NATURAL RESOURCES EVALUATION

for the

Prepared for:

Seminole County Contract No.: PS-5738-10/JVP
Financial Project ID: 240216-4-28-01
Federal Aid Project No.: TCSP-045-U
ETDM No.: 4972

JUNE 2017

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by FDOT pursuant to 23 U.S.C. § 327 and Memorandum of Understanding dated 12/14/2016 and executed by FHWA and FDOT.

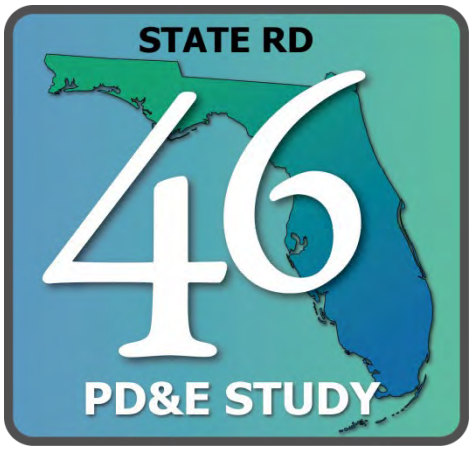
PART A – WETLANDS AND OTHER SURFACE WATERS REPORT

PART B – PROTECTED SPECIES AND HABITAT REPORT

NATURAL RESOURCES EVALUATION

Part A:
Wetlands and Other Surface Waters Report

for the



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1.0 INTRODUCTION

Seminole County, in consultation with the Florida Department of Transportation (FDOT), is conducting a Project Development and Environment (PD&E) study to evaluate possible alternative improvements to widen State Road 46 from east of State Road 415 (SR 415) to County Road 426 (CR 426). The build alternatives include a roadway widening from a two-lane undivided roadway to a four-lane divided roadway. The proposed four-laning would result in the construction of a new bridge causeway over Lake Jesup, of parallel structure and of the same length, on the north side of the newly constructed Lake Jesup Bridge.

This study followed procedures outlined in the Project Development and Environment Manual, Part 2, Analysis and Documentation, Chapter 18, Wetlands and Other Surface Waters (FDOT, revised August 22, 2016), as established in the Federal Highway Administration (FHWA) Technical Advisory T6640.8A (FHWA, October 30, 1987). In accordance with this guidance, the following tasks were completed:

- Project wetlands were identified and classified.
- Project wetlands were delineated on aerial photographs.
- Factors such as the wildlife habitat values, hydrologic functions, and public uses of project wetlands were determined.
- Functions and values of project wetlands were assessed.
- Project impacts within wetlands and other surface waters were calculated.
- Alternatives analysis, minimization measures, and mitigation measures were addressed.

1.1 PROJECT BACKGROUND

The widening of SR 46 and the replacement of the bridge over Lake Jesup have been the subject of numerous studies since 1995 when the original study was initiated regarding the replacement of the bridge. In 2002, FDOT initiated the SR 46 Lake Jesup Bridge Replacement PD&E study. The study involved the re-evaluation of the impacts associated with replacing the existing SR 46 bridge over the St. Johns River in the vicinity of Lake Jesup. The PD&E study was completed in 2003 and the project moved forward into design and permitting, followed by right-of-way acquisition, and finally construction. The SR 46 Lake Jesup Bridge Replacement construction project was initiated in December 2007 and completed in June 2009. During the construction, the aging and obsolete bridge was removed as well as the existing causeway. The new bridge was constructed to span the entire lake/river area and eliminate the need for a causeway. As part of the wetland mitigation plan for this project, Channel B (oxbow channel) was excavated to one-foot National Geodetic Vertical Datum (NGVD) 1929 within the limits of the FDOT right-of-way. The mitigation plan also included the causeway removal, the removal of the adjacent fish camps, wetland restoration and enhancement, and preservation of the adjacent marsh habitat. The U.S. Army Corps of Engineers (USACE), in partnership with the St. Johns River Water Management District (SJRWMD) and the FDOT, began a study in 2001 to explore the issue of the restricted hydrologic connection between Lake Jesup and the St. Johns River. The USACE report was prepared under the authority of the Lake Jesup Continuing Authorities Program (CAP) Section 1135 of the 1986 Water Resources Development Act (WRDA), as amended. Section 1135

involves the modification of existing USACE projects and operations to improve the quality of the environment. The USACE distributed a Final Ecosystem Restoration Report (ERR) in April 2012. The report recommended no further federal action was warranted due to the fact that the hydrologic modeling did not demonstrate that the decline of water quality within Lake Jesup was a result of USACE's bypass canal known as "Government Cut".

2.0 PROJECT PURPOSE AND NEED

The SR 46 widening project will serve as an improvement to a major hurricane evacuation route for northern Brevard and southern Volusia Counties. This evacuation route is imperative for those counties since the nearest east-west evacuation routes are located approximately 8 miles to the south (State Road 50) and approximately 25 miles to the north (State Road 44). State Road 50, the nearest alternative route, is anticipated to be over capacity by year 2035.

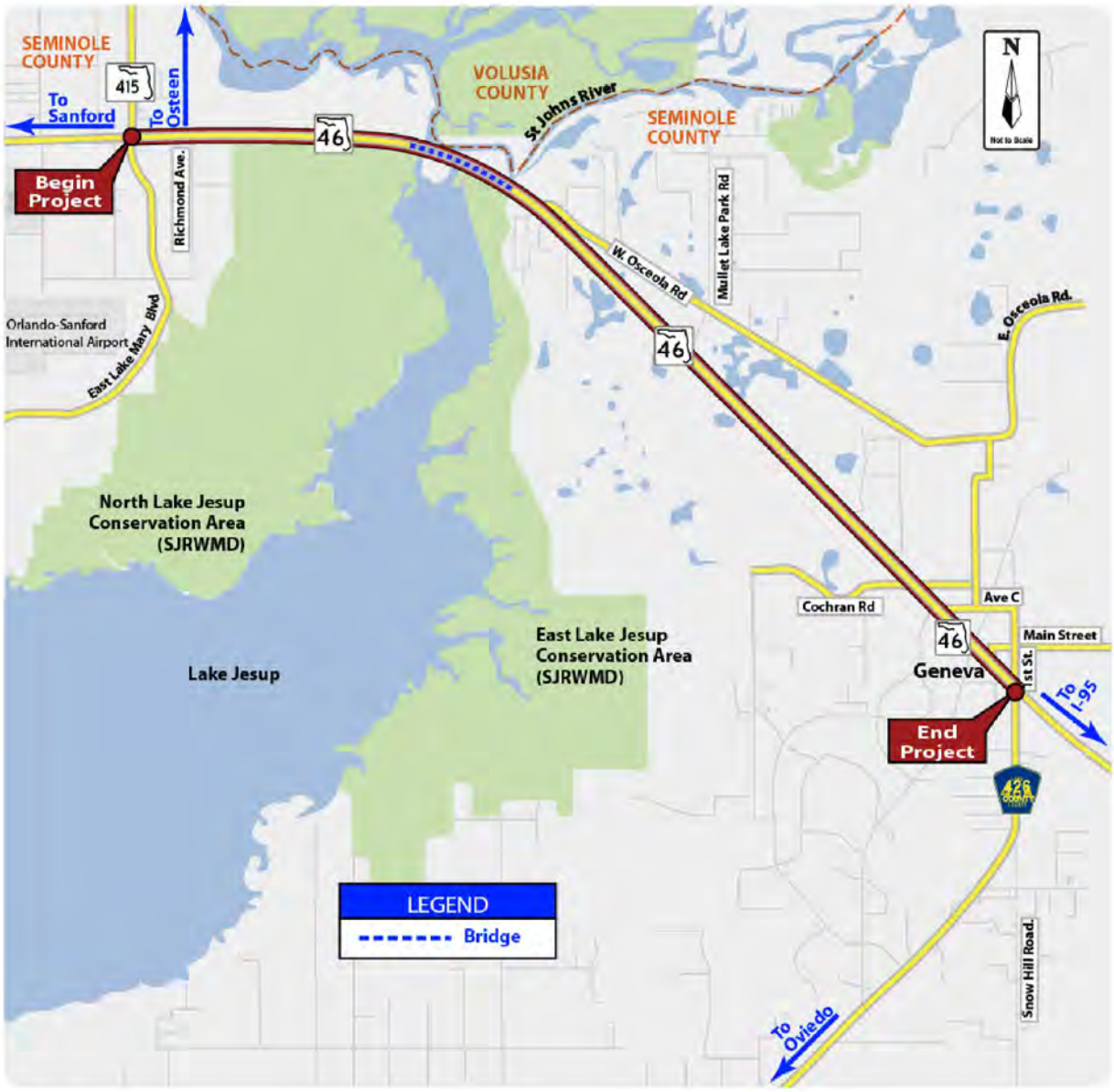
The overall project will alleviate traffic congestion and correct safety and roadway deficiencies. The specific transportation needs include to:

- Provide a higher capacity east-west travel facility in Seminole County.
- Improve safety to reduce vehicle crash fatalities and injuries on SR 46.
- Develop a transportation facility that minimizes impacts to the area's resources.

The widening of the SR 46 corridor between SR 415 and CR 426 as a four-lane section is included as a planned improvement in the Metroplan Orlando 2030 Long Range Transportation Plan (LRTP). The project is also in the Seminole County's Comprehensive Plan and is number 11 on the Metroplan Orlando Prioritized Project List.

3.0 PROJECT DESCRIPTION

SR 46 is an integral component of Central Florida's transportation and evacuation system that traverses Lake, Seminole, and Brevard Counties with interchanges at I-4 and I-95. SR 46 is currently a two-lane rural roadway extending between SR 415 and CR 426 in eastern Seminole County. The project length is approximately 7.4 miles. The western terminus connects to SR 415, which is under construction to a four-lane divided facility. Lake Mary Boulevard, which was recently extended to SR 415, provides a direct connection to the Orlando-Sanford International Airport and the Seminole Expressway (SR 417). The eastern terminus of the project occurs at CR 426 (Geneva), which provides a direct connection to the City of Oviedo. Figure 1 presents the project study limits.



STATE RD 46 PD&E STUDY

Project Location Map

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 1

SCALE: NTS

JOB NO.: 10.20

DATE: 11/19/2013

For the purpose of this PD&E study, the SR 46 widening project was subdivided into four (4) segments. Segment 1 consists of the expansion of the existing two-lane rural roadway to a four-lane suburban roadway section from SR 415 to the west end of the Lake Jesup Bridge. Segment 2 consists of an additional two-lane bridge over Lake Jesup. The proposed four-laning would result in the construction of a new bridge over Lake Jesup, of parallel structure and of the same length, north of the newly constructed Lake Jesup Bridge. Segment 3 consists of the expansion of a two-lane rural roadway to a four-lane suburban roadway segment from the east end of the Lake Jesup Bridge to Hart Road. Segment 4 consists of the expansion of a two-lane rural roadway to a four-lane urban roadway segment from Hart Road to CR 426. In addition, drainage, stormwater management facilities, and access management are included as part of this project.

There were five (5) alternatives analyzed as part of the PD&E study, one No-Build Alternative and four (4) Build Alternatives. Special considerations in the development of the alternatives included providing bicycle facilities and improvements to major intersections. The PD&E study addresses engineering solutions and their potential impacts to the human, natural, and physical environment.

4.0 PROJECT ALTERNATIVES

For the purposes of analyzing the build alternatives, the project was split into four segments as follows:

- Segment 1 – SR 415 to the west end of the Lake Jesup/St. Johns River Bridge
- Segment 2 – The Lake Jesup/St. Johns River Bridge
- Segment 3 – The east end of the Lake Jesup/St. Johns River Bridge to Hart Road
- Segment 4 – Hart Road to CR 426

4.1 BUILD ALTERNATIVES

There were five (5) alternatives analyzed as part of this study. The alternatives include:

- Build Alternative 1
  - > SR 415 to Lake Jesup (Suburban North Typical Section)
  - > Lake Jesup to Hart Road (Suburban Best Fit Typical Section)
  - > Hart Road to CR 426 (Urban Typical Section)
- Build Alternative 2
  - > SR 415 to Lake Jesup (Suburban South Typical Section)
  - > Lake Jesup to Hart Road (Suburban Best Fit Typical Section)
  - > Hart Road to CR 426 (Urban Typical Section)
- Build Alternative 3
  - > SR 415 to Lake Jesup (Suburban North Typical Section)
  - > Lake Jesup to Hart Road (Rural Best Fit Typical Section)
  - > Hart Road to CR 426 (Urban Typical Section)

- Build Alternative 4
  - > SR 415 to Lake Jesup (Suburban South Typical Section)
  - > Lake Jesup to Hart Road (Rural Best Fit Typical Section)
  - > Hart Road to CR 426 (Urban Typical Section)
- Alternative 5 No-Build (SR 46 remains a 2-lane arterial)

4.2 NO-BUILD ALTERNATIVE

The No-Build Alternative provides no improvements to SR 46 within the project limits. Other planned and programmed roadway projects identified in MetroPlan Orlando's LRTP are assumed to be implemented. The absence of construction-related and short-term operational impacts associated with the Build Alternative is a benefit of the No-Build Alternative. Long-term benefits accrued from serving future traffic demands would not be realized with this alternative. Continued traffic growth on SR 46 will result in traffic volumes in excess of capacity, thereby increasing congestion. The No-Build Alternative does not fulfill the purpose and need of the project. Distinct advantages and limitations associated with the No-Build Alternative are as follows:

Advantages

- No impedance to traffic flow during construction.
- No disruption to existing land uses because of construction activities.
- No right-of-way acquisition or relocations.
- No expenditure of funds for engineering design or construction.
- No impacts to the adjacent natural, physical, human, and social environments.

Limitations

- Increase in traffic congestion and user cost associated with increased travel time due to excessive delay.
- Increase in carbon monoxide and other pollutants due to increased traffic congestion.
- Increase in maintenance costs due to roadway and structure deterioration.
- Increase in emergency vehicle response time.
- Increase in evacuation time during weather emergencies as a result of heavy congestion.
- Increase in crash potential because of increased congestion.
- Not compatible with the area's long range plans.
- No opportunity for potential additional mitigation to Lake Jesup/St. Johns River.

The No-Build Alternative will remain a viable alternative through the Public Hearing.

4.3 ALTERNATIVES EVALUATION

An analysis of any potential impacts to public conservation lands, conservation easements, and wetlands was conducted for all alternatives. This information is presented within a subsequent

section (Section 8 – Proposed Impacts to Wetlands and Other Surface Waters).

4.4 RECOMMENDED ALTERNATIVE

Four alternatives for the widening of SR 46 were developed and considered. Of the four alternatives, two alternatives have been eliminated from further study (Alternatives 1 and 3) due to impacts to a private mitigation bank (Rolf Bergmann Mitigation Tract) and the existing Florida Power and Light (FPL) transmission line (utility easement), which are both located north of SR 46 and west of the Lake Jesup Bridge (Segment 1). The Rolf Bergmann Mitigation Tract occurs on the north side of SR 46, east of State Road 415 and west of the Lake Jesup Bridge. Information provided by the SJRWMD indicates that there are multiple individual conservation easements within this tract, which are along the north right-of-way of SR 46. The impacts associated with Alternatives 1 and 3 impact each conservation easement along the right-of-way, which will require multiple conservation easement releases from SJRWMD and additional wetland mitigation. The significant environmental consequences associated with the impacts within multiple conservation easements result in these alternatives being considered impractical. And, the required multiple conservation easement releases are economically impractical; therefore, Alternatives 1 and 3 were determined to be not feasible. In addition, FPL has existing overhead transmission and distribution lines along the north right-of-way line within Segment 1 of the project. The costs associated with the relocation of the FPL lines would make the project economically impractical; therefore, Alternatives 1 and 3 were determined to be not feasible. Alternative 4 was eliminated from further study since it had the greatest amount of wetland impacts when compared to the other alternatives.

The recommended build alternative for the SR 46 widening project is Alternative 2 since it meets the purpose and need of the project. The recommended alternative (Alternative 2) consists of the Suburban South typical section within Segment 1, which extends from SR 415 to the west end of the Lake Jesup Bridge. The Bridge with Multi-Use Path is recommended for Segment 2. The Suburban Best Fit typical section is recommended for Segment 3, which extends from the east end of the Lake Jesup Bridge to Hart Road. And, the Urban Center typical section is recommended for Segment 4, which extends from Hart Road to CR 426. This alternative was selected since it is determined to be the best suited for the project since it provides for only one impact within a single conservation easement and the remaining wetland impacts are not considered significant. The recommended pond sites are Pond A3, the expansion of existing ponds (Ponds 1 & 2), Pond B1, Pond C1, Pond D1, Pond E2, Pond F2, Pond G2, Pond H1, and floodplain compensation ponds FPC 1 and FPC 2 (as shown in the figures presented in Section 6).

5.0 METHODOLOGY

The following resource materials were utilized during the study to identify and evaluate wetlands and other surface waters that are likely to be impacted by the proposed roadway improvements:

Cartographic Catalog

- True color aerial photography, raster format, 2009 and 2012, FDOT.
- True color aerial photography, raster format, September, 2011, Aerial Cartographics of America.
- USGS Quadrangle Map (Geneva, FL, 1953, photorevised 1970).
- USGS Quadrangle Map (Osteen, FL, 1965, photorevised 1980).
- USGS Quadrangle Map (Oviedo, FL, 1956, photorevised 1980).
- United States Fish and Wildlife Service (USFWS), National Wetland Inventory (NWI) Map, Geneva, 1988.
- USFWS, National Wetland Inventory (NWI) Map, Osteen, 1988.
- USFWS, National Wetland Inventory (NWI) Map, Oviedo, 1988.
- United States Soil Conservation Service (Natural Resources Conservation Service), *Soil Survey of Seminole County, Florida*, 1990.
- United States Soil Conservation Service (Natural Resources Conservation Service), *Soil Survey of Volusia County, Florida*, 1980.

Resource Information

- *Classification of Wetlands and Deepwater Habitats of the United States*, Cowardin, LM, Carter, V, Golet, FC, and LaRoe, ET, 1979.
- *Florida Land Use, Cover and Forms Classification System*, Florida Department of Transportation, 1999.
- *The Florida Wetlands Delineation Manual*, Gilbert, Katherine M, John D Tobe, Richard W Cantrell, Maynard E Sweeley, and James R Cooper, 1995.
- *Guide to the Vascular Plants of Florida*, Wunderlin, Richard P and Bruce F Hansen, 2011.
- *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region*, U.S. Army Corps of Engineers (USACE), 2010.
- Uniform Mitigation Assessment Method (UMAM), Rule 62-345, Florida Administrative code (F.A.C.), 2007.

Geographic Information System (GIS) Data

- United States Department of Agriculture, Natural Resources Conservation Service, Soils Survey Geographic (SSURGO) Database for Seminole County, Florida, 2011.
- United States Department of Agriculture, Natural Resources Conservation Service, Soils Survey Geographic (SSURGO) Database for Volusia County, Florida, 2011.
- St. Johns River Water Management District, 2009 Land Cover and Land Use, 2011.

Field reviews were conducted from February (8 & 29) through March (16, 20, 23, 26 & 27), 2012 in order to determine existing environmental conditions within the project area. For this project, the wetlands and other surface waters identified were those that occurred within approximately 200 feet north and south of the recommended alternative centerline and those that occurred within the proposed pond site alternatives. During the field reviews, each wetland and other surface water was visually inspected and a delineation was marked on the project aerials. Approximate boundaries were determined using the USACE *Wetland Delineation Manual*, the USACE

Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coast Plan Region, and *The Florida Wetlands Delineation Manual*. In general, photointerpretation methods are vulnerable to error and therefore should be used for land use planning purposes only. No attempt was made, in either the design or products of this evaluation, to define the limits of proprietary jurisdiction of any federal and/or state agency or local government.

6.0 EXISTING NATURAL AND ECOLOGICAL CHARACTERISTICS

6.1 SOIL CLASSIFICATIONS

The soils within the project study area were identified using maps and definitions formulated by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) (Figures 2A through 2E). Thirty (30) mapping units were mapped by NRCS within the study area and are presented in Table 1.

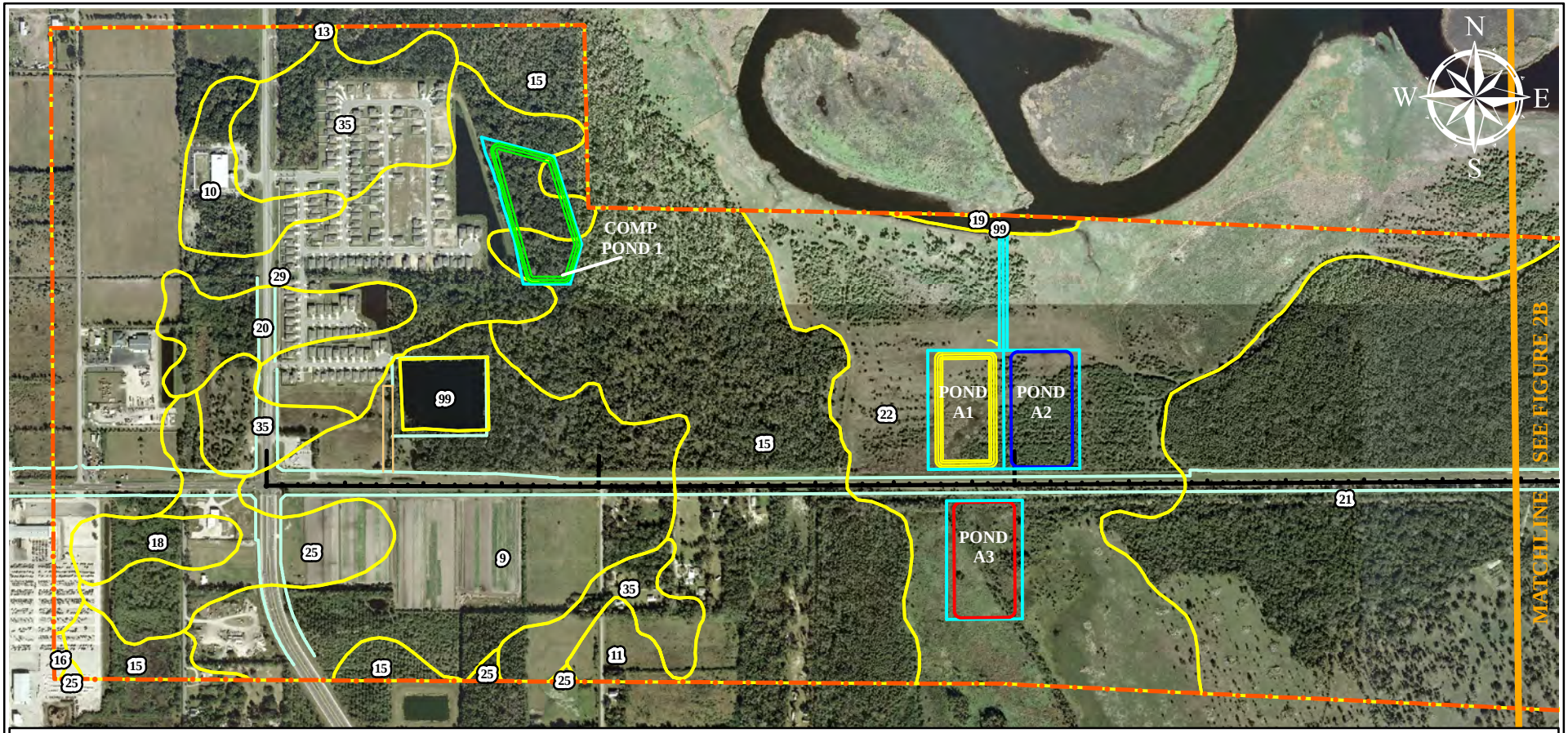
6.2 Classification of Existing Land Uses

The project study area currently supports thirty-seven (37) land use types/vegetative communities (Figures 3A through 3E, FLUCFCS Map), which includes uplands, wetlands, and other surface waters. These land use types/vegetative communities were identified using the *Florida Land Use, Cover and Forms Classification System,* Level III [FLUCFCS FDOT, January 1999 and St. Johns River Water Management District (SJRWMD), November 2011, 2009 Land Cover and Land Use (GIS data file)]. Table 2 lists the land cover types, the classifications, and acreages within the project study area. The following provides a brief description of the wetland and other surface water land use types [the entire list of land use descriptions is provided within the Protected Species and Habitat Evaluation Report (PSHER)].

Wetlands and Other Surface Waters

<u>Streams, Waterways, and Ditches (510)</u>
Roadside ditches and swales occur sporadically in the cleared edges of upland wetland communities along the highway alignment. These habitats contain a wide variety of upland and wetland herbaceous species, dependent on the type of adjacent natural community, the hydrologic regime, and the presence or absence of hydric soils. Certain wetland ditches have a high concentration of undesirable species such as cattail (*Typha* spp.).

One wide (>50 ft) but shallow ditch occurs on the north side of the road alignment, bisecting an area of mixed scrub-shrub wetland. This ditch is vegetated by a variety of herbaceous species including maidencane (*Panicum hemitomon*), blue flag iris (*Iris virginica*), yellow canna (*Canna flaccida*), and lizard's-tail (*Saururus cernuus*).



LEGEND

- Project Study Area
- Right-of-Way: Source - URS

SYMBOL	DESCRIPTION
9	Basinger and Delray Fine Sand
10	Basinger, Samsula and Hontoon Soils, Depressional
11	Basinger and Symrna Fine Sands, Depressional
13	EauGallie and Immokalee Fine Sands
15	Felda and Manatee Mucky Fine Sands, Depressional
16	Immokalee Sand
18	Malabar Fine Sand
19	Manatee, Floridana and Holopaw Soils, Frequently Flooded
20	Myakka and EauGallie Fine Sands
21	Nittaw Mucky Fine Sand, Depressional
22	Nittaw Muck, Occasionally Flooded
25	Pineda Fine Sand
29	St. Johns and EauGallie Fine Sands
35	Wabasso Fine Sand
99	Water

Datum projection: NAD_1983_State Plane_Florida_East_FIPS_0901_Feet
Source: Aerials - FDOT, 2009 & NRCS, USDA, SSURGO Data for Seminole and Volusia Counties, Florida.

STATE RD 46 PD&E STUDY

Soils Map

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

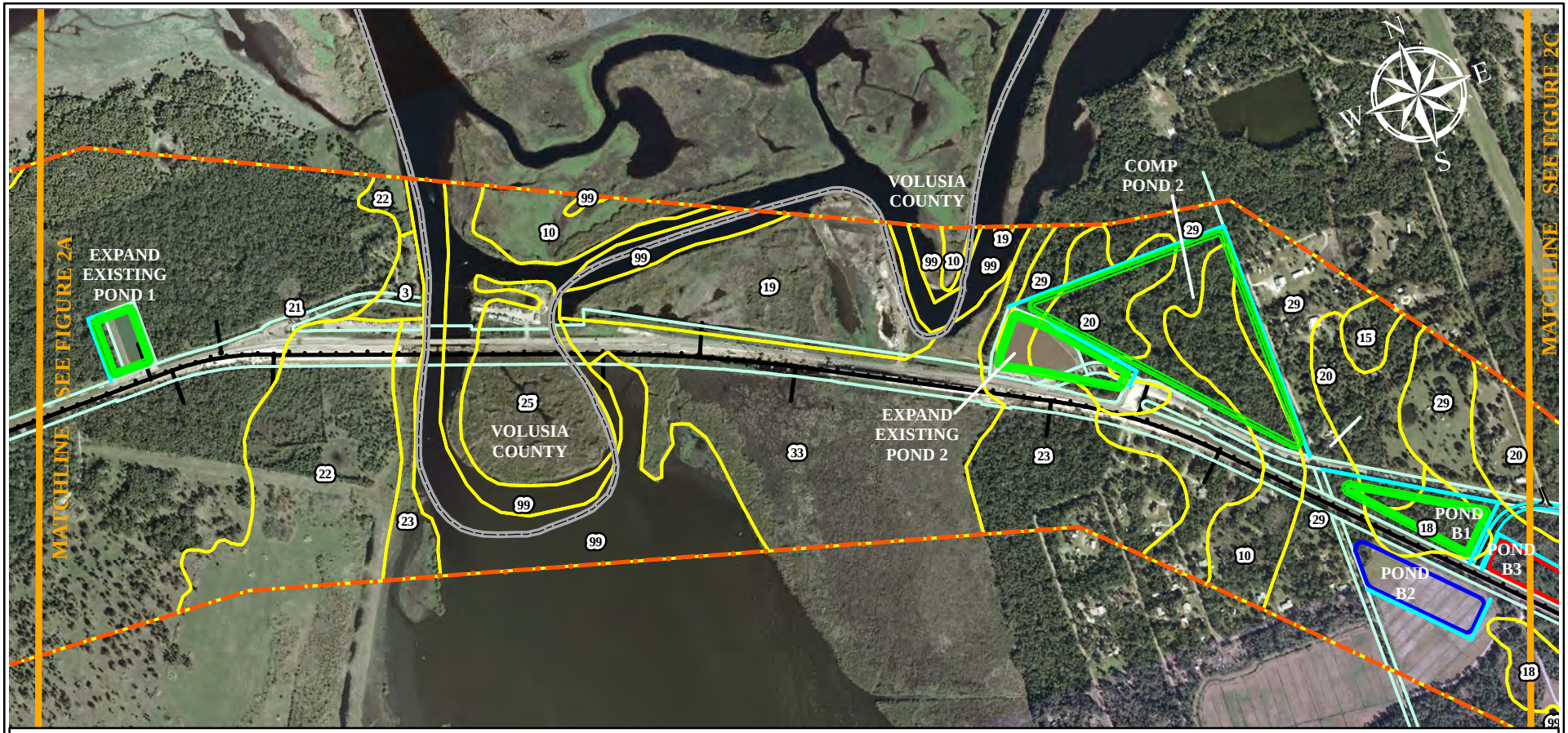
Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 2A

SCALE: 1" = 1000'

JOB NO.: 10.20

DATE: 11/19/13



LEGEND

- Project Study Area
- Right-of-Way: Source - URS

SYMBOL	DESCRIPTION
3	Arents, 0 to 5 Percent Slopes
10	Basinger, Samsula and Hontoon Soils, Depressional
10	Bluff Sandy Clay Loam - Volusia County
15	Felda and Manatee Mucky Fine Sands, Depressional
18	Malabar Fine Sand
19	Manatee, Floridana and Holopaw Soils, Frequently Flooded
20	Myakka and EauGallie Fine Sands
21	Nittaw Mucky Fine Sand, Depressional
22	Nittaw Muck, Occasionally Flooded
23	Nittaw, Okeelanta, and Bassinger Soils, Frequently Flooded
25	Gator Muck - Volusia County
29	St. Johns and EauGallie Fine Sands
33	Terra Ceia Muck, Frequently Flooded
99	Water

Datum projection: NAD_1983_State Plane_Florida_East_FIPS_0901_Feet
Source: Aerials - FDOT, 2009 & NRCS, USDA, SSURGO Data for Seminole and Volusia Counties, Florida.

STATE RD 46 PD&E STUDY

Soils Map

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

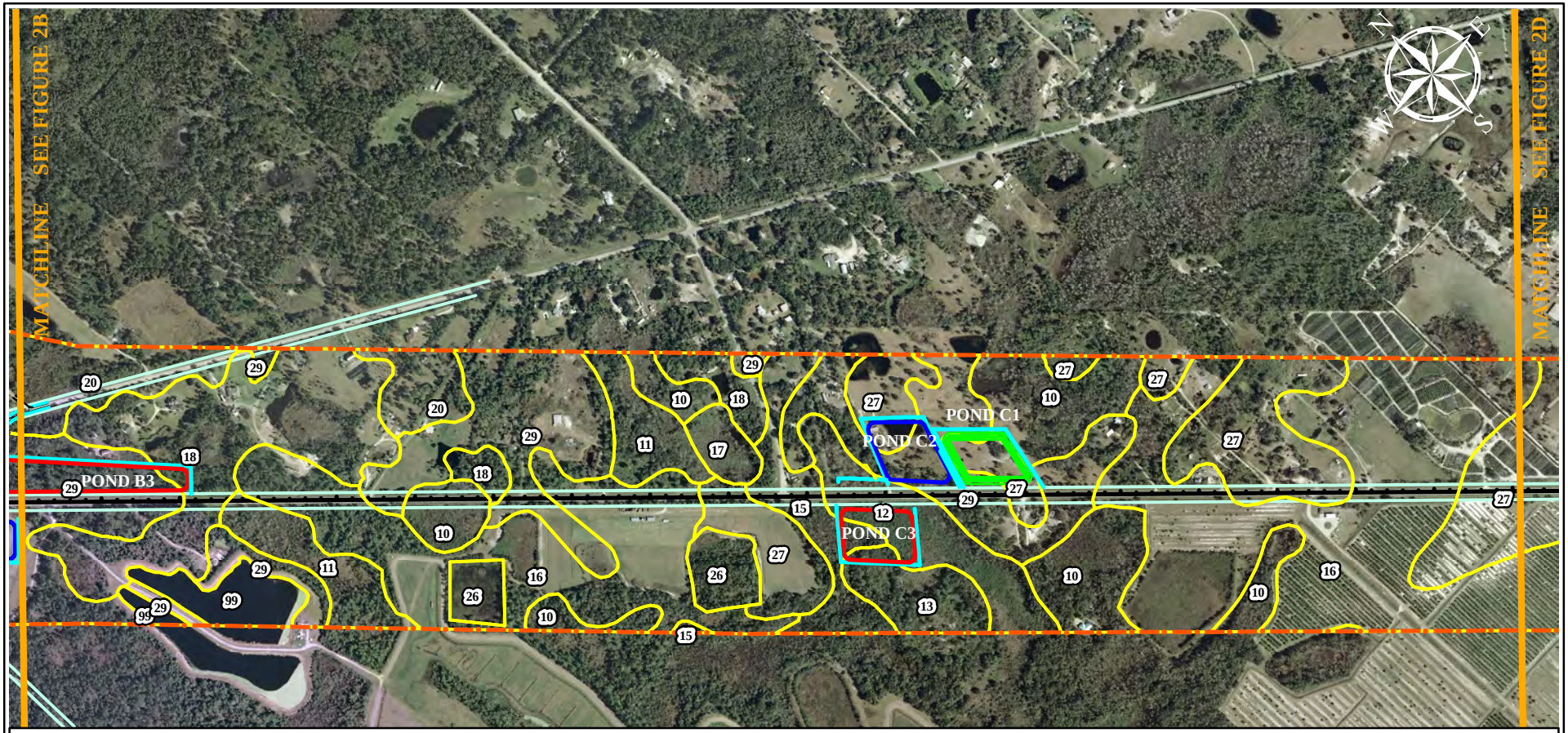
Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 2B

SCALE: 1" = 1000'

JOB NO.: 10.20

DATE: 11/19/13



LEGEND

Project Study Area

Right-of-Way: Source - URS

SYMBOL	DESCRIPTION
10	Basinger, Samsula and Hontoon Soils, Depressional
11	Basinger and Smyrna Fine Sands, Depressional
12	Canova and Terra Ceia Mucks
13	EauGallie and Immokalee Fine Sands
15	Felda and Manatee Mucky Fine Sands, Depressional
16	Immokalee Sand
17	Brighton, Samsula,and Sanibel Mucks
18	Malabar Fine Sand
20	Myakka and EauGallie Fine Sands
26	Udorthents, Excavated
27	Pomello Fine Sand, 0 to 5 Percent Slopes
29	St. Johns and EauGallie Fine Sands
99	Water

Datum projection: NAD_1983_State Plane_Florida_East_FIPS_0901_Feet
Source: Aerials - FDOT, 2009 & NRCS, USDA, SSURGO Data for Seminole and Volusia Counties, Florida.

STATE RD 46 PD&E STUDY

Soils Map

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

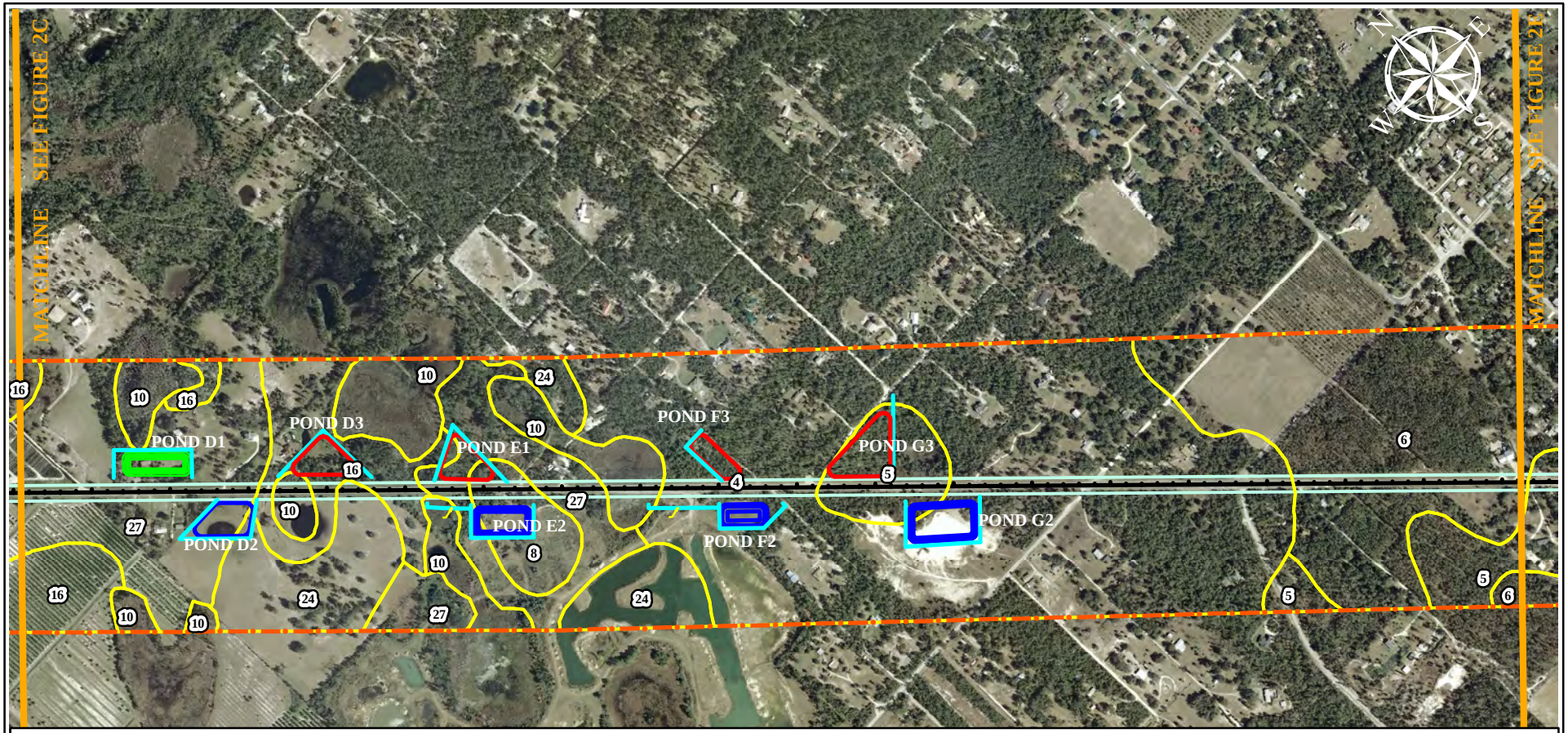
Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 2C

SCALE: 1" = 1000'

JOB NO.: 10.20

DATE: 11/19/13



LEGEND

Project Study Area

Right-of-Way: Source - URS

SYMBOL	DESCRIPTION
4	Astatula Fine Sand, 0 to 5 Percent Slopes
5	Astatula Fine Sand, 5 to 8 Percent Slopes
6	Astatula - Apopka Fine Sands, 0 to 5 Percent Slopes
8	Astatula - Apopka Fine Sands, 8 to 12 Percent Slopes
10	Basinger, Samsula, and Hontoon Soils, Depressional
16	Immokalee Sand
24	Paola - St. Lucie Sands, 0 to 5 Percent Slopes
27	Pomello Fine Sand, 0 to 5 Percent Slopes

Datum projection: NAD_1983_State Plane_Florida_East_FIPS_0901_Feet
Source: Aerials - FDOT, 2009 & NRCS, USDA, SSURGO Data for Seminole and Volusia Counties, Florida.

STATE RD 46 PD&E STUDY

Soils Map

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

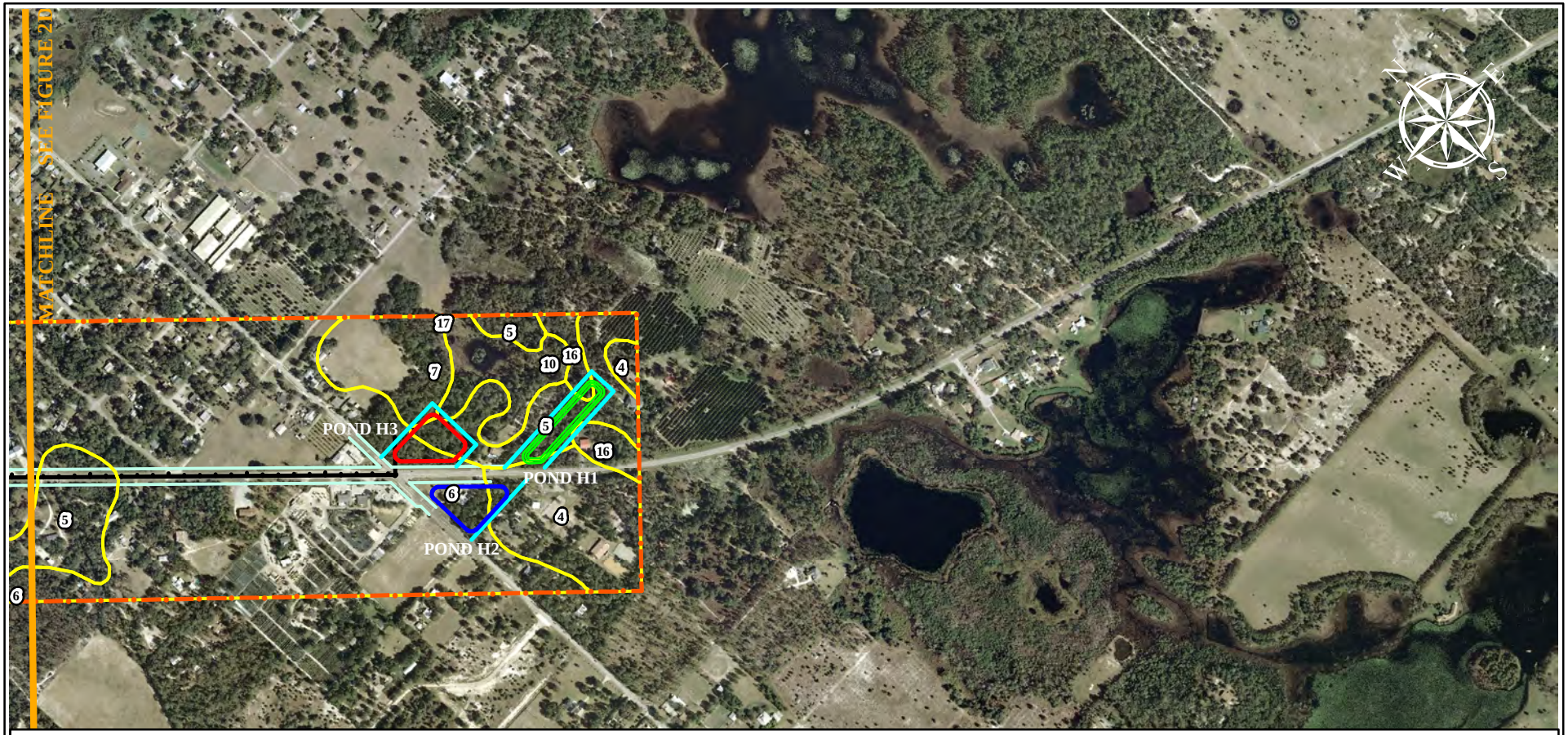
Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 2D

SCALE: 1" = 1000'

JOB NO.: 10.20

DATE: 11/19/13



LEGEND

Project Study Area

Right-of-Way: Source - URS

SYMBOL	DESCRIPTION		
		7	Astatula - Apopka Fine Sands, 5 to 8 Percent Slopes
4	Astatula Fine Sand, 0 to 5 Percent Slopes	10	Basinger, Samsula, and Hontoon Soils, Depressional
5	Astatula Fine Sand, 5 to 8 Percent Slopes	16	Immokalee Sand
6	Astatula - Apopka Fine Sands, 0 to 5 Percent Slopes	17	Brighton, Samsula, and Sanibel Mucks

Datum projection: NAD_1983_State Plane_Florida_East_FIPS_0901_Feet
Source: Aerials - FDOT, 2009 & NRCS, USDA, SSURGO Data for Seminole and Volusia Counties, Florida.

STATE RD 46 PD&E STUDY

Soils Map

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 2E

SCALE: 1" = 1000'

JOB NO.: 10.20

DATE: 11/19/13

Table 1. Descriptions of United States Department of Agriculture, Natural Resource Conservation Service Soils and Hydric Soils Characteristics Identified within the SR 46 PD&E Study Area. [1, 2, 3]

Mapping Unit #	Mapping Unit Name (Series & Phase) [3]	Hydric Component and Phase [4, 5]	% of mapping unit	Hydric Rating	Hydric Criteria [6]	Drainage [3]
3	Arents, 0-5% slopes	---	---	no	none	not rated
4	Astatula fine sand, 0-5% slopes	---	---	no	none	excessively drained
5	Astatula fine sand, 5-8% slopes	---	---	no	none	excessively drained
6	Astutula-Apopka fine sands, 0-5% slopes	---	---	no	none	excessively to well drained
7	Astutula-Apopka fine sands, 5-8% slopes	---	---	no	none	excessively to well drained
8	Astutula-Apopka fine sands, 8-12% slopes	---	---	no	none	excessively to well drained
9	Basinger and Delray fine sands					poorly to very poorly drained
		Basinger	60	yes	2B1	
		Delray	32	yes	2B1	
		Malabar	4	yes	2B1	
10	Basinger, Samsula, and Hontoon soils, depressional					very poorly drained
		Basinger	58	yes	2B1, 3	
		Hontoon	15	yes	1, 3	
		Samsula	15	yes	1, 3	
		Felda	3	yes	2B1, 3	
		Smyrna	2	yes	2B1, 3	
10	Bluff sandy clay loam [Volusia Co.]					very poorly drained, frequently
		Bluff	80	yes	2B3, 4	
		Chobee, frequently flooded	7	yes	2B3, 4	
		Gator	7	yes	1, 3, 4	
		Holopaw, hydric	6	yes	2B1	
11	Basinger and Samsula fine sands, depressional					very poorly drained
		Basinger	63	yes	2B1, 3	
		Smyrna	28	yes	2B1, 3	
		Malabar	4	yes	2B1	
12	Canova and Terra Ceia mucks					very poorly drained
		Canova, drained	75	yes	2B2, 3	
		Terra Ceia, drained	25	yes	1, 3	
13	EauGallie and Immokalee fine sands					poorly drained
		Malabar	9	yes	2B1	
15	Felda and Manatee mucky fine sands, depressional					very poorly drained
		Felda	56	yes	2B1, 3	
		Malabar	38	yes	2B3, 3	
		Delray	3	yes	2B1	
16	Immokalee sand	---	---	no	none	poorly drained
17	Brighton, Samsula, and Sanibel mucks					very poorly drained
		Brighton, drained	47	yes	1, 3	
		Samsula, drained	35	yes	1, 3	
		Sanibel, drained	15	yes	2B2, 3	
		Delray	2	yes	2B1	
		Basinger	1	yes	2B1, 3	

Table 1. Descriptions of United States Department of Agriculture, Natural Resource Conservation Service Soils and Hydric Soils Characteristics Identified within the SR 46 PD&E Study Area. [1, 2, 3]

Mapping Unit #	Mapping Unit Name (Series & Phase) [3]	Hydric Component and Phase [4, 5]	% of mapping unit	Hydric Rating	Hydric Criteria [6]	Drainage [3]
18	Malabar fine sand					poorly drained
		Malabar	86	yes	2B1	
		Basinger	5	yes	2B1	
		Felda	4	yes	2B1, 3	
19	Manatee, Floridana, and Holopaw soils, frequently flooded					very poorly to poorly drained
		Manatee, flooded	61	yes	2B3,4	
		Floridana, flooded	21	yes	2B1, 4	
		Holopaw, flooded	15	yes	2B1, 4	
		Basinger, flooded	3	yes	2B1, 4	
20	Myakka and EauGallie fine sands					poorly drained
		Basinger	5	yes	2B1	
		Pompano, flooded	5	yes	2B1	
21	Nittaw mucky fine sand, depressional					very poorly drained
		Nittaw	91	yes	2B3, 3	
		Basinger	9	yes	2B1, 3	
22	Nittaw muck, occasionally flooded					very poorly drained
		Nittaw	100	yes	2B3	
23	Nittaw, Okeelanta, Basinger soils, frequently flooded					poorly to very poorly drained
		Nittaw, flooded	45	yes	2B3, 4	
		Okeelanta, flooded	34	yes	1, 4	
		Basinger, flooded	19	yes	2B1, 4	
		Pompano, flooded	2	yes	2B1	
24	Paola-St. Lucie sands, 0-5% slopes	---	---	no	none	excessively drained
25	Pineda fine sand					poorly drained
		Pineda	89	yes	2B1	
		Basinger	4	yes	2B1	
25	Gator muck [Volusia Co.]					very poorly drained
		Gator	80	yes	1, 3, 4	
		Holopaw, hydric	3	yes	2B1	
		Placid	3	yes	2B1, 3	
		Pompano, hydric	3	yes	2B1	
		St. Johns, hydric	3	yes	2B1	
		Tequesta	3	yes	2B2, 3	
		Terra Ceia	3	yes	1, 3	
		Tomoka	2	yes	1, 3	
26	Udorthents, excavated	---	---	---	---	not rated
		Aquents	10	yes	2B2, 3	
27	Pomello fine sand 0-5% slopes	---	---	no	none	moderately well drained
29	St. Johns and EauGallie fine sands					poorly drained
		Felda	5	yes	2B1, 3	
33	Terra Ceia muck, frequently flooded					very poorly drained
		Terra Ceia, flooded	100	yes	1, 4	

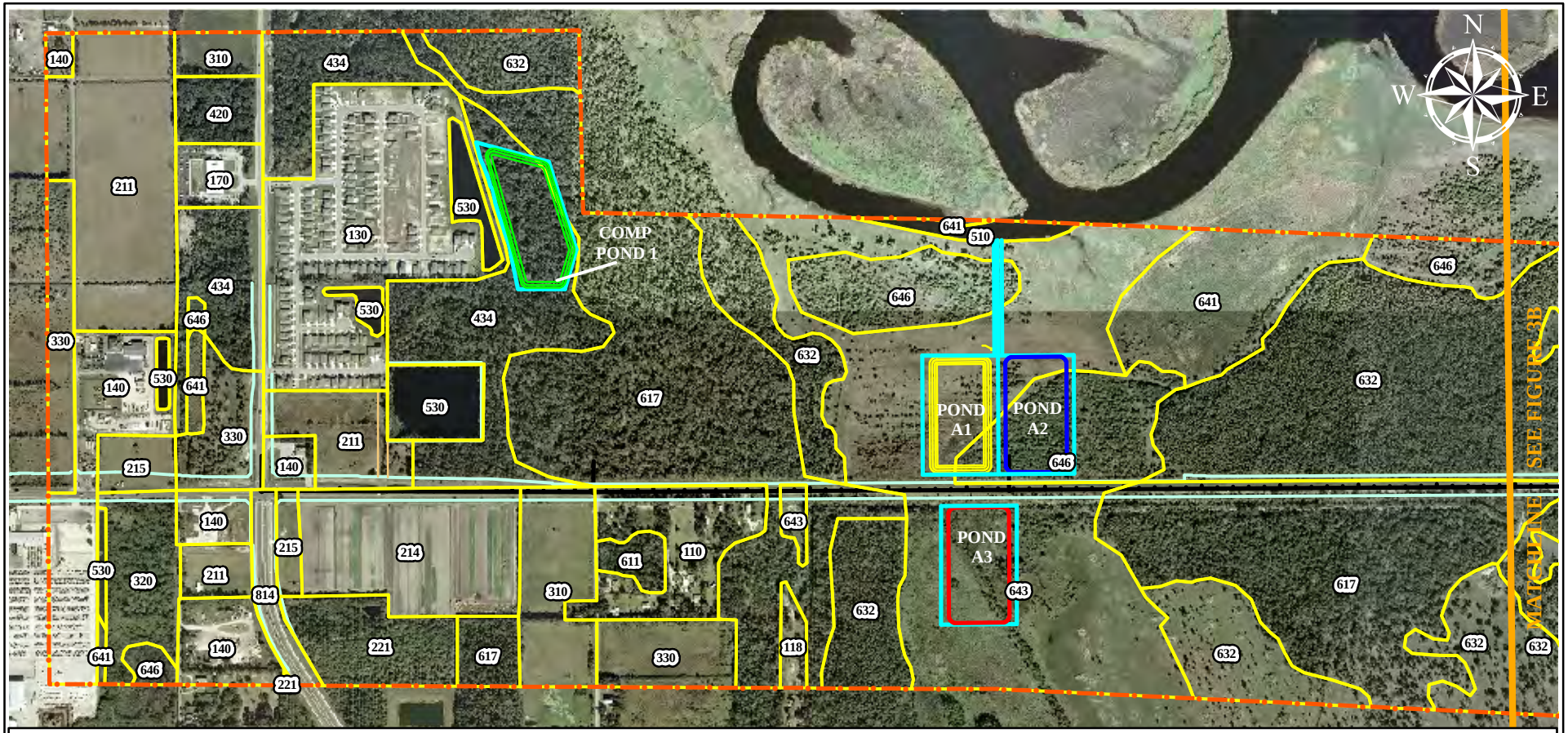
Table 1. Descriptions of United States Department of Agriculture, Natural Resource Conservation Service Soils and Hydric Soils Characteristics Identified within the SR 46 PD&E Study Area. [1, 2, 3]

Mapping Unit #	Mapping Unit Name (Series & Phase) [3]	Hydric Component and Phase [4, 5]	% of mapping unit	Hydric Rating	Hydric Criteria [6]	Drainage [3]
35	Wabasso fine sand					poorly drained
		Pineda	10	yes	2B1	
99	Water	---	---	---	---	permanently flooded

[1] United States Department of Agriculture (USDA) Soil Conservation Service (SCS), Soil Survey of Seminole County, Florida, March 1990, sheets 5, 10, 11 & 18
[2] USDA, SCS, Soil Survey of Volusia County, Florida, February 1980, sheet 95
[3] USDA, Natural Recources Conservation Service (NRCS), Official Soil Servies Descriptions, http://soils.usda.gov/technical/classification/osd/index.html
[4] USDA - NRCS, National List of Hydric Soils, http://soils.usda.gov/use/hydric/
[5] Florida Association of Environmental Soil Scientists, Hydric Soils of Florida Handbook, 4th Edition, March 2007
[6] USDA - NRCS, Criteria for Hydric Soils, http://soils.usda.gov/use/hydric/ (see Legend below)

Legend: Hydric Criteria

1	All Histels except Folistels and Histosols except Folists
2B1	Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that are poorly drained or very poorly drained and have a water table equal to 0.0 ft from the surface if textures are course sand, sand, or fine sand in all layers within 20 inches
2B2	Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that are poorly drained or very poorly drained and have a water table at less than or equal to 0.5 ft from the surface during the growing season if permeability is equal to or greater than 6.0 in/hour (h) in all layers within 20 inches
2B3	Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that are poorly drained or very poorly drained and have a water table at less than or equal to 1.0 ft from the surface during the growing season if permeability is less than 6.0 in/h in any layer within 20 inches
3	Soils that are frequently ponded for long duration or very long duration during the growing season
4	Soils that are frequently flooded for long duration or very long duration during the growing season



LEGEND

- Project Study Area
- Right-of-Way: Source - URS
- Pond Alternatives

SYMBOL	DESCRIPTION
110	Residential, Low Density - less than 2 dwellings/acre
118	Residential, Rural - 1 unit on 2 or more acres
130	Residential, High Density - 6 or more dwellings/acre
140	Commercial and Services
170	Institutional
211	Improved Pastures
214	Row Crops
215	Field Crops
221	Citrus Groves
310	Herbaceous Upland Nonforested
320	Shrub and Brushland
330	Mixed Upland Nonforested
420	Upland Hardwood Forests
434	Upland Mixed Coniferous/Hardwood
510	Streams, Waterways and Ditches
530	Reservoirs
611	Bay Swamps
617	Mixed Wetland Hardwoods
632	Cabbage Palm Hammock
641	Freshwater Marshes
643	Wet Prairies
646	Mixed Scrub - Shrub Wetland
814	Roads and Highways

Datum projection: NAD_1983_State Plane_Florida_East_FIPS_0901_Feet
Source: Aerials - FDOT, 2009 & SJRWMD, 2009

STATE RD 46 PD&E STUDY

FLUCFCS Map

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 3A

SCALE: 1" = 1000'

JOB NO.: 10.20

DATE: 12/31/13

LEGEND

- Project Study Area
- Right-of-Way: Source - URS
- Pond Alternatives

SYMBOL	DESCRIPTION
110	Residential, Low Density - less than 2 dwellings/acre
184	Marina - (Park)
211	Improved Pastures
213	Woodland Pastures
411	Pine Flatwoods
434	Upland Mixed Coniferous/Hardwood
510	Streams, Waterways, and Ditches
520	Lakes
530	Reservoirs
617	Mixed Wetland Hardwoods
630	Wetland Forested Mixed
632	Cabbage Palm Hammock
641	Freshwater Marshes
643	Wet Prairies
646	Mixed Scrub - Shrub Wetland
742	Borrow Areas
814	Roads and Highways

Datum projection: NAD_1983_State Plane_Florida_East_FIPS_0901_Feet
Source: Aerials - FDOT, 2009 & SJRWMD, 2009.

