS, EPA, SWFWMD, USACE, and FDEP reviewed the project for potential impacts to wetlands and other surface waters:

- NMFS stated there would be no direct or indirect impacts to NMFS trust resources.
- USFWS stated that the project corridor is in the CFA of wood stork colonies and thus, lost habitat due to the project should be replaced. Additionally, BMPs should be used to prevent degradation of wetland and other aquatic resources due to erosion, siltation, and nutrient discharges associated with the project site. If impacts to wetlands are unavoidable, mitigation and compensation are recommended. Finally, the project should

initiate consultation with FWS during project development if minimal or moderate involvement with wildlife and habitat resources is anticipated.

- The EPA stated that the project may have direct, indirect, and cumulative effects on wetlands, wetlands habitat and water quality in the area. Additionally, the EPA acknowledged there is a small wetland system north of Muck Pond Road, west of the corridor. The EPA acknowledged that due to the increase in impervious surface, there will likely be an increase in stormwater runoff which may contain sediment, grease, heavy metals, and other pollutants, and that wetlands should not be displaced by the installation of stormwater conveyance and treatment swales.

- USACE stated that a wetland survey should be conducted to identify wetlands and jurisdictional determination should be completed.

- FDEP stated that there are over 8 acres of jurisdictional wetlands within a 500-foot buffer zone of the Project. Further, the Project will require an ERP and will be required to eliminate or reduce impacts to wetland resources to the greatest extent practicable. These eliminations or reductions should focus on avoidance vial pile bridging where applicable, avoiding the displacement of wetlands by the installation of stormwater conveyance and swales, and considering cumulative impacts of concurrent and future road improvement projects in the vicinity of the Project. Finally, significant attention should be given to forested wetland systems.

4.2.1 Southwest Florida Water Management District

SWFWMD stated that there are both wetlands (herbaceous and forested) and surface waters within a 200-foot buffer of the Project. The degree of effect recommended by SWFWMD was minimal, however, a Formal Wetland Delineation is required by a qualified environmental scientist pursuant to *Chapter 62-340, F.A.C.*, and an environmental resource permit (ERP) is required for the proposed additional lanes. The type of ERP will be subject to determination after final design configurations. Finally, in wetland permitting, reworking ditches to accommodate new roadway formations will be considered temporary impact, but piping of surface waters will be considered permanent impacts even if they do not require mitigation.

The SWFWMD commented that coordination with FWC for Audubon's crested caracara, Florida grasshopper sparrow, Florida scrub jay, black bear sites, and other threatened or endangered species may be required after a wildlife survey of the proposed site is completed at the time of design.

4.3 WETLAND EVALUATION AND IMPACTS

Wetland and surface water impacts within the project study area were calculated using the proposed ROW footprint as an area of direct impact **(Appendix C)**. Although some wetland impacts may be unavoidable, any impacts will be further refined during future project phases

with avoidance and minimization implemented to the extent practicable. Therefore, the estimates presented in this section may be more expansive than future design impacts. There is an estimated 1.63 acres of wetland impact and 2.06 acres of surface water impact (**Table 4-2**).

Table 4-2 Wetlands and Other Surface Waters Impacts

Feature ID	NWI/USFWS	FLUCCS	Impact Acreage
Wetlands			
WL-1	PEM	6400	-
WL-2	PFO1	6150	0.29
WL-3	PFO1	6150	-
WL-4	PFO1	6150	0.42
WL-5	PFO1	6150	0.92
WL-6	PFO1	6150	-
WL-7	PFO1	6150	-
WL-8	PFO1	6150	-
		Total Wetland Impact	1.63
Surface Waters			
P-1	PUBx	5100	0.11
P-2	PUBx	5100	-
P-3	PUBx	5100	-
P-4	PUBx	5100	-
P-5	PUBx	5100	0.03
P-6	PUBx	5100	-
P-7	PUBx	5100	-
P-8	PUBx	5100	-
P-9	PUBx	5100	-
P-10	PUBx	5100	-
P-11	PUBx	5100	0.23
P-12	PUBx	5100	-
P-13	PUBx	5100	-
P-14	PUBx	5100	-
P-15	PUBx	5100	-
P-16	PUBx	5100	-
P-17	PUBx	5100	-
P-18	PUBx	5100	-
P-19	PUBx	5100	-
P-20	PUBx	5100	-
P-21	PUBx	5100	0.03
P-22	PUBx	5100	-
P-23	PUBx	5100	-
SW-1	R4UBx	5100	0.01
SW-2	R4UBx	5100	-
SW-3	R4UBx	5100	0.20
SW-4	R4UBx	5100	0.40

Feature ID	NWI/USFWS	FLUCCS	Impact Acreage
SW-5	R4UBx	5100	0.36
SW-6	R4UBx	5100	0.33
SW-7	R4UBx	5100	0.05
SW-8	R4UBx	5100	0.25
SW-9	R4UBx	5100	-
SW-10	R4UBx	5100	0.02
SW-11	R4UBx	5100	0.04
SW-12	R4UBx	5100	-
SW-13	R4UBx	5100	-
SW-14	R4UBx	5100	-
SW-15	R4UBx	5100	-
SW-16	R4UBx	5100	-
SW-17	R4UBx	5100	-
SW-18	R4UBx	5100	-
SW-19 (Baker Creek)	R4UBx	5100	-
		Total Surface Water Impacts	2.06

Impacts to project wetlands were assessed using the Uniform Mitigation Assessment Method (UMAM). The UMAM (*Chapter 62-345 F.A.C.*) was developed by the State of Florida to assess the ecological functions provided by wetlands and the amount of mitigation necessary to offset the loss of functions by a proposed project. UMAM was subsequently adopted by the USACE. The UMAM analysis is based on assessing an area on three criteria: location and landscape support, water environment, and community structure. These criteria are scored with the whole increment values between "10" (indicating the highest quality system) and "0" (indicating no present value). The three criteria are summed and divided by 30 to yield a score for the assessment area between "0" and "1." The difference between the "with project" and "current" condition is calculated to result in the "Delta." The UMAM delta is multiplied by the area of wetland impact to quantify the loss of wetland functions (functional loss).

UMAM was used to analyze the quality of the wetlands which will be impacted by the project. Each individual wetland within the project corridor was evaluated using UMAM. The wetlands within the project corridor were grouped together based on wetland type, function, overall characteristics, and watershed.

UMAM data sheets were compiled for each wetland type and are provided in **Appendix K**. The functional loss for the surface water ditches, stormwater features, and ponds were not calculated as wetland mitigation is not required for these systems. The FDEP may claim federal jurisdiction over portions of ditches cut in hydric soils. The jurisdiction along with potential mitigation requirements for these ditches will be determined during the project's design and environmental permitting phase.

Significant Waters and Protection Areas include Aquatic Preserves, Outstanding Florida Waters (OFW), Wild and Scenic Rivers, and Class I and Class II waters. There are no systems classified as Significant Waters and Protection Areas within or directly adjacent to the project study area. The project's stormwater management facilities will be designed in accordance with applicable State requirements and coordinated further with the SWFWMD during the project's future environmental permitting effort.

4.4 AVOIDANCE AND MINIMIZATION

Pursuant to *EO 11990*: *Protection of Wetlands,* federal actions should avoid, to the extent possible, the long- and short-term adverse impacts associated with the destruction or modification of wetlands and avoid direct or indirect support of construction in wetlands wherever there is a practicable alternative. Transportation safety standards for side slopes, additional lanes and widths, horizontal clearances/clear zones, driver sight distance, and stormwater management facility design necessitate these impacts. Wetland impact avoidance and minimization measures will be evaluated and documented during the project design phase. These measures may include but are not limited to, consideration of the use of structural elements such as retaining walls, consideration of the placement of stormwater treatment systems, and the use of appropriate best management practices during construction.

4.5 WETLAND FUNCTIONAL ANALYSIS

The UMAM was used to assess functions and values for the wetlands within the study area, in accordance with *Chapter 62-345*, *F.A.C.* The UMAM scores were developed for individual wetlands identified within the study area. The wetland quality ratings (delta values) are expressed numerically with numbers ranging between 0 and 1, with 1 representing an extremely high-quality wetland and 0 reflecting an extremely low-quality wetland, or an area that is no longer functioning as a wetland.

The functional loss of a wetland system is the estimated loss of function by the proposed project impacts and is calculated by multiplying the delta value by the impact acreage. Functional loss values are used to determine the amount of mitigation that would be required to offset the loss of wetland and other surface water's function caused by the proposed project. The functional loss for the forested wetlands within the study area is 0.761. Mitigation is not typically required by SWFWMD for other surface waters impacts. **Table 4-3** summarizes impact acreage and functional loss for each wetland. For a detailed summary of individual wetland impacts, please refer to the UMAM Sheets provided in **Appendix K**.

Table 4-3 Functional Loss Analysis

FLUCCS Classification	Wetland / Other Surface Waters Description	Impact Acreage	Functional Loss Value
6150	Stream and Lake Swamps (Bottomland)	1.63	0.761

4.6 WETLAND IMPACT MITIGATION

Wetland impacts from the construction of this project will be mitigated pursuant to *Section 373.4137, F.S.*, to satisfy all mitigation requirements of *Part IV of Chapter 373, F.S.* and *33 U.S.C. §1344*. In 2008, the USACE and the US Environmental Protection Agency (EPA) issued regulations governing compensatory mitigation for activities authorized by the Department of the Army (Federal Register 2008). These regulations, as promulgated in *33 CFR Part 332*, establish a hierarchy for determining the type and location of compensatory mitigation. The rule establishes a preference for the use of mitigation bank credits if available. Total impacts from the project are approximately 1.63 acres of wetland impacts with a total estimated functional loss of 0.761 units. **Table 4-4** displays the available credits applicable to the project as of February 20th, 2024, as provided by the USACE Regulatory In-Lieu Fee and Bank Information Tracking System (RIBITS). With multiple banks currently offering enough credits to cover the project, sufficient mitigation credits are available to offset the impacts from the proposed improvements. With compensatory mitigation completed within the same watershed where the impacts are incurred, the project will not result in cumulative impacts.

Table 4-4 Wetlands Mitigation Availability

Bank Name	Credit Classification	Assessment Method	Available Credits
Fox Branch Ranch	Palustrine Emergent	UMAM	1.55
	Palustrine Forested	UMAM	6.54
Hillsborough River	Palustrine Emergent	UMAM	5.54
	Palustrine Forested	UMAM	5.61
North Tampa		UMAM	
	Palustrine Forested	UMAM	0.09
Two Rivers	Palustrine Emergent	UMAM	4.43
	Palustrine Forested	UMAM	58.33
Wiggins Prairie	Palustrine Emergent	UMAM	
	Palustrine Forested	UMAM	25.93

SECTION 5 ESSENTIAL FISH HABITAT

This study was evaluated for EFH in accordance with the requirements of the Magnuson-Stevens Fishery Conservation and Management Act of 1996 (MSA) and the FDOT PD&E Manual. No EFH is located within the study area; therefore, there will be no involvement with EFH for this project. During the ETDM Programming Screen, the NMFS stated there would be no direct or indirect impacts to NMFS trust resources. NMFS determined no involvement in this Project as resources for which they are responsible are not present in the Project area.

SECTION 6 ANTICIPATED PERMITS AND AUTHORIZATIONS

All necessary permits will be acquired prior to construction of the proposed project improvements.

Coordination and/or permitting is anticipated to be conducted with the following agencies as shown in **Table 6-1**.

Table 6-1 Permit Coordination

Coordinating Agency	Permit
USACE	404 Permit
SWFWMD	Individual Environmental Resource Permit
Florida Department of Environmental Protection (FDEP)	National Pollutant Discharge Elimination System (NPDES) Permit

SECTION 7 CONCLUSIONS AND COMMITMENTS

7.1 PROTECTED SPECIES AND HABITAT

The project study area was evaluated for the presence of federal and state-protected species and their suitable habitat in accordance with *50 CFR Part 402 of the ESA*, as amended, *Chapter 5B-40 F.A.C.*: *Preservation of Native Flora of Florida, Chapter 68A-27 F.A.C.: Rules Relating to Endangered or Threatened Species*, and the FDOT *PD&E Manual*.

Literature reviews, agency database searches and field reviews were conducted to assess federal and state-protected species presence, their habitat, and designated critical habitat occurring or potentially occurring within the project study area. Two non-listed, managed species, the Bald eagle and Florida black bear, are also discussed based on the potential for occurrence within the study area and their protection under other existing regulations.

The project study area was evaluated for the presence of federal and/or state-protected species and their suitable habitat in accordance with *Section 7* of the *ESA* and *Part 2, Chapter 16* of the *PD&E Manual*. Based on this evaluation the proposed "***may affect, but is not likely to adversely affect***" the eastern indigo snake (*Drymarchon couperi*), Florida pine snake (*Pituophis melanoleucus mugitus*), gopher tortoise (*Gopherus polyphemus*), short-tailed snake (*Lampropeltis extenuate*), bald eagle (*Haliaeetus leucocephalus*), Florida sandhill crane (*Antigone canadensis pratensis*), little blue heron (*Egretta caerulea*), reddish egret (*Egretta rufescens*), roseate spoonbill (*Patalea ajaja*), tricolored heron (*Egretta tricolor*), wood stork (*Mycteria americana*), Florida spiny-pod (*Matelea* floridana), pinescrub bluestem (*Schizachyrium niveum*), redmargin zephyrlily (*Zephyranthes simpsonii*), sand butterfly-pea (*Centrosema arenicola*), scrub pinweed (*Lechea cernua*), swamp plume polypody (*Pecluma ptilodon*), Tampa mock vervain (*Glandularia tampensis*) and toothed lattice-vein fern (*Thelypteris serrata*). The project is anticipated to have "***no effect***" on the American oystercatcher (*Haematopus palliates*), Audubon's crested caracara (*Caracara cheriway*), black skimmer (*Rynchops niger*), eastern black rail (*Laterallus jamaicensis ssp. jamaicensis*), Everglade snail kite (*Rostrhamus sociabilis plumbeus*), Florida burrowing owl (*Athene cunicularia*), Florida grasshopper sparrow (*Ammodramus savannarum floridanus*), Florida scrub jay (*Aphelocoma coerulescens*), least tern (*Sternula antillarum*), southeastern American kestrel (*Falco sparverius Paulus*), whooping crane *(Grus americana*), and pygmy fringe-tree (*Chionanthus pygmaeus*).

Table 7-1 Potential Faunal Species Effect Determinations

Species	Common Name	State Status (FWC)	Federal Status (USFWS)	Effect Determination	Potential for Occurrence
REPTILES					
Drymarchon corais couperi	Eastern indigo snake	FT	T	MANLAA	Moderate
Pituophis	Florida pine	ST	--	No adverse effect	Low

Species	Common Name	State Status (FWC)	Federal Status (USFWS)	Effect Determination	Potential for Occurrence
melanoleucus mugitus	snake			anticipated	
Gopherus polyphemus	Gopher tortoise	ST	--	No adverse effect anticipated	Low
Lampropeltis extenuata	Short-tailed snake	ST	--	No adverse effect anticipated	Low
BIRDS					
Haematopus palliates	American oystercatcher	ST	--	No effect anticipated	None
Caracara cheriway	Audubon's crested caracara	FT	T	No effect	Low
Haliaeetus leucocephalus	Bald eagle[1]	--	--	--	Moderate
Rynchops niger	Black skimmer	ST	--	No effect anticipated	None
Laterallus jamaicensis jamaicensis	Eastern black rail	FT	T	No effect	None
Rostrhamus sociabilis plumbeus	Everglade snail kite	FE	E	No effect	None
Athene cunicularia	Florida burrowing owl	ST	--	No effect anticipated	None
Ammodramus savannarum floridanus	Florida grasshopper sparrow	FE	E	No effect	None
Antigone canadensis pratensis	Florida sandhill crane	ST	--	No adverse effect anticipated	Moderate
Aphelocoma coerulescens	Florida scrub jay	FT	T	No effect	None
Sternula antillarum	Least tern	ST	E*	No effect anticipated	None
Egretta caerulea	Little blue heron	ST	--	No adverse effect anticipated	Moderate
Egretta rufescens	Reddish egret	ST	--	No adverse effect anticipated	Moderate
Patalea ajaja	Roseate spoonbill	ST	--	No adverse effect anticipated	Moderate
Falco sparverius paulus	Southeastern American kestrel	ST	--	No effect anticipated	None
Egretta tricolor	Tricolored heron	ST	--	No adverse effect anticipated	Moderate
Grus americana	Whooping crane	--	EXPN	No effect	Low
Mycteria americana	Wood stork	FT	T	MANLAA	Moderate
INSECTS					

Species	Common Name	State Status (FWC)	Federal Status (USFWS)	Effect Determination	Potential for Occurrence
Danaus plexippus	Monarch butterfly	--	C	--	Low
MAMMALS					
Ursus americanus floridanus	Florida black bear[2]	--	--	--	Low
Perimyotis subflavus	Tricolored bat	--	PE	--	Low

-- Not Listed; MANLAA: May Affect, Not Likely to Adversely Affect
C: Candidate Species, EXPN: Experimental population; Non-essential
E: Endangered in some states; FE: Federal Endangered; PE: Proposed Endangered; SE: State Endangered*
T: Threatened; FT: Federal Threatened; PT: Proposed Threatened; ST: State-Designated Threatened
[1] Protected under the Bald and Golden Eagles Protection Act (16 U.S.C. 668-668c)
[2] Protected under the Florida Black Bear Conservation Rule (68A-4.009, F.A.C.)

Table 7-2 Potential Floral Species Effect Determinations

Species	Common Name	State Status (FWC)	Federal Status (USFWS)	Effect Determination	Potential for Occurrence
Matelea floridana	Florida spiny-pod	SE	--	No adverse effect anticipated	Low
Schizachyrium niveum	Pinescrub (scrub) bluestem	SE	--	No adverse effect anticipated	Low
Chionanthus pygmaeus	Pygmy fringe-tree	FE	E	No effect	Low
Zephyranthes simpsonii	Redmargin (Simpson's) zephyrlily	ST	--	No adverse effect anticipated	Low
Centrosema Arenicola	Sand butterfly-pea	SE	--	No adverse effect anticipated	Low
Lechea cernua	Scrub (nodding) pinweed	ST	--	No adverse effect anticipated	Low
Pecluma plumula	Swamp plume polypody	SE	--	No adverse effect anticipated	Low
Glandularia tampensis	Tampa mock vervain	SE	--	No adverse effect anticipated	Low
Thelypteris serrata	Toothed lattice-vein fern	SE	--	No adverse effect anticipated	Low

-- Not Listed; MANLAA: May Affect, Not Likely to Adversely Affect
C: Candidate Species, EXPN: Experimental population; Non-essential
E: Endangered in some states; FE: Federal Endangered; PE: Proposed Endangered; SE: State Endangered*
T: Threatened; FT: Federal Threatened; PT: Proposed Threatened; ST: State-Designated Threatened

7.2 WETLANDS

Pursuant to *EO 11990: Protection of Wetlands* (May 1977), USDOT developed a policy, *USDOT Order 5660.1A: Preservation of the Nation's Wetlands* (August 24, 1978), which requires all federally funded highway projects to protect wetlands to the fullest extent possible. In accordance with this policy, and the FDOT *PD&E Manual*, the project preferred alternative was assessed to determine potential wetland impacts associated with its construction.

Wetland boundaries were estimated based on a combination of field observations, field-based GPS data collection, and aerial photointerpretation. Several parcels south of I-4 and east of McIntosh Road have received binding jurisdictional determinations from SWFWMD within the previous three years. Wetland boundary flag coordinates were extracted from the binding jurisdictional determinations (47195.000 [October 11, 2023] and 45376.000 September 13, 2021]) and used to create wetland boundaries for those parcels. Based on the evaluation completed, approximately 36.64 acres of wetlands and other surface waters occur within the study area. Of that wetland acreage, only 1.63 acres may be impacted by the proposed project as shown in **Table 7-3**.

Table 7-3 Summary of Wetland and Surface Water Impacts Table

Potential Wetland and Other Surface Waters Impacts

	Type of Wetland or Other Surface Water (NWI/USFWS)	Project Impact Acreage	Functional Loss
Project Totals	PFO1	1.63	0.761
	Total Wetlands	1.63	0.761
	PUBx	0.4	--
	R4UBx	1.66	--
	Total Other Surface Water	2.06	
	Total Wetland or Other Surface Water	**3.69**	**0.761**

The habitat functions of impacted wetlands were quantitatively and qualitatively assessed using the UMAM as per *Chapter 62-345, F.A.C.* The roadway preferred alternative evaluation resulted in an estimated UMAM functional loss of 0.761 acres. With compensatory mitigation completed within the same watershed where the impacts are incurred, the project will not result in cumulative impacts.

Wetland impacts which will result from the construction of this project will be mitigated pursuant to *Section 373.4137, F.S.*, to satisfy all mitigation requirements of *Part IV of Chapter 373, F.S.*, and *33 U.S.C. §1344*. The project anticipates using commercially available mitigation credits from agency-approved banks with an appropriate geographic service area to provide compensatory

mitigation sufficient to offset unavoidable project impacts to wetlands and wetland-dependent species habitat.

In accordance with *EO11990: Protection of Wetlands* and *USDOT 5660.1A: Preservation of the Nation's Wetlands*, and based on the documentation of existing conditions as presented in the NRE, it is hereby determined that:

- Through the implementation of compensatory mitigation, the proposed project will have no significant short-term or long-term adverse impacts to wetlands.
- There is no practicable alternative to construction in wetlands.
- Wetland impacts which will result from the construction of this project will be mitigated pursuant to *Section 373.4137, F.S.,* to satisfy all mitigation requirements of *Part IV of Chapter 373, F.S.* and *33 U.S.C. §1344.*
- As previously discussed in Section 4, wetlands and other surface waters present are entirely freshwater systems.

7.3 IMPLEMENTATION MEASURES

- FDOT will implement erosion and sediment control BMPs including a Stormwater Pollution Prevention Plan, during project construction, to protect water quality.
- Wetland impacts, including potential impacts to wood stork suitable foraging habitat that will result from the construction of this project will be mitigated for pursuant to *Section 373.4127, F.S.*, or as otherwise agreed upon between FDOT and the appropriate regulatory agencies.
- Surveys to update locations of active bald eagle nest sites will be conducted during the design phase, and permits will be acquired if there will be unavoidable impacts during construction. Coordination with USFWS and FWC will take place, as necessary.
- Surveys for gopher tortoise burrows, as well as commensal species, will be conducted during the design phase and permits to relocate tortoises and commensals as appropriate will be obtained from the FWC.

7.4 COMMITMENTS

- To avoid impacts to the eastern indigo snake, the most recent version of the USFWS Standard Protection Measures for the Eastern Indigo Snake will be utilized during site preparation and construction. If more than 25 gopher tortoise burrows, active or inactive, are identified to be impacted by the project, the FDOT will initiate ESA *Section 7* consultation with the USFWS. All gopher tortoise burrows, active or inactive, will be evacuated prior to site manipulation in the vicinity of the burrow. If an indigo snake is encountered, the snake must be allowed to vacate the area prior to additional site

manipulation in the vicinity. If excavating potentially occupied burrows, the excavation method should minimize the potential for injury of an indigo snake. Holes, cavities, and snake refugia other than gopher tortoise burrows will be inspected each morning before planned site manipulation of a particular area, and, if occupied by an indigo snake, no work shall commence until the snake has vacated the vicinity of the proposed work.

- Seasonal surveys for the Florida spiny-pod, pinescrub (scrub) bluestem, pygmy fringe-tree, redmargin (Simpson's) zephyrlily, sand butterfly-pea, scrub (nodding) pinweed, swamp plume polypody, Tampa mock vervain, and toothed lattice-vein fern will be performed during the design phase and coordination with USFWSFDACS-DPI will occur if impacts to listed plant species are anticipated.

SECTION 8 REFERENCES

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SECTION 9 LIST OF APPENDICES

Appendix A Existing Land Use Map

Appendix B Wetlands and Other Surface Waters Photographs

Appendix C Detailed Wetland and Other Surface Waters Map

Appendix D NRCS Soils Map

Appendix E FWC Strategic Habitat Conservation Areas

Appendix F Observed Listed and Protected Species Map

Appendix G Standard Protection Measures and Special Provisions

Appendix H Eastern Indigo Snake Programmatic Effect Determination Key

Appendix I Wood Stork Colonies

Appendix J Effect Determination Key for the Wood Stork in Central and North Peninsular Florida

Appendix K Uniform Mitigation Assessment Method Sheets

Appendix L McIntosh Road Concept Plan

Appendix M Preferred SMF and FPC Pond Sites

Appendix N State Listed Floral Species

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NATURAL RESOURCE EVALUATION

Florida Department of Transportation

District Seven

MCINTOSH ROAD FROM SOUTH OF US 92 TO NORTH OF I-4

Limits of Project: McIntosh Road from South of US 92 to North of I-4

Hillsborough County, Florida

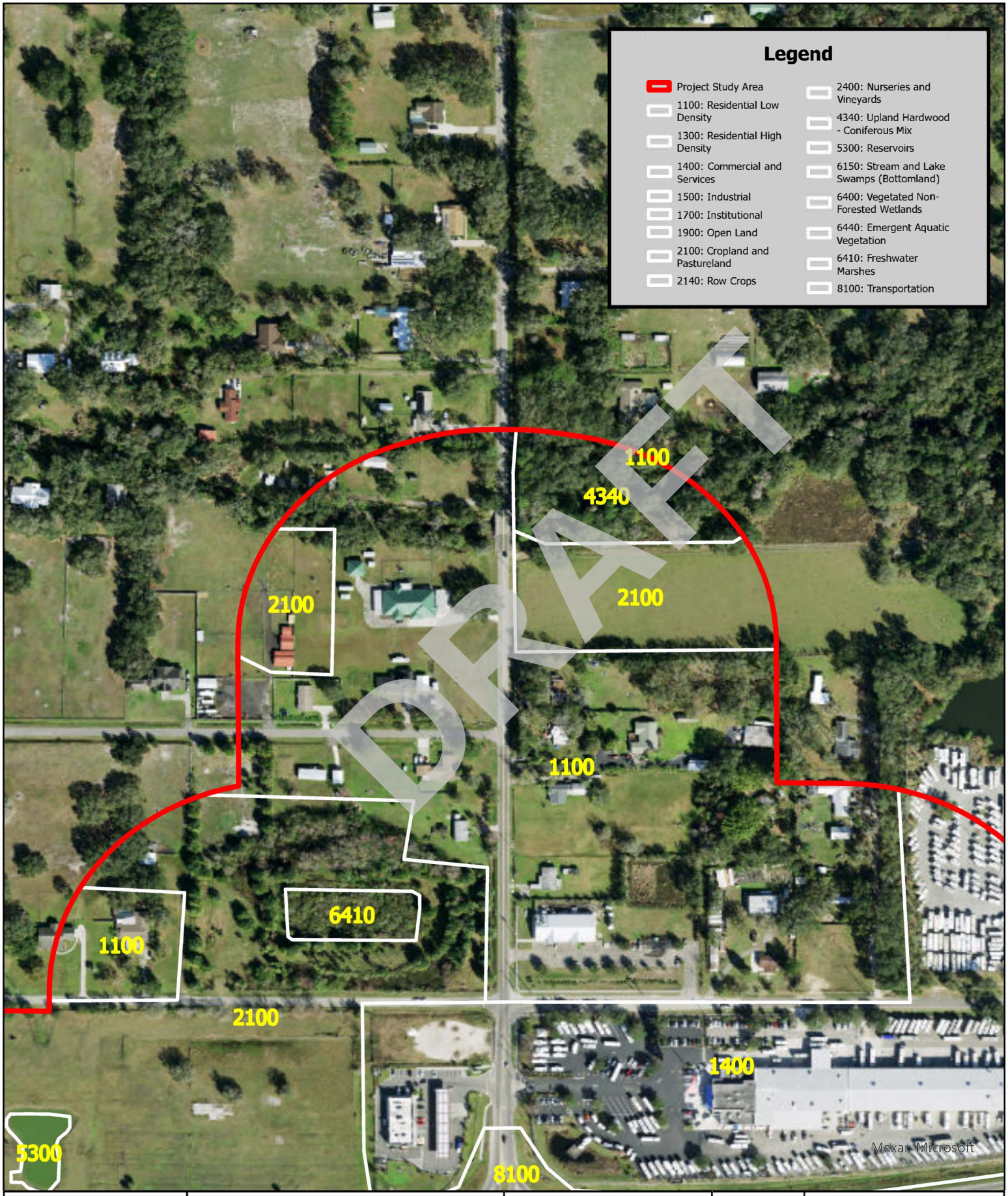
Financial Management Number: 447157-1

ETDM Number: 14469

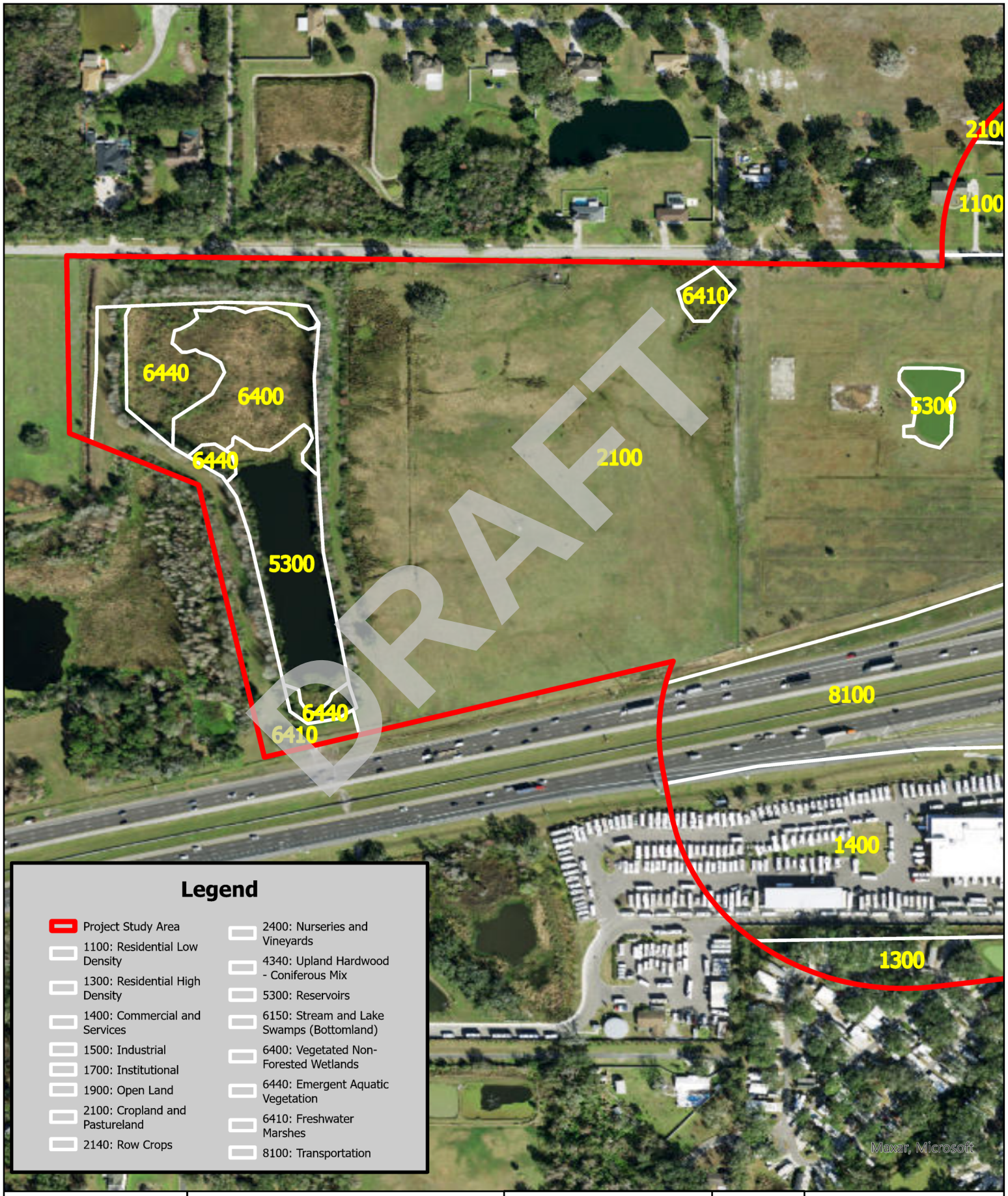
Date: August 2024

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by the Florida Department of Transportation (FDOT) pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated May 26, 2022 and executed by the Federal Highway Administration and FDOT.

Appendix A Existing Land Use Map



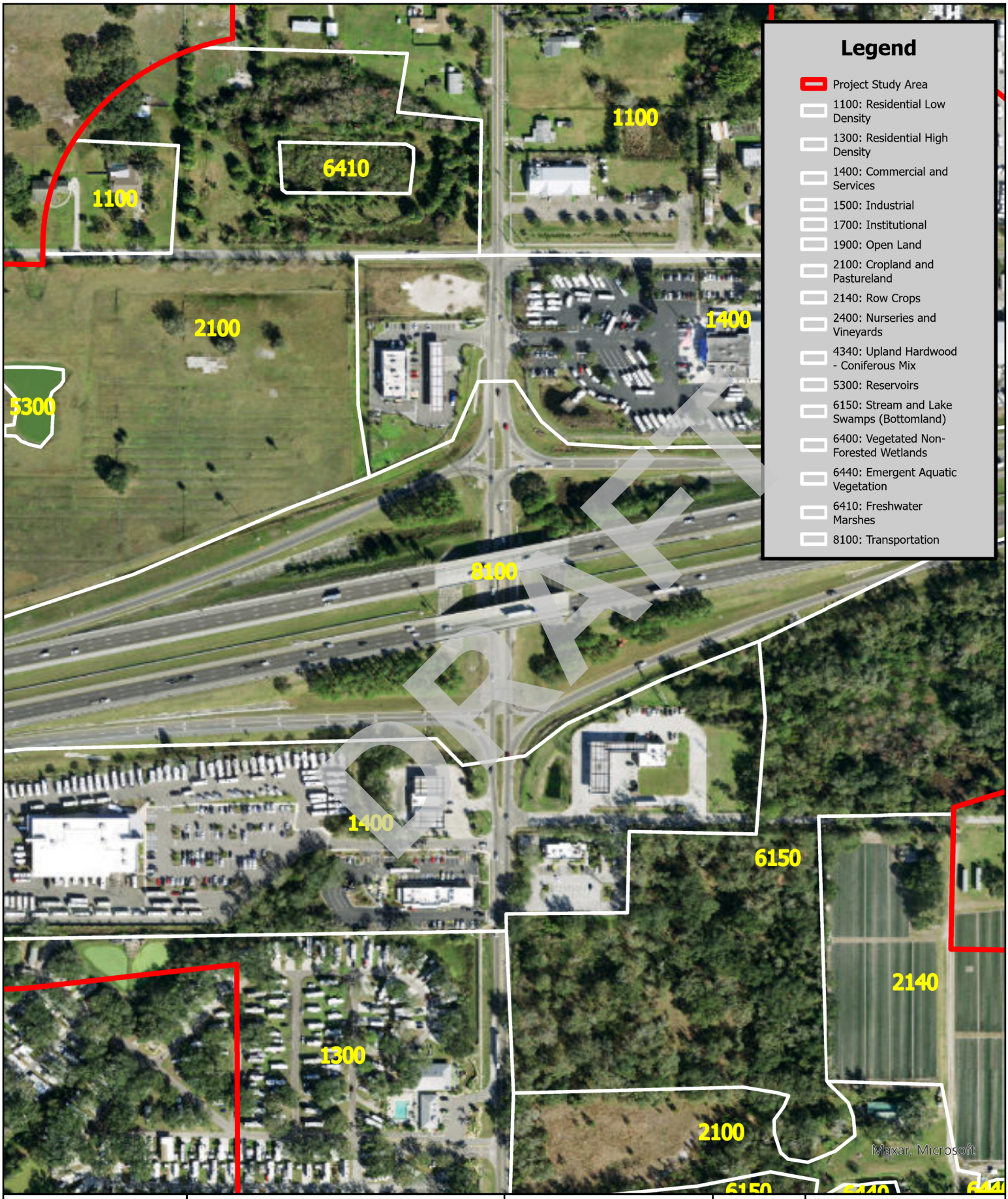
FLUCFCS Map Sheet 1	**McIntosh Rd. From South of US 92 to North of Muck Pond/Gore Rd. FPID: 447157-1 Hillsborough County, FL**	0 150 300 Feet	N	FDOT



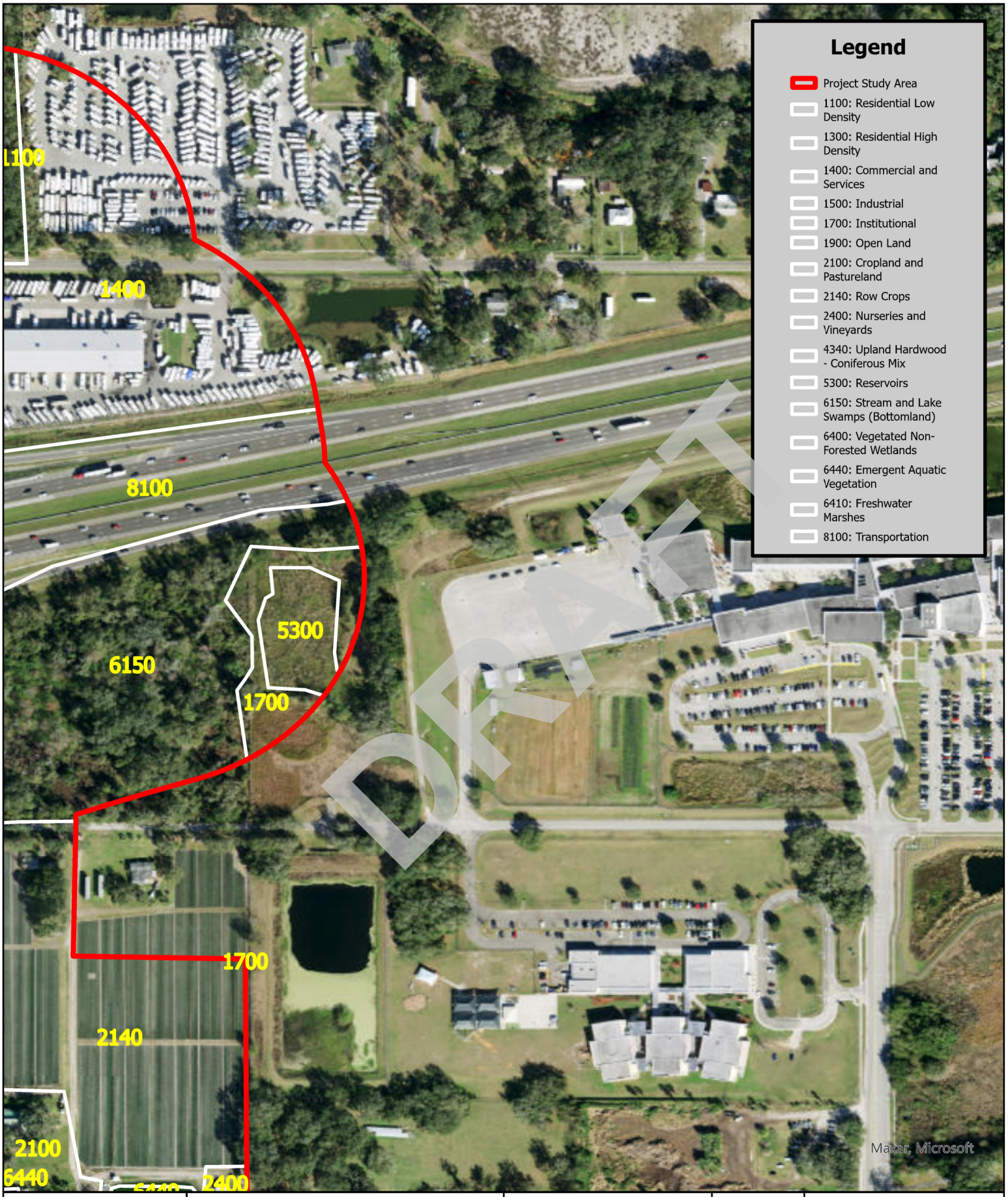
Legend

- Project Study Area
- 1100: Residential Low Density
- 1300: Residential High Density
- 1400: Commercial and Services
- 1500: Industrial
- 1700: Institutional
- 1900: Open Land
- 2100: Cropland and Pastureland
- 2140: Row Crops
- 2400: Nurseries and Vineyards
- 4340: Upland Hardwood - Coniferous Mix
- 5300: Reservoirs
- 6150: Stream and Lake Swamps (Bottomland)
- 6400: Vegetated Non-Forested Wetlands
- 6440: Emergent Aquatic Vegetation
- 6410: Freshwater Marshes
- 8100: Transportation

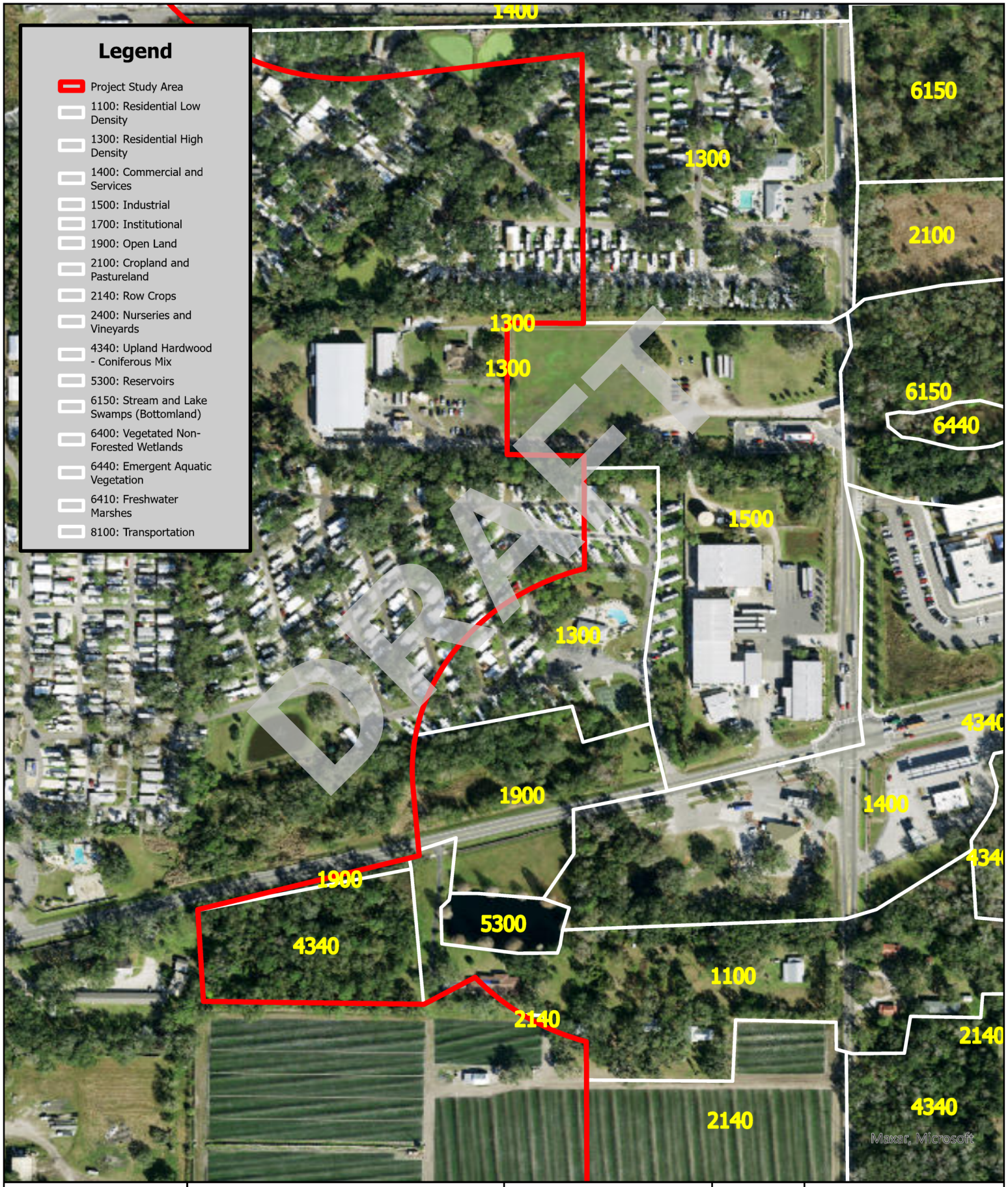
FLUCFCS Map Sheet 2	**McIntosh Rd. From South of US 92 to North of Muck Pond/Gore Rd. FPID: 447157-1 Hillsborough County, FL**	0 150 300 Feet	N	FDOT



FLUCFCS Map Sheet 3	**McIntosh Rd. From South of US 92 to North of Muck Pond/Gore Rd. FPID: 447157-1 Hillsborough County, FL**	0 150 300 Feet	N	FDOT



FLUCFCS Map Sheet 4	**McIntosh Rd. From South of US 92 to North of Muck Pond/Gore Rd. FPID: 447157-1 Hillsborough County, FL**	0 150 300 Feet	N	FDOT



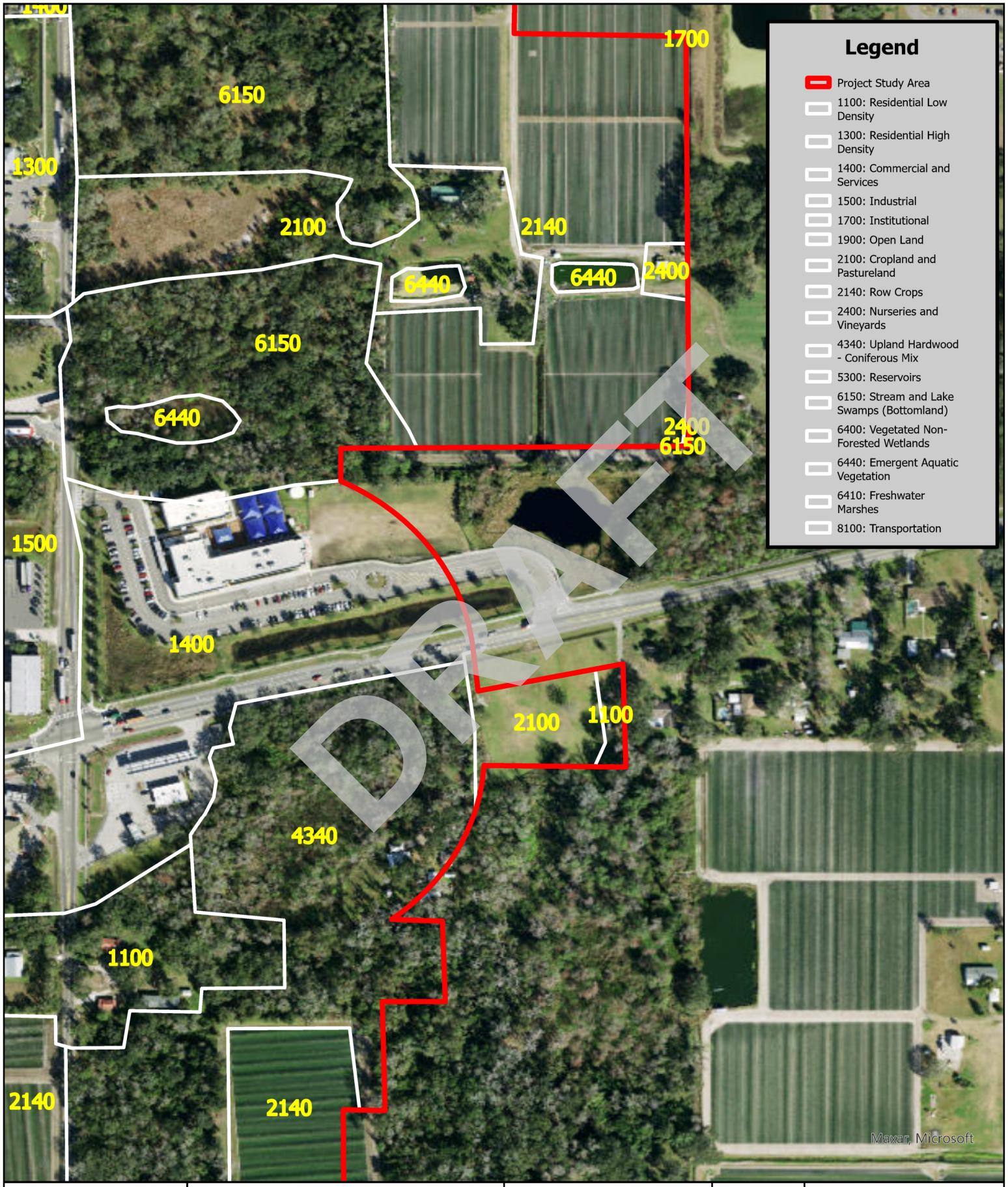
FLUCFCS Map Sheet 5

McIntosh Rd.
From South of US 92 to
North of Muck Pond/Gore Rd.
FPID: 447157-1
Hillsborough County, FL

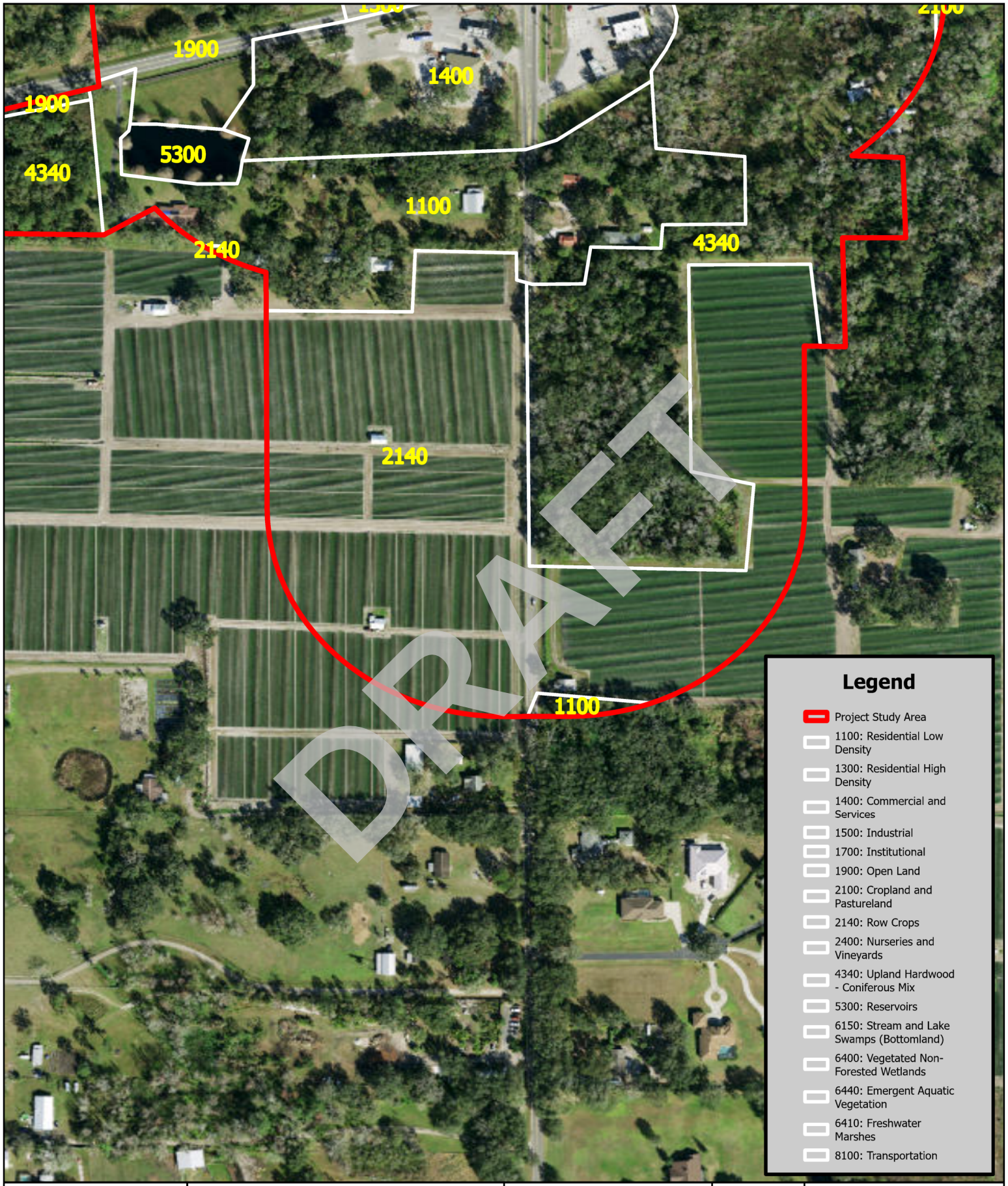
0 150 300 Feet

N

FDOT



FLUCFCS Map Sheet 6	**McIntosh Rd. From South of US 92 to North of Muck Pond/Gore Rd. FPID: 447157-1 Hillsborough County, FL**	0 150 300 Feet	N	FDOT



FLUCFCS Map Sheet 7	**McIntosh Rd. From South of US 92 to North of Muck Pond/Gore Rd. FPID: 447157-1 Hillsborough County, FL**	0 150 300 Feet	N	FDOT

Appendix B Wetlands and Other Surface Waters Photographs

McIntosh Road NRE Photo Log

Photo 1
Description: Forested Wetland W-1. Photo taken facing southeast from approximately 100 feet southeast of the Kangaroo Express convenience store.

Photo 2
Description: Forested Wetland W-1. Photo taken facing northwest back towards the Kangaroo Express convenience store.

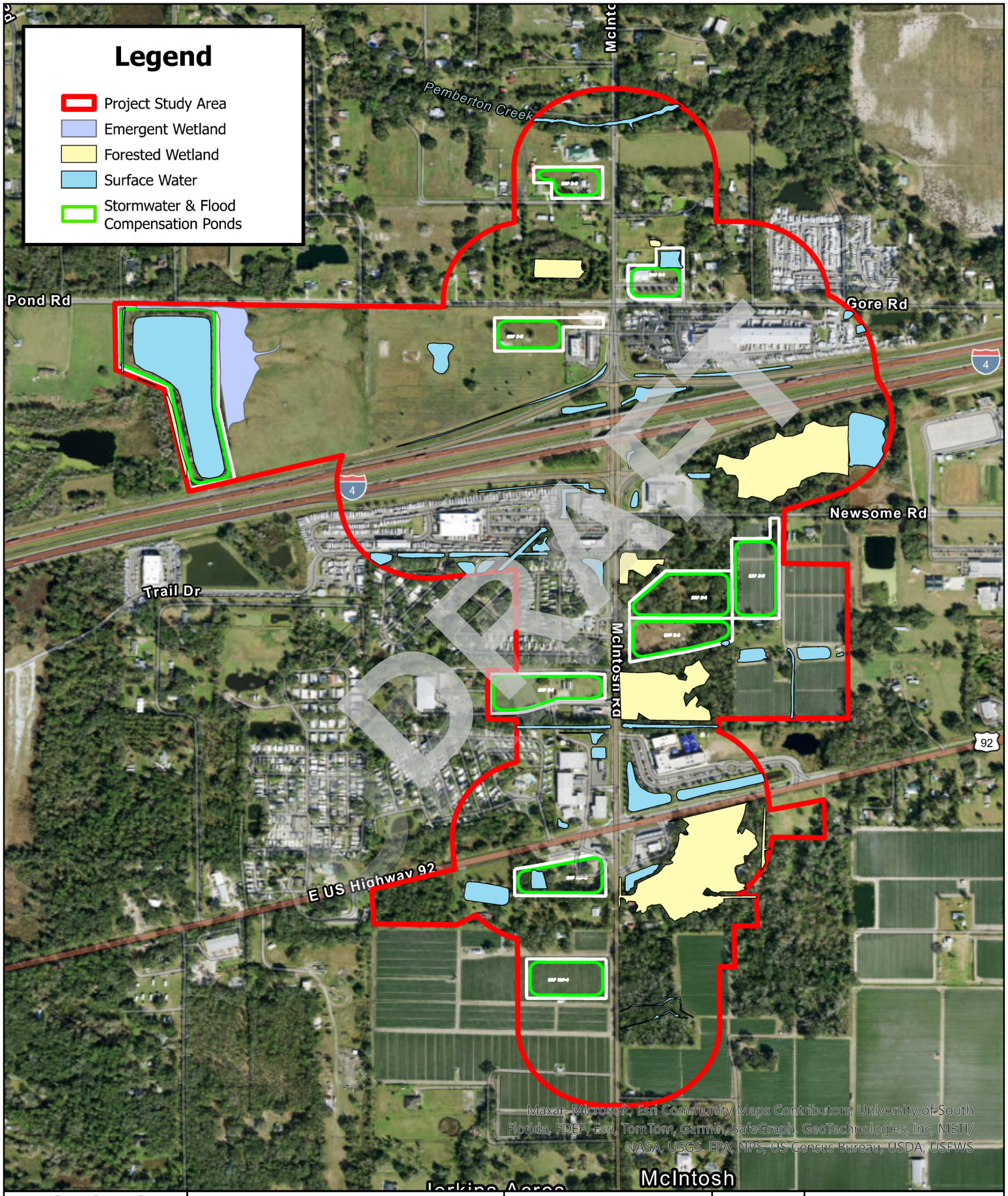
Photo 3
Description: Surface water adjacent to Wetland W-1. Photo taken facing west.

Photo 4
Description: Culvert crossing of the surface water adjacent to the south of Wetland W-1. Photo taken facing southwest along McIntosh Road.

Photo 5
Description: Wetland W-2, south of the Burger King. Photo taken facing south from the parking area adjacent McIntosh Road.

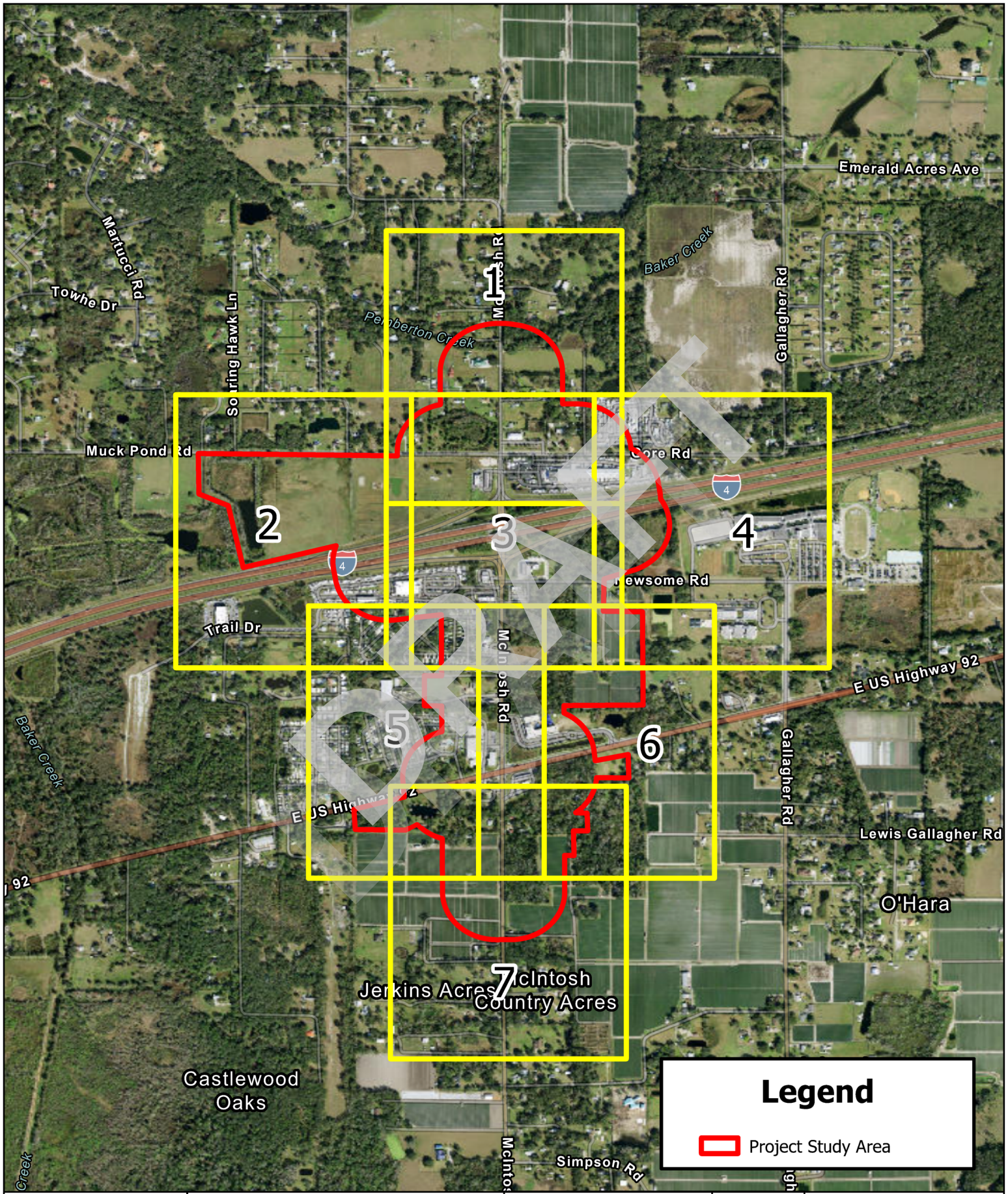
Photo 6
Description: Wetland W-3, taken from just northwest of Independence Academy along McIntosh Road. Photo taken facing east from McIntosh Road.