STATE RD 46 PD&E STUDY

FLUCFCS Map

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

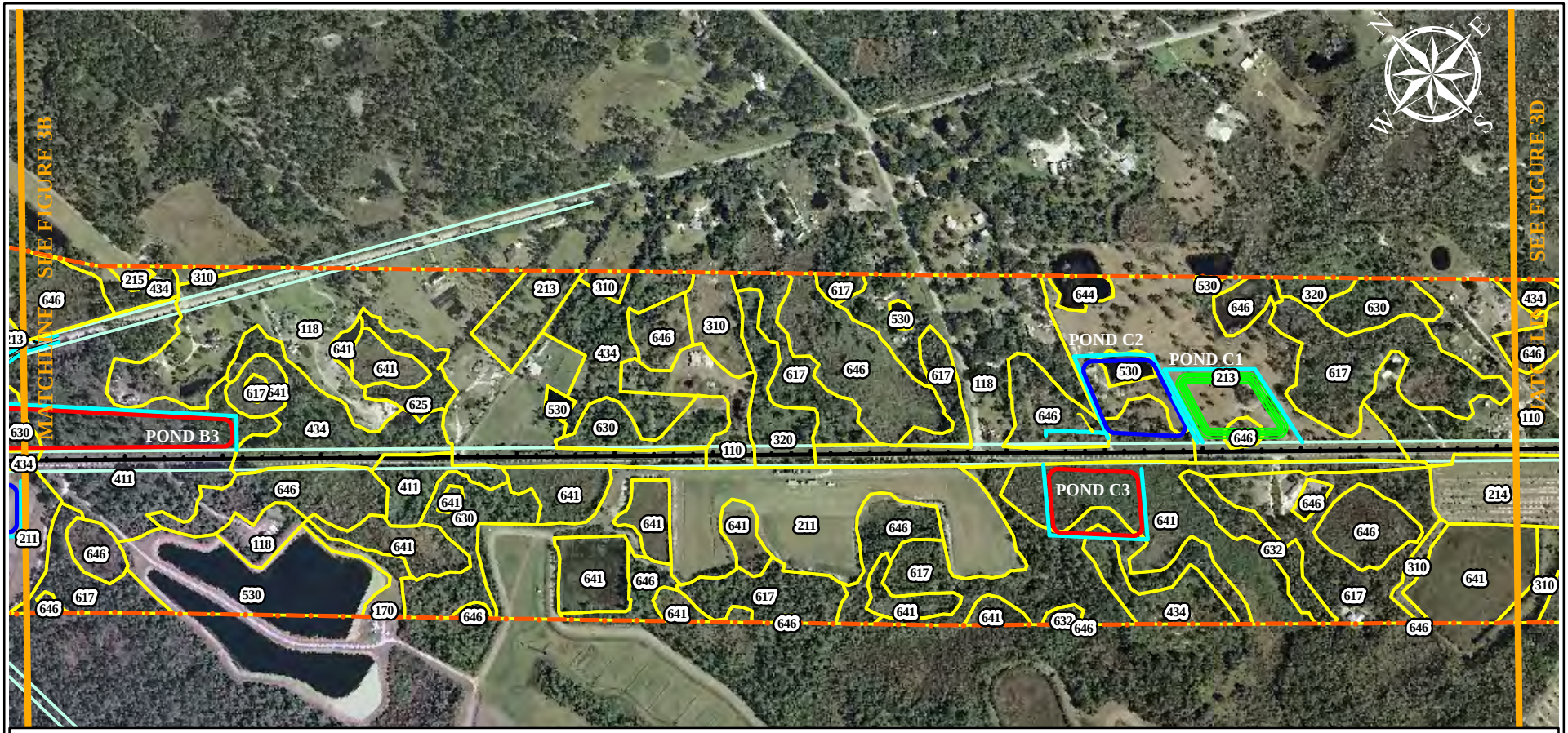
Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 3B

SCALE: 1" = 1000'

JOB NO.: 10.20

DATE: 12/31/13



LEGEND

- Project Study Area
- Right-of-Way: Source - URS
- Pond Alternatives

SYMBOL	DESCRIPTION
110	Residential, Low Density - less than 2 dwellings/acre
118	Residential, Rural - 1 unit on 2 or more acres
170	Institutional
211	Improved Pastures
213	Woodland Pastures
214	Row Crops
215	Field Crops
310	Herbaceous Upland Nonforested
320	Shrub and Brushland
411	Pine Flatwoods
434	Upland Mixed Coniferous/Hardwood
530	Reservoirs
617	Mixed Wetland Hardwoods
625	Hydric Pine Flatwoods
630	Wetland Forested Mixed
632	Cabbage Palm Hammock
641	Freshwater Marshes
646	Mixed Scrub - Shrub Wetland

Datum projection: NAD_1983_State Plane_Florida_East_FIPS_0901_Feet
Source: Aerials - FDOT, 2009 & SJRWMD, 2009

STATE RD 46 PD&E STUDY

FLUCFCS Map

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

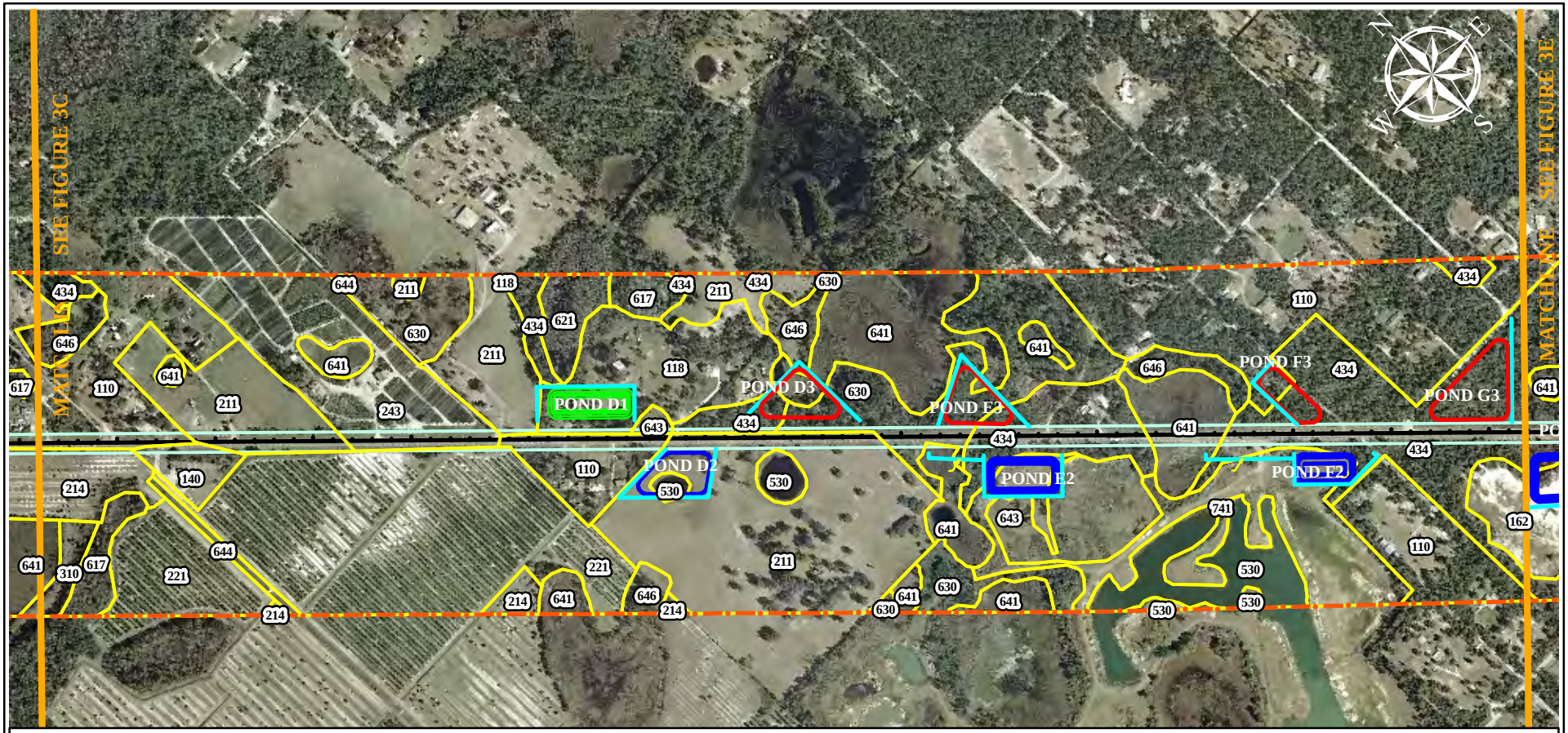
Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 3C

SCALE: 1" = 800'

JOB NO.: 10.20

DATE: 12/31/13



LEGEND

- Project Study Area
- Right-of-Way: Source - URS
- Pond Alternatives

SYMBOL	DESCRIPTION
110	Residential, Low Density - less than 2 dwellings/acre
118	Residential, Rural - 1 unit on 2 or more acres
140	Commercial and Services
162	Sand & Gravel Pits
211	Improved Pastures
214	Row Crops
221	Citrus Groves
243	Ornamentals
310	Herbaceous Upland Nonforested
434	Upland Mixed Coniferous/Hardwood
530	Reservoirs
617	Mixed Wetland Hardwoods
621	Cypress
630	Wetland Forested Mixed
641	Freshwater Marshes
643	Wet Prairies
644	Emergent Aquatic Vegetation
646	Mixed Scrub - Shrub Wetland
741	Rural Land in Transition

Datum projection: NAD_1983_State Plane_Florida_East_FIPS_0901_Feet
Source: Aerials - FDOT, 2009 & SJRWMD, 2009

STATE RD 46 PD&E STUDY

FLUCFCS Map

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

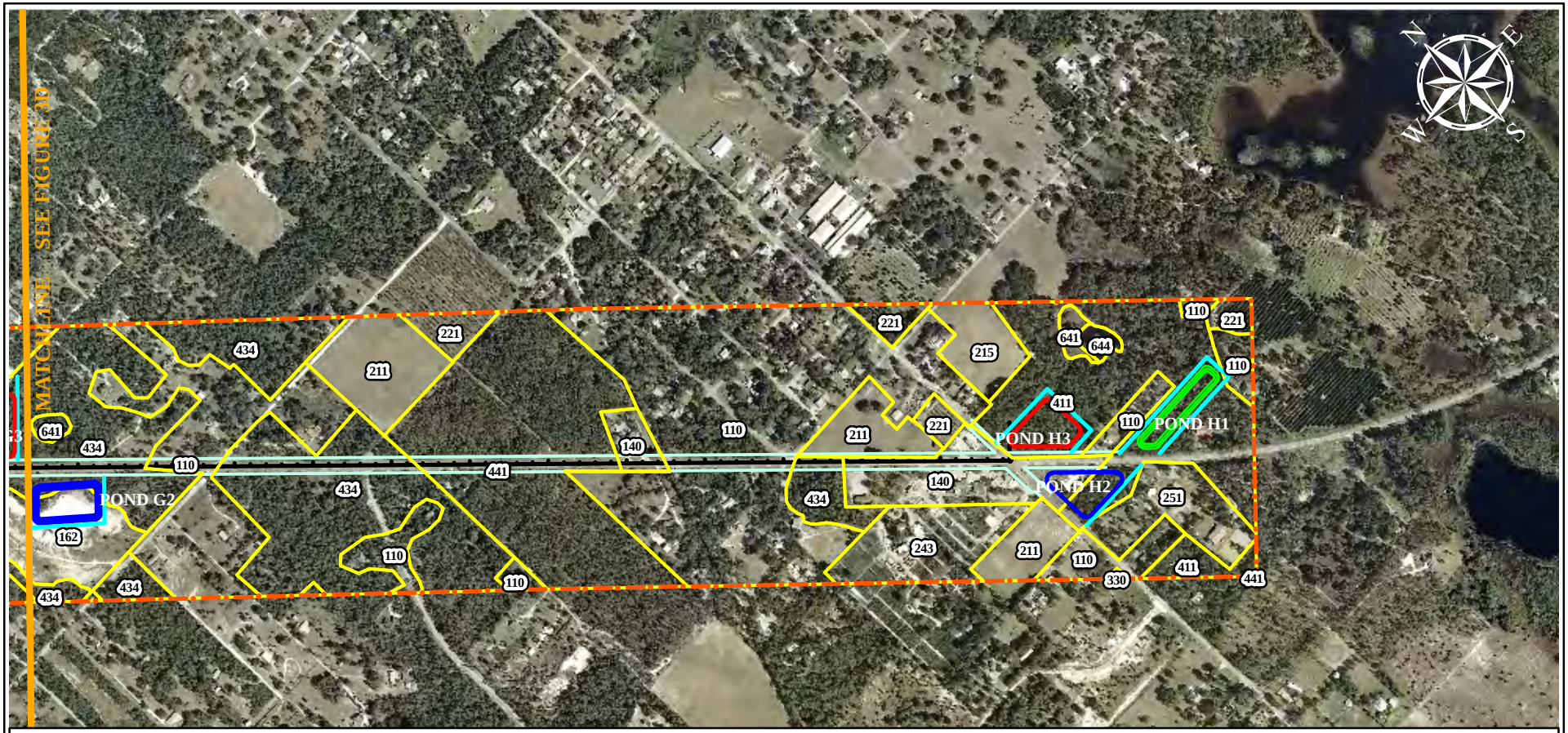
Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 3D

SCALE: 1" = 800'

JOB NO.: 10.20

DATE: 11/19/13



LEGEND

- Project Study Area
- Right-of-Way: Source - URS
- Pond Alternatives

SYMBOL	DESCRIPTION
110	Residential, Low Density - less than 2 dwellings/acre
140	Commercial and Services
162	Sand and Gravel Pits
211	Improved Pastures
215	Field Crops
221	Citrus Groves
243	Ornamentals
251	Horse Farms
330	Mixed Upland Nonforested
411	Pine Flatwoods
434	Upland Mixed Coniferous/Hardwood
441	Pine Plantation
641	Freshwater Marshes
644	Emergent Aquatic Vegetation

Datum projection: NAD_1983_State Plane_Florida_East_FIPS_0901_Feet
Source: Aerials - FDOT, 2009 & SJRWMD, 2009

STATE RD 46 PD&E STUDY

FLUCFCS Map

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 3E

SCALE: 1" = 1000'

JOB NO.: 10.20

DATE: 11/19/13

Table 2. Land Use within the Project Study Area.

FLUCFCS Code	Description	Acres
110	Residential - Low Density	207.87
118	Residential, Rural	63.58
130	Residential, High Density	44.56
140	Commercial and Services	50.81
162	Sand and Gravel Pits	10.66
170	Institutional	6.70
184	Marina	4.62
211	Improved Pastures	147.66
213	Woodland Pastures	38.60
214	Row Crops	33.38
215	Field Crops	12.18
221	Citrus Groves	58.81
243	Ornamentals	25.53
251	Horse Farms	8.66
310	Herbaceous Upland Nonforested	23.66
320	Shrub and Brushland	16.31
330	Mixed Upland Nonforested	25.33
411	Pine Flatwoods	59.84
420	Upland Hardwood Forests	5.52
434	Upland Mixed Coniferous/Hardwood	238.13
441	Pine Plantation	41.03
510	Streams, Waterways, and Ditches	33.50
520	Lakes	34.60
530	Reserviors	34.79
611	Bay Swamps	2.84
617	Mixed Wetland Hardwoods	204.48
621	Cypress	2.84
625	Hydric Pine Flatwoods	2.38
630	Wetland Forested Mixed	40.45
632	Cabbage Palm Hammock	209.01
641	Freshwater Marshes	198.63
643	Wet Prairies	120.79
644	Emergent Aquatic Vegetation	2.89
646	Mixed Scrub-Shrub Wetland	122.05
741	Rural Land in Transition	15.80
742	Borrow Areas	10.81
814	Roads and Highways	13.70
TOTAL		2173.00

The St. Johns River occurs on the project alignment north of Lake Jesup. This portion of the land use contains open, flowing water with a wide variety of emergent wetland vegetation along the river's edge.

Lakes (520)
Lake Jesup is the lone example of this land use on the project corridor. It consists of a large body of open water along with the associated emergent wetland vegetation along the lake shores.

Reservoirs (530)
Three land use areas of this type occur to the west of the St. Johns River and function as storm water retention ponds.

Bay Swamps (611)
This forested wetland land use is typically composed of sweetbay (*Magnolia virginiana*), loblolly bay (*Gordonia lasianthus*), red bay (*Persea borbonia*), and red maple (*Acer rubrum*) with lesser numbers of slash pine and laurel oak. One area of this land use occurs on the western portion of the project corridor.

Mixed Wetland Hardwoods (617)
This wetland forested habitat type typically contains a large variety of hardwoods in the canopy stratum, including red maple, swamp tupelo (*Nyssa sylvatica* var. *biflora*), sweetbay, laurel oak, cabbage palm, and dahoon holly. The woody understory typically includes saw palmetto, swamp dogwood (*Cornus florida*), Chinese tallowtree (*Sapium sebiferum*), and wax myrtle. The groundcover stratum is moderate and typically contains wetland ferns such as royal fern (*Osmunda regalis*), cinnamon fern (*O. cinnamomea*), and Virginia chain fern (*Woodwardia virginica*).

Cypress (621)
This forested wetland habitat is usually pure or predominant stands of bald cypress (*Taxodium distichum*) or pond cypress (*Taxodium ascendens*). The understory typically is composed of saw palmetto and wax myrtle, with the groundcover dominated by wetland ferns such as royal fern, cinnamon fern, Virginia chain fern and netted chain fern (*Woodwardia areolata*). One area of this habitat type occurs on the north side of the central portion of the project corridor.

Hydric Pine Flatwoods (625)
This forested wetland habitat is typically dominated by slash pine in the canopy with saw palmetto and wax myrtle in the understory. The groundcover layer contains a wide variety of wetland grasses and forbs. One area of this habitat type occurs on the north side of the central portion of the project corridor.

Wetland Forested Mixed (630)
This land use consists of forested wetlands containing a wide variety of canopy species, including laurel oak, cabbage palm, slash pine, loblolly pine, red maple, swamp tupelo, sweetbay, swamp dogwood, and dahoon holly. The habitat typically has a sparse groundcover stratum, containing sawgrass (*Cladium jamaicense*) and a variety of wetland fern species.

Cabbage Palm Hammock (632)
These are large areas of higher elevation wetlands dominated by dense stands of cabbage palm. They also contain a wide variety of woody species with low areal cover, including American ash (*Ulmus americana*), laurel oak, live oak, red cedar, Brazilian pepper, and groundsel tree. Groundcover species are extremely sparse due to heavy shading by the cabbage palms.

Freshwater Marshes (641)
This herbaceous land use includes wetland areas of lower elevation dominated by graminoid species such as maidencane. Typical habitats also contain a wide diversity of herbaceous wetland species such as duck potato (*Sagittaria lancifolia*) and shrub species such as buttonbush (*Cephalanthus occidentalis*), primrose willow (*Ludwigia peruviana*), and groundsel tree.

Wet Prairies (643)
This herbaceous land use includes wetland areas of higher elevation containing a wide variety of herbaceous species including sand cordgrass (*Spartina bakeri*), spikerush (*Eleocharis* spp.), spadeleaf (*Centella asiatica*), duck potato, Virginia saltmarsh mallow (*Kosteletzkya pentacarpos*), and creeping primrosewillow (*Ludwigia repens*), in addition to scattered shrub species such as groundsel tree, wax myrtle, and cabbage palm.

Emergent Aquatic Vegetation (644)
This land use is usually associated with areas of open water and typically contains floating vegetation such as spatterdock (*Nuphar advena*) and white waterlily (*Nymphaea odorata*). One area of this land use occurs in the western portion of the project study area.

Mixed Scrub-Shrub Wetland (646)
This land use includes several diverse wetland habitats. One habitat type contains shrub marsh, composed of coastalplain willow (*Salix caroliniana*), elderberry, buttonbush, wax myrtle, primrose willow, and sawgrass, surrounded by a band of hardwoods dominated by red maple. The herbaceous stratum is very sparse in this community type.

A second habitat type under this land use contains hardwood swamp, typically dominated by red maple with a highly diverse and dense herbaceous component composed of a wide variety of wetland ferns. A third habitat type under this land use contains heavily grazed community with scattered hardwood saplings and a variety of wetland and upland herbaceous species. Disturbance species such as Chinese tallow tree are common in this disturbed community.

A third habitat type under this land use contains heavily grazed community with scattered hardwood saplings and a variety of wetland and upland herbaceous species. Disturbance species such as Chinese tallowtree are common in this disturbed community.

6.3 HYDROLOGIC FEATURES

The current roadway (SR 46) crosses Lake Jesup, which is a Class III waterbody. Lake Jesup has a surface area totaling approximately 10,660 acres and drains a watershed of approximately 87,331 acres to the St. Johns River, which is located on the northeast side of the Middle St. Johns Basin.

A majority of the watershed occurs within Seminole County, but a small portion extends into Orange County. The lake was verified by the Florida Department of Environmental Protection as impaired for nutrients and unionized ammonia due to elevated annual average Trophic State Index (TSI) values and exceedances of the unionized ammonia criterion and was included on the Verified List of impaired waters for the Middle St. Johns Basin that was adopted by Secretarial Order on May 27, 2004. The Total Maximum Daily Load (TMDL) report for nutrients and unionized ammonia for Lake Jesup (including Lake Jesup outlet) was completed in 2006.

Heath Spring is located within the eastern portion of the study corridor and approximately 1 mile northwest of Geneva, Florida. Heath Spring is composed of several seeps in a steep sand slope on the southeast edge of a large sinkhole. The spring is located approximately 200 feet north of the existing right-of-way within private property.

6.4 CONSERVATION EASEMENTS

There are two large tracts immediately adjacent to the recommended alternative that are under recorded conservation easements; these include the Rolf Bergmann Mitigation Tract and the North Lake Jesup Tract of the Lake Jesup Conservation Area (formerly known as the Futch Property). The Rolf Bergmann Mitigation Tract occurs on the north side of SR 46 and is a private mitigation bank. The North Lake Jesup Tract occurs on the south side of SR 46 and is publicly owned. Both tracts occur west of the Lake Jesup Bridge.

The Rolf Bergmann Mitigation Tract has been recognized as being of "regional ecological significance" due to its geophysical location and hydrologic importance to the St. Johns River as well as the Lake Jesup watershed and floodplains. The various recorded conservation easements within the project corridor include the following:

SJRWMD APPLICANT	SJRWMD APPLICATION NO.	CONSERVATION EASEMENT SEMINOLE COUNTY BOOK/PAGE
River Run	40-117-51666-1	3974/1408
City of Maitland	4-095-91505-1	05358/0832
Acorn Development Company	4-117-92497-1	05447/1055
CFE Inc.	40-117-93597-1	5598/541
Centex Homes	4-117-51666-2	5904/1476
BLR Investments Inc.	40-117-96997-1	6032/148
Centex Homes	4-117-51666-2	05924/1264
JDC Calhoun Inc.	4-117-95027-2	6085/1898
Seminole County	4-117-95247-1	6416/439
Seminole County	4-117-63028-3	6952/984
FDEP APPLICANT	**FDEP APPLICATION NO.**	**CONSERVATION EASEMENT SEMINOLE COUNTY BOOK/PAGE**
UNKNOWN	59-246293-001	5997/1224

There was a portion of the Rolf Bergmann Mitigation Tract, located in Section 35, Township 19S, Range 31E, that may have been utilized as mitigation for wetland impacts; however, a recorded conservation easement and SJRWMD permit number could not be identified. This area occurs between the CFE Inc. mitigation parcel and the Centex Homes mitigation parcel.

The Florida Department of Environmental Protection has a vested interest in the North Lake Jesup Tract in the form of a recorded Conservation Easement. The tract was established as mitigation for the construction of State Road 417 (Seminole County Expressway Authority) as authorized by FDEP Permit No's 519723289 and 591733339. The property is currently owned by the SJRWMD.

6.5 MITIGATION AREAS

The wetland mitigation conducted to offset the unavoidable wetland impacts associated with the Lake Jesup Bridge Replacement project occurs within the project study area (SJRWMD Permit No. 4-117-95925-1). The mitigation included wetland restoration and enhancement activities associated with the excavation of uplands within the adjacent fish camps, the enhancement of marsh systems impacted by the previously dredged boat basins, and the removal of the existing bridge causeway. The mitigation areas occur within the existing right-of-way and within areas north of the existing Lake Jesup Bridge, which are located outside of the existing right-of-way.

7.0 WETLAND AND OTHER SURFACE WATER FEATURES

During the project field reviews, each wetland and other surface water was visually inspected and a delineation was marked on the project aerials. For this project, the wetlands and other surface waters identified were those that occurred within approximately 200 feet north and south of the recommended alternative centerline and those that occurred within the proposed pond site alternatives. The wetland limits were identified in general accordance with the USACE *Wetland Delineation Manual, the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region* (November 2010) and the state of Florida's *Delineation of the Landward Extent of Wetlands and Surface Waters* (Chapter 62-340, Florida Administrative Code). In the event wetland boundaries differed between the two methods, the more landward extent was used to define that particular wetland system's boundary. Wetlands and other surface waters within the project study area were mapped on aerial photographs and included as Figures 4A through 4J. The wetland land use classification codes correspond to the attribute data within the SJRWMD Land Cover and Land Use GIS data file (2009) and furthered categorized using the *Classification of Wetlands and Deepwater Habitats of the United States*, (Cowardin, et. al., 1979) as adopted by the United States Fish and Wildlife Service (USFWS), National Wetland Inventory.

Wetlands

Mixed Wetland Hardwoods
FLUCFCS Code: 617
NWI Code: PFO7C, Palustrine, Forested, Evergreen, Seasonally Flooded

The woody strata contain loblolly bay, red bay, red maple, cabbage palm, dahoon holly, and wax

myrtle. Vegetation recorded from the herbaceous stratum includes sawtooth blackberry (*Rubus argutus*), bushy bluestem, Nuttall's meadowbeauty (*Rhexia nuttallii*), fourpetal St. John's-wort (*Hypericum tetrapetalum*), broomsedge bluestem, Virginia chainfern, and yellow hatpins (*Syngonanthus flavidulus*).

Cypress
FLUCFCS Code: 621
NWI Code: PFO2C, Palustrine, Forested, Needle-leaved Deciduous, Seasonally Flooded

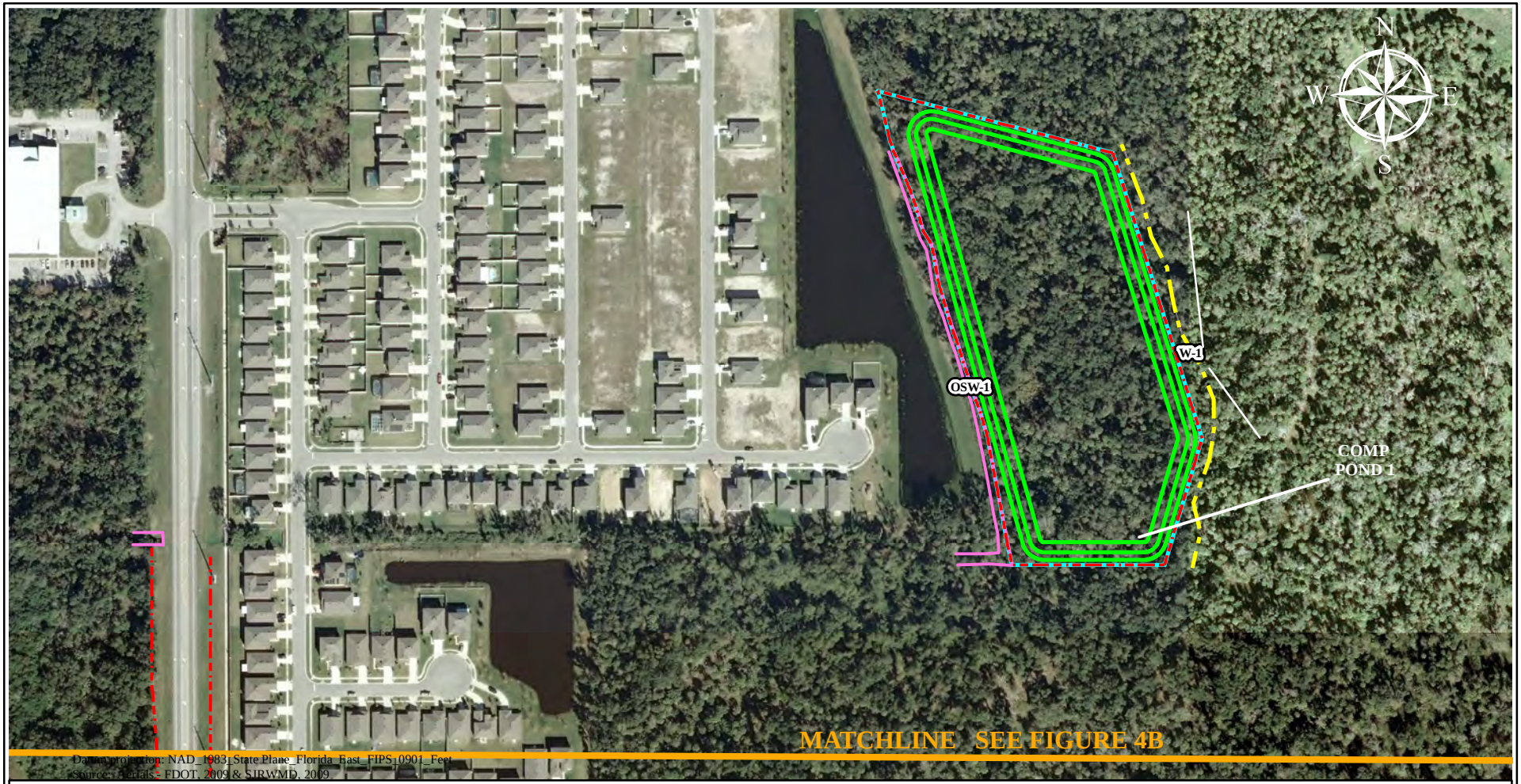
Pond cypress dominated wetlands are located throughout area. They occur as small cypress wetlands, large contiguous wetland systems, and along the upper elevations of freshwater marshes. The cypress systems contain remnant pond cypress in the canopy with an understory and shrub stratum of younger cypress, pond pine, slash pine, dahoon holly, red bay, wax myrtle, fetterbush (*Lyonia lucida*), and sandweed (*Hypericum fasciculatum*). The herbaceous stratum is diverse and includes erectleaf witchgrass (*Dichanthelium erectifolium*), woolly witchgrass (*D. scabriusculum*), narrowfruit horned beaksedge (*Rhynchospora inundata*), fascicled beaksedge (*R. fascicularis*), false fennel, redtop panicum (*Panicum rigidulum*), pickerelweed (*Pontederia cordata*), flattened pipewort (*Eriocaulon compressum*), sawtooth blackberry, and Florida yelloweyed grass (*Xyris floridana*).

Hydric Pine Flatwoods
FLUCFCS Code: 625
NWI Code: PFO4B, Palustrine, Forested, Needle-leaved Everygreen, Saturated

Within these systems, canopy closure estimates range from 50 to 100 percent. The dominant species from the canopy stratum of this wetland is slash pine, with lesser amounts of laurel oak and cabbage palm. The subcanopy layer contains slash pine and water oak, while the shrub stratum contained saw palmetto. The herbaceous cover is dense in areas without shrub cover, and is dominated by openflower witchgrass (*Dichanthelium laxiflorum*), broomsedge bluestem, Virginia chainfern, and swamp fern (*Blechnum serrulatum*). Additional species recorded from the groundcover stratum includes fascicled beaksedge, cypress witchgrass, cinnamon fern, sphagnum moss, sawgrass, Elliott's milkpea (*Galactia elliottii*), Carolina redroot (*Lachnanthes caroliniana*), and beaked panicum (*Panicum anceps*).

Wetland Forested Mixed
FLUCFCS Code: 630
NWI Code: PFO7C, Palustrine, Forested, Evergreen, Seasonally Flooded

Live oak, water oak, laurel oak, slash pine, loblolly pine, and cabbage palm are common throughout the canopy stratum along with scattered red cedar. Species common in these communities are muscadine (*Vitis rotundifolia*), earleaf greenbrier (*Smilax auriculata*), cypress witchgrass (*Dichanthelium dichotomum*), cinnamon fern, sphagnum moss (*Sphagnum* sp.), yellow jessamine (*Gelsemium sempervirens*), American beautyberry (*Callicarpa americana*), blackberry, and dogfennel.



LEGEND

- Preferred Alternative Right-of-Way: Source - URS
- Wetland Line
- Other Surface Waters: Wetland-Cut Ditch
- Other Surface Waters: Upland-Cut Ditch
- Direct Wetland Impacts
- Secondary Wetland Impacts
- Other Surface Waters: Wetland-Cut Ditch Impacts
- Other Surface Waters: Upland-Cut Ditch Impacts

STATE RD 46 PD&E STUDY

Existing Wetlands/Other Surface Waters and Proposed Impacts for the Recommended Alternative

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

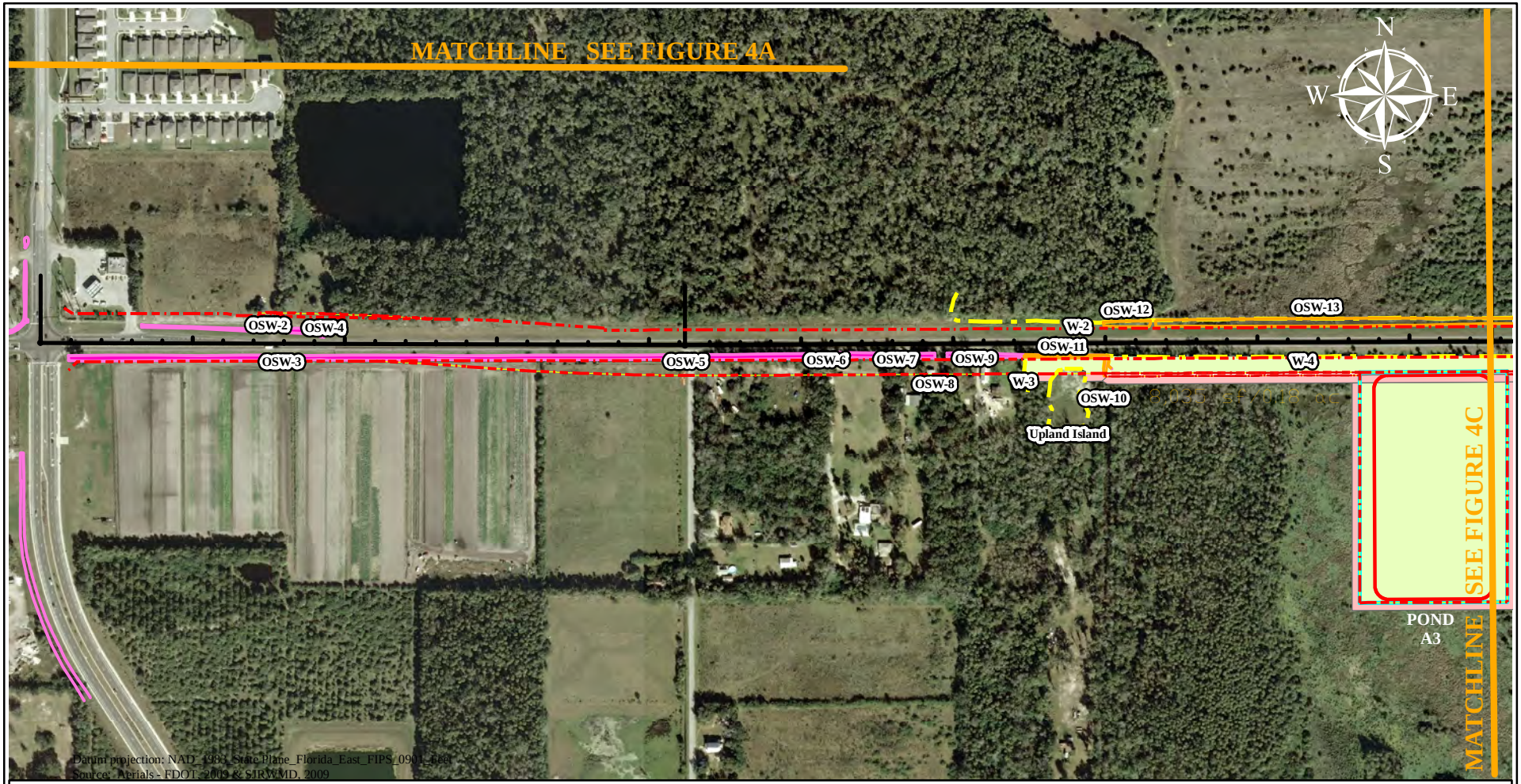
Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 4A

SCALE: 1" = 300'

JOB NO.: 10.20

DATE: 11/19/13



LEGEND

- Preferred Alternative Right-of-Way: Source - URS
- Wetland Line
- Other Surface Waters: Wetland-Cut Ditch
- Other Surface Waters: Upland-Cut Ditch
- Direct Wetland Impacts
- Secondary Wetland Impacts
- Other Surface Waters: Wetland-Cut Ditch Impacts
- Other Surface Waters: Upland-Cut Ditch Impacts

STATE RD 46 PD&E STUDY

Existing Wetlands/Other Surface Waters and Proposed Impacts for the Recommended Alternative

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 4B

SCALE: 1" = 500'

JOB NO.: 10.20

DATE: 11/19/13

LEGEND

- Preferred Alternative Right-of-Way: Source - URS
- Wetland Line
- Other Surface Waters: Wetland-Cut Ditch
- Other Surface Waters: Upland-Cut Ditch
- Direct Wetland Impacts
- Secondary Wetland Impacts
- Other Surface Waters: Wetland-Cut Ditch Impacts
- Other Surface Waters: Upland-Cut Ditch Impacts

STATE RD 46 PD&E STUDY

Existing Wetlands/Other Surface Waters and Proposed Impacts for the Recommended Alternative

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

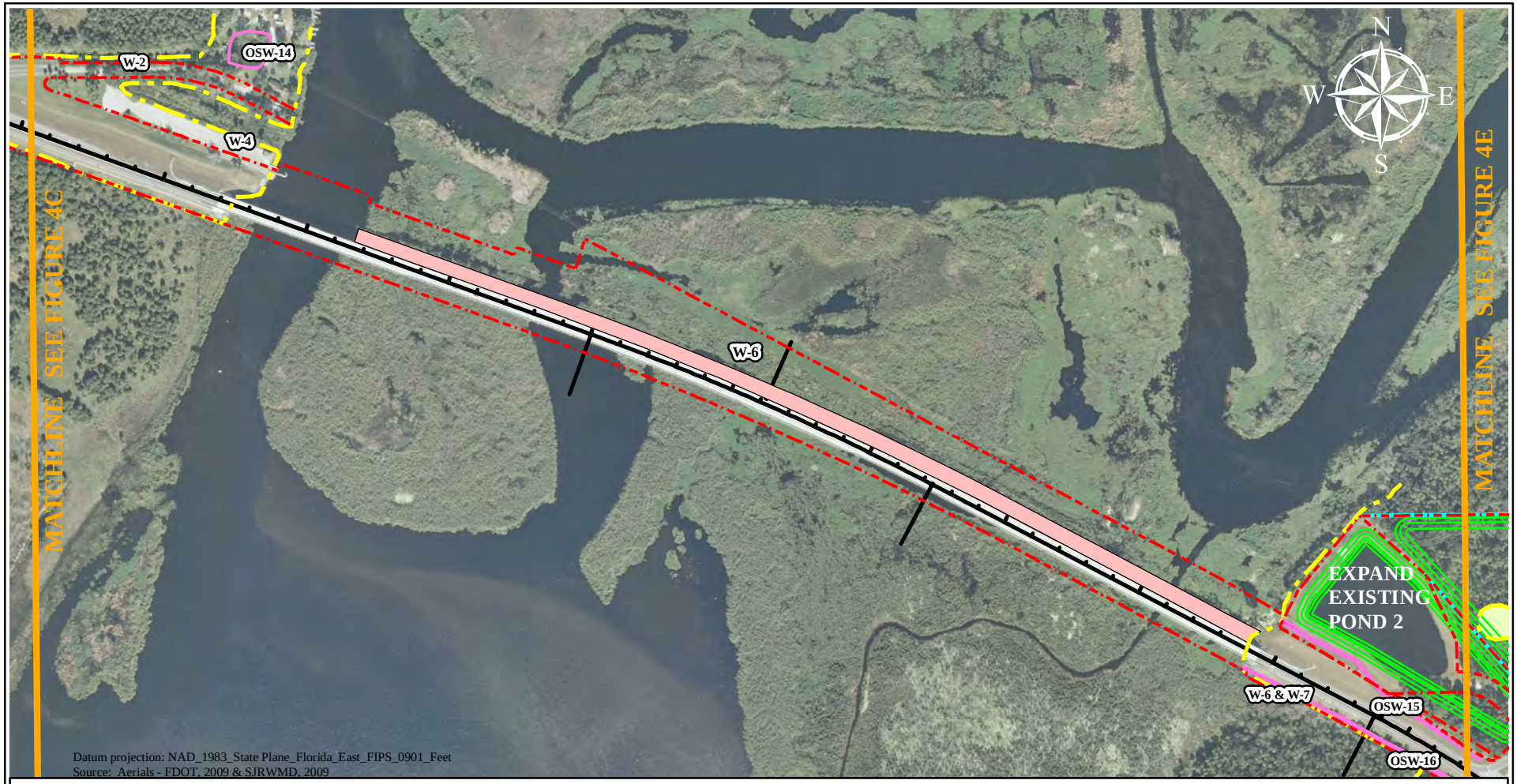
Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 4C

SCALE: 1" = 500'

JOB NO.: 10.20

DATE: 11/19/13



LEGEND

- Preferred Alternative Right-of-Way: Source - URS
- Wetland Line
- Other Surface Waters: Wetland-Cut Ditch
- Other Surface Waters: Upland-Cut Ditch
- Direct Wetland Impacts
- Secondary Wetland Impacts
- Other Surface Waters: Wetland-Cut Ditch Impacts
- Other Surface Waters: Upland-Cut Ditch Impacts

STATE RD 46 PD&E STUDY

Existing Wetlands/Other Surface Waters and Proposed Impacts for the Recommended Alternative

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

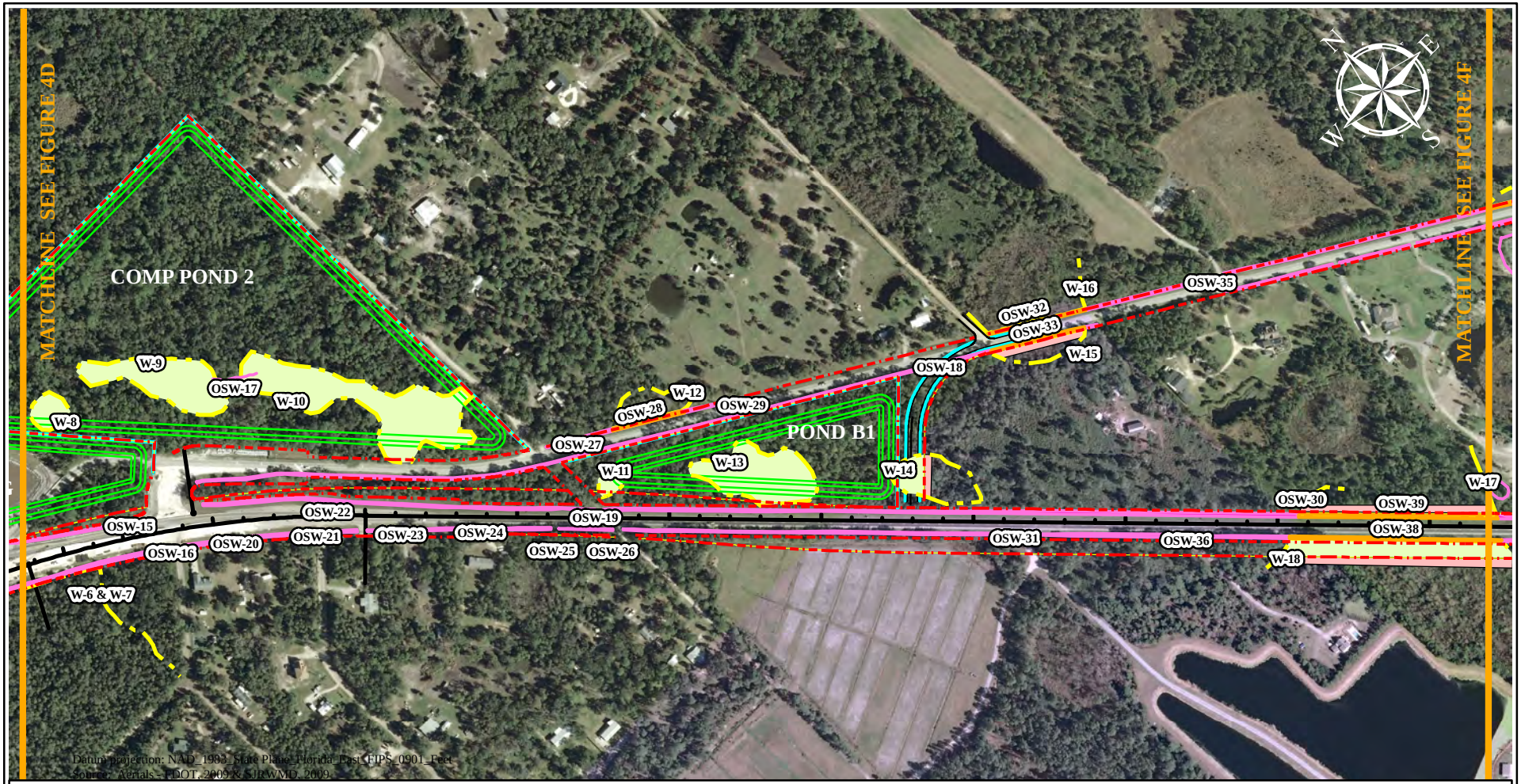
Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 4D

SCALE: 1" = 500'

JOB NO.: 10.20

DATE: 11/19/13



LEGEND

- Preferred Alternative Right-of-Way: Source - URS
- Wetland Line
- Other Surface Waters: Wetland-Cut Ditch
- Other Surface Waters: Upland-Cut Ditch
- Direct Wetland Impacts
- Secondary Wetland Impacts
- Other Surface Waters: Wetland-Cut Ditch Impacts
- Other Surface Waters: Upland-Cut Ditch Impacts

STATE RD 46 PD&E STUDY

Existing Wetlands/Other Surface Waters and Proposed Impacts for the Recommended Alternative

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

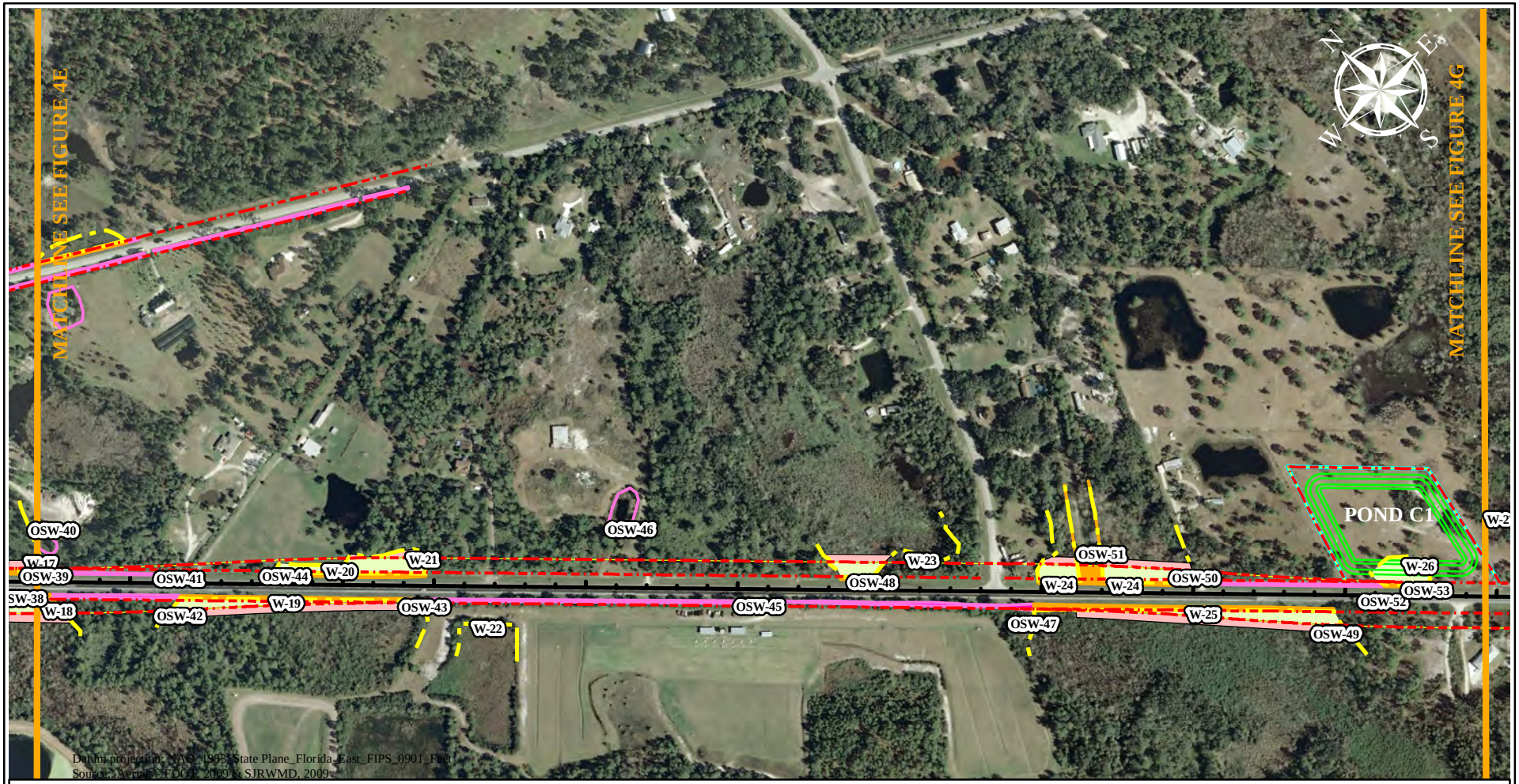
Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 4E

SCALE: 1" = 500'

JOB NO.: 10.20

DATE: 11/19/13



STATE RD 46 PD&E STUDY

Existing Wetlands/Other Surface Waters and Proposed Impacts for the Recommended Alternative

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 4F

SCALE: 1" = 500'

JOB NO.: 10.20

DATE: 11/19/13

LEGEND

- Preferred Alternative Right-of-Way: Source - URS
- Wetland Line
- Other Surface Waters: Wetland-Cut Ditch
- Other Surface Waters: Upland-Cut Ditch
- Direct Wetland Impacts
- Secondary Wetland Impacts
- Other Surface Waters: Wetland-Cut Ditch Impacts
- Other Surface Waters: Upland-Cut Ditch Impacts

STATE RD 46 PD&E STUDY

Existing Wetlands/Other Surface Waters and Proposed Impacts for the Recommended Alternative

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 4G

SCALE: 1" = 500'

JOB NO.: 10.20

DATE: 11/19/13

LEGEND

- Preferred Alternative Right-of-Way: Source - URS
- Wetland Line
- Other Surface Waters: Wetland-Cut Ditch
- Other Surface Waters: Upland-Cut Ditch
- Direct Wetland Impacts
- Secondary Wetland Impacts
- Other Surface Waters: Wetland-Cut Ditch Impacts
- Other Surface Waters: Upland-Cut Ditch Impacts

STATE RD 46 PD&E STUDY

Existing Wetlands/Other Surface Waters and Proposed Impacts for the Recommended Alternative

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 4H

SCALE: 1" = 500'

JOB NO.: 10.20

DATE: 11/19/13

LEGEND

- Preferred Alternative Right-of-Way: Source - URS
- Wetland Line
- Other Surface Waters: Wetland-Cut Ditch
- Other Surface Waters: Upland-Cut Ditch
- Direct Wetland Impacts
- Secondary Wetland Impacts
- Other Surface Waters: Wetland-Cut Ditch Impacts
- Other Surface Waters: Upland-Cut Ditch Impacts

STATE RD 46 PD&E STUDY

Existing Wetlands/Other Surface Waters and Proposed Impacts for the Recommended Alternative

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 4I

SCALE: 1" = 500'

JOB NO.: 10.20

DATE: 11/19/13

LEGEND

- Preferred Alternative Right-of-Way: Source - URS
- Wetland Line
- Other Surface Waters: Wetland-Cut Ditch
- Other Surface Waters: Upland-Cut Ditch
- Direct Wetland Impacts
- Secondary Wetland Impacts
- Other Surface Waters: Wetland-Cut Ditch Impacts
- Other Surface Waters: Upland-Cut Ditch Impacts

STATE RD 46 PD&E STUDY

Existing Wetlands/Other Surface Waters and Proposed Impacts for the Recommended Alternative

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 4J

SCALE: 1" = 500'

JOB NO.: 10.20

DATE: 11/19/13

Cabbage Palm Hammock (Wetland)
FLUCFCS Code: 632
NWI Code: PFO3C, Palustrine, Forested, Broad-leaved Evergreen, Seasonally Flooded

This wetland habitat is found throughout much of the forested regions of the study area. Cabbage palm is the dominant species in the closed canopy stratum (90 to 100 percent canopy closure). Additional canopy species recorded include live oak, laurel oak, red cedar, red maple, slash pine, and water hickory (*Carya aquatica*). The subcanopy stratum is generally open to moderate, and includes cabbage palm, Brazilian pepper, sugarberry, elderberry, camphortree, sour orange (*Citrus aurantium*), sweetgum, and red cedar. The shrub layer is also fairly open to moderate cover, and is composed of lantana (*Lantana camara*), Peruvian primrosewillow (*Ludwigia peruviana*), American beautyberry, saw palmetto, sugarberry, and Brazilian pepper. Herbaceous species recorded for this habitat include common dayflower (*Commelina diffusa*), big carpetgrass (*Axonopus furcatus*), muscadine, rougeplant (*Rivina humilis*), beaked panicum, redtop panicum, wild coffee (*Psychotria nervosa*), swamp fern, yellow jessamine, poison ivy (*Toxicodendron radicans*), narrowleaf yellowtops (*Flaveria lineata*), Britton's wild petunia (*Ruellia brittoniana*), and caesarweed (*Urena lobata*).

Freshwater Marshes
FLUCFCS Code: 641
NWI Code: PEM1F, Palustrine, Emergent, Persistent, Semipermanently Flooded

Two types of freshwater marshes occur in the study area: shallow marshes and deepwater marshes. The herbaceous stratum is dominated by falsefennel, iris (*Iris* sp.), sand cordgrass, Britton's wild petunia, common dayflower, dotted smartweed (*Polygonum punctatum*), fall panicgrass (*Panicum dichotomiflorum*), Egyptian paspalidium (*Paspalidium geminatum*), alligator weed (*Alternanthera philoxeroides*), creeping primrosewillow, southern watergrass (*Luziola fluitans*), yellow canna (*Canna flaccida*), haspan flatsedge (*Cyperus haspan*), wood sage (*Teucrium canadense*), redtop panicum, and leafy bladderwort (*Utricularia foliosa*).

Wet Prairies
FLUCFCS Code: 643
NWI Code: PEM1C, Palustrine, Emergent, Persistent, Seasonally Flooded

These herbaceous wetland communities are similar to the freshwater marsh systems; however, they have a shorter hydroperiod and low frequency of flooding. The dominant herbaceous species recorded is maidencane, big carpetgrass, and bushy bluestem. Other species commonly identified include falsefennel, buttonbush, common persimmon (*Diospyros virginiana*), aster (*Aster* sp.), danglepod (*Sesbania herbacea*), manyflower marshpennywort (*Hydrocotyle umbellata*), creeping primrosewillow, and Elliott's yellow-eyed grass (*Xyris elliottii*).

Mixed Scrub – Shrub Wetland
FLUCFCS Code: 646
NWI Code: PSS6/7C, Palustrine, Forested, Deciduous/Evergreen, Seasonally Flooded

Areas of wetland shrub marsh exists throughout the study area. Species include red maple, coastalplain willow, laurel oak, red cedar, and sugarberry. Herbaceous species include tropical flatsedge (*Cyperus surinamensis*), Virginia chainfern, muscadine, spikerush, broomsedge bluestem, rosy camphorweed (*Pluchea baccharis*), and peppervine.

Other Surface Waters

Ditches
FLUCFCS Code: 510
NWI Code: PUBCx, Palustrine, Unconsolidated Bottom, Seasonally Flooded, Excavated

A large number of ditches are located throughout the project study limits. The majority of ditches are roadside swales and shallow ditches associated with streets and highways. These ditches convey water during the rainy season but may not contain standing water for much of the year. Ditches were also observed within natural communities when used to drain wetter habitats. The vegetation ranged from non-existent (open water or bare ground) to various levels of cover. Vegetation in the ditches included dotted smartweed, pickerelweed, beggarticks, caesarweed, sawtooth blackberry, climbing hempvine, shrubby false buttonweed (*Spermacoce verticillata*), manyflower marshpennywort, big carpetgrass, and bulltongue arrowhead (*Sagittaria lancifolia*).

A large ditch system also exists along the south side of SR 46 and west of Lake Jesup, which is located within the Lake Jesup Conservation Area (Futch Property). This ditch is very wide with trees along the ditch banks for much of its length. This system connects to Lake Jesup to the east. The woody species on the western ditch banks included cabbage palm, Brazilian pepper, and sugarberry. The herbaceous portions of the ditch include manyflower, marshpennywort, paragrass (*Urochloa mutica*), and dotted smartweed along its forested portions, and contained cattail, floating marshpennywort, and soft rush (*Juncus effusus*) in the recently reworked eastern portion of the ditch.

Lakes
FLUCFCS Code: 520
NWI Code: PAB3H, Palustrine, Aquatic Bed, Rooted Vascular, Permanently Flooded

Lake Jesup is located south of SR 46 and is continuous with the St. Johns River. Large areas of deepwater marsh are associated with the lake, particularly along the eastern shore of the lake. An extensive system of deepwater marshes occurs in association with Lake Jesup and the St. Johns River. The littoral zones have some woody species growing along the fringes of the system, as well on small, scattered tree islands. At the time of the field reviews, the water levels were very high within the St. Johns River and Lake Jesup. Most tree islands were under two to three feet of water. Woody species recorded for the deepwater marsh include coastalplain willow, water hickory, sweetgum, sugarberry, Chinese tallowtree, Brazilian pepper, and cabbage palm. The herbaceous stratum is dominated by common reed (*Phragmites australis*). Additional herbaceous species commonly observed in the deepwater marsh include guinea grass, peppervine, alligator flag (*Thalia geniculata*), water hyacinth (*Eichhornia crassipes*), water lettuce (*Pistia stratiotes*), common dayflower, climbing hempvine (*Mikania scandens*), cattail, burrmarigold (*Bidens laevis*),

creeping oxeye (*Wedelia trilobata*), Peruvian primrosewillow, floating marshpennywort (*Hydrocotyle ranunculoides*), water paspalum (*Paspalum repens*), Mexican primrosewillow (*Ludwigia octovalvis*), and denseflower knotweed (*Polygonum densiflorum*).

8.0 PROPOSED IMPACTS TO WETLANDS AND OTHER SURFACE WATERS

8.1 IMPACT ASSESSMENT

8.1.1 Alternatives

Preliminary estimates of wetland and other surface water acreage that will be directly and indirectly impacted by the project's alternatives are provided in Table 3. The summary of proposed impacts to existing (recorded) conservation easements is provided in Table 4.

As previously discussed, the wetland mitigation conducted to offset the unavoidable wetland impacts associated with the Lake Jesup Bridge Replacement project occurs within the current project corridor (SJRWMD Permit No. 4-117-95925-1). Two typical sections, rural and suburban, were analyzed for the new parallel bridge structure. For the rural typical section, the proposed impacts to the existing mitigation areas include approximately 0.51 acres within the wetland enhancement areas and approximately 2.70 acres within the wetland restoration areas.

For the suburban section, the proposed impacts include approximately 1.04 acres within the wetland enhancement areas and approximately 2.99 acres within the wetland restoration areas.

Table 3. Summary of Proposed Impacts to Wetlands and Other Surface Waters by Alternative.

Wetland/OSW ID No.	FLUCFCS Code	Description	Total Direct Wetland Impacts (Acres)	Total Secondary[1] Wetland Impacts (Acres)	Total Direct Wetland-cut Ditch Impact (Acres)	Total Direct Upland-cut Ditch Impact (Acres)	Secondary Wetland Impact Bridge Shading Impact (Acres)	Reason for Impact
Alternative 1 - Suburban North, Suburban Best Fit, & Urban								
OSW-2	510	Ditch				0.07		Road
OSW-3	510	Ditch				0.25		Road
OSW-4	510	Ditch				0.05		Road
OSW-5	510	Ditch				0.44		Road
OSW-6	510	Ditch				0.16		Road
OSW-7	510	Ditch				0.06		Road
OSW-8	510	Ditch				0.03		Road
OSW-9	510	Ditch				0.03		Road
OSW-10	510	Ditch				0.09		Road
W-3	617	Mixed Wetland Hardwoods	0.03	0.01				Road
OSW-11	510	Ditch			0.06			Road
W-2	632	Cabbage Palm Hammock	4.16	3.12				Road
OSW-12	510	Ditch			0.06			Road
OSW-13	510	Ditch			1.03			Road
W-4	617	Mixed Wetland Hardwoods	0.48	0.31				Road
W-6	641	Freshwater Marshes					4.26	Road
OSW-16	510	Ditch				0.15		Road
OSW-15	510	Ditch				0.05		Road
OSW-19	510	Ditch				0.23		Road
OSW-18	510	Ditch				0.36		Road
OSW-17	510	Ditch				0.03		Road
OSW-20	510	Ditch				0.04		Road
OSW-21	510	Ditch				0.04		Road
OSW-22	510	Ditch				0.02		Road
OSW-23	510	Ditch				0.01		Road
OSW-24	510	Ditch				0.03		Road
OSW-25	510	Ditch				0.03		Road
OSW-26	510	Ditch				0.02		Road
OSW-30	510	Ditch				0.66		Road

Table 3. Summary of Proposed Impacts to Wetlands and Other Surface Waters by Alternative.

Wetland/OSW ID No.	FLUCFCS Code	Description	Total Direct Wetland Impacts (Acres)	Total Secondary[1] Wetland Impacts (Acres)	Total Direct Wetland-cut Ditch Impact (Acres)	Total Direct Upland-cut Ditch Impact (Acres)	Secondary Wetland Impact Bridge Shading Impact (Acres)	Reason for Impact
W-11	643	Wet Prairies	0.01	0.00				Road
W-13	625	Hydric Pine Flatwoods	0.01	0.00				Road
OSW-31	510	Ditch				0.17		Road
W-14	625	Hydric Pine Flatwoods	0.23	0.08				Road
W-15	617	Mixed Wetland Hardwoods	0.02	0.18				Road
OSW-33	510	Ditch			0.05			Road
OSW-34	510	Ditch				0.01		Road
OSW-36	510	Ditch				0.09		Road
OSW-37	510	Ditch				0.60		Road
W-18	630	Wetland Forested Mixed	0.84	0.50				Road
OSW-38	510	Ditch			0.12			Road
OSW-39	510	Ditch			0.17			Road
W-17	630	Wetland Forested Mixed	0.11	0.35				Road
OSW-41	510	Ditch				0.66		Road
OSW-42	510	Ditch				0.60		Road
W-19	630	Wetland Forested Mixed	0.35	0.84				Road
OSW-43	510	Ditch			0.14			Road
W-20	646	Mixed Scrub-Shrub Wetland	0.12					Road
OSW-44	510	Ditch			0.12			Road
W-21	646	Mixed Scrub-Shrub Wetland	0.31	0.01				Road
OSW-45	510	Ditch				0.60		Road
OSW-47	510	Ditch				0.18		Road
W-23	617	Mixed Wetland Hardwoods	0.16	0.12				Road
OSW-48	510	Ditch			0.02			Road
W-24	617	Mixed Wetland Hardwoods	0.49	0.23				Road
W-25	646	Mixed Scrub-Shrub Wetland	0.44	0.52				Road
OSW-49	510	Ditch			0.30			Road
OSW-50	510	Ditch			0.10			Road
OSW-51	510	Ditch			0.09			Road
OSW-52	510	Ditch				0.12		Road

Table 3. Summary of Proposed Impacts to Wetlands and Other Surface Waters by Alternative.

Wetland/OSW ID No.	FLUCFCS Code	Description	Total Direct Wetland Impacts (Acres)	Total Secondary[1] Wetland Impacts (Acres)	Total Direct Wetland-cut Ditch Impact (Acres)	Total Direct Upland-cut Ditch Impact (Acres)	Secondary Wetland Impact Bridge Shading Impact (Acres)	Reason for Impact
W-26	617	Mixed Wetland Hardwoods	0.03					Road
OSW-53	510	Ditch			0.02			Road
OSW-54	510	Ditch				0.00		Road
OSW-55	510	Ditch				0.02		Road
OSW-56	510	Ditch			0.02			Road
W-31	617	Mixed Wetland Hardwoods	0.04	0.05				Road
W-35	643	Wet Prairies	0.13					Road
OSW-57	510	Ditch			0.02			Road
W-36	617	Mixed Wetland Hardwoods	0.01	0.06				Road
W-37	646	Mixed Scrub-Shrub Wetland	0.18	0.14				Road
OSW-56	510	Ditch			0.07			Road
OSW-60	510	Ditch				0.03		Road
W-38	646	Mixed Scrub-Shrub Wetland	0.17	0.40				Road
W-39	646	Mixed Scrub-Shrub Wetland	0.39	0.19				Road
W-1	632	Cabbage Palm Hammock		0.03				Pond
W-2	632	Cabbage Palm Hammock	1.02	0.31				Pond
W-4	617	Mixed Wetland Hardwoods	8.04	1.14				Pond
W-8	617	Mixed Wetland Hardwoods	0.26					Pond
W-9	632	Cabbage Palm Hammock	1.20					Pond
W-10	632	Cabbage Palm Hammock	2.37					Pond
W-11	643	Wet Prairies	0.12					Pond
W-13	625	Hydric Pine Flatwoods	1.26					Pond
W-14	625	Hydric Pine Flatwoods	0.02	0.00				Pond
W-26	617	Mixed Wetland Hardwoods	0.30					Pond
Total ALT 1			23.30	8.59	2.40	5.91	4.26	
Alternative 2 - Suburban South, Suburban Best Fit, & Urban								
OSW-2	510	Ditch				0.07		Road
OSW-3	510	Ditch				0.25		Road
OSW-4	510	Ditch				0.05		Road
OSW-5	510	Ditch				0.44		Road

Table 3. Summary of Proposed Impacts to Wetlands and Other Surface Waters by Alternative.

Wetland/OSW ID No.	FLUCFCS Code	Description	Total Direct Wetland Impacts (Acres)	Total Secondary[1] Wetland Impacts (Acres)	Total Direct Wetland-cut Ditch Impact (Acres)	Total Direct Upland-cut Ditch Impact (Acres)	Secondary Wetland Impact Bridge Shading Impact (Acres)	Reason for Impact
OSW-6	510	Ditch				0.16		Road
OSW-7	510	Ditch				0.06		Road
OSW-8	510	Ditch				0.03		Road
OSW-9	510	Ditch				0.03		Road
OSW-10	510	Ditch				0.11		Road
W-3	617	Mixed Wetland Hardwoods	0.32	0.09				Road
OSW-11	510	Ditch			0.08			Road
W-4	617	Mixed Wetland Hardwoods	6.56	3.24				Road
W-2	632	Cabbage Palm Hammock	0.91	1.41				Road
W-6	641	Freshwater Marshes					4.26	Road
OSW-16	510	Ditch				0.15		Road
OSW-15	510	Ditch				0.05		Road
OSW-19	510	Ditch				0.23		Road
OSW-18	510	Ditch				0.36		Road
OSW-17	510	Ditch				0.03		Road
OSW-20	510	Ditch				0.04		Road
OSW-21	510	Ditch				0.04		Road
OSW-22	510	Ditch				0.02		Road
OSW-23	510	Ditch				0.01		Road
OSW-24	510	Ditch				0.03		Road
OSW-25	510	Ditch				0.03		Road
OSW-26	510	Ditch				0.02		Road
OSW-30	510	Ditch				0.66		Road
W-11	643	Wet Prairies	0.01	0.00				Road
W-13	625	Hydric Pine Flatwoods	0.01	0.00				Road
OSW-31	510	Ditch				0.17		Road
W-14	625	Hydric Pine Flatwoods	0.23	0.08				Road
W-15	617	Mixed Wetland Hardwoods	0.02	0.18				Road
OSW-33	510	Ditch			0.05			Road
OSW-34	510	Ditch				0.01		Road

Table 3. Summary of Proposed Impacts to Wetlands and Other Surface Waters by Alternative.

Wetland/OSW ID No.	FLUCFCS Code	Description	Total Direct Wetland Impacts (Acres)	Total Secondary[1] Wetland Impacts (Acres)	Total Direct Wetland-cut Ditch Impact (Acres)	Total Direct Upland-cut Ditch Impact (Acres)	Secondary Wetland Impact Bridge Shading Impact (Acres)	Reason for Impact
OSW-36	510	Ditch				0.09		Road
OSW-37	510	Ditch				0.60		Road
W-18	630	Wetland Forested Mixed	0.84	0.50				Road
OSW-38	510	Ditch			0.12			Road
OSW-39	510	Ditch			0.17			Road
W-17	630	Wetland Forested Mixed	0.11	0.35				Road
OSW-41	510	Ditch				0.66		Road
OSW-42	510	Ditch				0.60		Road
W-19	630	Wetland Forested Mixed	0.35	0.84				Road
OSW-43	510	Ditch			0.14			Road
W-20	646	Mixed Scrub-Shrub Wetland	0.12					Road
OSW-44	510	Ditch			0.12			Road
W-21	646	Mixed Scrub-Shrub Wetland	0.31	0.01				Road
OSW-45	510	Ditch				0.60		Road
OSW-47	510	Ditch				0.18		Road
W-23	617	Mixed Wetland Hardwoods	0.16	0.12				Road
OSW-48	510	Ditch			0.02			Road
W-24	617	Mixed Wetland Hardwoods	0.49	0.23				Road
W-25	646	Mixed Scrub-Shrub Wetland	0.44	0.52				Road
OSW-49	510	Ditch			0.30			Road
OSW-50	510	Ditch			0.10			Road
OSW-51	510	Ditch			0.09			Road
OSW-52	510	Ditch				0.12		Road
W-26	617	Mixed Wetland Hardwoods	0.03					Road
OSW-53	510	Ditch			0.02			Road
OSW-54	510	Ditch				0.00		Road
OSW-55	510	Ditch				0.02		Road
OSW-56	510	Ditch			0.02			Road
W-31	646	Mixed Scrub-Shrub Wetland	0.04	0.05				Road
W-35	643	Wet Prairies	0.13					Road

Table 3. Summary of Proposed Impacts to Wetlands and Other Surface Waters by Alternative.

Wetland/OSW ID No.	FLUCFCS Code	Description	Total Direct Wetland Impacts (Acres)	Total Secondary[1] Wetland Impacts (Acres)	Total Direct Wetland-cut Ditch Impact (Acres)	Total Direct Upland-cut Ditch Impact (Acres)	Secondary Wetland Impact Bridge Shading Impact (Acres)	Reason for Impact
OSW-57	510	Ditch			0.02			Road
W-36	617	Mixed Wetland Hardwoods	0.01	0.06				Road
W-37	646	Mixed Scrub-Shrub Wetland	0.18	0.14				Road
OSW-56	510	Ditch			0.07			Road
OSW-60	510	Ditch				0.03		Road
W-38	646	Mixed Scrub-Shrub Wetland	0.17	0.40				Road
W-39	646	Mixed Scrub-Shrub Wetland	0.39	0.19				Road
W-1	632	Cabbage Palm Hammock		0.03				Pond
W-2	632	Cabbage Palm Hammock	1.02	0.31				Pond
W-4	617	Mixed Wetland Hardwoods	8.04	1.14				Pond
W-8	617	Mixed Wetland Hardwoods	0.26					Pond
W-9	632	Cabbage Palm Hammock	1.20					Pond
W-10	632	Cabbage Palm Hammock	2.37					Pond
W-11	643	Wet Prairies	0.12					Pond
W-13	625	Hydric Pine Flatwoods	1.26					Pond
W-14	625	Hydric Pine Flatwoods	0.02	0.00				Pond
W-26	617	Mixed Wetland Hardwoods	0.30					Pond
Total ALT 2			26.43	9.89	1.33	5.93	4.26	
Alternative 3 - Suburban North, Rural Best Fit, & Urban								
OSW-2	510	Ditch				0.07		Road
OSW-3	510	Ditch				0.25		Road
OSW-4	510	Ditch				0.05		Road
OSW-5	510	Ditch				0.44		Road
OSW-6	510	Ditch				0.16		Road
OSW-7	510	Ditch				0.06		Road
OSW-8	510	Ditch				0.03		Road
OSW-9	510	Ditch				0.03		Road
OSW-10	510	Ditch				0.09		Road
W-3	617	Mixed Wetland Hardwoods	0.03	0.01				Road
OSW-11	510	Ditch			0.06			Road

Table 3. Summary of Proposed Impacts to Wetlands and Other Surface Waters by Alternative.

Wetland/OSW ID No.	FLUCFCS Code	Description	Total Direct Wetland Impacts (Acres)	Total Secondary[1] Wetland Impacts (Acres)	Total Direct Wetland-cut Ditch Impact (Acres)	Total Direct Upland-cut Ditch Impact (Acres)	Secondary Wetland Impact Bridge Shading Impact (Acres)	Reason for Impact
W-2	632	Cabbage Palm Hammock	4.16	3.12				Road
OSW-12	510	Ditch			0.06			Road
OSW-13	510	Ditch			1.03			Road
W-4	617	Mixed Wetland Hardwoods	0.48	0.31				Road
W-6	641	Freshwater Marshes					4.26	Road
OSW-16	510	Ditch				0.15		Road
OSW-15	510	Ditch				0.05		Road
OSW-19	510	Ditch				0.23		Road
OSW-18	510	Ditch				0.36		Road
OSW-20	510	Ditch				0.04		Road
OSW-21	510	Ditch				0.04		Road
OSW-22	510	Ditch				0.02		Road
OSW-23	510	Ditch				0.01		Road
OSW-24	510	Ditch				0.03		Road
OSW-25	510	Ditch				0.03		Road
OSW-26	510	Ditch				0.02		Road
OSW-30	510	Ditch				0.66		Road
W-11	643	Wet Prairies	0.03	0.00				Road
W-13	625	Hydric Pine Flatwoods	0.04	0.00				Road
OSW-31	510	Ditch				0.17		Road
W-14	625	Hydric Pine Flatwoods	0.23	0.08				Road
W-15	617	Mixed Wetland Hardwoods	0.02	0.18				Road
OSW-33	510	Ditch			0.05			Road
OSW-36	510	Ditch				0.09		Road
OSW-37	510	Ditch				0.60		Road
W-18	630	Wetland Forested Mixed	0.85	0.04				Road
W-17	630	Wetland Forested Mixed	0.80	0.03				Road
OSW-40	510	Ditch				0.02		Road
OSW-41	510	Ditch				0.66		Road
OSW-42	510	Ditch				0.60		Road

Table 3. Summary of Proposed Impacts to Wetlands and Other Surface Waters by Alternative.

Wetland/OSW ID No.	FLUCFCS Code	Description	Total Direct Wetland Impacts (Acres)	Total Secondary[1] Wetland Impacts (Acres)	Total Direct Wetland-cut Ditch Impact (Acres)	Total Direct Upland-cut Ditch Impact (Acres)	Secondary Wetland Impact Bridge Shading Impact (Acres)	Reason for Impact
W-19	630	Wetland Forested Mixed	0.35	0.04				Road
OSW-43	510	Ditch			0.14			Road
W-20	646	Mixed Scrub-Shrub Wetland	0.12					Road
OSW-44	510	Ditch			0.12			Road
W-21	646	Mixed Scrub-Shrub Wetland	0.39					Road
OSW-45	510	Ditch				0.60		Road
OSW-47	510	Ditch				0.18		Road
W-23	617	Mixed Wetland Hardwoods	0.33	0.07				Road
OSW-48	510	Ditch			0.02			Road
W-24	617	Mixed Wetland Hardwoods	0.82	0.23				Road
W-25	646	Mixed Scrub-Shrub Wetland	0.27	0.27				Road
OSW-49	510	Ditch			0.30			Road
OSW-50	510	Ditch			0.10			Road
OSW-51	510	Ditch			0.15			Road
OSW-52	510	Ditch				0.12		Road
W-26	617	Mixed Wetland Hardwoods	0.32	0.00				Road
OSW-53	510	Ditch			0.02			Road
OSW-54	510	Ditch				0.00		Road
OSW-56	510	Ditch			0.02			Road
OSW-56	510	Ditch			0.07			Road
OSW-57	510	Ditch			0.02			Road
W-30	617	Mixed Wetland Hardwoods	0.03					Road
W-31	646	Mixed Scrub-Shrub Wetland	0.04	0.01				Road
W-32	646	Mixed Scrub-Shrub Wetland	0.04	0.01				Road
W-34	646	Mixed Scrub-Shrub Wetland	0.03	0.01				Road
W-35	643	Wet Prairies	0.13					Road
W-36	617	Mixed Wetland Hardwoods	0.03	0.00				Road
W-37	646	Mixed Scrub-Shrub Wetland	0.34	0.01				Road
W-38	646	Mixed Scrub-Shrub Wetland	0.36	0.03				Road
W-39	646	Mixed Scrub-Shrub Wetland	0.60	0.02				Road

Table 3. Summary of Proposed Impacts to Wetlands and Other Surface Waters by Alternative.

Wetland/OSW ID No.	FLUCFCS Code	Description	Total Direct Wetland Impacts (Acres)	Total Secondary[1] Wetland Impacts (Acres)	Total Direct Wetland-cut Ditch Impact (Acres)	Total Direct Upland-cut Ditch Impact (Acres)	Secondary Wetland Impact Bridge Shading Impact (Acres)	Reason for Impact
W-1	632	Cabbage Palm Hammock		0.03				Pond
W-2	632	Cabbage Palm Hammock	1.02	0.31				Pond
W-4	617	Mixed Wetland Hardwoods	8.04	1.14				Pond
W-8	617	Mixed Wetland Hardwoods	0.26					Pond
W-9	632	Cabbage Palm Hammock	1.20					Pond
W-10	632	Cabbage Palm Hammock	2.37					Pond
W-11	643	Wet Prairies	0.12					Pond
W-13	625	Hydric Pine Flatwoods	1.26					Pond
W-14	625	Hydric Pine Flatwoods	0.02	0.00				Pond
W-26	617	Mixed Wetland Hardwoods	0.30					Pond
Total ALT 3			25.45	5.95	2.18	5.83	4.26	
Alternative 4 - Suburban South, Rural Best Fit, & Urban								
OSW-2	510	Ditch				0.07		Road
OSW-3	510	Ditch				0.25		Road
OSW-4	510	Ditch				0.05		Road
OSW-5	510	Ditch				0.44		Road
OSW-6	510	Ditch				0.16		Road
OSW-7	510	Ditch				0.06		Road
OSW-8	510	Ditch				0.03		Road
OSW-9	510	Ditch				0.03		Road
OSW-10	510	Ditch				0.11		Road
W-3	617	Mixed Wetland Hardwoods	0.32	0.09				Road
OSW-11	510	Ditch			0.08			Road
W-4	617	Mixed Wetland Hardwoods	6.56	3.24				Road
W-2	632	Cabbage Palm Hammock	0.91	1.41				Road
W-6	641	Freshwater Marshes					4.26	Road
OSW-15	510	Ditch				0.05		Road
OSW-16	510	Ditch				0.15		Road
OSW-19	510	Ditch				0.23		Road
OSW-18	510	Ditch				0.36		Road

Table 3. Summary of Proposed Impacts to Wetlands and Other Surface Waters by Alternative.

Wetland/OSW ID No.	FLUCFCS Code	Description	Total Direct Wetland Impacts (Acres)	Total Secondary[1] Wetland Impacts (Acres)	Total Direct Wetland-cut Ditch Impact (Acres)	Total Direct Upland-cut Ditch Impact (Acres)	Secondary Wetland Impact Bridge Shading Impact (Acres)	Reason for Impact
OSW-20	510	Ditch				0.04		Road
OSW-21	510	Ditch				0.04		Road
OSW-22	510	Ditch				0.02		Road
OSW-23	510	Ditch				0.01		Road
OSW-24	510	Ditch				0.03		Road
OSW-25	510	Ditch				0.03		Road
OSW-26	510	Ditch				0.02		Road
OSW-30	510	Ditch				0.66		Road
W-11	643	Wet Prairies	0.03	0.00				Road
W-13	625	Hydric Pine Flatwoods	0.04	0.00				Road
OSW-31	510	Ditch				0.17		Road
W-14	625	Hydric Pine Flatwoods	0.23	0.08				Road
W-15	617	Mixed Wetland Hardwoods	0.02	0.18				Road
OSW-33	510	Ditch			0.05			Road
OSW-36	510	Ditch				0.09		Road
OSW-37	510	Ditch				0.60		Road
W-18	630	Wetland Forested Mixed	0.85	0.04				Road
W-17	630	Wetland Forested Mixed	0.80	0.03				Road
OSW-40	510	Ditch				0.02		Road
OSW-41	510	Ditch				0.66		Road
OSW-42	510	Ditch				0.60		Road
W-19	630	Wetland Forested Mixed	0.35	0.04				Road
OSW-43	510	Ditch			0.14			Road
W-20	646	Mixed Scrub-Shrub Wetland	0.12					Road
OSW-44	510	Ditch			0.12			Road
W-21	646	Mixed Scrub-Shrub Wetland	0.39					Road
OSW-45	510	Ditch				0.60		Road
OSW-47	510	Ditch				0.18		Road
W-23	617	Mixed Wetland Hardwoods	0.33	0.07				Road
OSW-48	510	Ditch			0.02			Road

Table 3. Summary of Proposed Impacts to Wetlands and Other Surface Waters by Alternative.

Wetland/OSW ID No.	FLUCFCS Code	Description	Total Direct Wetland Impacts (Acres)	Total Secondary[1] Wetland Impacts (Acres)	Total Direct Wetland-cut Ditch Impact (Acres)	Total Direct Upland-cut Ditch Impact (Acres)	Secondary Wetland Impact Bridge Shading Impact (Acres)	Reason for Impact
W-24	617	Mixed Wetland Hardwoods	0.82	0.23				Road
W-25	646	Mixed Scrub-Shrub Wetland	0.27	0.27				Road
OSW-49	510	Ditch			0.30			Road
OSW-50	510	Ditch			0.10			Road
OSW-51	510	Ditch			0.15			Road
OSW-52	510	Ditch				0.12		Road
W-26	617	Mixed Wetland Hardwoods	0.32	0.00				Road
OSW-53	510	Ditch			0.02			Road
OSW-54	510	Ditch				0.00		Road
OSW-56	510	Ditch			0.02			Road
OSW-56	510	Ditch			0.07			Road
OSW-57	510	Ditch			0.02			Road
W-30	617	Mixed Wetland Hardwoods	0.03					Road
W-31	646	Mixed Scrub-Shrub Wetland	0.04	0.01				Road
W-32	646	Mixed Scrub-Shrub Wetland	0.04	0.01				Road
W-34	646	Mixed Scrub-Shrub Wetland	0.03	0.01				Road
W-35	643	Wet Prairies	0.13					Road
W-36	617	Mixed Wetland Hardwoods	0.03	0.00				Road
W-37	646	Mixed Scrub-Shrub Wetland	0.34	0.01				Road
W-38	646	Mixed Scrub-Shrub Wetland	0.36	0.03				Road
W-39	646	Mixed Scrub-Shrub Wetland	0.60	0.02				Road
W-1	632	Cabbage Palm Hammock		0.03				Pond
W-2	632	Cabbage Palm Hammock	1.02	0.31				Pond
W-4	617	Mixed Wetland Hardwoods	8.04	1.14				Pond
W-8	617	Mixed Wetland Hardwoods	0.26					Pond
W-9	632	Cabbage Palm Hammock	1.20					Pond
W-10	632	Cabbage Palm Hammock	2.37					Pond
W-11	643	Wet Prairies	0.12					Pond
W-13	625	Hydric Pine Flatwoods	1.26					Pond
W-14	625	Hydric Pine Flatwoods	0.02	0.00				Pond

Table 3. Summary of Proposed Impacts to Wetlands and Other Surface Waters by Alternative.

Wetland/OSW ID No.	FLUCFCS Code	Description	Total Direct Wetland Impacts (Acres)	Total Secondary[1] Wetland Impacts (Acres)	Total Direct Wetland-cut Ditch Impact (Acres)	Total Direct Upland-cut Ditch Impact (Acres)	Secondary Wetland Impact Bridge Shading Impact (Acres)	Reason for Impact
W-26	617	Mixed Wetland Hardwoods	0.30					Pond
Total ALT 4			28.57	7.25	1.11	5.85	4.26	
Total ALT 5	No-Build		0.00	0.00	0.00	0.00	0.00	

[1] Secondary wetland impact extends 25 feet from either the edge of construction or from the toe of slope.

Table 4. Summary of Proposed Impacts to Existing Conservation Easements by Alternative.

	Total Impact (Acres)	Reason for Impact
Alternative 1 - Suburban North, Suburban Best Fit, & Urban		
Easement Granted to SJRWMD	14.28	Road and Pond
Easement Granted to FDEP	0.48	Road
Total ALT 1	14.76	
Alternative 2 - Suburban South, Suburban Best Fit, & Urban		
Easement Granted to SJRWMD	11.03	Road and Pond
Easement Granted to FDEP	6.56	Road
Total ALT 2	17.59	
Alternative 3 - Suburban North, Rural Best Fit, & Urban		
Easement Granted to SJRWMD	14.28	Road and Pond
Easement Granted to FDEP	0.48	Road
Total ALT 3	14.76	
Alternative 4 - Suburban South, Rural Best Fit, & Urban		
Easement Granted to SJRWMD	11.03	Road and Pond
Easement Granted to FDEP	6.56	Road
Total ALT 4	17.59	
Total ALT 5 - No Build	0.00	

Summary of Impacts – Table 5 provides a summary of wetlands and other surface waters impacts by alternative.

Table 5. Summary of Impacts by Alternative.

Alternative	Direct Wetland Impact (Acres)	Secondary Wetland Impact (Acres)	Wetland-Cut Ditch Impact (Acres)	Upland-Cut Ditch Impact (Acres)	Bridge Shading Impact (Acres)	Conservation Easement Impact (Acres)
1	23.30	8.59	2.40	5.91	4.26	14.76
2	26.43	9.89	1.33	5.93	4.26	17.59
3	25.45	5.95	2.18	5.83	4.26	14.76
4	28.57	7.25	1.11	5.85	4.26	17.59
5	0.00	0.00	0.00	0.00	0.00	0.00

8.1.2 Recommended Alternative

The recommended alternative (Alternative 2) consists of the Suburban South typical section within Segment 1, which extends from SR 415 to the west end of the Lake Jesup Bridge. The Bridge with Multi-Use Path is recommended for Segment 2. The Suburban Best Fit typical section is recommended for Segment 3, which extends from the east end of the Lake Jesup Bridge to Hart Road. And, the Urban Center typical section is recommended for Segment 4, which extends from Hart Road to CR 426. The recommended pond sites are Pond A3, the expansion of existing ponds (Ponds 1 & 2), Pond B1, Pond C1, Pond D1, Pond E2, Pond F2, Pond G2, Pond H1, and floodplain compensation ponds FPC 1 and FPC 2.

Direct Wetland Impacts

A preliminary estimate of wetland acreage that will be directly impacted by the recommended alternative is approximately 26.43 acres. These wetland areas are shown in Figures 4A –4J. A majority of the wetland impacts occur within forested wetlands (approximately 26.17 acres) and approximately 0.26 acres occur within herbaceous wetlands.

Secondary Wetland Impacts

Secondary impacts are anticipated to occur within wetland areas that remain within 25 feet of the roadway improvements, new pond areas, and pond expansion areas. The width of the anticipated secondary impacts is estimated and based on the fact that the project is a road widening project within an area that has experienced various anthropogenic impacts. The 25-foot distance was determined using the assessors' best scientific judgment in analyzing what type of secondary impacts will be expected during and following construction and how far into a wetland those affects will be experienced per SJRWMD and USACE criteria. Secondary impacts typically include noise, light infiltration, and adverse alterations to the wetland plant species composition such as increases in upland, nuisance, and/or exotic plant species occurrences. A preliminary estimate of wetland acreage that may be adversely affected by secondary impacts associated with the recommended alternative is 9.89 acres.

Wetland-cut Ditch Impacts

Man-made drainage ditches (roadside drainage ditches) cut through existing wetlands are considered wetland-cut ditches. These surface waters are considered jurisdictional by the state and federal agencies. Approximately 1.33 acres of wetland-cut ditches may be impacted by the recommended alternative.

Upland-cut Ditch Impacts

Upland man-made drainage ditches (roadside drainage ditches) are those that appear to be cut wholly from uplands (occur within upland soil mapping units) and are not considered to be jurisdictional wetlands and/or other surface waters. It is estimated that approximately 5.93 acres of upland-cut ditches may be impacted by the recommended alternative.

Bridge Shading Impacts

For this study, an evaluation of impacts to emergent wetland vegetation, not open water, was conducted for the new parallel bridge over the St. Johns River. It was determined that the new parallel bridge span may result in direct impacts to emergent wetland vegetation due to shading by the bridge and possibly by pile construction. If the emergent wetland vegetation would not be directly impacted due to the height of the proposed bridge then the impact may be considered to be a secondary wetland impact due to shading. The determination was based on the information contained within the Type 2 Categorical Exclusion Environmental Document conducted for the Lake Jesup Bridge Replacement in 2003 and the UMAM scores for the bridge replacement project (SJRWMD Permit No. 4-117-95925-1). An estimation of direct wetland impacts resulting from pile construction was not practical since information on the number of piles needed to support the structure was not available. Therefore, the analysis resulted in only the estimation of secondary impacts resulting from the additional bridge span, which totaled approximately 4.26 acres.

8.2 AVOIDANCE AND MINIMIZATION ANALYSIS

All build alternatives for the SR 46 PD&E project contain multiple wetland and other surface water impacts. Specific measures have been taken in an effort to minimize wetland impacts. The recommended alternative has incorporated avoidance of impacts in keeping a large portion of the proposed project within the existing right-of-way and footprint of the SR 46, with the exception of the wetland impacts for the pond sites. The recommended alternative also eliminated potential impacts by proposing a short wall at the toe of slope along the north side of the roadway just west of the existing Lake Jesup Bridge. The proposed wall will avoid both wetland and utility impacts and the need to acquire additional right-of-way for the project. The project includes a parallel bridge over the St. Johns River. The new bridge will completely span the wetlands and there is existing fill land to support the proposed bridge abutment foundations (west and east bridge abutments).

8.3 SUMMARY OF UNIFORM MITIGATION ASSESSMENT METHOD (UMAM) EVALUATION

The functional assessment for the proposed impacts for the recommended alternative was conducted utilizing the Uniform Mitigation Assessment Method (UMAM), pursuant to 62-345, F.A.C. (UMAM scoring sheets for direct wetland impacts and the bridge shading impact are provided in Appendix A). The functional categories evaluated under UMAM are: Location and Landscape Support, Water Environment, and Community Structure. These UMAM functional categories are all scored with respect to the value they provide to wildlife and fisheries. Scores are based on site-specific conditions including wetland size, contiguousness to other natural areas, structural complexity of the vegetative community, (vegetative strata composition, density, condition, percent cover of exotics), hydrologic condition, wildlife habitat, distance from development, and water quality. The functional categories are scored from 0 (lowest) to 10 (highest) in increments of 1. The final UMAM score is a number between 0 and 1, based on the sum of the individual scores divided by the total maximum score (30). Table 6 summarizes the proposed impacts, the UMAM scoring, and the UMAM functional loss associated with the recommended alternative. The secondary wetland impacts were scored anticipating a minor decrease in wetland function in vegetative community structure in a "with project" condition. It is important to note that all UMAM scores would need to be reviewed and approved by the SJRWMD and the USACE and are subject to change during the permitting process.

The UMAM analysis for the recommended alternative resulted in a loss in wetland functions that may total 15.53 functional units (direct and secondary wetland impacts).

8.4 CONCEPTUAL MITIGATION ALTERNATIVES

Wetland mitigation for the proposed impacts will be coordinated and approved by the USACE and the SJRWMD during the permitting process. All mitigation will occur within the same drainage basin as the project impacts to avoid any cumulative wetland impacts. The wetlands within the study area occur within two (2) different regulatory mitigation basins, which include Mitigation Basin 23 (Lake Jesup) and Mitigation Basin 18 (St. Johns River – Canaveral Marshes to Wekiva). The preliminary assessment of potential impacts associated with the recommended alternative shows that the functional loss of wetland functions may total approximately 15.53 functional units. The estimated functional loss within Basin 23 (Lake Jesup) totals 1.39 functional units and the estimated functional loss within Basin 18 (St. Johns River – Canaveral Marshes to Wekiva) totals 14.14 functional units.

The mitigation alternative for Basin 18 (St. Johns River – Canaveral Marshes to Wekiva) may consist primarily of off-site mitigation through the purchase of mitigation banks credits at an approved mitigation bank. This portion of the project is located within approved mitigation bank service areas and compensatory mitigation credits are available for the proposed impacts.

Table 6. UMAM Analysis and Scoring for the Recommended Alternative

Wetland/OSW ID No.	FLUCFCS Code	Description	Regulatory Basin No.	Location and Landscape Support		Water Environment		Community Structure		Score (Sum/30)		Delta	Acres	Functional Loss [2]
				Current	With	Current	With	Current	With	Current	With			
Alternative 2 - Suburban South, Suburban Best Fit, & Urban														
W-1 (Secondary Impact) [1]	632	Cabbage Palm Hammock	Basin 18	6	6	6	6	7	6	0.63	0.60	-0.03	0.03	0.001
W-2 Road (Direct Impact)	632	Cabbage Palm Hammock	Basin 18	6	0	6	0	6	0	0.60	0.00	-0.60	0.91	0.55
W-2 Road (Secondary Impact)	632	Cabbage Palm Hammock	Basin 18	6	6	6	6	6	5	0.60	0.57	-0.03	1.41	0.04
W-2 Ponds (Direct Impact)	632	Cabbage Palm Hammock	Basin 18	6	0	6	0	5	0	0.57	0.00	-0.57	1.02	0.58
W-2 Ponds (Secondary Impact)	632	Cabbage Palm Hammock	Basin 18	6	6	6	6	5	4	0.57	0.53	-0.03	0.31	0.01
W-3 (Direct Impact)	617	Mixed Wetland Hardwoods	Basin 18	4	0	5	0	4	0	0.43	0.00	-0.43	0.32	0.14
W-3 (Secondary Impact)	617	Mixed Wetland Hardwoods	Basin 18	4	4	5	5	4	3	0.43	0.40	-0.03	0.09	0.003
W-4 (Direct Impact)	617	Mixed Wetland Hardwoods	Basin 18	6	0	5	0	5	0	0.53	0.00	-0.53	14.6	7.74
W-4 (Secondary Impact)	617	Mixed Wetland Hardwoods	Basin 18	6	6	5	5	5	4	0.53	0.50	-0.03	4.38	0.13
W-6 (Secondary Impact - Bridge Shading)	641	Freshwater Marsh	Basin 18	9	9	9	9	9	8	0.90	0.87	-0.03	4.26	0.13
W-8 & W-15 (Direct Impact)	617	Mixed Wetland Hardwoods	Basin 18	6	0	4	0	4	0	0.47	0.00	-0.47	0.28	0.13
W-8 & W-15 (Secondary Impact)	617	Mixed Wetland Hardwoods	Basin 18	6	6	4	4	4	3	0.47	0.43	-0.04	0.18	0.01
W-9 & W-10 (Direct Impact)	632	Cabbage Palm Hammock	Basin 18	6	0	7	0	7	0	0.67	0.00	-0.67	3.57	2.39
W-11 (Direct Impact)	643	Wet Prairies	Basin 18	4	0	4	0	4	0	0.40	0.00	-0.40	0.13	0.05
W-13 & W-14 (Direct Impact)	625	Hydric Pine Flatwoods	Basin 18	5	0	4	0	3	0	0.40	0.00	-0.40	1.52	0.61
W-13 & W-14 (Secondary Impact)	625	Hydric Pine Flatwoods	Basin 18	5	5	4	4	3	2	0.40	0.37	-0.03	0.08	0.002
W-17 (Direct Impact)	630	Wetland Forested Mixed	Basin 18	6	0	7	0	7	0	0.67	0.00	-0.67	0.11	0.07
W-17 (Secondary Impact)	630	Wetland Forested Mixed	Basin 18	6	6	7	7	7	6	0.67	0.63	-0.04	0.35	0.01
W-18 & W-19 (Direct Impact)	630	Wetland Forested Mixed	Basin 23	6	0	7	0	7	0	0.67	0.00	-0.67	1.19	0.80
W-18 & W-19 (Secondary Impact)	630	Wetland Forested Mixed	Basin 23	6	6	7	7	7	6	0.67	0.63	-0.04	1.34	0.05
W-20 (Direct Impact)	646	Mixed Scrub-Shrub Wetland	Basin 18	4	0	4	0	4	0	0.40	0.00	-0.40	0.12	0.05
W-24 (Direct Impact)	617	Mixed Wetland Hardwoods	Basin 18	5	0	5	0	6	0	0.53	0.00	-0.53	0.49	0.26
W-24 (Secondary Impact)	617	Mixed Wetland Hardwoods	Basin 18	5	5	5	5	6	5	0.53	0.50	-0.03	0.23	0.01
W-25 &W-31 (Direct Impact)	646	Mixed Scrub-Shrub Wetland	Basin 23	6	0	6	0	4	0	0.53	0.00	-0.53	0.48	0.25
W-25 &W-31 (Secondary Impact)	646	Mixed Scrub-Shrub Wetland	Basin 23	6	6	6	6	4	3	0.53	0.50	-0.03	0.57	0.02
W-21, W-37, W-38 & W-39 (Direct Impact)	646	Mixed Scrub-Shrub Wetland	Basin 18	6	0	6	0	4	0	0.53	0.00	-0.53	1.05	0.56
W-21, W-37, W-38 & W-39 (Secondary Impact)	646	Mixed Scrub-Shrub Wetland	Basin 18	6	6	6	6	4	3	0.53	0.50	-0.03	0.74	0.02
W-26 (Direct Impact)	617	Mixed Wetland Hardwoods	Basin 18	4	0	3	0	4	0	0.37	0.00	-0.37	0.33	0.12
W-35 (Direct Impact)	643	Wet Prairies	Basin 18	4	0	4	0	3	0	0.37	0.00	-0.37	0.13	0.05
W-23 & W-36 (Direct Impact)	617	Mixed Wetland Hardwoods	Basin 18	6	0	7	0	6	0	0.63	0.00	-0.63	0.17	0.11
W-23 & W-36 (Secondary Impact)	617	Mixed Wetland Hardwoods	Basin 18	6	6	7	7	6	5	0.63	0.60	-0.03	0.18	0.01
OSW Nos. 38, 43, 49 & 56a	510	Wetland-cut Ditches	Basin 23	6	0	4	0	4	0	0.47	0.00	-0.47	0.58	0.27
OSW Nos. 11, 33, 39, 44, 48, 51, 50, 53, 56b & 57	510	Wetland-cut Ditches	Basin 18	6	0	4	0	4	0	0.47	0.00	-0.47	0.75	0.35
Total Functional Loss														**15.53**

[1] Secondary wetland impact extends 25 feet from either the edge of construction or from the toe of slope.

[2] UMAM scores have not been approved by permitting agencies and are subject to change during the permitting process.

Additional mitigation bank credits may be required within Basin 18 (St. Johns River – Canaveral Marshes to Wekiva) for direct and secondary impacts within the existing wetland enhancement and wetland restoration areas association with the Lake Jesup Bridge Replacement project (SJRWMD Permit No. 4-117-95925-1). Preliminary estimates indicate that the new bridge span may impact approximately 1.04 acres of wetland enhancement and approximately 2.99 acres of wetland restoration. The SJRWMD UMAM scores for the bridge replacement project were researched and the mitigation relative functional gain (UMAM score) for the wetland restoration area was determined to be 0.39. The UMAM mitigation scoring for the wetland enhancement area immediately adjacent to the bridge was a two-step process.

There are currently no approved mitigation banks offering both state and federal mitigation bank credits within Basin 23 (Lake Jesup). Mitigation alternatives for Basin 23 (Lake Jesup) may include mitigation through restoration activities and other BMAP projects within the Lake Jesup Basin such as shoreline revegetation projects within Lake Jesup (*Lake Jesup Basin Management Action Plan*, July 2013). Potential restoration activities may also include the restoration of hydrology and water flow within state and/or county owned lands (Lake Jesup Conservation Area) within the Lake Jesup Basin. Another mitigation alternative within the Lake Jesup Basin could include the purchase of natural lands for preservation. Information on available parcels may be acquired through Seminole County's Parks and Preservation Advisory Committee and Natural Lands Subcommittee. One of the goals of Seminole County's Natural Lands Subcommittee is to participate in the County-wide analysis of greenway/connectivity through the County's Master Planning process and to evaluate future environmental land acquisitions.

8.5 PERMITTING REQUIREMENTS

The construction of the proposed roadway improvements will require permits from federal and state regulatory agencies prior to the construction of this project. Permits will be required for wetland impacts, conservation easement releases, stormwater discharge, and treatment and attenuation.

A list of potential permits includes the following:

- Federal Dredge and Fill Permit (Individual Permit) (USACE)
- Individual Environmental Resource Permit (ERP) (SJRWMD)
- National Pollution Discharge Prevention and Elimination System (NPDES) Permit (FL Department of Environmental Protection)

Sovereign Submerged State Lands

In accordance with the ERP process, projects that traverse sovereign submerged state lands must also obtain a public easement from the Division of State Lands (FDEP). In 2005, FDOT applied for a Letter of Consent (LOC) to conduct the dredge and fill activities associated with the SR 46 Lake Jesup Bridge Replacement project. A TIITF (Trustees of the Internal Improvement Trust Fund) deed (TIITF Deed no. 19473) exists for the existing right-of-way for SR 46 (D.B. 371, Page 279, Volusia County, and D.B. 156, Page 346, Seminole County). This easement will require further evaluation during the ERP application review process to determine if the established

boundary of the TIITF deed of sovereign submerged state lands allows for the construction of the new parallel bridge structure.

National Marine Fisheries Service

Upon the conclusion of the ETAT (Environmental Technical Advisory Team) review and completion of the Programming Summary Report [Efficient Transportation Decision Making (ETDM) Process], the National Marine Fisheries Service (NMFS) determined that the wetlands likely to be affected by the project are not designated as essential fish habitat (EFH). No further coordination under the Magnuson-Stevens Act will be required for this project.

U.S. Coast Guard

Upon the conclusion of the ETAT (Environmental Technical Advisory Team) review and completion of the Programming Summary Report [Efficient Transportation Decision Making (ETDM) Process], the Coast Guard will not require a bridge permit for the construction of a second bridge across Lake Jesup.

Request for a Conservation Easement Release (SJRWMD)

The SJRWMD will require a Conservation Easement Release for each conservation easement that occurs within the Bergmann Tract, which is a private mitigation bank under various conservation easements, for those lands that occur within the proposed right-of-way of the recommended alternative. For the partial release of lands within each easement, the SJRWMD would require the submittal of a letter and supporting documentation (pursuant to the SJRWMD conservation easement release checklist for public projects). Options to offset the loss of conservation lands may include any restoration or enhancement project within Lake Jesup or the St. Johns River, especially in the vicinity of the existing bridge. Authorization for any proposed restoration project would be provided through the issuance of an ERP permit. The SJRWMD may also allow the use of mitigation bank credits and/or the SJRWMD would accept an exchange of lands for other lands at the terms and conditions of the SJRWMD Board. No permit modification would be required as part of the Conservation Easement release.

Request for a Conservation Easement Release (FDEP)

For the partial release of lands within the Futch Property, FDEP would require the submittal of a letter and supporting documentation for the partial release of the necessary acreage needed for the roadway improvements. Mitigation bank credits would be acceptable to FDEP for the partial release of lands within the Futch Property. Other options to offset the loss of conservation lands may include any restoration or enhancement project within Lake Jesup or the St. Johns River, especially in the vicinity of the existing bridge. Authorization for any proposed restoration project would be provided through the issuance of an ERP permit. No permit modification would be required as part of the Conservation Easement release. FDEP stated that they would not object to the elimination of the canal within the Futch Property, which occurs on the south side of the SR 46, since it was planned to be filled as part of the original mitigation plan for the parcel. The canal occurs within the proposed right-of-way of the recommended alternative.

8.6 AGENCY COORDINATION

Preliminary coordination with the relevant regulatory agencies, including USACE, USFWS, NMFS, SJRWMD, FFWCC, and FDEP was accomplished through the Environmental Screening Tool component of ETDM. In general, the comments received consisted of statements regarding the need to acquire the appropriate permits, the need for avoidance and minimization of wetland impacts, and maintenance of existing water quality. Several of these comments have been integrated into the project design.

In addition, meetings were held with the SJRWMD and the FDEP during the PD&E process to discuss the proposed roadway improvements and the proposed impacts within wetlands, conservation easements, and permitted mitigation areas in order to keep them informed and to solicit feedback. The meeting with SJRWMD staff was held on August 22, 2012 and the meeting with FDEP staff was held on August 28, 2012 (see Appendix B). Another focus of the agency meetings was to discuss mitigation for the proposed impacts, which included the discussion of various mitigation alternatives. Coordination with the regulatory agencies will continue throughout the permitting phase of the project to ensure that all potential wetland mitigation concepts are evaluated and to identify and analyze viable options that could be implemented.

9.0 CONCLUSION AND RECOMMENDATIONS

During the course of the PD&E Study, assessments of wetland and environmental resources within the project corridor have been conducted. The primary goal of these tasks was to determine the extent and characteristics of the wetlands and other surface waters located within and adjacent to the right-of-way. All of the wetland systems found within the project corridor are currently impacted by their close proximity to the heavily travelled roadway, by drainage projects, and by the adjacent commercial or residential developments. Other surface waters (i.e., ditches) will also be impacted by the proposed roadway design, both upland-cut and wetland-cut ditches.

The total number of wetland impacts for the recommended alternative (for the entire project) is approximately 26.43 acres. The recommended alternative will directly impact approximately 26.17 of acres of forested wetlands and 0.26 acres of wet prairie/marsh. Additionally, approximately 1.33 acres of wetland-cut ditches (other surface waters) will be directly impacted. The UMAM analysis for the recommended alternative resulted in a loss in wetland functions that may total 15.53 functional units (direct and secondary wetland impacts). Preliminary estimates indicate that the new bridge span may impact existing mitigation areas that were associated with the SR 46 Bridge Replacement project. These impacts include approximately 1.04 acres of wetland enhancement and approximately 2.99 acres of wetland restoration. In addition, the recommended alternative will directly impact both SJRWMD and FDEP Conservation Easements that occur north and south of the SR 46, west of the bridge.

Functional losses from direct and secondary impacts will be offset through the appropriate mitigation. Cumulative wetland impacts are not anticipated when appropriate mitigation is provided within the same mitigation basin as defined by the SJRWMD. The proposed project is

not anticipated to cause water quality impacts based on the storm water design guidelines to be implemented.

10.0 REFERENCES

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APPENDIX A

UNIFORM MITIGATION ASSESSMENT METHOD (UMAM) SCORING SHEETS

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-1

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
Cabbage Palm Wetland Hammock (632)		Impact	No direct impact & 0.03 ac (secondary impacts)

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
St. Johns River (Canaveral Marshes to Wekiva) (Basin 18)	St. Johns River (Class III)	

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

Large wetland systems that are hydrologically connected to the St. Johns River.

Assessment area description

This community has a relatively closed-canopy of cabbage palms with either a shrubby understory or a ground cover of hydrophytic vegetation. Cabbage palm wetland hammocks are located in the St. Johns River floodplains. Typical vegetation include cabbage palm, live oak, laurel oak, red cedar, red maple, and slash pine. Subcanopy and shrub vegetation includes cabbage palm, Brazilian pepper, sugarberry, elderberry, sweetgum, red cedar, Peruvian primrosewillow, American beautyberry, and saw palmetto. Groundcover vegetation may include giant leather fern, swamp fern, royal fern, cinnamon fern, netted chain fern, grapevine, cordgrass and panic grasses. The soils consist fo nearly level, poorly to somewhat poorly drained sands. This community tends to occur on more circumneutral sands (pH 6.0 - 7.5) underlain by marl or shell beds or it may be on low, flat, wet sites where limestone may be near the surface and frequently outcrops. The normal length of time of water standing above the soil surface is over 60 days per year. Fire frequency can be anywhere between 5-25 years.

In it's current condition the assessment area is predominantly sabal palm with occurrences of laurel oak, live oak, red cedar, sugarberry, American elm, low panic grasses, woodsgrass, various ferns, and Carolina wild petunia.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
St. Johns River, SR 46 and Lake Jesup	The area does not appear to contain any floral or faunal components that are considered unique or rare within the area.

Functions	Mitigation for previous permit/other historic use
The optimal functions include providing cover and foraging habitat for aquatic and wetland dependent wildlife, wildlife corridor, flood attenuation, water storage, food chain support and water quality enhancement.	This area was used for mitigation as part of the Bergmann Mitigation Tract.

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)
Optimally, the following wildlife may occur: white-tailed deer, bobcat, striped skunk, cotton rate, cottontailed rabbitt, cricket frog, green anole, oak toad, green treefrog, greenhouse frog, black racer, eastern box turtle, Florida cottonmouth, eastern diamondback rattlesnake, pygmy rattlesnake, ground skink, yellow rat snake, armadillo, gray squirrel, opossum, raccoon, red-shouldered hawk, northern bobwhite, owls, and passerine avifauna.	Optimally, the community may be utilized by white ibis (FFWCC, SSC), snowy egret (FFWCC, SSC), little blue heron (FFWCC, SSC), tricolored heron (FFWCC, SSC), wood stork (FE, FFWCC & E, USFWS) and eastern indigo snake (T, FFWCC & USFWS).

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

Racoons, raptors, passerines, deer, and gray squirrel.

Additional relevant factors:

The wetland occurs adjacent to permitted stormwater ponds and a ditch occurs along the western boundary of the forested uplands/wetlands. The ditch contains water year round.

Assessment conducted by:	Assessment date(s):
Liz Barker & Bruce Tatje	21-Nov-13

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-1
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact (Secondary)	Liz Barker & Bruce Tatje	21-Nov-13

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

		w/o pres or current	with
.500(6)(a) Location and Landscape Support	Current condition: The wetland assessment area is located immediately east of proposed Pond 1, and is adjacent to conservation area to the north, east, and south. A high-density residential subdivision and retention pond are located to the west of the proposed pond and assessment area. Wildlife access to and from AA is very good and natural communities provide good wildlife habitat. Nuisance species cover in adjacent communities is minimal. The adjacent retention pond negatively affects the AA and associated wildlife through parallel groundwater movement to the pond.	6	6
.500(6)(b)Water Environment (n/a for uplands)	Current condition: Movement of groundwater to the adjacent retention pond negtively affects the hydrology of the AA and surrounding area. In addition, a small ditch is located near the west boundary of the proposed pond footprint, and a large ditch running from west to east is located north of the proposed pond footprint. However, the hydrology present in the AA appears to be mostly adequate for the wetland, with no negative hydrological indicators. The vegetation is representative for this community type and little to no vegetative stress was observed.	6	6
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	Current condition: The forested wetland community is a mature system composed of a dense canopy, moderate subcanopy and shrub strata, and minimal groundcover due to shading conditions. Appropriate vegetative species were observed in the system with minimal nuisance or undesirable species cover (< 1%). Recruitment of woody species is good as is the age distribution. There was limited evidence of fire and tree stress was not observed. Vegetation within the AA consists of *Sabal palmetto, Quercus laurifolia, Q. virginiana, Ulmus americana, Liquidambar styraciflua, Carpinus caroliniana, Dichanthelium dichotomum, Ruellia caroliniensis, and Oplismenus hirtellus.*	7	6

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.63	0.60

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = -0.03 x 0.03 acres = -0.001

Delta = [with-current]
-0.03

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-2 (Road)

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
Cabbage Palm Wetland Hammock (632)		Impact	0.91 ac (direct impact) & 1.41 ac (secondary impact)

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
St. Johns River (Canaveral Marshes to Wekiva) (Basin 18)	St. Johns River (Class III)	

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

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Assessment area description

This community has a relatively closed-canopy of cabbage palms with either a shrubby understory or a ground cover of hydrophytic vegetation. Cabbage palm wetland hammocks are located in the St. Johns River floodplains. Typical vegetation include cabbage palm, live oak, laurel oak, red cedar, red maple, and slash pine. Subcanopy and shrub vegetation includes cabbage palm, Brazilian pepper, sugarberry, elderberry, sweetgum, red cedar, Peruvian primrosewillow, American beautyberry, and saw palmetto. Groundcover vegetation may include giant leather fern, swamp fern, royal fern, cinnamon fern, netted chain fern, grapevine, cordgrass and panic grasses. The soils consist fo nearly level, poorly to somewhat poorly drained sands. This community tends to occur on more circumneutral sands (pH 6.0 - 7.5) underlain by marl or shell beds or it may be on low, flat, wet sites where limestone may be near the surface and frequently outcrops. The normal length of time of water standing above the soil surface is over 60 days per year. Fire frequency can be anywhere between 5-25 years.

In it's current condition the assessment area is predominantly sabal palm with occurrences of red maple, cordgrass, swamp tupelo, groundsel tree, Peruvian primrosewillow, laurel oak, red redar, Brazilian pepper, wax myrtle, Virginia saltmarsh mallow, carpetgrass, spikerush, thistle, capeweed and soft rush.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
St. Johns River, SR 46 and Lake Jesup	The area does not appear to contain any floral or faunal components that are considered unique or rare within the area.

Functions	Mitigation for previous permit/other historic use
The optimal functions include providing cover and foraging habitat for aquatic and wetland dependent wildlife, wildlife corridor, flood attenuation, water storage, food chain support and water quality enhancement.	This area was used for mitigation as part of the Bergmann Mitigation Tract.

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)
Optimally, the following wildlife may occur: white-tailed deer, bobcat, striped skunk, cotton rate, cottontailed rabbitt, cricket frog, green anole, oak toad, green treefrog, greenhouse frog, black racer, eastern box turtle, Florida cottonmouth, eastern diamondback rattlesnake, pygmy rattlesnake, ground skink, yellow rat snake, armadillo, gray squirrel, opossum, raccoon, red-shouldered hawk, northern bobwhite, owls, and passerine avifauna.	Optimally, the community may be utilized by white ibis (FFWCC, SSC), snowy egret (FFWCC, SSC), little blue heron (FFWCC, SSC), tricolored heron (FFWCC, SSC), wood stork (FE, FFWCC & E, USFWS) and eastern indigo snake (T, FFWCC & USFWS).

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

Racoons.

Additional relevant factors:

Clearing has occurred in the area due to powerline maintenance. No opposite bank on ditch; therefore all water from roadway flows into the wetland. The assessment area is utilized by cattle. Additional anthropogenic impacts include various swales that have been cut through the wetland to drain water from the wetland since it's used for pasture.

Assessment conducted by:	Assessment date(s):
Liz Barker & Bruce Tatje	21-Nov-13

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-2 (Road)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact (Secondary)	Liz Barker & Bruce Tatje	21-Nov-13

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

		w/o pres or current	with
.500(6)(a) Location and Landscape Support	Current condition: The AA occurs adjacent to the SR46 rights-of-way north of the highway. While the surrounding natural communities provide good wildlife habitat and wildlife access to the AA, SR46 is a major impediment to wildlife access. Invasive plant species cover in the natural communities adjacent to the AA is <10%. The western portion of Wetland 2 has wetland-cut ditches adjacent to the roadway that negatively affects the wetlands and associated wildlife through drainage. The eastern portion of Wetland 2 is bordered by maintained grassy swales that affect the wetland and associated wildlife to a lesser degree.	6	0
.500(6)(b)Water Environment (n/a for uplands)	Current condition: Hydrology has been altered by the adjacent wetland-cut ditch and grassy swales that drain Wetland 2. While this community type typically does not contain surface water, the groundwater level appears to be slightly less than optimum. Soil moisture is less than optimum and fire frequency is low. Plant communities are healthy with no apparent stress.	6	0
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	The appropriate desirable vegetative species are present, with low cover of invasive and exotic species such as Ludwigia peruviana along the disturbed edge. Regeneration is good with dense canopy, moderate subcanopy and shrub, and low herbaceous strata. The vegetative community appears to be healthy with no apparent stress. The canopy is dominated by *Sabal palmetto,* with lesser cover by *Ulmus americana, Quercus laurifolia,* and *Q. virginiana.* The subcanopy contains *Schinus terebinthifolius, Baccharis halimifolia,* and *Juniperus virginiana*. As a result of almost total canopy closure, the herbaceous stratum is minimal, composed of *Ruellia caroliniensis, Juncus effusus,* and *Spartina bakeri*.	6	0

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.60	0

Delta = [with-current]
-0.60

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = -0.60 x 0.91 acres = -0.55

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-2 (Pond)

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
Cabbage Palm Wetland Hammock (632)		Impact	1.02 ac (direct impact) & 0.31 ac (secondary impact)

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
St. Johns River (Canaveral Marshes to Wekiva) (Basin 18)	St. Johns River (Class III)	

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

Large wetland systems that are hydrologically connected to the St. Johns River.

Assessment area description

This community has a relatively closed-canopy of cabbage palms with either a shrubby understory or a ground cover of hydrophytic vegetation. Cabbage palm wetland hammocks are located in the St. Johns River floodplains. Typical vegetation include cabbage palm, live oak, laurel oak, red cedar, red maple, and slash pine. Subcanopy and shrub vegetation includes cabbage palm, Brazilian pepper, sugarberry, elderberry, sweetgum, red cedar, Peruvian primrosewillow, American beautyberry, and saw palmetto. Groundcover vegetation may include giant leather fern, swamp fern, royal fern, cinnamon fern, netted chain fern, grapevine, cordgrass and panic grasses. The soils consist fo nearly level, poorly to somewhat poorly drained sands. This community tends to occur on more circumneutral sands (pH 6.0 - 7.5) underlain by marl or shell beds or it may be on low, flat, wet sites where limestone may be near the surface and frequently outcrops. The normal length of time of water standing above the soil surface is over 60 days per year. Fire frequency can be anywhere between 5-25 years.

In it's current condition the assessment areas are predominantly sabal palm; however, there are areas that do not contain a forested component. The vegetation is diverse dependent upon the hydrologic gradient and includes the following: cordgrass, Carolina willow, groundsel tree, wax myrtle, spikerush, spadeleaf, arrowhead, thistle, primrose willow, torpedograss, bermudagrass, various sedges, carpetgrass, pickerelweed, and smartweed.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
St. Johns River, SR 46 and Lake Jesup	The area does not appear to contain any floral or faunal components that are considered unique or rare within the area.

Functions	Mitigation for previous permit/other historic use
The optimal functions include providing cover and foraging habitat for aquatic and wetland dependent wildlife, wildlife corridor, flood attenuation, water storage, food chain support and water quality enhancement.	This area was used for mitigation as part of the Bergmann Mitigation Tract.

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)
Optimally, the following wildlife may occur: white-tailed deer, bobcat, striped skunk, cotton rate, cottontailed rabbitt, cricket frog, green anole, oak toad, green treefrog, greenhouse frog, black racer, eastern box turtle, Florida cottonmouth, eastern diamondback rattlesnake, pygmy rattlesnake, ground skink, yellow rat snake, armadillo, gray squirrel, opossum, raccoon, red-shouldered hawk, northern bobwhite, owls, and passerine avifauna.	Optimally, the community may be utilized by white ibis (FFWCC, SSC), snowy egret (FFWCC, SSC), little blue heron (FFWCC, SSC), tricolored heron (FFWCC, SSC), wood stork (FE, FFWCC & E, USFWS) and eastern indigo snake (T, FFWCC & USFWS).

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

Racoons and crayfish.

Additional relevant factors:

All areas are grazed by cattle.

Assessment conducted by:	Assessment date(s):
Liz Barker & Bruce Tatje	21-Nov-13

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-2 (Ponds)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	Liz Barker & Bruce Tatje	21-Nov-13

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

.500(6)(a) Location and Landscape Support w/o pres or current: 6 with: 0	Current condition: The AA occurs adjacent to the SR46 rights-of-way, north of the highway. While the surrounding natural communities provide good wildlife habitat and wildlife access to the AA, SR46 is a major impediment to wildlife access In addition, active pasture is located to the north of the proposed Pond A1, which is dominated by undesirable pasture grass and provides little wildlife habitat and access. Invasive plant species cover on the disturbed roadside edge is < 10%. Wetland-cut ditches (adjacent to Pond A-1) and maintained grassy swales (adjacent to Pond 1) at the southern edge of the AAs negatively affect the wetlands and associated wildlife through drainage.	
.500(6)(b)Water Environment (n/a for uplands) w/o pres or current: 6 with: 0	Current condition: Hydrology has been altered by the adjacent wetland-cut ditch and grassy swales that drain the wetlands. Good soil moisture in Pond A-1 with less than adequate soil moisture in Pond 1. Low vegetative stress and healthy plant communities.	
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current: 5 with: 0	Undesirable vegetative cover of <10% occurs at the roadside disturbance, with healthy vegetative cover and growth in all other areas. The northern portion of Pond A-1 was managed as active pasture and is dominated by *Paspalum notatum*, an invasive species. The natural habitats of Pond A-1 contain *Sabal palmetto, Ulmus americana, Salix caroliniana, Nyssa sylvatica, Baccharis halimifolia,* and *Sapium sebiferum* in the woody strata, and *Spartina bakeri, Bacopy monnieri, Polygonum punctatum, Eleocharis spp., Sagittaria lancifolia* in the herbaceous stratum. The woody strata within Pond 1 contain *Sabal palmetto, Ulmus american, Quercus laurifolia, Q. virginiana, Schinus terebinthifolius, Baccharis halimifolia, and Juniperus virginiana.* As a result of almost total canopy closure, the herbaceous stratum of Pond A-1 is low, composed of *Ruellia caroliniensis, Juncus effusus,* and *Spartina bakeri.*	

Score = sum of above scores/30 (if uplands, divide by 20)	If preservation as mitigation,	For impact assessment areas
current or w/o pres: 0.57 with: 0	Preservation adjustment factor =	FL = delta x acres = -0.57 x 1.02 acres = -0.58
	Adjusted mitigation delta =	

Delta = [with-current]	If mitigation	For mitigation assessment areas
-0.57	Time lag (t-factor) =	RFG = delta/(t-factor x risk) =
	Risk factor =	

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-3

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
Mixed Hardwood Wetlands (617)		Impact	0.32 ac (direct impacts) 0.09 ac (secondary impacts)

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
St. Johns River (Canaveral Marshes to Wekiva) (Basin 18)	St. Johns River (Class III)	

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

Large wetland systems that are hydrologically connected to Lake Jesup and the St. Johns River.

Assessment area description

Mixed wetland hardwood communities are regularly inundated freshwater swamps that are found in large and irregularly shaped basins that are not associated with rivers. They occur on low, flat, wet sites in a variety of lowland landscapes such as in depressional basins. The hydrologic period will range from 6-9 months of inundation. The main water source may be groundwater or bodies of water such as creeks. This community type tends to have a deep, fairly permanent pool of water. Species composition is heterogeneous and may include red maple, hickory, dahoon holly, red cedar, blackgum, swamp bay, laurel oak, cabbage palm, and hackberry. Groundcover species may include cinnamon fern, royal fern, saw palmetto, poison ivy, swamp fern, lizard's tail, and sawgrass. Soils usually consist of seasonally flooded organic soils with organic matter accumulation of greater than 3 feet. The frequency of fire is variable and typically one fire per century.

Current condition: Canal was cut through the wetland system along it's eastern border. A portion of the wetland has been filled. Vegetation in the area includes the following: red cedar, sweetgum, sabal palm, red maple, sweetbay, Brazilian pepper, golden rain tree, swamp fern, and yellow jessamine.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
St. Johns River, SR 46 and Lake Jesup	The area does not appear to contain any floral or faunal components that are considered unique or rare within the area.

Functions	Mitigation for previous permit/other historic use
The optimal functions include providing cover and foraging habitat for aquatic and wetland dependent wildlife, wildlife corridor, flood attenuation, water storage, food chain support and water quality enhancement.	None

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)
Optimally, the following wildlife may occur: white-tailed deer, bobcat, black bear, cottontail rabbit, cotton rat, wood rat, cricket frog, green treefrog, greenhouse frog, black racer, eastern box turtle, green anole, ground skink, armadillo, gray squirrel, opossum, raccoon, osprey, various hawks, pileated woodpecker, swallow-tailed kite, barred owl, and passerine avifauna.	Optimally, the community may be utilized by white ibis (FFWCC, SSC), snowy egret (FFWCC, SSC), little blue heron (FFWCC, SSC), tricolored heron (FFWCC, SSC), wood stork (FE, FFWCC & E, USFWS) and eastern indigo snake (T, FFWCC & USFWS).

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

Racoons

Additional relevant factors:

Upland island of fill occurs immediately adjacent to wetland. Household trash and debris was observed within this area. Commerical property occurs immediately adjacent to wetland.

Assessment conducted by:	Assessment date(s):
Liz Barker & Bruce Tatje	21-Nov-13

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-3
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	Liz Barker & Bruce Tatje	21-Nov-13

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

		w/o pres or current	with
.500(6)(a) Location and Landscape Support	Current condition: The AA occurs adjacent to the rights-of-way of SR 46 and a wetland-cut ditch. An area of cleared, disturbed land in located to the south of the AA, with commercial land to the west. SR 46 is a major impediment to wildlife access, while the commercial property and disturbed land provides minimal wildlife habitat and access. Nuisance species and undesirable vegetative cover in adjacent communities is moderate to high. Wetland protection of the AA are not provided by the adjacent uplands.	4	0
.500(6)(b)Water Environment (n/a for uplands)	Current condition: Hydrology has been altered by the adjacent wetland-cut ditch, which greatly reduces the hydrology of the AA. The resulting vegetation is heavily stressed and soils within the AA are drier than normal. Plant communities are stressed, and the cover of undesirable vegetative species is high.	5	0
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	Current condition: The vegetative community is dominated by exotic, nuisance, and undesirable species (> 30%). There is a low regeneration of native woody vegetation and the community is heavily stressed. The vegetative community in this AA contains *Acer rubrum, Schinus terebinthefolius, Magnolia virginiana, Liquidambar styraciflua, Juniperus virginiana, Pinus serotina, Koelreuteria formosana, Blechnum serrulatum, Gelsemium sempervirens,* and *Albizia sp.*	4	0

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.43	0

Delta = [with-current]
-0.43

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = -0.43 x 0.32 acres = -0.14

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-4

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
Mixed Hardwood Wetlands (617)		Impact	14.60 ac (direct impacts) 4.38 ac (secondary impacts)

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
St. Johns River (Canaveral Marshes to Wekiva) (Basin 18)	St. Johns River (Class III)	

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

Large wetland systems that are hydrologically connected to Lake Jesup and the St. Johns River.

Assessment area description

Mixed wetland hardwood communities are regularly inundated freshwater swamps that are found in large and irregularly shaped basins that are not associated with rivers. They occur on low, flat, wet sites in a variety of lowland landscapes such as in depressional basins. The hydrologic period will range from 6-9 months of inundation. The main water source may be groundwater or bodies of water such as creeks. This community type tends to have a deep, fairly permanent pool of water. Species composition is heterogeneous and may include red maple, hickory, dahoon holly, red cedar, blackgum, swamp bay, laurel oak, cabbage palm, and hackberry. Groundcover species may include cinnamon fern, royal fern, saw palmetto, poison ivy, swamp fern, lizard's tail, and sawgrass. Soils usually consist of seasonally flooded organic soils with organic matter accumulation of greater than 3 feet. The frequency of fire is variable and typically one fire per century.

Current condition: Canal was cut through the wetland system and occurs from east to west. The restoration of parts of the canal have already occurred as part of the Seminole County Expressway Authority mitigation plan; however, a large portion of the canal remains. Vegetation in the area includes the following: swamp tupelo, laurel oak, cabbage palm, red maple, water oak, sweetgum, red cedar, live oak, Brazilian pepper, and groundsel tree.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
St. Johns River, SR 46 and Lake Jesup	The area does not appear to contain any floral or faunal components that are considered unique or rare within the area.

Functions	Mitigation for previous permit/other historic use
The optimal functions include providing cover and foraging habitat for aquatic and wetland dependent wildlife, wildlife corridor, flood attenuation, water storage, food chain support and water quality enhancement.	The area was used for mitigation for the Seminole County Expressway Authority and was known as the Futch Property (FDEP permit nos. 591723289 & 591733339)

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)
Optimally, the following wildlife may occur: white-tailed deer, bobcat, black bear, cottontail rabbit, cotton rat, wood rat, cricket frog, green treefrog, greenhouse frog, black racer, eastern box turtle, green anole, ground skink, armadillo, gray squirrel, opossum, raccoon, osprey, various hawks, pileated woodpecker, swallow-tailed kite, barred owl, and passerine avifauna.	Optimally, the community may be utilized by white ibis (FFWCC, SSC), snowy egret (FFWCC, SSC), little blue heron (FFWCC, SSC), tricolored heron (FFWCC, SSC), wood stork (FE, FFWCC & E, USFWS) and eastern indigo snake (T, FFWCC & USFWS).