Appendix C Detailed Wetland and Other Surface Waters Map

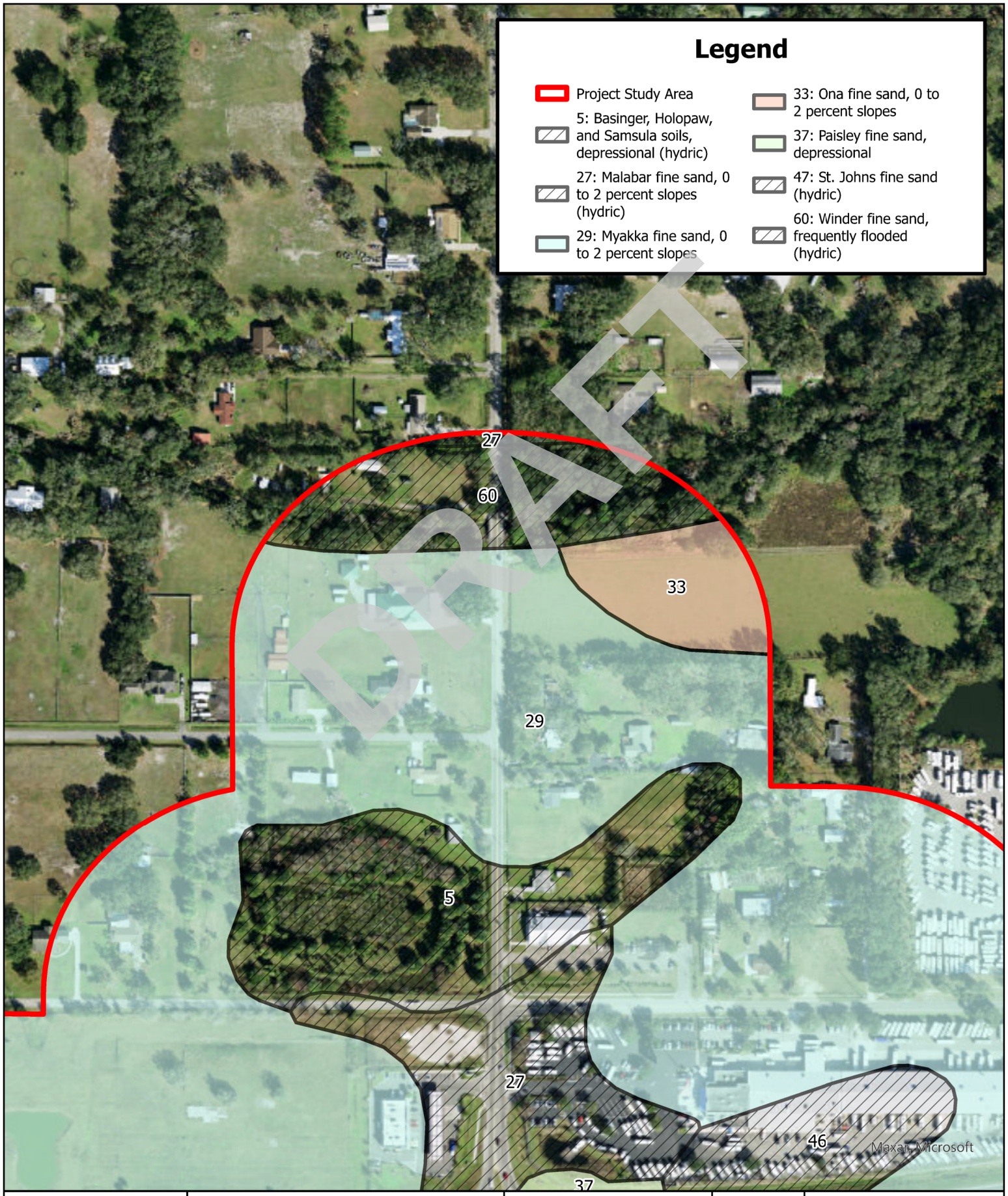


Wetland and Other Surface Water Overview Map	**McIntosh Rd. From South of US 92 to North of Muck Pond/Gore Rd. FPID: 447157-1 Hillsborough County, FL**	0 400 800 Feet	N	FDOT

Appendix D NRCS Soils Map



Sheet Index	McIntosh Rd. From South of US 92 to North of Muck Pond/Gore Rd. FPID: 447157-1 Hillsborough County, FL	0 0.125 0.25 Miles	N	FDOT



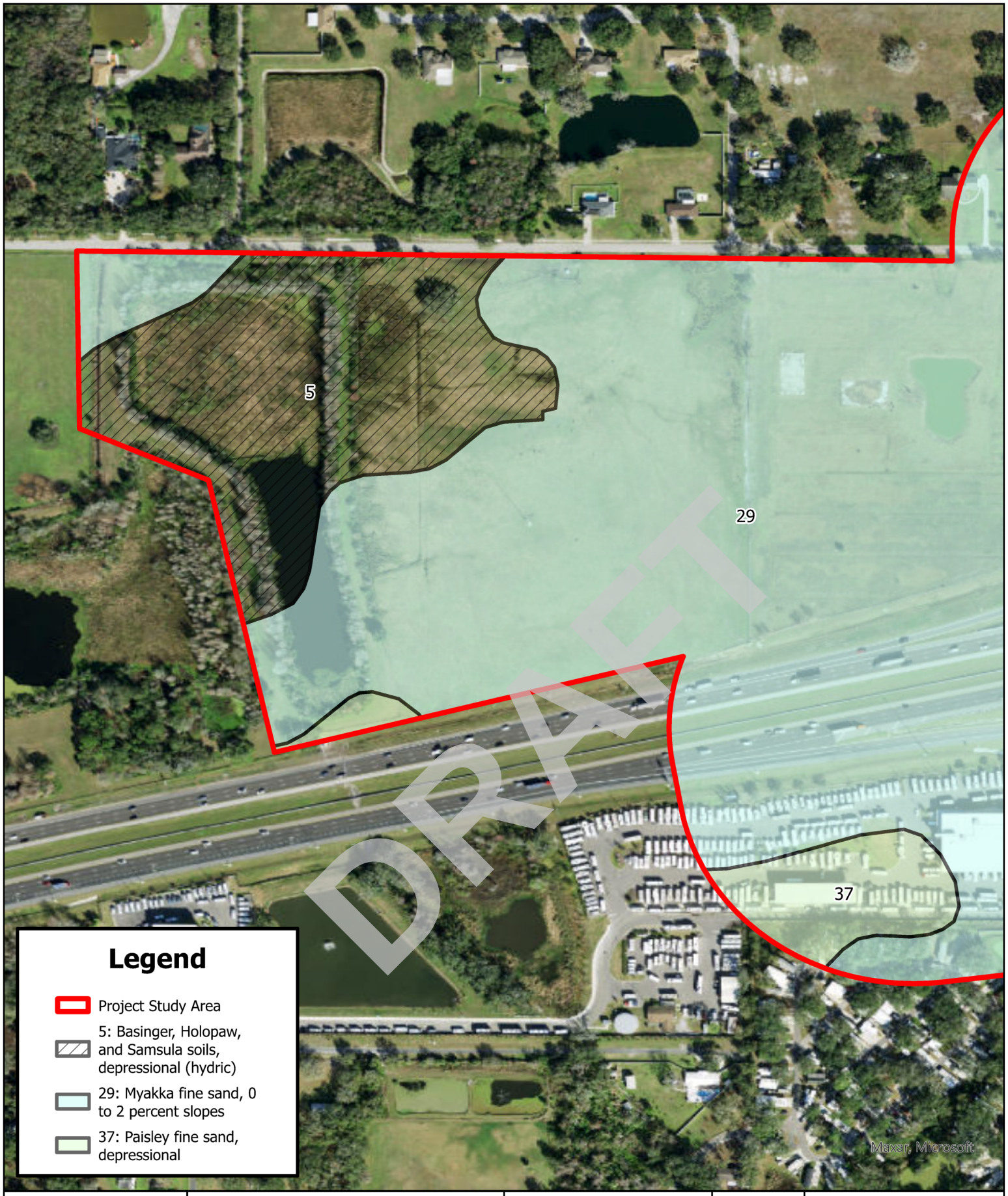
Soils Map
Sheet 1

McIntosh Rd.
From South of US 92 to
North of Muck Pond/Gore Rd.
FPID: 447157-1
Hillsborough County, FL

0 150 300 Feet

N

FDOT



Legend

- Project Study Area
- 5: Basinger, Holopaw, and Samsula soils, depressional (hydric)
- 29: Myakka fine sand, 0 to 2 percent slopes
- 37: Paisley fine sand, depressional

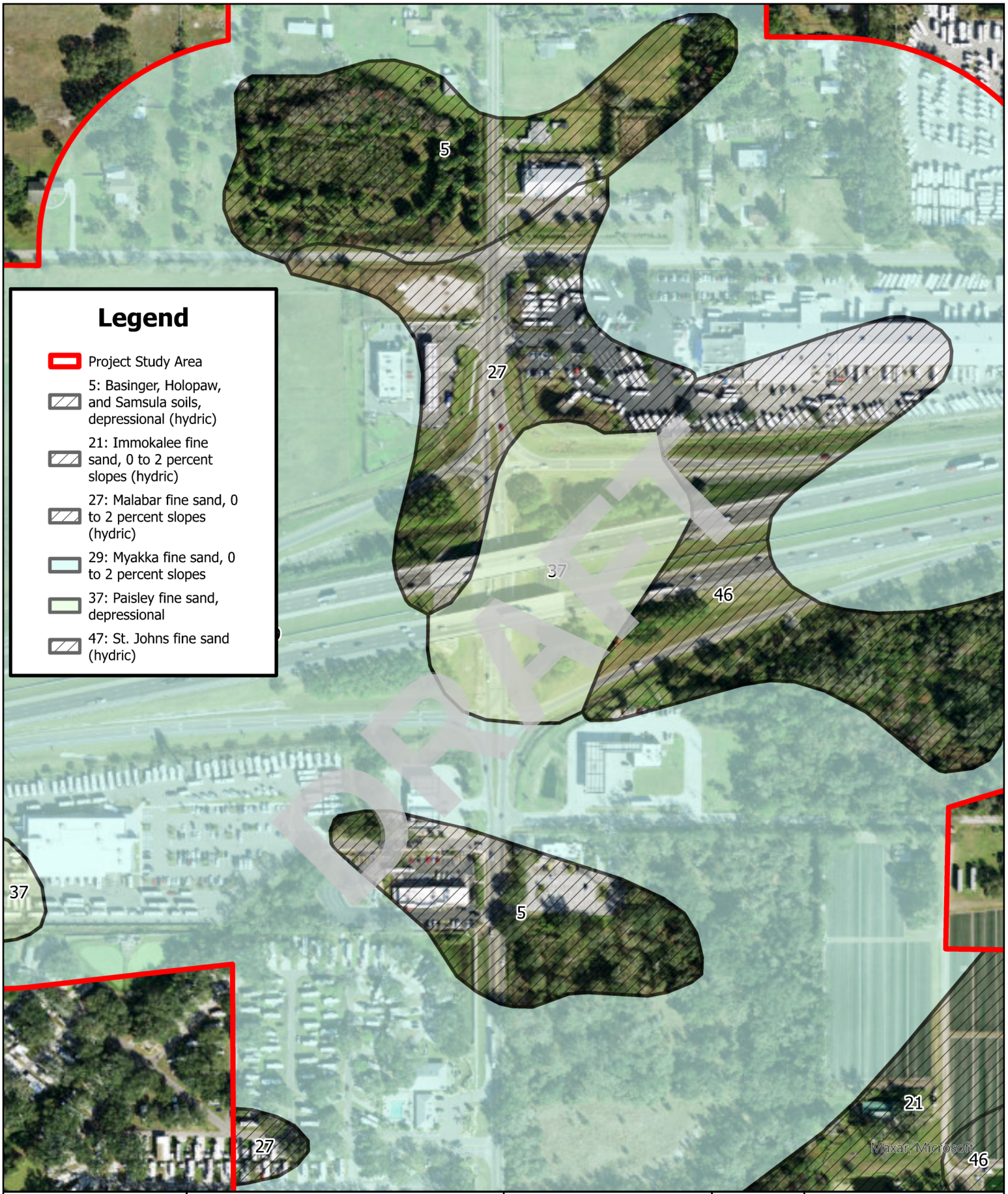
Soils Map Sheet 2

McIntosh Rd.
From South of US 92 to
North of Muck Pond/Gore Rd.
FPID: 447157-1
Hillsborough County, FL

0 150 300 Feet

N

FDOT



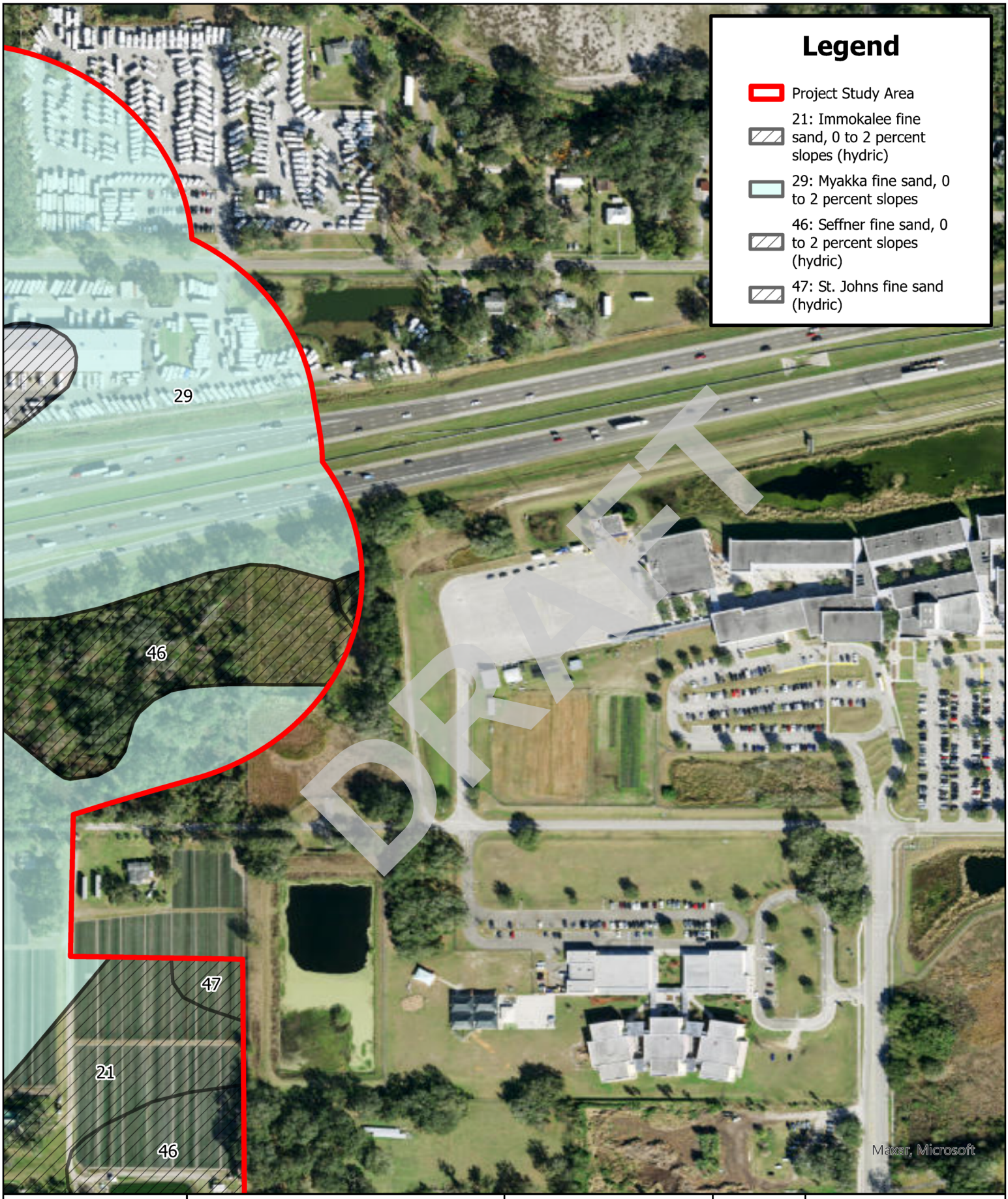
Soils Map
Sheet 3

McIntosh Rd.
From South of US 92 to
North of Muck Pond/Gore Rd.
FPID: 447157-1
Hillsborough County, FL

0 150 300 Feet

N

FDOT



Soils Map
Sheet 4

McIntosh Rd.
From South of US 92 to
North of Muck Pond/Gore Rd.
FPID: 447157-1
Hillsborough County, FL

0 150 300 Feet

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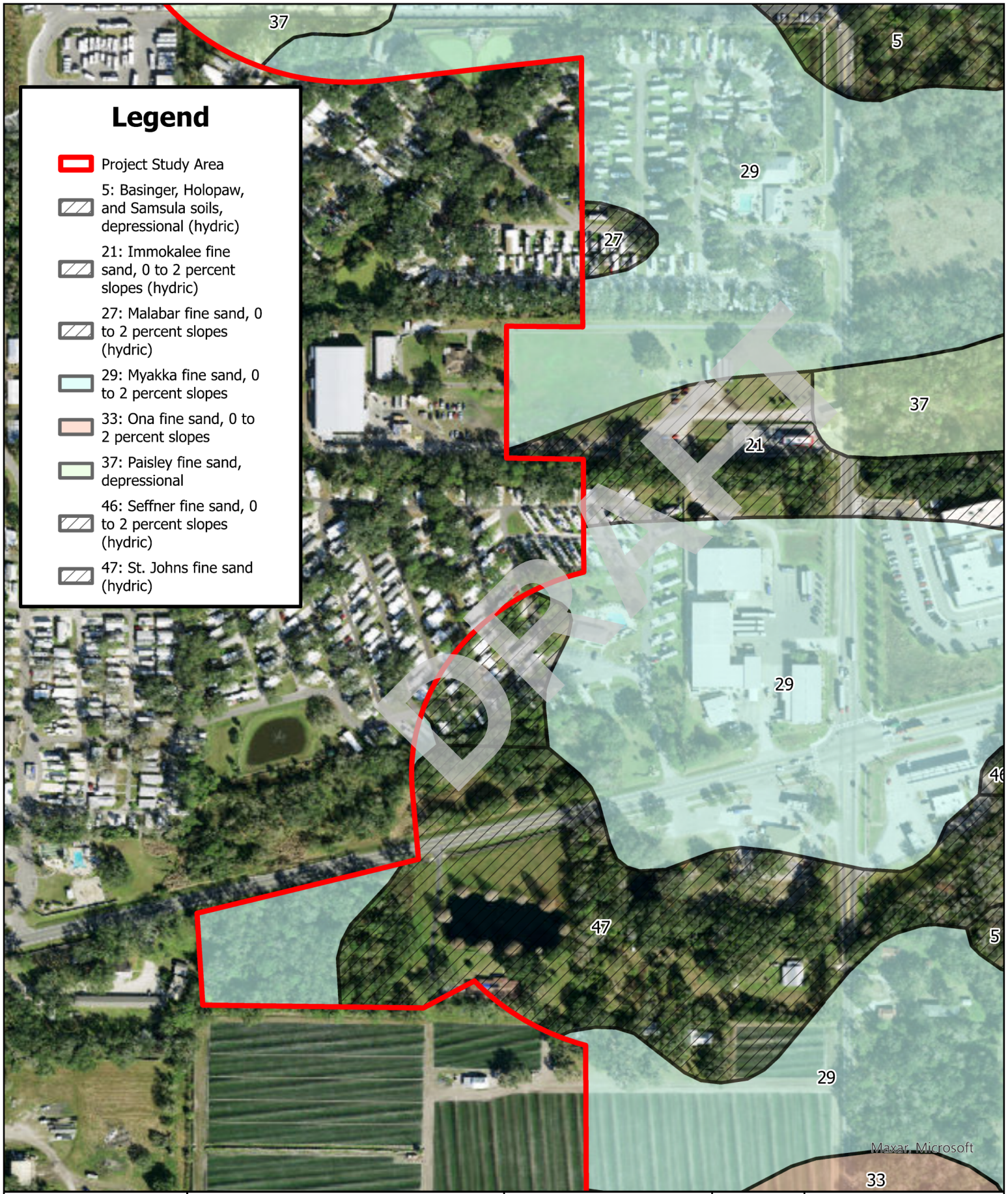
FDOT



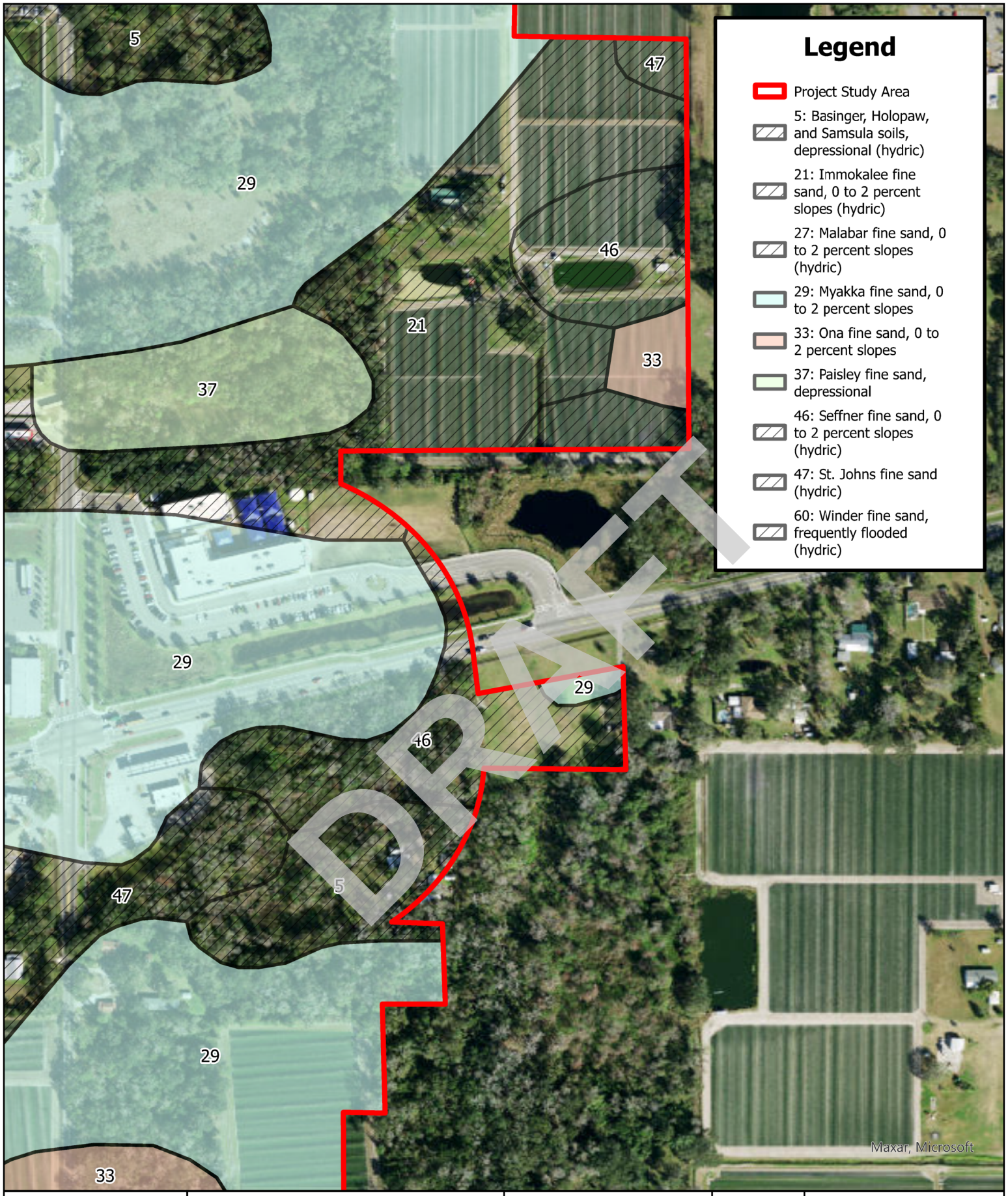
Soils Map
Sheet 5

McIntosh Rd.
From South of US 92 to
North of Muck Pond/Gore Rd.
FPID: 447157-1
Hillsborough County, FL

0 150 300 Feet

N

FDOT



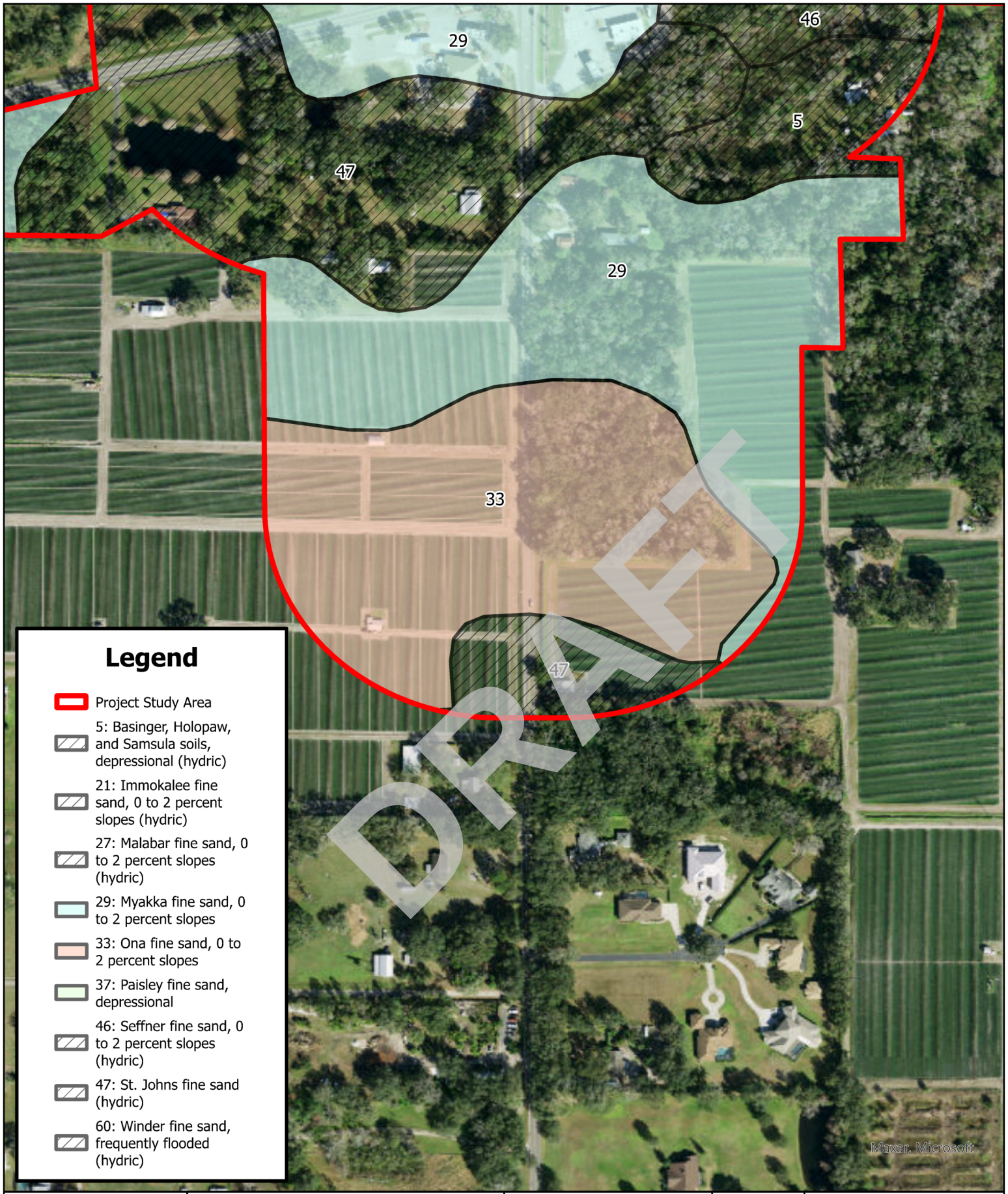
Soils Map
Sheet 6

McIntosh Rd.
From South of US 92 to
North of Muck Pond/Gore Rd.
FPID: 447157-1
Hillsborough County, FL

0 150 300 Feet

N

FDOT



Legend

- Project Study Area
- 5: Basinger, Holopaw, and Samsula soils, depressional (hydric)
- 21: Immokalee fine sand, 0 to 2 percent slopes (hydric)
- 27: Malabar fine sand, 0 to 2 percent slopes (hydric)
- 29: Myakka fine sand, 0 to 2 percent slopes
- 33: Ona fine sand, 0 to 2 percent slopes
- 37: Paisley fine sand, depressional
- 46: Seffner fine sand, 0 to 2 percent slopes (hydric)
- 47: St. Johns fine sand (hydric)
- 60: Winder fine sand, frequently flooded (hydric)

Soils Map
Sheet 7

McIntosh Rd.
From South of US 92 to
North of Muck Pond/Gore Rd.
FPID: 447157-1
Hillsborough County, FL

0 150 300 Feet

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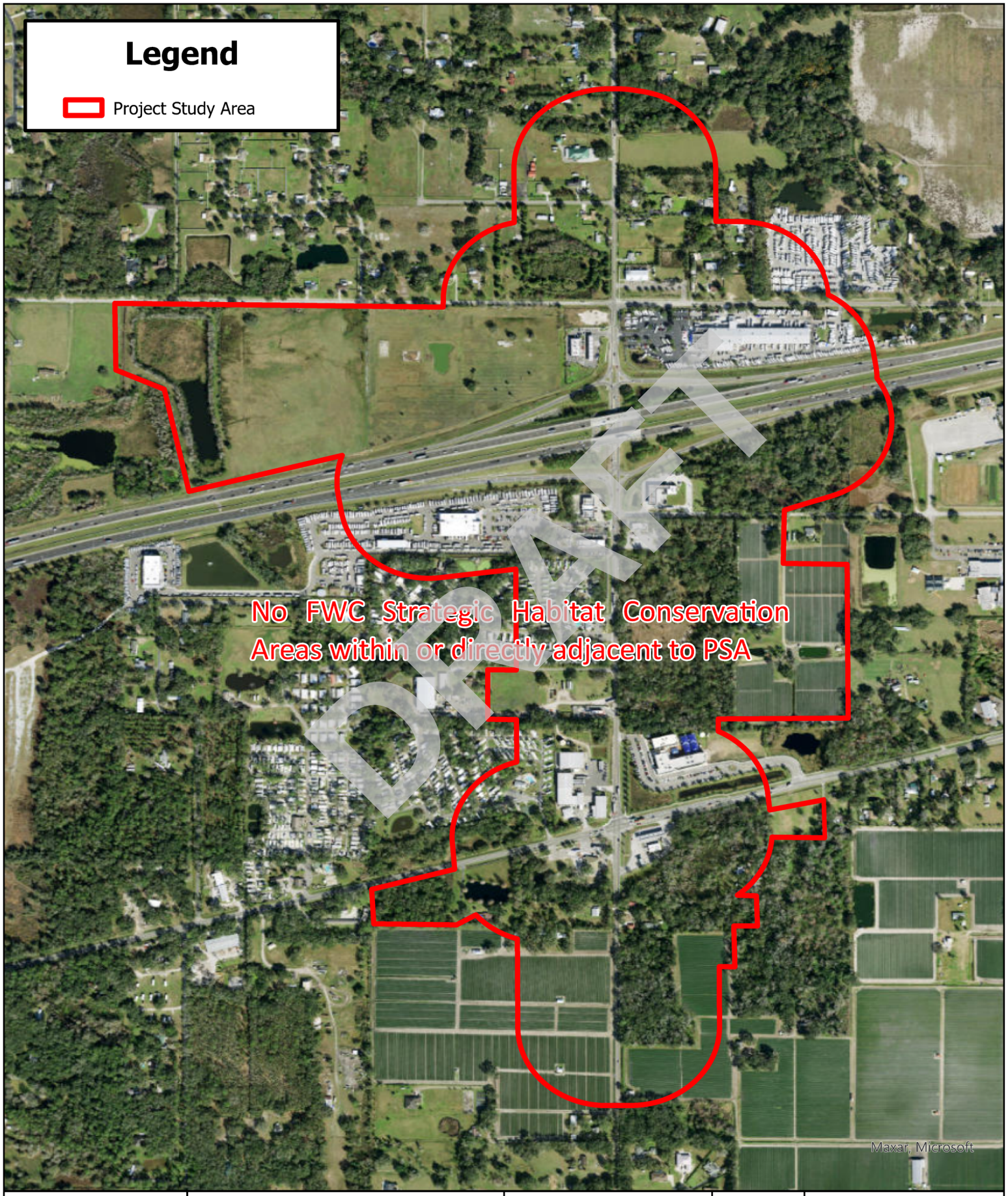
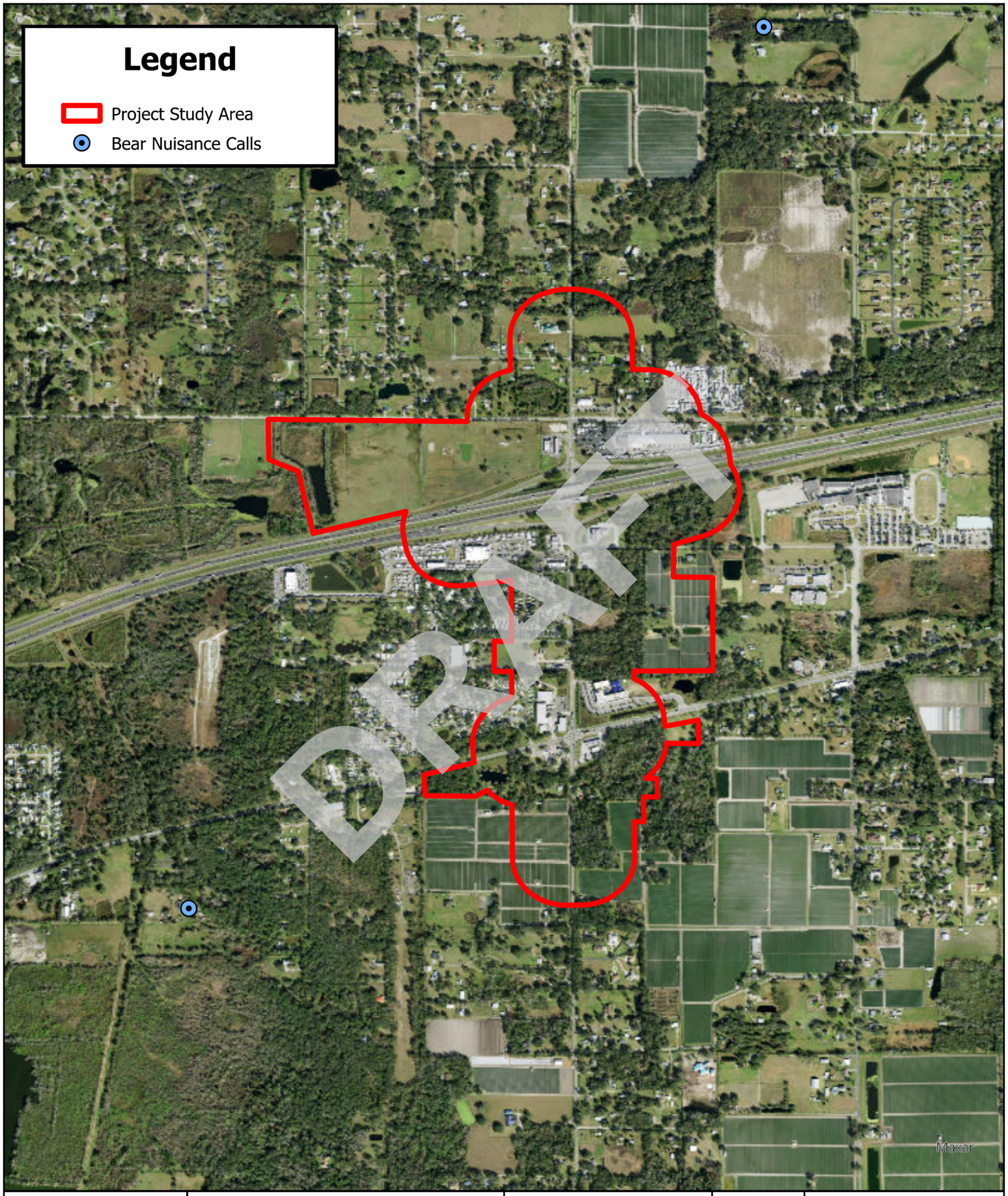
FDOT

Appendix E FWC Strategic Habitat Conservation Areas



Appendix E FWC Strategic Habitat Conservation Areas	**McIntosh Rd. From South of US 92 to North of Muck Pond/Gore Rd. FPID: 447157-1 Hillsborough County, FL**	0 400 800 Feet	N	FDOT

Appendix F Observed Listed and Protected Species Map



Appendix F Observed Listed and Protected Species Map	**McIntosh Rd. From South of US 92 to North of Muck Pond/Gore Rd. FPID: 447157-1 Hillsborough County, FL**	0 0.125 0.25 Miles	N	FDOT

Appendix G Standard Protection Measures

STANDARD PROTECTION MEASURES FOR THE EASTERN INDIGO SNAKE
U.S. Fish and Wildlife Service
August 12, 2013

The eastern indigo snake protection/education plan (Plan) below has been developed by the U.S. Fish and Wildlife Service (USFWS) in Florida for use by applicants and their construction personnel. At least **30 days prior** to any clearing/land alteration activities, the applicant shall notify the appropriate USFWS Field Office via e-mail that the Plan will be implemented as described below (North Florida Field Office: jaxregs@fws.gov; South Florida Field Office: verobeach@fws.gov; Panama City Field Office: panamacity@fws.gov). As long as the signatory of the e-mail certifies compliance with the below Plan (including use of the attached poster and brochure), no further written confirmation or "approval" from the USFWS is needed and the applicant may move forward with the project.