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

Racoon, armadillo and passerine avian species.

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
Liz Barker & Bruce Tatje	21-Nov-13

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-4
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	Liz Barker & Bruce Tatje	21-Nov-13

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

		w/o pres or current	with
.500(6)(a) Location and Landscape Support	Current condition: The AA occurs south of the rights-of-way of SR 46. Large expanses of contiguous forested wetland continues to the south of the AA. A wide and deep canal occurs in the AA, parallel to the highway but within the forested wetland of AA. SR 46 is a major impediment to wildlife access. Nuisance species cover in adjacent communities is low. Road runoff to wetland, and drainage from the canal, negatively effects the wetland and associated wildlife.	6	0
.500(6)(b)Water Environment (n/a for uplands)	Current condition: Water levels within the forested community have been greatly impacted by the canal, which has drained the wetland resulting in soil degradation, dry soil conditions, loss of water level indicators, and stressed vegetation.	5	0
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	Current condition: The cover of undesirable vegetative species is approximately 20% and includes *Ludwigia peruviana, Prunus serotina,* and *Schinus terebinthifolia.* Decreased hydrology has resulted in a high encroachment of upland species and low regeneration of woody wetland species. The woody strata include *Quercus laurifolia, Sabal palmetto, Schinus terebinthifolia, Ulmus americana, Baccharis halimifolia, Prunus serotina, Quercus virginiana, Juniperus virginiana,* and *Acer rubrum.* The groundcover was sparse, containing *Ruellia caroliniensis, Spartina bakeri, Juncus effusus, Centella asiatica, and Woodwardia virginica.*	5	0

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.53	0

Delta = [with-current]
-0.53

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = -0.53 x 14.60 acres = -7.74

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-6

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
Freshwater Marsh (641)		Impact	4.26

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
St. Johns River (Canaveral Marshes to Wekiva) (Basin 18)	St. Johns River (Class III)	

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

A deep freshwater marsh area that occurs on the north side of the existing Lake Jesup bridge, which is hydrologically connected to the St. Johns River.

Assessment area description

Basin marshes are regularly inundated freshwater herbaceous marshes that occur in a variety of isolated or mostly isolated depressions. They occur around fluctuating shorelines of lakes, at the head of broad, low basins which were former embayments of the sea during times of higher sea level, and as large, deep inclusions within non-pyrogenic communities such as hardwood forests or basin swamps. They are regularly inundated with water originating from localized rainfall. Species composition is heterogeneous but can generally be divided into submersed, floating-leaved, emergent, and grassy zones, and may contain patches of shrub habitat. Common species found in the floating-leaved zone include white waterlily and yellow pondlily. The emergent zone may have pickerelweed, bulltongue arrowhead, cattail, sawgrass, and softstem bulrush. The grassy zone typically contains maidencane, dotted smartweed, and sand cordgrass. Common soil series include Ledwith-Wauberg, Wabasso, and Riviera. The frequency of fire varies depending on the hydrology of the marsh and its exposure to fire from surrounding areas. Natural fires probably occasionally burned basin marshes at the end of the dry season.

In it's current condition, the assessment area exists as emergent vegetation within the waterbody. Current vegetation includes cattail, giant reed, alligator weed, manyflower marshpenneywort, guineagrass, water hyacinth, water lettuce, common dayflower, Peruvian primrose willow and water paspalum.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
St. Johns River, SR 46 and Lake Jesup	The area does not appear to contain any floral or faunal components that are considered unique or rare within the area.

Functions	Mitigation for previous permit/other historic use
The optimal functions include providing cover and foraging habitat for aquatic and wetland dependent wildlife, flood attenuation, water storage, food chain support and water quality enhancement.	This area was used as mitigation for the SR 46 Lake Jesup Bridge Replacement (4-117-95925-1) as wetland creation and enhancement.

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)
Optimally, the following wildlife may occur: white-tailed deer, bobcat, cottontail rabbit, cotton rat, cricket frog, green treefrog, greenhouse frog, black racer, eastern box turtle, Florida cottonmouth, green anole, banded water snake, ground skink, mud turtle, armadillo, gray squirrel, opossum, raccoon, red-shouldered hawk, osprey, and passerine avifauna.	Optimally, the community may be utilized by Florida sandhill crane, (FFWCC, ST), white ibis (FFWCC, SSC), limpkin (FFWCC, SSC), snowy egret (FFWCC, SSC), little blue heron (FFWCC, SSC), tricolored heron (FFWCC, SSC), and wood stork (FE, FFWCC & E, USFWS).

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

None were observed.

Additional relevant factors:

Lake Jesup has been identified as one of the most euthrophic bodies of water in the state of Florida. Total nitrogen and total phosphorus input levels exceed the recommended critical loading rates for north central Florida lakes. The lake also contains a thick organic sediment layer.

Assessment conducted by:	Assessment date(s):
Liz Barker	22-Nov-13

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-6
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Secondary Impact - Shading	E. Barker & B. Tatje	November 22, 2013

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

.500(6)(a) Location and Landscape Support	w/o pres or current: 9	with: 9	Current Condition: Adjacent wildlife habitats outside of AA are sufficient to provide support of observed and expected wildlife species. Some invasive exotics (primrose willow and cattail) were observed. The emergent vegetation within the AA provides water quality improvements. After impact: The AA will function as it did prior to the impact and no loss of function is anticipated.
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 9	with: 9	Current Condition: The hydrology is appropriate for the community type. The plant community is healthy, with good diversity, and no apparent stress. The water quality within Lake Jesup is not optimal for this community type. After impact: The AA will function as it did prior to the impact and no loss of function is anticipated.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: 9	with: 8	Current Condition: The vegetation is appropriate for the community type and the area is dominated by desirable species that provide cover for wildlife. Some invasive and exotic plant species were observed (<10%). After impact: The vegetative community type will remain similar to it's existing condition. It is anticipated that the new bridge span will increase the shading of the emergent vegetation within the AA. Desirable and nuisance species composition is not expected to differ from it's existing condition.

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres: 0.90	with: 0.87

Delta = [with-current]
0.03

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = -0.03 x 4.26 acres = -0.13

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-8 and W-15

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
Mixed Hardwood Wetlands (617)		Impact	0.28 ac (direct impacts) & 0.18 ac (secondary impacts)

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
St. Johns River (Canaveral Marshes to Wekiva) (Basin 18)	St. Johns River (Class III)	

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

Large wetland systems that are hydrologically connected to the St. Johns River.

Assessment area description

Mixed wetland hardwood communities are regularly inundated freshwater swamps that are found in large and irregularly shaped basins that are not associated with rivers. They occur on low, flat, wet sites in a variety of lowland landscapes such as in depressional basins. The hydrologic period will range from 6-9 months of inundation. The main water source may be groundwater or bodies of water such as creeks. This community type tends to have a deep, fairly permanent pool of water. Species composition is heterogeneous and may include red maple, hickory, dahoon holly, red cedar, blackgum, swamp bay, laurel oak, cabbage palm, and hackberry. Groundcover species may include cinnamon fern, royal fern, saw palmetto, poison ivy, swamp fern, lizard's tail, and sawgrass. Soils usually consist of seasonally flooded organic soils with organic matter accumulation of greater than 3 feet. The frequency of fire is variable and typically one fire per century.

Current condition: Vegetation in the area includes the following: Carolina willow, Brazilian pepper, cabbage palm, red maple, red cedar, pond pine, buttonbush, swamp fern, peppervine, yellow jessamine, sawgrass, woodsgrass, cattails, pepervine, and royal fern.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
St. Johns River, SR 46 and Lake Jesup	The area does not appear to contain any floral or faunal components that are considered unique or rare within the area.

Functions	Mitigation for previous permit/other historic use
The optimal functions include providing cover and foraging habitat for aquatic and wetland dependent wildlife, wildlife corridor, flood attenuation, water storage, food chain support and water quality enhancement.	None.

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)
Optimally, the following wildlife may occur: white-tailed deer, bobcat, black bear, cottontail rabbit, cotton rat, wood rat, cricket frog, green treefrog, greenhouse frog, black racer, eastern box turtle, green anole, ground skink, armadillo, gray squirrel, opossum, raccoon, osprey, various hawks, pileated woodpecker, swallow-tailed kite, barred owl, and passerine avifauna.	Optimally, the community may be utilized by white ibis (FFWCC, SSC), snowy egret (FFWCC, SSC), little blue heron (FFWCC, SSC), tricolored heron (FFWCC, SSC), wood stork (FE, FFWCC & E, USFWS) and eastern indigo snake (T, FFWCC & USFWS).

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

Racoon, armadillo, bald eagles, ospreys, and passerine avian species.

Additional relevant factors:

Existing FDOT stormwater pond is adjacent to wetland 8. Household trash and concrete identified in wetland 8.

Assessment conducted by:	Assessment date(s):
Liz Barker & Bruce Tatje	21-Nov-13

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-8 and W-15
Impact or Mitigation	**Assessment conducted by:**	
Impact	Liz Barker & Bruce Tatje	21-Nov-13

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

		w/o pres or current	with
.500(6)(a) Location and Landscape Support	Current condition: AA's are adjacent to retention ponds and/or roadways (West Osceola Road), with forested upland habitat adjacent to wetlands on other sides. The roadway is an impediment to wildlife access, while the retention pond provides reduced wildlife habitat and access. Nuisance species cover is moderate adjacent to the roadway but low throughout the rest of the surrounding uplands.	6	0
.500(6)(b)Water Environment (n/a for uplands)	Current condition: The hydrology of W-8 has been heavily impacted by the adjacent retention pond, resulting in dry conditions and soil in all but the lowest elevations of the wetland, with heavy upland encroachment into the wetland. Undesirable vegetation cover is high in this wetland, including nuisance and upland species. The hydrology of W-15 has been impacted by being severed from the adjacent wetland by the roadway. Road runoff to the wetland negatively affects the wetland by increasing water levels to an unhealthy degree, decreasing the cover of emergent vegetation and promoting the cover of undesirable woody species such as *Salix caroliniana*. The type of vegetation in both wetlands is not appropriate, and hydrologic stress of natural vegetation is high.	4	0
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	Current condition: Wetland 8 - Nuisance and exotic species cover is > 25%, including *Schinus terebinthifolia* and *Gelsemium sempervirens*. The cover of upland species due to encroachment is > 25%. Yard waste, tires, and construction waste was observed and the wetland was heavily disturbed. The vegetative community is composed of *Pinus serotina, Juniperus virginiana, Sabal palmetto, Schinus terebinthifolia, Acer rubrum, Blechnum serrulatum, and Gelsemium sempervirens.* Wetland 15 - Nuisance and exotic species cover is >10%. The vegetative community is dominated by *Salix caroliniana*, and also contains *Acer rubrum, Myrica cerifera, Woodwardia virginica, Cladium jamaicense, Peltandra virginica, Spartina bakeri, Typha spp., Osmunda regalis, Cephalanthus occidentalis, and Sagittaria lancifolia.*	4	0

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.47	0

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = -0.47 x 0.28 acres = -0.13

Delta = [with-current]
-0.47

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-9 and W-10

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
Cabbage Palm Wetland Hammock (632)		Impact	3.57 ac (direct impacts)

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
St. Johns River (Canaveral Marshes to Wekiva) (Basin 18)	St. Johns River (Class III)	

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

Large wetland systems that are hydrologically connected to Lake Jesup and the St. Johns River.

Assessment area description

This community has a relatively closed-canopy of cabbage palms with either a shrubby understory or a ground cover of hydrophytic vegetation. Cabbage palm wetland hammocks are located in the St. Johns River floodplains. Typical vegetation include cabbage palm, live oak, laurel oak, red cedar, red maple, and slash pine. Subcanopy and shrub vegetation includes cabbage palm, Brazilian pepper, sugarberry, elderberry, sweetgum, red cedar, Peruvian primrosewillow, American beautyberry, and saw palmetto. Groundcover vegetation may include giant leather fern, swamp fern, royal fern, cinnamon fern, netted chain fern, grapevine, cordgrass and panic grasses. The soils consist fo nearly level, poorly to somewhat poorly drained sands. This community tends to occur on more circumneutral sands (pH 6.0 - 7.5) underlain by marl or shell beds or it may be on low, flat, wet sites where limestone may be near the surface and frequently outcrops. The normal length of time of water standing above the soil surface is over 60 days per year. Fire frequency can be anywhere between 5-25 years.

Current condition: Dominant vegetation includes sabal palm with lesser amounts of laurel oak, sweetgum, red cedar, red maple, and pond pine. Additional vegetation observed includes leather fern, saw palmetto, swamp fern, cinnamon fern, royal fern, and Virginia chain fern. Significant duff layer on wetland floor which adversely affected the percent cover of herbaceous plant species.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
St. Johns River, SR 46 and Lake Jesup	The area does not appear to contain any floral or faunal components that are considered unique or rare within the area.

Functions	Mitigation for previous permit/other historic use
The optimal functions include providing cover and foraging habitat for aquatic and wetland dependent wildlife, wildlife corridor, flood attenuation, water storage, food chain support and water quality enhancement.	None

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)
Optimally, the following wildlife may occur: white-tailed deer, bobcat, striped skunk, cotton rate, cottontailed rabbitt, cricket frog, green anole, oak toad, green treefrog, greenhouse frog, black racer, eastern box turtle, Florida cottonmouth, eastern diamondback rattlesnake, pygmy rattlesnake, ground skink, yellow rat snake, armadillo, gray squirrel, opossum, raccoon, red-shouldered hawk, northern bobwhite, owls, and passerine avifauna.	Optimally, the community may be utilized by white ibis (FFWCC, SSC), snowy egret (FFWCC, SSC), little blue heron (FFWCC, SSC), tricolored heron (FFWCC, SSC), wood stork (FE, FFWCC & E, USFWS) and eastern indigo snake (T, FFWCC & USFWS).

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

Bald eagles, ospreys, racoons and armadillos.

Additional relevant factors:

Various anthropogenic effects within the wetlands due to adjacent roadways and rural residential area. Significant noise impacts associated with traffic on Osceola Road (trucks traveling to landfill).

Assessment conducted by:	Assessment date(s):
Liz Barker & Bruce Tatje	21-Nov-13

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-9 and W-10
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	Liz Barker & Bruce Tatje	21-Nov-13

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

		w/o pres or current	with
.500(6)(a) Location and Landscape Support	Current conditon: These AA's occur north of West Osceola Road and southwest of rural residential community. They are surrounded by upland forested community which offers good wildlife habitat and access to and from the AA's, although the roadways that border two sides are moderate impediments to wildlife access.. Undesirable plant species cover is low.	6	0
.500(6)(b)Water Environment (n/a for uplands)	Current condition: Hydrology appears to be adequate, with good water level indicators and soil moisture. The vegetattive community is healthy with minimal hyrologic stress, although some upland encroachment was observed.	7	0
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	Current condition: Nuisance species cover in the AA's is low (< 10%) and the appropriate wetland species were observed in each area. There is good recruitment of desirable species in healthy vegetative communities. Topographic features are diverse and the regeneration of vegetation is good. The systems are composed of a cabbage palm slough with two small, open, herbaceous communities. The slough is dominated by *Sabal palmetto*, with *Quercus laurifolia* in lesser numbers in the canopy. The groundcover contains *Acrostichum danaeifolium, Blechnum serrulatum, Osmunda cinnamomea, O. regalis, and Woodwardia virginica.* The smaller herbaceous communities are composed of *Acrostichum danaeifolium, Iris virginica, Solidago fistulosa, Blechnum serrulatum, Fuirena scirpoides, Centella asiatica, Baccharis halimifolia, Sagittaria lancifolia, and Myrica cerifera.*	7	0

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.67	0

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = -0.67 x 3.57 acres = -2.39

Delta = [with-current]
-0.67

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-11

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
Wet Prairie (643)		Impact	0.13 ac (direct impact)

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
St. Johns River (Canaveral Marshes to Wekiva) (Basin 18)	St. Johns River (Class III)	

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

Large wetland systems that are hydrologically connected to Lake Jesup and the St. Johns River.

Assessment area description

This community is composed predominately of grassy vegetation on hydric soils and is usually distinguished from marshes by having less water and shorter herbage. Species composition varies greatly and is dependent upon hydroperiod, soils, and site history. These systems are typically the most species-rich wetlands and include a variety of grasses, sedges, and forbs. Typical plants include wiregrass, toothache grass, spikerush, maidencane, and beakrush. Other typical plants include tickseed, sundews, hatpins,St. John's wort, wax myrtle, meadowbeauty, whitetop sedge black-eyed susan, marsh pinks, pitcher plants, and yellow-eyed grass). Common soil series includes a variety of soils, but mostly depressioinal soil types that include both sands and organics. Wet prairies are the least frequently flooded of any marsh type. Their hydroperiods are considered short (50 -150 days per year). Hydrologic disturbance and alteration may result in shrub species recruitment and dominance. The frequency of fire varies from every 2 to 4 years.

Current condition: Dominant vegetation includes beaked panicum, bahiagrass, groundsel tree, dogfennel, licoriceweed, St. Andrew's cross, yellow bristlegrass, climbing hempvine, bushy bluestem, and broomsedge bluestem.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
St. Johns River, SR 46 and Lake Jesup	The area does not appear to contain any floral or faunal components that are considered unique or rare within the area.

Functions	Mitigation for previous permit/other historic use
The optimal functions include providing cover and foraging habitat for aquatic and wetland dependent wildlife, flood attenuation, water storage, food chain support and water quality enhancement.	None

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)
Optimally, the following wildlife may occur: cricket frog, green treefrog, greenhouse frog, black racer, eastern box turtle, Florida cottonmouth, southern black racer, yellow rat snake, green anole, ground skink, mud turtle, armadillo, gray squirrel, marsh rabbit, opossum, raccoon, white-tailed deer, mourning dove, red-winged blackbird, grackle, European starling, crow, egrets, gray catbird, killdeer, northern harrier, marsh wren, and turkey.	Optimally, the community may be utilized by Florida sandhill crane (T, FFWCC), white ibis (FFWCC, SSC), snowy egret (FFWCC, SSC), little blue heron (FFWCC, SSC), tricolored heron (FFWCC, SSC), wood stork (E, FFWCC & USFWS), and eastern indigo snake (T, FFWCC & USFWS).

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

None.

Additional relevant factors:

Area was highly disturbed and no observations of hydrology.

Assessment conducted by:	Assessment date(s):
Liz Barker & Bruce Tatje	21-Nov-13

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-11
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	Liz Barker & Bruce Tatje	21-Nov-13

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

		w/o pres or current	with
.500(6)(a) Location and Landscape Support	Current condition: AA is surrounded by upland forested habitat, but is close to West Osceola Road and agricultural lands to the north, and SC 46 and agricultural lands to the south. The open agricultural lands offer low wildlife habitat and access, and the highways are major impediments to wildlife access. Nuisance and invasive species cover is greater than 25%, with high upland species encroachment.	4	0
.500(6)(b)Water Environment (n/a for uplands)	Current condition: Hydrology has been altered by adjacent roadway systems and associated ditches. There is less than adequate hydrology for the AA, with stressed vegetation, upland species encroachment, a loss of organics in the soils, and dry soil conditions. Plant communities are not healthy with a low diversity of wetland species and high stress.	4	0
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	Current condition: Desirable wetland species cover is <50%, with >25% nuisance and exotic species cover and >25% upland species cover. Upland species are heavily encroaching, in addition to *Pinus elliottii* seedlings recruiting throughout the AA. Woody species observed in the wetland include *Sapium sebiferum, Sabal palmetto, Baccharis halimifolia,* and *Hypericum hypericoides*. The groundcover stratum is dominated by *Panicum anceps* and *Paspalum notatum*, and also includes *Andropogon virginicus, Juncus effusus, Eupatorium capillifolium, Urena lobata,* and *Vitis rotundifolia*.	4	0

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.40	0

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = -0.40 x 0.13 acres = - 0.05

Delta = [with-current]
-0.40

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-13 & W-14

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
Hydric Pine Flatwoods (625)		Impact	1.52 ac (direct impacts) & 0.08 ac (secondary impacts)

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
St. Johns River (Canaveral Marshes to Wekiva) (Basin 18)	St. Johns River (Class III)	

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

Large wetland systems that are hydrologically connected to Lake Jesup and the St. Johns River.

Assessment area description

Hydric Pine Flatwoods are common throughout Florida, though the species composition may very slightly between north and south Florida. They are found on nearly level land and are typically interspersed with smaller communities of other types, especially wetlands. Typical plants include a canopy of sweetbay, slash pine, and pond pine, with an extremely diverse groundcover including wiregrass, deer tongue,bog buttons, meadow-beauty, and yellow-eyed grass. Typical shrubs include gallberry,dahoon holly, fetterbush, wax myrtle, shining sumac, saw palmetto, and highbush blueberry. Where fire has been suppressed, shrubs and trees like titi, gallberry, myrtle-leaved holly, sweet bay, swamp tupelo or black gum, and swamp bay become dense and the groundcover disappears. Typically consist of less than 1 m (1-3 ft) acidic sands generally overlying an organic hardpan or clay layer. Underlain by a hardpan, which substantially reduces the percolation of water. During the rainy season, flatwoods may be inundated for one or more months per year. Natural fires probably occurred every 3-10 years during pre-Columbian times. Without relatively frequent fires, hydric pine flatwoods may succeed into hardwood dominated forests characterized by a closed canopy that essentially eliminates the ground cover herbs and shrubs

Current condition: Dominant vegetation includes slash pine with lesser amounts of laurel oak, red maple, and cabbage palm. Additional vegetation observed includes saw palmetto, gallberry, common persimmon, yellow jessamine, cinnamon fern, royal fern, and Virginia chain fern.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
St. Johns River, SR 46 and Lake Jesup	The area does not appear to contain any floral or faunal components that are considered unique or rare within the area.

Functions	Mitigation for previous permit/other historic use
The optimal functions include providing cover and foraging habitat for aquatic and wetland dependent wildlife, flood attenuation, water storage, food chain support and water quality enhancement.	None

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)
Optimally, the following wildlife may occur: white-tailed deer, bobcat, striped skunk, cotton mouse, gray squirrel, fox squirrel, cottontail rabbit,cricket frog, green treefrog, greenhouse frog, black racer, oak toad, pygmy rattlesnake, eastern box turtle, Florida cottonmouth, green anole, ground skink, mud turtle, armadillo, opossum, raccoon, red-shouldered hawk, northern bobwhite, turkey, and passerine avifauna.	Optimally, the community may be utilized by white ibis (FFWCC, SSC), snowy egret (FFWCC, SSC), little blue heron (FFWCC, SSC), tricolored heron (FFWCC, SSC), wood stork (FE, FFWCC & E, USFWS) and eastern indigo snake (T, FFWCC & USFWS).

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

Bald eagle.

Additional relevant factors:

Adjacent ditch captures water from roadway; therefore, no input into wetland from road runoff. No evidence of hydrology within wetland. The upland habitat that is adjacent to the wetland provides suitable habitat for wetland dependent species.

Assessment conducted by:	Assessment date(s):
Liz Barker & Bruce Tatje	21-Nov-13

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-13 & W-14
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	Liz Barker & Bruce Tatje	21-Nov-13

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

		w/o pres or current	with
.500(6)(a) Location and Landscape Support	Current condition: These two AA's are located between West Osceola Road and agricultural land to the north, and SR 46 and agricultural land to the south. Immediately surrounding the wetlands is an upland forested community. While the uplands immediately adjacent to the AA's offers some wildlife habitat, the close proximity to two heavily traveled roads is a major impediment to wildlife access and the agricultural properties provide reduced wildlife habitat and access. Undesirable species cover in adjacent communities is moderate. Adjacent ditches to the north and south negatively affects the wetlands and associated wildlife.	5	0
.500(6)(b)Water Environment (n/a for uplands)	Current conditions: The hydrologic levels are not appropriate and hydrology indicators are not present. Soils have degraded to contain minimal organics and dry soil conditions were present during all visits. Vegetation is very stressed, with heavy upland species encroachment and low wetland species present. Fire suppression has been very high and a very thick duff level occurs.	4	0
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	Current conditions: Other than persistent *Pinus elliottii*, AA's contain mostly inappropriate species. Desirable wetland species cover is < 10%, with < 25% exotic and nuisance species and > 50% upland species cover. Dominated by *Pinus elliottii* in the monoculture canopy, the subcanopy and shrub strata contain *Acer rubrum, Sabal palmetto, Baccharis halimifolia, Ilex glabra, Quercus laurifolia,* and *Cephalanthus occidentalis*. The groundcover is composed of *Gelsemium sempervirens, Vitis rotundifolia, Andropogon virginicus, Cladium jamaicense, Woodwardia virginica, Osmunda regalis, Hypericum cistifolium, Rhynchospora fasciculata, Dichanthelium dichotomon,* and *Diospyros virginiana.*	3	0

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.40	0

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = -0.40 x 1.52 acres = -0.61

Delta = [with-current]
-0.40

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-18 and W-19

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
Wetland Forested Mixed (630)		Impact	1.19 ac (direct impacts) 1.34 ac (secondary impacts)

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
Lake Jesup Basin (23)	Lake Jesup (Class III)	

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

The various assessment areas occur immediately adjacent to the ROW of SR 46.

Assessment area description

The optimal condition of a basin swamp is characterized by a predominance of hydrophytic trees and shrubs that can withstand and extended hydroperiod. The dominant trees may consist of cypress, swamp tupelo and bay trees. Typical understory vegetation may include slash pine, red maple, dahoon, bays, laurel oak, water oak, sweetgum and American elm. Shrubs such as saltbush and wax myrtle may be concentrated along the perimeter depending upon the depth of the hydroperiod. The herbaceous layer is highly variable in species composition dependent upon the hydroperiod. Typical species include maidencane, ferns, arrowheads, sedges, and grasses. Soils are typically acidic and are comprised of nutrient-poor peat that has formed over a clay lens or over another impervious layer. The hydroperiod may range from 7 to 12 months of inundation with the primary source of water being local rainfall. Shortened periods of flooding may occur and result in an increase of woody plant species. Fire intervals are highly variable and depend on various factors such as dominant vegetation, fire exposure and drought. The interior portions may go without fire for decades or even centuries while the outer edges may be more susceptible to frequent fire.

Current condition: The wetland areas contain slash pine, swamp tupeolo, swamp bay, red maple, cabbale palm, dahoon holly, and laurel oak. Understory vegetation includes buttonbush, wax mytle, gallberry, saw palmetto, groundsel tree, sawgrass, royal fern, Virginia chain fern, swamp fern, and cinnamon fern.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
None	The area does not appear to contain any floral or faunal components that are considered unique or rare within the area.

Functions	Mitigation for previous permit/other historic use
The optimal functions include providing cover and foraging habitat for aquatic and wetland dependent wildlife, wildlife corridor, flood attenuation, water storage, food chain support and water quality enhancement.	None

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)
Optimally, the following wildlife may occur: white-tailed deer, bobcat, squirrel tree frog, banded water snake, cricket frog, cottonmouth, little grass frog, mud turtle, armadillo, gray squirrel, opossum, raccoon, red-shouldered hawk, osprey, owls, and passerine avifauna.	Optimally, the community may be utilized by white ibis (FFWCC, SSC), snowy egret (FFWCC, SSC), little blue heron (FFWCC, SSC), tricolored heron (FFWCC, SSC), wood stork (FE, FFWCC & E, USFWS) and eastern indigo snake (T, FFWCC & USFWS).

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

Bald eagles were noted within the area.

Additional relevant factors:

Stormwater from road is directed into the wetland and receives no treatment from the adjacent ditch.

Assessment conducted by:	Assessment date(s):
Liz Barker & Bruce Tatje	21-Nov-13

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-18 and W-19
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	Liz Barker & Bruce Tatje	21-Nov-13

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

		w/o pres or current	with
.500(6)(a) Location and Landscape Support	Current condition: The AA's occur immediately south of SR 46, which is a major impediment to wildlife access. The forested habitat to the south of the highway provides moderate habitat for wildlife, however it is disjointed due to agricultural properties further south that offer reduced wildlife habitat and access. Nuisance and exotic species cover is low, occurring only at the disturbed edge of the forested system. Hydrologic connectivity is good.	6	0
.500(6)(b)Water Environment (n/a for uplands)	Current condition: The wetlands contain good hydrologic levels, hydrologic indicators, flow patterns, and saturated to inundated soils. The appropriate vegetation is present and no hydrologic stress was apparent for vegetative species. Fire frequency is low.	7	0
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	Current condition: The forested wetland is composed of appropriate and desirable wetland species, with < 1% cover of undesirable vegetative species at the disturbed roadside edge. There is good topographic diversity within the AA's, with good vegetative health observed. Woody species recruitment is good and age levels are appropriate for these mature communities. The canopy contains a diverse mix, including *Quercus laurifolia, Acer rubrum, Sabal palmetto, Ilex cassine, Pinus elliottii, P. taeda,* and *Nyssa sylvatica.* In addition to seedlings and saplings of canopy species, the subcanopy and shrub strata are composed of *Cephalanthus occidentalis, Myrica cerifera, Ilex glabra,* and *Serenoa repens*. The herbaceous stratum is sparse due to canopy closure and surface water cover and contains *Sagittaria lancifolia, Woodwardia virginicus, Cladium jamaicense, Osmunda regalis, O. cinnamomea,* and *Blechnum serrulatum.* Low numbers of *Schinus terebinthifolius* and *Ludwigia peruviana* exist at the edge of the roadway easement.	7	0

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.67	0

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = -0.67 x 1.19 acres = -0.80

Delta = [with-current]
-0.67

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-17

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
Wetland Forested Mixed (630)		Impact	0.11 ac (direct impacts) 0.35 ac (secondary impacts)

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
St. Johns River (Canaveral Marshes to Wekiva) (Basin 18)	St. Johns River (Class III)	

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

The assessment area occurs immediately adjacent to the ROW of SR 46.

Assessment area description

The optimal condition of a basin swamp is characterized by a predominance of hydrophytic trees and shrubs that can withstand and extended hydroperiod. The dominant trees may consist of cypress, swamp tupelo and bay trees. Typical understory vegetation may include slash pine, red maple, dahoon, bays, laurel oak, water oak, sweetgum and American elm. Shrubs such as saltbush and wax myrtle may be concentrated along the perimeter depending upon the depth of the hydroperiod. The herbaceous layer is highly variable in species composition dependent upon the hydroperiod. Typical species include maidencane, ferns, arrowheads, sedges, and grasses. Soils are typically acidic and are comprised of nutrient-poor peat that has formed over a clay lens or over another impervious layer. The hydroperiod may range from 7 to 12 months of inundation with the primary source of water being local rainfall. Shortened periods of flooding may occur and result in an increase of woody plant species. Fire intervals are highly variable and depend on various factors such as dominant vegetation, fire exposure and drought. The interior portions may go without fire for decades or even centuries while the outer edges may be more susceptible to frequent fire.

Current condition: The wetland area contains slash pine, swamp tupeolo, swamp bay, red maple, cabbale palm, dahoon holly, and laurel oak. Understory vegetation includes buttonbush, wax mytle, gallberry, saw palmetto, groundsel tree, sawgrass, royal fern, Virginia chain fern, swamp fern, and cinnamon fern.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
None	The area does not appear to contain any floral or faunal components that are considered unique or rare within the area.

Functions	Mitigation for previous permit/other historic use
The optimal functions include providing cover and foraging habitat for aquatic and wetland dependent wildlife, wildlife corridor, flood attenuation, water storage, food chain support and water quality enhancement.	None

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)
Optimally, the following wildlife may occur: white-tailed deer, bobcat, squirrel tree frog, banded water snake, cricket frog, cottonmouth, little grass frog, mud turtle, armadillo, gray squirrel, opossum, raccoon, red-shouldered hawk, osprey, owls, and passerine avifauna.	Optimally, the community may be utilized by white ibis (FFWCC, SSC), snowy egret (FFWCC, SSC), little blue heron (FFWCC, SSC), tricolored heron (FFWCC, SSC), wood stork (FE, FFWCC & E, USFWS) and eastern indigo snake (T, FFWCC & USFWS).

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

Bald eagles were noted within the area.

Additional relevant factors:

Stormwater from road is directed into the wetland and receives no treatment from the adjacent ditch.

Assessment conducted by:	Assessment date(s):
Liz Barker & Bruce Tatje	21-Nov-13

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-17
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	Liz Barker & Bruce Tatje	21-Nov-13

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

		w/o pres or current	with
.500(6)(a) Location and Landscape Support	Current condition: The AA occurs immediately south of SR 46, which is a major impediment to wildlife access. The forested habitat to the south of the highway provides moderate habitat for wildlife, however it is disjointed due to agricultural properties further south that offer reduced wildlife habitat and access. Nuisance and exotic species cover is low, occurring only at the disturbed edge of the forested system. Hydrologic connectivity is good.	6	0
.500(6)(b)Water Environment (n/a for uplands)	Current condition: The wetland contains good hydrologic levels, hydrologic indicators, flow patterns, and saturated to inundated soils. The appropriate vegetation is present and no hydrologic stress was apparent for vegetative species. Fire frequency is low.	7	0
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	Current condition: The forested wetland is composed of appropriate and desirable wetland species, with < 1% cover of undesirable vegetative species at the disturbed roadside edge. There is good topographic diversity within the AA's, with good vegetative health observed. Woody species recruitment is good and age levels are appropriate for these mature communities. The canopy contains a diverse mix, including *Quercus laurifolia, Acer rubrum, Sabal palmetto, Ilex cassine, Pinus elliottii, P. taeda,* and *Nyssa sylvatica.* In addition to seedlings and saplings of canopy species, the subcanopy and shrub strata are composed of *Cephalanthus occidentalis, Myrica cerifera, Ilex glabra,* and *Serenoa repens*. The herbaceous stratum is sparse due to canopy closure and surface water cover and contains *Sagittaria lancifolia, Woodwardia virginicus, Cladium jamaicense, Osmunda regalis, O. cinnamomea,* and *Blechnum serrulatum.* Low numbers of *Schinus terebinthifolius* and *Ludwigia peruviana* exist at the edge of the roadway easement.	7	0

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.67	0

Delta = [with-current]
-0.67

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = -0.67 x 0.11 acres = -0.07

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-20

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
Mixed scrub/shrub wetland (646)		Impact	0.12 ac (direct impact)

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
St. Johns River (Canaveral Marshes to Wekiva) (Basin 18)	St. Johns River (Class III)	

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

The assessment area occurs immediately adjacent to the ROW of SR 46 and within a rural residential area. The wetland occurs within the front yard of a residence.

Assessment area description

This community is associated with topographic depressions and poorly drained soil. Associated species include Carolina willow, wax myrtle, groundsel tree, elderberry, and buttonbush, and other low scrub with no dominate species. Other typical plants include sawgrass, swamp fern, cinnamon fern, royal fern, panic grasses, sedges, greenbrier, and grapevine. Soils are characterized by deep acidic peat substrate that has accumulated in a depression in the landscape. Wetland shrub communities occur in topographic depressions and maintain moisture by capillary action through the underlying deep peat; soils are usually saturated or inundated. Fire frequency is variable. In shrub dominated systems fires can occur every 3-8 years.

Current condition: Dominant vegetation includes Carolina willow, buttonbush, wax myrtle, red maple, cordgrass, various sedges, low panic grasses and grapevine.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
None.	The area does not appear to contain any floral or faunal components that are considered unique or rare within the area.

Functions	Mitigation for previous permit/other historic use
The optimal functions include providing cover and foraging habitat for aquatic and wetland dependent wildlife, flood attenuation, water storage, food chain support and water quality enhancement.	None

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)
Optimally, the following wildlife may occur: white-tailed deer, bobcat, cottontail rabbit, cotton rat, cricket frog, green treefrog, greenhouse frog, black racer, Florida cottonmouth, green anole, banded water snake, ground skink, mud turtle, armadillo, opossum, raccoon, hawks and passerine avifauna.	Optimally, the community may be utilized by white ibis (FFWCC, SSC), snowy egret (FFWCC, SSC), little blue heron (FFWCC, SSC), tricolored heron (FFWCC, SSC), wood stork (FE, FFWCC & E, USFWS) and eastern indigo snake (T, FFWCC & USFWS).

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

Additional relevant factors:

The adjacent upland community types have been altered and consist of maintained bahiagrass.

Assessment conducted by:	Assessment date(s):
Liz Barker & Bruce Tatje	21-Nov-13

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-20
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	Liz Barker & Bruce Tatje	21-Nov-13

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

		w/o pres or current	with
.500(6)(a) Location and Landscape Support	Current condition: AA borders SR 46, which is a major impediment to wildlife access. Immediately north of the impact area is active pasture which provides reduced wildlife habitat and access. The AA itself is a remnant of historical forested habitat, containing woody saplings and shrub species. Its disturbed nature and small areal size offers little in the way of wildlife habitat.	4	0
.500(6)(b)Water Environment (n/a for uplands)	Current condition: Loss of natural wetland conditions and adjacent drainage ditch has greatly reduced hydrologic functions in the AA, resulting in inappropriate vegetation, degraded soils, and low soil moisture.	4	0
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	Current condition: There is high cover of innapropriate vegetative, including *Paspalum notatum* in the pasture as well as disturbed shrubby species in the forested remnant. Vegetation occuring includes *Paspalum notatum, Spartina bakeri, Sabal palmetto, Vitis rotundifolia, Acer rubrum, Salix caroliniana, Myrica cerifera, Cephalanthus occidentalis,* and *Sapium sebiferum.*	4	0

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.40	0

Delta = [with-current]
-0.40

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = -0.40 x 0.12 acres = -0.05

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-24

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
Mixed Hardwood Wetlands (617)		Impact	0.49 ac (direct impacts) 0.23 ac (secondary impacts)

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
St. Johns River (Canaveral Marshes to Wekiva) (Basin 18)	St. Johns River (Class III)	

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

The assessment areas occur immediately adjacent to the ROW of SR 46 and within a rural residential area.

Assessment area description

Mixed wetland hardwood communities are regularly inundated freshwater swamps that are found in large and irregularly shaped basins that are not associated with rivers. They occur on low, flat, wet sites in a variety of lowland landscapes such as in depressional basins. The hydrologic period will range from 6-9 months of inundation. The main water source may be groundwater or bodies of water such as creeks. This community type tends to have a deep, fairly permanent pool of water. Species composition is heterogeneous and may include red maple, hickory, dahoon holly, red cedar, blackgum, swamp bay, laurel oak, cabbage palm, and hackberry. Groundcover species may include cinnamon fern, royal fern, saw palmetto, poison ivy, swamp fern, lizard's tail, and sawgrass. Soils usually consist of seasonally flooded organic soils with organic matter accumulation of greater than 3 feet. The frequency of fire is variable and typically one fire per century.

Current condition: The wetland area is predominantly red maple with occurences of cabbage palm, and sugarberry. Understory vegetation includes wax mytle, elderberry, buttonbush, sawgrass, Virginia chain fern, lizard's tail, bandanna-of-the-everglades, and Florida pellitory.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
None	The area does not appear to contain any floral or faunal components that are considered unique or rare within the area.

Functions	Mitigation for previous permit/other historic use
The optimal functions include providing cover and foraging habitat for aquatic and wetland dependent wildlife, flood attenuation, water storage, food chain support and water quality enhancement.	None

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)
Optimally, the following wildlife may occur: white-tailed deer, bobcat, black bear, cottontail rabbit, cotton rat, wood rat, cricket frog, green treefrog, greenhouse frog, black racer, eastern box turtle, green anole, ground skink, armadillo, gray squirrel, opossum, raccoon, osprey, various hawks, pileated woodpecker, swallow-tailed kite, barred owl, and passerine avifauna.	Optimally, the community may be utilized by white ibis (FFWCC, SSC), snowy egret (FFWCC, SSC), little blue heron (FFWCC, SSC), tricolored heron (FFWCC, SSC), wood stork (FE, FFWCC & E, USFWS) and eastern indigo snake (T, FFWCC & USFWS).

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

Racoons, armadillo,and deer.

Additional relevant factors:

A canal was cut thru the center of the wetland. Runoff from the adjacent roadway flows directly into wetland. A large culvert connects the wetland to the south of the roadway.

Assessment conducted by:	Assessment date(s):
Liz Barker & Bruce Tatje	21-Nov-13

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-24
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	Liz Barker & Bruce Tatje	21-Nov-13

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

		w/o pres or current	with
.500(6)(a) Location and Landscape Support	Current condition: The AA in bordered by SR 46 to the south and rural residential property to the north. SR 46 is a major impediment to wildlife access, while the rural residential habitat provides reduced wildlife habitat and access. Nuisance and exotic species < 10% cover.	5	0
.500(6)(b)Water Environment (n/a for uplands)	Current condition: A large canal bisects the wetland, which drains the AA as well as overflow from the wetland to the south of SR 46. Therefore, the AA is isolated by the highway from the majority of its historic connection and is drained by the canal. Mucky soils are saturated in the AA, but standing water conditions were not seen nor do hydrologic indicators show standing water during the year. The canal drains the majority of water from wetland but soils remain saturated enough to keep from degrading. Thus, water levels are adequate but severely below what is appropriate for historical conditions. Reduced hydrology results in some vegetative stress.	5	
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	Current condition: Forested habitat is secondary growth of immature *Acer rubrum* monoculture. There is low diversity of species in all strata, although vegetation is mostly healthy for habitat type. Nuisance and exotic species < 10%. The canopy is dominated by *Acer rubrum*, with subcanopy and shrub strata containing *Sambucus nigra, Celtis laevigata,* and *Sabal palmetto.* The groundcover contains *Woodwardia virginica, Canna flaccida, Cladium jamaicense, Saururus cernuus,* and *Parietaria floridana*.	6	0

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.53	0

Delta = [with-current]
-0.53

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = -0.53 x 0.49 acres = -0.26

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-25 & W-31

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
Mixed scrub/shrub wetland (646)		Impact	0.48 ac (direct impact) 0.57 (secondary impact)

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
Lake Jesup Basin (23)	Lake Jesup (Class III)	

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

The various assessment areas occur immediately adjacent to the ROW of SR 46.

Assessment area description

This community is associated with topographic depressions and poorly drained soil. Associated species include Carolina willow, wax myrtle, groundsel tree, elderberry, and buttonbush, and other low scrub with no dominate species. Other typical plants include sawgrass, swamp fern, cinnamon fern, royal fern, panic grasses, sedges, greenbrier, and grapevine. Soils are characterized by deep acidic peat substrate that has accumulated in a depression in the landscape. Wetland shrub communities occur in topographic depressions and maintain moisture by capillary action through the underlying deep peat; soils are usually saturated or inundated. Fire frequency is variable. In shrub dominated systems fires can occur every 3-8 years.

Current condition: the various wetlands are dominated by Carolina willow, buttonbush, red maple, laurel oak, primrose willow, sawgrass, cattail, arrowhead, dog fennel, broomsedge, and soft rush.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
None	The area does not appear to contain any floral or faunal components that are considered unique or rare within the area.

Functions	Mitigation for previous permit/other historic use
The optimal functions include providing cover and foraging habitat for aquatic and wetland dependent wildlife, flood attenuation, water storage, food chain support and water quality enhancement.	None

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)
Optimally, the following wildlife may occur: white-tailed deer, bobcat, cottontail rabbit, cotton rat, cricket frog, green treefrog, greenhouse frog, black racer, Florida cottonmouth, green anole, banded water snake, ground skink, mud turtle, armadillo, opossum, raccoon, hawks and passerine avifauna.	Optimally, the community may be utilized by white ibis (FFWCC, SSC), snowy egret (FFWCC, SSC), little blue heron (FFWCC, SSC), tricolored heron (FFWCC, SSC), wood stork (FE, FFWCC & E, USFWS) and eastern indigo snake (T, FFWCC & USFWS).

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

Additional relevant factors:

SR 46 bisects a number of the wetland systems. The edge of the wetlands are well maintained and mowed on a continual basis. Crown of road directs stormwater into adjacent wetland systems.

Assessment conducted by:	Assessment date(s):
Liz Barker & Bruce Tatje	21-Nov-13

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-25 & W-31
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	Liz Barker & Bruce Tatje	21-Nov-13

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

		w/o pres or current	with
.500(6)(a) Location and Landscape Support	Current condition: The AA's border the north and south sides of SR 46, which is a major impediemtn to wildlife access. However, large tracts of natural community exist behind the AA's, which provide moderate wildlife habitat and access. Nuisance species cover in adjacent communities is < 10%. Hydrologic connectivity is good.	6	0
.500(6)(b)Water Environment (n/a for uplands)	Current condition: Water level indicators are good in the AA's, as are surface water levels and soil saturation. However, the type of vegetation is not necessarily appropriate, as historically these habitats would have been freshwater marsh; disturbance and hydrologic impacts resulted in a shift to shrub marshes.	6	0
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	Current condition: When compared to historic communities, the current shrub marshes have a high cover of inappropriate species (*Salix caroliniana*). Topographic features are good, but the high degree of woody species cover is not similar to historic conditions. Nuisance species cover occurs at the impacted road edge, typically < 10% cover by nuisance species. The woody strata are dominated by *Salix caroliniana* but also contain *Cephalanthus occidentalis, Ludwigia peruviana, Myrica cerifera, Acer rubrum, Quercus laurifolia,* and *Sesbania spp.* Herbaceous species observed from the AA's include *Eupatorium capillifolium, Andropogon virginicus, Cladium jamaicense, Juncus effusus, Osmunda regalis, Polygonum punctatum, Sagittaria lancifolia, S. graminifolia, Saururus cernuus, Iris virginica, Panicum hemitomon,* and *Rumex spp.*	4	0

Junc

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.53	0

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = -0.53 x 0.48 acres = -0.25

Delta = [with-current]
-0.53

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-21, W-37, W-38 and W-39

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
Mixed scrub/shrub wetland (646)		Impact	1.05 ac (direct impact) 0.74 (secondary impact)

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
St. Johns River (Canaveral Marshes to Wekiva) (Basin 18)	St. Johns River (Class III)	

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

The various assessment areas occur immediately adjacent to the ROW of SR 46.

Assessment area description

This community is associated with topographic depressions and poorly drained soil. Associated species include Carolina willow, wax myrtle, groundsel tree, elderberry, and buttonbush, and other low scrub with no dominate species. Other typical plants include sawgrass, swamp fern, cinnamon fern, royal fern, panic grasses, sedges, greenbrier, and grapevine. Soils are characterized by deep acidic peat substrate that has accumulated in a depression in the landscape. Wetland shrub communities occur in topographic depressions and maintain moisture by capillary action through the underlying deep peat; soils are usually saturated or inundated. Fire frequency is variable. In shrub dominated systems fires can occur every 3-8 years.

Current condition: the various wetlands are dominated by Carolina willow, buttonbush, red maple, laurel oak, primrose willow, sawgrass, cattail, arrowhead, dog fennel, broomsedge, and soft rush.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
None	The area does not appear to contain any floral or faunal components that are considered unique or rare within the area.

Functions	Mitigation for previous permit/other historic use
The optimal functions include providing cover and foraging habitat for aquatic and wetland dependent wildlife, flood attenuation, water storage, food chain support and water quality enhancement.	None

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)
Optimally, the following wildlife may occur: white-tailed deer, bobcat, cottontail rabbit, cotton rat, cricket frog, green treefrog, greenhouse frog, black racer, Florida cottonmouth, green anole, banded water snake, ground skink, mud turtle, armadillo, opossum, raccoon, hawks and passerine avifauna.	Optimally, the community may be utilized by white ibis (FFWCC, SSC), snowy egret (FFWCC, SSC), little blue heron (FFWCC, SSC), tricolored heron (FFWCC, SSC), wood stork (FE, FFWCC & E, USFWS) and eastern indigo snake (T, FFWCC & USFWS).

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

Additional relevant factors:

SR 46 bisects a number of the wetland systems. The edge of the wetlands are well maintained and mowed on a continual basis. Crown of road directs stormwater into adjacent wetland systems.

Assessment conducted by:	Assessment date(s):
Liz Barker & Bruce Tatje	21-Nov-13

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-21, W37, W38 and W39
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	Liz Barker & Bruce Tatje	21-Nov-13

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

		w/o pres or current	with
.500(6)(a) Location and Landscape Support	Current condition: The AA's border the north and south sides of SR 46, which is a major impediemtn to wildlife access. However, large tracts of natural community exist behind the AA's, which provide moderate wildlife habitat and access. Nuisance species cover in adjacent communities is < 10%. Hydrologic connectivity is good.	6	0
.500(6)(b)Water Environment (n/a for uplands)	Current condition: Water level indicators are good in the AA's, as are surface water levels and soil saturation. However, the type of vegetation is not necessarily appropriate, as historically these habitats would have been freshwater marsh; disturbance and hydrologic impacts resulted in a shift to shrub marshes.	6	0
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	Current condition: When compared to historic communities, the current shrub marshes have a high cover of inappropriate species (*Salix caroliniana*). Topographic features are good, but the high degree of woody species cover is not similar to historic conditions. Nuisance species cover occurs at the impacted road edge, typically < 10% cover by nuisance species. The woody strata are dominated by *Salix caroliniana* but also contain *Cephalanthus occidentalis, Ludwigia peruviana, Myrica cerifera, Acer rubrum, Quercus laurifolia,* and *Sesbania spp.* Herbaceous species observed from the AA's include *Eupatorium capillifolium, Andropogon virginicus, Cladium jamaicense, Juncus effusus, Osmunda regalis, Polygonum punctatum, Sagittaria lancifolia, S. graminifolia, Saururus cernuus, Iris virginica, Panicum hemitomon,* and *Rumex spp.*	4	0

Junc

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.53	0

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = -0.53 x 1.05 acres = -0.56

Delta = [with-current]
-0.53

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-26

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
Mixed Hardwood Wetlands (617)		Impact	0.33 ac (direct impact)

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
St. Johns River (Canaveral Marshes to Wekiva) (Basin 18)	St. Johns River (Class III)	

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

The assessment area is an isolated wetland located adjacent to SR 46 and within an area of rural residential. The wetland is surrounded by managed pasture with cattle fencing in various areas. The area is hydrologically isolated and does not appear to discharge to the adjacent wetland-cut ditch.

Assessment area description

Mixed wetland hardwood communities are regularly inundated freshwater swamps that are found in large and irregularly shaped basins that are not associated with rivers. They occur on low, flat, wet sites in a variety of lowland landscapes such as in depressional basins. The hydrologic period will range from 6-9 months of inundation. The main water source may be groundwater or bodies of water such as creeks. This community type tends to have a deep, fairly permanent pool of water. Species composition is heterogeneous and may include red maple, hickory, dahoon holly, red cedar, blackgum, swamp bay, laurel oak, cabbage palm, and hackberry. Groundcover species may include cinnamon fern, royal fern, saw palmetto, poison ivy, swamp fern, lizard's tail, and sawgrass. Soils usually consist of seasonally flooded organic soils with organic matter accumulation of greater than 3 feet. The frequency of fire is variable and typically one fire per century.

In it's current condition, the assessment area exists as a disturbed wetland community in association with an active pasture as the upland buffer. The wetland is basically deviod of wetland dependent species since the groundcover is predominantly bahiagrass (90% cover). The wetland dependent vegetation includes red maple, sweetgum, sweetbay, virginia fern, broomsedge and isolated occurences of lizard's tail.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
None	The area does not appear to contain any floral or faunal components that are considered unique or rare within the area.

Functions	Mitigation for previous permit/other historic use
The optimal functions include providing cover and foraging habitat for aquatic and wetland dependent wildlife, wildlife corridor, flood attenuation, water storage, food chain support and water quality enhancement.	None

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)
Optimally, the following wildlife may occur: white-tailed deer, bobcat, black bear, cottontail rabbit, cotton rat, wood rat, cricket frog, green treefrog, greenhouse frog, black racer, eastern box turtle, green anole, ground skink, armadillo, gray squirrel, opossum, raccoon, osprey, various hawks, pileated woodpecker, swallow-tailed kite, barred owl, and passerine avifauna.	Optimally, the community may be utilized by white ibis (FFWCC, SSC), snowy egret (FFWCC, SSC), little blue heron (FFWCC, SSC), tricolored heron (FFWCC, SSC), wood stork (FE, FFWCC & E, USFWS) and eastern indigo snake (T, FFWCC & USFWS).

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

None were observed.

Additional relevant factors:

Heavily grazed since height of vegetation was less than 6 inches. The area appears to be part of a front yard. A small berm occurs between the wetland's edge and the ditch within the ROW. The ditch appears to collect water from the roadway and there was no indicators that demonstrate that water flows from the ditch into the adjacent wetland.

Assessment conducted by:	Assessment date(s):
Liz Barker & Bruce Tatje	21-Nov-13

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-26
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	Liz Barker & Bruce Tatje	21-Nov-13

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

		w/o pres or current	with
.500(6)(a) Location and Landscape Support	Current condition: The AA occurs adjacent to SR 46 and is surrounded by pastureland. SR 46 is a major impediment to wildlife access, while the pasture community provides reduced wildlife habitat and access. > 90% invasive vegetative species.	4	0
.500(6)(b)Water Environment (n/a for uplands)	Current condition: Impacts from the roadway, combined with impacs from active grazing, have resulted in the loss of most hydrology. Evidence of hydrology is only seen at lowest elevations; higher elevations have a high degree of upland encroachement such as *Pinus elliottii* seedlings and saplings. Soils have lost majority of organic composition resulting in mineral sands with no organics. Adjacent swale captures the majority of rainwater and drains wetland. Vegetation is highly stressed, and inappropriate vegetation dominates.	3	0
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	Current condition: > 75% inappropriate vegetative cover. Dominant vegetation is *Paspalum notatum*. The woody strata are composed of *Acer rubrum, Liquidambar styraciflua,* and *Magnolia virginiana.* In addition to *Paspalum notatum*, the herbaceous stratum contains scattered *Axonopus furcatus, Centella asiatica, Eleocharis spp., Juncuss effusus, Andropogon virginicus,* and *Woodwardia virginica.*	4	0

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.37	0

Delta = [with-current]
-0.37

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = -0.37 x 0.33 acres = -0.12

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-35

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
Wet Prairie (643)		Impact	0.13 ac (direct impact)

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
St. Johns River (Canaveral Marshes to Wekiva) (Basin 18)	St. Johns River (Class III)	

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

The assessment area is an isolated wetland located adjacent to SR 46 and within an area of rural residential. The wetland is surrounded by managed pasture with cattle fencing in various areas. Historically, the wetland was bisected by the roadway construction.

Assessment area description

This community is composed predominately of grassy vegetation on hydric soils and is usually distinguished from marshes by having less water and shorter herbage. Species composition varies greatly and is dependent upon hydroperiod, soils, and site history. These systems are typically the most species-rich wetlands and include a variety of grasses, sedges, and forbs. Typical plants include wiregrass, toothache grass, spikerush, maidencane, and beakrush. Other typical plants include tickseed, sundews, hatpins,St. John's wort, wax myrtle, meadowbeauty, whitetop sedge black-eyed susan, marsh pinks, pitcher plants, and yellow-eyed grass). Common soil series includes a variety of soils, but mostly depressioinal soil types that include both sands and organics. Wet prairies are the least frequently flooded of any marsh type. Their hydroperiods are considered short (50 -150 days per year). Hydrologic disturbance and alteration may result in shrub species recruitment and dominance. The frequency of fire varies from every 2 to 4 years.

In it's current condition, the assessment areas exist as disturbed wetland communities in association with an active pasture as the upland buffer. The wetland is basically devoid of wetland dependent species since the groundcover is predominantly bermudagrass (90% cover). Pine seedlings have become established along the wetland edge and have encroached within the wetland. The wetland dependent vegetation includes dogfennel, ragweed, arrowhead, spadeleaf and Chinese tallow occurs along the fence line and within wetland.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
None	The area does not appear to contain any floral or faunal components that are considered unique or rare within the area.

Functions	Mitigation for previous permit/other historic use
The optimal functions include providing cover and foraging habitat for aquatic and wetland dependent wildlife, flood attenuation, water storage, food chain support and water quality enhancement.	None

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)
Optimally, the following wildlife may occur: cricket frog, green treefrog, greenhouse frog, black racer, eastern box turtle, Florida cottonmouth, southern black racer, yellow rat snake, green anole, ground skink, mud turtle, armadillo, gray squirrel, marsh rabbit, opossum, raccoon, white-tailed deer, mourning dove, red-winged blackbird, grackle, European starling, crow, egrets, gray catbird, killdeer, northern harrier, marsh wren, and turkey.	Optimally, the community may be utilized by Florida sandhill crane (T, FFWCC), white ibis (FFWCC, SSC), snowy egret (FFWCC, SSC), little blue heron (FFWCC, SSC), tricolored heron (FFWCC, SSC), wood stork (E, FFWCC & USFWS), and eastern indigo snake (T, FFWCC & USFWS).

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

Additional relevant factors:

Heavily grazed since height of vegetation was less than 6 inches. The area appears to be part of a front yard.

Assessment conducted by:	Assessment date(s):
Liz Barker & Bruce Tatje	21-Nov-13

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-35
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	Liz Barker & Bruce Tatje	21-Nov-13

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

		w/o pres or current	with
.500(6)(a) Location and Landscape Support	Current condition: The AA is adjacent to SR 46 and surrounded completely by rural residential communities. SR 46 is a major impediment to wildlife access, while the rural residential areas provide reduced wildlife habitat and access. No hydrologic connectivity for this AA. The habitat is dominated by invasive species.	4	0
.500(6)(b)Water Environment (n/a for uplands)	Current condition: The adjacent ditch and grazing activities has resulted in a high loss of hydrology, resulting in the encroachment of upland species such as *Pinus elliottii* seedlings. Adequate soil moisture for a wetland exists only at the lowest elevations, and inappropriate vegetation for a wetland system was observed.	4	0
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	Current condition: At least 90% of natural vegetation has been lost by the decline in hydrologic function and active grazing. The woody strata are dominated by *Sapium sebiferum*. The herbaceous stratum is dominated by *Cynodon dactylon*, with lesser cover by *Rubus pensylvaticus, Axonopus furcatus, Centella asiata, Eupatorium leptophyllum, Ambrosia artemisiifolia, Sagittaris lancifolia, Lachnanthese caroliana, Panicum hemitomon.*	3	0

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.37	0

Delta = [with-current]
-0.37

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = -0.37 x 0.13 acres = -0.05

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-23 & W-36

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
617 - Mixed Hardwood Wetlands		Impact	0.17 ac (direct impact) 0.18 ac (secondary impact)

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
St. Johns River (Canaveral Marshes to Wekiva) (Basin 18)	St. Johns River (Class III)	

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

The assessment area is an isolated wetland located adjacent to SR 46 and within an area of rural residential. The wetland is surrounded by managed pasture with cattle fencing in various areas. The area is hydrologically isolated and does not appear to discharge to the adjacent wetland-cut ditch.

Assessment area description

Mixed wetland hardwood communities are regularly inundated freshwater swamps that are found in large and irregularly shaped basins that are not associated with rivers. They occur on low, flat, wet sites in a variety of lowland landscapes such as in depressional basins. The hydrologic period will range from 6-9 months of inundation. The main water source may be groundwater or bodies of water such as creeks. This community type tends to have a deep, fairly permanent pool of water. Species composition is heterogeneous and may include red maple, hickory, dahoon holly, red cedar, blackgum, swamp bay, laurel oak, cabbage palm, and hackberry. Groundcover species may include cinnamon fern, royal fern, saw palmetto, poison ivy, swamp fern, lizard's tail, and sawgrass. Soils usually consist of seasonally flooded organic soils with organic matter accumulation of greater than 3 feet. The frequency of fire is variable and typically one fire per century.

In it's current condition the assessment areas exists as part of larger wetland systems that exist north of the existing roadway. The areas consist of laurel oak, red maple, cabbage palm, dahoon holly, highbush blueberry, wax myrtle, royal fern, cinnamon fern, dayflower, grapevine, and southern shield fern.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
None	The area does not appear to contain any floral or faunal components that are considered unique or rare within the area.

Functions	Mitigation for previous permit/other historic use
The optimal functions include providing cover and foraging habitat for aquatic and wetland dependent wildlife, wildlife corridor, flood attenuation, water storage, food chain support and water quality enhancement.	None

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)
Optimally, the following wildlife may occur: white-tailed deer, bobcat, black bear, cottontail rabbit, cotton rat, wood rat, cricket frog, green treefrog, greenhouse frog, black racer, eastern box turtle, green anole, ground skink, armadillo, gray squirrel, opossum, raccoon, osprey, various hawks, pileated woodpecker, swallow-tailed kite, barred owl, and passerine avifauna.	Optimally, the community may be utilized by white ibis (FFWCC, SSC), snowy egret (FFWCC, SSC), little blue heron (FFWCC, SSC), tricolored heron (FFWCC, SSC), wood stork (FE, FFWCC & E, USFWS) and eastern indigo snake (T, FFWCC & USFWS).

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

None were observed.

Additional relevant factors:

The areas are fenced along edge of wetland at the ROW. There are areas of disturbance within the wetlands that include asphalt and fill material. Adjacent habitat consists of natural uplands.

Assessment conducted by:	Assessment date(s):
Liz Barker & Bruce Tatje	21-Nov-13

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		W-23 & W-36
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	Liz Barker & Bruce Tatje	21-Nov-13

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

		w/o pres or current	with
.500(6)(a) Location and Landscape Support	Current condition: AA's are adjacent to SR 46, with significant natural community surrounding them on other sides (also with some rural agricultural property). SR 46 is a major impediment to wildlife access, while the natural communities and rural agriculture adjacent habitats provide somewhat reduced wildlife habitat and access. Invasive plant species are < 10% and occur in disturbed roadside area. Good hydrologic connectivity.	6	0
.500(6)(b)Water Environment (n/a for uplands)	Current condition: The AA is the upper elevation of the forested fringe of a large marsh system. The area of impact includes the edge of wetland habitat that has limited organic soils and evidence of hydrology by nature of being the upper edge of the wetland. Vegetation is evidence of appropriate hydrology, and good soil moisture is present. No surface water indictors present as would be expected at wetland/upland interface. No hydrologic stress on vegetation.	7	0
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	Current condition: <20% undesirable species in AA, these resulting from disturbance from roadway edge. Regeneration of woody species is good, vegetation is healthy, and topographic variation is normal for habitat type. A mature forested system that contains generally appropriate vegetation. There is scattered debris from dumping at the upland edge of the wetland. The canopy contains *Acer rubrum, Nyssa sylvatica, Magnolia virginiana, Quercus laurifolia, Sabal palmetto,* and *Ilex cassine.* The subcanopy and shrub strata contain saplings of canopy species in addition to *Serenoa repens, Cornus florida,* and *Myrica cerifera.* The groundcover stratum is sparse due to the closed canopy and includes *Osmunda regalis, O. cinnamomea, Woodwardia virginica, Cladium jamaicense,* and *Habaneria spp.* Undesirable species observed along the disturbed edge of the AA include *Sapium sebiferum, Vitis rotundifolia, Rubus pensylvanicus,* and *Lygodium spp.*	6	0

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.63	0

Delta = [with-current]
-0.63

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = -0.63 x 0.17 acres = -0.11

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		Wetland-cut ditches (OSW Nos 38, 43, 49 & 56a)

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
Wetland Forests (610, 620 & 630)		Impact	0.58 ac (direct impact)

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
Lake Jesup (Basin 23)	Lake Jesup (Class III)	

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

Wetland-cut ditches occur within the north and south ROWs of SR 46 and Osceola Road.

Assessment area description

Forested wetland communities are regularly inundated freshwater swamps that are found in large and irregularly shaped basins that are not associated with rivers. They occur on low, flat, wet sites in a variety of lowland landscapes such as in depressional basins. The hydrologic period will range from 6-9 months of inundation. The forested component is heterogeneous and may include red maple, hickory, dahoon holly, red cedar, blackgum, swamp bay, laurel oak, cabbage palm, and hackberry. Groundcover species may include cinnamon fern, royal fern, saw palmetto, poison ivy, swamp fern, lizard's tail, and sawgrass. Soils usually consist of seasonally flooded organic soils with organic matter accumulation of greater than 3 feet. The frequency of fire is variable and typically one fire per century.

Current condition: The various roadside ditches lack the forested and shrub strata. The herbaceous strata is variable dependent upon location and maintenance. The vegetation typically includes smartweed, blackberry, caesarweed, Peruvian primrose willow, various species of primrose willow, marsh pennywort, common dayflower, torpedograss, alligatorweed, various sedges, and low panic grasses.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
None	The area does not appear to contain any floral or faunal components that are considered unique or rare within the area.

Functions	Mitigation for previous permit/other historic use
The optimal functions include flood attenuation, water storage, food chain support and water quality enhancement.	None

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)
Optimally, the following wildlife may occur: wading birds, various amphibians and reptiles, fish, smalll mammals, raptors and passerine species.	Optimally, the community may be utilized by white ibis (FFWCC, SSC), snowy egret (FFWCC, SSC), little blue heron (FFWCC, SSC), tricolored heron (FFWCC, SSC), and wood stork (FE, FFWCC & E, USFWS).

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

None

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
Liz Barker & Bruce Tatje	21-Nov-13

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		Wetland-cut ditches (OSW Nos 38, 43, 49 & 56a)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	Liz Barker & Bruce Tatje	21-Nov-13

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

		w/o pres or current	with
.500(6)(a) Location and Landscape Support	The wetland-cut ditches occur within the right-of-ways of SR 46 and Osceola Road. Some areas are connected to large areas of native vegetative communities and others occur in rural residential areas that contain remnant upland and wetland vegetative communities. The roadways are major impediments to wildlife access. Wildlife movements are also adversely affected by fencing that occurs in various areas immediately adjacent to the assessment areas.	6	0
.500(6)(b)Water Environment (n/a for uplands)	Road runoff into the wetland-cut ditches has negative effects on water quality. Hydrology is primarily dependent on rainfall events and sheet flow from roadway. Moderate percent cover of nuisance and exotic plant species. In some areas the crown of the road may direct runoff to either the north or south ROW ditch.	4	0
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	Desirable wetland vegetation is variable dependent upon hydrology and maintenance activities. Nuisance and exotic species coverage may reach 25 - 50% of the total percent cover. The vegetation is continually mowed and vegetation height is typically less than 6 inches. Upland species encroachment occurs throughout due to hydrologic alterations and disturbance.	4	0

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.47	0

Delta = [with-current]
-0.47

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = -0.47 x 0.58 acres = -0.27

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		Wetland-cut ditches (OSW Nos 11, 33, 39, 44, 48, 51, 50, 53, 56b, & 57)

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
Wetland Forests (610, 620 & 630)		Impact	0.75 ac (direct impact)

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
St. Johns River (Canaveral Marshes to Wekiva) (Basin 18)	St. Johns River (Class III)	

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

Wetland-cut ditches occur within the north and south ROWs of SR 46 and Osceola Road.

Assessment area description

Forested wetland communities are regularly inundated freshwater swamps that are found in large and irregularly shaped basins that are not associated with rivers. They occur on low, flat, wet sites in a variety of lowland landscapes such as in depressional basins. The hydrologic period will range from 6-9 months of inundation. The forested component is heterogeneous and may include red maple, hickory, dahoon holly, red cedar, blackgum, swamp bay, laurel oak, cabbage palm, and hackberry. Groundcover species may include cinnamon fern, royal fern, saw palmetto, poison ivy, swamp fern, lizard's tail, and sawgrass. Soils usually consist of seasonally flooded organic soils with organic matter accumulation of greater than 3 feet. The frequency of fire is variable and typically one fire per century.

Current condition: The various roadside ditches lack the forested and shrub strata. The herbaceous strata is variable dependent upon location and maintenance. The vegetation typically includes smartweed, blackberry, caesarweed, Peruvian primrose willow, various species of primrose willow, marsh pennywort, common dayflower, torpedograss, alligatorweed, various sedges, and low panic grasses.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
None	The area does not appear to contain any floral or faunal components that are considered unique or rare within the area.

Functions	Mitigation for previous permit/other historic use
The optimal functions include flood attenuation, water storage, food chain support and water quality enhancement.	None

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)
Optimally, the following wildlife may occur: wading birds, various amphibians and reptiles, fish, smalll mammals, raptors and passerine species.	Optimally, the community may be utilized by white ibis (FFWCC, SSC), snowy egret (FFWCC, SSC), little blue heron (FFWCC, SSC), tricolored heron (FFWCC, SSC), and wood stork (FE, FFWCC & E, USFWS).

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

None

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
Liz Barker & Bruce Tatje	21-Nov-13

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR 46 Widening from East of SR 415 to CR 426		Wetland-cut ditches (OSW Nos 11, 33, 39, 44, 48, 51, 50, 53, 56b, & 57)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	Liz Barker & Bruce Tatje	21-Nov-13

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

		w/o pres or current	with
.500(6)(a) Location and Landscape Support	The wetland-cut ditches occur within the right-of-ways of SR 46 and Osceola Road. Some areas are connected to large areas of native vegetative communities and others occur in rural residential areas that contain remnant upland and wetland vegetative communities. The roadways are major impediments to wildlife access. Wildlife movements are also adversely affected by fencing that occurs in various areas immediately adjacent to the assessment areas.	6	0
.500(6)(b)Water Environment (n/a for uplands)	Road runoff into the wetland-cut ditches has negative effects on water quality. Hydrology is primarily dependent on rainfall events and sheet flow from roadway. Moderate percent cover of nuisance and exotic plant species. In some areas the crown of the road may direct runoff to either the north or south ROW ditch.	4	0
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	Desirable wetland vegetation is variable dependent upon hydrology and maintenance activities. Nuisance and exotic species coverage may reach 25 - 50% of the total percent cover. The vegetation is continually mowed and vegetation height is typically less than 6 inches. Upland species encroachment occurs throughout due to hydrologic alterations and disturbance.	4	0

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.47	0

Delta = [with-current]
-0.47

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = -0.47 x 0.75 acres = -0.35

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

APPENDIX B

AGENCY COORDINATION

SR 46 Environmental Issues
Meeting Notes
Meeting with St. Johns River Water Management District – Maitland Service Center
August 22, 2012

SR 46 PD&E Study
FPN 240216-4-28-01
Contract No. PS-5738-10

ATTENDEES:

Mark Flomerfelt, P.E. – Seminole County
Jan Everett – URS
Chris Rizzolo – URS
Mary McGehee – FDOT
Lee Kissick – SJRWMD
Kenneth Lewis – SJRWMD
Shannon Carter Wetzel – Seminole County
Danh Lee – URS
Liz Barker – EMD
Victoria Nations – SJRWMD
Marjorie Cook – SJRWMD

A meeting was held at the Maitland Service Center of the St. Johns River Water Management District on August 22, 2012 for the SR 46 Project Development and Environment (PD&E) study. The meeting was held to discuss the proposed roadway improvements, the conservation easements within the corridor and the proposed impacts to environmentally sensitive areas. A summary of the items discussed at the meeting includes the following:

Chris Rizzolo introduced the project, provided a brief history and background information.

- The limits of the PD&E study were discussed as well as the various typical sections associated with the project. The suburban typical section requires 148' of R/W and the rural typical section requires 188' of R/W. Only the suburban typical section is under consideration for the portion of the project west of the bridge.
- The Build Alternatives have been broken into smaller segments to allow for a more detailed and thorough evaluation. In addition, there will be north, central and south alignment alternatives.
- In addition, there is an adjacent FP&L transmission line north of the roadway between SR 415 and the bridge.
- The project is scheduled for design in fiscal year 2015 (July 2014 through June 2015).
- The summary of findings outlined within the U.S. Army Corps of Engineers Draft Ecosystem Restoration Report (April 2012) regarding the Government Cut (bypass canal) was discussed. In addition, information regarding Channels A, B and C was provided.

- The previous PD&E study was discussed as well as the commitments and recommendations made during the previous PD&E process.

Liz Barker provided a summary of the environmental information collected to date regarding the conservation easements along the corridor and the mitigation areas associated with the Lake Jesup Bridge Replacement project.

- West of Lake Jesup and north of SR 46 is the Bergmann Tract, a private mitigation bank under various conservation easements. The URS PD&E team does not have a record of all the acreage that has been placed within the various conservation easements or information on whether or not all easements have been recorded within Seminole County. There may be many very small easements that have been purchased for a variety of developments, which could make widening SR 46 to the north difficult.
- West of Lake Jesup and south of SR 46 is a single conservation easement over the Futch Property granted to the Florida Department of Environmental Protection (FDEP). The Futch property was utilized as mitigation for the construction of the Eastern Beltway (Seminole County Expressway Authority) permitted through FDEP.
- The mitigation for the previously permitted Lake Jesup Bridge Replacement was discussed, which consisted of the removal of the causeway and the restoration of the Tornado Tavern and Marina Isle Fish Camps. The mitigation was evaluated utilizing UMAM during the permitting of the bridge replacement. The documentation demonstrating the final scoring and function gain for each mitigation area is still in question. Lee Kissick stated that he is working with Lisa Grant to determine if the UMAM scoring, as outlined within Anthony Miller's email dated November 3, 2006, is the final version of the UMAM scoring.
- An existing Sovereign Submerged Lands easement from the Board of Trustees of the Internal Improvement Trust Fund (TIITF) exists within project corridor. Therefore, a modification for the project improvements should not be required.
- Although not quantified at this time, the project will result in direct and secondary wetland impacts throughout the corridor.
- Various mitigation options were preliminarily discussed which included additional restoration and enhancement opportunities as well as mitigation bank credits.

Victoria Nations outlined the permitting requirements for the project:

- The SJRWMD will only require a Conservation Easement Release submittal for impacts to recorded conservation easements. The URS PD&E team will need to determine if all conservation easements have been recorded.
- In addition, the District may have the master map that demonstrates all conservation easements associated with the Bergmann Mitigation Tract. The District will search their files.

- The SJRWMD will not require permit modifications of the various permits associated with the Bergmann Mitigation Tract in conjunction with the Conservation Easement Release submittals.
- The SJRWMD will not require a modification to the Lake Jesup Bridge Replacement permit due to the proposed impacts to the existing mitigation areas.
- The SJRWMD Individual Environmental Resource Permit will be applied for at the appropriate time.
- Restoration of Channel B as requested by the Friends of Lake Jesup may be one mitigation strategy, but it would have to show a benefit.

Dahn Lee explained the preliminary stormwater design for the project, consisting of ponds and adjacent swales.

Marjorie Cook addressed the following items:

- The preliminary stormwater design for the project needs to address the loss of flood storage within the 10-year floodplain. Compensation shall be provided through excavation of a volume of uplands equivalent to the loss of storage within the regulatory floodplain.
- It was recommended that the URS PD&E team review the existing sovereign submerged lands easement to insure that the proposed project occurs within the SSL easement.

Note: The above reflects the writer's understanding of the contents of the meeting. If any misinterpretations or inaccuracies are included, please notify the author within seven (7) days of receiving the notes.

SR 46 Environmental Issues
Meeting Notes
Meeting with Florida Department of Environmental Protection – Central District Office
August 28, 2012

SR 46 PD&E Study
FPN 240216-4-28-01
Contract No. PS-5738-10

Chris Rizzolo – URS	Liz Barker – EMD
Mary McGehee – FDOT	Lisa Prather – FDEP

A meeting was held at the Central District office of the Florida Department of Environmental Protection on August 28, 2012 for the SR 46 Project Development and Environment (PD&E) study. The meeting was held to discuss the proposed roadway improvements, the conservation easements within the corridor and the proposed impacts to environmentally sensitive areas. A summary of the items discussed at the meeting includes the following:

Chris Rizzolo introduced the project, provided a brief history and background information.

- The limits of the PD&E study were discussed as well as the various typical sections associated with the project. The suburban typical section requires 148' of R/W and the rural typical section requires 188' of R/W. Only the suburban typical section is under consideration for the portion of the project west of the bridge.
- The physical constraints within the limits of the project were discussed, which include the environmental constraints, available right-of-way and utilities.
- The summary of findings outlined within the U.S. Army Corps of Engineers Draft Ecosystem Restoration Report (April 2012) regarding the Government Cut (bypass canal) was discussed.

Liz Barker provided a summary of the environmental information collected to date regarding the conservation easements along the corridor.

- West of Lake Jesup and north of SR 46 is the Bergmann Tract, a private mitigation bank under various conservation easements.
- West of Lake Jesup and south of SR 46 is a single conservation easement over the Futch Property granted to the Florida Department of Environmental Protection (FDEP). The Futch property was utilized as mitigation for the construction of the Eastern Beltway (Seminole County Expressway Authority) permitted through FDEP.

- Since it is highly likely that a Conservation Easement Release would be required by FDEP to allow for the proposed roadway improvements, various mitigation options were preliminarily discussed that included additional restoration and enhancement opportunities as well as mitigation bank credits.

Lisa Prather outlined the requirements for a Conservation Easement Release:

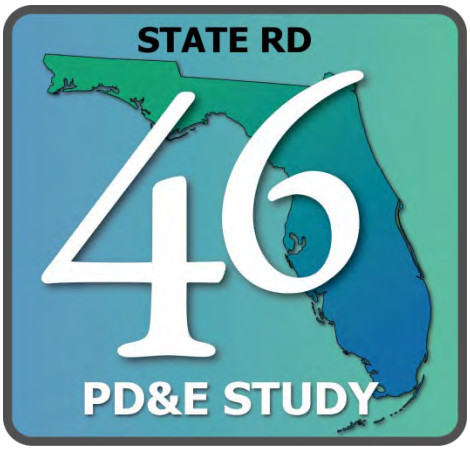
- Historically, a Conservation Easement Release was completed during the permitting of the Lake Jesup Bridge Replacement, which was accomplished utilizing mitigation bank credits from the Lake Monroe Mitigation Bank.
- The FDEP will only require a Conservation Easement Release letter submittal for impacts to the recorded conservation easement for the Futch Property.
- No permit modification would be required in associated with the Conservation Easement Release.
- FDEP would be amenable to the concept of using the restoration of Channel B for the partial release of lands within the Futch Property. The details of this mitigation plan would needed to be provided to FDEP as part of the Conservation Easement Release submittal. There was discussion regarding the timing of the mitigation and how many acres of the channel would be restored. Authorization for the proposed restoration project would be provided through the issuance of an Environmental Resource Permit.
- FDEP would not object to the elimination of the canal within the Futch Property, which occurs on the south side of SR 46, since it was planned to be filled as part of the original mitigation plan.

Note: The above reflects the writer's understanding of the contents of the meeting. If any misinterpretations or inaccuracies are included, please notify the author within seven (7) days of receiving the notes.

NATURAL RESOURCES EVALUATION

Part B:
Protected Species and Habitat Evaluation Report

for the



Seminole County Contract No.: PS-5738-10/JVP
Financial Project ID: 240216-4-28-01
Federal Aid Project No.: TCSP-045-U
ETDM No.: 4972

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1.0 INTRODUCTION

Seminole County, in consultation with the Florida Department of Transportation (FDOT), is conducting a Project Development and Environment (PD&E) Study (PD&E Study) to evaluate possible alternative improvements to widen State Road 46 (SR 46), from east of State Road 415 (SR 415) to County Road 426 (CR 426). The build alternatives include a roadway widening from a two-lane undivided roadway to a four-lane divided roadway. The proposed four-lane roadway would result in the construction of a new bridge causeway over Lake Jesup, of parallel structure and of the same length, on the north side of the newly constructed Lake Jesup Bridge.

This PD&E Study followed procedures outlined in the Project Development and Environment Manual, Part 2, Analysis and Documentation, Chapter 27: Protected Species and Habitat (FDOT, effective August 26, 2016). In accordance with this guidance, the following tasks were completed:

- Project land uses, and vegetated communities, including wetlands and surface waters were delineated on aerial photographs.
- Species distribution, habitat needs, and other biological requirements were evaluated.
- Potential project impacts to wildlife, wildlife habitat, and listed species were evaluated.
- Alternatives analysis, minimization measures, and mitigation measures were addressed.
- Results of consultation/coordination with United States Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS) and other agencies discussed.

1.1 PROJECT BACKGROUND

The widening of SR 46 and the replacement of the bridge over Lake Jesup have been the subject of numerous studies since 1995 when the original study was initiated regarding the replacement of the bridge. In 2002, FDOT initiated the SR 46 Lake Jesup Bridge Replacement PD&E Study. The study involved the re-evaluation of the impacts associated with replacing the existing SR 46 bridge over the St. Johns River in the vicinity of Lake Jesup. The PD&E Study was completed in 2003 and the project moved forward into design and permitting, followed by right-of-way acquisition, and finally construction. The SR 46 Lake Jesup Bridge Replacement construction project was initiated in December 2007 and completed in June 2009. During the construction, the aging and obsolete bridge was removed as well as the existing causeway. The new bridge was constructed to span the entire lake/river area and eliminate the need for a causeway. As part of the wetland mitigation plan for this project, Channel B (oxbow channel) was excavated to one-foot National Geodetic Vertical Datum (NGVD) 1929 within the limits of the FDOT right-of-way. The mitigation plan also included the causeway removal, the removal of the adjacent fish camps, wetland restoration and enhancement, and preservation of the adjacent marsh habitat.

The U.S. Army Corps of Engineers (USACE), in partnership with the St. Johns River Water Management District (SJRWMD) and the FDOT, began a study in 2001 to explore the issue of the restricted hydrologic connection between Lake Jesup and the St. Johns River. The USACE report was prepared under the authority of the Lake Jesup Continuing Authorities Program (CAP) Section 1135 of the 1986 Water Resources Development Act (WRDA), as amended. Section 1135 involves the modification of existing USACE projects and operations to improve the quality of the environment. The USACE distributed a Final Ecosystem Restoration Report (ERR) in April 2012.

The report recommended no further federal action was warranted due to the fact that the hydrologic modeling did not demonstrate that the decline of water quality within Lake Jesup was a result of USACE's bypass canal known as "Government Cut".

2.0 PROJECT PURPOSE AND NEED

The SR 46 widening project will serve as an improvement to a major hurricane evacuation route for northern Brevard and southern Volusia Counties. This evacuation route is imperative for those counties since the nearest east-west evacuation routes are located approximately 8 miles to the south (State Road 50) and approximately 25 miles to the north (State Road 44). State Road 50, the nearest alternative route, is anticipated to be over capacity by year 2035.

The overall project will alleviate traffic congestion and correct safety and roadway deficiencies. The specific transportation needs include:

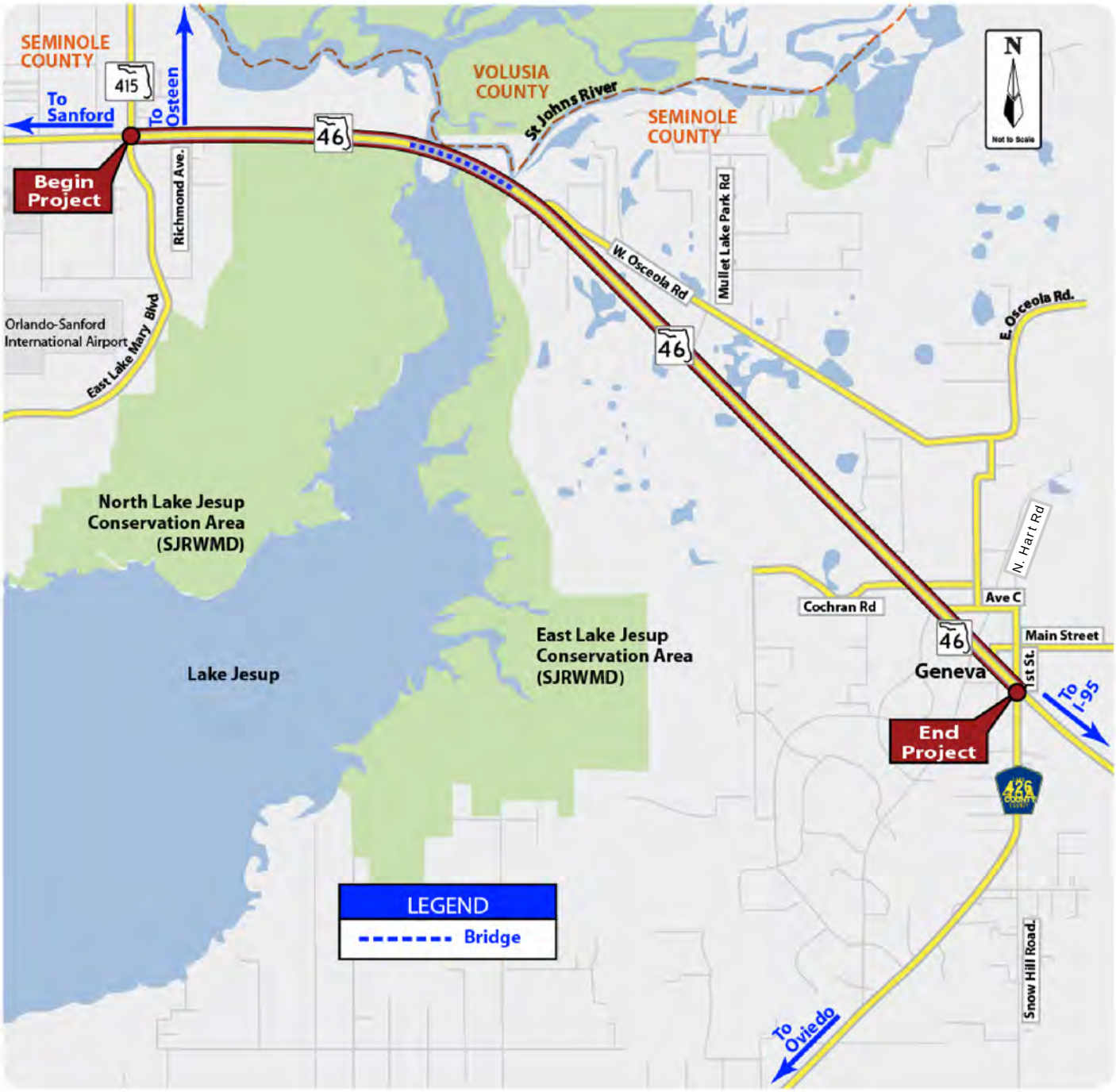
- Provide a higher capacity east-west travel facility in Seminole County.
- Improve safety to reduce vehicle crash fatalities and injuries on SR 46.
- Develop a transportation facility that minimizes impacts to the area's resources.

The widening of the SR 46 corridor between SR 415 and CR 426, as a four-lane section is included as a planned improvement in the MetroPlan Orlando 2030 Long Range Transportation Plan (LRTP). The project is also in the Seminole County's Comprehensive Plan and is number 11 on the MetroPlan Orlando Prioritized Project List.

3.0 PROJECT DESCRIPTION

SR 46 is an integral component of Central Florida's transportation and evacuation system that traverses Lake, Seminole, and Brevard Counties with interchanges at I-4 and I-95. SR 46 is currently a two-lane rural roadway within the study area extending between SR 415 and CR 426 in eastern Seminole County. The project length is approximately 7.4 miles. The western terminus connects to SR 415, which is under construction to be widened to a four-lane divided facility. Lake Mary Boulevard, which was recently extended to SR 415, provides a direct connection to the Orlando-Sanford International Airport and the Seminole Expressway (SR 417). The eastern terminus of the project occurs at CR 426 (Geneva), which provides a direct connection to the City of Oviedo. Figure 1 presents the project study limits.

For the purpose of this PD&E Study, the SR 46 widening project was subdivided into four (4) segments. Segment 1 consists of the expansion of the existing two-lane rural roadway to a four-lane suburban roadway section from SR 415 to the west end of the Lake Jesup Bridge. Segment



STATE RD 46 PD&E STUDY

Project Location Map

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 1

SCALE: NTS

JOB NO.: 10.20

DATE: 11/19/2013

2 consists of an additional two-lane bridge over Lake Jesup. The proposed four-lanes would result in the construction of a new bridge over Lake Jesup, of parallel structure and of the same length, north of the newly constructed Lake Jesup Bridge. Segment 3 consists of the expansion of a two-lane rural roadway to a four-lane suburban roadway segment from the east end of the Lake Jesup Bridge to Hart Road. Segment 4 consists of the expansion of a two-lane rural roadway to a four-lane urban roadway segment from Hart Road to CR 426. In addition, drainage, stormwater management facilities, and access management are included as part of this project.

There were five (5) alternatives analyzed as part of the PD&E Study, one No-Build Alternative and four (4) Build Alternatives. Special considerations in the development of the alternatives included providing bicycle facilities, and improvements to major intersections. The PD&E Study addresses engineering solutions and their potential impacts to the human, natural, and physical environment.

4.0 PROJECT ALTERNATIVES

For the purposes of analyzing the build alternatives, the project was split into four (4) segments as follows:

- Segment 1 – SR 415 to the west end of the Lake Jesup/St. Johns River Bridge.
- Segment 2 – The Lake Jesup/St. Johns River Bridge.
- Segment 3 – The east end of the Lake Jesup/St. Johns River Bridge to Hart Road.
- Segment 4 – Hart Road to CR 426.

4.1 BUILD ALTERNATIVES

There were five (5) alternatives analyzed as part of this PD&E Study. The alternatives include:

- Build Alternative 1
  - > SR 415 to Lake Jesup (Suburban North Typical Section)
  - > Lake Jesup to Hart Road (Suburban Best Fit Typical Section)
  - > Hart Road to CR 426 (Urban Typical Section)
- Build Alternative 2
  - > SR 415 to Lake Jesup (Suburban South Typical Section)
  - > Lake Jesup to Hart Road (Suburban Best Fit Typical Section)
  - > Hart Road to CR 426 (Urban Typical Section)
- Build Alternative 3
  - > SR 415 to Lake Jesup (Suburban North Typical Section)
  - > Lake Jesup to Hart Road (Rural Best Fit Typical Section)
  - > Hart Road to CR 426 (Urban Typical Section)
- Build Alternative 4
  - > SR 415 to Lake Jesup (Suburban South Typical Section)
  - > Lake Jesup to Hart Road (Rural Best Fit Typical Section)
  - > Hart Road to CR 426 (Urban Typical Section)
- Alternative 5 No-Build

4.2 NO-BUILD ALTERNATIVE

The No-Build Alternative provides no improvements to SR 46 within the project limits. Other planned and programmed roadway projects identified in MetroPlan Orlando's LRTP are assumed to be implemented. The absence of construction-related and short-term operational impacts associated with the Build Alternative is a benefit of the No-Build Alternative. Long-term benefits accrued from serving future traffic demands would not be realized with this alternative. Continued traffic growth on SR 46 will result in traffic volumes in excess of capacity, thereby increasing congestion. The No-Build Alternative does not fulfill the purpose and need of the project. Distinct advantages and limitations associated with the No-Build Alternative are as follows:

Advantages

- No impedance to traffic flow during construction.
- No disruption to existing land uses because of construction activities.
- No right-of-way acquisition or relocations.
- No expenditure of funds for engineering design or construction.
- No impacts to the adjacent natural, physical, human, and social environments.

Limitations

- Increase in traffic congestion and user cost associated with increased travel time due to excessive delay.
- Increase in carbon monoxide and other pollutants due to increased traffic congestion.
- Increase in maintenance costs due to roadway and structure deterioration.
- Increase in emergency vehicle response time.
- Increase in evacuation time during weather emergencies as a result of heavy congestion.
- Increase in crash potential because of increased congestion.
- Not compatible with the area's long range plans.
- No opportunity for potential additional mitigation to Lake Jesup/St. Johns River.

The No-Build Alternative will remain a viable alternative through the Public Hearing.

4.3 ALTERNATIVES EVALUATION

An analysis of any potential impacts to wildlife habitat and protected species was conducted for all alternatives. This information is presented within a subsequent section (Section 8.0 – Impact Analysis).

4.4 RECOMMENDED ALTERNATIVE

The recommended alternative was selected to not only avoid and minimize impacts to natural resources but also to minimize cost and maximize safety. The evaluation focused on minimizing impacts to public conservation lands, conservation easements, wetlands, and potential habitat for threatened and endangered (T&E) species. The preferred alternative (Alternative 2) consists of the Suburban South typical section within Segment 1, which extends from SR 415 to the west end of

the Lake Jesup Bridge. The Bridge with Multi-Use Path is recommended for Segment 2. The Suburban Best Fit typical section is recommended for Segment 3, which extends from the east end of the Lake Jesup Bridge to Hart Road. The Urban Center typical section is recommended for Segment 4, which extends from Hart Road to CR 426. The preferred pond sites are Pond A1, the expansion of an existing pond (Pond 1), Pond B1, and floodplain compensation ponds FPC 1 and FPC 2.

5.0 METHODOLOGY

The review of protected (listed) wildlife species has been performed in fulfillment of the National Environmental Policy Act (NEPA) requirements. A query of existing databases and literature review was conducted using the United States Fish and Wildlife Service (USFWS) and Florida Fish and Wildlife Conservation Commission (FFWCC) online databases for breeding birds, wading bird colonies, and bald eagles (*Haliaeetus leucocephalus*); Florida Natural Areas Inventory-FNAI; Florida Committee on Rare and Endangered Plants and Animals (FCREPA) texts; and a variety of other sources based on suitable habitat available within the project area compared to species whose geographic range overlap Seminole County. Published lists of federal and state protected wildlife documented to occur in Seminole County were reviewed to evaluate the potential of species occurrences within the project corridor.

Federal and state agency comments to the proposed project were received by the FDOT Environmental Technical Advisory Team utilizing their Efficient Transportation Decision Making (ETDM) process to bulletin board comments received and document the Advanced Notification Process. The Planning Screen for Project #4972 (SR 46 from SR 415 to CR 426) may be reviewed online (https://etdmpub.fla-etat.org/est/). This document addresses those comments relevant to wildlife habitat and protected species. During the ETDM review, NMFS made the determination that no essential fish habitat (EFH) is within the project area.

Critical to the study and analysis of listed species is the utilization of land use and vegetative cover mapping for the project study area. The limits of the study area ranged from 800 to 1,500 feet from the SR 46 right-of-way depending on the distance of all proposed pond locations. The initial mapping for this project was acquired through SJRWMD and has continued to be used, with minor revisions after field verification of jurisdictional wetland and surface water boundaries. Land use classifications follow the Florida Land Use, Cover, and Forms Classification System (FLUCFCS, FDOT, 1999). Areas were mapped and classified to level III FLUCFCS during the field studies and wetland jurisdictional determinations.

Available literature was reviewed prior to the field reviews to evaluate the probability of species occurrence within the project area based on known geographic range and the presence of suitable habitat. A query of the FFWCC eagle nest location database (http://www.wildflorida.org/eagle/eaglenests/) identified four eagle nests (SE 034, SE 036, SE 051, and SE 082) near the project area. The bald eagle nest location data is only considered accurate to within 0.1 mile. A direct inquiry of FFWCC was made regarding listed species sightings within the study area. The FFWCC response (9/12/12) confirmed the database query results and reported findings for manatee, Florida black bear, wading bird colonies, and several other species (Appendix 1). No other known eagle nests were identified within a ½ mile radius of the project area.

An inquiry was also made of FNAI requesting data for listed plant and animal species and sensitive areas. The response to this inquiry, dated March 20, 2012 and included as Appendix 2, confirmed eagle nest locations but no other significant observations within the project study area.

Assessments of the ecological communities were conducted to evaluate current conditions with respect to the presence of threatened and endangered species and to determine if significant changes to natural habitats and corridors within the project area have occurred. Pedestrian wildlife surveys were conducted in February (8 & 29), March (16, 20, 23, 26 & 27), and September (27), 2012 and December 8, 2014. Vehicular and pedestrian transects were used to traverse the various land uses and observations of wildlife species were recorded. A species-specific survey for the crested caracara (*Caracara cheriway*) was also conducted between January and April 2015.

6.0 EXISTING NATURAL AND ECOLOGICAL CHARACTERISTICS

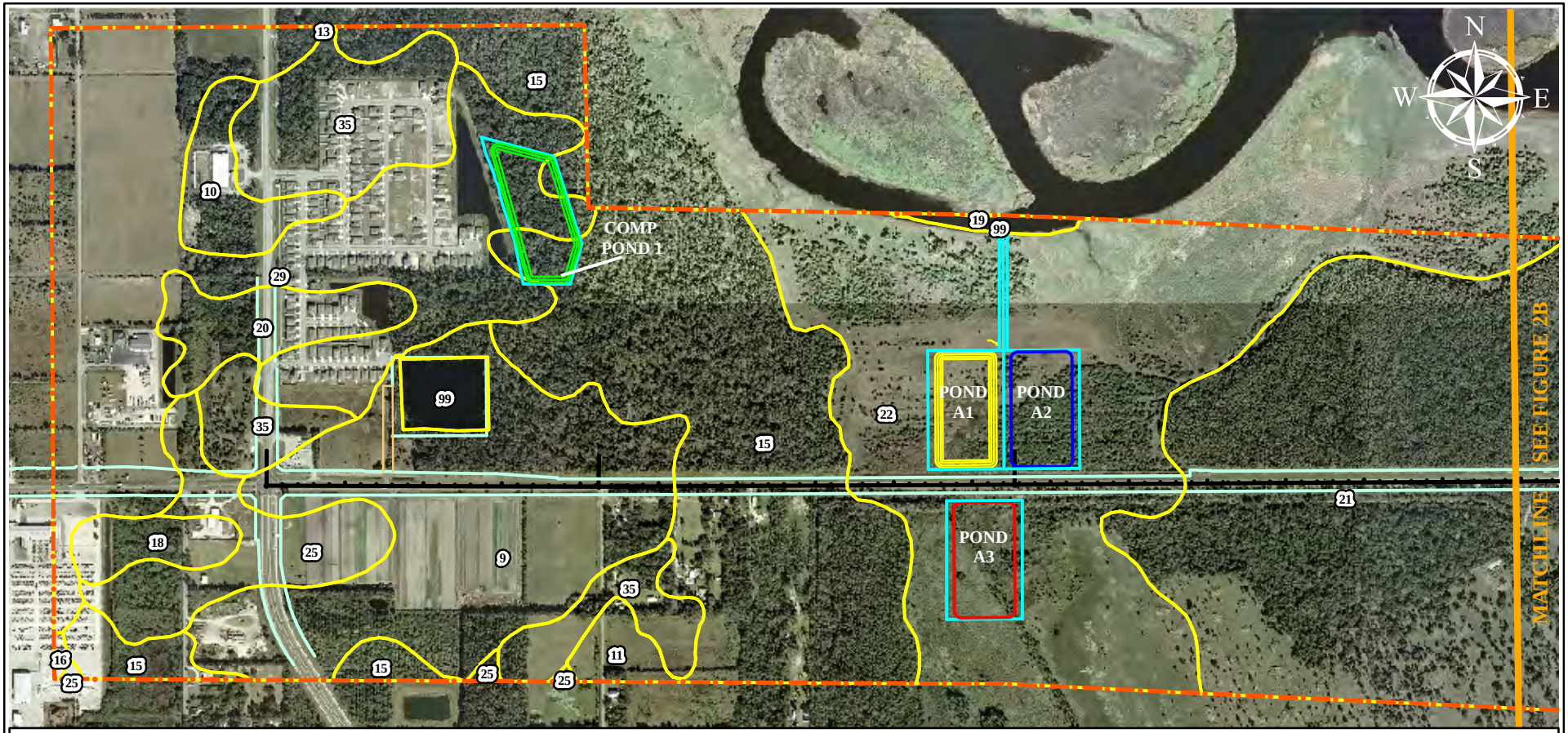
6.1 SOIL CLASSIFICATIONS

Soils within the SR 46 PD&E Study area were originally mapped by the United States Department of Agriculture, Natural Resources Conservation Service (NRCS) (formerly the Soil Conservation Service (SCS)) as published within the Soil Survey for Seminole County, Florida (March 1990) and the Soils Survey for Volusia County, Florida (February 1980) and are currently available through the NRCS web site (http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx).

The soil maps for the project area derived from these data are provided as Figures 2A-2E. The maps, coupled with both historic and current aerial imagery, provide the basis for mapping and interpreting the location and condition of natural lands and anthropogenic features, e.g. wetlands, wildlife habitat, and community resources. Key to this interpretation is the understanding of physical properties inherent to the distinct mapping units delineated within the soils maps. These properties, as described within the SCS Soil Survey for Seminole County, the Hydric Soils of Florida Handbook, 4th edition and the NRCS on-line Manual of Hydric Soils of the United States, are presented within Tables 1 and 2. Table 1 provides information regarding water table depth and hydrologic group relevant to pond siting and roadway construction. Table 2 provides information relevant to natural community mapping, relevant to wetlands determination and listed species survey.

6.2 CLASSIFICATION OF EXISTING LAND USES

FLUCFCS classified to level III was used in the identification of land use/vegetative communities within the study area and are found in Table 3 and depicted on Figures 3A-3E.



LEGEND

Project Study Area

Right-of-Way: Source - URS

Pond Alternatives

SYMBOL	DESCRIPTION
9	Basinger and Delray Fine Sand
10	Basinger, Samsula and Hontoon Soils, Depressional
11	Basinger and Symrna Fine Sands, Depressional
13	EauGallie and Immokalee Fine Sands
15	Felda and Manatee Mucky Fine Sands, Depressional
16	Immokalee Sand
18	Malabar Fine Sand
19	Manatee, Floridana and Holopaw Soils, Frequently Flooded
20	Myakka and EauGallie Fine Sands
21	Nittaw Mucky Fine Sand, Depressional
22	Nittaw Muck, Occasionally Flooded
25	Pineda Fine Sand
29	St. Johns and EauGallie Fine Sands
35	Wabasso Fine Sand
99	Water

Datum projection: NAD_1983_State Plane_Florida_East_FIPS_0901_Feet
Source: Aerials - FDOT, 2009 & NRCS, USDA, SSURGO Data for Seminole and Volusia Counties, Florida.

STATE RD 46 PD&E STUDY

Soils Map

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

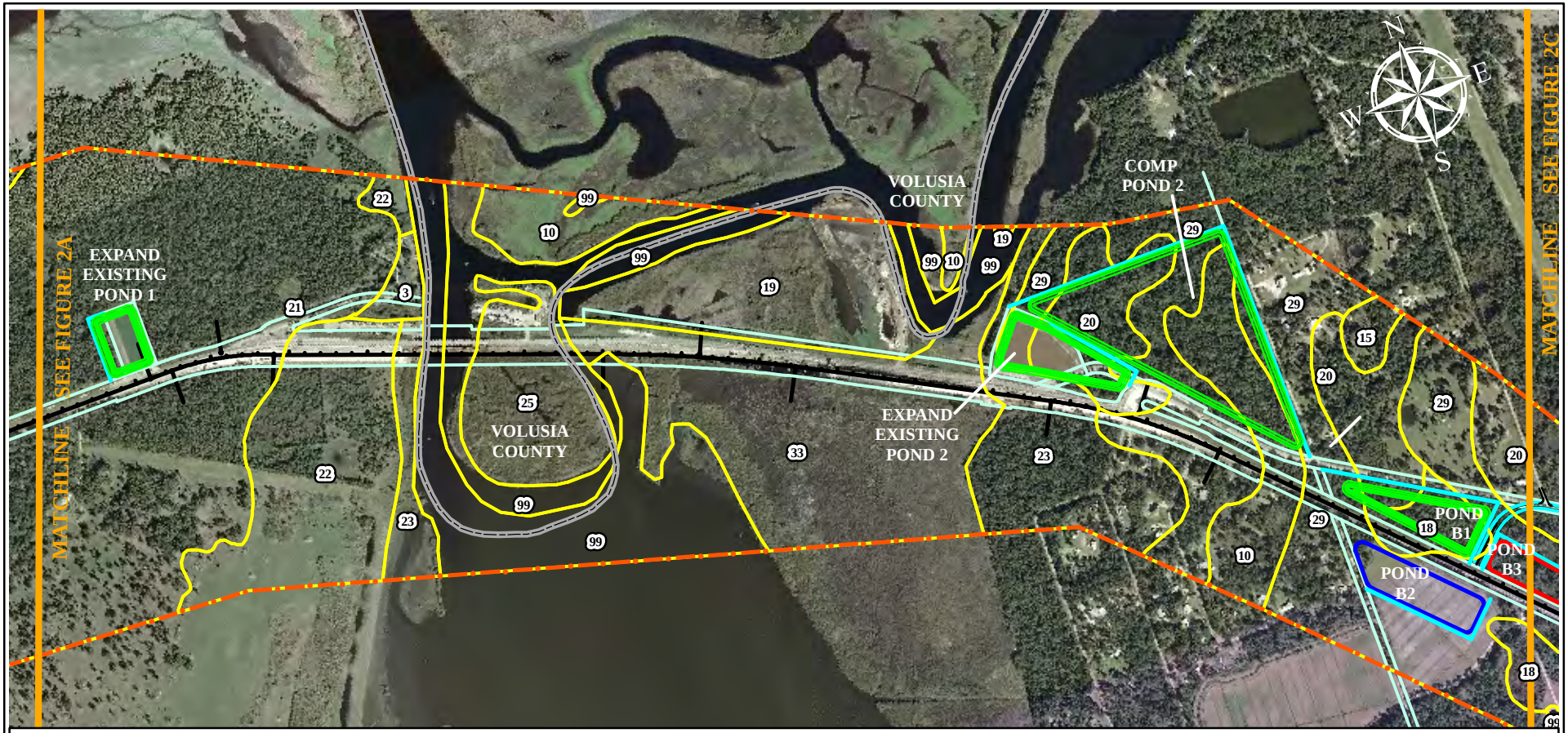
Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 2A

SCALE: 1" = 1000'

JOB NO.: 10.20

DATE: 11/19/13



LEGEND

- Project Study Area
- Right-of-Way: Source - URS
- Pond Alternatives

SYMBOL	DESCRIPTION
3	Arents, 0 to 5 Percent Slopes
10	Basinger, Samsula and Hontoon Soils, Depressional
10	Bluff Sandy Clay Loam - Volusia County
15	Felda and Manatee Mucky Fine Sands, Depressional
18	Malabar Fine Sand
19	Manatee, Floridana and Holopaw Soils, Frequently Flooded
20	Myakka and EauGallie Fine Sands
21	Nittaw Mucky Fine Sand, Depressional
22	Nittaw Muck, Occasionally Flooded
23	Nittaw, Okeelanta, and Bassinger Soils, Frequently Flooded
25	Gator Muck - Volusia County
29	St. Johns and EauGallie Fine Sands
33	Terra Ceia Muck, Frequently Flooded
99	Water

Datum projection: NAD_1983_State Plane_Florida_East_FIPS_0901_Feet
Source: Aerials - FDOT, 2009 & NRCS, USDA, SSURGO Data for Seminole and Volusia Counties, Florida.

STATE RD 46 PD&E STUDY

Soils Map

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

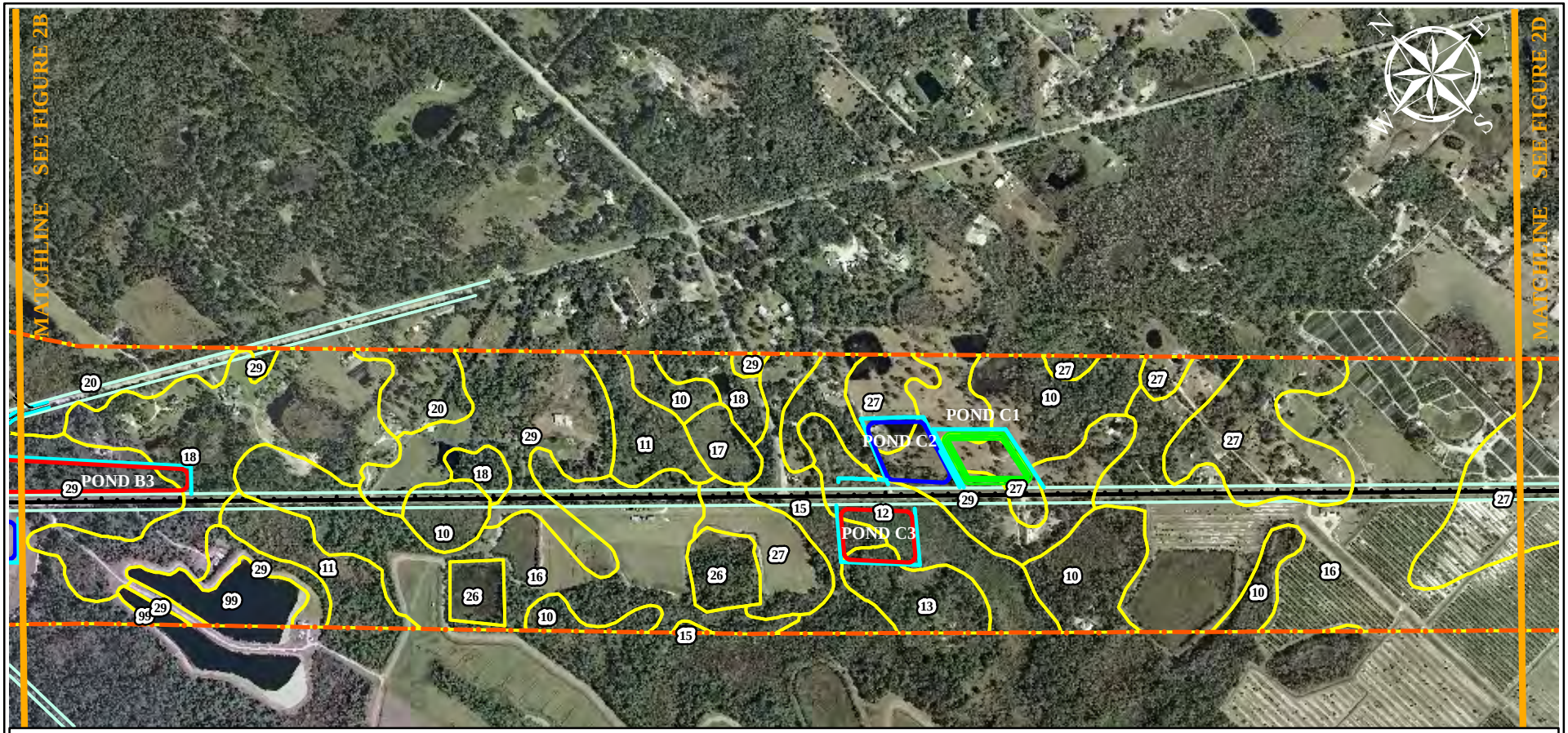
Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 2B

SCALE: 1" = 1000'

JOB NO.: 10.20

DATE: 11/19/13



LEGEND

Project Study Area

Pond Alternatives

Right-of-Way: Source - URS

SYMBOL	DESCRIPTION
10	Basinger, Samsula and Hontoon Soils, Depressional
11	Basinger and Smyrna Fine Sands, Depressional
12	Canova and Terra Ceia Mucks
13	EauGallie and Immokalee Fine Sands
15	Felda and Manatee Mucky Fine Sands, Depressional
16	Immokalee Sand
17	Brighton, Samsula,and Sanibel Mucks
18	Malabar Fine Sand
20	Myakka and EauGallie Fine Sands
26	Udorthents, Excavated
27	Pomello Fine Sand, 0 to 5 Percent Slopes
29	St. Johns and EauGallie Fine Sands
99	Water

Datum projection: NAD_1983_State Plane_Florida_East_FIPS_0901_Feet
Source: Aerials - FDOT, 2009 & NRCS, USDA, SSURGO Data for Seminole and Volusia Counties, Florida.

STATE RD 46 PD&E STUDY

Soils Map

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

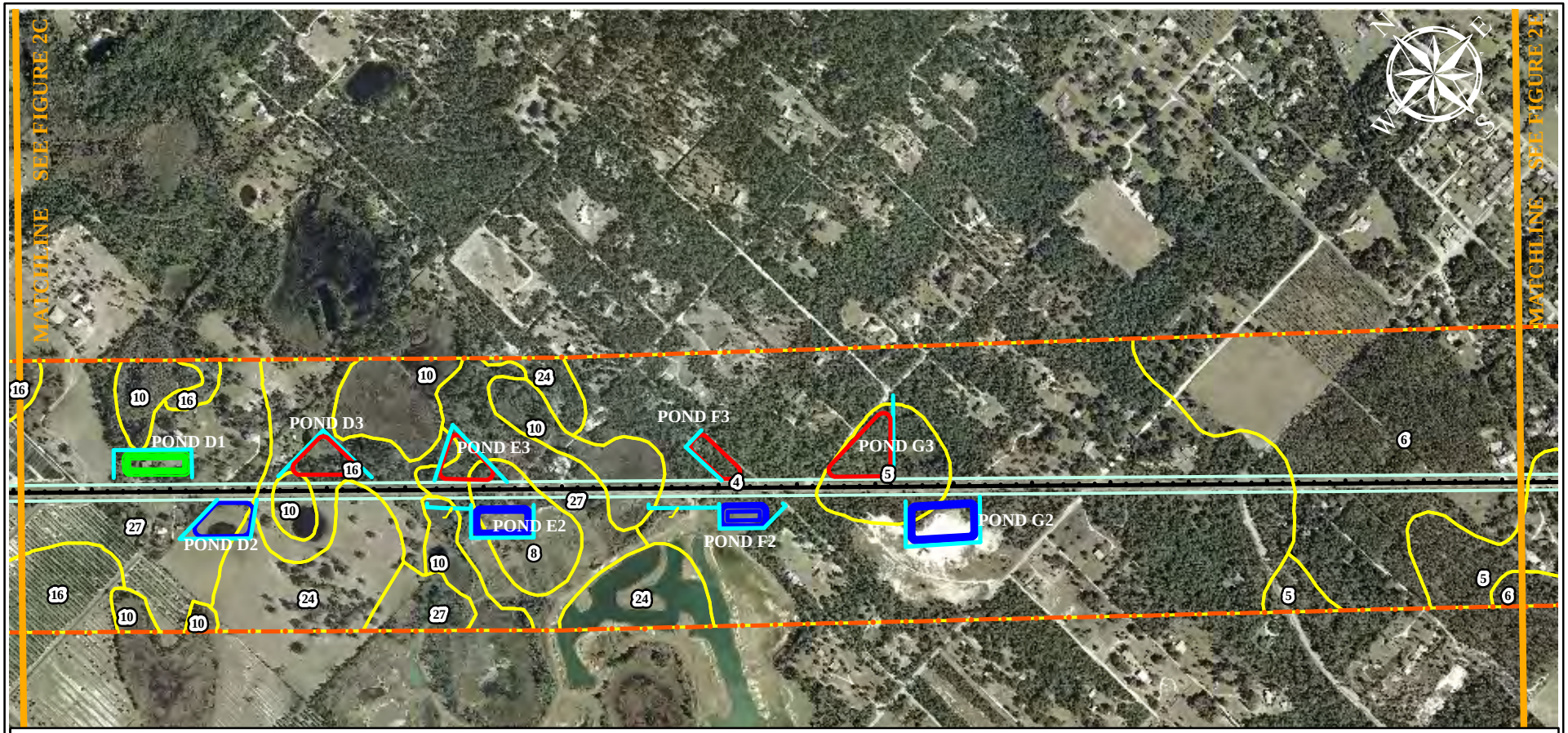
Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 2C

SCALE: 1" = 1000'

JOB NO.: 10.20

DATE: 11/19/13



LEGEND

Project Study Area

Right-of-Way: Source - URS

Pond Alternatives

SYMBOL	DESCRIPTION
4	Astatula Fine Sand, 0 to 5 Percent Slopes
5	Astatula Fine Sand, 5 to 8 Percent Slopes
6	Astatula - Apopka Fine Sands, 0 to 5 Percent Slopes
8	Astatula - Apopka Fine Sands, 8 to 12 Percent Slopes
10	Basinger, Samsula, and Hontoon Soils, Depressional
16	Immokalee Sand
24	Paola - St. Lucie Sands, 0 to 5 Percent Slopes
27	Pomello Fine Sand, 0 to 5 Percent Slopes

Datum projection: NAD_1983_State Plane_Florida_East_FIPS_0901_Feet
Source: Aerials - FDOT, 2009 & NRCS, USDA, SSURGO Data for Seminole and Volusia Counties, Florida.

STATE RD 46 PD&E STUDY

Soils Map

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

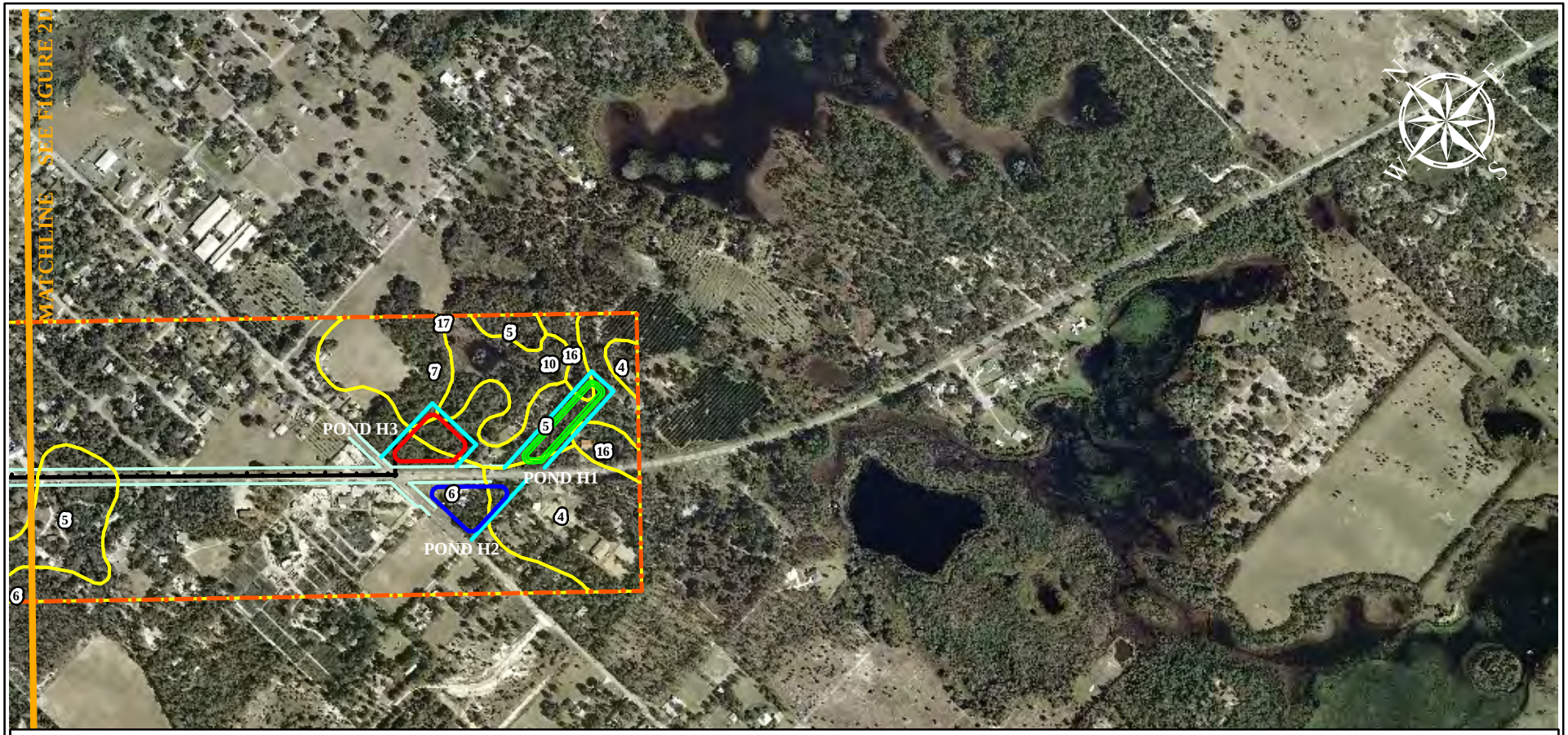
Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 2D

SCALE: 1" = 1000'

JOB NO.: 10.20

DATE: 11/19/13



LEGEND

Project Study Area

Pond Alternatives

Right-of-Way: Source - URS

SYMBOL	DESCRIPTION		
		7	Astatula - Apopka Fine Sands, 5 to 8 Percent Slopes
4	Astatula Fine Sand, 0 to 5 Percent Slopes	10	Basinger, Samsula, and Hontoon Soils, Depressional
5	Astatula Fine Sand, 5 to 8 Percent Slopes	16	Immokalee Sand
6	Astatula - Apopka Fine Sands, 0 to 5 Percent Slopes	17	Brighton, Samsula, and Sanibel Mucks

Datum projection: NAD_1983_State Plane_Florida_East_FIPS_0901_Feet
Source: Aerials - FDOT, 2009 & NRCS, USDA, SSURGO Data for Seminole and Volusia Counties, Florida.

STATE RD 46 PD&E STUDY

Soils Map

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 2E

SCALE: 1" = 1000'

JOB NO.: 10.20

DATE: 11/19/13

Table 1: Physical properties of NRCS soils within the SR 46 PD&E Study Area

Mapping Unit #	Mapping Unit Name (Series & Phase)	Hydrologic group [3]	Flooding			High Water Table		
			frequency [4]	duration [5]	months	Depth (ft) [6]	Kind	Months
3	Arents, 0-5% slopes	C	none	---	---	1.5-3.5	apparent [7]	Jun-Nov
4, 5	Astatula fine sand, 0-5% & 5-8% slopes	A	none	---	---	>6.0	---	---
6, 7, 8	Astutula-Apopka fine sands, 0-5%, 5-8% & 8-12% slopes	A	none	---	---	>6.0	---	---
9	Bassinger and Delray fine sands (Basinger phase)	B/D	none	---	---	0-1.0	apparent	Jun-Feb
9	Bassinger and Delray fine sands (Delray phase)	B/D	none	---	---	0-1.0	apparent	Jun-Mar
10	Basinger, Samsula, and Hontoon soils, depressional (Basinger phase)	D	none	---	---	+2-0	apparent	Jun-Feb
10	Basinger, Samsula, and Hontoon soils, depressional (Samsula phase)	B/D	none	---	---	+2-0	apparent	Jan-Dec
10	Basinger, Samsula, and Hontoon soils, depressional (Hontoon phase)	B/D	none	---	---	+2-0	apparent	Jan-Dec
10	Bluff sandy clay loam [Volusia Co.]	D	frequent	long	Jun-Nov	0-1.0	apparent	Jul-Dec
11	Basinger and Samsula fine sands, depressional	D	none	---	---	+2-0	apparent	Jun-Feb
12	Canova and Terra Ceia mucks	B/D	none	---	---	+2-0	apparent	Jan-Dec
13	EauGallie and Immokalee fine sands	B/D	none	---	---	0-1.0	apparent	Jun-Oct
15	Felda and Manatee mucky fine sands, depressional (Felda phase)	D	none	---	---	+2-0	apparent	Jun-Dec
15	Felda and Manatee mucky fine sands, depressional (Manatee phase)	D	none	---	---	+2-0	apparent	Jun-Feb
16	Immokalee sand	B/D	none	---	---	0-1.0	apparent	Jun-Oct
17	Brighton, Samsula, and Sanibel mucks (Brighton phase)	B/D	none	---	---	+2-0	apparent	Jan-Dec
17	Brighton, Samsula, and Sanibel mucks (Samsula phase)	B/D	none	---	---	+2-0	apparent	Jan-Dec
17	Brighton, Samsula, and Sanibel mucks (Sanibel phase)	B/D	none	---	---	+2-0	apparent	Jun-Feb
18	Malabar fine sand	B/D	none	---	---	0-1.0	apparent	Jun-Nov
19	Manatee, Floridana, and Holopaw soils, frequently flooded	D	frequent	very long	Jun-Feb	0-1.0	apparent	Jun-Feb
20	Myakka and EauGallie fine sands	B/D	none	---	---	0-1.0	apparent	Jun-Oct

Mapping Unit #	Mapping Unit Name (Series & Phase)	Hydrologic group [3]	Flooding			High Water Table		
			frequency [4]	duration [5]	months	Depth (ft) [6]	Kind	Months
21	Nittaw mucky fine sand, depressional	D	none	---	---	+2-0	apparent	Jun-Apr
22	Nittaw muck, occasionally flooded	D	occasional	very long	Jun-Sep	0-1.0	apparent	Jun-Nov
23	Nittaw, Okeelanta, Basinger soils, frequently flooded (Nittaw phase)	D	frequent	very long	Jun-Sep	0-1.0	apparent	Jun-Nov
23	Nittaw, Okeelanta, Basinger soils, frequently flooded (Okeelanta phase)	D	frequent	very long	Mar-Sep	0-1.0	apparent	Jan-Dec
23	Nittaw, Okeelanta, Basinger soils, frequently flooded (Basinger phase)	D	frequent	long	Jul-Sep	0-1.0	apparent	Jun-Nov
24	Paola-St. Lucie sands, 0-5% slopes	A	none	---	---	>6.0	---	---
25	Pineda fine sand	B/D	none	---	---	0-1.0	apparent	Jun-Nov
25	Gator muck [Volusia Co.]	D	frequent	very long	Jun-Apr	+1-0	apparent	Jun-Mar
26	Udorthents, excavated	---	---	---	---	---	---	---
27	Pomello fine sand 0-5% slopes	C	none	---	---	2.0-3.5	apparent	Jul-Nov
29	St. Johns and EauGallie fine sands (St. Johns phase)	B/D	none	---	---	0-1.0	apparent	Jun-Apr
29	St. Johns and EauGallie fine sands (St. Johns phase)	B/D	none	---	---	0-1.0	apparent	Jun-Oct
33	Terra Ceia muck, frequently flooded	D	frequent	long	Jun-Nov	0-1.0	apparent	Jan-Dec
35	Wabasso fine sand	B/D	none	---	---	0-1.0	apparent	Jun-Oct
99	Water	---	---	---	---	---	---	---

[1]United States Department of Agriculture (USDA) Soil Conservation Service (SCS), Soil Survey of Seminole County, Florida, March 1990.