If the applicant decides to use an eastern indigo snake protection/education plan other than the approved Plan below, written confirmation or "approval" from the USFWS that the plan is adequate must be obtained. At least 30 days prior to any clearing/land alteration activities, the applicant shall submit their unique plan for review and approval. The USFWS will respond via e-mail, typically within 30 days of receiving the plan, either concurring that the plan is adequate or requesting additional information. A concurrence e-mail from the appropriate USFWS Field Office will fulfill approval requirements.

The Plan materials should consist of: 1) a combination of posters and pamphlets (see **Poster Information** section below); and 2) verbal educational instructions to construction personnel by supervisory or management personnel before any clearing/land alteration activities are initiated (see **Pre-Construction Activities** and **During Construction Activities** sections below).

POSTER INFORMATION

Posters with the following information shall be placed at strategic locations on the construction site and along any proposed access roads (a final poster for Plan compliance, to be printed on 11" x 17" or larger paper and laminated, is attached):

DESCRIPTION: The eastern indigo snake is one of the largest non-venomous snakes in North America, with individuals often reaching up to 8 feet in length. They derive their name from the glossy, blue-black color of their scales above and uniformly slate blue below. Frequently, they have orange to coral reddish coloration in the throat area, yet some specimens have been reported to only have cream coloration on the throat. These snakes are not typically aggressive and will attempt to crawl away when disturbed. Though indigo snakes rarely bite, they should NOT be handled.

SIMILAR SNAKES: The black racer is the only other solid black snake resembling the eastern indigo snake. However, black racers have a white or cream chin, thinner bodies, and WILL BITE if handled.

LIFE HISTORY: The eastern indigo snake occurs in a wide variety of terrestrial habitat types throughout Florida. Although they have a preference for uplands, they also utilize some wetlands

and agricultural areas. Eastern indigo snakes will often seek shelter inside gopher tortoise burrows and other below- and above-ground refugia, such as other animal burrows, stumps, roots, and debris piles. Females may lay from 4 - 12 white eggs as early as April through June, with young hatching in late July through October.

PROTECTION UNDER FEDERAL AND STATE LAW: The eastern indigo snake is classified as a Threatened species by both the USFWS and the Florida Fish and Wildlife Conservation Commission. "Taking" of eastern indigo snakes is prohibited by the Endangered Species Act without a permit. "Take" is defined by the USFWS as an attempt to kill, harm, harass, pursue, hunt, shoot, wound, trap, capture, collect, or engage in any such conduct. Penalties include a maximum fine of $25,000 for civil violations and up to $50,000 and/or imprisonment for criminal offenses, if convicted.

Only individuals currently authorized through an issued Incidental Take Statement in association with a USFWS Biological Opinion, or by a Section 10(a)(1)(A) permit issued by the USFWS, to handle an eastern indigo snake are allowed to do so.

IF YOU SEE A <u>LIVE</u> EASTERN INDIGO SNAKE ON THE SITE:

- Cease clearing activities and allow the live eastern indigo snake sufficient time to move away from the site without interference;
- Personnel must NOT attempt to touch or handle snake due to protected status.
- Take photographs of the snake, if possible, for identification and documentation purposes.
- Immediately notify supervisor or the applicant's designated agent, **and** the appropriate USFWS office, with the location information and condition of the snake.
- If the snake is located in a vicinity where continuation of the clearing or construction activities will cause harm to the snake, the activities must halt until such time that a representative of the USFWS returns the call (within one day) with further guidance as to when activities may resume.

IF YOU SEE A <u>DEAD</u> EASTERN INDIGO SNAKE ON THE SITE:

- Cease clearing activities and immediately notify supervisor or the applicant's designated agent, **and** the appropriate USFWS office, with the location information and condition of the snake.
- Take photographs of the snake, if possible, for identification and documentation purposes.
- Thoroughly soak the dead snake in water and then freeze the specimen. The appropriate wildlife agency will retrieve the dead snake.

Telephone numbers of USFWS Florida Field Offices to be contacted if a live or dead eastern indigo snake is encountered:

North Florida Field Office – (904) 731-3336
Panama City Field Office – (850) 769-0552
South Florida Field Office – (772) 562-3909

PRE-CONSTRUCTION ACTIVITIES

1. The applicant or designated agent will post educational posters in the construction office and throughout the construction site, including any access roads. The posters must be clearly visible to all construction staff. A sample poster is attached.

2. Prior to the onset of construction activities, the applicant/designated agent will conduct a meeting with all construction staff (annually for multi-year projects) to discuss identification of the snake, its protected status, what to do if a snake is observed within the project area, and applicable penalties that may be imposed if state and/or federal regulations are violated. An educational brochure including color photographs of the snake will be given to each staff member in attendance and additional copies will be provided to the construction superintendent to make available in the onsite construction office (a final brochure for Plan compliance, to be printed double-sided on 8.5" x 11" paper and then properly folded, is attached). Photos of eastern indigo snakes may be accessed on USFWS and/or FWC websites.

3. Construction staff will be informed that in the event that an eastern indigo snake (live or dead) is observed on the project site during construction activities, all such activities are to cease until the established procedures are implemented according to the Plan, which includes notification of the appropriate USFWS Field Office. The contact information for the USFWS is provided on the referenced posters and brochures.

DURING CONSTRUCTION ACTIVITIES

1. During initial site clearing activities, an onsite observer may be utilized to determine whether habitat conditions suggest a reasonable probability of an eastern indigo snake sighting (example: discovery of snake sheds, tracks, lots of refugia and cavities present in the area of clearing activities, and presence of gopher tortoises and burrows).

2. If an eastern indigo snake is discovered during gopher tortoise relocation activities (i.e. burrow excavation), the USFWS shall be contacted within one business day to obtain further guidance which may result in further project consultation.

3. Periodically during construction activities, the applicant's designated agent should visit the project area to observe the condition of the posters and Plan materials, and replace them as needed. Construction personnel should be reminded of the instructions (above) as to what is expected if any eastern indigo snakes are seen.

POST CONSTRUCTION ACTIVITIES

Whether or not eastern indigo snakes are observed during construction activities, a monitoring report should be submitted to the appropriate USFWS Field Office within 60 days of project completion. The report can be sent electronically to the appropriate USFWS e-mail address listed on page one of this Plan.

Appendix H Eastern Indigo Snake Programmatic Effect Determination Key

United States Department of the Interior
U. S. FISH AND WILDLIFE SERVICE
7915 BAYMEADOWS WAY, SUITE 200
JACKSONVILLE, FLORIDA 32256-7517

IN REPLY REFER TO:
August 13, 2013

Colonel Alan M. Dodd, District Engineer
Department of the Army
Jacksonville District Corps of Engineers
P.O Box 4970
Jacksonville, Florida 32232-0019
(Attn: Mr. David S. Hobbie)

RE: Update Addendum to USFWS Concurrence Letter to U.S. Army Corps of Engineers Regarding Use of the Attached Eastern Indigo Snake Programmatic Effect Determination Key

Dear Colonel Dodd:

This letter is to amend the January 25, 2010, letter to the U.S. Army Corps of Engineers regarding the use of the attached eastern indigo snake programmatic effect determination key (key). It supersedes the update addendum issued January 5, 2012.

We have evaluated the original programmatic concurrence and find it suitable and appropriate to extend its use to the remainder of Florida covered by the Panama City Ecological Services Office.

On Page 2

The following replaces the last paragraph above the signatures:

"Thank you for your continued cooperation in the effort to conserve fish and wildlife resources. Any questions or comments should be directed to Annie Dziergowski (North Florida ESO) at 904-731-3089, Harold Mitchell (Panama City ESO) at 850-769-0552, or Victoria Foster (South Florida ESO) at 772-469-4269."

On Page 3

The following replaces both paragraphs under "Scope of the key":

"This key should be used only in the review of permit applications for effects determinations for the eastern indigo snake within the State of Florida, and not for other listed species or for aquatic resources such as Essential Fish Habitat (EFH)."

On Page 4

The following replaces the first paragraph under Conservation Measures:

"The Service routinely concurs with the Corps' "not likely to adversely affect" (NLAA) determination for individual project effects to the eastern indigo snake when assurances are given that

our *Standard Protection Measures for the Eastern Indigo Snake* (Service 2013) located at: http://www.fws.gov/northflorida/IndigoSnakes/indigo-snakes.htm will be used during project site preparation and project construction. There is no designated critical habitat for the eastern indigo snake."

On Page 4 and Page 5 (Couplet D)

The following replaces D. under Conservation Measures:

D. The project will impact less than 25 acres of xeric habitat (scrub, sandhill, or scrubby flatwoods) or less than 25 active and inactive gopher tortoise burrows……*go to* E

The project will impact more than 25 acres of xeric habitat (scrub, sandhill, or scrubby flatwoods) or more than 25 active and inactive gopher tortoise burrows and consultation with the Service is requested[2]……*"may affect"*

On Page 5

The following replaces footnote #3:

"[3]If excavating potentially occupied burrows, active or inactive, individuals must first obtain state authorization via a FWC Authorized Gopher Tortoise Agent permit. The excavation method selected should also minimize the potential for injury of an indigo snake. Applicants should follow the excavation guidance provided within the most current Gopher Tortoise Permitting Guidelines found at http://myfwc.com/gophertortoise ."

Thank you for making these amendments concerning the Eastern Indigo Snake Key. If you have any questions, please contact Jodie Smithem of my staff at the address on the letterhead, by email at jodie_smithem@fws.gov, or by calling (904)731-3134.

Sincerely,

Dawn Jennings
Acting Field Supervisor

cc:
Panama City Ecological Services Field Office, Panama City, FL
South Florida Ecological Services Field Office, Vero Beach, FL

United States Department of the Interior

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

January 25, 2010

David S. Hobbie
Chief, Regulatory Division
U.S. Army Corps of Engineers
Post Office Box 4970
Jacksonville, Florida 32232-0019

Service Federal Activity Code: 41420-2009-FA-0642
Service Consultation Code: 41420-2009-I-0467
41910-2010-I-0045
Subject: North and South Florida Ecological Services Field Offices Programmatic Concurrence for Use of Original Eastern Indigo Snake Key(s) Until Further Notice

Dear Mr. Hobbie:

The U.S. Fish and Wildlife Service's (Service) South and North Florida Ecological Services Field Offices (FO), through consultation with the U.S. Army Corps of Engineers Jacksonville District (Corps), propose revision to both Programmatic concurrence letters/keys for the federally threatened Eastern Indigo Snake (*Drymarchon corais couperi*), (indigo snake), and now provide one key for both FO's. The original programmatic key was issued by the South Florida FO on November 9, 2007. The North Florida FO issued a revised version of the original key on September 18, 2008. Both keys were similar in content, but reflected differences in geographic work areas between the two Field Offices. The enclosed key satisfies each office's responsibilities under the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C.1531 *et seq.*).

Footnote number 3 in the original keys indicated "A member of the excavation team should be authorized for Incidental Take during excavation through either a section 10(a)(1)(A) permit issued by the Service or an incidental take permit issued by the Florida Fish and Wildlife Conservation Commission (FWC)." We have removed this reference to a Service issued Section 10(a)(1)(A) permit, as one is not necessary for this activity. We also referenced the FWC's revised April 2009 Gopher Tortoise Permitting Guidelines with a link to their website for updated excavation guidance, and have provided a website link to our Standard Protection Measures. All other conditions and criteria apply.

We believe the implementation of the attached key achieves our mutual goal for all users to make consistent effect determinations regarding this species. The use of this key for review of projects

located in all referenced counties in our respective geographic work areas leads the Service to concur with the Corps' determination of "may affect, not likely to adversely affect" (MANLAA) for the Eastern indigo snake. The biological rationale for the determinations is contained within the referenced documents and is submitted in accordance with section 7 of the Act.

Should circumstances change or new information become available regarding the eastern indigo snake or implementation of the key, the determinations may be reconsidered as deemed necessary.

Thank you for your continued cooperation in the effort to conserve fish and wildlife resources. Any questions or comments should be directed to either Allen Webb (Vero Beach) at 772-562-3909, extension 246, or Jay Herrington (Jacksonville) at 904-731-3326.

Sincerely,

Paul Souza
Field Supervisor
South Florida Ecological Services Office

David L. Hankla
Field Supervisor
North Florida Ecological Services Office

Enclosure

cc: electronic only
FWC, Tallahassee, Florida (Dr. Elsa Haubold)
Service, Jacksonville, Florida (Jay Herrington)
Service, Vero Beach, Florida (Sandra Sneckenberger)

Eastern Indigo Snake Programmatic Effect Determination Key

Scope of the key

This key should be used only in the review of permit applications for effects determinations within the North and South Florida Ecological Services Field Offices Geographic Areas of Responsibility (GAR), and not for other listed species or for aquatic resources such as Essential Fish Habitat (EFH). Counties within the **North** Florida GAR include Alachua, Baker, Bradford, Brevard, Citrus, Clay, Columbia, Dixie, Duval, Flagler, Gilchrist, Hamilton, Hernando, Hillsborough, Lafayette, Lake, Levy, Madison, Manatee, Marion, Nassau, Orange, Pasco, Pinellas, Putnam, St. Johns, Seminole, Sumter, Suwannee, Taylor, Union, and Volusia.

Counties in the **South** Florida GAR include Broward, Charlotte, Collier, De Soto, Glades, Hardee, Hendry, Highlands, Lee, Indian River, Martin, Miami-Dade, Monroe, Okeechobee, Osceola, Palm Beach, Polk, Sarasota, St. Lucie.

Habitat

Over most of its range, the eastern indigo snake frequents several habitat types, including pine flatwoods, scrubby flatwoods, high pine, dry prairie, tropical hardwood hammocks, edges of freshwater marshes, agricultural fields, coastal dunes, and human-altered habitats (Service 1999). Eastern indigo snakes appear to need a mosaic of habitats to complete their life cycle. Wherever the eastern indigo snake occurs in xeric habitats, it is closely associated with the gopher tortoise *(Gopherus polyphemus)*, the burrows of which provide shelter from winter cold and summer desiccation (Speake et al. 1978; Layne and Steiner 1996). Interspersion of tortoise-inhabited uplands and wetlands improves habitat quality for this species (Landers and Speake 1980; Auffenberg and Franz 1982).

In south Florida, agricultural sites, such as sugar cane fields, created in former wetland areas are occupied by eastern indigo snakes (Enge pers. comm. 2007). Formerly, indigo snakes would have only occupied higher elevation sites within the wetlands. The introduction of agriculture and its associated canal systems has resulted in an increase in rodents and other species of snakes that are prey for eastern indigo snakes. The result is that indigos occur at higher densities in these areas than they did historically.

Even though thermal stress may not be a limiting factor throughout the year in south Florida, indigo snakes still seek and use underground refugia. On the sandy central ridge of central Florida, eastern indigos use gopher tortoise burrows more (62 percent) than other underground refugia (Layne and Steiner 1996). Other underground refugia used include armadillo (*Dasypus novemcinctus*) burrows near citrus groves, cotton rat (*Sigmodon hispidus*) burrows, and land crab (*Cardisoma guanhumi*) burrows in coastal areas (Service 2006). Natural ground holes, hollows at the base of trees or shrubs, ground litter, trash piles, and crevices of rock-lined ditch walls are also used (Layne and Steiner 1996). These refugia are used most frequently where tortoise burrows are not available, principally in low-lying areas off the central and coastal ridges. In extreme south Florida (the Everglades and Florida Keys), indigo snakes are found in tropical

hardwood hammocks, pine rocklands, freshwater marshes, abandoned agricultural land, coastal prairie, mangrove swamps, and human-altered habitats (Steiner et al. 1983). It is suspected that they prefer hammocks and pine forests, because most observations occur in these habitats disproportionately to their presence in the landscape (Steiner et al. 1983). Hammocks may be important breeding areas as juveniles are typically found there. The eastern indigo snake is a snake-eater so the presence of other snake species may be a good indicator of habitat quality.

Conservation Measures

The Service routinely concurs with the Corps' "not likely to adversely affect" (NLAA) determination for individual project effects to the eastern indigo snake when assurances are given that our *Standard Protection Measures for the Eastern Indigo Snake* (Service 2004) located at: http://www.fws.gov/northflorida/IndigoSnakes/indigo-snakes will be used during project site preparation and project construction. There is no designated critical habitat for the eastern indigo snake.

In an effort to reduce correspondence in effect determinations and responses, the Service is providing an Eastern Indigo Snake Effect Determination Key, similar in utility to the West Indian Manatee Effect Determination Key and the Wood Stork Effect Determination Keys presently being utilized by the Corps. If the use of this key results in a Corps' determination of "no effect" for a particular project, the Service supports this determination. If the use of this Key results in a determination of NLAA, the Service concurs with this determination and no additional correspondence will be necessary[1]. This key is subject to revisitation as the Corps and Service deem necessary.

A. Project is not located in open water or salt marsh.....*go to* B

Project is located solely in open water or salt marsh.....*"no effect"*

B. Permit will be conditioned for use of the Service's *Standard Protection Measures For The Eastern Indigo Snake* during site preparation and project construction.....*go to* C

Permit will not be conditioned as above for the eastern indigo snake, or it is not known whether an applicant intends to use these measures and consultation with the Service is requested[2] .....*"may affect"*

C. There are gopher tortoise burrows, holes, cavities, or other refugia where a snake could be buried or trapped and injured during project activities .....*go to* D

There are no gopher tortoise burrows, holes, cavities, or other refugia where a snake could be buried or trapped and injured during project activities .....*"NLAA"*

D. The project will impact less than 25 acres of xeric habitat supporting less than 25 active and inactive gopher tortoise burrows.....*go to* E

The project will impact more than 25 acres of xeric habitat or more than 25 active and inactive gopher tortoise burrows and consultation with the Service is requested[2]..... *"may affect"*

E. Any permit will be conditioned such that all gopher tortoise burrows, active or inactive, will be evacuated prior to site manipulation in the vicinity of the burrow[3]. If an indigo snake is encountered, the snake must be allowed to vacate the area prior to additional site manipulation in the vicinity. Any permit will also be conditioned such that holes, cavities, and snake refugia other than gopher tortoise burrows will be inspected each morning before planned site manipulation of a particular area, and, if occupied by an indigo snake, no work will commence until the snake has vacated the vicinity of proposed work..... *"NLAA"*

Permit will not be conditioned as outlined above and consultation with the Service is requested[2] ..... *"may affect"*

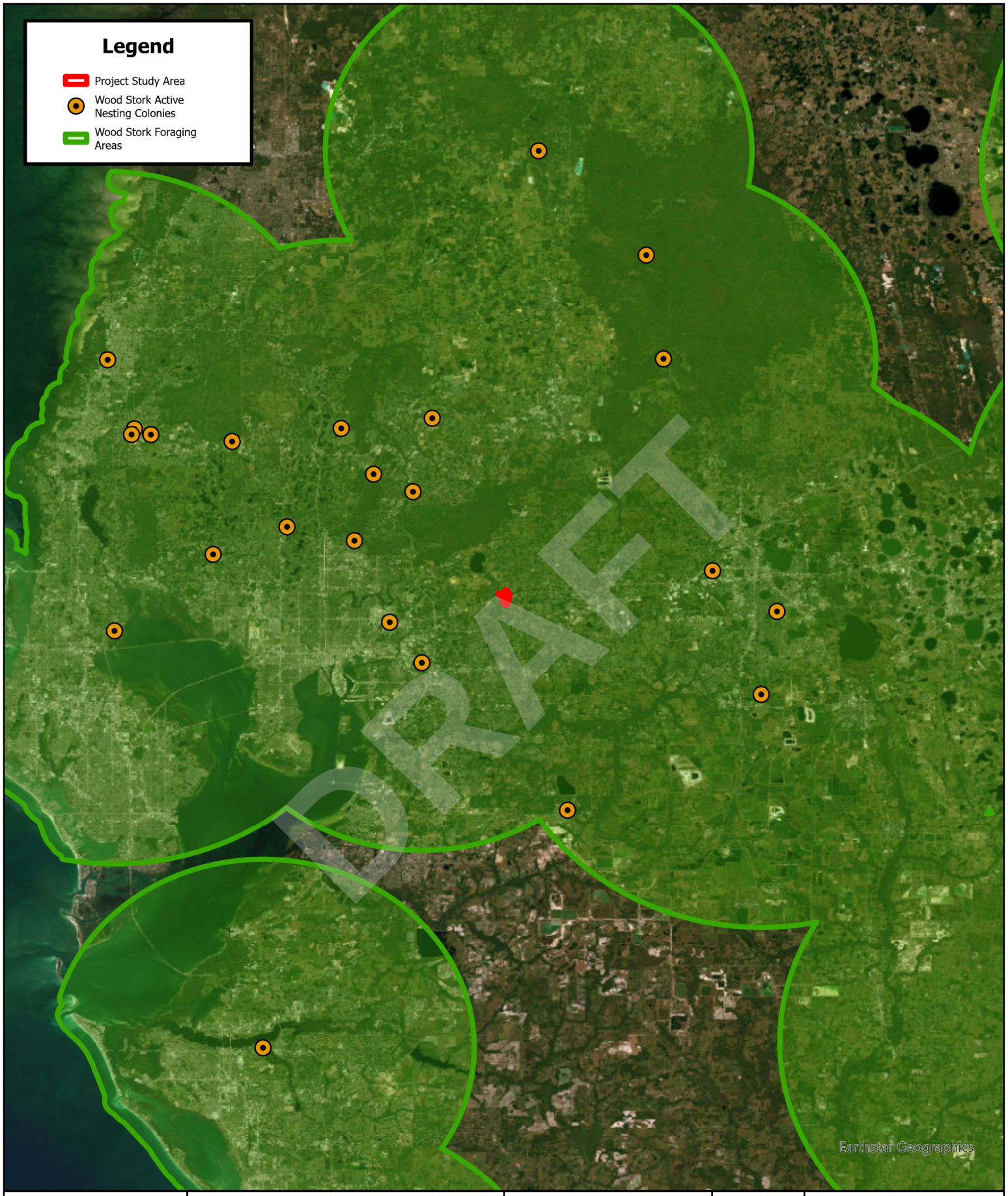
---

[1]With an outcome of "no effect" or "NLAA" as outlined in this key, the requirements of section 7 of the Act are fulfilled for the eastern indigo snake and no further action is required.

[2]Consultation may be concluded informally or formally depending on project impacts.

[3] If burrow excavation is utilized, it should be performed by experienced personnel. The method used should minimize the potential for injury of an indigo snake. Applicants should follow the excavation guidance provided within the Florida Fish and Wildlife Conservation Commission's revised April 2009 Gopher Tortoise Permitting Guidelines located at **http://myfwc.com/License/Permits_ProtectedWildlife.htm#gophertortoise**. A member of the excavation team should be authorized for Incidental Take during excavation through an incidental take permit issued by the Florida Fish and Wildlife Conservation Commission.

Appendix I Wood Stork Colonies



Appendix I
Wood Stork Colonies Map

McIntosh Rd.
From South of US 92 to
North of Muck Pond/Gore Rd.
FPID: 447157-1
Hillsborough County, FL

0 5 10 Miles

N

FDOT

Appendix J Effect Determination Key for the Wood Stork in Central and North Peninsular Florida

THE CORPS OF ENGINEERS, JACKSONVILLE DISTRICT, U. S. FISH AND WILDLIFE SERVICE, JACKSONVILLE ECOLOGICAL SERVICES FIELD OFFICE AND STATE OF FLORIDA EFFECT DETERMINATION KEY FOR THE WOOD STORK IN CENTRAL AND NORTH PENINSULAR FLORIDA
September 2008

Purpose and Background

The purpose of this document is to provide a tool to improve the timing and consistency of review of Federal and State permit applications and Federal civil works projects, for potential effects of these projects on the endangered wood stork (*Mycteria americana*) within the Jacksonville Ecological Services Field Office (JAFL) geographic area of responsibility (GAR see below). The key is designed primarily for Corps Project Managers in the Regulatory and Planning Divisions and the Florida Department of Environmental Protection or its authorized designee, or Water Management Districts. The tool consists of the following dichotomous key and reference material. The key is intended to be used to evaluate permit applications and Corps' civil works projects for impacts potentially affecting wood storks or their wetland habitats. At certain steps in the key, the user is referred to graphics depicting known wood stork nesting colonies and their core foraging areas (CFA), footnotes, and other support documents. The graphics and supporting documents may be downloaded from the Corps' web page at http://www.saj.usace.army.mil/permit or at the JAFL web site at http://www.fws.gov/northflorida/WoodStorks. We intend to utilize the most recent information for both the graphics and supporting information; so should this information be updated, we will modify it accordingly. **Note: This information is provided as an aid to project review and analysis, and is not intended to substitute for a comprehensive biological assessment of potential project impacts. Such assessments are site-specific and usually generated by the project applicant or, in the case of civil works projects, by the Corps or project co-sponsor.**

Explanatory footnotes provided in the key must be closely followed whenever encountered.

Scope of the key

This key should only be used in the review of permit applications for effects determinations on wood storks within the JAFL GAR, and not for other listed species. Counties within the JAFL GAR include Alachua, Baker, Bradford, Brevard, Citrus, Clay, Columbia, Dixie, Duval, Flagler, Gilchrist, Hamilton, Hernando, Hillsborough, Lafayette, Lake, Levy, Madison, Manatee, Marion, Nassau, Orange, Pasco, Pinellas, Putnam, St. Johns, Seminole, Sumter, Suwannee, Taylor, Union, and Volusia.

The final effect determination will be based on project location and description, the potential effects to wood storks, and any measures (for example project components, special permit conditions) that avoid or minimize direct, indirect, and/or cumulative

impacts to wood storks and/or suitable wood stork foraging habitat. Projects that key to a "no effect" determination do not require additional consultation or coordination with the JAFL. Projects that key to "NLAA" also do not need further consultation; however, the JAFL staff will assist the Corps if requested, to answer questions regarding the appropriateness of mitigation options. Projects that key to a "may affect" determination equate to "likely to adversely affect" situations, and those projects should not be processed under the SPGP or any other programmatic general permit. For all "may affect" determinations, Corps Project Managers should request the JAFL to initiate formal consultation on the Wood stork.

Summary of General Wood Stork Nesting and Foraging Habitat Information

The wood stork is primarily associated with freshwater and estuarine habitats that are used for nesting, roosting, and foraging. Wood storks typically nest colonially in medium to tall trees that occur in stands located either in swamps or on islands surrounded by relatively broad expanses of open water (Ogden 1991; Rodgers et al. 1996). Successful breeding sites are those that have limited human disturbance and low exposure to land based predators. Nesting sites protected from land-based predators are characterized as those surrounded by large expanses of open water or where the nest trees are inundated at the onset of nesting and remain inundated throughout most of the breeding cycle. These colonies have water depths between 0.9 and 1.5 meters (3 and 5 feet) during the breeding season.

In addition to limited human disturbance and land-based predation, successful nesting depends on the availability of suitable foraging habitat. Such habitat generally results from a combination of average or above-average rainfall during the summer rainy season, and an absence of unusually rainy or cold weather during the winter-spring breeding season (Kahl 1964; Rodgers et al. 1987). This pattern produces widespread and prolonged flooding of summer marshes that tends to maximize production of freshwater fishes, followed by steady drying that concentrate fish during the season when storks nest (Kahl 1964). Successful nesting colonies are those that have a large number of foraging sites. To maintain a wide range of foraging opportunities, a variety of wetland habitats exhibiting short and long hydroperiods should be present. In terms of wood stork foraging, the Service (1999) describes a short hydroperiod as one where a wetland fluctuates between wet and dry in 1 to 5-month cycles, and a long hydroperiod where the wet period is greater than five consecutive months. Wood storks during the wet season generally feed in the shallow water of short-hydroperiod wetlands and in coastal habitats during low tide. During the dry season, foraging shifts to longer hydroperiod interior wetlands as they progressively dry down (though usually retaining some surface water throughout the dry season).

Because of their specialized feeding behavior, wood storks forage most effectively in shallow-water areas with highly concentrated prey. Typical foraging sites for the wood stork include freshwater marshes, depressions in cypress heads, swamp sloughs, managed impoundments, stock ponds, shallow-seasonally flooded roadside or agricultural ditches, and narrow tidal creeks or shallow tidal pools. Good foraging conditions are characterized by water that is relatively calm, open, and having water depths between 5 and 15 inches (5 and 38 cm). Preferred foraging habitat includes wetlands exhibiting a mosaic of submerged and/or emergent aquatic vegetation, and shallow, open-water areas subject to hydrologic

regimes ranging from dry to wet. The vegetative component provides nursery habitat for small fish, frogs, and other aquatic prey, and the shallow, open-water areas provide sites for concentration of the prey during daily or seasonal low water periods.

WOOD STORK KEY

Although designed primarily for use by Corps Project Managers in the Regulatory and Planning Divisions, and State Regulatory agencies or their designees, project permit applicants and co-sponsors of civil works projects may find this key and its supporting documents useful in identifying potential project impacts to wood storks, and planning how best to avoid, minimize, or compensate for any identified adverse effects.