[2]United States Department of Agriculture (USDA) Soil Conservation Service (SCS), Soil Survey of Volusia County, Florida, February 1980.

[3] Hydrologic Group: soils having similar runoff potential under similar storm and cover conditions

Class	Definition
A	sand, loamy sand or sandy loam types of soils having a low runoff potential and high infiltration rates even when thoroughly wetted; consist chiefly of deep, well to excessively drained sands or gravels and have a high rate of water transmission
B	silt loam or loam soils having a moderate infiltration rate when thoroughly wetted and consists chiefly or moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse textures
C	sandy clay loam soils having low infiltration rates when thoroughly wetted and consist chiefly of soils with a layer that impedes downward movement of water and soils with moderately fine to fine structure

D	clay loam, silty clay loam, sandy clay, silty clay or clay soils with the highest runoff potential; very low infiltration rates when thoroughly wetted and consist chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a claypan or clay layer at or near the surface and shallow soils over nearly impervious material

[4] Flooding Frequency Class: indicates the number of times flooding occurs over a period of time.

Class	Duration
none	no reasonable possibility of flooding; one chance out of 500 of flooding in any year or less than 1 time in 500 years.
very rare	very unlikely but is possible under extremely unusual weather conditions; less than 1 percent chance of flooding in any year or less than 1 time in 100 years but more than 1 time in 500 years.
rare	unlikely but is possible under unusual weather conditions; 1 to 5 percent chance of flooding in any year or nearly 1 to 5 times in 100 years
occasional	expected infrequently under usual weather conditions; 5 to 50 percent chance of flooding in any year or 5 to 50 times in 100 years.
frequent	likely to occur often under usual weather conditions; more than a 50 percent chance of flooding in any year (i.e., 50 times in 100 years), but less than a 50 percent chance of flooding in all months in any year.
very frequent	likely to occur very often under usual weather conditions; more than a 50 percent chance of flooding in all months of any year.

[5] Flooding Duration Class: average duration of inundation per flood occurrence

Class	Duration
extremely brief	0.1 to 4 hours
very brief	4 hours to < 2 days
brief	2 days to < 7 days
long	7 days to < 30 days
very long	> 30 days
[6] Depth	"+" sign indicates water level above ground
[7] Apparent:	(Apparent) Water Table is the upper surface of ground water or that level below which the soil is saturated with water. It is at least 6 inches thick and persists in the soil for more than a few weeks.

Table 2: Hydric mapping criteria NRCS soils within the SR 46 PD&E Study Area [1,2,3]

Mapping Unit #	Mapping Unit Name (Series & Phase) [3]	Hydric Component and Phase [4, 5]	% of mapping unit	Hydric Rating	Hydric Criteria [6]	Drainage [3]
3	Arents, 0-5% slopes	---	---	no	none	not rated
4	Astatula fine sand, 0-5% slopes	---	---	no	none	excessively drained
5	Astatula fine sand, 5-8% slopes	---	---	no	none	excessively drained
6	Astutula-Apopka fine sands, 0-5% slopes	---	---	no	none	excessively to well drained
7	Astutula-Apopka fine sands, 5-8% slopes	---	---	no	none	excessively to well drained
8	Astutula-Apopka fine sands, 8-12% slopes	---	---	no	none	excessively to well drained
9	Basinger and Delray fine sands					poorly to very poorly drained
		Basinger	60	yes	2B1	
		Delray	32	yes	2B1	
		Malabar	4	yes	2B1	
10	Basinger, Samsula, and Hontoon soils, depressional					very poorly drained
		Basinger	58	yes	2B1, 3	
		Hontoon	15	yes	1, 3	
		Samsula	15	yes	1, 3	
		Felda	3	yes	2B1, 3	
		Smyrna	2	yes	2B1, 3	
10	Bluff sandy clay loam [Volusia Co.]					very poorly drained, frequently flooded
		Bluff	80	yes	2B3, 4	
		Chobee, frequently flooded	7	yes	2B3, 4	
		Gator	7	yes	1, 3, 4	
		Holopaw, hydric	6	yes	2B1	
11	Basinger and Samsula fine sands, depressional					very poorly drained
		Basinger	63	yes	2B1, 3	
		Smyrna	28	yes	2B1, 3	
		Malabar	4	yes	2B1	
12	Canova and Terra Ceia mucks					very poorly drained
		Canova, drained	75	yes	2B2, 3	
		Terra Ceia, drained	25	yes	1, 3	
13	EauGallie and Immokalee fine sands					poorly drained
		Malabar	9	yes	2B1	

Mapping Unit #	Mapping Unit Name (Series & Phase) [3]	Hydric Component and Phase [4, 5]	% of mapping unit	Hydric Rating	Hydric Criteria [6]	Drainage [3]
15	Felda and Manatee mucky fine sands, depressional					very poorly drained
		Felda	56	yes	2B1, 3	
		Malabar	38	yes	2B3, 3	
		Delray	3	yes	2B1	
16	Immokalee sand	---	---	no	none	poorly drained
17	Brighton, Samsula, and Sanibel mucks					very poorly drained
		Brighton, drained	47	yes	1, 3	
		Samsula, drained	35	yes	1, 3	
		Sanibel, drained	15	yes	2B2, 3	
		Delray	2	yes	2B1	
		Basinger	1	yes	2B1, 3	
18	Malabar fine sand					poorly drained
		Malabar	86	yes	2B1	
		Basinger	5	yes	2B1	
		Felda	4	yes	2B1, 3	
19	Manatee, Floridana, and Holopaw soils, frequently flooded					very poorly to poorly drained
		Manatee, flooded	61	yes	2B3,4	
		Floridana, flooded	21	yes	2B1, 4	
		Holopaw, flooded	15	yes	2B1, 4	
		Basinger, flooded	3	yes	2B1, 4	
20	Myakka and EauGallie fine sands					poorly drained
		Basinger	5	yes	2B1	
		Pompano, flooded	5	yes	2B1	
21	Nittaw mucky fine sand, depressional					very poorly drained
		Nittaw	91	yes	2B3, 3	
		Basinger	9	yes	2B1, 3	
22	Nittaw muck, occasionally flooded					very poorly drained
		Nittaw	100	yes	2B3	
23	Nittaw, Okeelanta, Basinger soils, frequently flooded					poorly to very poorly drained
		Nittaw, flooded	45	yes	2B3, 4	
		Okeelanta, flooded	34	yes	1, 4	
		Basinger, flooded	19	yes	2B1, 4	
		Pompano, flooded	2	yes	2B1	
24	Paola-St. Lucie sands, 0-5% slopes	---	---	no	none	excessively drained
25	Pineda fine sand					poorly drained
		Pineda	89	yes	2B1	

Mapping Unit #	Mapping Unit Name (Series & Phase) [3]	Hydric Component and Phase [4, 5]	% of mapping unit	Hydric Rating	Hydric Criteria [6]	Drainage [3]
		Basinger	4	yes	2B1	
25	Gator muck [Volusia Co.]					very poorly drained
		Gator	80	yes	1, 3, 4	
		Holopaw, hydric	3	yes	2B1	
		Placid	3	yes	2B1, 3	
		Pompano, hydric	3	yes	2B1	
		St. Johns, hydric	3	yes	2B1	
		Tequesta	3	yes	2B2, 3	
		Terra Ceia	3	yes	1, 3	
		Tomoka	2	yes	1, 3	
26	Udorthents, excavated	---	---	---	---	not rated
		Aquents	10	yes	2B2, 3	
27	Pomello fine sand 0-5% slopes	---	---	no	none	moderately well drained
29	St. Johns and EauGallie fine sands					poorly drained
		Felda	5	yes	2B1, 3	
33	Terra Ceia muck, frequently flooded					very poorly drained
		Terra Ceia, flooded	100	yes	1, 4	
35	Wabasso fine sand					poorly drained
		Pineda	10	yes	2B1	
99	Water	---	---	---	---	permanently flooded

[1] United States Department of Agriculture (USDA) Soil Conservation Service (SCS), Soil Survey of Seminole County, Florida, March 1990, sheets 5, 10, 11 & 18

[2] USDA, SCS, Soil Survey of Volusia County, Florida, February 1980, sheet 95

[3] USDA, Natural Recources Conservation Service (NRCS), Official Soil Servies Descriptions, http://soils.usda.gov/technical/classification/osd/index.html

[4] USDA - NRCS, National List of Hydric Soils, http://soils.usda.gov/use/hydric/

[5] Florida Association of Environmental Soil Scientists, Hydric Soils of Florida Handbook, 4th Edition, March 2007

[6] USDA - NRCS, Criteria for Hydric Soils, http://soils.usda.gov/use/hydric/ (see Legend below)

Legend: Hydric Criteria

1 All Histels except Folistels and Histosols except Folists

2B1 Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that are poorly drained or very poorly drained and have a water table equal to 0.0 ft from the surface if textures are course sand, sand, or fine sand in all layers within 20 inches

2B2 Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that are poorly drained or very poorly drained and have a water table at less than or equal to 0.5 ft from the surface during the growing season if permeability is equal to or greater than 6.0 in/hour (h) in all layers within 20 inches

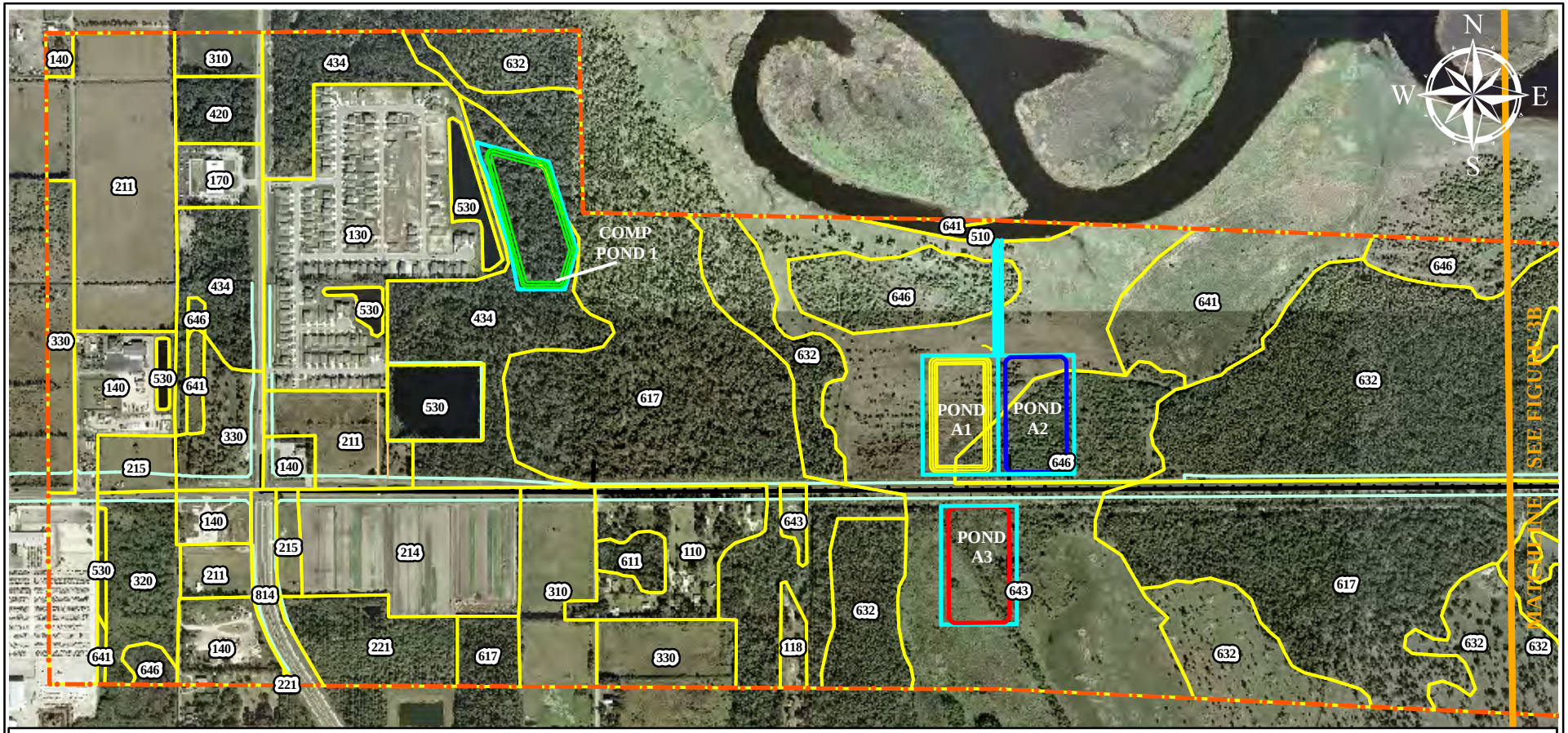
2B3 Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that are poorly drained or very poorly drained and have a water table at less than or equal to 1.0 ft from the surface during the growing season if permeability is less than 6.0 in/h in any layer within 20 inches

3 Soils that are frequently ponded for long duration or very long duration during the growing season

4 Soils that are frequently flooded for long duration or very long duration during the growing season

Table 3. Land Use within the Project Study Area.

FLUCFCS Code	Description	Acres
110	Residential - Low Density	207.87
118	Residential, Rural	63.58
130	Residential, High Density	44.56
140	Commercial and Services	50.81
162	Sand and Gravel Pits	10.66
170	Institutional	6.70
184	Marina	4.62
211	Improved Pastures	147.66
213	Woodland Pastures	38.60
214	Row Crops	33.38
215	Field Crops	12.18
221	Citrus Groves	58.81
243	Ornamentals	25.53
251	Horse Farms	8.66
310	Herbaceous Upland Non-forested	23.66
320	Shrub and Brushland	16.31
330	Mixed Upland Non-forested	25.33
411	Pine Flatwoods	59.84
420	Upland Hardwood Forests	5.52
434	Upland Mixed Coniferous/Hardwood	238.13
441	Pine Plantation	41.03
510	Streams, Waterways, and Ditches	33.50
520	Lakes	34.60
530	Reservoirs	34.79
611	Bay Swamps	2.84
617	Mixed Wetland Hardwoods	204.48
621	Cypress	2.84
625	Hydric Pine Flatwoods	2.38
630	Wetland Forested Mixed	40.45
632	Cabbage Palm Hammock	209.01
641	Freshwater Marshes	198.63
643	Wet Prairies	120.79
644	Emergent Aquatic Vegetation	2.89
646	Mixed Scrub-Shrub Wetland	122.05
741	Rural Land in Transition	15.80
742	Borrow Areas	10.81
814	Roads and Highways	13.70
TOTAL		2,173.00



LEGEND

- Project Study Area
- Right-of-Way: Source - URS
- Pond Alternatives

SYMBOL	DESCRIPTION
110	Residential, Low Density - less than 2 dwellings/acre
118	Residential, Rural - 1 unit on 2 or more acres
130	Residential, High Density - 6 or more dwellings/acre
140	Commercial and Services
170	Institutional
211	Improved Pastures
214	Row Crops
215	Field Crops
221	Citrus Groves
310	Herbaceous Upland Nonforested
320	Shrub and Brushland
330	Mixed Upland Nonforested
420	Upland Hardwood Forests
434	Upland Mixed Coniferous/Hardwood
510	Streams, Waterways and Ditches
530	Reservoirs
611	Bay Swamps
617	Mixed Wetland Hardwoods
632	Cabbage Palm Hammock
641	Freshwater Marshes
643	Wet Prairies
646	Mixed Scrub - Shrub Wetland
814	Roads and Highways

Datum projection: NAD_1983_State Plane_Florida_East_FIPS_0901_Feet
Source: Aerials - FDOT, 2009 & SJRWMD, 2009

STATE RD 46 PD&E STUDY

FLUCFCS Map

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 3A

SCALE: 1" = 1000'

JOB NO.: 10.20

DATE: 12/31/13

LEGEND

Project Study Area
Right-of-Way: Source - URS
Pond Alternatives

SYMBOL	DESCRIPTION
110	Residential, Low Density - less than 2 dwellings/acre
184	Marina - (Park)
211	Improved Pastures
213	Woodland Pastures
411	Pine Flatwoods
434	Upland Mixed Coniferous/Hardwood
510	Streams, Waterways, and Ditches
520	Lakes
530	Reservoirs
617	Mixed Wetland Hardwoods
630	Wetland Forested Mixed
632	Cabbage Palm Hammock
641	Freshwater Marshes
643	Wet Prairies
646	Mixed Scrub - Shrub Wetland
742	Borrow Areas
814	Roads and Highways

Datum projection: NAD_1983_State Plane_Florida_East_FIPS_0901_Feet
Source: Aerials - FDOT, 2009 & SJRWMD, 2009.

STATE RD 46 PD&E STUDY

FLUCFCS Map

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

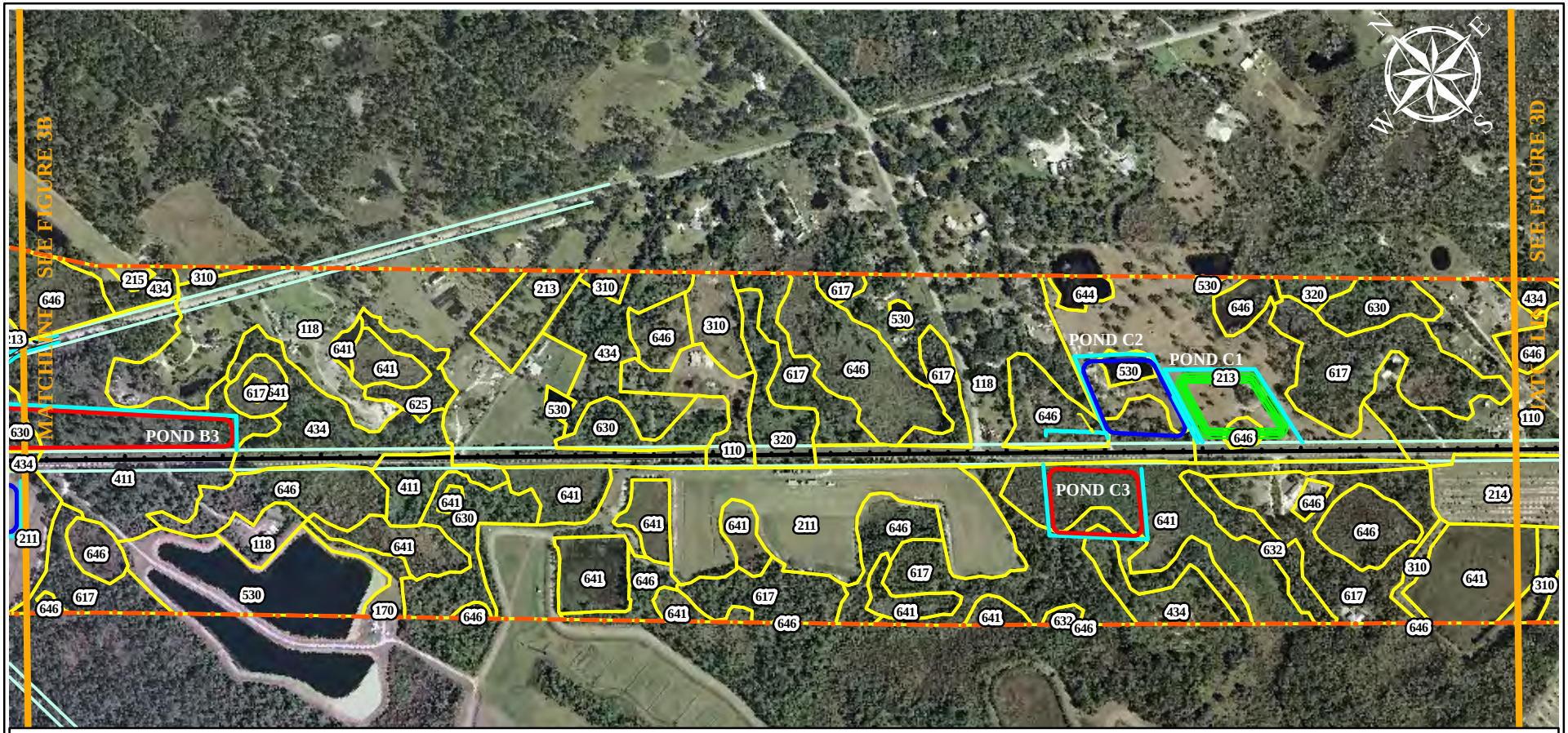
Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 3B

SCALE: 1" = 1000'

JOB NO.: 10.20

DATE: 12/31/13



LEGEND

- Project Study Area
- Right-of-Way: Source - URS
- Pond Alternatives

SYMBOL	DESCRIPTION
110	Residential, Low Density - less than 2 dwellings/acre
118	Residential, Rural - 1 unit on 2 or more acres
170	Institutional
211	Improved Pastures
213	Woodland Pastures
214	Row Crops
215	Field Crops
310	Herbaceous Upland Nonforested
320	Shrub and Brushland
411	Pine Flatwoods
434	Upland Mixed Coniferous/Hardwood
530	Reservoirs
617	Mixed Wetland Hardwoods
625	Hydric Pine Flatwoods
630	Wetland Forested Mixed
632	Cabbage Palm Hammock
641	Freshwater Marshes
646	Mixed Scrub - Shrub Wetland

Datum projection: NAD_1983_State Plane_Florida_East_FIPS_0901_Feet
Source: Aerials - FDOT, 2009 & SJRWMD, 2009

STATE RD 46 PD&E STUDY

FLUCFCS Map

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

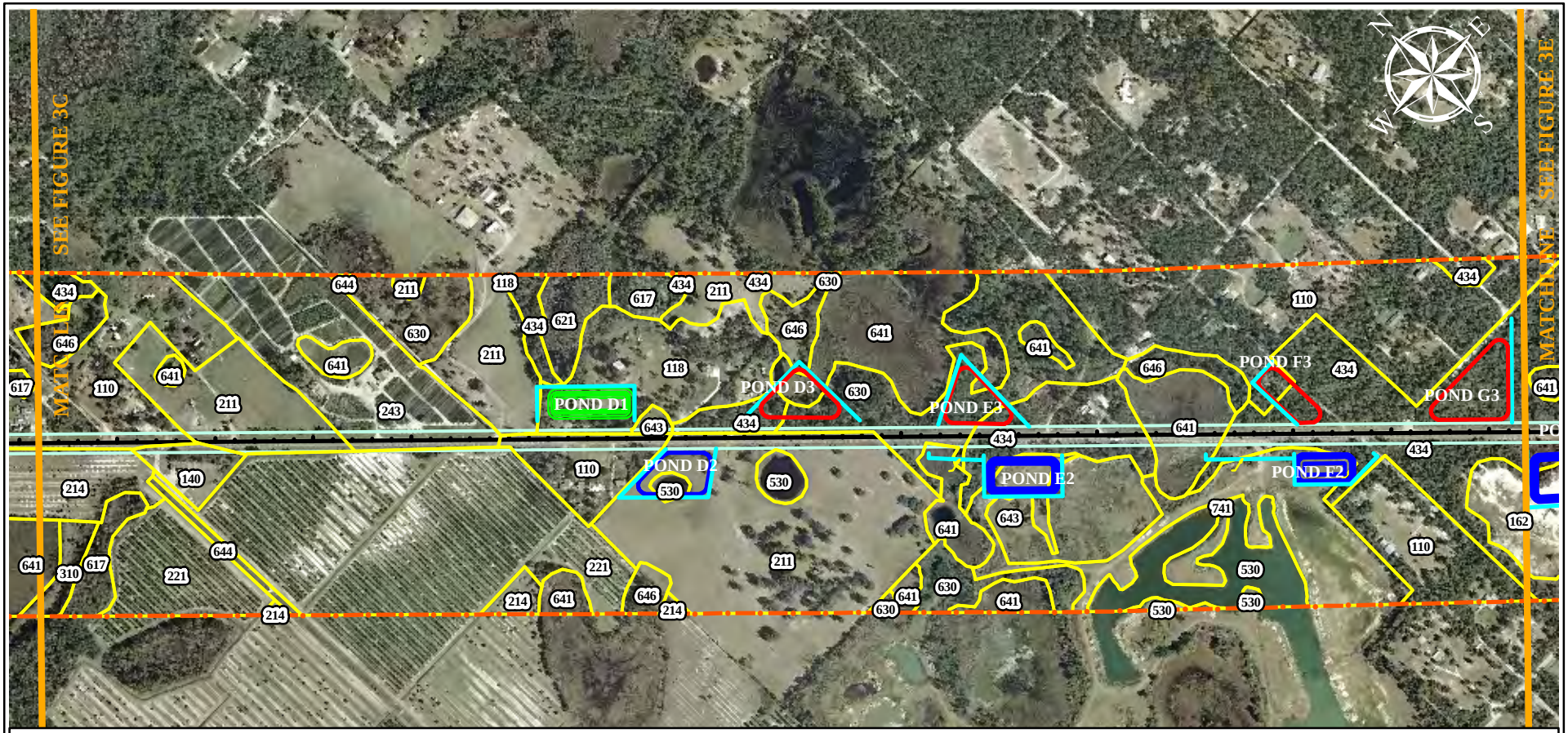
Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 3C

SCALE: 1" = 800'

JOB NO.: 10.20

DATE: 12/31/13



LEGEND

- Project Study Area
- Right-of-Way: Source - URS
- Pond Alternatives

SYMBOL	DESCRIPTION
110	Residential, Low Density - less than 2 dwellings/acre
118	Residential, Rural - 1 unit on 2 or more acres
140	Commercial and Services
162	Sand & Gravel Pits
211	Improved Pastures
214	Row Crops
221	Citrus Groves
243	Ornamentals
310	Herbaceous Upland Nonforested
434	Upland Mixed Coniferous/Hardwood
530	Reservoirs
617	Mixed Wetland Hardwoods
621	Cypress
630	Wetland Forested Mixed
641	Freshwater Marshes
643	Wet Prairies
644	Emergent Aquatic Vegetation
646	Mixed Scrub - Shrub Wetland
741	Rural Land in Transition

Datum projection: NAD_1983_State Plane_Florida_East_FIPS_0901_Feet
Source: Aerials - FDOT, 2009 & SJRWMD, 2009

STATE RD 46 PD&E STUDY

FLUCFCS Map

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

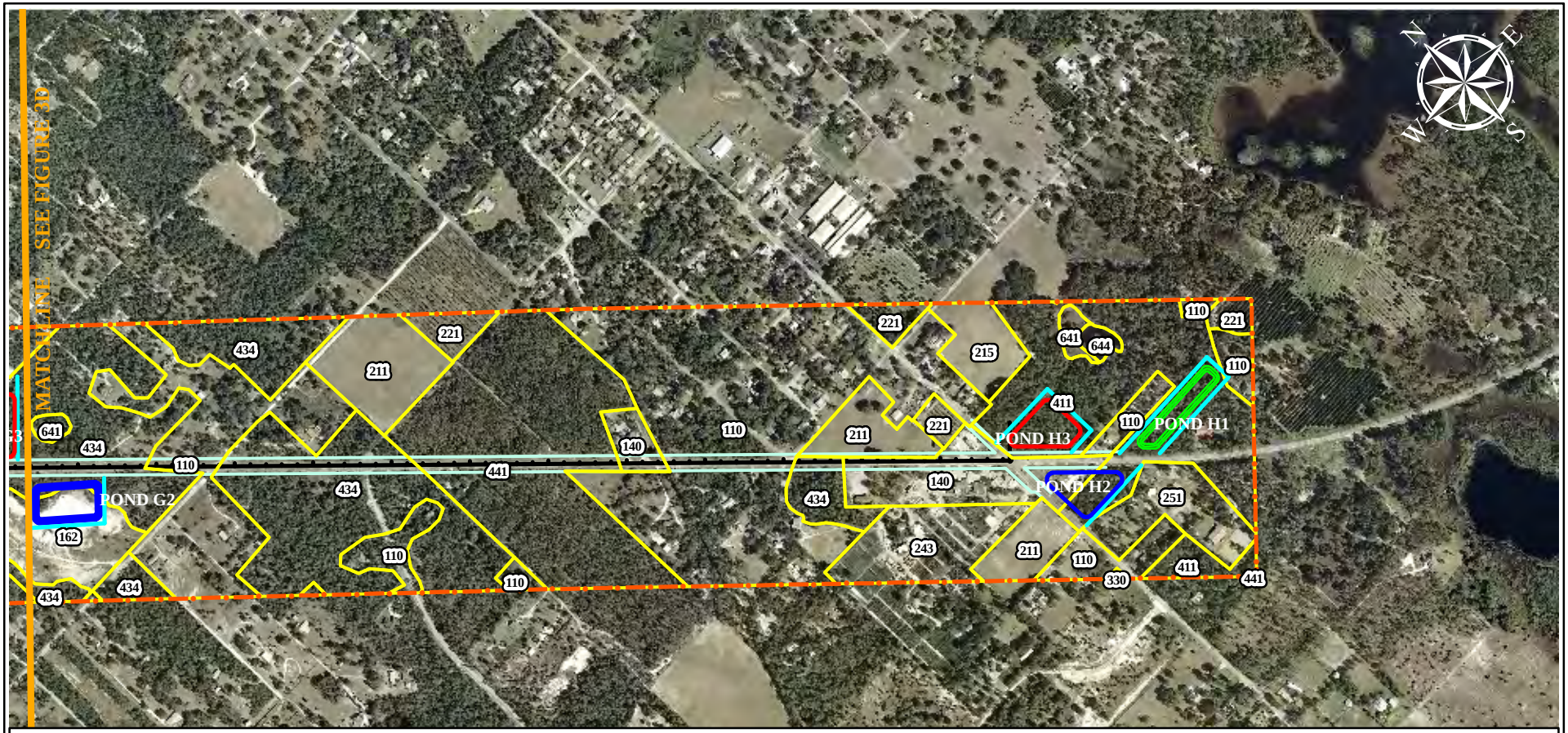
Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 3D

SCALE: 1" = 800'

JOB NO.: 10.20

DATE: 11/19/13



LEGEND

Project Study Area

Right-of-Way: Source - URS

Pond Alternatives

SYMBOL	DESCRIPTION
110	Residential, Low Density - less than 2 dwellings/acre
140	Commercial and Services
162	Sand and Gravel Pits
211	Improved Pastures
215	Field Crops
221	Citrus Groves
243	Ornamentals
251	Horse Farms
330	Mixed Upland Nonforested
411	Pine Flatwoods
434	Upland Mixed Coniferous/Hardwood
441	Pine Plantation
641	Freshwater Marshes
644	Emergent Aquatic Vegetation

Datum projection: NAD_1983_State Plane_Florida_East_FIPS_0901_Feet
Source: Aerials - FDOT, 2009 & SJRWMD, 2009

STATE RD 46 PD&E STUDY

FLUCFCS Map

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 3E

SCALE: 1" = 1000'

JOB NO.: 10.20

DATE: 11/19/13

A brief description of the FLUCFCS mapping follows:

Uplands

Residential, Low Density (110)
This land use was observed throughout the higher elevations of the project limits. It consists of low density single family residences, containing less than two dwellings per acre and has a low likelihood for wildlife occurrence.

Residential, Rural (118)
This land use contains one residence on a minimum of two acres and has a low likelihood for wildlife occurrence.

Residential, High Density (130)
This land use contains six or more residences per acre. One land use of this type, a residential housing development, is located on the western end of the project limits. This land use has a low likelihood for wildlife occurrence.

Commercial and Services (140)
This land use was observed along the eastern and western ends of the project corridor and consists of service stations, auto salvage, retail nursery establishments, and other service oriented businesses. This land use has a low likelihood for wildlife occurrence.

Sand and Gravel Pits (162)
One area of this land use type occurs to the south of SR 46 and west of Geneva. The habitat consists of fine white sands that are being recruited by upland vegetation from the surrounding natural land uses. This land use has a low likelihood for wildlife occurrence.

Institutional (170)
One area of institutional land use, a family health center, is located at the western end of the project corridor. This land use has a low likelihood for wildlife occurrence.

Marina (184)
This land use occurred in one location north of the project corridor on the west shore of the St. Johns River. The location includes boat ramps, picnic area and parking lot for recreational usage. This land use has a low likelihood for wildlife occurrence.

Improved Pastures (211)
This land use contains herbaceous habitat that is either actively grazed or had previously been actively grazed but is currently unmaintained. Active pasture is typically dominated by bahiagrass (*Paspalum notatum*) with lesser components of Bermuda grass (*Cynodon dactylon*), false fennel (*Eupatorium leptophyllum*), capeweed (*Phyla nodiflora*), and purple thistle (*Cirsium horridulum*). Pastures that are not currently active are dominated by bahiagrass with lesser components of broomsedge bluestem (*Andropogon virginicus*), bushy bluestem (*A. glomeratus*), and common ragweed (*Ambrosia artemisiifolia*). Scattered trees and shrubs, including cabbage palm (*Sabal palmetto*), groundsel tree (*Baccharis halimifolia*), elderberry (*Sambucus nigra* ssp. c*anadensis*),

wax myrtle (*Myrica cerifera*), Brazilian pepper (*Schinus terebinthifolia*), and live oak (*Quercus virginiana*), were also observed. The active pastures have a low likelihood for wildlife occurrence while inactive pastures have a moderate likelihood for wildlife occurrence.

Woodland Pastures (213)
This land use is actively grazed pasture which has retained a portion of the historic canopy cover. The herbaceous stratum is dominated by bahiagrass with a lesser component of Bermuda grass, broomsedge bluestem, and false fennel. Tree species observed in this community include live oak and laurel oak (*Quercus laurifolia*). This land use has a low likelihood for wildlife occurrence.

Row Crops (214)
This is an agricultural land use depicting land under cultivation for various types of vegetables. One example of this land use, containing several different vegetable crops, is located on the western end of the alignment. A second example of this land use was historically mapped in the central portion of the alignment that actually contains an abandoned citrus grove. This land use has a low likelihood for wildlife occurrence.

Field Crops (215)
This is an agricultural land use used for land under cultivation for various grain crops. One example of this land use was incorrectly mapped on the western end of the alignment. This area is cultivated for various types of vegetables that would be more accurately described as row crops. This land use has a low likelihood for wildlife occurrence.

Citrus Groves (221)
This is an agricultural land use used for land under cultivation with various citrus crops. This land use has a moderate likelihood for wildlife occurrence.

Ornamentals (243)
This land use contains ornamental nursery growing facilities on the eastern portion of the project corridor in the City of Geneva. A second, smaller example of this land use is located in the central portion of the project corridor. This land use has a low likelihood for wildlife occurrence.

Horse Farms (251)
This is an agricultural land use for active equine facilities and associated pastures. The vegetated portions of the land use are typically dominated by bahiagrass and Bermuda grass. This land use has a low likelihood for wildlife occurrence.

Herbaceous Upland Non-forested (310)
This land use contains herbaceous upland habitat of undetermined usage. It is typically dominated by bahiagrass with lesser components of Bermuda grass, false fennel, capeweed, and purple thistle. This land use has a low likelihood for wildlife occurrence.

Shrub and Brushland (320)
This land use consists of habitat that has been disturbed from previous clearing activities and currently exhibits dense secondary vegetative growth. Woody species observed in this community have greater than 50% cover and include live oak, sugarberry (*Celtis laevigata*), cabbage palm,

Brazilian pepper, and red cedar (*Juniperus virginiana*). Herbaceous species typical of this habitat include Bermuda grass, guineagrass (*Panicum maximum*), and common ragweed. This land use has a moderate likelihood for wildlife occurrence.

Mixed Upland Non-forested (330)
This land use consists of habitat that has been disturbed from previous clearing activities and currently exhibits low to moderate secondary vegetative growth. Woody species observed in this community have less than 50% cover and include live oak, saw palmetto (*Serenoa repens*), sugarberry, and Brazilian pepper. Herbaceous species typical of this habitat include Bermuda grass, guineagrass, broomsedge bluestem, common ragweed, beggarticks (*Bidens alba*), and peppervine (*Ampelopsis arborea*). This land use has a moderate likelihood for wildlife occurrence.

Pine Flatwoods (411)
This land use consists of natural pine flatwoods. The habitat is dominated by slash pine (Pinus elliottii) with a dense understory of saw palmetto. This land use has a high likelihood for wildlife occurrence.

Upland Hardwood Forests (420)
This forested upland habitat contains a mixture of hardwood species such as live oak, sand live oak (*Quercus geminata*), water oak (*Q. nigra*), laurel oak, and sweetgum (*Liquidambar styraciflua*). One area of this land use occurs on the western portion of the project corridor. This land use has a high likelihood for wildlife occurrence.

Upland Mixed Coniferous/Hardwood (434)
This forested upland habitat contains a diverse mixture of coniferous species such as slash pine, sand pine (*Pinus clausa*), loblolly pine (*P. taeda*), pond pine (*P. serotina*), and red cedar, as well as hardwood species such as live oak, sand live oak, water oak, laurel oak, sweetgum, dahoon holly (*Ilex cassine*), and southern magnolia (*Magnolia grandiflora*). This land use has a high likelihood for wildlife occurrence.

Pine Plantation (441)
One large area of this land use occurs on both the north and south side of the road alignment near the eastern (Geneva) end of the alignment. This habitat contains mature planted slash pine with very sparse cover in the sub-canopy, shrub and herbaceous strata, including pricklypear cactus (*Opuntia humifusa*), citrus (*Citrus* spp.), stinging nettle (*Cnidoscolus stimulosus*), cabbage palm, black cherry (*Prunus serotina*), winged sumac (*Rhus copallinum*), and laurel oak. The substrate is covered by a thick layer of pine needles, offering little in the way of food and cover for wildlife. This land use has a low likelihood for wildlife occurrence.

Rural Land in Transition (741)
One area of this land use occurs on the western portion of the project corridor and surrounds a borrow pit system that was active until 2003. This upland habitat is dominated by bahiagrass and Bermuda grass and has a low likelihood for wildlife occurrence.

Borrow Areas (742)
One land use of this type occurs to the east of the St. Johns River and consists of a borrow area used for fill material. This land use has a low likelihood for wildlife occurrence.

Roads and Highways (814)
This land use includes State Roads 46 and 415 as well as smaller roads.

Wetlands and Other Surface Waters

Streams, Waterways, and Ditches (510)
Roadside ditches and swales occur sporadically in the cleared edges of upland wetland communities along the highway alignment. These habitats contain a wide variety of upland and wetland herbaceous species, dependent on the type of adjacent natural community, the hydrologic regime, and the presence or absence of hydric soils. Certain wetland ditches have a high concentration of undesirable species such as cattail (*Typha* spp.). Roadside ditches and swales have a moderate likelihood for wildlife occurrence.

One wide (> 50 ft) but shallow ditch occurs on the north side of the road alignment, bisecting an area of mixed scrub-shrub wetland. This ditch is vegetated by a variety of herbaceous species including maidencane (*Panicum hemitomon*), blue flag iris *(Iris virginiaca*), yellow canna (*Canna flaccida*), and lizard's-tail (*Saururus cernuus*). This portion of the land use has a moderate likelihood for wildlife occurrence.

The St. Johns River occurs on the project alignment north of Lake Jesup. This portion of the land use contains open, flowing water with a wide variety of emergent wetland vegetation along the river's edge. The St. Johns River has a high likelihood for wildlife occurrence.

Lakes (520)
Lake Jesup is the lone example of this land use on the project corridor. It consists of a large body of open water along with the associated emergent wetland vegetation along the lake shores. Lake Jesup has a high likelihood for wildlife occurrence.

Reservoirs (530)
Three land use areas of this type occur to the west of the St. Johns River and function as storm water retention ponds. This land use has a moderate likelihood for wildlife occurrence.

Bay Swamps (611)
This forested wetland land use is typically composed of sweetbay (*Magnolia virginiana*), loblolly bay (*Gordonia lasianthus*), red bay (*Persea borbonia*), and red maple (*Acer rubrum*), with lesser numbers of slash pine and laurel oak. One area of this land use occurs on the western portion of the project corridor and has a high likelihood for wildlife occurrence.

Mixed Wetland Hardwoods (617)
This wetland forested habitat type typically contains a large variety of hardwoods in the canopy stratum, including red maple, swamp tupelo (*Nyssa sylvatica* var. *biflora*), sweetbay, laurel oak, cabbage palm, and dahoon holly. The woody understory typically includes saw palmetto, swamp

dogwood (*Cornus florida*), Chinese tallowtree (*Sapium sebiferum*), and wax myrtle (*Myrica cerifera*). The groundcover stratum is moderate and typically contains wetland ferns such as royal fern (*Osmunda regalis*), cinnamon fern (*O. cinnamomea*), and Virginia chain fern (*Woodwardia virginica*). This land use has a high likelihood for wildlife occurrence.

Cypress (621)
This forested wetland habitat is usually pure or predominant stands of bald cypress (*Taxodium distichum*) or pond cypress (*Taxodium ascendens*). The understory typically is composed of saw palmetto and wax myrtle, with the groundcover dominated by wetland ferns such as royal fern, cinnamon fern, Virginia chain fern and netted chain fern (*Woodwardia areolata*). One area of this habitat type occurs on the north side of the central portion of the project corridor. This land use has a high likelihood for wildlife occurrence.

Hydric Pine Flatwoods (625)
This forested wetland habitat is typically dominated by slash pine in the canopy with saw palmetto and wax myrtle in the understory. The groundcover layer contains a wide variety of wetland grasses and forbs. One area of this habitat type occurs on the north side of the central portion of the project corridor. This land use has a high likelihood for wildlife occurrence.

Wetland Forested Mixed (630)
This land use consists of forested wetlands containing a wide variety of canopy species, including laurel oak, cabbage palm, slash pine, loblolly pine, red maple, swamp tupelo, sweetbay, swamp dogwood, and dahoon holly. The habitat typically has a sparse groundcover stratum, containing sawgrass (*Cladium jamaicense*) and a variety of wetland fern species. This land use has a high likelihood for wildlife occurrence.

Cabbage Palm Hammock (632)
These are large areas of higher elevation wetlands dominated by dense stands of cabbage palm. They also contain a wide variety of woody species with low areal cover, including American ash (*Ulmus americana*), laurel oak, live oak, red cedar, Brazilian pepper, and groundsel tree. Groundcover species are extremely sparse due to heavy shading by the cabbage palms. This land use has a low to moderate likelihood for wildlife occurrence.

Freshwater Marshes (641)
This herbaceous land use includes wetland areas of lower elevation dominated by graminoid species such as maidencane. Typical habitats also contain a wide diversity of herbaceous wetland species such as duck potato (*Sagittaria lancifolia*) and shrub species such as buttonbush (*Cephalanthus occidentalis*), primrose willow (*Ludwigia peruviana*), and groundsel tree. This land use has a high likelihood for wildlife occurrence.

Wet Prairies (643)
This herbaceous land use includes wetland areas of higher elevation containing a wide variety of herbaceous species including sand cordgrass (*Spartina bakeri*), spikerush (*Eleocharis* spp.), spadeleaf (*Centella asiatica*), duck potato, Virginia saltmarsh mallow (*Kosteletzkya pentacarpos*), and creeping primrosewillow (*Ludwigia repens*), in addition to scattered shrub species such as

groundsel tree, wax myrtle, and cabbage palm. This land use has a low to moderate likelihood for wildlife occurrence.

Emergent Aquatic Vegetation (644)
This land use is usually associated with areas of open water and typically contains floating vegetation such as spatterdock (*Nuphar advena*) and white waterlily (*Nymphaea odorata*). One area of this land use occurs in the western portion of the project corridor. This land use has a moderate likelihood for wildlife occurrence.

Mixed Scrub-Shrub Wetland (646)
This land use includes several diverse wetland habitats. One habitat type contains shrub marsh, composed of coastalplain willow (*Salix caroliniana*), elderberry, buttonbush, wax myrtle, primrose willow, and sawgrass, surrounded by a band of hardwoods dominated by red maple. The herbaceous stratum is very sparse in this community type. This portion of the land use has a moderate likelihood for wildlife occurrence.

A second habitat type under this land use contains hardwood swamp, typically dominated by red maple with a highly diverse and dense herbaceous component composed of a wide variety of wetland ferns. This portion of the land use has a high likelihood for wildlife occurrence.

A third habitat type under this land use contains heavily grazed community with scattered hardwood saplings and a variety of wetland and upland herbaceous species. Disturbance species such as Chinese tallowtree are common in this disturbed community. The likelihood for wildlife occurrence in this portion of land use is low.

6.3 HYDROLOGIC FEATURES

The current roadway (SR 46) crosses Lake Jesup, which is a Class III waterbody. Lake Jesup has a surface area totaling approximately 10,660 acres and drains a watershed of approximately 87,331 acres to the St. Johns River, which is located on the northeast side of the Middle St. Johns Basin. A majority of the watershed occurs within Seminole County, but a small portion extends into Orange County. The lake was verified by the Florida Department of Environmental Protection as impaired for nutrients and unionized ammonia due to elevated annual average Trophic State Index (TSI) values and exceedances of the unionized ammonia criterion and was included on the Verified List of impaired waters for the Middle St. Johns Basin that was adopted by Secretarial Order on May 27, 2004. The Total Maximum Daily Load (TMDL) report for nutrients and unionized ammonia for Lake Jesup (including Lake Jesup outlet) was completed in 2006.

Heath Spring is located within the eastern portion of the study corridor and approximately one (1) mile northwest of Geneva, Florida. Heath Spring is composed of several seeps in a steep sand slope on the southeast edge of a large sinkhole. The spring is located approximately 200 feet north of the existing right-of-way within private property.

6.4 CONSERVATION EASEMENTS

There are two (2) large tracts immediately adjacent to the recommended alternative that are under recorded conservation easements. They are the Rolf Bergmann Mitigation Tract and the North Lake Jesup Tract of the Lake Jesup Conservation Area (formerly known as the Futch Property). The Rolf Bergmann Mitigation Tract occurs on the north side of SR 46 and is a private mitigation bank. The North Lake Jesup Tract lies on the south side of SR 46 and is publicly owned. Both tracts are located west of the Lake Jesup Bridge.

The Rolf Bergmann Mitigation Tract has been recognized as being of "regional ecological significance" due to its geophysical location and hydrologic importance to St. Johns River as well as the Lake Jesup watershed and floodplains. There was a portion of the Rolf Bergmann Mitigation Tract, located in Section 35, Township 19S, Range 31E, that may have been utilized as mitigation for wetland impacts. However, a recorded conservation easement and SJRWMD permit number could not be identified. This area occurs between the CFE Inc. mitigation parcel and the Centex Homes mitigation parcel.

The Florida Department of Protection has a vested interest in the North Lake Jesup Tract in the form of a recorded Conservation Easement. The tract was established as mitigation for the construction of State Road 417 (Seminole County Expressway Authority) as authorized by FDEP Permit No's 519723289 and 591733339. The property is currently owned by the SJRWMD.

The recommended alternative is proposed to impact 17.59 acres of potential conservation easement lands.

7.0 PROTECTED SPECIES

The field surveys conducted for the PD&E Study revealed occurrences of wading birds, eagles, osprey and other raptors, small passerine birds, and amphibians in the area. Evidence of deer and wild hogs was also clearly evident as was evidence of mesomammals (e.g. raccoons, opossums). While portions of the study area have clearly been impacted by human activity, significant portions of natural areas, as well as agricultural and ruderal lands, remain intact providing habitat to numerous wild and human habituated species. While numerous federal, state, and local regulations provide protection to plant and animal species, only those regulations germane to the National Environmental Policy Act or have bearing upon roadway construction have been considered. Citations for these regulations are included within the references section of this document.

The following discussion describes each protected species that occurs or has a potential for occurrence within or adjacent to the proposed project alignment. This analysis resulted in a list of protected wildlife and plant species that either occur or have a probability to occur in habitats within or adjacent to the study area (Tables 4 and 5, respectively). Table 4 includes two species (sand skink and Atlantic sturgeon) which were reported by FFWCC during the ETDM review as potentially occurring within the region. A review of the scientific literature indicates that while these species occur within Seminole County, the project area is out of range of their respective ranges. Reported occurrences of protected species and critical habitat are within the vicinity of

the project corridor as shown on Figure 4. Bear nuisance incident reports from 1980 to 2011 are also shown in Figure 4.

7.1 FAUNA

Sherman's Fox Squirrel
The Sherman's fox squirrel (*Sciurus niger shermani*) is a state-listed species of special concern. The fox squirrel's primary habitat includes areas that are characterized as fire-maintained longleaf pine-turkey oak, sandhill and flatwoods communities. These plant communities are limited within and adjacent to the study area. No fox squirrels or evidence of fox squirrels were observed within or adjacent to the project during the PD&E Study. This project is expected to have minimal impact the Sherman's fox squirrel.

Florida Manatee
The Florida manatee (*Trichechus manatus latirostris*) is a subspecies of the West Indian manatee and is listed as federally threatened. It is a native species found in all parts of the state with fossil remains dating back 45 million years. This species is dependent upon warm waters and historically individuals would disperse in the warmer months and migrate south or congregate around warm springs during the winter. Reduction in spring water flows is thought to have impacted this species. Manatee easily move between fresh and salt waters, from rivers and streams to estuaries, lagoons, and near shore marine environments but their propensity to congregate around the warm outflows of water cooled power plants may have significantly altered their warm season/cold season migration patterns.

While disease, weather, and habitat loss remain considerable threats to manatee survival, watercraft strike remains the principal cause of mortality with violent collisions with propeller driven boats frequently leading maiming, disfigurement, and even death. Such collusions are so common that adults are usually identified by their unique pattern of propeller scars. Population modeling by various agencies continues to predict declines in manatee numbers. Protections for Florida manatees were first enacted in 1893. Today, they are protected by the Florida Manatee Sanctuary Act (§379.2431(2), Florida Statutes) and are federally protected by both the Marine Mammal Protection Act and the Endangered Species Act. Manatees are known to utilize the waters of the St. Johns River and have been reported as far up the St. Johns River as Lemon Bluff upstream of the project corridor in Volusia County. In response to query, FFWCC has provided critical habitat and mortality data for this species within the vicinity of the project area. These data are provided within Appendix 1 and confirm that the SR 46 bridge over St. Johns River/Lake Jesup traverses critical habitat for the Florida Manatee and that manatee mortality has occurred within the area. Critical habitat for this species is also presented in Figure 4.

Coordination with FFWCC and USFWS regarding this species during project design, permitting, and construction will be necessary. The Manatee Effect Determination Key is provided as Appendix 3. Effect determination upon this species includes location of project within a county or contiguous county having an approved Manatee Protection Plan, installation of barriers to manatees, dredging activity, and impacts to manatee foraging habitat. The principal regulatory vehicle for this coordination will be through USACE dredge and fill permitting.

USFWS project review as documented in their 5/29/2014 concurrence letter (Appendix 4) stated: the Service concurs with a determination MANLAA ("may affect, not likely to adversely affect") if the conditions listed below are incorporated into the project:

- 2011 In-Water Construction Conditions (or current version) [FFWCC's *Standard Manatee Conditions for In-Water Work* (Appendix 5)] will be followed. In the future, current guidelines and contact numbers could be found on our office website or the Army Corps website.
- Any culverts larger than eight inches in diameter should be grated to prevent manatee entrapment. The spacing between the bridge pilings will be at least 60 inches apart to allow for manatee movement in between the pilings.
- Barges will be equipped with fender systems that provide a minimum standoff distance of four feet between wharves, bulkheads and vessels moored together to prevent crushing manatees between the barges or between the barge and work site. All existing slow speed or no wake zones will apply to all work boats and barges associated with the construction.
- No dredging is proposed at this time. If dredging is needed, consultation should be reinitiated.
- No blasting is proposed at this time. FDOT understands that blasting will result in a 'may affect' determination and FDOT would initiate formal ESA consultation.

As these conditions will be incorporated into the project it is anticipated that this project will have a "may affect, not likely to adversely affect" determination for the Florida manatee.

Table 4: Protected Wildlife Species, Listing Status, Habitat Preference, and Potential for Occurrence within the SR 46 PD&E Study Area

Scientific name	Common name	Listing Status[1, 2, 3, 4]	Habitat Preference [5,]	Potential Occurence[6]
Mammals				
Sciurus niger shermani	Sherman's fox squirrel	SSC	Pinelands and mixed hardwood-conifer communities	low
Trichechus manatus	Florida manatee	FT	Coastal waters, bays, rivers, and (occasionally) lakes. Requires warm-water refugia such as springs or cooling effluent during cold weather. Sheltered coves are important for feeding, resting, and calving.	moderate
Puma concolor coryi	Florida panther	FE	A wilderness species with ability to adapt to human intrusion and habitat alterations to hunt medium to large sized game	low
Ursus americanus floridanus	Florida black bear	P[7]	Forested communities, forested wetlands, pine flatwoods, sand pine scrub and mixed hardwood forests	low
Birds				
Aphelocoma coerulescens	Florida scrub jay	FT	oak scrub; low growing oaks with patches of bare ground	low
Athene cunicularia	burrowing owl	ST	Open sandy treeless areas, typically pastures and prairies	moderate
Caracara cheriway	crested caracara	FT	Open country, including dry prairie and pasture lands with cabbage palm, cabbage palm/live oak hammocks, and shallow ponds and sloughs. Preferred nest trees are cabbage palms, followed by live oaks.	pair observed flying over western terminus of project
Egretta caerulea	little blue heron	ST	Freshwater, brackish and estuarine wetlands	present
Egretta tricolor	tricolored heron	ST	Freshwater, brackish and estuarine wetlands	present
Falco spaverius paulas	Southeastern American kestrel	ST	mainly open country from mountains to coasts; formerly even cities	moderate
Grus canadensis pratensis	Florida sandhill crane	ST	Shallow marshes and open pastures	present
Haliaeetus leucocephalus	bald eagle	P[8]	Nests in mature pine or cypress near permanent waterbodies	adults, juveniles & nest SE 036 observed
Mycteria americana	wood stork	FT	Freshwater and brackish wetlands	present
Pandion haliaetus	osprey	P[9]	open bodies of water, nesting nearby	present
Picoides borealis	red-cockaded woodpecker	FE	fire maintained pine flatwoods; nesting in old growth longleaf and less frequently slash pines; rarely in cypress	low
Platalea ajaja	roseate spoonbill	ST	Forages in shallow marine, brackish or freshwater sites including mudflats, tidal ponds and sloughs, freshwater sloughs and marshes; nesting primarily on coastal islands	low
Rostrhamus sociabilis plumbeus	Everglade snail kite	FE	Forages over relatively shallow, clear, calm waters, ideally relatively open with a low density of emergent vegetation	low

Reptiles and Amphibians				
Drymarchon corais couperi	Eastern indigo snake	FT	Hydric hammock, palustrine habitats, sandhill, scrub, upland pine forest, and other habitats; frequently observed in gopher tortoise burrows	moderate
Gopherus polyphemus	gopher tortoise	ST	Old field, sandhill, scrub, xeric hammock, ruderal, dry prairie, and pine flatwoods	moderate
Lampropeltis extenuata	short-tailed snake	ST	Longleaf pine-turkey oak associations, occasionally found in upland hammock and sand pine scrub	low
Neoseps reynoldsi	sand skink	FT	endemic to Central, Lake Wales, Winter Haven, and Mt. Dora Ridges; loose sands in rosemary scrub	out of range
Pituophis melanoleucus mugitus	Florida pine snake	ST	Sandhill, xeric hammock, pine flatwoods and other ruderal habitats	low
Fish				
Acipenser oxyrinchus oxyrinchus	Atlantic sturgeon	FE	Marine and large freshwater habitats; spawning near river fall line	out of range
Pteronotropis welaka	bluenose shiner	ST	Quiet backwaters and pools of blackwater streams and rivers and spring runs; usually with thick vegetation nearby. Occurs in both low-pH and high-pH environments.	out of range

[1] On November 8, 2010 new threatened species rules approved by the Florida Fish and Wildlife Conservation Commission (FFWCC) went into effect. All Federally listed species that occur in Florida are included on Florida's list as Federally-designated Endangered (FE), Federally-threatened (FT) species. In addition, the State has a listing process to identify species that are not Federally listed but at risk of extension. These species are called State-designated Threatened.

[2] Listing Status: FE - federally designated endangered, FT - federally designated threatened, ST - state designated threatened, SSC - State Species of Special Concern, or P - protected by federal and/or state law.

[3] FFWCC - *Florida's Endangered and Threatened Species*, January 2017.

[4] U.S. Fish and Wildlife Service, Orange County Federally Listed Species (available on the web), last modified June 21, 2016.

[5] Habitat descriptions: **http://www.fnai.org/bioticsscearch.cfm.**

[6] Probability of occurrence: None, low, moderate, high, or present based on best available data and selective field observations.

[7] Protected per the Florida Black Bear Conservation Rule (68A-4.009 FAC).

[8] Migratory Bird Treaty Act (16 USC 703-712), Golden and Bald Eagle Protection Act (16 USC 668-668d), Lacey Act (16 USC 3371-3378), Eagle Act (50 CFR Parts 13 & 22), and the Florida Eagle Rule (FAC 68-16.002).

[9] Migratory Bird Treaty Act and Florida Osprey Protection Rules (Chapter 68A-4.001 FAC).

Table 5: Protected Plant Species, Listing Status, Habitat Preference, and Potential for Occurrence within the SR 46 PD&E Study Area

Scientific Name	Common Name	Listing Status[1]		Habitat Preference	Potential Occurrence[4]
		State[2]	Federal[3]		
Asclepias curtissii	Curtiss' milkweed	E	-	Dry hammocks, scrub, and scrubby flatwoods	Low: limited habitat available
Calopogon multiflorus	many-flowered grass pink	T	-	Damp meadows, pine flatwoods with longleaf pine, wiregrass, saw palmetto; fire maintained	Low: limited habitat available
Carex chapmanii	Chapman's sedge	T	-	Hammocks, woodlands, slope forests, hydric hammocks, floodplain forests	Moderate: available habitat
Centrosema arenicola	pineland butterfly pea, sand butterfly pea	E	-	Sandhill, scrubby flatwoods, dry upland woods, open mixed woodlands, pine or oak-palmetto thickets	Low: limited habitat available
Chionanthus pygmaeus	pygmy fringetree	E	E	Scrub, sandhill, and xeric hammock, primarily on the Lake Wales Ridge. May form thickets with evergreen scrub oaks and shrubs	Low: limited habitat available
Coelorachis tuberculosa	piedmont joint grass, Florida jointtail grass	T	-	Sandhills, upland lake margins	Low: limited habitat available
Ctenitis submarginalis	brown-hair comb fern	E	-	Cypress swamps, rockland hammocks, spoil banks	Low: limited cypress swamp habitat available
Dennstaedtia bipinnata	cuplet fern, bipinnate cuplet fern	E	-	Deep muck soil of hydric hammocks, wet woods	Low: limited deep muck habitat available
Encyclia tampensis	butterfly orchid	C	-	Mangrove, cypress and hardwood swamps and hammocks, live oak hammocks	High: good habitat plentiful
Garberia heterophylla	garberia	T	-	Dry sandy pine or pine-oak scrub and praires, typically on the edge of open sunny areas	Low: limited habitat available
Gonolobus suberosus	anglepod, angularfruit milkvine	T	-	Calcareous mesic hammocks, cabbage palm hammocks, bottomland forests, seepage streams	Moderate: available habitat
Harrisella porrecta (filiformis)	threadroot orchid, leafless harrisella	T	-	Old orange groves, cypress domes, strand swamps, hardwood swamps and hammocks, tramways and sloughs	Moderate: available habitat
Illicium parviflorum	yellow star anise	E	-	Banks of spring-run or seepage streams, bottomland forest, hydric hammocks, and baygall dominated by red maple and sweet bay	Moderate: available habitat
Lechea cernua	scrub pinweed, nodding pinweed	T	-	Sand scrub, openings, fire maintained; disturbed areas	Low: limited habitat available
Lechea divaricata	spreading pinweed	E	-	Dry sandy soil, scrub and scrubby flatwoods	Low: limited habitat available

Scientific Name	Common Name	Listing Status[1]		Habitat Preference	Potential Occurrence[4]
		State[2]	Federal[3]		
Lilium catesbaei	Catesby's lily, pine lily	T	-	Wet and mesic flatwoods, wet prairies, seepage slopes, bogs, usually with grasses	Low: limited habitat available
Lobelia cardinalis	cardinal flower	T	-	Banks and shallow waters of rivers and streams, ditches, cypress swamps, floodplain forests, hardwood hammocks, and sloughs	Moderate: available habitat
Lycopodiella cernuum	nodding clubmoss, staghorn clubmoss	C	-	Wet depressions, wet prairies, ditches, moist areas	Moderate: available habitat
Myrcianthes fragrans	Simpson's stopper, twinberry	T	-	Coastal hardwood hammocks, rockland hammocks, oak scrub, coastal flatwoods, shell mounds	Low: limited preferred habitat available
Nemastylis floridana	celestia lily, fallflowering ixia	E	-	Clearings in swamps, marshes, wet pine flatwoods, prairies, and edges of cabbage palm hammocks	Moderate: available habitat
Nolina atopocarpa	Florida beargrass	T	-	Grassy areas of mesic flatwoods, bordering savannahs, shell middens	Low: limited habitat available
Ophioglossum palmatum	hand fern	E	-	Grows in bases of cabbage palm leaves in hydric hammocks, strand swamps, and maritime hammocks	High: good habitat plentiful
Osmunda cinnamomea	cinnamon fern	C	-	Swamps and wetlands	Present
Osmunda regalis var. *spectabilis*	royal fern	C	-	Swamps and wetlands	Present
Pecluma (Polypodium) plumula	plume polypody	E	-	Low hardwood hammocks, swampy woods, along streams and creeks, commonly epiphytic on trees (particularly oaks)	Moderate: available habitat
Pecluma (Polypodium) ptilodon var. *bourgeauana*	swamp plume polypody, comb polypody	E	-	Rockland hammocks, strand swamps, and wet woods; often on tree bases and fallen logs	Moderate: available habitat
Pinguicula caerulea	blue butterwort	T	-	Sandy to sandy-peaty soils of pine flatwoods, ditches, roadsides	Moderate: available habitat
Pinguicula lutea	yellow butterwort	T	-	Sandy-peaty soils, pine flatwoods, seepage bogs, ditches, roadsides	Moderate: available habitat
Pogonia ophioglossoides	rose pogonia, snakemouth orchid	T	-	Spaghnum bogs, meadows, swamps, pine savannahs, pine flatwoods, prairies, roadside ditches	Moderate: available habitat

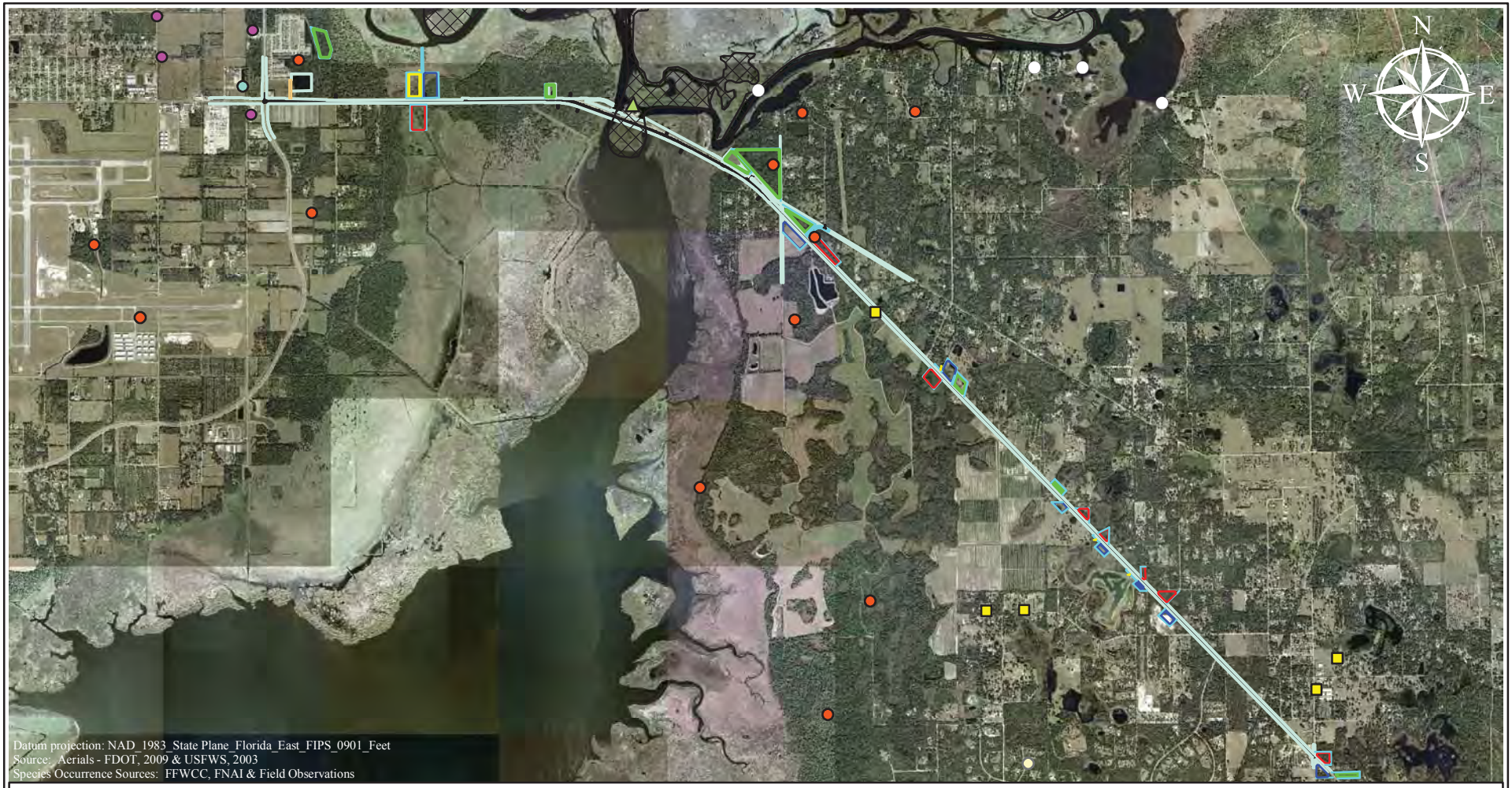
Scientific Name	Common Name	Listing Status[1]		Habitat Preference	Potential Occurrence[4]
		State[2]	Federal[3]		
Eulophia (Pteroglossaspis) ecristata	non-crested eulophia, giant orchid	T	-	Sand pine scrub, sandhills, pine rockland, pine flatwoods, prairies, old fields, usually in sandy soil	Low: limited habitat available
Pycnanthemum floridanum	Florida mountain mint	T	-	Sandhill, mixed upland forests, wet flatwoods, floodplain forests, moist areas, roadside ditches	Moderate: available habitat
Rhapidophyllum hystrix	needle palm	C	-	River bluffs, ravine slopes, hammocks, bottomlands	Moderate: available habitat
Rhipsalis baccifera	mistletoe cactus	E	-	On branches of mangroves and button wood in tidal swamps and on trees in rockland hammocks (African in origin, work indicates that the plants cited were persistent from cultivation, Seminole Co. plants were cultivated)	Moderate: available habitat
Stenorrhynchos (Sacoila) lanceolatus	leafless beaked orchid	T	-	Open pastures, roadside, wet pine flatwoods, sandhills	Moderate: available habitat
Salix floridana	Florida willow	E	-	Hydric hammocks, dense bottomland forest and floodplains, swamps, edges of streams, spring runs, and springheads	High: good habitat plentiful
Sarracenia minor	hooded pitcherplant	T	-	Flatwoods, bogs, ditches, wet prairies	Moderate: available habitat
Spiranthes laciniata	lacelip ladies' tresses	T	-	Shores of swamps, wet prairies, marshes, flatwoods, ditches, grassy roadsides, wet sandy soil	Moderate: available habitat
Tillandsia fasciculata	common wildpine, cardinal airplant	E	-	Hammocks, Cypress swamps, pinelands	Moderate: available habitat
Tillandsia utriculata	giant wild pine, giant airplant	E	-	Hammocks, cypress swamps, pinelands, scrub	High: good habitat plentiful
Zamia pumila	Florida arrowroot, coontie	C	-	Well-drained sandy or loamy soils; upland hardwood hammocks, pine and palmetto flatwoods, cabbage palm hammocks, scrub, sandy ridges, shell mounds, pastures	Moderate: available habitat
Zephyranthes simpsonii	Simpson's zephyr lily	T	-	Wet pinelands and pastures, dome swamps, ditches, wet pastures, often in burned over areas, roadsides	Moderate: available habitat

[1] Listing Status: C = commercially exploited; E = endangered; T = threatened.

[2] Rules of the Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Chapter 5B-40, Preservation of Native Flora of Florida, Section 5B-40.0055: Regulated Plant Index, May 19, 20166.

[3] United States Fish and Wildlife Service: 50 CFR Chapter 1, Section 17.12, "Endangered and threatened plants", 2007.

[4] Probability of occurrence: Low, moderate, high, present, or out of range, based on best available data and selective field observations.



LEGEND

SYMBOL	DESCRIPTION
Right-of-Way: Source - URS	
Proposed Pond Sites	
	Approximate Location of Bald Eagle Nests
	Rare and Imperiled Fish
	Critical Habitat for Florida Manatee
	Approximate Location of Nuisance Bear Incidents
	Crested Caracara Sighting
	Manatee Mortality
	Unconfirmed Avain Nest on Cell Tower

STATE RD 46 PD&E STUDY

Species Occurrence Map

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 4

SCALE: 1" = 4500'

JOB NO.: 10.20

DATE: 9/4/2015

Florida Panther
The Florida panther is federally listed as endangered. Although suitable habitat for Florida panther (*Puma concolor coryi*) does exist outside southwest Florida, habitat fragmentation appears to have limited its breeding range to south Florida. While males, noted for their far-ranging migrations, have been documented throughout peninsular Florida, females appear restricted to south Florida. In 2015 the nearest documented occurrence of panther was near Vero Beach along the I-95 corridor. The Florida subspecies is very secretive and habitat fragmentation appears to be the principal factor limiting breeding range expansion. This project is not located within a USFWS designated habitat zone or consultation area for this species. This project is expected to have "no effect" upon the Florida panther.

Florida Black Bear
The Florida black bear (*Ursus americanus floridanus*), while no longer a state-listed species, is still managed by FFWCC through the Florida Black Bear Conservation rule (68A-4.009 FAC) and remains a concern because of vehicle and animal safety. The project lies within FFWCC documented secondary habitat for this species. No direct observations of bear, tracks, or other signs were observed during the field reviews of the project study area. In response to inquiry FFWCC reported a single nuisance call on SR 46 and no mortality from 1980 to 2011 (Figure 4, Appendix 1). The project is expected to have minimal impact to the Florida black bear.

Florida Scrub-Jay
The Florida scrub-jay (*Aphelocoma coerulescens*) is a federally and state listed threatened species endemic to Florida. Although populations of Florida scrub-jay have been reported within Seminole County, these observations are from the Wekiva basin in the western portion of the county. FFWCC metapopulation documentation places this species in Volusia County, north of Lake Monroe. While habitat for this species does occur near the project area, that habitat is of poor quality and lacks the fire maintenance critical to this species. No indications of this species were observed during the field reviews. This project is expected to have "no effect" on the Florida scrub-jay.

Burrowing Owl
The Florida burrowing owl (*Athene cunicularia*), an endemic subspecies of burrowing owl, is a state-listed threatened. The bird and egg-containing nests are federally protected under the Migratory Bird Treaty Act. A state permit is required before disturbing an active (containing eggs or flightless young) nest.

This pint-sized ground nester lives in open, treeless areas spending most of its time on the ground, where its sandy brown plumage provides camouflage from potential predators. The owl's unusually long legs provide additional height for a better view from its typical ground-level perch. This species occurs throughout the state although its distribution is considered local and spotty. Habitat for this species includes open native prairies and cleared areas that offer short groundcover including pastures, agricultural fields, golf courses, airports, and vacant lots in residential areas. These owls live as single breeding pairs, but frequently nest burrows are found in loose colonies consisting of two or more families. This species is active during both day and night. Although burrowing owls use burrows year round, their breeding season is restricted from February to July.

As a threatened species the burrows, owls, and their eggs are protected from harassment and/or disturbance by state law as well as by the federal Migratory Bird Treaty Act. FFWCC has no management guidelines for burrowing owls in rural areas. In urban areas, FFWCC recommends a 150-foot radius circle buffer be staked and roped-off around the burrow to protect it during construction (Appendix 6). Rural impacts are discussed with FFWCC on a case-by-case basis. Although no burrowing owls or evidence of this species were identified within the project area, habitat for this species is available. FFWCC identified the potential for occurrence of this species during their ETDM review of the project. As such, survey and coordination with FFWCC for this species will continue as project design and permitting progress. This project is expected to have no impact on the Florida burrowing owl.

Crested Caracara

The crested caracara (*Caracara cheriway*) is a federally and state listed threatened species. In Florida, the species typically utilizes sparsely treed agricultural lands and wet prairies, commonly nesting in lone cabbage palms or palm copses. They are most common in cattle ranchlands where human presence is limited. Caracara are not robust flyers and frequently hunt on foot. These birds are opportunistic omnivores feeding on slow moving or incapacitated amphibians, reptiles, insects, small mammals, and young birds. The young, in particular, frequently scavenge carrion. The breeding range in Florida is restricted to the southern peninsula, but the dispersal flights of the young are far ranging. On March 20, 2012 two adult birds were observed flying south near the western terminus of the project. Seminole County is the extreme northern limit of their nesting range and little nesting habitat has been identified within the project study area. However, the project is within the USFWS crested caracara consultation area.

In an effort to gather information needed for USFWS to provide concurrence or non-concurrence with the effect determination and at the request of USFWS, a formal crested caracara survey of the SR 46 project corridor was performed between January 1 and April 30, 2015. This survey was conducted in accordance with the USFWS Caracara Survey Protocol (USFWS 2004) and email correspondence. Results of the 2015 crested caracara survey for this PD&E Study are documented within Appendix 7. Although no caracaras were identified within the project area during this survey, 2 adult and 2 juvenile birds were observed near a probable nest site located in a cluster of palm trees located over 4,000 feet northwest of the SR 46 project western terminus. Since no crested caracaras or their nests were observed within the SR 46 corridor from SR 415 to CR 426 during the 2015 survey, a determination has been made that the construction of the SR 46 roadway improvements “may affect, not likely to adversely affect” the crested caracara.

Southeastern American Kestrel

The Southeastern American kestrel (*Falco spaverius paulus*) is the smallest falcon in North America, slightly smaller than the migratory American kestrel. This resident subspecies is state listed as threatened. The resident population is usually the only kestrel found in Florida in May or June. Kestrels hunt in open pine habitats, prairies, pastures, roadside, and woodland edges utilizing the grassy and open ground patches found therein. The subspecies nests in pine snags and sometimes oak tree holes breeding between mid-March to early June. No known occurrence records identify nests within the project area and no nests or kestrels were observed during the field site surveys. This project is expected to have no impact upon the on the Southeastern American kestrel.

Florida Sandhill Crane
Florida sandhill crane (*Grus canadensis pratensis*) is a state-listed threatened species. This species is regionally common and forages in pastures, open prairies, lawns, and golf courses while nesting in deep marshes. Although nesting habitat for this species is available within and adjacent to the project, no sandhill crane nests were observed or have been reported within the area. As such, this project is expected to have minimal impact upon this species. A nest survey will be conducted prior to construction.

Bald Eagle
The FFWCC bald eagle (*Haliaeetus leucocephalus*) nest database provides a source of statewide information regarding documented nest locations, and status of nest activities within the past five (5) years. Reported nest locations are accurate to within 0.1 miles. Four (4) nests have been reported within ½ mile of the proposed project. These nests are identified as SE 034, SE 036, SE 051, and SE 082 (Figure 4, Appendices 1 & 2).

Nest SE 034 — Nest SE 034 is located approximately 2,100 feet southwest of the SR 46 right of way within the City of Sanford Water Reclamation Facility. The last FFWCC eagle nest survey within this County (2015) documented that this nest was active. This project does not propose any construction activity within 660 feet of this nest.

Nest SE 051 — According to the FFWCC eagle nest database, the location of SE 051 is approximately 350 feet west of a proposed compensating storage pond. The FFWCC database documents that the nest has been inactive since 2008. Aerial photographs indicate that the location of this eagle nest is within a residential subdivision that was constructed in 2009. Project biologists verified that this nest was no longer present in 2016.

Residents of the Sterling Meadows subdivision reported (in 2012) that a pair of eagles had successfully nested in a nearby cell tower located approximately 2,300 feet southwest of SE 051. It has not been confirmed whether eagles or osprey are using this new nest. However, the project does not propose any construction activity within 660 feet of this nest.

Nest SE 082 —Nest SE 082 is located approximately 2,500 feet northeast of the SR 46 right-of-way. The last FFWCC eagle nest survey within this County (2015) documented that this nest was active. This project does not propose any construction activity within 660 feet of this nest.

Uninventoried eagle nest — Field reviews of the project area during the PD&E Study (2012-2013) determined that an eagle nest was located approximately 850 feet northeast of the SR 46 right-of-way within the boundary of a proposed compensating storage pond. In 2015 and 2016, additional field reviews were conducted to determine the exact location of this nest; however, the nest could not be located either year. It is therefore assumed that this nest no longer exists.

Nest SE 036 — The nearest active eagle nest, SE 036, is located approximately 100 feet northeast of the maintained SR 46 right-of-way, opposite the entrance road to the City of Sanford Water Reclamation Facility. The last FFWCC eagle nest survey within this County (2015) documented that this nest was active. In 2016 this nest was verified as still active.

Although no longer listed as a threatened species by either state or federal agencies, the bald eagle is protected under the Migratory Bird Treaty Act of 1917 [Title 16, Chapter 7, Subchapter II, § 703-712 (2/1/10)] and the Bald and Golden Eagle Protection Act of 1940 [16 U.S.C. 668-668d, 54 Stat. 250 (11/8/1978)]. The National Bald Eagle Management Guidelines (May 2007) provide guidance for human-eagle interaction and are consistent with the USFWS clearance letter of June 5, 2006 which states that projects that are greater than 660 feet from an active eagle nest tree do not need to contact USFWS. On January 17, 2017, the USFWS revised regulations for eagle no purposeful take permits and eagle nest take permits that included changes to permit issuance criteria, requirements, and fees. In addition, the FFWCC revisions to the state's bald eagle rules eliminated the need for applicants to obtain a state permit for activities with the potential to take or disturb bald eagles or their nests. Under the approved revisions, only a federal permit is needed. FFWCC rule revision (68A-16.002, F.A.C.) became effective on June 22, 2017.

The proposed project may cause a disturbance to eagle nest SE 036, due to the proximity of the proposed roadway improvements and the realignment of Osceola Road. The proposed project may cause a disturbance to eagle nest ***SE 036*** due to the current proximity of project improvements. Commitments that impose work restrictions that correspond to the bald eagle non-nesting season can be implemented. However, because the design phase of this project is not scheduled until 2021 and this corridor has a large regional population of eagles, it is likely that conditions could change in the next four (4) years. As such, it is too early to determine whether this project will affect the bald eagle. We commit to additional surveys for eagle nests and agency coordination during the design phase of the project to ascertain whether a federal disturbance permit will be necessary.

Wood Stork

The wood stork (*Mycteria americana*) is a federally and state-listed threatened species. Portions of the proposed project lie within the 15-mile Core Foraging Area (CFA) of one wood stork nesting colony (612320) and just outside the range of the Mud Lake colony as identified by the USFWS website and during FFWCC coordination (Appendix 9). No wood storks were observed during the current PD&E Study field reviews. There appears to be limited foraging habitat and no nesting habitat available for this species within or immediately adjacent to the project corridor. Project impacts to potential suitable foraging habitats have been estimated for the recommended alternative as 26.43 acres (wetlands) and 1.33 acres (wetland-cut ditches).

During early coordination, USFWS determined that the project may contribute to a loss of wetlands within the CFA associated with the SR 46 project and may result in the loss of foraging habitat for the wood stork. To minimize adverse effects to the wood stork, and other wetland dependent species, USFWS recommended that impacts to suitable foraging habitat and all wetlands be avoided. The principal regulatory agency for permitting impacts to this species is the USACE and done through the dredge and fill permitting process. While the project "may affect" this species, additional surveys and continued consultation will be made during design and permitting of the project. The effect determination key for the wood stork is provided in Appendix 10. The effect determination includes the presence of an active colony within 2,500 feet or suitable forage habitat within core foraging habitat identified within the project boundary. Impacts to wetlands and wetland-cut ditches within the CFA will be mitigated, in part, through the purchase

of mitigation credits from an approved mitigation bank within the CFA. Coordination with USFWS will continue through the permitting process. For these reasons it is anticipated that this project will have a "may affect, not likely to adversely affect" determination for this species.

Osprey

Ospreys (*Pandion haliaetus*) are protected under the federal Migratory Bird Treaty Act (16 USC 703-712) and state protected by Chapter 68A Florida Administrative Code (FAC). Although both active and inactive osprey nests are protected federally, only active nests require federal permitting for taking. Osprey frequently build their nests on man-made structures, usually on tall isolated towers and power poles. This species has been observed within the study area. While no osprey nests have been identified within the proposed alignment, there are nests adjacent to the corridor. Consequently, this project is expected to have minimal impact to the osprey. A nest survey for this species will be conducted prior to construction and all necessary permits for nest removal will be obtained if nests are located within the construction footprint.

Red-cockaded Woodpecker

The red-cockaded woodpecker (*Picoides borealis*) is a territorial, non-migratory bird species listed as endangered under state and federal rules. These woodpeckers reside in mature pine (longleaf and loblolly) forests in the southeastern United States excavating their nest cavities exclusively in living pine trees. These cavities generally take from 1 to 3 years to excavate and represent a significant investment for the bird. The understory near nest tree clusters is typically very sparse. Fire plays a significant role in maintaining nesting communities. Red-cockaded woodpeckers are social cooperative breeders living in social units called "groups", which typically consist of a breeding pair and up to four "helpers" (offspring from previous years). Habitat loss and fire suppression have played significant roles in the decline of this species. Only marginal nesting habitat has been identified within the project study area primarily due to fire suppression and the lack of suitable nest trees. No nest cavities or individual birds were identified during site reviews and no nest clusters have been reported within the area. The closest reported red-cockaded woodpecker colony is Orange County, approximately 17 miles south of the project. Consequently, this project is expected to have "no effect" on the red-cockaded woodpecker populations.

Roseate Spoonbill

The roseate spoonbill (*Platalea ajaja*) is listed as a threatened species by Florida statutes and is also federally protected under the Migratory Bird Treaty Act. It is the only spoonbill endemic (native) to the Western Hemisphere and is easily recognized by its pink wings and under parts (with some red on the tops of the wings) with a white neck and back and pinkish legs and feet. While the species looks almost entirely pink in flight, they actually have no feathers at all on their heads. The species has specialized nerve endings in the tip of its bill, which help it detect prey as it sweeps back and forth in shallow water. Its diet primarily consists of crayfish, shrimp, crabs, and small fish. The preferred nesting habitat for this species is mangrove islands and occasionally dredge-spoil islands as documented in Florida Bay, Tampa Bay, and Brevard County. Individuals may occasionally be observed feeding inland within marshy banks of Florida's rivers and streams. Threats to this species include habitat loss and degradation, disturbance, pesticides, availability and quality of food sources, poaching, and increases in freshwater flows affecting estuarine viability. This species is only incidental to the St. Johns River and as such should not be affected

by this project. This species was not observed during the field reviews of the project corridor. Therefore, this project is expected to have no impact upon the roseate spoonbill.

Snail Kite

Snail Kite (*Rostrhamus sociabilis plumbeus*), formerly known as the Everglade Snail Kite has been listed as federally and state endangered since 1967. The range of the Florida population of snail kites is restricted to watersheds in the central and southern part of the state. In addition, the project is outside of the USFWS "critical habitat" for this species. These kites are dependent directly on the hydrology and water quality of these watersheds because of a highly specific diet composed almost entirely of apple snails (*Pomacea paludosa*), the only large snail in their range. This medium-sized raptor utilizes an unusual and diagnostic slender, curved bill for extracting their primary prey, the apple snail, from its shell. Snail kites use their feet to capture snails at or below the surface of the water, never using their bills to capture prey.

These birds forage over relatively shallow, clear, calm waters. Under ideal conditions these waters are relatively open with a low density of emergent vegetation. Because water depth is so critical, the availability of foraging habitat varies seasonally and from year to year. As such, snail kites are considered an indicator species for ecological community health. The St. Johns River historically provided foraging habitat for this species but occurrences within the central and lower watershed are now rare. Although the project lies within a consultation area for the snail kite, the nearest breeding location is located in Lake Tohopekaliga. This project is expected to have "no effect" upon the snail kite.

Wading Birds

Three regionally common species of wading birds known to use the project area for foraging on a temporary basis are no longer listed. These are the snowy egret (*Egretta thula*), white ibis (*Eudocimus albus*), and limpkin (*Aramus guarauna*). Two species formerly listed as species of special concern have been upgraded to threatened: tricolored heron (*Egretta tricolor*) and little blue heron (*Egretta caerulea*). It appears that adjoining and on-site wetlands provide adequate foraging habitat for these species. Roosting and foraging habitat is available in adjacent wetlands. Available nesting habitat within and immediately adjacent to the project right-of-way is limited (Figure 4, Appendix 1). With wetland mitigation measures, this project is expected to have minimal impact to these species.

Eastern Indigo Snake

The Eastern indigo snake (*Drymarchon corais couperi*), designated as threatened by both federal and state agencies, is found in habitats ranging from mangrove swamps and wet prairies to xeric pinelands and scrub. Although this species is typically associated with high, dry, well-drained soils, during warmer months, indigos also frequent streams and swamps. In drier communities, where habitat use coincides, these snakes occasionally utilize gopher tortoise burrows for shelter. Since this species is known to inhabit virtually all native Florida communities and to range over large areas, there is a likelihood that this species may forage within the study area. There are no xeric habitats (scrub, sandhill, or scrubby flatwoods mapped for the project area (Figure 3). However, within some of the upland mixed coniferous/hardwood habitats there may be a few xeric vegetation pockets. No Eastern indigo snakes were observed during any of the PD&E Study field surveys.

During the permitting process, the Eastern Indigo Snake Programmatic Effect Determination Key (updated August 12, 2013) will be utilized to determine project effects on this species. Utilization of the Key is triggered by the presence of more than 25 acres of suitable habitat and gopher tortoise burrows or other refugia for this species. Standard Protection Measures for the Eastern indigo snake (Appendix 11) will be adhered to during the construction of this project. During the June 2015 gopher tortoise survey, discussed below, fewer than 25 burrows and less than 25 acres of xeric habitat. In accordance with the Eastern Indigo Snake Programmatic Effect Determination Key, it is expected that this project "may affect, but not likely to adversely affect" this species.

Gopher Tortoise

The gopher tortoise is a state-listed threatened species and a federal candidate for listing in the state of Florida. Preferred habitats for this species are natural uplands such as sandhills, scrub, xeric pine, and oak communities with an open canopy that allow light to reach the sandy ground. These conditions can also be suitable on disturbed upland areas like roadsides and fence rows. A 100% gopher tortoise survey was conducted on June 2 and 4, 2015 in accordance with the current revision of the FFWCC Gopher Tortoise Permitting Guidelines. The surveys were conducted in suitable gopher tortoise habitat that occurred within the proposed ponds, existing and proposed SR 46 rights-of-way. A total of 18 potentially occupied gopher tortoise burrows and one abandoned gopher tortoise burrow were recorded as shown in Figure 5. Since gopher tortoises and/or their burrows were found within the project construction limits, gopher tortoise surveys, permitting, and relocation will be conducted in accordance with FFWCC guidelines immediately prior to project construction. This project is anticipated to have minimal impact to this species.

Short-tailed Snake

The short-tailed snake (*Lampropeltis extenuate*), a state-listed threatened species, is found in open areas of dry sandy loose soils, scrub, sand pine scrub, and pine flatwoods. No occurrence records are known of the short-tailed snake in the project area and none were observed during numerous field reviews. Habitat for this species is limited within the project study area. This project is anticipated to have minimal impact to the short-tailed snake.

Sand Skink

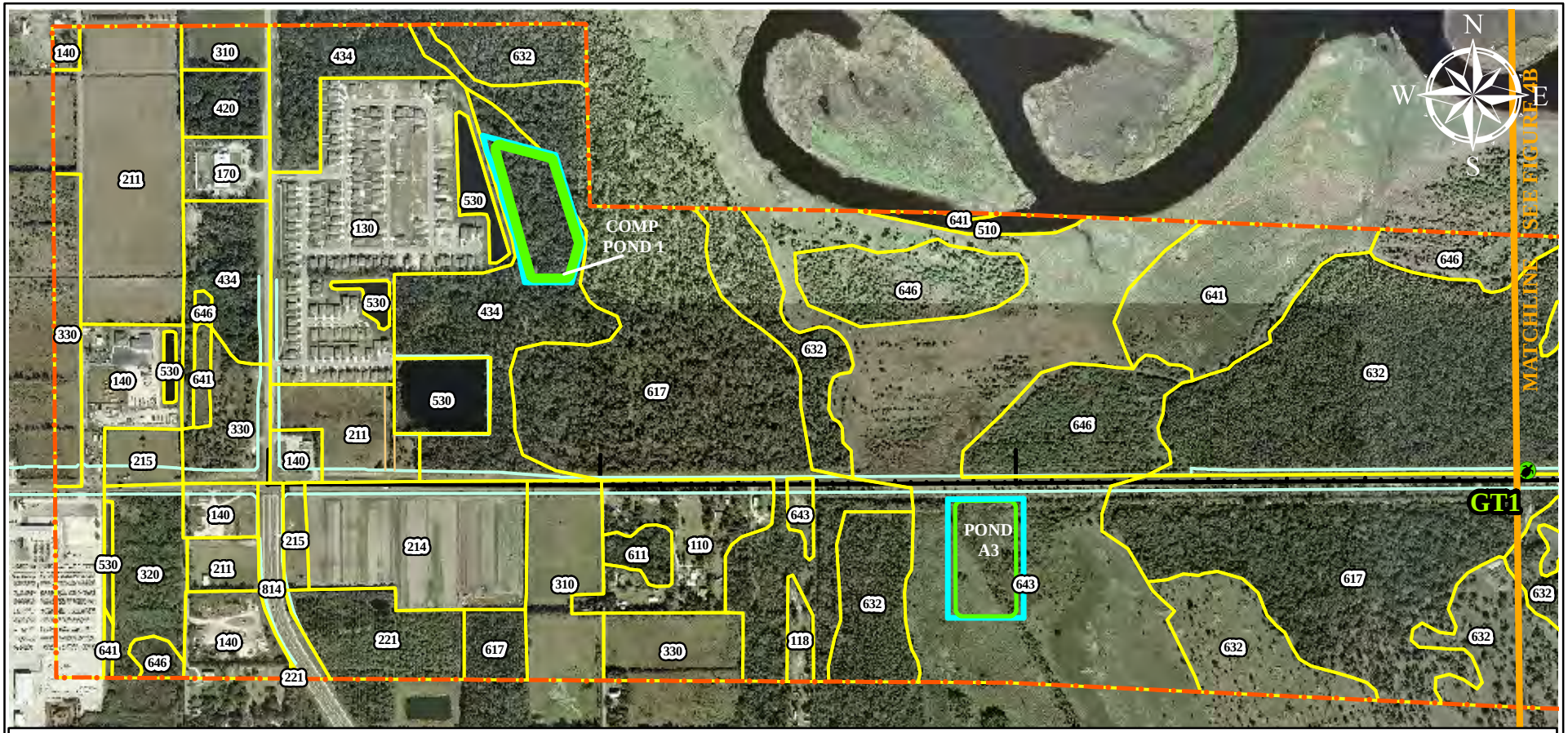
The sand skink (*Neoseps reynoldsi*) is a small, fossorial lizard that is endemic to the Pleistocene sand ridges of interior central Florida, particularly, the Central Ridge, the Lake Wales and Winter Haven Ridges, and rarely on the Mt. Dora Ridge. This species is listed as threatened by state and federal agencies. The sand skink is adapted for swimming in loose sand, below the surface in search of food, shelter, and mates. Habitat loss due to agricultural and residential uses and from habitat degradation due to fire exclusion has significantly impacted this species. The project study area is well outside the documented range of this species and outside the USFWS designated consultation area. As such, this project will have "no effect" on this species.

Florida Pine Snake
The Florida pine snake (*Pituophis melanoleucus mugitus*) is a state-listed threatened species which is found in open areas of dry sandy loose soils, scrub, dry prairie, and pine flatwoods. FNAI occurrence records of the Florida pine snake do not report any sightings of the snake within the project area, nor were pine snakes directly observed during any of the field investigations within the study corridor. This project is expected to minimal impact to the Florida pine snake.

Atlantic Sturgeon
The Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) is listed as a federally endangered species (50 CFR parts 223 & 224, 2/6/2012). It is a long-lived, estuarine dependent, anadromous fish which can potentially can grow to 14 feet long and weigh up to 800 lbs. These primitive fish have been aged to 60 years. The Atlantic sturgeon is anadromous, spawning in freshwater during spring and early summer and migrating into estuarine and marine waters where they spend most of their lives. Atlantic sturgeon spawn in moderately flowing water in deep parts of large rivers laying highly adhesive eggs which are usually deposited on hard surfaces (e.g., cobble and limerock). Suitable egg laying habitat is uncommon in the St. Johns River. Sturgeon upstream spawning movement is somewhat limited by the riverine freshwater/saltwater interface which is considerably downstream from this project. According to NMFS, in the St. Johns River FFWCC has only identified habitat for this species north of Palatka, well outside the limits of the project area. Consequently, this project will have "no effect" on the Atlantic sturgeon.

Bluenose Shiner
The bluenose shiner (*Pteronotropis welaka*) is a state-listed threatened species. In Florida, there are two disjunct distributions, the St. Johns River basin and the western panhandle, with no known occurrences between the St. Johns and the Apalachicola Rivers. This small olive-colored, ray-finned fish has dark-colored dorsal (back) fins, and yellow pelvic and anal fins that are banded in black. Two distinct features of the bluenose shiner include a blue nose, a dark lateral stripe that runs from the snout to the tail, and males that have well developed (in size and color) dorsal, pelvic and anal fins. It feeds on insects and rotifers (microscopic aquatic species) and inhabits backwaters and river swamps to spring-run streams and often associated with areas of aquatic vegetation and deep pools. Spawning takes place over sunfish nests with females producing 55 to 190 eggs. Elevated nutrient loading, turbidity, and habitat alteration by invasive plant species are seen as the principal threats to this species. Recent coordination with FFWCC regarding this species resulted in a determination that the project study area is outside the documented range of this species. Therefore, the project is expected to have no impact to the bluenose shiner.

Wildlife Species of Concern – Bats
Bats belong to an order of mammals more closely related to primates than rodents and are considered highly beneficial with respect to nuisance insects and insect borne diseases. Two families representing 18 species of bats are known to breed in the eastern United States. Twenty-one bat species have been identified in Florida, of which thirteen species are known to breed in the state with eight accidental (occasional) species. bridges, crevices, and the attics of buildings. During the coldest parts of winter, most Florida bats enter torpor (a form of deep sleep) during the day and coldest nights. Because most bat species only have one baby per year, bat populations take a significant time to recover from catastrophic acts by both human and natural.



LEGEND

- Project Study Area
- Preferred Pond Alternatives
- Right-of-Way: Source - URS
- Potentially Occupied Gopher Tortoise Burrow

SYMBOL	DESCRIPTION
110	Residential, Low Density - less than 2 dwellings/acre
118	Residential, Rural - 1 unit on 2 or more acres
130	Residential, High Density - 6 or more dwellings/acre
140	Commercial and Services
170	Institutional
211	Improved Pastures
214	Row Crops
215	Field Crops
221	Citrus Groves
310	Herbaceous Upland Nonforested
320	Shrub and Brushland
330	Mixed Upland Nonforested
420	Upland Hardwood Forests
434	Upland Mixed Coniferous/Hardwood
510	Streams, Waterways and Ditches
530	Reservoirs
611	Bay Swamps
617	Mixed Wetland Hardwoods
632	Cabbage Palm Hammock
641	Freshwater Marshes
643	Wet Prairies
646	Mixed Scrub - Shrub Wetland
814	Roads and Highways

Datum projection: NAD_1983_State Plane_Florida_East_FIPS_0901_Feet
Source: Aerials - FDOT, 2009 & SJRWMD, 2009

STATE RD 46 PD&E STUDY

Results of 100% Gopher Tortoise Survey

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 5A

SCALE: 1" = 1000'

JOB NO.: 10.20

DATE: 06/05/15

LEGEND

- Project Study Area
- Right-of-Way: Source - URS
- Potentially Occupied Gopher Tortoise Burrow
- Preferred Pond Alternatives

SYMBOL	DESCRIPTION
110	Residential, Low Density - less than 2 dwellings/acre
184	Marina - (Park)
211	Improved Pastures
213	Woodland Pastures
411	Pine Flatwoods
434	Upland Mixed Coniferous/Hardwood
510	Streams, Waterways, and Ditches
520	Lakes
530	Reservoirs
617	Mixed Wetland Hardwoods
630	Wetland Forested Mixed
632	Cabbage Palm Hammock
641	Freshwater Marshes
643	Wet Prairies
646	Mixed Scrub - Shrub Wetland
742	Borrow Areas
814	Roads and Highways

Datum projection: NAD_1983_State Plane_Florida_East_FIPS_0901_Feet
Source: Aerials - FDOT, 2009 & SJRWMD, 2009.

STATE RD 46 PD&E STUDY

Results of 100% Gopher Tortoise Survey

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

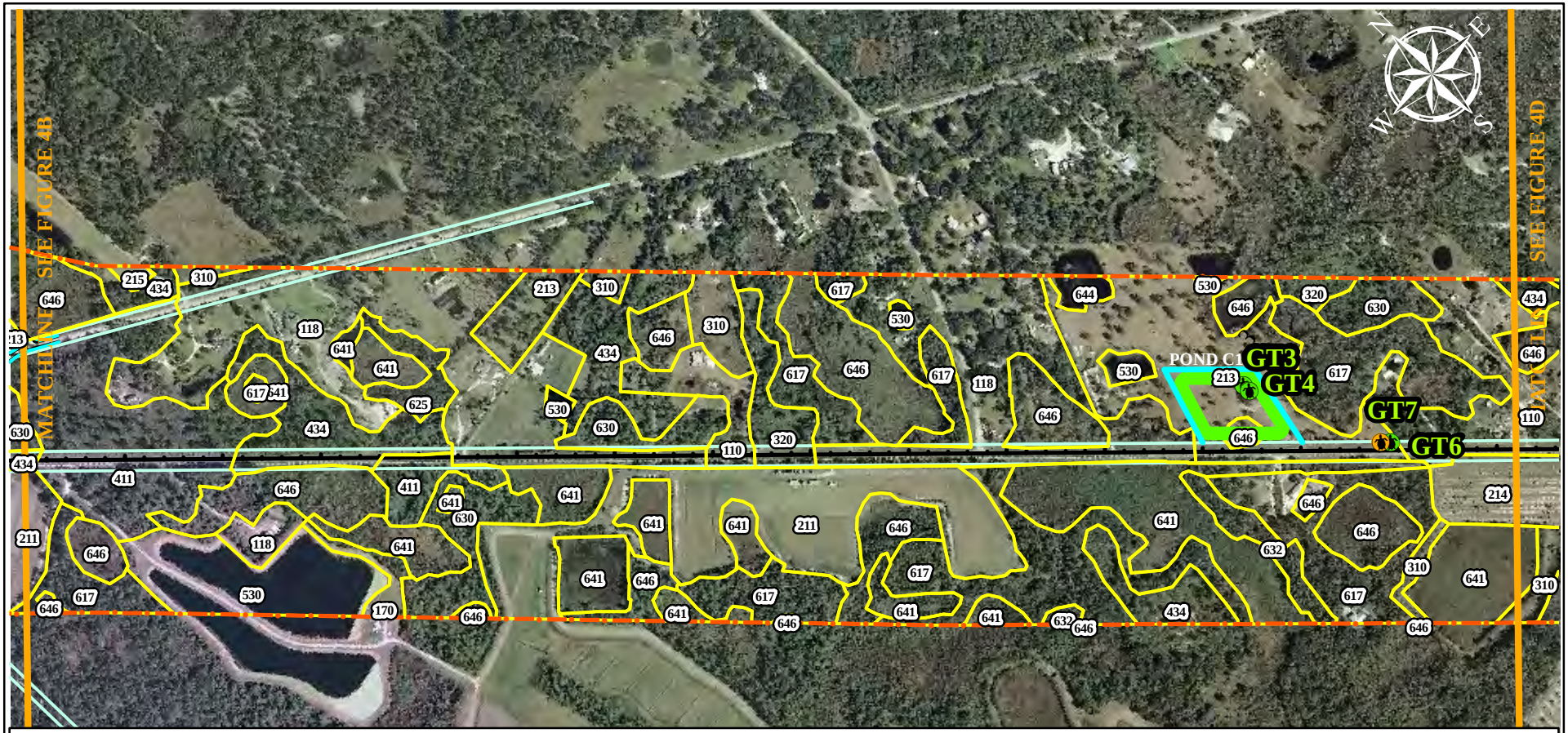
Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 5B

SCALE: 1" = 1000'

JOB NO.: 10.20

DATE: 6/5/15



LEGEND

- Project Study Area
- Right-of-Way: Source - URS
- Potentially Occupied Gopher Tortoise Burrow
- Preferred Pond Alternatives
- Abandoned Gopher Tortoise Burrow

SYMBOL	DESCRIPTION
110	Residential, Low Density - less than 2 dwellings/acre
118	Residential, Rural - 1 unit on 2 or more acres
170	Institutional
211	Improved Pastures
213	Woodland Pastures
214	Row Crops
215	Field Crops
310	Herbaceous Upland Nonforested
320	Shrub and Brushland
411	Pine Flatwoods
434	Upland Mixed Coniferous/Hardwood
530	Reservoirs
617	Mixed Wetland Hardwoods
625	Hydric Pine Flatwoods
630	Wetland Forested Mixed
632	Cabbage Palm Hammock
641	Freshwater Marshes
646	Mixed Scrub - Shrub Wetland

Datum projection: NAD_1983_State Plane_Florida_East_FIPS_0901_Feet
Source: Aerials - FDOT, 2009 & SJRWMD, 2009

STATE RD 46 PD&E STUDY

Results of 100% Gopher Tortoise Survey

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

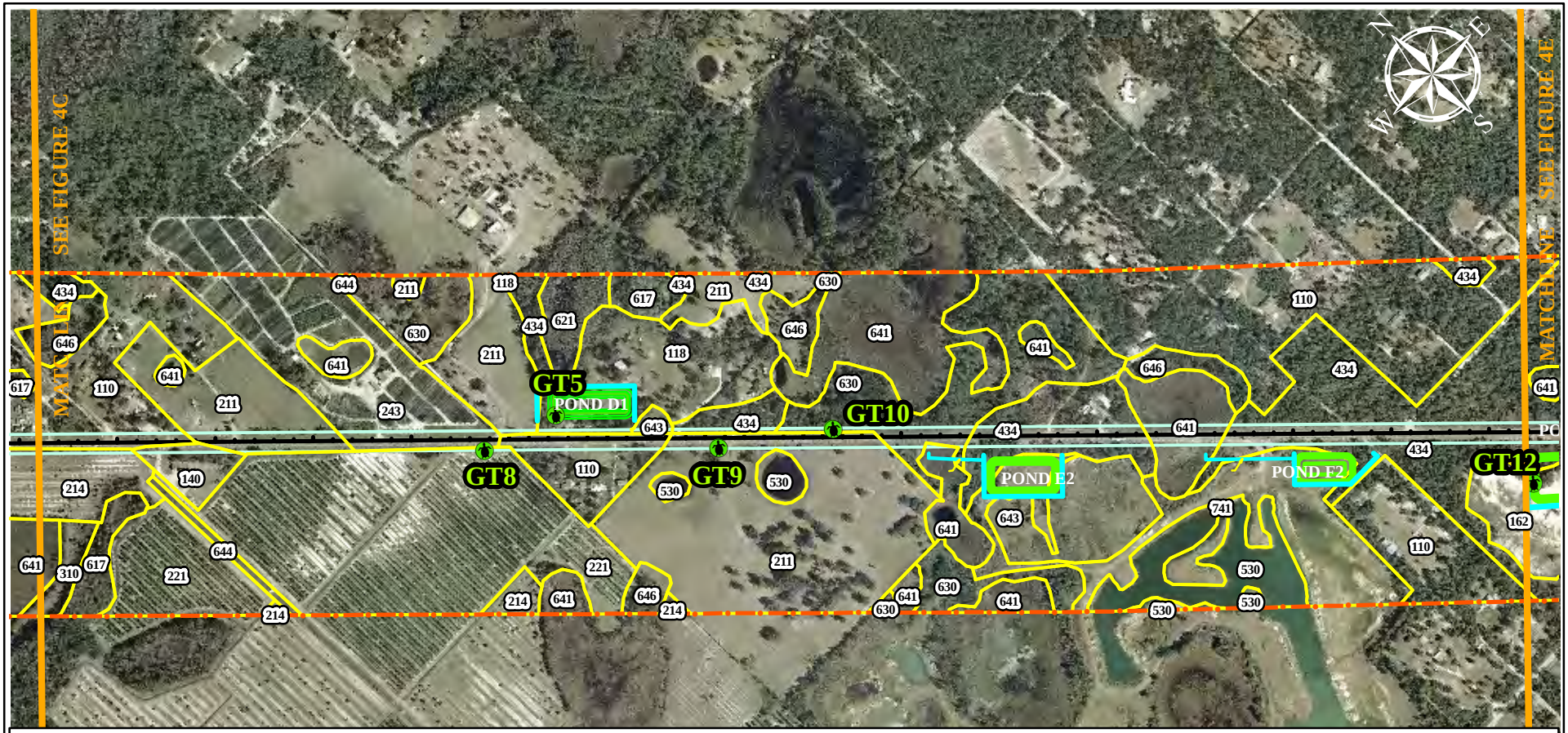
Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 5C

SCALE: 1" = 800'

JOB NO.: 10.20

DATE: 6/5/15



LEGEND

- Project Study Area
- Preferred Pond Alternatives
- Right-of-Way: Source - URS
- Potentially Occupied Gopher Tortoise Burrow

SYMBOL	DESCRIPTION
110	Residential, Low Density - less than 2 dwellings/acre
118	Residential, Rural - 1 unit on 2 or more acres
140	Commercial and Services
162	Sand & Gravel Pits
211	Improved Pastures
214	Row Crops
221	Citrus Groves
243	Ornamentals
310	Herbaceous Upland Nonforested
434	Upland Mixed Coniferous/Hardwood
530	Reservoirs
617	Mixed Wetland Hardwoods
621	Cypress
630	Wetland Forested Mixed
641	Freshwater Marshes
643	Wet Prairies
644	Emergent Aquatic Vegetation
646	Mixed Scrub - Shrub Wetland
741	Rural Land in Transition

Datum projection: NAD_1983_State Plane_Florida_East_FIPS_0901_Feet
Source: Aerials - FDOT, 2009 & SJRWMD, 2009

STATE RD 46 PD&E STUDY

Results of 100% Gopher Tortoise Survey

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

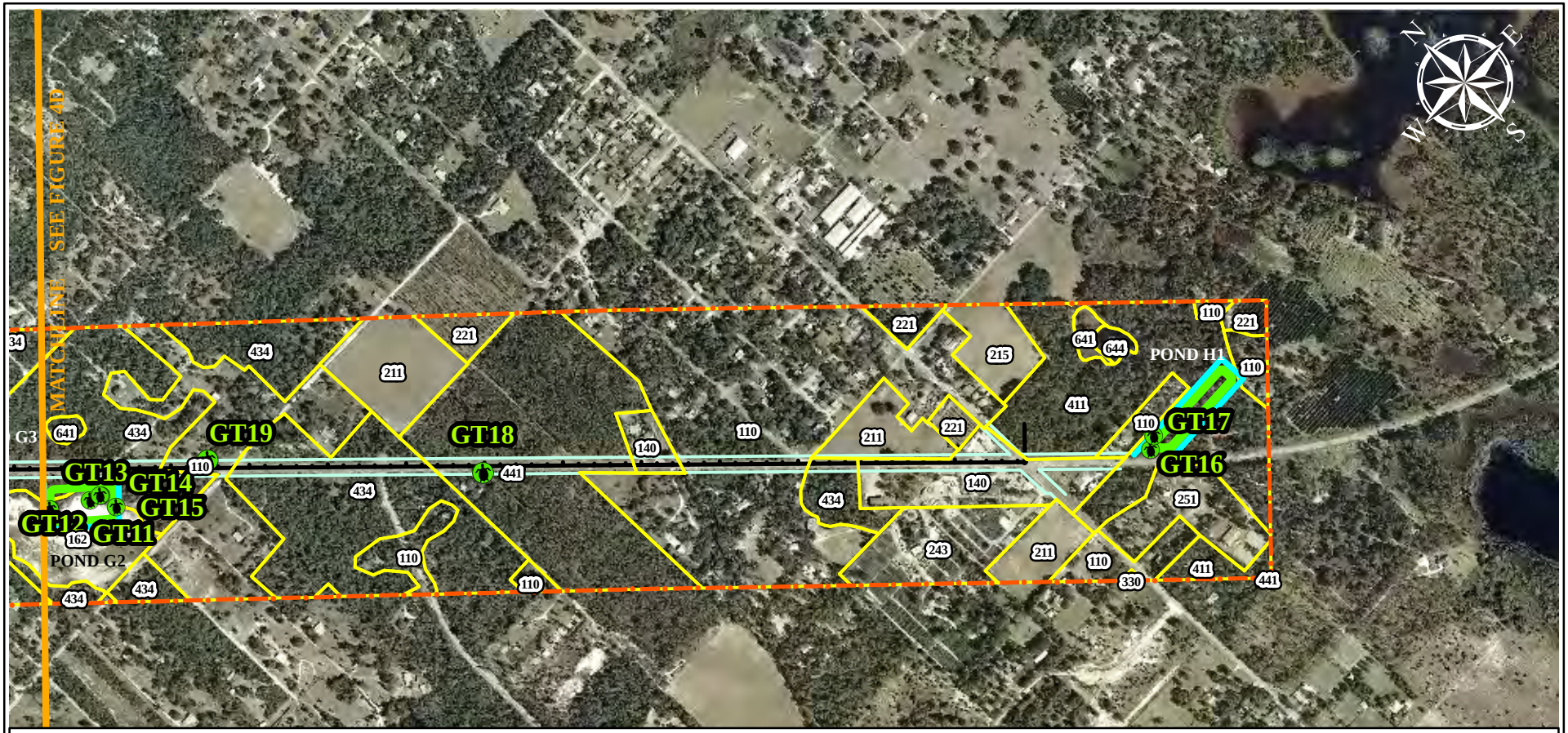
Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 5D

SCALE: 1" = 800'

JOB NO.: 10.20

DATE: 6/5/15



LEGEND

- Project Study Area
- Preferred Pond Alternatives
- Right-of-Way: Source - URS
- Potentially Occupied Gopher Tortoise Burrow

SYMBOL	DESCRIPTION
110	Residential, Low Density - less than 2 dwellings/acre
140	Commercial and Services
162	Sand and Gravel Pits
211	Improved Pastures
215	Field Crops
221	Citrus Groves
243	Ornamentals
251	Horse Farms
330	Mixed Upland Nonforested
411	Pine Flatwoods
434	Upland Mixed Coniferous/Hardwood
441	Pine Plantation
641	Freshwater Marshes
644	Emergent Aquatic Vegetation

Datum projection: NAD_1983_State Plane_Florida_East_FIPS_0901_Feet
Source: Aerials - FDOT, 2009 & SJRWMD, 2009

STATE RD 46 PD&E STUDY

Results of 100% Gopher Tortoise Survey

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 5E

SCALE: 1" = 1000'

JOB NO.: 10.20

DATE: 6/5/15

Most species are long-lived when compared to other mammals of similar size with Florida bats probably living more than 12 years.

Florida has three (3) species of bat which are specifically listed as endangered: Florida bonneted bat (*Eumops glaucinus floridanus* or *Eumops floridanus*) which is endemic to southern Florida and listed as federally endangered; gray bat (*Myotis grisescens*) which is federally listed as endangered; and Indiana bat (*Myotis sodalist*) which is a cave rooster that barely reaches the Florida panhandle and is federally listed as endangered. None of these species are found within the SR 46 PD&E Study project area.

While endangered and threatened species of bats are protected under the Endangered Species Act, further protection for both listed and non-listed species is afforded through Chapter 68A-4.001 FAC (General Prohibitions) and Chapter 68A-9.010 FAC (Taking Nuisance Wildlife). Through this legislation, bats may not be harmed, but rather must be excluded from colonies (roosting sites) that must be disturbed or removed. Exclusions are not permitted during the breeding season and while flightless young are present. Bat exclusion devices or any other intentional use of a device or materials at a roost site which may prevent or inhibit the free ingress and/or egress of bats may not be used from April 16th through August 14th (breeding season).

Non-listed bats are known to utilize the SR 46 PD&E Study area. It is likely that the SR 46 bridge over the St. Johns River/Lake Jesup is utilized as a roosting site. Although it is unlikely that construction of a parallel bridge would disturb a roosting colony on the existing span any required coordination with FFWCC would take place during construction.

Fauna Summary

A table summarizing the determinations of the project upon protected animal species identified within the project area is provided as Table 6. There are no effect determinations that require formal consultation at this time.

Table 6. Determination of Effect for Protected Animal Species within the project study area.

Determination of Effect	Federal/State Protected Species	
	Common Name	**Scientific Name**
"may affect, but not likely to adversely affect"	Florida manatee	*Trichechus manatus latirostris*
	crested caracara	*Caracara cheriway*
	bald eagle	*Haliaeetus leucocephalus*
	wood stork	*Mycteria americana*
	Eastern indigo snake	*Drymarchon corais couperi*
"no effect"	Florida panther	*Puma concolor coryi*
	Florida scrub-jay	*Aphelocoma coerulescens*
	red-cockaded woodpecker	*Picoides borealis*
	snail kite	*Rostrhamus sociabilis plumbeus*
	sand skink	*Neoseps reynoldsi*
	Atlantic sturgeon	*Acipenser oxyrinchus oxyrinchus*
Determination of Effect	**Species Only Protected by the State**	
	Common Name	**Scientific Name**
minimal impact	Sherman's fox squirrel	*Sciurus niger shermani*
	Florida black bear	*Ursus americanus floridanus*
	little blue heron	*Egretta caerulea*
	tricolored heron	*Egretta tricolor*
	Florida sandhill	*Grus canadensis pratensis*
	osprey	*Pandion haliaetus*
	gopher tortoise	*Gopherus Polyphemus*
	short-tailed snake	*Lampropeltis extenuate*
	Florida pine snake	*Pituophis melanoleucus mugitus*
no impact	Florida burrowing owl	*Athene cunicularia*
	Southeastern American kestrel	*Falco spaverius paulas*
	roseate spoonbill	*Platalea ajaja*
	Bluenose shiner	*Pteronotropis welaka*

7.2 FLORA

Listed plant species that have been observed or have the potential for occurrence within the project corridor are listed in Table 5. As a result of numerous field reviews, two protected plant species, pursuant to Chapter 5B-40, FAC, were observed within the project area. The species observed consist of two fern species (cinnamon fern and royal fern) listed as "commercially exploited" by the state. "Commercially exploited" is a classification that is used by the state more as an indicator of potential species decline if harvesting of wild plants continues to be aggressive. No other protected plants have been observed within or adjacent to the project corridor. USFWS (5/29/14) has concurred that no federally listed plants occur in Seminole County.

8.0 IMPACT ANALYSIS

FFWCC stated during the ETDM consultation that indirect and cumulative effects of this project could be at least moderate. Habitat fragmentation and isolation reducing habitat quality due to increased road width and traffic is of concern. It is likely that because of these factors as well as increased vehicle speed that roadkill of wildlife may increase. Roadway improvements will improve access within the rural setting along the current highway affecting additional habitat through increased residential and commercial development.

8.1 PERMITTING REQUIREMENTS

Florida Fish and Wildlife Conservation Commission
A 100% gopher tortoise survey of all proposed construction and mobilization areas will be required prior to construction. A gopher tortoise relocation permit from FFWCC will be required prior to the disturbance and/or excavation of any gopher tortoise burrows.

National Marine Fisheries Service
Initial NMFS comments to the Planning Screen indicated that wetlands in the project corridor were designated as essential fish habitat (EFH) by the South Atlantic Fishery Management Council (SAFMC), which managed red drum under the Magnuson-Stevens Act. Management of Atlantic stocks of red drum are no longer authorized through the Magnuson-Stevens Act, which also removed the EFH designations for red drum. Based on these changes, NMFS has determined that wetlands likely to be affected by the project are not EFH (Lake Monroe essentially is the upstream extent of white shrimp in the St. Johns River, and the site of the proposed project is upstream of Lake Monroe). No further coordination under the Magnuson-Stevens Act will be required for this project. Consequently, the NMFS determined that the wetlands likely to be affected by the project are not designated as essential fish habitat (EFH).

St. Johns River Water Management District
Evaluation of impacts to wetland dependent species is a component of the Environmental Resource Permit (ERP) review. Generally, the treatment and mitigation of such impacts is deferred to the appropriate regulatory agency, e.g. FFWCC and or USFWS. Mitigation measures for impacts to protected species may be included within the final permit conditions and special conditions.

United States Army Corps of Engineers
USACE is a joint recipient of the ERP permit application and will review impacts to federally listed (protected) species. After consultation with the appropriate federal agency, USACE may provide permit conditions relevant to protected species.

U.S. Coast Guard
Upon the conclusion of the ETAT review and completion of the Programming Summary Report (ETDM Process), the Coast Guard indicated that a USCG bridge permit is not required for the construction of the second bridge across Lake Jesup.

United States Fish and Wildlife Service
A Bald Eagle Purposeful Take Permit may be required for proposed work affecting nest SE 036. Additional surveys for eagle nests and agency coordination will occur during design to ascertain whether a disturbance permit is necessary.

Impacts to suitable foraging habitat (wetlands and surface waters) within the wood stork core foraging area will require further coordination and possibly permitting during the design phase of this project.

A survey for crested caracaras will be conducted prior to construction within recognized caracara habitat.

8.2 AGENCY COORDINATION

Preliminary coordination with the relevant regulatory agencies, including USACE, USFWS, NMFS, SJRWMD, FFWCC, and FDEP was accomplished through the Environmental Screening Tool component of ETDM. In general, the comments received consisted of statements regarding the need to acquire the appropriate permits, the need for avoidance and minimization of wetlands, wildlife habitat and protected species impact concerns, and maintenance of existing water quality. Several of these comments have been integrated into the project design.

In addition, meetings were held with SJRWMD and FDEP during the PD&E Study process to discuss the proposed roadway improvements and the proposed impacts within wetlands, conservation easements, and permitted mitigation areas. Another focus of the agency meetings was to discuss mitigation for the proposed impacts, which included the discussion of various mitigation alternatives. Coordination with FFWCC was conducted regarding element occurrence of wildlife and protected species as well as wildlife habitat. Coordination with FFWCC and USFWS regarding potential impacts to the eagle nests was also initiated (Appendix 8) and comments referencing level effect for some species are documented within Appendix 4. On-going correspondence with USFWS/FFWCC and NMFS are provided within Appendices 12 & 13 respectively.

Coordination with the regulatory agencies will continue throughout the permitting phase of the project to ensure that all potential mitigation concepts are evaluated and to identify and analyze viable options that could be implemented.

8.3 IMPACT ASSESSMENT

The recommended alternative will impact 28.57 acres of wetlands, 11.1 acres of wetland cut ditches, and 5.85 acres of upland cut ditches. Approximately 17.59 acres of conservation easements will also be impacted.

Increased travel and lane widths, associated with all the build alternatives, are likely to increase wildlife mortality particularly in the vicinity of the Lake Jesup Bridge. This project, however, is not expected to have a negative impact on habitat connectivity.

The construction of Comp Pond 2, common to all the build alternatives, will remove riverine habitat buffering the St. Johns River.

The realignment of Osceola Road, common to all alternatives, may affect eagle's nest SE 036 as heavy vehicles stop and accelerate within 660 feet of the nest crowding the nest from a third side. All alternatives utilize a best fit typical section on SR 46 which maintains the current northern right-of-way boundary in the vicinity of SE 036. Additional surveys for eagle nests and agency coordination will occur during design to ascertain whether impacts to this nest or other eagle nests will occur.

The project will potentially impact 18 gopher tortoise burrows during construction. Permitting and relocation of associated gopher tortoises will off-set any adverse impacts to this species.

9.0 CONCLUSION AND RECOMMENDATIONS

The potential wildlife impacts identified during this Protected Species and Habitat Evaluation study are common to all the build alternatives. Ubiquitous and marginally protected (non-listed) wildlife species utilize the natural and agricultural areas within and adjacent to the project corridor both seasonally and year long. Maintenance of wildlife habitat, particularly that habitat associated with the St. Johns River, is an issue consistently mentioned from regulatory agency comments within the on-line ETDM screening tool for this project. Additional ETDM recommendations are presented as follows:

- Continue to investigate options to minimize habitat impacts west and in the vicinity of the Lake Jesup Bridge as well as opportunities to improve habitat connectivity in those locations (USFWS).
- Coordinate with USFWS to review impacts to roadside ditches affecting potential foraging habitat for the wood stork.
- Coordinate with land managers to ensure that roadway design and construction do not compromise their ability to manage conservation lands effectively.
- Coordinate with FFWCC regarding potential impacts to the identified eagle's nests.
- Conduct gopher tortoise surveys consistent with FFWCC protocols prior to construction.
- Conduct wildlife surveys to verify findings of the SR 46 Protected Species and Habitat Evaluation Report during permitting and prior to construction within the proposed right-of-way as well as all mobilization and staging areas (FFWCC & USFWS).

- An osprey nest survey will be conducted prior to construction and all necessary permits for nest removal will be obtained if nests are located within the construction footprint (FFWCC).
- Coordinate with FFWCC and USFWS regarding the Florida manatee during project design, permitting, and construction.
- Adhere to the Standard Conditions for In-Water Work as they pertain to the Florida manatee during bridge construction; incorporate these conditions within the plan set (USFWS).
- Any culverts larger than eight inches in diameter will be grated to prevent manatee entrapment. The spacing between the bridge pilings will be at least 60 inches apart to allow for manatee movement in between the pilings (USFWS).
- Barges will be equipped with fender systems that provide a minimum standoff distance of four feet between wharves, bulkheads and vessels moored together to prevent crushing manatees between the barges or between the barge and work site. All existing slow speed or no wake zones will apply to all work boats and barges associated with the construction (USFWS).
- No dredging is proposed at this time. If dredging is needed, consultation should be reinitiated for the Florida manatee (USFWS).
- There will be no blasting in manatee sensitive areas (USFWS).
- Adhere to the Standard Protection Measures for the Eastern indigo snake during road construction; incorporate these measures within the plan set (USFWS).
- Utilize a burrow scope during gopher tortoise excavation to further minimize impacts to the Eastern indigo snake (USFWS).
- Reinitiate field surveys for crested caracara, Florida sandhill crane, and Florida burrowing owl prior to construction (FFWCC).
- Subsequent crested caracara surveys will be conducted closer to construction. If at that time, the survey reveals additional nests, then FDOT will reinitiate consultation with USFWS.
- Investigate opportunities to include bat friendly structural components within or adjacent to the bridge during design and construction; providing bat exclusions during construction.
- The presence of road kill is a significant factor affecting juvenile bald eagle and caracara mortality:
    - Installation of wildlife fencing along undeveloped lands immediately west and in the vicinity of the Lake Jesup Bridge will be considered.
    - While the maintenance of hydrologic connectivity is critical in preventing habitat degradation, integration of wildlife-friendly components within culverts provides alternatives to over-road movement for small and meso-sized wildlife.

10.0 COMMITMENTS

To satisfy both agency and community concerns FDOT will adhere to the following commitments during permitting and construction of the project:

- Investigate options to minimize habitat impacts west and near the Lake Jesup Bridge as well as opportunities to improve habitat connectivity in those locations during permitting and design.
- Ensure that roadway design and construction does not compromise the ability to access and manage conservation lands effectively.
- Conduct an osprey nest survey prior to construction and obtain all necessary permits for nest removal as necessary.
- Grate any culverts larger than eight inches in diameter to prevent manatee entrapment. The spacing between the bridge pilings will be at least 60 inches apart to allow for manatee movement in between the pilings.
- Equip barges with fender systems that provide a minimum standoff distance of four feet between wharves, bulkheads and vessels moored together to prevent crushing manatees between the barges or between the barge and work site. All existing slow speed or no wake zones will apply to all work boats and barges associated with the construction.
- Initiate consultation with USFWS for the Florida manatee if dredging is deemed necessary for construction.
- There will be no blasting in manatee sensitive areas.
- Field surveys for crested caracara, Florida sandhill crane, and Florida burrowing owl will be accomplished prior to construction.
- Subsequent crested caracara surveys will be conducted during the design phase. If at that time survey reveals additional nests, then FDOT will reinitiate consultation with USFWS.
- Conduct eagle nest survey and agency coordination during the design phase to determine whether a disturbance permit is necessary.
- Reinitiate consultation with USFWS prior to advancing the project into construction.
- Conduct gopher tortoise survey and agency coordination during the design phase[1]

[1] Gopher tortoise survey will not be tracked as a commitment, but will be tracked as a required permit.