A. Project within 2,500 feet of an active colony site[1]……*May affect*

Project more than 2,500 feet from a colony site……go to B

B. Project does not affect suitable foraging habitat[2] (SFH)…….*no effect*

Project impacts SFH[2]……go to C

C. Project impacts to SFH are less than or equal to 0.5 acre[3]…….....*NLAA*[4]

Project impacts to SFH are greater than or equal to 0.5 acre..……..go to D

D. Project impacts to SFH not within a Core Foraging Area[5] (see attached map) of a colony site, and no wood storks have been documented foraging on site…….....NLAA[4]

Project impacts to SFH are within the CFA of a colony site, or wood storks have been documented foraging on a project site outside the CFA ……..….go to E

E. Project provides SFH compensation within the Service Area of a Service-approved wetland mitigation bank or wood stork conservation bank preferably within the CFA, or consists of SFH compensation within the CFA consisting of enhancement, restoration or creation in a project phased approach that provides an amount of habitat and foraging function equivalent to that of impacted SFH (see *Wood Stork Foraging Habitat Assessment Procedure*[6] for guidance), is not contrary to the Service's *Habitat Management Guidelines For The Wood Stork In The Southeast Region* and in accordance with the CWA section 404(b)(1) guidelines……*NLAA*[4]

Project does not satisfy these elements.……....……...*May affect*

[1] An active nesting site is defined as a site currently supporting breeding pairs of wood storks, or has supported breeding wood storks at least once during the preceding 10-year period.

[2] Suitable foraging habitat (SFH) is described as any area containing patches of relatively open (< 25% aquatic vegetation), calm water, and having a permanent or seasonal water depth between 2 and 15 inches (5 to 38 cm). SFH supports and concentrates, or is capable of supporting and concentrating small fish, frogs, and other aquatic prey. Examples of SFH include, but are not limited to, freshwater marshes and stock ponds, shallow, seasonally flooded roadside or agricultural ditches, narrow tidal creeks or shallow tidal pools, managed impoundments, and depressions in cypress heads and swamp sloughs. See above *Summary of General Wood Stork Nesting and Foraging Habitat Information*.

[3] On an individual basis, projects that impact less than 0.5 acre of SFH generally will not have a measurable effect on wood storks, although we request the Corps to require mitigation for these losses when appropriate. Wood Storks are a wide ranging species, and individually, habitat change from impacts to less than 0.5 acre of SFH is not likely to adversely affect wood storks. However, collectively they may have an effect and therefore regular monitoring and reporting of these effects are important.

[4] Upon Corps receipt of a general concurrence issued by the JAFL through the Programmatic Concurrence on this key, "NLAA" determinations for projects made pursuant to this key require no further consultation with the JAFL.

[5] The U.S. Fish and Wildlife Service (Service) has identified core foraging area (CFA) around all known wood stork nesting colonies that is important for reproductive success. In Central Florida, CFAs include suitable foraging habitat (SFH) within a 15-mile radius of the nest colony; CFAs in North Florida include SFH within a 13-mile radius of a colony. The referenced map provides locations of known colonies and their CFAs throughout Florida documented as active within the last 10 years. The Service believes loss of suitable foraging wetlands within these CFAs may reduce foraging opportunities for the wood stork.

[6]This draft document, *Wood Stork Foraging Habitat Assessment Procedure*, by Passarella and Associates, Incorporated, may serve as further guidance in ascertaining wetland foraging value to wood storks and compensating for impacts to wood stork foraging habitat.

Monitoring and Reporting Effects

For the Service to monitor cumulative effects, it is important for the Corps to monitor the number of permits and provide information to the Service regarding the number of permits issued that were determined "may affect, not likely to adversely affect." It is requested that information on date, Corps identification number, project acreage, project wetland acreage, and latitude and longitude in decimal degrees be sent to the Service quarterly.

Literature Cited

Kahl, M.P., Jr. 1964. Food ecology of the wood stork (*Mycteria americana*) in Florida. Ecological Monographs 34:97-117.

Ogden, J.C. 1991. Nesting by wood storks in natural, altered, and artificial wetlands in central and northern Florida. Colonial Waterbirds 14:39-45.

Rodgers, J.A. Jr., A.S. Wenner, and S.T. Schwikert. 1987. Population dynamics of wood storks in northern and central Florida, USA. Colonial Waterbirds 10:151-156.

Rodgers, J.A., Jr., S.T. Schwikert, and A. Shapiro-Wenner. 1996. Nesting habitat of wood storks in north and central Florida, USA. Colonial Waterbirds 19:1-21.

U.S. Fish and Wildlife Service. 1999. South Florida multi-species recovery plan. Fish and Wildlife Service; Atlanta, Georgia. Available from: http://verobeach.fws.gov/Programs/Recovery/vbms5.html.

HABITAT MANAGEMENT GUIDELINES FOR THE WOOD STORK IN THE SOUTHEAST REGION

HABITAT MANAGEMENT GUIDELINES FOR THE WOOD STORK IN THE SOUTHEAST REGION

Prepared by

John C. Ogden
Acting Program Manager
Wildlife Research
Everglades National Park

for the

Southeast Region
U.S. Fish and Wildlife Service

Cover design by
Florida Power & Light Company
Miami, Florida

HABITAT MANAGEMENT GUIDELINES FOR THE WOOD STORK IN THE SOUTHEAST REGION

Introduction

A number of Federal and state laws and/or regulations prohibit, cumulatively, such acts as harrassing, disturbing, harming, molesting, pursuing, etc., wood storks, or destroying their nests (see Section VII). Although advisory in nature, these guidelines represent a biological interpretation of what would constitute violations of one or more of such prohibited acts. Their purpose is to mainain and/or improve the environmental conditions that are required for the survival and well-being of wood storks in the southeastern United States, and are designed essentially for application in wood stork/human activity conflicts (principally land development and human intrusion into stork use sites). The emphasis is to avoid or minimize detrimental human-related impacts on wood storks. These guidelines were prepared in consultations with state wildlife agencies and wood stork experts in the four southeastern states where the wood stork is listed as Endangered (Alabama, Florida, Georgia, South Carolina).

General

The wood stork is a gregarious species, which nests in colonies (rookeries), and roosts and feeds in flocks, often in association with other species of long-legged water birds. Storks that nest in the southeastern United States appear to represent a distinct population, separate from the nearest breeding population in Mexico. Storks in the southeastern U.S. population have recently (since 1980) nested in colonies scattered throughout Florida, and at several central-southern Georgia and coastal South Carolina sites. Banded and color-marked storks from central and southern Florida colonies have dispersed during non-breeding seasons as far north as southern Georgia, and the coastal counties in South Carolina and southeastern North Carolina, and as far west as central Alabama and northeastern Mississippi. Storks from a colony in south-central Georgia have wintered between southern Georgia and southern Florida. This U.S. nesting population of wood storks was listed as endangered by the U.S. Fish and Wildlife Service on February 28, 1984 (*Federal Register* 49(4):7332-7335).

Wood storks use freshwater and estuarine wetlands as feeding, nesting, and roosting sites. Although storks are not habitat specialists, their needs are exacting enough, and available habitat is limited enough, so that nesting success and the size of regional populations are closely regulated by year-to-year differences in the quality and quantity of suitable habitat. Storks are especially sensitive to environmental conditions at feeding sites; thus, birds may fly relatively long distances either daily or between regions annually, seeking adequate food resources.

All available evidence suggests that regional declines in wood stork numbers have been largely due to the loss or degradation of essential wetland habitat. An understanding of the qualities of good stork habitat should help to focus protection efforts on those sites

that are seasonally important to regional populations of wood storks. Characteristics of feeding, nesting, and roosting habitat, and management guidelines for each, are presented here by habitat type.

I. Feeding habitat.

A major reason for the wood stork decline has been the loss and degredation of feeding habitat. Storks are especially sensitive to any manipulation of a wetland site that results in either reduced amounts or changes in the timing of food availability.

Storks feed primarily (often almost exclusively) on small fish between 1 and 8 inches in length. Successful foraging sites are those where the water is between 2 and 15 inches deep. Good feeding conditions usually occur where water is relatively calm and uncluttered by dense thickets of aquatic vegetation. Often a dropping water level is necessary to concentrate fish at suitable densities. Conversely, a rise in water, especially when it occurs abruptly, disperses fish and reduces the value of a site as feeding habitat.

The types of wetland sites that provide good feeding conditions for storks include: drying marshes or stock ponds, shallow roadside or agricultural ditches, narrow tidal creeks or shallow tidal pools, and depressions in cypress heads or swamp sloughs. In fact, almost any shallow wetland depression where fish tend to become concentrated, either through local reproduction or the consequences of area drying, may be used by storks.

Nesting wood storks do most of their feeding in wetlands between 5 and 40 miles from the colony, and occasionally at distances as great as 75 miles. Within this colony foraging range and for the 110-150 day life of the colony, and depending on the size of the colony and the nature of the surrounding wetlands, anywhere from 50 to 200 different feeding sites may be used during the breeding season.

Non-breeding storks are free to travel much greater distances and remain in a region only for as long as sufficient food is available. Whether used by breeders or non-breeders, any single feeding site may at one time have small or large numbers of storks (1 to 100+), and be used for one to many days, depending on the quality and quantity of available food. Obviously, feeding sites used by relatively large numbers of storks, and/or frequently used areas, potentially are the more important sites necessary for the maintenance of a regional population of birds.

Differences between years in the seasonal distribution and amount of rainfall usually mean that storks will differ between years in where and when they feed. Successful nesting colonies are those that have a large number of feeding site options, including sites that may be suitable only in years of rainfall extremes. To maintain the wide range of feeding site options requires that many different wetlands, with both relatively short and long annual hydroperiods, be preserved. For example, protecting only the larger wetlands, or those with longer annual hydroperiods, will result in the eventual loss of smaller, seemingly less important wetlands. However, these small scale wetlands are crucial as the only available feeding sites during the wetter periods when the larger habitats are too deeply flooded to be used by storks.

II. Nesting habitat.

Wood storks nest in colonies, and will return to the same colony site for many years so long as that site and surrounding feeding habitat continue to supply the needs of the birds. Storks require between 110 and 150 days for the annual nesting cycle, from the period of courtship until the nestlings become independent. Nesting activity may begin as early as December or as late as March in southern Florida colonies, and between late February and April in colonies located between central Florida and South Carolina. Thus, full term colonies may be active until June-July in south Florida, and as late as July-August at more northern sites. Colony sites may also be used for roosting by storks during other times of the year.

Almost all recent nesting colonies in the southeastern U.S. have been located either in woody vegetation over standing water, or on islands surrounded by broad expanses of open water. The most dominant vegetation in swamp colonies has been cypress, although storks also nest in swamp hardwoods and willows. Nests in island colonies may be in more diverse vegetation, including mangroves (coastal), exotic species such as Australian pine (*Casuarina*) and Brazilian Pepper (*Schinus*), or in low thickets of cactus (*Opuntia*). Nests are usually located 15-75 feet above ground, but may be much lower, especially on island sites when vegetation is low.

Since at least the early 1970's, many colonies in the southeastern U.S. have been located in swamps where water has been impounded due to the construction of levees or roadways. Storks have also nested in dead and dying trees in flooded phosphate surface mines, or in low, woody vegetation on mounded, dredge islands. The use of these altered wetlands or completely "artificial" sites suggests that in some regions or years storks are unable to locate natural nesting habitat that is adequately flooded during the normal breeding season. The readiness with which storks will utilize water impoundments for nesting also suggests that colony sites could be intentionally created and maintained through long-term site management plans. Almost all impoundment sites used by storks become suitable for nesting only fortuitously, and therefore, these sites often do not remain available to storks for many years.

In addition to the irreversible impacts of drainage and destruction of nesting habitat, the greatest threats to colony sites are from human disturbance and predation. Nesting storks show some variation in the levels of human activity they will tolerate near a colony. In general, nesting storks are more tolerant of low levels of human activity near a colony when nests are high in trees than when they are low, and when nests contain partially or completely feathered young than during the period between nest construction and the early nestling period (adults still brooding). When adult storks are forced to leave their nests, eggs or downy young may die quickly (<20 minutes) when exposed to direct sun or rain.

Colonies located in flooded environments must remain flooded if they are to be successful. Often water is between 3 and 5 feet deep in successful colonies during the nesting season. Storks rarely form colonies, even in traditional nesting sites, when they are dry, and may abandon nests if sites become dry during the nesting period. Flooding in colonies may be most important as a defense against mammalian predators. Studies of stork colonies in Georgia and

Florida have shown high rates of raccoon predation when sites dried during the nesting period. A reasonably high water level in an active colony is also a deterrent against both human and domestic animal intrusions.

Although nesting wood storks usually do most feeding away from the colony site (>5 miles), considerable stork activity does occur close to the colony during two periods in the nesting cycle. Adult storks collect almost all nesting material in and near the colony, usually within 2500 feet. Newly fledged storks, near the end of the nesting cycle, spend from 1-4 weeks during the fledging process flying locally in the colony area, and perched in nearby trees or marshy spots on the ground. These birds return daily to their nests to be fed. It is essential that these fledging birds have little or no disturbance as far our as one-half mile within at least one or two quadrants from the colony. Both the adults, while collecting nesting material, and the inexperienced fledglings, do much low, flapping flight within this radius of the colony. At these times, storks potentially are much more likely to strike nearby towers or utility lines.

Colony sites are not necessarily used annually. Regional populations of storks shift nesting locations between years, in response to year-to-year differences in food resources. Thus, regional populations require a range of options for nesting sites, in order to successfully respond to food availability. Protection of colony sites should continue, therefore, for sites that are not used in a given year.

III. Roosting habitat.

Although wood storks tend to roost at sites that are similar to those used for nesting, they also use a wider range of site types for roosting than for nesting. Non-breeding storks, for example, may frequently change roosting sites in response to changing feeding locations, and in the process, are inclined to accept a broad range of relatively temporary roosting sites. Included in the list of frequently used roosting locations are cypress "heads" or swamps (not necessarily flooded if trees are tall), mangrove islands, expansive willow thickets or small, isolated willow "islands" in broad marshes, and on the ground either on levees or in open marshes.

Daily activity patterns at a roost vary depending on the status of the storks using the site. Non-breeding adults or immature birds may remain in roosts during major portions of some days. When storks are feeding close to a roost, they may remain on the feeding grounds until almost dark before making the short flight. Nesting storks traveling long distances (>40 miles) to feeding sites may roost at or near the latter, and return to the colony the next morning. Storks leaving roosts, especially when going long distances, tend to wait for mid-morning thermals to develop before departing.

IV. Management zones and guidelines for feeding sites.

To the maximum extent possible, feeding sites should be protected by adherence to the following protection zones and guidelines:

A. There should be no human intrusion into feeding sites when storks are present. Depending upon the amount of screening vegetation, human activity should be no closer than between 300 feet (where solid vegetation screens exist) and 750 feet (no vegetation screen).

B. Feeding sites should not be subjected to water management practices that alter traditional water levels or the seasonally normal drying patterns and rates. Sharp rises in water levels are especially disruptive to feeding storks.

C. The introduction of contaminants, fertilizers, or herbicides into wetlands that contain stork feeding sites should be avoided, especially those compounds that could adversely alter the diversity and numbers of native fishes, or that could substantially change the characteristics of aquatic vegetation. Increase in the density and height of emergent vegetation can degrade or destroy sites as feeding habitat.

D. Construction of tall towers (especially with guy wires) within three miles, or high power lines (especially across long stretches of open country) within one mile of major feeding sites should be avoided.

V. Management zones and guidelines for nesting colonies.

A. Primary zone: This is the most critical area, and must be managed according to recommended guidelines to insure that a colony site survives.

1. Size: The primary zone must extend between 1000 and 1500 feet in all directions from the actual colony boundaries when there are no visual or broad aquatic barriers, and never less than 500 feet even when there are strong visual or aquatic barriers. The exact width of the primary zone in each direction from the colony can vary within this range, depending on the amount of visual screen (tall trees) surrounding the colony, the amount of relatively deep, open water between the colony and the nearest human activity, and the nature of the nearest human activity. In general, storks forming new colonies are more tolerant of existing human activity, than they will be of new human activity that begins after the colony has formed.

2. Recommended Restrictions:

a. Any of the following activities within the primary zone, at any time of the year, are likely to be detrimental to the colony:

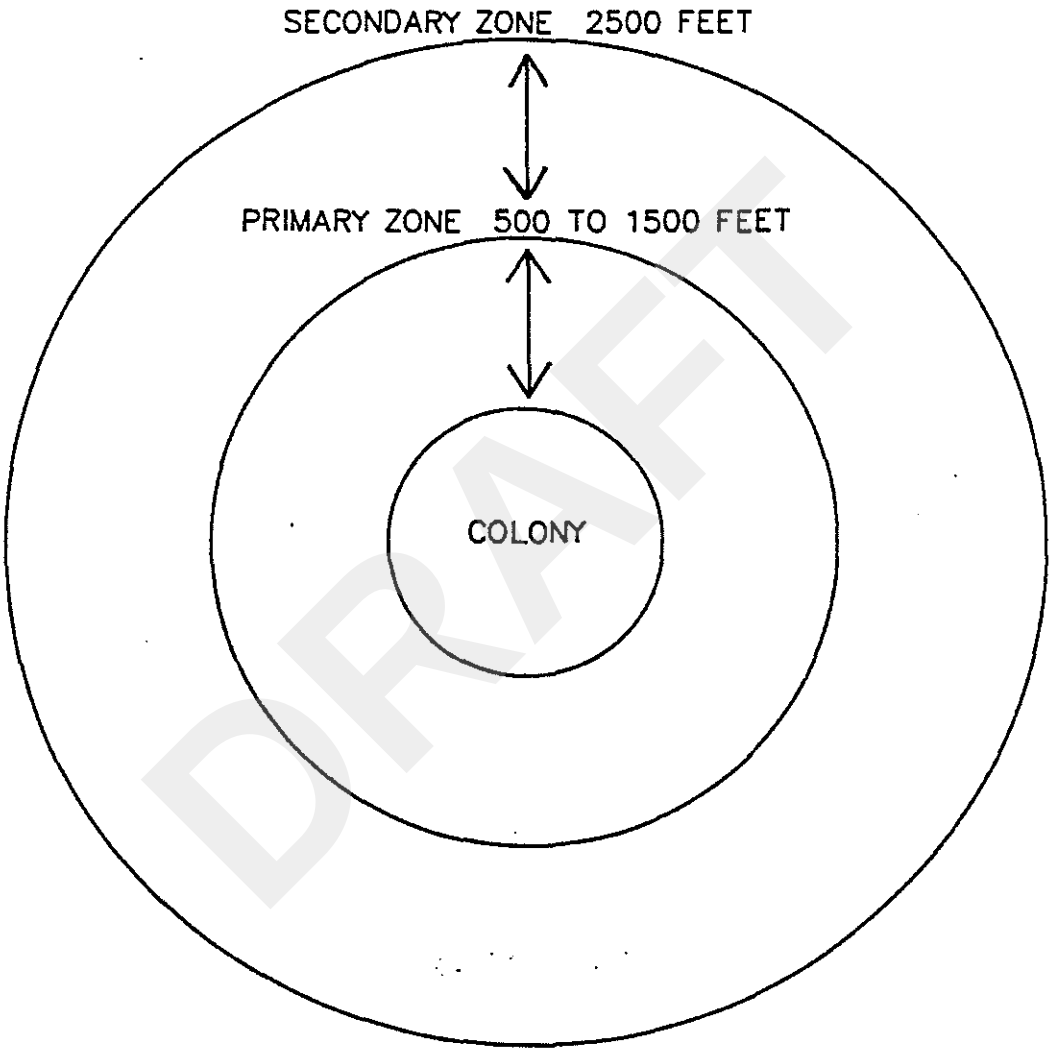
(1) Any lumbering or other removal of vegetation, and

(2) Any activity that reduces the area, depth, or length of flooding in wetlands under and surrounding the colony, except where periodic (less than annual) water control may be required to maintain the health of the aquatic, woody vegetation, and

(3) The construction of any building, roadway, tower, power line, canal, etc.

b. The following activities within the primary zone are likely to be detrimental to a colony if they occur when the colony is active:

(1) Any unauthorized human entry closer than 300 feet of the colony, and


SECONDARY ZONE 2500 FEET
PRIMARY ZONE 500 TO 1500 FEET
COLONY

(2) Any increase or irregular pattern in human activity anywhere in the primary zone, and

(3) Any increase or irregular pattern in activity by animals, including livestock or pets, in the colony, and

(4) Any aircraft operation closer than 500 feet of the colony.

B. Secondary Zone: Restrictions in this zone are needed to minimize disturbances that might impact the primary zone, and to protect essential areas outside of the primary zone. The secondary zone may be used by storks for collecting nesting material, for roosting, loafing, and feeding (especially important to newly fledged young), and may be important as a screen between the colony and areas of relatively intense human activities.

1. Size: The secondary zone should range outward from the primary zone 1000-2000 feet, or to a radius of 2500 feet of the outer edge of the colony.

2. Recommended Restrictions:

a. Activities in the secondary zone which may be detrimental to nesting wood storks include:

(1) Any increase in human activities above the level that existed in the year when the colony first formed, especially when visual screens are lacking, and

(2) Any alteration in the area's hydrology that might cause changes in the primary zone, and

(3) Any substantial (>20 percent) decrease in the area of wetlands and woods of potential value to storks for roosting and feeding.

b. In addition, the probability that low flying storks, or inexperienced, newly-fledged young will strike tall obstructions, requires that high-tension power lines be no closer than one mile (especially across open country or in wetlands) and tall trans-mission towers no closer than 3 miles from active colonies. Other activities, including busy highways and commercial and residential buildings may be present in limited portions of the secondary zone at the time that a new colony first forms. Although storks may tolerate existing levels of human activities, it is important that these human activities not expand substantially.

VI. Roosting site guidelines.

The general characteristics and temporary use-patterns of many stork roosting sites limit the number of specific management recommendations that are possible:

A. Avoid human activities within 500-1000 feet of roost sites during seasons of the year and times of the day when storks may be present. Nocturnal activities in active roosts may be especially disruptive.

B. Protect the vegetative and hydrological characteristics of the more important roosting sites--those used annually and/or used by flocks of 25 or more storks. Potentially, roosting sites may, some day, become nesting sites.

VII. Legal Considerations.

A. Federal Statutes

The U.S. breeding population of the wood stork is protected by the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.)(Act). The population was listed as endangered on February 28, 1984 (49 Federal *Register* 7332); wood storks breeding in Alabama, Florida, Georgia, and South Carolina are protected by the Act.

Section 9 of the Endangered Species Act of 1973, as amended, states that it is unlawful for any person subject to the jurisdiction of the United States to take (defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.") any listed species anywhere within the United States.

The wood stork is also federally protected by its listing (50 CFR 10.13) under the Migratory Bird Treaty Act (167 U.S.C. 703-711), which prohibits the taking, killing or possession of migratory birds except as permitted.

B. State Statutes

1. State of Alabama

Section 9-11-232 of Alabama's Fish, Game, and Wildlife regulations curtails the possession, sale, and purchase of wild birds. "Any person, firm, association, or corporation who takes, catches, kills or has in possession at any time, living or dead, any protected wild bird not a game bird or who sells or offers for sale, buys, purchases or offers to buy or purchase any such bird or exchange same for anything of value or who shall sell or expose for sale or buy any part of the plumage, skin, or body of any bird protected by the laws of this state or who shall take or willfully destroy the nests of any wild bird or who shall have such nests or eggs of such birds in his possession, except as otherwise provided by law, shall be guilty of a misdemeanor...

Section 1 of the Alabama Nongame Species Regulation (Regulation 87-GF-7) includes the wood stork in the list of nongame species covered by paragraph (4). " It shall be unlawful to take, capture, kill, possess, sell, trade for anything of monetary value, or offer to sell or trade for anything of monetary value, the following nongame wildlife species (or any parts or reproductive products of such species) without a scientific collection permit and written permission from the Commissioner, Department of Conservation and Natural Resources,..."

2. State of Florida

Rule 39-4.001 of the Florida Wildlife Code prohibits "taking, attempting to take, pursuing, hunting, molesting, capturing, or killing (collectively defined as "taking"), transporting, storing, serving, buying, selling,

possessing, or wantonly or willingly wasting any wildlife or freshwater fish or their nests, eggs, young, homes, or dens except as specifically provided for in other rules of Chapter 39, Florida Administrative Code.

Rule 39-27.011 of the Florida Wildlife Code prohibits "killing, attempting to kill, or wounding any endangered species." The "Official Lists of Endangered and Potentially Endangered Fauna and Flora in Florida" dated 1 July 1988, includes the wood stork, listed as "endangered" by the Florida Game and Fresh Water Fish Commission.

3. State of Georgia

Section 27-1-28 of the Conservation and Natural Resources Code states that "Except as otherwise provided by law, rule, or regulation, it shall be unlawful to hunt, trap, fish, take, possess, or transport any nongame species of wildlife..."

Section 27-1-30 states that, "Except as otherwise provided by law or regulation, it shall be unlawful to disturb, mutilate, or destroy the dens, holes, or homes of any wildlife; "

Section 27-3-22 states, in part, "It shall be unlawful for any person to hunt, trap, take, possess, sell, purchase, ship, or transport any hawk, eagle, owl, or any other bird or any part, nest, or egg thereof...".

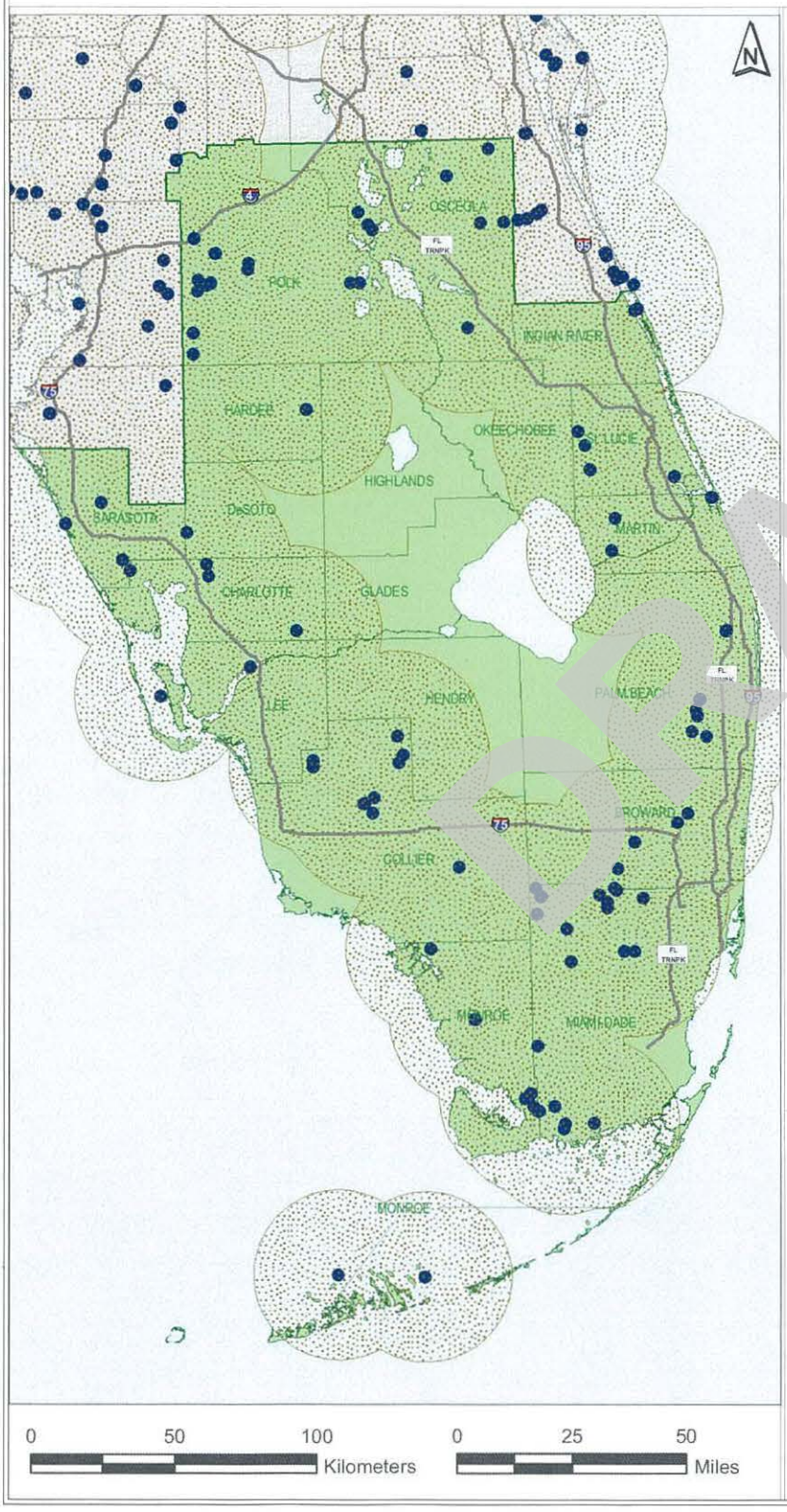
The wood stork is listed as endangered pursuant to the Endangered Wildlife Act of 1973 (Section 27-3-130 of the Code). Section 391-4-13-.06 of the Rules and Regulations of the Georgia Department of Natural Resources prohibits harassment, capture, sale, killing, or other actions which directly cause the death of animal species protected under the Endangered Wildlife Act. The destruction of habitat of protected species on public lands is also prohibited.

4. State of South Carolina

Section 50-15-40 of the South Carolina Nongame and Endangered Species Conservation Act states, "Except as otherwise provided in this chapter, it shall be unlawful for any person to take, possess, transport, export, process, sell, or offer of sale or ship, and for any common or contract carrier knowingly to transport or receive for shipment any species or subspecies of wildlife appearing on any of the following lists: (1) the list of wildlife indigenous to the State, determined to be endangered within the State...(2) the United States' List of Endangered Native Fish and Wildlife... (3) the United States' List of Endangered Foreign Fish and Wildlife ..."

5/21/2010

Wood Stock



Nesting Colonies
Core Foraging Areas

1999 to 2005

- Colony Location
- Core Foraging Area
- South Florida Service Area

Produced by:
South Florida Ecological Services Office
http://verobeach.fws.gov
Phone: 772.562.3909

5/21/2010

Enclosure 3

Wood Stork Foraging Analysis: Excerpts of concepts and procedure as presented by the Service in this appendix may be viewed in detail in any one of our recent Biological Opinions for project related impacts to the wood stork. These documents can be found at the internet website address http://www.fws.gov/filedownloads/ftp%5verobeach.

Foraging Habitat

Researchers have shown that wood storks forage most efficiently and effectively in habitats where prey densities are high and the water shallow and canopy open enough to hunt successfully (Ogden et al. 1978, Browder 1984, Coulter 1987). Prey availability to wood storks is dependent on a composite variable consisting of density (number or biomass/m^2) and the vulnerability of the prey items to capture (Gawlik 2002). For wood storks, prey vulnerability appears to be largely controlled by physical access to the foraging site, water depth, the density of submerged vegetation, and the species-specific characteristics of the prey. For example, fish populations may be very dense, but not available (vulnerable) because the water depth is too deep (greater than 30 cm) for storks or the tree canopy at the site is too dense for storks to land. Calm water, about 5-40 cm (2-16 in) in depth, and free of dense aquatic vegetation is ideal (Coulter and Bryan 1993).

Coulter and Bryan's (1993) study suggested that wood storks preferred ponds and marshes, and visited areas with little or no canopy more frequently. Even in foraging sites in swamps, the canopy tended to be sparse. They suggested that open canopies may have contributed to detection of the sites and more importantly may have allowed the storks to negotiate landing more easily than at closed-canopy sites. In their study, the median amount of canopy cover where wood stork foraging was observed was 32 percent. Other researchers (P.C. Frederick, University of Florida, personal communication 2006; J.A. Rodgers, FWC, personal communication 2006) also confirm that wood storks will forage in woodlands, though the woodlands have to be fairly open and vegetation not very dense. Furthermore, the canopies must be open enough for wood storks to take flight quickly to avoid predators.

Melaleuca-infested Wetlands: As discussed previously, wetland suitability for wood stork foraging is partially dependent on vegetation density. Melaleuca is a dense-stand growth plant species, effectively producing a closed canopy and dense understory growth pattern that generally limits a site's accessibility to foraging by wading birds. However, O'Hare and Dalrymple (1997) suggest moderate infestations of melaleuca may have little effect on some species' productivity (*i.e.*, amphibians and reptiles) as long as critical abiotic factors such as hydrology remain. They also note as the levels of infestation increase, usage by wetland dependent species decreases. Their studies also showed that the number of fish species present in a wetland system remain stable at certain levels of melaleuca. However, the availability of the prey base for wood storks and other foraging wading birds is reduced by the restriction of access caused from dense and thick exotic vegetation. Wood storks and other wading birds can forage in these systems in open area pockets (*e.g.*, wind blow-downs), provided multiple conditions are optimal (*e.g.*, water depth, prey density). In O'Hare and Dalrmyple's study (1997), they identify five cover types (Table 1) and

provide information on the number of wetland dependent bird species and the number of individuals observed within each of these vegetation classes (Table 2).

Table 1: Vegetation classes

DMM	75-100 percent mature dense melaleuca coverage
DMS or (SDM)	75-100 percent sapling dense melaleuca coverage
P75	50-75 percent melaleuca coverage
P50	0-50 percent melaleuca coverage
MAR (Marsh)	0-10 percent melaleuca coverage

The number of wetland-dependent species and individuals observed per cover type is shown below in columns 1, 2, and 3 (Table 2). To develop an estimate of the importance a particular wetland type may have (based on density and aerial coverage by exotic species) to wetland dependent species, we developed a foraging suitability value using observational data from O'Hare and Dalrymple (1997). The Foraging Suitability Value as shown in column 5 (Table 2) is calculated by multiplying the number of species by the number of individuals and dividing this value by the maximum number of species and individuals combined (12*132=1584). The results are shown below for each of the cover types in O'Hare and Dalrymple (1997) study (Table 1). As an example, for the P50 cover type, the foraging suitability is calculated by multiplying 11 species times 92 individuals for a total of 1,012. Divide this value by 1,584, which is the maximum number of species times the maximum number of individuals (12*132 = 1,584). The resultant is 0.6389 or 64 percent 11*92=1012/1584*100=63.89).

Table 2: Habitat Foraging Suitability

Cover Type	# of Species (S)	# of Individuals (I)	S*I	Foraging Suitability
DMM	1	2	2	0.001
DMS	4	10	40	0.025
P75	10	59	590	0.372
P50	11	92	1,012	0.639
MAR	12	132	1,584	1.000

This approach was developed to provide us with a method of assessing wetland acreages and their relationship to prey densities and prey availability. We consider wetland dependent bird use to be a general index of food availability. Based on this assessment we developed an exotic foraging suitability index (Table 3):

Table 3. Foraging Suitability Percentages

Exotic Percentage	Foraging Suitability (percent)
Between 0 and 25 percent exotics	100
Between 25 and 50 percent exotics	64
Between 50 and 75 percent exotics	37
Between 75 and 90 percent exotics	3
Between 90 and 100 percent exotics	0

In our assessment however, we consider DMM to represent all exotic species densities between 90 and 100 percent and DMS to represent all exotic species densities between 75 and 90 percent. In our evaluation of a habitat's suitability, the field distinction between an exotic coverage of

90 percent and 100 percent in many situations is not definable, therefore unless otherwise noted in the field reports and in our analysis; we consider a suitability value of 3 percent to represent both densities.

Hydroperiod: The hydroperiod of a wetland can affect the prey densities in a wetland. For instance, research on Everglades fish populations using a variety of quantitative sampling techniques (pull traps, throw traps, block nets) have shown that the density of small forage fish increases with hydroperiod. Marshes inundated for less than120 days of the year average ± 4 fish/m^2; whereas, those flooded for more than 340 days of the year average ± 25 fish/m^2 (Loftus and Eklund 1994, Trexler et al. 2002).

The Service (1999) described a short hydroperiod wetland as wetlands with between 0 and 180-day inundation, and long hydroperiod wetlands as those with greater than 180-day inundation. However, Trexler et al. (2002) defined short hydroperiod wetlands as systems with less than 300 days per year inundation. In our discussion of hydroperiods, we are considering short hydroperiod wetlands to be those that have an inundation of 180 days or fewer.

The most current information on hydroperiods in south Florida was developed by the SFWMD for evaluation of various restoration projects throughout the Everglades Protection Area. In their modeling efforts, they identified the following seven hydroperiods:

Table 4. SFWMD Hydroperiod Classes – Everglades Protection Area

Hydroperiod Class	Days Inundated
Class 1	0-60
Class 2	60-120
Class 3	120-180
Class 4	180-240
Class 5	240-300
Class 6	300-330
Class 7	330-365

Fish Density per Hydroperiod: In the Service's assessment of project related impacts to wood storks, the importance of fish data specific to individual hydroperiods is the principle basis of our assessment. In order to determine the fish density per individual hydroperiod, the Service relied on the number of fish per hydroperiod developed from throw-trap data in Trexler et al.'s (2002) study and did not use the electrofishing data also presented in Trexler et al.'s study that defined fish densities in catch per unit effort, which is not hydroperiod specific. Although the throw-trap sampling generally only samples fish 8 cm or less, the Service believes the data can be used as a surrogate representation of all fish, including those larger than 8 cm, which are typically sampled by either electrofishing or block net sampling.

We base this evaluation on the following assessment. Trexler et al.'s (2002) study included electrofishing data targeting fish greater than 8 cm, the data is recorded in catch per unit effort and in general is not hydroperiod specific. However, Trexler et al. (2002) notes in their assessment of the electrofishing data that in general there is a correlation with the number of fish per unit effort per changes in water depth. In literature reviews of electrofishing data by Chick et

al. (1999 and 2004), they note that electrofishing data provides a useful index of the abundance of larger fish in shallow, vegetated habitat, but length, frequency, and species compositional data should be interpreted with caution. Chick et al. (2004) also noted that electrofishing data for large fish (> 8cm) provided a positive correlation of the number of fish per unit effort (abundance) per changes in hydropeiod. The data in general show that as the hydroperiod decreases, the abundance of larger fishes also decreases.

Studies by Turner et al. (1999), Turner and Trexler (1997), and Carlson and Duever (1979) also noted this abundance trend for fish species sampled. We also noted in our assessment of prey consumption by wood storks in the Ogden et al. (1976) study (Figure 4) (discussed below), that the wood stork's general preference is for fish measuring 1.5 cm to 9 cm, although we also acknowledged that wood storks consume fish larger than the limits discussed in the Ogden et al. (1976) study. A similar assessment is reference by Trexler and Goss (2009) noting a diversity of size ranges of prey available for wading birds to consume, with fish ranging from 6 to 8 cm being the preferred prey for larger species of wading birds, particularly wood storks (Kushlan et al. 1975).

Therefore, since data were not available to quantify densities (biomass) of fish larger than 8 cm to a specific hydroperiod, and Ogden et al.'s (1976) study notes that the wood stork's general preference is for fish measuring 1.5 cm to 9 cm, and that empirical data on fish densities per unit effort correlated positively with changes in water depth, we believe that the Trexler et al. (2002) throw-trap data represents a surrogate assessment tool to predict the changes in total fish density and the corresponding biomass per hydroperiod for our wood stork assessment.

In consideration of this assessment, the Service used the data presented in Trexler et al.'s (2002) study on the number of fish per square-meter per hydroperiod for fish 8 cm or less to be applicable for estimating the total biomass per square-meter per hydroperiod for all fish. In determining the biomass of fish per square-meter per hydroperiod, the Service relied on the summary data provided by Turner et al. (1999), which provides an estimated fish biomass of 6.5 g/m^2 for a Class 7 hydroperiod for all fish and used the number of fish per square-meter per hydroperiod from Trexler et al.'s data to extrapolate biomass values per individual hydroperiods.

Trexler et al.'s (2002) studies in the Everglades provided densities, calculated as the square-root of the number of fish per square meter, for only six hydroperiods; although these cover the same range of hydroperiods developed by the SFWMD. Based on the throw-trap data and Trexler et al.'s (2002) hydroperiods, the square-root fish densities are:

Table 5. Fish Densities per Hydroperiod from Trexler et al. (2002)

Hydroperiod Class	Days Inundated	Fish Density
Class 1	0-120	2.0
Class 2	120-180	3.0
Class 3	180-240	4.0
Class 4	240-300	4.5
Class 5	300-330	4.8
Class 6	330-365	5.0

Trexler et al.'s (2002) fish densities are provided as the square root of the number of fish per square meter. For our assessment, we squared these numbers to provide fish per square meter, a simpler calculation when other prey density factors are included in our evaluation of adverse effects to listed species from the proposed action. We also extrapolated the densities over seven hydroperiods, which is the same number of hydroperiods characterized by the SFWMD. For example, Trexler et al.'s (2002) square-root density of a Class 2 wetland with three fish would equate to a SFWMD Model Class 3 wetland with nine fish. Based on the above discussion, the following mean annual fish densities were extrapolated to the seven SFWMD Model hydroperiods:

Table 6. Extrapolated Fish Densities for SFWMD Hydroperiods

Hydroperiod Class	Days Inundated	Extrapolated Fish Density
Class 1	0-60	2 fish/m^2
Class 2	60-120	4 fish/m^2
Class 3	120-180	9 fish/m^2
Class 4	180-240	16 fish/m^2
Class 5	240-300	20 fish/m^2
Class 6	300-330	23 fish/m^2
Class 7	330-365	25 fish/m^2

Fish Biomass per Hydroperiod: A more important parameter than fish per square-meter in defining fish densities is the biomass these fish provide. In the ENP and WCA-3, based on studies by Turner et al. (1999), Turner and Trexler (1997), and Carlson and Duever (1979), the standing stock (biomass) of large and small fishes combined in unenriched Class 5 and 6 hydroperiod wetlands averaged between 5.5 to 6.5 grams-wet-mass/m^2. In these studies, the data was provided in g/m^2 dry-weight and was converted to g/m^2 wet-weight following the procedures referenced in Kushlan et al. (1986) and also referenced in Turner et al. (1999). The fish density data provided in Turner et al. (1999) included both data from samples representing fish 8 cm or smaller and fish larger than 8 cm and included summaries of Turner and Trexler (1997) data, Carlson and Duever (1979) data, and Loftus and Eklund (1994) data. These data sets also reflected a 0.6 g/m^2 dry-weight correction estimate for fish greater than 8 cm based on Turner et al.'s (1999) block-net rotenone samples.

Relating this information to the hydroperiod classes developed by the SFWMD, we estimated the mean annual biomass densities per hydroperiod. For our assessment, we considered Class 7 hydroperiod wetlands based on Turner et al. (1999) and Trexler et al. (2002) studies to have a mean annual biomass of 6.5 grams-wet-mass/m^2 and to be composed of 25 fish/m^2. The remaining biomass weights per hydroperiod were determined as a direct proportion of the number of fish per total weight of fish for a Class 7 hydroperiod (6.5 grams divided by 25 fish equals 0.26 grams per fish).

For example, given that a Class 3 hydroperiod has a mean annual fish density of 9 fish/m^2, with an average weight of 0.26 grams per fish, the biomass of a Class 3 hydroperiod would be 2.3 grams/m^2 (9*0.26 = 2.3). Based on the above discussion, the biomass per hydroperiod class is:

Table 7. Extrapolated Mean Annual Fish Biomass for SFWMD Hydroperiods

Hydroperiod Class	Days Inundated	Extrapolated Fish Biomass
Class 1	0-60	0.5 gram/m^2
Class 2	60-120	1.0 gram/m^2
Class 3	120-180	2.3 grams/m^2
Class 4	180-240	4.2 grams/m^2
Class 5	240-300	5.2 grams/m^2
Class 6	300-330	6.0 grams/m^2
Class 7	330-365	6.5 grams/m^2

Wood stork suitable prey size: Wood storks are highly selective in their feeding habits and in studies on fish consumed by wood storks, five species of fish comprised over 85 percent of the number and 84 percent of the biomass of over 3,000 prey items collected from adult and nestling wood storks (Ogden et al. 1976). Table 8 lists the fish species consumed by wood storks in Ogden et al. (1976).

Table 8. Primary Fish Species consumed by Wood Storks from Ogden et al. (1976)

Common name	Scientific name	Percent Individuals	Percent Biomass
Sunfishes	*Centrarchidae*	14	44
Yellow bullhead	*Italurus natalis*	2	12
Marsh killifish	*Fundulus confluentus*	18	11
Flagfish	*Jordenella floridae*	32	7
Sailfin molly	*Poecilia latipinna*	20	11

These species were also observed to be consumed in much greater proportions than they occur at feeding sites, and abundant smaller species [*e.g.*, mosquitofish (*Gambusia affinis*), least killifish (*Heterandria formosa*), bluefin killifish (*Lucania goodei*)] are under-represented, which the researchers believed was probably because their small size did not elicit a bill-snapping reflex in these tactile feeders (Coulter et al. 1999). Their studies also showed that, in addition to selecting larger species of fish, wood storks consumed individuals that are significantly larger (>3.5 cm) than the mean size available (2.5 cm), and many were greater than 1-year old (Ogden et al. 1976, Coulter et al. 1999). However, Ogden et al. (1976) also found that wood storks most likely consumed fish that were between 1.5 and 9.0 cm in length (Figure 4 in Ogden et al. 1976).

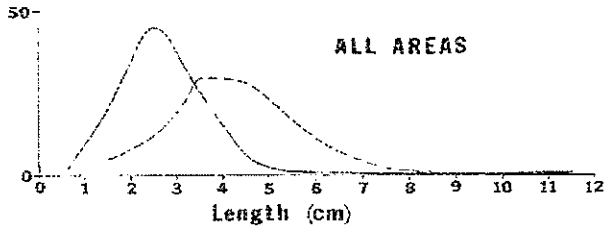


FIGURE 4. Length frequency distribution of fish available to and consumed by Wood Storks in different habitats.

In Ogden et al.'s (1976) Figure 4, the dotted line is the distribution of fish consumed and the solid line is the available fish. Straight interpretation of the area under the dotted line curve

represents the size classes of fish most likely consumed by wood storks and is the basis of our determination of the amount of biomass that is within the size range of fish most likely consumed by wood storks, which in this example is a range size of 1.5 to 9.0 cm in length.

Wood stork suitable prey base (biomass per hydroperiod): To estimate that fraction of the available fish biomass that might be consumed by wood storks, the following analysis was conducted. Trexler et al.'s (2002) 2-year throw trap data of absolute and relative fish abundance per hydroperiod distributed across 20 study sites in the ENP and the WCAs was considered to be representative of the Everglades fish assemblage available to wood storks (n = 37,718 specimens of 33 species). Although Trexler et al.'s (2002) data was based on throw-trap data and representative of fish 8 cm or smaller, the Service believes the data set can be used to predict the biomass/m^2 for total fish (those both smaller and larger than 8 cm). This approach is also supported, based on our assessment of prey consumption by wood storks in Ogden et al.'s (1976) study (Figure 4), that the wood storks general preference is for fish measuring 1.5 cm to 9 cm and is generally inclusive of Trexler et al.'s (2002) throw-trap data of fish 8 cm or smaller.

To estimate the fraction of the fish biomass that might be consumed by wood storks, the Service, using Trexler et al.'s (2002) throw-trap data set, determined the mean biomass of each fish species that fell within the wood stork prey size limits of 1.5 to 9.0 cm. The mean biomass of each fish species was estimated from the length and wet mass relationships for Everglades' icthyofauna developed by Kushlan et al. (1986). The proportion of each species that was outside of this prey length and biomass range was estimated using the species mean and variance provided in Table 1 in Kushlan et al. (1986). These biomass estimates assumed the length and mass distributions of each species was normally distributed and the fish biomass could be estimated by eliminating that portion of each species outside of this size range. These biomass estimates of available fish prey were then standardized to a sum of 6.5 g/m^2 for Class 7 hydroperiod wetlands (Service 2009).

For example, Kushlan et al. (1986) lists the warmouth (*Lepomis gulosus*) with a mean average biomass of 36.76 g. In fish samples collected by Trexler et al. (2002), this species accounted for 0.048 percent (18/37,715=0.000477) of the Everglades freshwater ichthyofauna. Based on an average biomass of 36.76 g (Kushlan et al. 1986), the 0.048 percent representation from Trexler et al. (2002) is equivalent to an average biomass of 1.75 g (36.76*0.048) or 6.57 percent (1.75/26.715) of the estimated average biomass (26.715 g) of Trexler et al.'s (2002) samples (Service 2009).

Standardizing these data to a sample size of 6.5 g/m^2, the warmouth biomass for long hydroperiod wetlands would be about 0.427 g (Service 2009). However, the size frequency distribution (assumed normal) for warmouth (Kushlan et al. 1986) indicate 48 percent are too large for wood storks and 0.6 percent are too small (outside the 1.5 cm to 9 cm size range most likely consumed), so the warmouth biomass within the wood stork's most likely consumed size range is only 0.208 g (0.427*(0.48+0.006)=0.2075) in a 6.5 g/m^2 sample. Using this approach summed over all species in long hydroperiod wetlands, only 3.685 g/m^2 of the 6.5 g/m^2 sample consists of fish within the size range likely consumed by wood storks or about 57 percent (3.685/6.5*100=56.7) of the total biomass available.

An alternative approach to estimate the available biomass is based on Ogden et al. (1976). In their study (Table 8), the sunfishes and four other species that accounted for 84 percent of the biomass eaten by wood storks totaled 2.522 g of the 6.5 g/m^2 sample (Service 2009). Adding the remaining 16 percent from other species in the sample, the total biomass would suggest that 2.97 g of a 6.5 g/m^2 sample are most likely to be consumed by wood storks or about 45.7 percent (2.97/6.5=0.4569)

The mean of these two estimates is 3.33g/m^2 for long hydroperiod wetlands (3.685 + 2.97 = 6.655/ 2 = 3.33). This proportion of available fish prey of a suitable size (3.33 g/m^2 / 6.5 g/m^2 = 0.51 or 51 percent) was then multiplied by the total fish biomass in each hydroperiod class to provide an estimate of the total biomass of a hydroperiod that is the appropriate size and species composition most likely consumed by wood storks.

As an example, a Class 3 SFWMD model hydroperiod wetland with a biomass of 2.3 grams/m^2, adjusted by 51 percent for appropriate size and species composition, provides an available biomass of 1.196 grams/m^2. Following this approach, the biomass per hydroperiod potentially available to predation by wood storks based on size and species composition is:

Table 9. Wood Stork Suitable Prey Base (fish biomass per hydroperiod)

Hydroperiod Class	Days Inundated	Fish Biomass
Class 1	0-60	0.26 gram/m^2
Class 2	60-120	0.52 gram/m^2
Class 3	120-180	1.196 grams/m^2
Class 4	180-240	2.184 grams/m^2
Class 5	240-300	2.704 grams/m^2
Class 6	300-330	3.12 grams/m^2
Class 7	330-365	3.38 grams/m^2

Wood Stork-Wading Bird Prey Consumption Competition: In 2006, (Service 2006), the Service developed an assessment approach that provided a foraging efficiency estimate that 55 percent of the available biomass was actually consumed by wood storks. Since the implementation of this assessment approach, the Service has received comments from various sources concerning the Service's understanding of Fleming et al.'s (1994) assessment of prey base consumed by wood storks versus prey base assumed available to wood stork and the factors included in the 90 percent prey reduction value.

In our original assessment, we noted that, "*Fleming et al. (1994) provided an estimate of 10 percent of the total biomass in their studies of wood stork foraging as the amount that is actually consumed by the storks. However, the Fleming et al. (1994) estimate also includes a second factor, the suitability of the foraging site for wood storks, a factor that we have calculated separately. In their assessment, these two factors accounted for a 90 percent reduction in the biomass actually consumed by the storks. We consider these two factors as equally important and are treated as equal components in the 90 percent reduction; therefore, we consider each factor to represent 45 percent of the reduction. In consideration of this approach, Fleming et al.'s (1994) estimate that 10 percent of the biomass would actually be consumed by the storks would be added to the 45 percent value for an estimate that 55 percent (10 percent plus the remaining 45 percent) of the available biomass would actually be consumed by the storks and is the factor we believe represents the amount of the prey base that is actually consumed by the stork.*"

In a follow-up review of Fleming et al.'s (1994) report, we noted that the 10 percent reference is to prey available to wood storks, not prey consumed by wood storks. We also noted the 90 percent reduction also includes an assessment of prey size, an assessment of prey available by water level (hydroperiod), an assessment of suitability of habitat for foraging (openness), and an assessment for competition with other species, not just the two factors considered originally by the Service (suitability and competition). Therefore, in re-evaluating of our approach, we identified four factors in the 90 percent biomass reduction and not two as we previously considered. We believe these four factors are represented as equal proportions of the 90 percent reduction, which corresponds to an equal split of 22.5 percent for each factor. Since we have accounted previously for three of these factors in our approach (prey size, habitat suitability, and hydroperiod) and they are treated separately in our assessment, we consider a more appropriate foraging efficiency to represent the original 10 percent and the remaining 22.5 percent from the 90 percent reduction discussed above. Following this revised assessment, our competition factor would be 32.5 percent, not the initial estimate of 55 percent.

Other comments reference the methodology's lack of sensitivity to limiting factors, i.e., is there sufficient habitat available across all hydroperiods during critical life stages of wood stork nesting and does this approach over emphasize the foraging biomass of long hydroperiod wetlands with a corresponding under valuation of short hydroperid wetlands. The Service is aware of these questions and is examining alternative ways to assess these concerns. However, until futher research is generated to refine our approach, we continue to support the assessment tool as outlined.

Following this approach, Table 10 has been adjusted to reflect the competition factor and represents the amount of biomass consumed by wood storks and is the basis of our effects assessments (Class 1 hydroperiod with a biomass 0.26 g, multiplied by 0.325, results in a value of 0.08 g [0.25*.325=0.08]) (Table 10).

Table 10 Actual Biomass Consumed by Wood Storks

Hydroperiod Class	Days Inundated	Fish Biomass
Class 1	0-60	0.08 gram/m^2
Class 2	60-120	0.17 gram/m^2
Class 3	120-180	0.39 grams/m^2
Class 4	180-240	0.71 grams/m^2
Class 5	240-300	0.88 grams/m^2
Class 6	300-330	1.01 grams/m^2
Class 7	330-365	1.10 grams/m^2

Sample Project of Biomass Calculations and Corresponding Concurrence Determination

Example 1:

An applicant is proposing to construct a residential development with unavoidable impacts to 5 acres of wetlands and is proposing to restore and preserve 3 acres of wetlands onsite. Data on the onsite wetlands classified these systems as exotic impacted wetlands with greater than 50

percent but less than 75 percent exotics (Table 3) with an average hydroperiod of 120-180 days of inundation.

The equation to calculate the biomass lost is: The number of acres, converted to square-meters, times the amount of actual biomass consumed by the wood stork (Table 10), times the exotic foraging suitability index (Table 3), equals the amount of grams lost, which is converted to kg.

Biomass lost (5*4,047*0.39 (Table 10)*0.37 (Table 3)=2,919.9 grams or 2.92 kg)

In the example provided, the 5 acres of wetlands, converted to square-meters (1 acre= 4,047 m^2) would provide 2.9 kg of biomass (5*4,047*0.39 (Table 10)*0.37 (Table 3)= 2,919.9 grams or 2.9 kg), which would be lost from development.

The equation to calculate the biomass from the preserve is the same, except two calculations are needed, one for the existing biomass available and one for the biomass available after restoration.

Biomass Pre: (3*4,047*0.39(Table 10)*0.37 (Table 3)=1,751.95grams or 1.75 kg)

Biomass Post: (3*4,047*0.39 (Table 10)*1(Table 3)=4,734.99 grams or 4.74 kg)

Net increase: 4.74 kg-1.75 kg = 2.98 kg Compensation Site

Project Site Balance 2.98 kg- 2.92 kg = 0.07kg

The compensation proposed is 3 acres, which is within the same hydroperiod and has the same level of exotics. Following the calculations for the 5 acres, the 3 acres in its current habitat state, provides 1.75 kg (3*4,047*0.39 (Table 10)*0.37 (Table 3)=1,751.95grams or 1.75 kg) and following restoration provides 4.74 kg (3*4,047*0.39 (Table 10)*1(Table 3)=4,734.99 grams or 4.74 kg), a net increase in biomass of 2.98 kg (4.74-1.75=2.98).

Example 1: 5 acre wetland loss, 3 acre wetland enhanced – same hydroperiod - NLAA

Hydroperiod	Existing Footprint		On-site Preserve Area				Net Change*	
			Pre Enhancement		Post Enhancement			
	Acres	Kgrams	Acres	Kgrams	Acres	Kgrams	Acres	Kgrams
Class 1 - 0 to 60 Days								
Class 2 - 60 to 120 Days								
Class 3 - 120 to 180 Days	5	2.92	3	1.75	3	4.74	(5)	0.07
Class 4 - 180 to 240 Days								
Class 5 - 240 to 300 Days								
Class 6 - 300 to 330 Days								
Class 7 - 330 to 365 days								
TOTAL	**5**	**2.92**	**3**	**1.75**	**3**	**4.74**	**(5)**	**0.07**

*Since the net increase in biomass from the restoration provides 2.98 kg and the loss is 2.92 kg, there is a positive outcome (4.74-1.75-2.92=0.07) in the same hydroperiod and Service concurrence with a NLAA is appropriate.

Example 2:

In the above example, if the onsite preserve wetlands were a class 4 hydroperiod, which has a value of 0.71. grams/m^2 instead of a class 3 hydroperiod with a 0.39 grams/m^2 [Table 10]), there would be a loss of 2.92 kg of short hydroperiod wetlands (as above) and a net gain of 8.62 kg of long-hydroperiod wetlands.

Biomass lost: (5*4,047*0.39 (Table 10)*0.37 (Table 3)=2,919.9 grams or 2.92 kg)

The current habitat state of the preserve provides 3.19 kg (3*4,047*0.71 (Table 10)*0.37 (Table 3)=3,189.44 grams or 3.19 kg) and following restoration the preserve provides 8.62 kg (3*4,047*0.71 (Table 10)*1(Table 3)= 8,620.11 grams or 8.62 kg, thus providing a net increase in class 4 hydroperiod biomass of 5.43 kg (8.62-3.19=5.43).

Biomass Pre: (3*4,047*0.71(Table 10)*0.37 (Table 3) = 3,189.44 grams or 3.19 kg)

Biomass Post: (3*4,047*0.71 (Table 10)*1(Table 3)=8,620.11 grams or 8.62 kg)

Net increase: 8.62 kg-3.19 kg = 5.43 kg

Project Site Balance 5.43 kg- 2.92 kg = 2.51 kg

Example 2: 5 acre wetland loss, 3 acre wetland enhanced – different hydroperiod – May Affect

Hydroperiod	Existing Footprint		On-site Preserve Area				Net Change*	
			Pre Enhancement		Post Enhancement			
	Acres	Kgrams	Acres	Kgrams	Acres	Kgrams	Acres	Kgrams
Class 1 - 0 to 60 Days								
Class 2 - 60 to 120 Days								
Class 3 - 120 to 180 Days	5	2.92					(5)	-2.92
Class 4 - 180 to 240 Days			3	3.19	3	8.62	0	5.43
Class 5 - 240 to 300 Days								
Class 6 - 300 to 330 Days								
Class 7 - 330 to 365 days								
TOTAL	**5**	**2.92**	**3**	**3.19**	**3**	**8.62**	**(5)**	**2.51**

In this second example, even though there is an overall increase in biomass, the biomass loss is a different hydroperiod than the biomass gain from restoration, therefore, the Service could not concur with a NLAA and further coordination with the Service is appropriate.

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Appendix K Uniform Mitigation Assessment Method Sheets

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT
Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
MCINTOSH ROAD FROM S OF US 92 TO N OF I-4		**WL 1, WL 2, WL 3**

FLUCCs code	Further classification (optional)	Impact Type	Assessment Area Size
617 Mixed Wetland Hardwoods		**Direct Impact**	**1.63** Acres

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
Hillsborough River		**NA**

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

Wetlands adjacent to McIntosh Road surrounded by mix of residential, commercial, and agricultural land uses.

Assessment area description

Palustrine forested, broadleaf deciduous systems composed of red maple (Acer rubrum), laurel oak (Quercus laurifolia), Water oak (Quercus nigra), sweetgum (Liquidambar styraciflua), and wax myrtle (Myrica cerifera).

Significant Nearby Features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
none	**common in ROWs along I4 corridor**

Functions	Mitigation for previous permit/other historic use
water filtration and conveyance, limited forage and cover for birds and mammals	**NA**

Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)
raccoons, oppossum,	**low probability of occurance for listed species**

Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):

deer, raccoon, oppossum

Additional relevant factors:

none observed

Assessment conducted by:	Assessment date(s):
Brendan Brown, PWS; Andrew Ryan, PG	**01/12/24**

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name:	Application Number:	Assessment Area Name or Number:
MCINTOSH ROAD FROM S OF US 92 TO N OF I-4	**-**	**WL 1, WL 2, WL 3**
Impact or Mitigation:	Assessment Conducted by:	Assessment Date:
Impact	**Brendan Brown, PWS; Andrew Ryan, PG**	**01/12/24**

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

Enter Notes below (do NOT score each subcategory individually)

.500(6)(a) Location and Landscape Support

Current	With Impact
4	0

a. Quality and quantity **of habitat support** outside of AA.
b. **Invasive plant species** in proximity to AA.
c. **Wildlife access** to and from AA (proximity and barriers).
d. **Downstream benefits** provided to fish and wildlife.
e. Adverse impacts to wildlife in AA from **land uses** outside of AA.
f. **Hydrologic impediments and flow restrictions.**
g. **Dependency** of downstream habitats on quantity or quality of discharges.
h. Protection of wetland functions provided by uplands (**upland** AAs only).

Additional Notes: Wetland access constrainted by road, fenses, commercial land, residential properties. Wetlands provide limited benefit to downstream habitats.

.500(6)(b) Water Environment (n/a for uplands)

Current	With Impact
5	0

a. Appropriateness of **water levels and flows**.
b. Reliability of **water level indicators**.
c. Appropriateness of **soil moisture**.
d. **Soil erosion** or **depositional patterns, flow rates/points of discharge.**
e. **Fire history** (frequency/severity).
f. **Appropriate vegetative and/or benthic zonation**.
g. **Hydrologic stress** on vegetation.
h. **Use by animal**s with hydrologic requirements.
i. **Plant community composition** associated with water quality (i.e., plants tolerant of poor WQ).
j. **Water quality of standing water by observation** (i.e., discoloration, turbidity).
k. **Water quality data** for the type of community. — water quality impacted by agricultural practices and commercial properties
l. **Water depth, wave energy, currents, and light penetration**.

Additional Notes: Hydrologic indicators present. Surface saturation appropriate for time of year. Some debris and exotic species noted in wetland.

.500(6)(c) Community Structure

_X_ Vegetation
_____ Benthic
_____ Both

Current	With Impact
5	0

I. Appropriate/desirable species — some exotics present
II. Invasive/exotic plant species
III. Regeneration/recruitment
IV. Age, size distribution.
V. Snags, dens, cavity, etc.
VI. Plants' condition.
VII. Land management practices.
VIII. Topographic features (refugia, channels, hummocks).
IX. Submerged vegetation (only score if present).
X. Upland assessment area

Additional Notes: Natural vegation present, however, impacts from adjacent land management activity apparent.

Raw Score = Sum of above scores/30 (if uplands, divide by 20)

Current	With Impact
0.4666667	0

Impact Acres =	1.63

Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.761

Impact Delta (ID)	
Current - w/Impact	0.466666667

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Additional Notes:

Appendix L McIntosh Road Concept Plan

CONTRACT PLANS COMPONENTS

ROADWAY PLANS

INDEX OF ROADWAY PLANS

SHEET NO.	SHEET DESCRIPTION
01	KEY SHEET
02	PROJECT LAYOUT PLAN SHEET
03-13	CONCEPT PLAN SHEETS

STATE OF FLORIDA

DEPARTMENT OF TRANSPORTATION

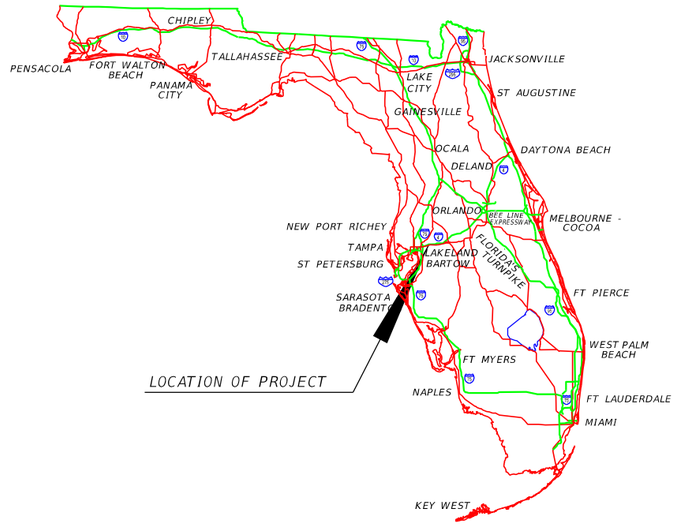
PROJECT DEVELOPMENT AND ENVIRONMENT STUDY CONCEPT PLANS

FINANCIAL PROJECT ID 447157-1-32-01
(FEDERAL FUNDS)
HILLSBOROUGH COUNTY (10900031 & 10000622)

MCINTOSH ROAD

ADD LANES AND RECONSTRUCT
FROM S. OF US 92 TO N. OF I-4

PROJECT LOCATION URL:	https://tinyurl.com/34tuk4p2
PROJECT LIMITS:	BEGIN MP 0.204 – END MP 0.443 (#10900031) BEGIN MP 0.000 – END MP 0.795 (#10000622)
EXCEPTIONS:	NONE
BRIDGE LIMITS:	NONE
RAILROAD CROSSING:	NONE



GOVERNING STANDARD PLANS:

Florida Department of Transportation, FY 2024-25 Standard Plans for Road and Bridge Construction and applicable Interim Revisions (IRs).

Standard Plans for Road Construction and associated IRs are available at the following website: http://www.fdot.gov/design/standardplans

APPLICABLE IRs: N/A

Standard Plans for Bridge Construction are included in the Structures Plans Component

GOVERNING STANDARD SPECIFICATIONS:

Florida Department of Transportation, FY 2024-25 Standard Specifications for Road and Bridge Construction at the following website:
http://www.fdot.gov/programmanagement/Implemented/SpecBooks

ROADWAY PLANS ENGINEER OF RECORD:

REJA E. RABBI, P.E.
P.E. LICENSE NUMBER 84637
CDM SMITH
4010 W. BOY SCOUT BLVD. STE. 450
TAMPA, FL 33607
813-281-2900
CONTRACT NO.: CAE10
VENDOR NO.: 04-247365

FDOT PROJECT MANAGER:

CRAIG FOX, P.E.

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Dated 07/29/24

CONSTRUCTION CONTRACT NO.	FISCAL YEAR	SHEET NO.
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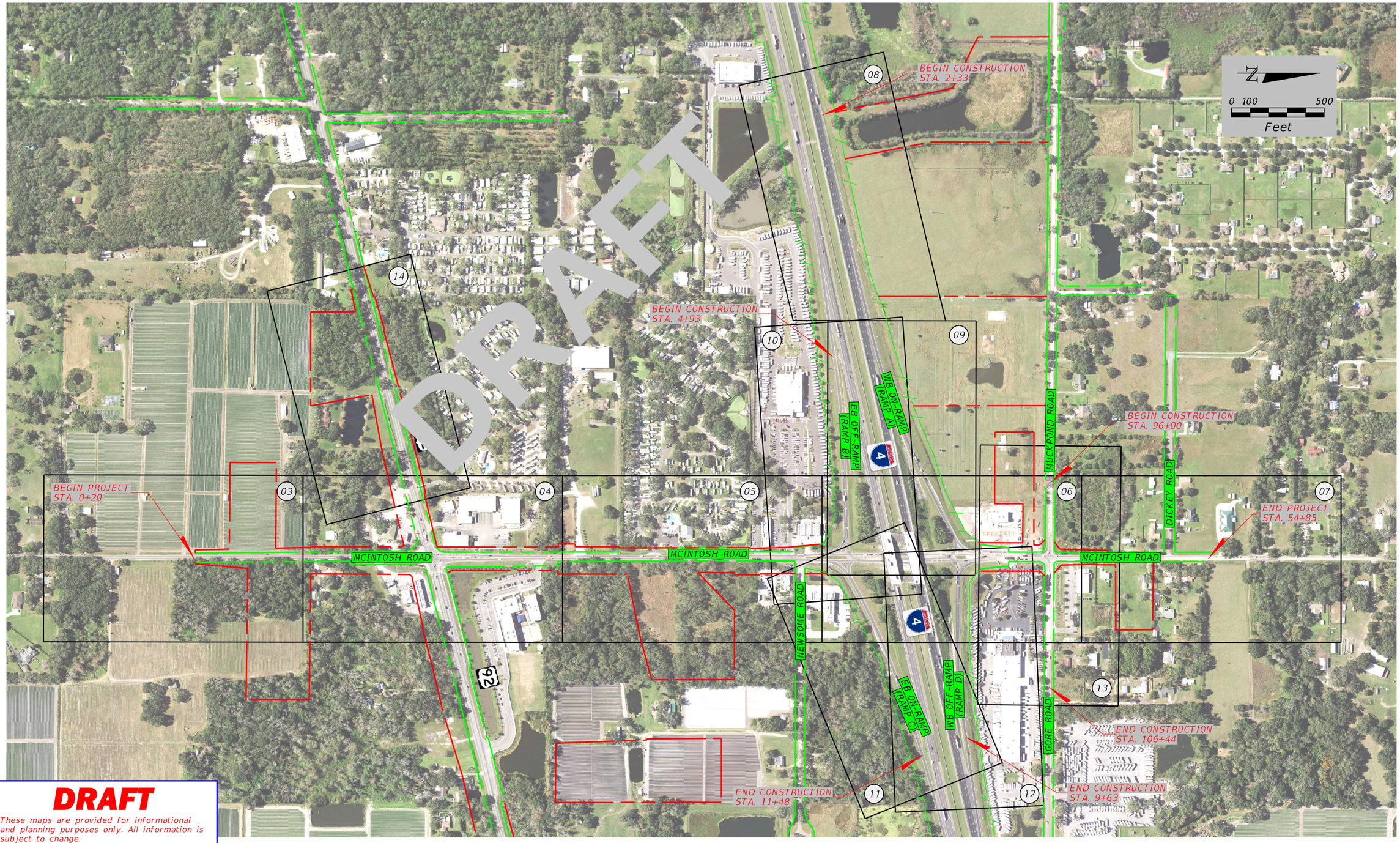

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LEGEND

- EXISTING ROW
- EXISTING LA ROW
- PROPOSED ROW
- PLAN SHEET BOUNDARY
- (##) PLAN SHEET NUMBER

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	HILLSBOROUGH	447157-1-32-01

ENGINEER OF RECORD

REJA E. RABBI, P.E.
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CDM SMITH
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TAMPA, FL 33607

MCINTOSH RD. PD&E STUDY

FROM S. OF US 92 TO N. OF I-4
PREFERRED ALTERNATIVE CONCEPT PLANS

SHEET NO. 02

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- PROPOSED GRAVITY WALL
- US 92 IMPROVEMENTS FPID. 447158-1-52-01

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	HILLSBOROUGH	447157-1-32-01

ENGINEER OF RECORD

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MCINTOSH RD. PD&E STUDY

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PREFERRED ALTERNATIVE CONCEPT PLANS

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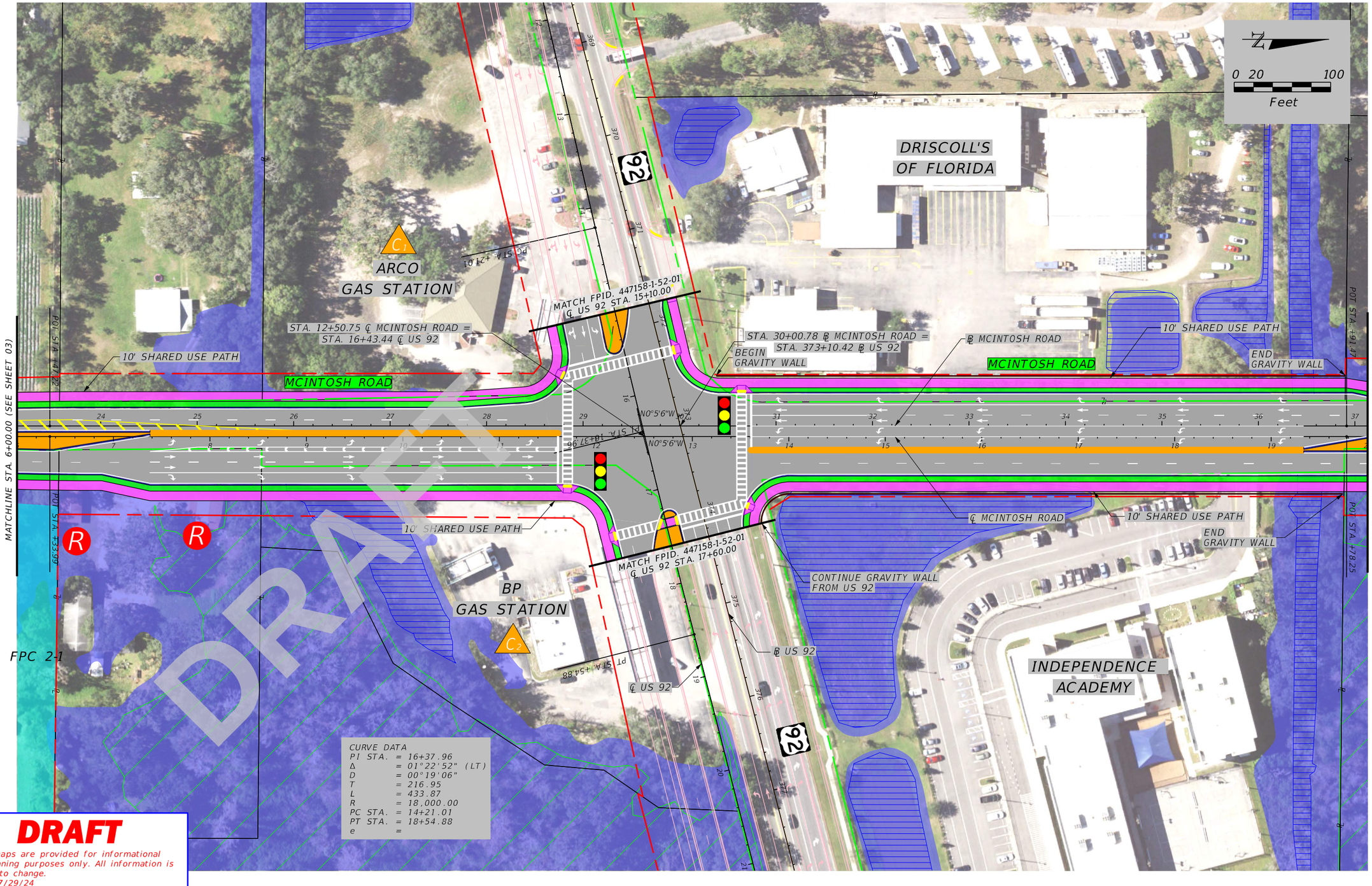

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N/A	HILLSBOROUGH	447157-1-32-01

ENGINEER OF RECORD
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TAMPA, FL 33607

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FROM S. OF US 92 TO N. OF I-4
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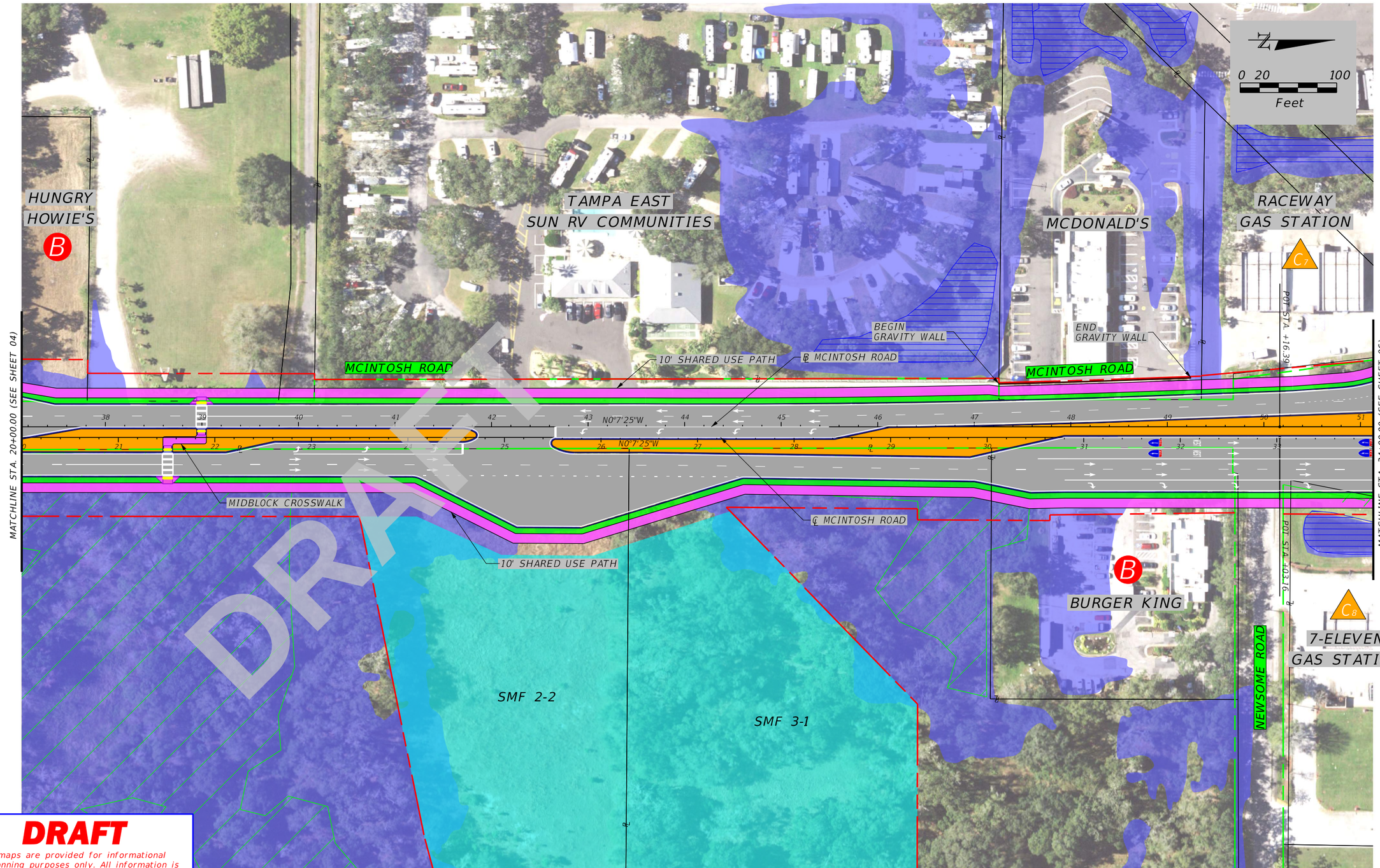

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STATE OF FLORIDA
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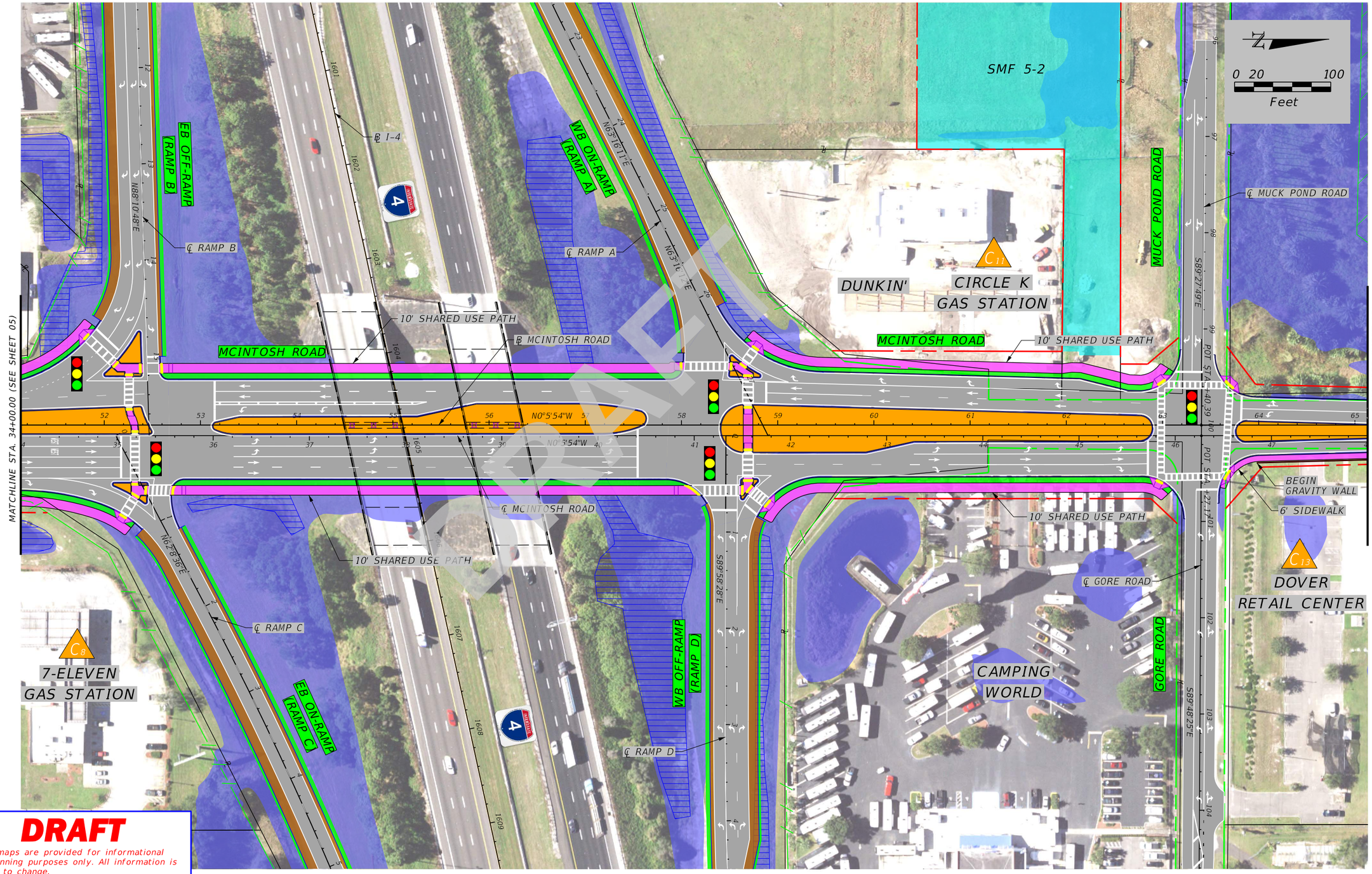

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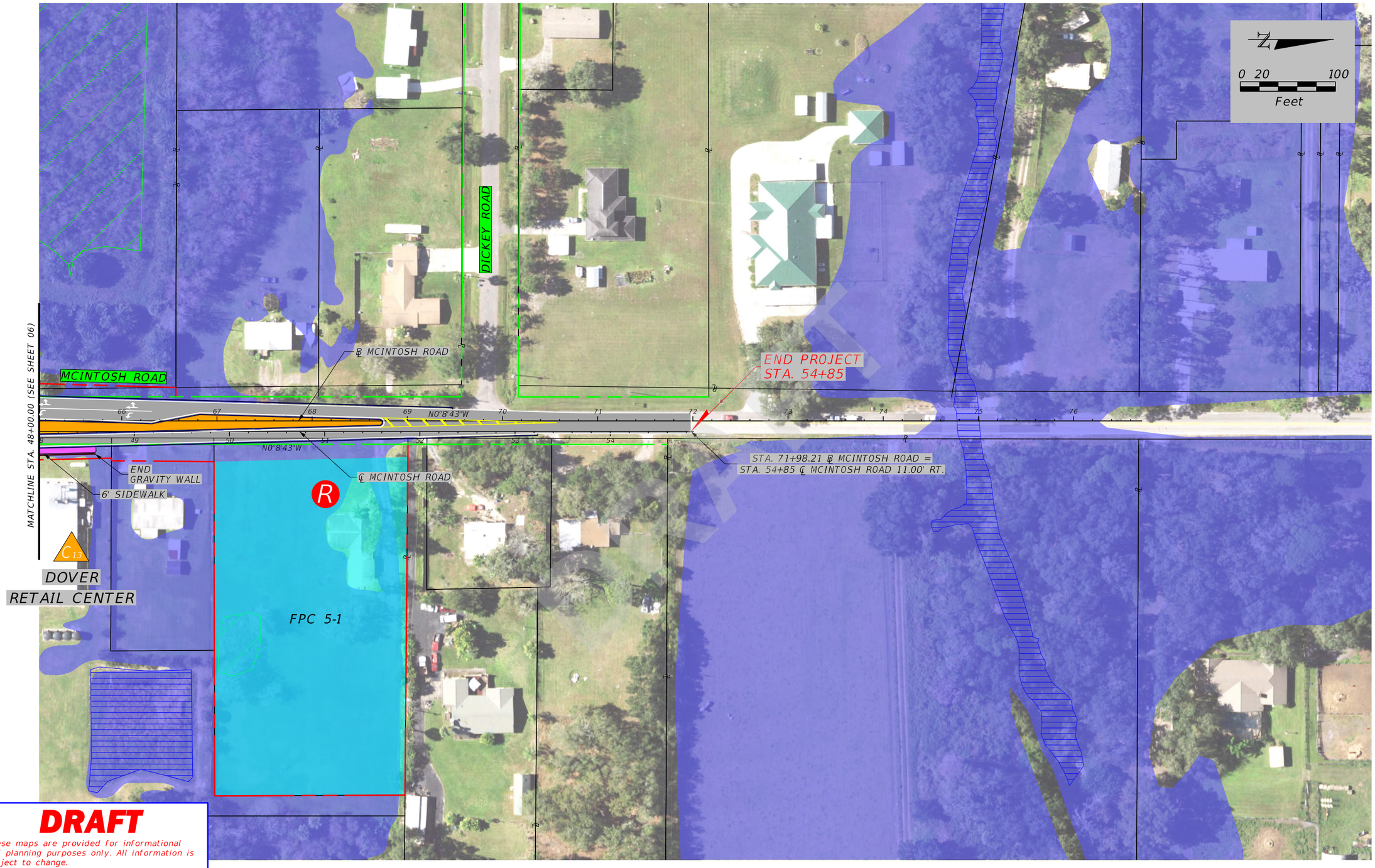

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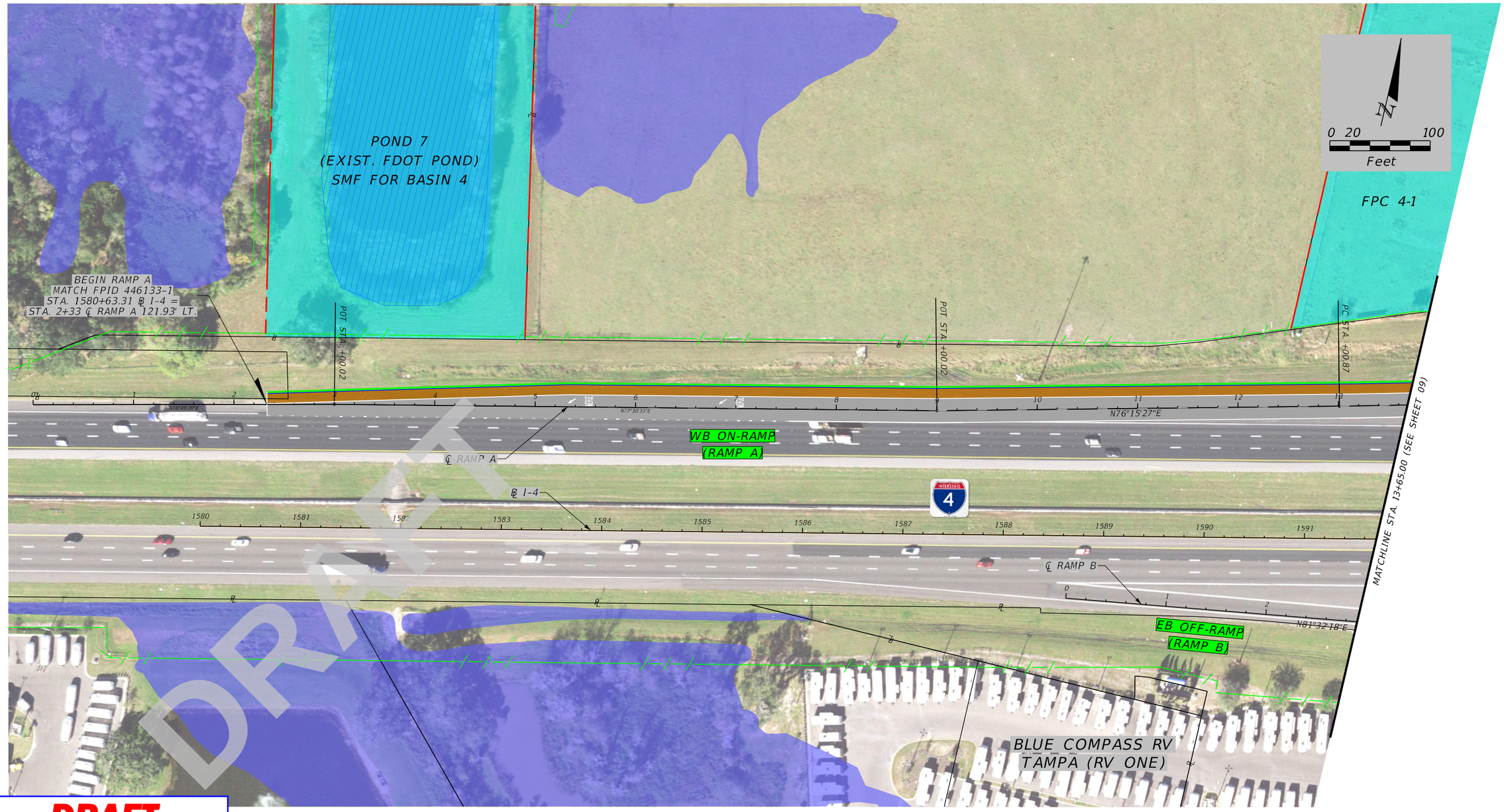

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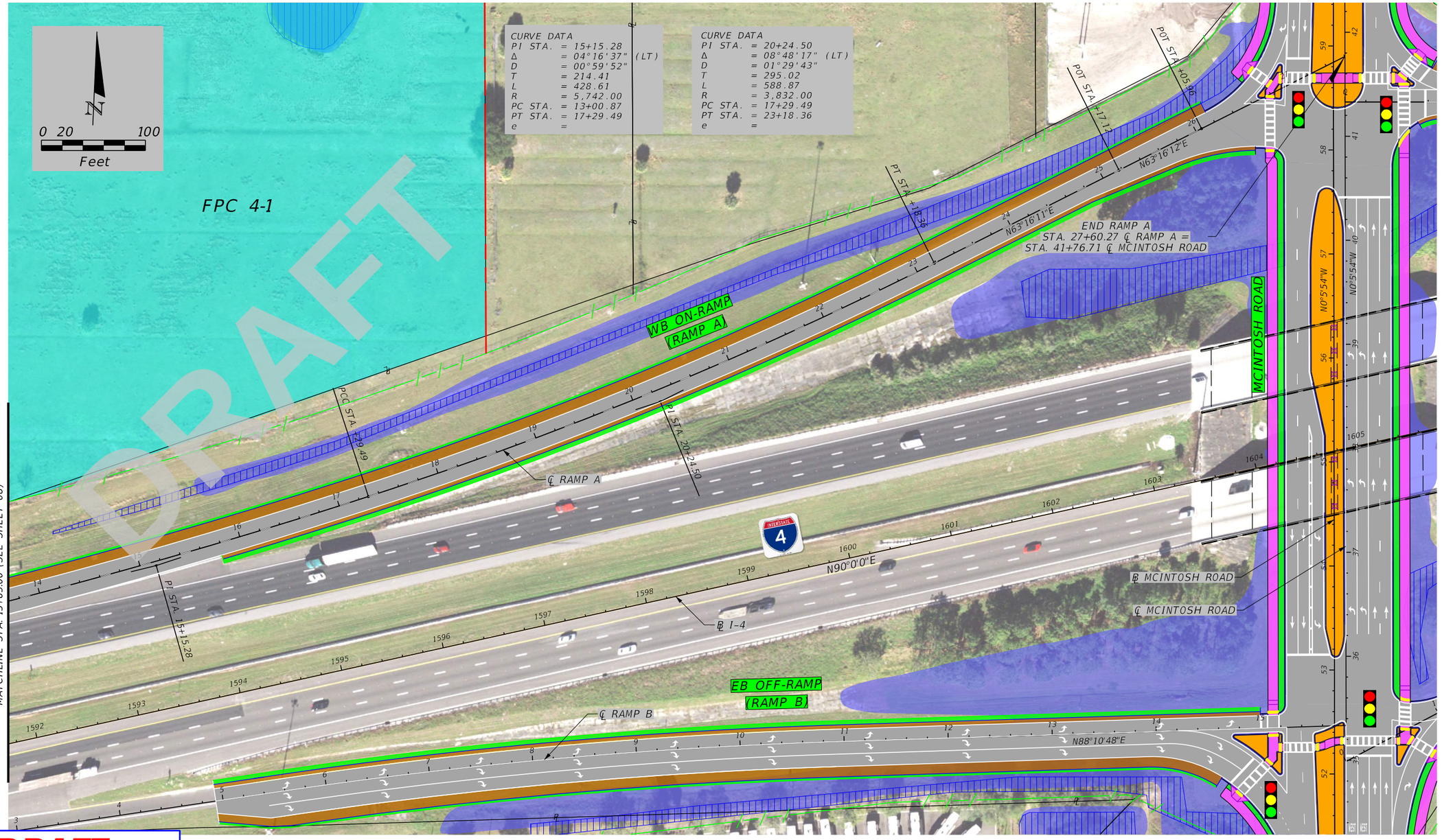

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FROM S. OF US 92 TO N. OF I-4
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FPC 4-1

℄ RAMP A

WB ON-RAMP
(RAMP A)

℄ I-4

N90°0'0"E

BEGIN RAMP B
MATCH FPID 441084-1
STA. 1593+54.77 ℄ I-4 =
STA. 4+93 ℄ RAMP B 96.68' RT.

PI STA. 8+11.60

℄ RAMP B

EB OFF-RAMP
(RAMP B)

PC STA. 4+31.05

PI STA. 9+19.46

POT STA. +40.07

POT STA. +38.96

POT STA. +12.11

CURVE DATA
PI STA. = 8+11.60
Δ = 06°54'26" (RT)
D = 01°13'57"
T = 280.55
L = 560.41
R = 4,648.62
PC STA. = 5+31.05
PT STA. = 10+91.46
e =

BLUE COMPASS RV
TAMPA (RV ONE)

℄ MCINTOSH ROAD

℄ MCINTOSH ROAD

END RAMP B
STA. 15+82.57 ℄ RAMP B =
STA. 35+33.44 ℄ MCINTOSH ROAD

EB ON-RAMP
(RAMP C)

N88°10'48"E

N62°8'36"E

℄ RAMP C

7-ELEVEN
GAS STATION

C8

RACEWAY
GAS STATION

C7

POT STA. +16.39

POT STA. +03.16

NEWSOME ROAD

MCINTOSH ROAD

MCDONALD'S

B

BURGER KING

N

0 20 100
Feet

DRAFT

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ENGINEER OF RECORD
REJA E. RABBI, P.E.
LICENSE NUMBER: 84637
CDM SMITH
4010 W. BOY SCOUT BLVD. STE. 450
TAMPA, FL 33607

MCINTOSH RD. PD&E STUDY

FROM S. OF US 92 TO N. OF I-4

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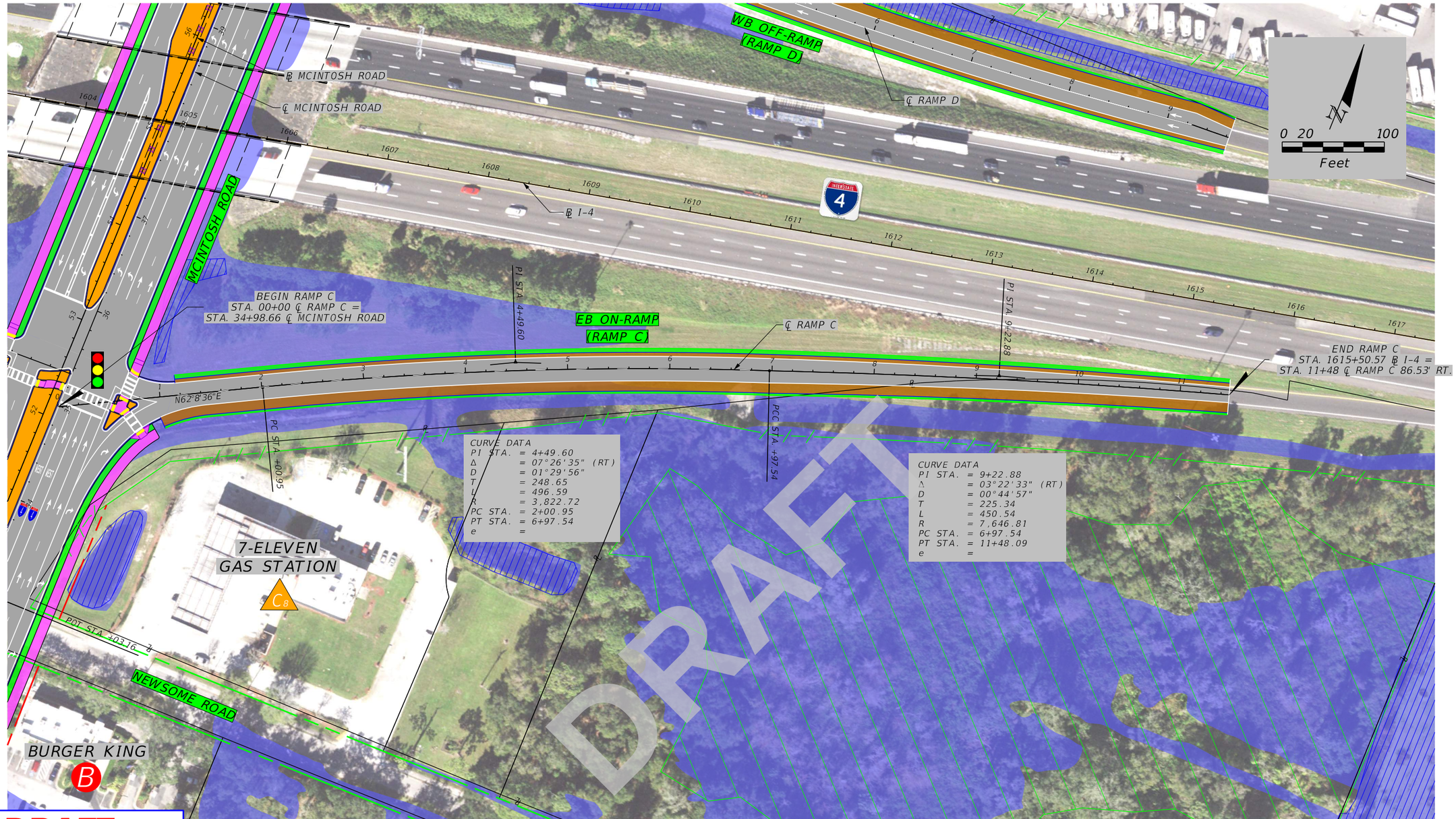

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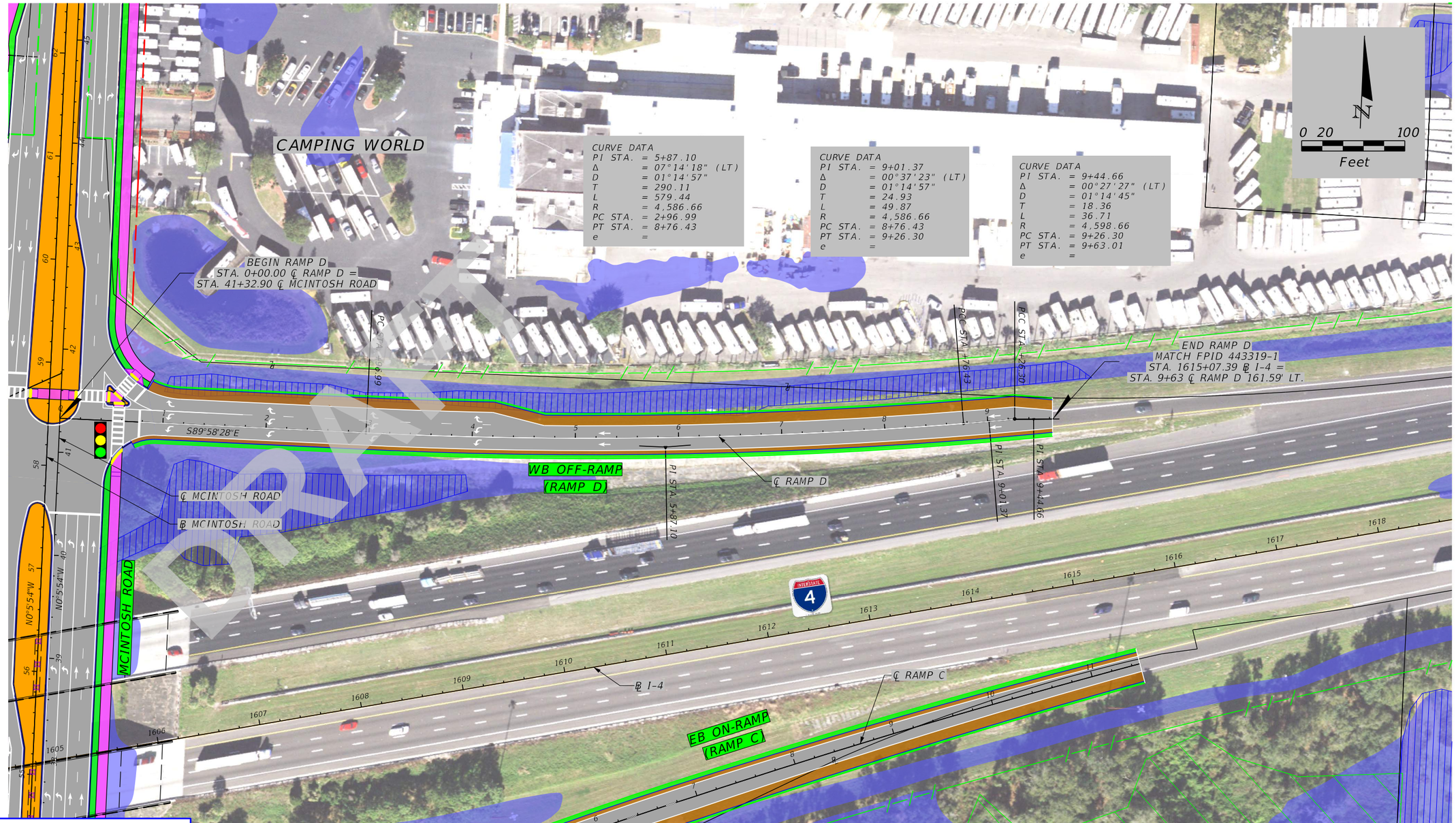

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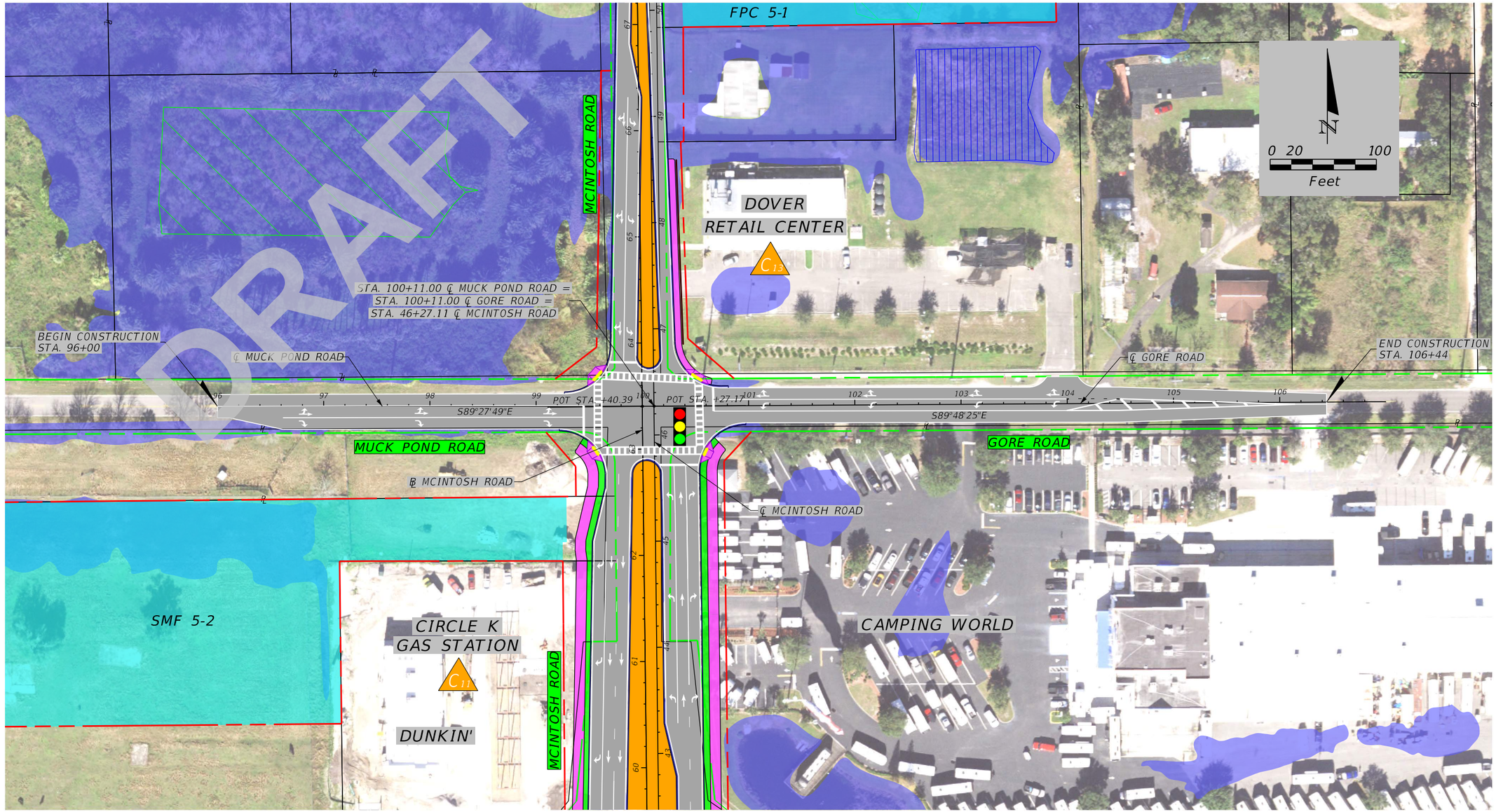

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CDM SMITH
4010 W. BOY SCOUT BLVD. STE. 450
TAMPA, FL 33607

MCINTOSH RD. PD&E STUDY

FROM S. OF US 92 TO N. OF I-4
PREFERRED ALTERNATIVE CONCEPT PLANS

SHEET NO. 13

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Appendix M Preferred SMF and FPC Pond Sites

EAST TAMPA RV RESORT THE OAKS

AIR STREAM AVE

DRISCOLL'S OF FLORIDA INC

MARATHON GAS STATION

KING OF GREEN WHOLESALE SOD

SPEEDWAY STATION

BASIN 1

MCINTOSH RD

600

92

FPC 1-1
PARCEL: 082939-0000 (3.21 AC)

FPC 2-1
PARCEL: 082972-0000 (5.46 AC)

SMF 1&7-1
PARCEL: 082939-0000 (2.58 AC)

LEGEND

- HC-SWMM FLOOD ZONE
- STORM WATER FACILITY
- FLOODPLAIN COMPENSATION SITE
- PROPOSED ROAD ROW

N

0 50 200
Feet

REVISIONS				N/A	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			PREFERRED SMF & FPC SITES BASIN 1	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					MCINTOSH	HILLSBOROUGH	447157-1-32-01		

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INTERSTATE 4

7-ELEVEN

RACEWAY GAS

NEWSOME RD

McDONALD'S

BURGER KING

BASIN 3

ACCESS EASEMENT FOR FPC 3-2
PARCEL: 082874-0000 (0.19 AC)

SMF 3-1
PARCEL: 082876-0050 (3.35 AC)

EAST TAMPA RV RESORT THE PALMS

SMF 2-2
PARCEL: 082877-0000 (2.51 AC)

FPC 3-2
PARCELS
082874-0000 (3.30 AC)
082874-0025 (3.57 AC)
TOTAL: 6.87 AC

MCINTOSH RD

BASIN 2

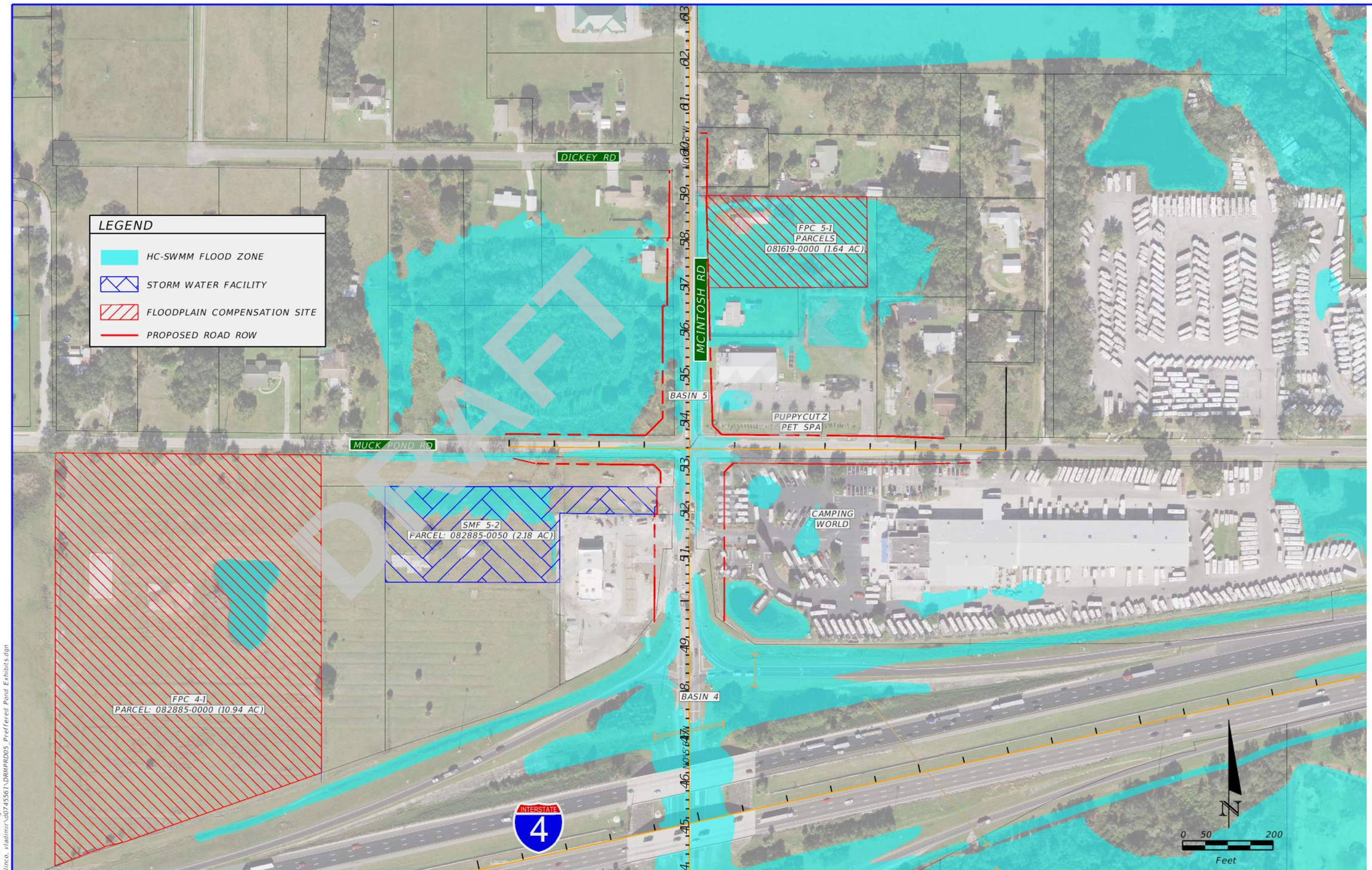
LEGEND

- HC-SWMM FLOOD ZONE
- STORM WATER FACILITY
- FLOODPLAIN COMPENSATION SITE
- ACCESS EASEMENT
- PROPOSED ROAD ROW

N

0 50 200
Feet

REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			PREFERRED SMF & FPC SITES BASIN 3	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				MCINTOSH	HILLSBOROUGH	447157-1-32-01		



REVISIONS				
DATE	DESCRIPTION	DATE	DESCRIPTION	

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
MCINTOSH	HILLSBOROUGH	447157-1-32-01

PREFERRED SMF & FPC SITES
BASIN 4 & 5

SHEET NO.

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

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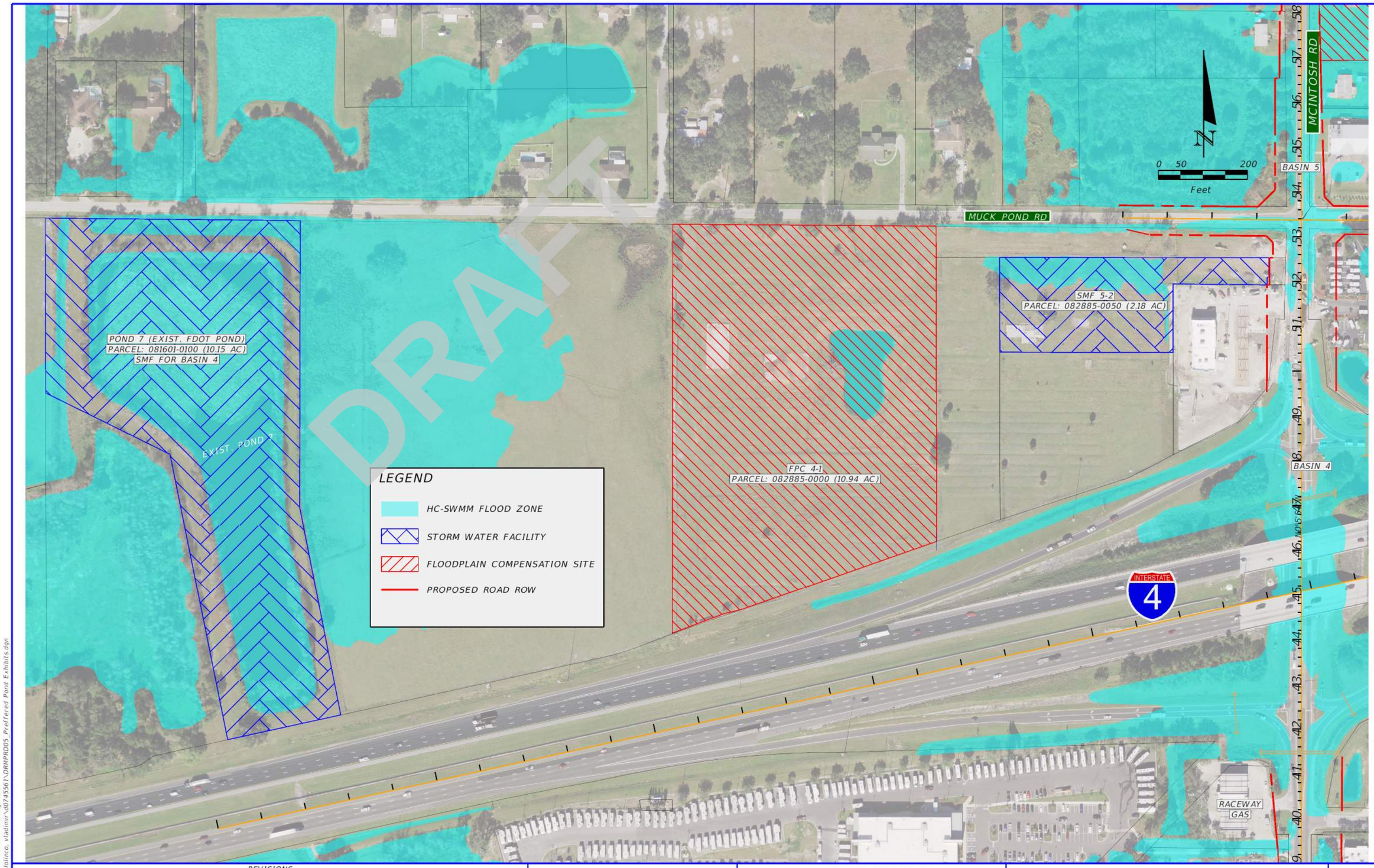

REVISIONS					STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			PREFERRED SMF & FPC SITES BASIN 4	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					MCINTOSH	HILLSBOROUGH	447157-1-32-01		

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

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Appendix N State Listed Floral Species

State Listed Floral Species, Hillsborough County, Florida (2024)

Species in **RED** listed in Section 3.8

Species	Common Name(s)	State Status (FWC)	Habitat Description	Probability of Occurrence	Effect Determination
Scaevola plumieri	BEACHBERRY; INKBERRY; GULLFEED	Threatened	Coastal dunes	None - No habitat in PSA	No effect anticipated
Pinguicula caerulea	BLUEFLOWER BUTTERWORT	Threatened	Sandy to sandy-peaty soils of pine flatwoods, ditches, roadsides	None - No habitat in PSA	No effect anticipated
Adiantum tenerum	BRITTLE MAIDENHAIR	Endangered	Rockland hammock, sinkhole, on limestone, upland, hardwood forest, streambanks	None - No habitat in PSA	No effect anticipated
Triphora amazonica	BROADLEAF NODDINGCAPS; WIDE-LEAVED TRIPHORA	Endangered	Hardwood hammocks	None - No habitat in PSA	No effect anticipated
Tillandsia fasciculata	CARDINAL AIRPLANT; COMMON WILD PINE; STIFF-LEAVED WILD PINE	Endangered	Hammocks, cypress swamps, pinelands	None - No habitat in PSA	No effect anticipated
Lobelia cardinalis	CARDINALFLOWER	Threatened	Riverbanks, springs, coastal hammocks	None - No habitat in PSA	No effect anticipated
Lilium catesbaei	CATESBY'S LILY; PINE LILY	Threatened	Wet flatwoods, bogs, usually with grasses	None - No habitat in PSA	No effect anticipated
Carex chapmannii	CHAPMAN'S SEDGE	Threatened	Hydric hammocks	None - No habitat in PSA	No effect anticipated
Pecluma ptilota var. bourgeauana	**COMB POLYPODY; SWAMP PLUME POLYPODY; PALMLEAF ROCKCAP FERN**	**Endangered**	**Hammocks, swamps**	**Low**	**No adverse effect anticipated**
Platanthera cristata	CRESTED YELLOW ORCHID; CRESTED FRINGED ORCHID	Threatened	Wet praries, bogs, ditched, and wet pine flatwoods	None - No habitat in PSA	No effect anticipated
Tephrosia angustissima var. curtissii	CURTISS' HOARYPEA	Endangered	Coastal Scrub	None - No habitat in PSA	No effect anticipated
Asclepias curtissii	CURTISS' MILKWEED	Endangered	Dry hammocks, scrub, and flatwoods	None - No habitat in PSA	No effect anticipated
Lechea divaricata	DRYSAND PINWEED; SPREADING PINWEED; PINE PINWEED	Endangered	Dry sandy soil, scrubby flatwoods	None - No habitat in PSA	No effect anticipated

State Listed Floral Species, Hillsborough County, Florida (2024)

Species in **RED** listed in Section 3.8

Species	Common Name(s)	State Status (FWC)	Habitat Description	Probability of Occurrence	Effect Determination
Asplenium erosum	EARED SPLEENWORT; AURICLED SPLEENWORT	Endangered	Live oaks in mesic hammocks, strand swamp	None - No habitat in PSA	No effect anticipated
Opuntia stricta	ERECT PRICKLYPEAR; SHELL-MOUND PRICKLYPEAR	Threatened	Coastal dunes, xeric scrub oak, sandy soils	None - No habitat in PSA	No effect anticipated
Acoelorraphe wrightii	EVERGLADES PALM	Threatened	Freshwater and brackish marshes, brackish swamps	None - No habitat in PSA	No effect anticipated
Lythrum flagellare	FLORIDA LOOSESTRIFE; LOWLAND LOOSESTRIFE	Endangered	Low open ground, swamps, thickets	None - No habitat in PSA	No effect anticipated
Tricerma phyllanthoides	FLORIDA MAYTEN	Threatened	Hammocks, dunes	None - No habitat in PSA	No effect anticipated
Matelea floridana	**FLORIDA MILKVINE; FLORIDA SPINY POD**	**Endangered**	**Bluffs, pine-oak-hickory woods**	**Low**	**No adverse effect anticipated**
Garberia heterophylla	GARBERIA	Threatened	Dry sandy pine or pine-oak scrub and prairies	None - No habitat in PSA	No effect anticipated
Tillandsia utriculata	GIANT AIRPLANT; GIANT WILD PINE	Endangered	Hammocks, cypress swamps, pinelands	None - No habitat in PSA	No effect anticipated
Acrostichum aureum	GOLDEN LEATHER FERN	Threatened	Marine and estuarine tidal swamp and tidal marsh	None - No habitat in PSA	No effect anticipated
Ophioglossum palmatum	HAND FERN	Endangered	Grows in bases of cabbage palm leaves in hydric hammocks, strand swamps	None - No habitat in PSA	No effect anticipated
Sarracenia minor	HOODED PITCHERPLANT	Threatened	Flatwoods, bogs, ditches	None - No habitat in PSA	No effect anticipated
Agrimonia incisa	INCISED AGRIMONY; HARVEST-LICE	Threatened	Sandhills, upland pine	None - No habitat in PSA	No effect anticipated
Nymphaea jamesoniana	JAMESON'S WATERLILY; NIGHTBLOOMING WATERLILY	Endangered	Freshwater ponds	None - No habitat in PSA	No effect anticipated
Sacoila lanceolata var. lanceolata	LEAFLESS BEAKED LADIES' TRESSES; LEAFLESS BEAKED ORCHID	Threatened	Pastures, pine flatlands, and roadsides	None - No habitat in PSA	No effect anticipated

State Listed Floral Species, Hillsborough County, Florida (2024)

Species in **RED** listed in Section 3.8

Species	Common Name(s)	State Status (FWC)	Habitat Description	Probability of Occurrence	Effect Determination
Spiranthes tuberosa	LITTLE LADIES' TRESSES; LITTLE PEARL-TWIST	Threatened	Bogs, fens, grassland, meadows, savanna, woodlands	None - No habitat in PSA	No effect anticipated
Rhynchospora megaplumosa	LONGBRISTLE BEAKSEDGE	Endangered	Scrubby flatwoods	None - No habitat in PSA	No effect anticipated
Spiranthes longilabris	LONGLIP LADIES' TRESSES; GIANTSPIRAL LADIESTRESSES	Threatened	Flatwoods, prairies, marshes, sandy bogs	None - No habitat in PSA	No effect anticipated
Calopogon multiflorus	MANYFLOWERED GRASSPINK	Threatened	Damp pinelands and meadows (fire maintained)	None - No habitat in PSA	No effect anticipated
Stachys crenata	MOUSE'S-EAR; SHADE BETONY	Endangered	Hammocks	None - No habitat in PSA	No effect anticipated
Dendrophylax porrectus	NEEDLEROOT AIRPLANT ORCHID; THREADROOT ORCHID	Threatened	Old orange groves, strand swamps, hardwood	None - No habitat in PSA	No effect anticipated
Lechea cernua	**NODDING PINWEED; SCRUB PINWEED**	**Threatened**	**Swamps, hammocks**	**Low**	**No adverse effect anticipated**
Tillandsia balbisiana	NORTHERN NEEDLELEAF	Threatened	Hammocks	None - No habitat in PSA	No effect anticipated
Liparis nervosa	PANTROPICAL WIDELIP ORCHID; TALL TWAYBLADE	Endangered	Cypress and hardwood swamps, moist hammocks	None - No habitat in PSA	No effect anticipated
Centrosema arenicola	**PINELAND BUTTERFLY PEA; SAND BUTTERFLY PEA**	**Endangered**	**Sandhills, xeric oak, srubby flatwoods**	**Low**	**No adverse effect anticipated**
Schizachyrium niveum	**PINESCRUB BLUESTEM**	**Endangered**	**Sandhill and rosemary sandy scrub**	**Low**	**No adverse effect anticipated**
Pecluma plumula	**PLUME POLYPODY; PLUMED ROCKCAP FERN**	**Endangered**	**Hammocks**	**Low**	**No adverse effect anticipated**
Vachellia tortuosa	POPONAX	Endangered	Dune scrub, desert	None - No habitat in PSA	No effect anticipated

State Listed Floral Species, Hillsborough County, Florida (2024)

Species in **RED** listed in Section 3.8

Species	Common Name(s)	State Status (FWC)	Habitat Description	Probability of Occurrence	Effect Determination
Zephyranthes simpsonii	**REDMARGIN ZEPHYRLILY; SIMPSON'S ZEPHYRLILY**	**Threatened**	**Wet pinelands and pastures, adjacent roadsides**	**Low**	**No adverse effect anticipated**
Pogonia ophioglossoides	ROSE POGONIA; SNAKEMOUTH ORCHID	Threatened	Sphagnum bogs, meadows, swamps, pine savannahs, pine flatwoods, prairies	None - No habitat in PSA	No effect anticipated
Platanthera nivea	SNOWY ORCHID	Threatened	Bogs, wet pine savannas and flatwoods, wet prairies	None - No habitat in PSA	No effect anticipated
Platanthera flava	SOUTHERN TUBERCLED ORCHID; PALEGREEN ORCHID; GYPSY-SPIKES	Threatened	Wet thickets, hydric hammocks, wet prairies, and wet meadows	None - No habitat in PSA	No effect anticipated
Neottia bifolia	SOUTHERN TWAYBLADE	Threatened	Rich humus of low moist woods, sphagnum moss, stream banks	None - No habitat in PSA	No effect anticipated
Glandularia tampensis	**TAMPA MOCK VERVAIN**	**Endangered**	**Sandy soil, upland hardwoods, pine savannah, pine flatwoods**	**Low**	**No adverse effect anticipated**
Thelypteris serrata	**TOOTHED LATTICE-VEIN FERN; DENTATE LATTICE-VEIN FERN**	**Endangered**	**Cypress and hardwood swamps, moist hammocks**	**Low**	**No adverse effect anticipated**
Matelea pubiflora	TRAILING MILKVINE; SANDHILL SPINY POD	Endangered	Sandy soils, xeric oak, sandhills	None - No habitat in PSA	No effect anticipated
Zephyranthes atamasca var. treatiae	TREAT'S ZEPHYRLILY; TREAT'S RAINLILY	Threatened	Low ground, rich moist woods, wet pastures & meadows, limestone out-crops in woods	None - No habitat in PSA	No effect anticipated
Gossypium hirsutum	UPLAND COTTON; WILD COTTON	Threatened	Disturbed roads, hammocks, shrub thickets	None - No habitat in PSA	No effect anticipated
Platanthera blephariglottis var. conspicua	WHITE FRINGED ORCHID	Threatened	Marshes, meadows, bogs, depressions in pine savannas	None - No habitat in PSA	No effect anticipated

State Listed Floral Species, Hillsborough County, Florida (2024)

Species in **RED** listed in Section 3.8

Species	Common Name(s)	State Status (FWC)	Habitat Description	Probability of Occurrence	Effect Determination
Pecluma dispersa	WIDESPREAD POLYPODY; WIDESPREAD ROCKCAP FERN	Endangered	Moist, rocky areas	None - No habitat in PSA	No effect anticipated
Pinguicula lutea	YELLOW BUTTERWORT; YELLOW-FLOWERED BUTTERWORT	Threatened	Sandy-peaty soils, pine flatwoods, seepage bogs, ditches, roadsides	None - No habitat in PSA	No effect anticipated
Platanthera ciliaris	YELLOW FRINGED ORCHID	Threatened	Bogs, swamps, marshes, pine savannahs, and flatwoods, floodplain forests	None - No habitat in PSA	No effect anticipated