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APPENDIX 1

FFWCC COORDINATION

Florida Fish and Wildlife Conservation Commission

Commissioners
Kenneth W. Wright
Chairman
Winter Park

Kathy Barco
Vice Chairman
Jacksonville

Ronald M. Bergeron
Fort Lauderdale

Richard A. Corbett
Tampa

Aliese P. "Liesa" Priddy
Immokalee

Charles W. Roberts III
Tallahassee

Brian S. Yablonski
Tallahassee

Executive Staff
Nick Wiley
Executive Director

Greg Holder
Assistant Executive Director

Karen Ventimiglia
Chief of Staff

Fish and Wildlife Research Institute

Gil McRae
Director

(727) 896-8626
(727) 823-0166 FAX

Information Sciences And Management

(850) 488-0588 Office
(850) 410-5260 Fax

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

Fish and Wildlife Research Institute
620 South Meridian Street
Tallahassee, Florida
32399-1600
Voice: (850) 410-0656

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

MyFWC.com/Research

September 12, 2012

Mr. Christian Miller, MBA, PWS
Environmental Management & Design, Inc.
1615 Edgewater Drive, Suite 100
Orlando, Florida 32804

Dear Mr. Miller:

This letter is in response to your request for listed species occurrence records and critical habitats for your project (SR 46 Road Improvement) located in Seminole County, Florida. Records from The Florida Fish and Wildlife Conservation Commission's database indicate that listed species occurrence data and critical habitats are located within project area. Enclosed are 8.5 x 11 maps showing listed species locations, SHCA's for the swallow-tailed kite, Florida mouse, Florida scrub-jay, and Cooper's hawk, prioritized SHCA's, species richness, priority wetlands for listed species, manatee mortality and critical habitat, and land cover for the surrounding area of the project site.

This letter and attachments should not be considered as a review or an assessment of the impact upon threatened or endangered species of the project site. It provides FWC's most current data regarding the location of listed species and their associated habitats.

Our SHCA recommendations are intended to be used as a guide. Land development and ownership in Florida is ever-changing and priority areas identified as SHCA might already have been significantly altered due to development or acquired into public ownership. Onsite surveys, literature reviews, and coordination with FWC biologists remain essential steps in documenting the presence or absence of rare and imperiled species and habitats within the project area.

Our fish and wildlife location data represents only those occurrences recorded by FWC staff and other affiliated researchers. It is important to understand that our database does not necessarily contain records of all listed species that may occur in a given area. Also, data on certain species, such as gopher tortoises, are not entered into our database on a site-specific basis. **Therefore, one should not assume that an absence of occurrences in our database indicates that species of significance do not occur in the area.**

The Florida Natural Areas Inventory (FNAI) maintains a separate database of listed plant and wildlife species, please contact FNAI directly for specific information on the location of element occurrences within the

project area. Because FNAI is funded to provide information to public agencies only, you may be required to pay a fee for this information. County-wide listed species information can be located at their website (http://www.fnai.org).

Please credit the Florida Fish and Wildlife Conservation Commission in any publication or presentation of these data. If you have any questions or further requests, please contact me at (850) 488-0588 or gisrequests@myfwc.com.

Sincerely,

Jan Stearns

Jan Stearns
Staff Assistant

js
2012_5855
Enclosures

2012-5855

Stearns, Janice

From: Christian H. Miller [cmiller@emd-inc.net]
Sent: Tuesday, September 11, 2012 9:00 AM
To: GISRequests
Subject: Bear nuisance and roadkill reported within or near the SR 46 PD&E study area
Attachments: SR 46 Location Map_revised2.pdf

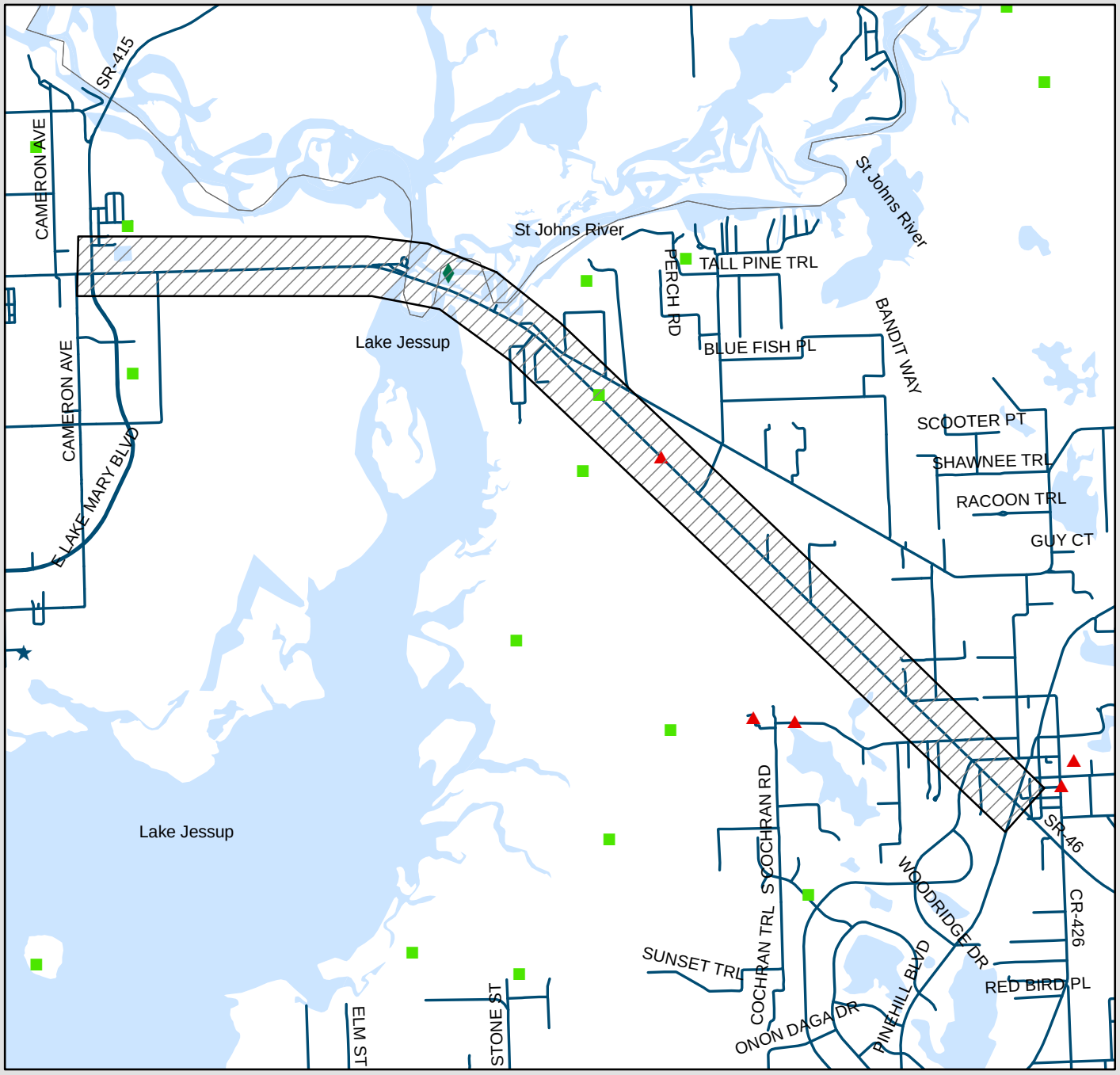
Susan Douglas directed me to your office with this request for information. We are currently preparing a PD&E study for proposed road improvements to SR 46 in Seminole County from SR 415 to CR 426 for FDOT and Seminole County. A location map is attached. I am looking for information regarding bear nuisance and roadkill reports within the area. Please contact me if you require any additional information.

thanks

Christian H. Miller, MBA, PWS
Environmental Management & Design, Inc.
1615 Edgewater Drive, Suite 100
Orlando, Florida 32804
Web site: emd-inc.net
Phone: 407.843.0615
FAX: 407.843.0616
Cell: 321.663.8242

Species Occurrence

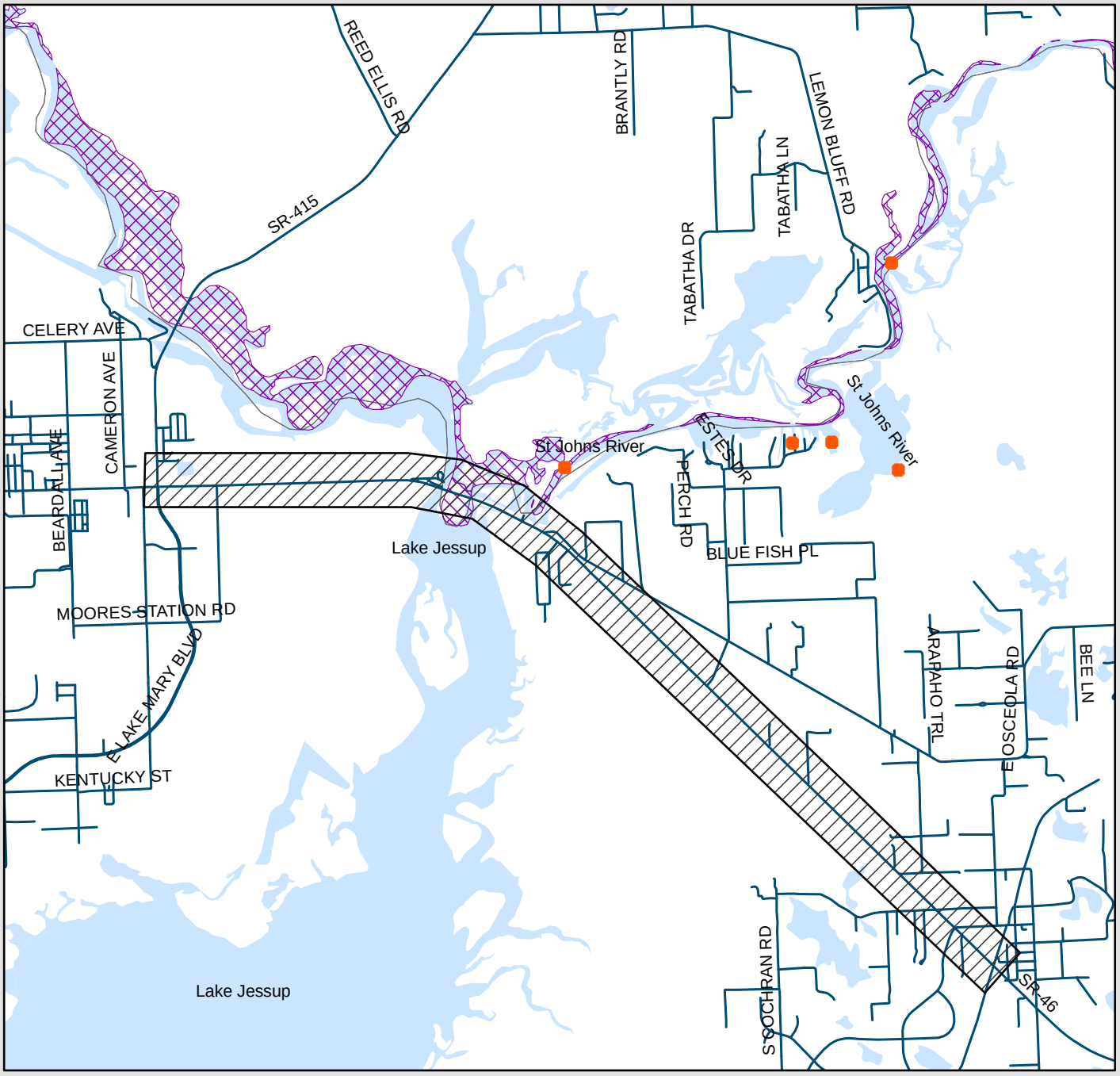
SR 46 Road Improvement



2012_5855

Manatee Mortality and Critical Habitat

SR 46 Road Improvement



Manatee Mortality
Manatee Critcal Habitat
County Boundary
Project Site

Miles
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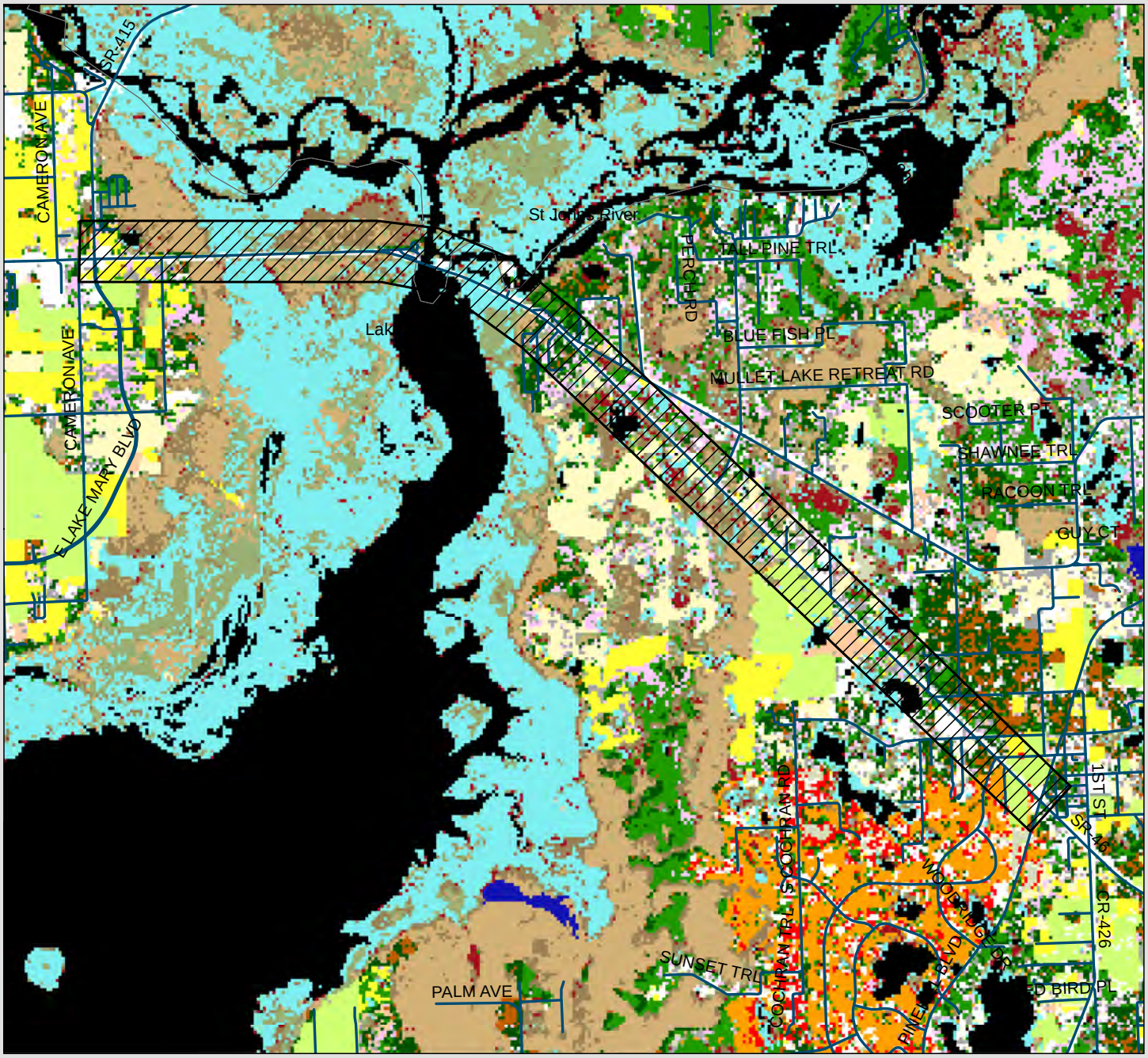
N

2012_5855

Florida Land Cover - 2003

SR 46 Road Improvement



Project Site

Major Roads

County Boundary

- Coastal Strand
- Sand/Beach
- Xeric Oak Scrub
- Sand Pine Scrub
- Sandhill
- Dry Prairie
- Mixed Pine-Hardwood Forest
- Hardwood Hammocks and Forest
- Pinelands
- Cabbage Palm-Live Oak Hammock
- Tropical Hardwood Hammock
- Freshwater Marsh and Wet Prairie
- Sawgrass Marsh
- Cattail Marsh
- Shrub Swamp
- Bay Swamp
- Cypress Swamp
- Cypress/Pine/Cabbage Palm
- Mixed Wetland Forest
- Hardwood Swamp
- Hydric Hammock
- Bottomland Hardwood Forest
- Salt Marsh
- Mangrove Swamp
- Scrub Mangrove
- Tidal Flat
- Open Water
- Shrub and Brushland
- Grassland
- Bare Soil/Clearcut
- Improved Pasture
- Unimproved Pasture
- Other Agriculture
- Citrus
- Exotic Plants
- High and Low Impact Urban
- Extractive

Miles

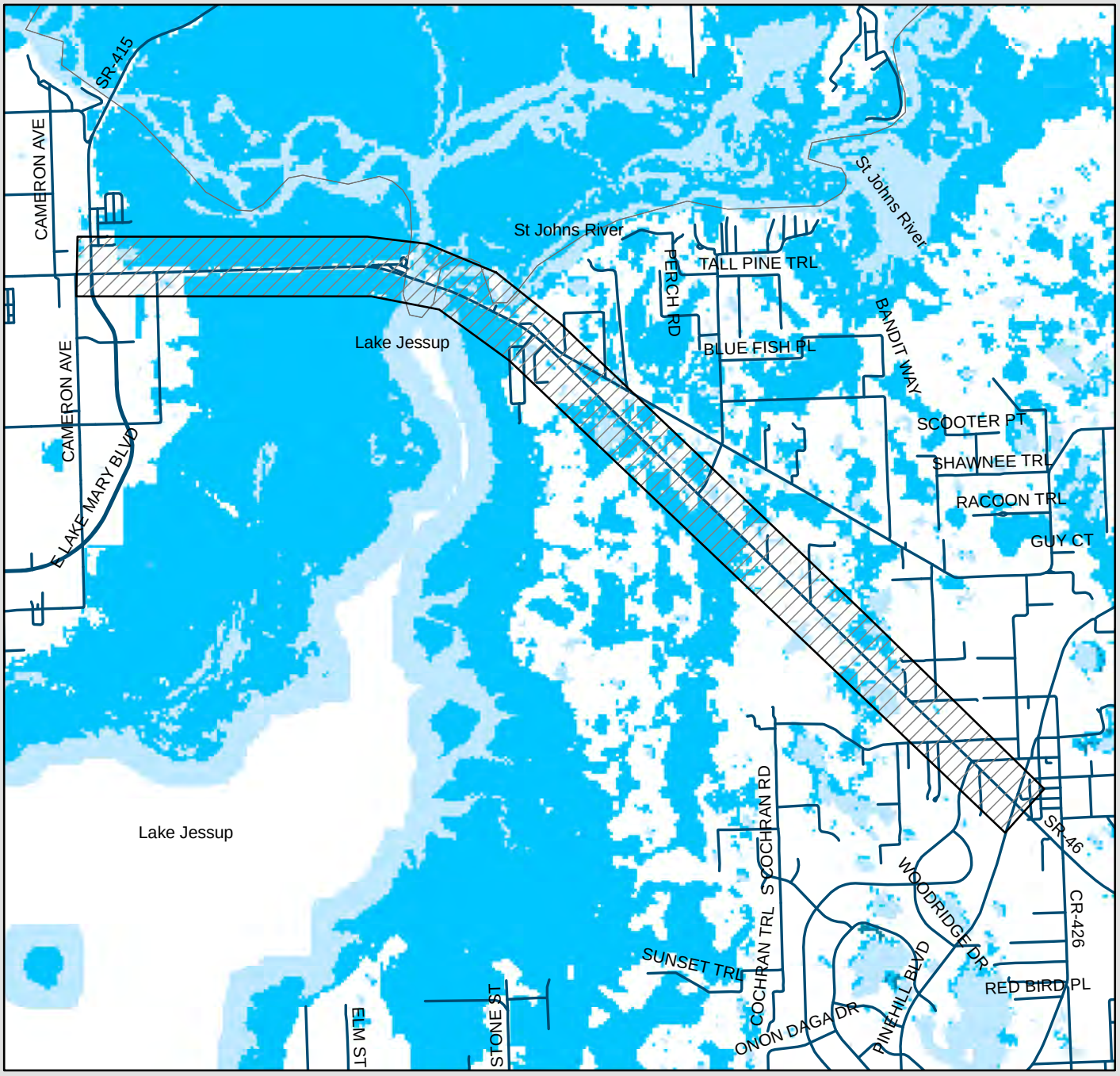
0 0.5 1

N

2012_5855

Priority Wetlands

SR 46 Road Improvement



Priority Wetlands
- 1-3 Species, Wetlands habitat
- 4-6 Species, Wetlands habitat
- 7-9 Species, Wetlands habitat
- 10-11 Species, Wetlands habitat

County Boundary
Project Site

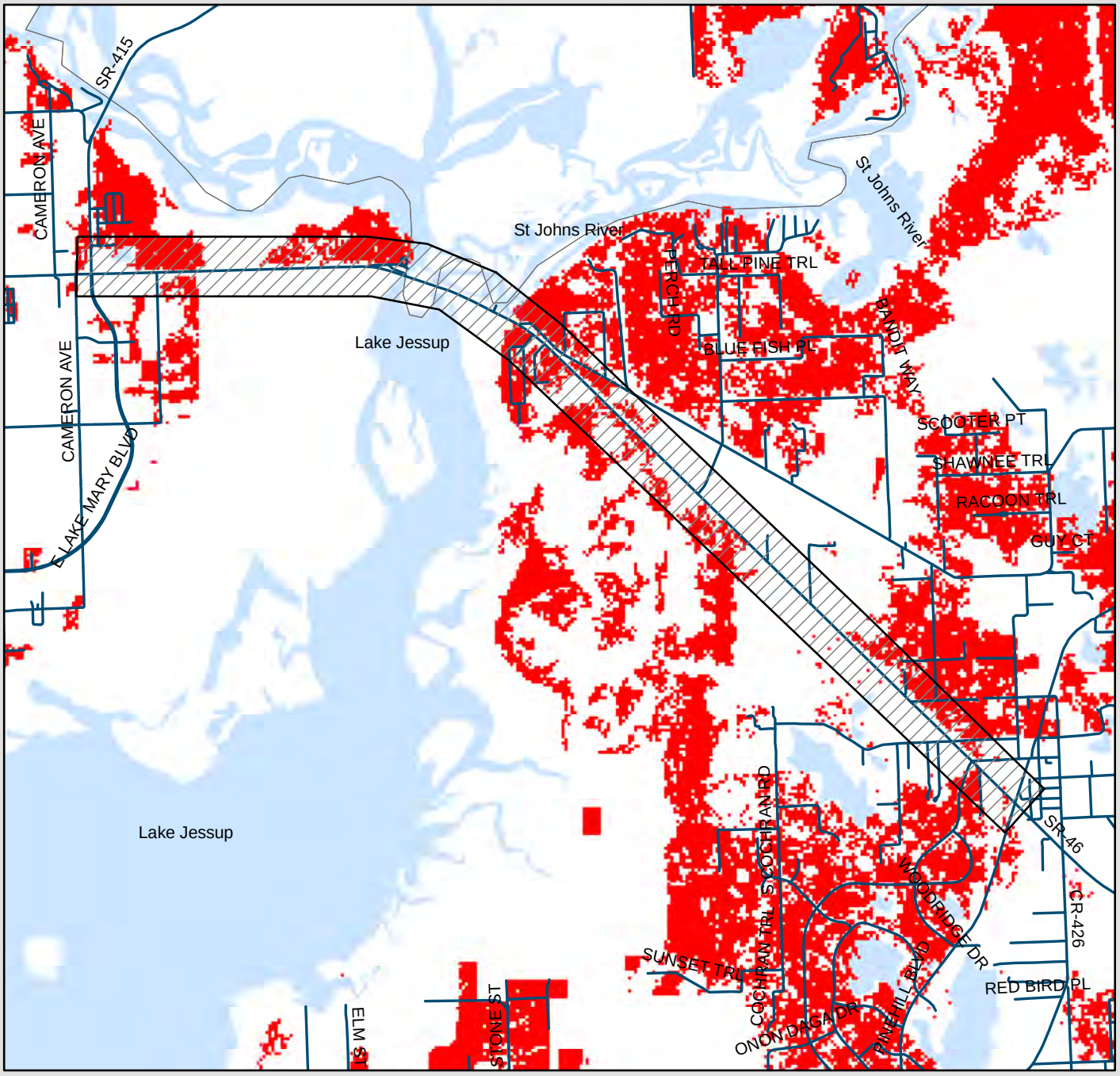
0 1 2 3 Miles

N

2012_5855

Strategic Habitat Conservation Areas

SR 46 Road Improvement



Strategic Habitat Conservation Areas
County Boundary
Project Site

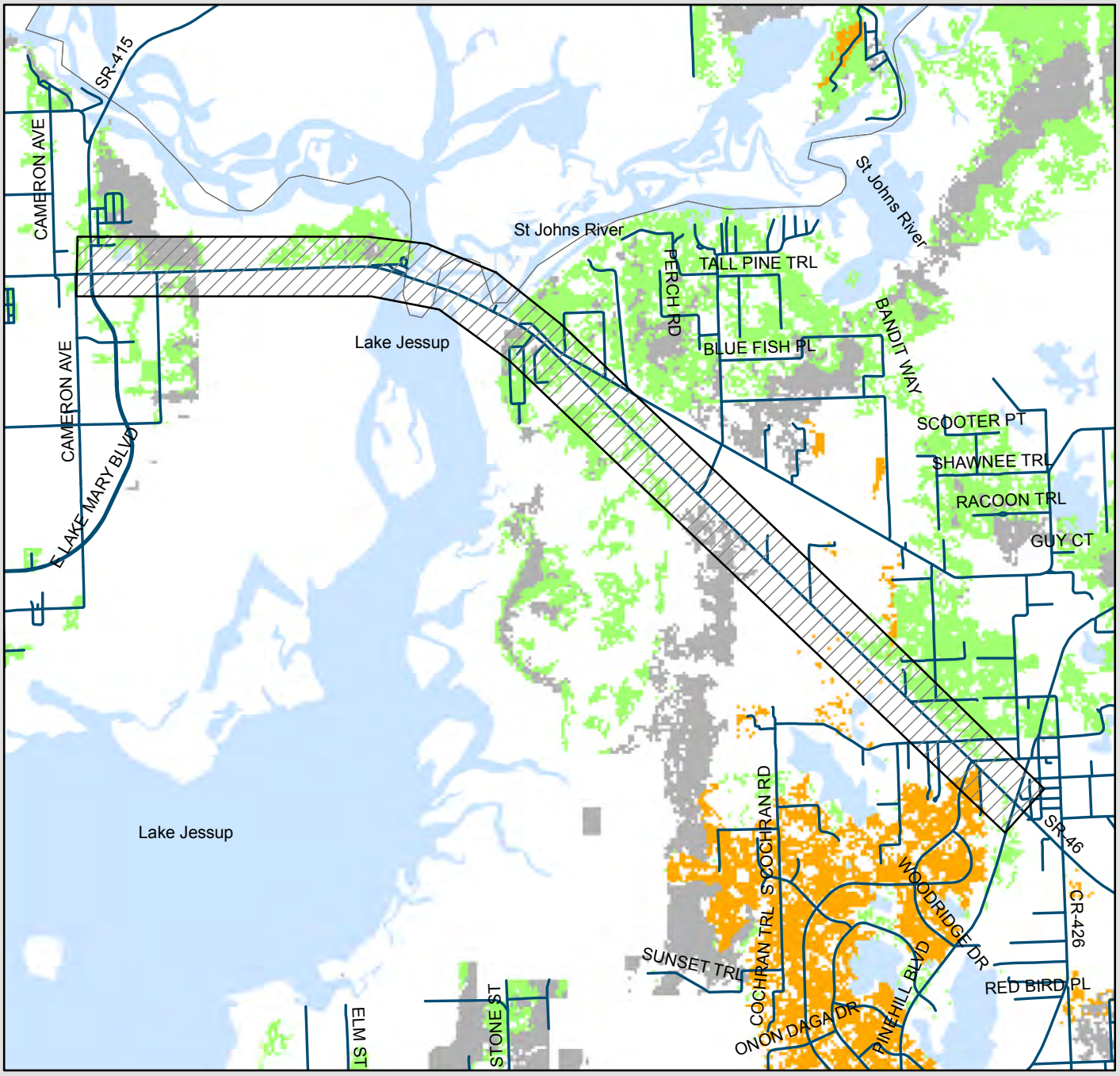
0 1 2 3 Miles

N

2012_5855

Prioritized SHCA's

SR 46 Road Improvement



Prioritized SHCA's
- Priority 1
- Priority 2
- Priority 3
- Priority 4
- Priority 5

County Boundary
Project Site

N

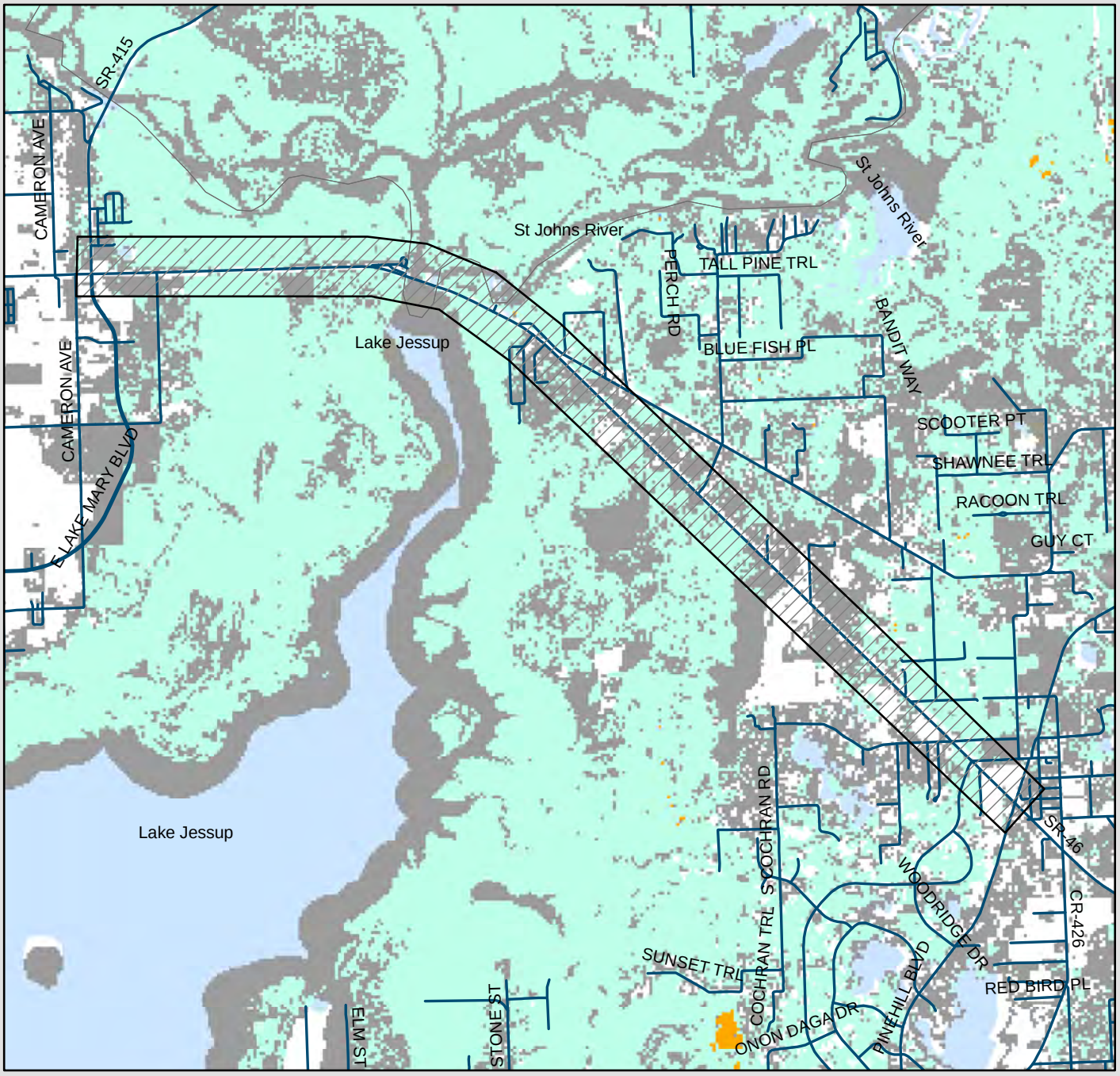
0 1 2 3 Miles

The prioritized SHCA map identifies 5 classes of SHCA based upon Heritage ranking criteria developed by The Nature Conservancy, the Natural Heritage Program Network, and the Florida Natural Areas Inventory. There are 2 possible ranks used to prioritize a species' SHCA: 1) the global rank based on a species worldwide status, and 2) the state rank based upon the species status in Florida. The state and global ranks are based upon many factors such as known occurrence locations, estimated abundance, range, amount of habitat currently protected, perceived levels of threats towards the species, and ecological fragility.

2012_5855

Species Richness

SR 46 Road Improvement



Species Richness
- 1 - 3
- 4 - 6
- 7 - 9
- 10 - 13

- County Boundary
- Project Site

0 1 2 3 Miles

N

2012_5855

APPENDIX 2

FNAI ELEMENT OCCURRENCE REPORT

FLORIDA
Natural Areas
INVENTORY

1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
850-224-8207
fax 850-681-9364
www.fnai.org

March 20, 2012

Christian Miller
Environmental Management and Design
1615 Edgewater Drive, Suite 100
Orlando, FL 32804

Dear Mr. Miller,

Thank you for requesting information from the Florida Natural Areas Inventory (FNAI). We have compiled the following information for your project area.

Project: State Road 46

Date Received: 03/20/2012

Location: Seminole County

Based on the information available, this site appears to be located on or very near a significant region of scrub habitat, a natural community in decline that provides important habitat for several rare species within a small area. Additional consideration should be given to avoid and/or mitigate impacts to these natural resources, and to design land uses that are compatible with these resources.

Element Occurrences

A search of our maps and database indicates that we currently have several element occurrences mapped in the vicinity of the study area (see enclosed map and element occurrence table). Please be advised that a lack of element occurrences in the FNAI database is not a sufficient indication of the absence of rare or endangered species on a site.

The element occurrences data layer includes occurrences of rare species and natural communities. The map legend indicates that some element occurrences occur in the general vicinity of the label point. This may be due to lack of precision of the source data, or an element that occurs over an extended area (such as a wide ranging species or large natural community). For animals and plants, element occurrences generally refer to more than a casual sighting; they usually indicate a viable population of the species. Note that some element occurrences represent historically documented observations which may no longer be extant. Extirpated element occurrences will be marked with an 'X' following the occurrence label on the enclosed map.

Likely and Potential Rare Species

In addition to documented occurrences, other rare species and natural communities may be identified on or near the site based on habitat models and species range models (see enclosed Biodiversity Matrix Report). These species should be taken into consideration in field surveys, land management, and impact avoidance and mitigation.

FNAI habitat models indicate areas, which based on land cover type, offer suitable habitat for one or more rare species that is known to occur in the vicinity. Habitat models have been developed for approximately 300 of the rarest species tracked by the Inventory, including all federally listed species.

Florida Resources and Environmental Analysis Center
Institute of Science and Public Affairs
The Florida State University

FNAI species range models indicate areas that are within the known or predicted range of a species, based on climate variables, soils, vegetation, and/or slope. Species range models have been developed for approximately 340 species, including all federally listed species.

The FNAI Biodiversity Matrix Geodatabase compiles Documented, Likely, and Potential species and natural communities for each square mile Matrix Unit statewide.

Managed Areas

Portions of the site appear to be located within the Lake Jesup Conservation Area, managed by the St. Johns River Water Management District.

The Managed Areas data layer shows public and privately managed conservation lands throughout the state. Federal, state, local, and privately managed conservation lands are included.

The Inventory always recommends that professionals familiar with Florida's flora and fauna conduct a site-specific survey to determine the current presence or absence of rare, threatened, or endangered species.

Please visit www.fnai.org/trackinglist.cfm for county or statewide element occurrence distributions and links to more element information.

The database maintained by the Florida Natural Areas Inventory is the single most comprehensive source of information available on the locations of rare species and other significant ecological resources. However, the data are not always based on comprehensive or site-specific field surveys. Therefore this information should not be regarded as a final statement on the biological resources of the site being considered, nor should it be substituted for on-site surveys. Inventory data are designed for the purposes of conservation planning and scientific research, and are not intended for use as the primary criteria for regulatory decisions.

Information provided by this database may not be published without prior written notification to the Florida Natural Areas Inventory, and the Inventory must be credited as an information source in these publications. FNAI data may not be resold for profit.

Thank you for your use of FNAI services. An invoice will be mailed separately. If I can be of further assistance, please contact me at (850) 224-8207 or at mobrien@fnai.org.

Sincerely,

Michael O'Brien

Michael O'Brien
GIS / Data Services

Encl

1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
(850) 224-8207
(850) 681-9364 Fax
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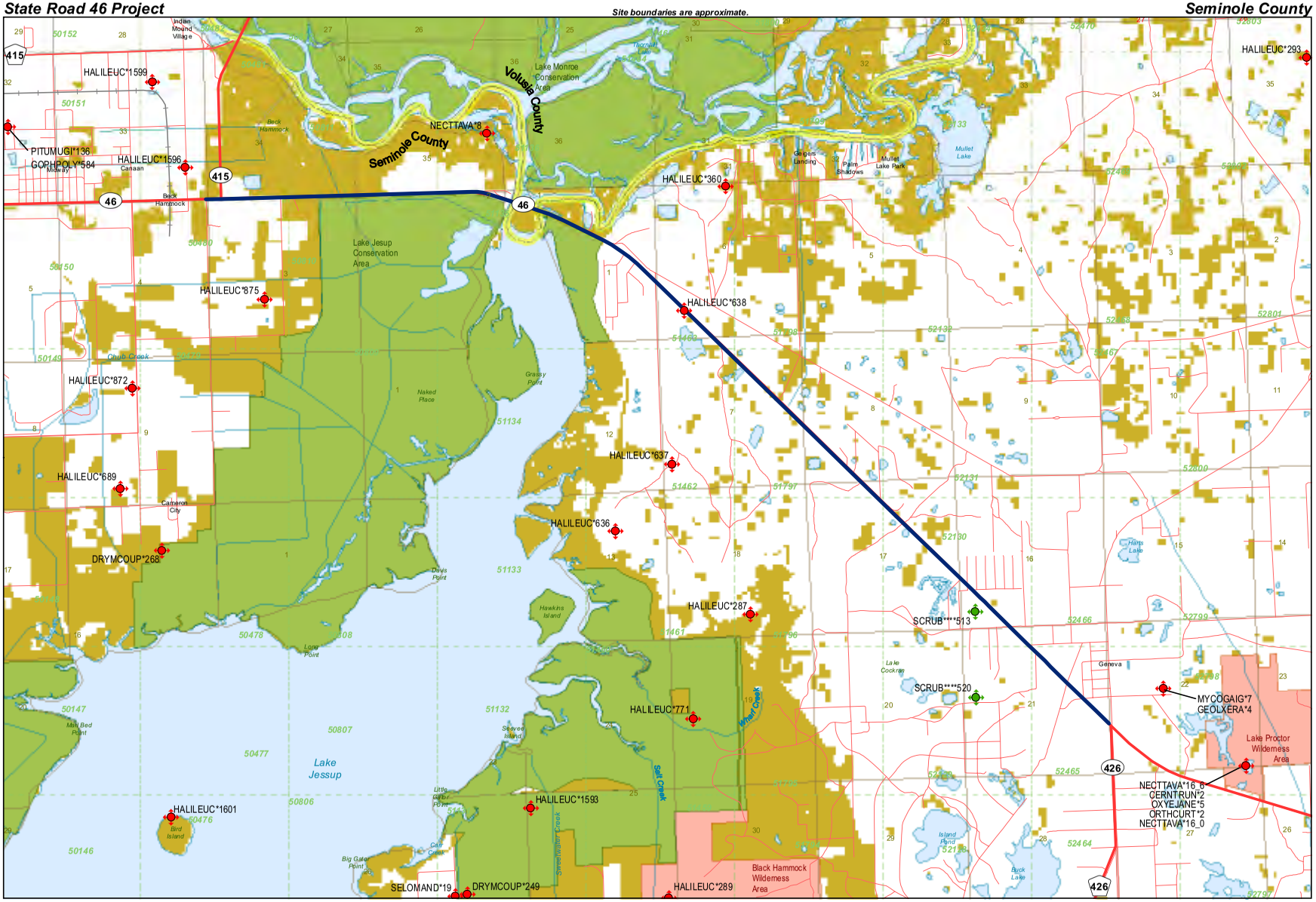
FLORIDA Natural Areas INVENTORY

State Road 46 Project

Site boundaries are approximate.

Seminole County



0 0.5 1 2 3 Miles

Map produced by MGO
Map Date: 3/20/2012

Element Occurrences

- Animals
- Plants
- Communities
- Other
- Data Sensitive

Point Indicates General Vicinity of Element

U.S. Fish & Wildlife Service Scrub Jay Survey 1992-96

Conservation Lands

- Federal
- State
- Local
- Private
- State Aquatic Preserves

Land Acquisition Projects

- Florida Forever Board of Trustees Projects

- FNAI Rare Species Habitat
- FNAI Biodiversity Matrix Square Mile Units

- County Boundary
- Interstate
- Turnpike
- Major Highway
- Local Road
- Railroad [Inactive railroads shown in Gray]
- Water

NOTE
Map should not be interpreted without accompanying documents.

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Florida Natural Areas Inventory

DOCUMENTED ELEMENT OCCURRENCES ON OR NEAR
State Road 46 Project, Seminole County

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
CERNTRUN*2	*Cernotina truncona*	Florida Cernotinan Caddisfly	G4	S3	N	N	2002-03-22	2002-03-22: No description given (U06RAS01FLUS).	2002-03-22: Five specimens were collected on 2002-03-22 using ultraviolet light (U06RAS01FLUS).
DRYMCOUP*249	*Drymarchon couperi*	Eastern Indigo Snake	G3	S3	LT	FT	1982-PRE	No general description given	2 INDIGOS IN UCF COLLECTION (MOLER INTERVIEW OF L. EHRHART, 1982-07-12).
DRYMCOUP*268	*Drymarchon couperi*	Eastern Indigo Snake	G3	S3	LT	FT	1977	No general description given	INDIGO OBSERVED BY FRED ANTONIO, 1977 (MOLER INTERVIEW OF F. ANTONIA, 1982-07-02).
GEOLXERA*4	*Geolycosa xera*	McCrone's Burrowing Wolf Spider	G2G3	S2S3	N	N	1963-PRE	1963-Pre: No description given (A63MCC01FLUS).	1963-Pre: Eleven specimens were collected (A63MCC01FLUS).
GOPHPOLY*584	*Gopherus polyphemus*	Gopher Tortoise	G3	S3	N	ST	ZZ	No general description given	Three specimens (Carn. MNH-3091,3125,9101), collector and date are not available.
HALILEUC*1593	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2003	2005-07-12: Source does not provide a description.	Nest status: Active, 2003, 2002, 2001, 2000, 1999;(U03FWC01FLUS)
HALILEUC*1596	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2003	2005-07-12: Source does not provide a description.	Nest status: Active, 2003, 2002, 2001, 2000, 1999;(U03FWC01FLUS)
HALILEUC*1599	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2003	2005-07-12: Source does not provide a description.	Nest status: Active, 2003, 2001, 2000, 1999; Not active, 2002;(U03FWC01FLUS)
HALILEUC*1601	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2001	2005-07-12: Source does not provide a description.	Nest status: Active, 2001, 1999; Not active, 2003, 2002, 2000;(U03FWC01FLUS)
HALILEUC*287	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2003	No general description given	Nest status 1995-2003: Continuously active. (U03FWC01FLUS). Previous data (note different format) NEST: 1995: PRODUCED 1 YOUNG; 1994: ACTIVE, PRODUCED 0 YOUNG; 1993: PRODUCED 2 YOUNG; 1992: PRODUCED 2 YOUNG; 1991: PRODUCED 1 YOUNG; 1990: PRODUCED 1 YOUNG

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Florida Natural Areas Inventory

DOCUMENTED ELEMENT OCCURRENCES ON OR NEAR
State Road 46 Project, Seminole County

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
HALILEUC*289	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2003	No general description given	Nest status 1999-2003: Continuously active; Status 1995-98: Active - 1997, 1995; Inactive - 1998, 1996; (U03FWC01FLUS). Previous data (note different format) NEST: 1995: PRODUCED 1 YOUNG; 1994: PRODUCED 2 YOUNG; 1993: PRODUCED 1 YOUNG; 1992: ACTIVE, PROD
HALILEUC*293	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	1997	No general description given	Nest status 1999-2003: Inactive - 2003, 2002, 2001, 2000, 1999; Status 1995-98: Active - 1997, 1996, 1995; Inactive - 1998; (U03FWC01FLUS). Previous data (note different format) NEST: 1995: PRODUCED 2 YOUNG; 1994: ACTIVE, PRODUCED 0 YOUNG; 1993: PRODUCED
HALILEUC*360	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2003	No general description given	Nest status 1999-2003: Active - 2003, 2002, 2000, 1999; Inactive - 2001;Status 1995-98: Continuously active. (U03FWC01FLUS). Previous data (note different format) NEST: 1995: PRODUCED 3 YOUNG; 1994: PRODUCED 1 YOUNG; 1993: PRODUCED 2 YOUNG; 1992: PRODUCE
HALILEUC*636	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2003	No general description given	Nest status 1999-2003: Active - 2003, 2001, 2000, 1999; Inactive - 2002;Status 1995-98: Continuously active. (U03FWC01FLUS). Previous data (note different format) NEST; 1995: PRODUCED 2 YOUNG; 1994: USED BY OWL; 1993: ACTIVE, PRODUCED 0 YOUNG; 1992: PROD
HALILEUC*637	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2003	No general description given	Nest status 1999-2003: Continuously active; Status 1995-98: Active - 1998, 1997, 1996; Inactive - 1995; (U03FWC01FLUS). Previous data (note different format) NEST; 1995: USED BY OWL; 1994: INACTIVE; 1993: ACTIVE, PRODUCED 0 YOUNG; 1992: PRODUCED 1 YOUNG;

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Florida Natural Areas Inventory

DOCUMENTED ELEMENT OCCURRENCES ON OR NEAR
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Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
HALILEUC*638	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2000	No general description given	Nest status 1999-2003: Active - 2000, 1999; Inactive - 2003, 2002; Unknown/not assessed - 2001;Status 1995-98: Continuously active. (U03FWC01FLUS). Previous data (note different format) NEST; 1995: PRODUCED 2 YOUNG; 1994: PRODUCED 2 YOUNG; 1993: PRODUCED
HALILEUC*689	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2003	No general description given	Nest status 1995-2003: Continuously active. (U03FWC01FLUS). Previous data (note different format) NEST; 1995: PRODUCED 2 YOUNG; 1994: PRODUCED 3 YOUNG; 1993: ACTIVE, PRODUCED 0 YOUNG; 1992: ACTIVE BUT PRODUCED 0 YOUNG; 1991: ACTIVE BUT PRODUCED 0 YOUNG;
HALILEUC*771	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2003	No general description given	Nest status 1999-2003: Continuously active; Status 1995-98: Active - 1997, 1996, 1995; Inactive - 1998; (U03FWC01FLUS). Previous data (note different format) NEST; 1995: ACTIVE, PRODUCED 0 YOUNG; 1994: PRODUCED 2 YOUNG; 1993: PRODUCED 1 YOUNG; 1992: PROD
HALILEUC*872	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	1997	No general description given	Nest status 1999-2003: Inactive - 2003, 2001, 2000, 1999; Unknown/not assessed - 2002; Status 1995-98: Active - 1997, 1996, 1995; Inactive - 1998; (U03FWC01FLUS). Previous data (note different format) Nest; 1995: Produced 1 young; 1994: Produced 2 young.
HALILEUC*875	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2003	No general description given	Nest status 1999-2003: Active - 2003, 2001, 2000, 1999; Inactive - 2002; Status 1995-98: Active - 1997, 1996; Inactive - 1998, 1995; (U03FWC01FLUS). Previous data (note different format) Nest; 1995: Active, produced 0 young; 1994: Active, produced 0 youn
MYCOGAIG*7	*Mycotrupes gaigei*	North Peninsular Mycotrupes Beetle	G2	S2	N	N	1960-04-20	1960-04-20: No description given (B73WOO01FLUS).	1960-04-20: Fifty one specimens were collected by R.E. Woodruff using a malt trap (B73WOO01FLUS).

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Florida Natural Areas Inventory

DOCUMENTED ELEMENT OCCURRENCES ON OR NEAR
State Road 46 Project, Seminole County

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
NECTTAVA*16_0	*Nectopsyche tavara*	Tavares White Miller Caddisfly	G3	S3	N	N	2005-04-01	This is a parent EO. Refer to individual sub-EOs for detailed information.	This is a parent EO for two sub-EOs. Refer to individual sub-EOs for detailed information.
NECTTAVA*16_6	*Nectopsyche tavara*	Tavares White Miller Caddisfly	G3	S3	N	N	2002-03-22	2002-03-22: No description given (U06RAS01FLUS).	2002-03-22: One specimen was collected on 2002-03-22 using ultraviolet light (U06RAS01FLUS).
NECTTAVA*8	*Nectopsyche tavara*	Tavares White Miller Caddisfly	G3	S3	N	N	2004-05-21	2004-05-21: No description given (U06RAS01FLUS).	2004-05-21: One specimen was collected on 2004-05-21 using ultraviolet light (U06RAS01FLUS).
ORTHCURT*2	*Orthotrichia curta*	Short Orthotrichian Microcaddisfly	G4	S2S3	N	N	2002-03-22	2002-03-22: No description given (U06RAS01FLUS).	2002-03-22: A total of 38 specimens were collected on 2002-03-22 using ultraviolet light (U06RAS01FLUS).
OXYEJANE*5	*Oxyethira janella*	Little-entrance Oxyethiran Microcaddisfly	G5	S4S5	N	N	2002-03-22	2002-03-22: No description given (U06RAS01FLUS).	2002-03-22: One specimen was collected on 2002-03-22 using ultraviolet light (U06RAS01FLUS).
PITUMUGI*136	*Pituophis melanoleucus mugitus*	Florida Pine Snake	G4T3	S3	N	SSC	1936-06-06	No general description given	1936-06-06: specimen collected by Russell (UF-621) (S36RUSSMFLUS).
SCRUB****513	Scrub		G2	S2	N	N	2005-05-28	1983-07-05: SAND PINE SCRUB ON ST LUCIE FINE SAND. UNDERSTORY DOMINATED BY LIVE, CHAPMAN AND MYRTLE OAK (U88CHR01). ALL THE LARGER SAND PINE WERE KILLED BY HAIL STORM AND BEETLE ATTACKS IN 1982. MANY OF THE PINE HAVE BEEN BLOWN OVER BY THE WIND. MOST OF	2005-05-28: This patch of scrub still persists here but is negatively affected by past sand mining operations, fire suppression, and exotic plant species. Rural and residential housing developments surround the area, fragmenting this vestige of scrub (PN
SCRUB****520	Scrub		G2	S2	N	N	2005-05-28	2005-05-28: Large area of scrub has been converted to highly fragmented scrub vestiges and the remaining scrub is up for sale in a parcel-by-parcel, rural residential area (PNDJEN04FLUS). 1984-01-31: SAND PINE SCRUB LOCATED ON LAKEWOOD SAND. INCLUDES SEV	2005-05-28: Scrub habitat here persists in small to medium-sized patches, but is highly fragemented by roads and parcel-by-parcel, rural-type residential development. Some mature sand pine scrub is very fire suppressed and alot of this scrub is cut-over,
SELOMAND*19	*Selonodon mandibularis*	Large-Jawed Cebrionid Beetle	G2G3	S2S3	N	N	1963-05-20	1963-05-20: No description given (B99GAL01FLUS).	1963-05-20: This female specimen was collected in a ligustrum trap and deposited at FSCA (B99GAL01FLUS).

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Florida Natural Areas Inventory

Biodiversity Matrix Report

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Matrix Unit ID: 50481					
Documented					
Haliaeetus leucocephalus	Bald Eagle	G5	S3	N	N
Likely					
Drymarchon couperi	Eastern Indigo Snake	G3	S3	LT	FT
Grus canadensis pratensis	Florida Sandhill Crane	G5T2T3	S2S3	N	ST
Mycteria americana	Wood Stork	G4	S2	LE	FE
Potential					
Athene cunicularia floridana	Florida Burrowing Owl	G4T3	S3	N	SSC
Carex chapmanii	Chapman's Sedge	G3	S3	N	LT
Corynorhinus rafinesquii	Rafinesque's Big-eared Bat	G3G4	S2	N	N
Cucurbita okeechobeensis	Okeechobee Gourd	G1	S1	LE	LE
Gopherus polyphemus	Gopher Tortoise	G3	S3	N	ST
Hartwrightia floridana	Hartwrightia	G2	S2	N	LT
Illicium parviflorum	Star Anise	G2	S2	N	LE
Lechea cernua	Nodding Pinweed	G3	S3	N	LT
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3	S3	N	N
Nemastylis floridana	Celestial Lily	G2	S2	N	LE
Peucaea aestivalis	Bachman's Sparrow	G3	S3	N	N
Pituophis melanoleucus mugitus	Florida Pine Snake	G4T3	S3	N	SSC
Podomys floridanus	Florida Mouse	G3	S3	N	SSC
Pteronotropis welaka	Bluenose Shiner	G3G4	S3S4	N	SSC
Rana capito	Gopher Frog	G3	S3	N	SSC
Salix floridana	Florida Willow	G2	S2	N	LE
Sciurus niger shermani	Sherman's Fox Squirrel	G5T3	S3	N	SSC
Trichechus manatus	Manatee	G2	S2	LE	FE
Ursus americanus floridanus	Florida Black Bear	G5T2	S2	N	ST*
Matrix Unit ID: 50811					
Likely					
Drymarchon couperi	Eastern Indigo Snake	G3	S3	LT	FT
Grus canadensis pratensis	Florida Sandhill Crane	G5T2T3	S2S3	N	ST
Mycteria americana	Wood Stork	G4	S2	LE	FE
Potential					
Carex chapmanii	Chapman's Sedge	G3	S3	N	LT
Corynorhinus rafinesquii	Rafinesque's Big-eared Bat	G3G4	S2	N	N
Cucurbita okeechobeensis	Okeechobee Gourd	G1	S1	LE	LE
Gopherus polyphemus	Gopher Tortoise	G3	S3	N	ST
Hartwrightia floridana	Hartwrightia	G2	S2	N	LT
Illicium parviflorum	Star Anise	G2	S2	N	LE
Lechea cernua	Nodding Pinweed	G3	S3	N	LT
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3	S3	N	N
Nemastylis floridana	Celestial Lily	G2	S2	N	LE
Peucaea aestivalis	Bachman's Sparrow	G3	S3	N	N
Pituophis melanoleucus mugitus	Florida Pine Snake	G4T3	S3	N	SSC

Definitions: *Documented - Rare species and natural communities documented on or near this site.*
Documented-Historic - Rare species and natural communities documented, but not observed/reported within the last twenty years.
Likely - Rare species and natural communities likely to occur on this site based on suitable habitat and/or known occurrences in the vicinity.
Potential - This site lies within the known or predicted range of the species listed.

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Florida Natural Areas Inventory

Biodiversity Matrix Report

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Pteronotropis welaka	Bluenose Shiner	G3G4	S3S4	N	SSC
Salix floridana	Florida Willow	G2	S2	N	LE
Sciurus niger shermani	Sherman's Fox Squirrel	G5T3	S3	N	SSC
Trichechus manatus	Manatee	G2	S2	LE	FE
Ursus americanus floridanus	Florida Black Bear	G5T2	S2	N	ST*

Matrix Unit ID: 51135

Likely

Drymarchon couperi	Eastern Indigo Snake	G3	S3	LT	FT
Grus canadensis pratensis	Florida Sandhill Crane	G5T2T3	S2S3	N	ST
Mycteria americana	Wood Stork	G4	S2	LE	FE

Potential

Corynorhinus rafinesquii	Rafinesque's Big-eared Bat	G3G4	S2	N	N
Cucurbita okeechobeensis	Okeechobee Gourd	G1	S1	LE	LE
Geolycosa xera	McCrone's Burrowing Wolf Spider	G2G3	S2S3	N	N
Gopherus polyphemus	Gopher Tortoise	G3	S3	N	ST
Illicium parviflorum	Star Anise	G2	S2	N	LE
Lechea cernua	Nodding Pinweed	G3	S3	N	LT
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3	S3	N	N
Mycotrupes gaigei	North Peninsular Mycotrupes Beetle	G2	S2	N	N
Nemastylis floridana	Celestial Lily	G2	S2	N	LE
Peucaea aestivalis	Bachman's Sparrow	G3	S3	N	N
Pituophis melanoleucus mugitus	Florida Pine Snake	G4T3	S3	N	SSC
Podomys floridanus	Florida Mouse	G3	S3	N	SSC
Pteronotropis welaka	Bluenose Shiner	G3G4	S3S4	N	SSC
Rana capito	Gopher Frog	G3	S3	N	SSC
Sciurus niger shermani	Sherman's Fox Squirrel	G5T3	S3	N	SSC
Trichechus manatus	Manatee	G2	S2	LE	FE
Ursus americanus floridanus	Florida Black Bear	G5T2	S2	N	ST*

Matrix Unit ID: 51136

Documented

Nectopsyche tavara	Tavares White Miller Caddisfly	G3	S3	N	N

Likely

Drymarchon couperi	Eastern Indigo Snake	G3	S3	LT	FT
Grus canadensis pratensis	Florida Sandhill Crane	G5T2T3	S2S3	N	ST
Mycteria americana	Wood Stork	G4	S2	LE	FE

Potential

Corynorhinus rafinesquii	Rafinesque's Big-eared Bat	G3G4	S2	N	N
Cucurbita okeechobeensis	Okeechobee Gourd	G1	S1	LE	LE
Geolycosa xera	McCrone's Burrowing Wolf Spider	G2G3	S2S3	N	N
Gopherus polyphemus	Gopher Tortoise	G3	S3	N	ST
Illicium parviflorum	Star Anise	G2	S2	N	LE
Lechea cernua	Nodding Pinweed	G3	S3	N	LT
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3	S3	N	N

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Florida Natural Areas Inventory

Biodiversity Matrix Report

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Mycotrupes gaigei	North Peninsular Mycotrupes Beetle	G2	S2	N	N
Nemastylis floridana	Celestial Lily	G2	S2	N	LE
Peucaea aestivalis	Bachman's Sparrow	G3	S3	N	N
Pituophis melanoleucus mugitus	Florida Pine Snake	G4T3	S3	N	SSC
Podomys floridanus	Florida Mouse	G3	S3	N	SSC
Pteronotropis welaka	Bluenose Shiner	G3G4	S3S4	N	SSC
Rana capito	Gopher Frog	G3	S3	N	SSC
Sciurus niger shermani	Sherman's Fox Squirrel	G5T3	S3	N	SSC
Trichechus manatus	Manatee	G2	S2	LE	FE
Ursus americanus floridanus	Florida Black Bear	G5T2	S2	N	ST*

Matrix Unit ID: 51462

Documented

Haliaeetus leucocephalus	Bald Eagle	G5	S3	N	N

Likely

Drymarchon couperi	Eastern Indigo Snake	G3	S3	LT	FT
Grus canadensis pratensis	Florida Sandhill Crane	G5T2T3	S2S3	N	ST
Mycteria americana	Wood Stork	G4	S2	LE	FE

Potential

Athene cunicularia floridana	Florida Burrowing Owl	G4T3	S3	N	SSC
Calopogon multiflorus	Many-flowered Grass-pink	G2G3	S2S3	N	LE
Carex chapmanii	Chapman's Sedge	G3	S3	N	LT
Centrosema arenicola	Sand Butterfly Pea	G2Q	S2	N	LE
Coelorachis tuberculosa	Piedmont Jointgrass	G3	S3	N	LT
Conradina grandiflora	Large-flowered Rosemary	G3	S3	N	LT
Cucurbita okeechobeensis	Okeechobee Gourd	G1	S1	LE	LE
Deeringothamnus pulchellus	Beautiful Pawpaw	G1	S1	LE	LE
Geolycosa xera	McCrone's Burrowing Wolf Spider	G2G3	S2S3	N	N
Gopherus polyphemus	Gopher Tortoise	G3	S3	N	ST
Illicium parviflorum	Star Anise	G2	S2	N	LE
Lechea cernua	Nodding Pinweed	G3	S3	N	LT
Matelea floridana	Florida Spiny-pod	G2	S2	N	LE
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3	S3	N	N
Mycotrupes gaigei	North Peninsular Mycotrupes Beetle	G2	S2	N	N
Nemastylis floridana	Celestial Lily	G2	S2	N	LE
Nolina atopocarpa	Florida Beargrass	G3	S3	N	LT
Panicum abscissum	Cutthroat Grass	G3	S3	N	LE
Peucaea aestivalis	Bachman's Sparrow	G3	S3	N	N
Podomys floridanus	Florida Mouse	G3	S3	N	SSC
Pteronotropis welaka	Bluenose Shiner	G3G4	S3S4	N	SSC
Rana capito	Gopher Frog	G3	S3	N	SSC
Salix floridana	Florida Willow	G2	S2	N	LE
Sciurus niger shermani	Sherman's Fox Squirrel	G5T3	S3	N	SSC
Trichechus manatus	Manatee	G2	S2	LE	FE
Ursus americanus floridanus	Florida Black Bear	G5T2	S2	N	ST*
Warea carteri	Carter's Warea	G3	S3	LE	LE

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Florida Natural Areas Inventory

Biodiversity Matrix Report

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Matrix Unit ID: 51463					
Documented					
Haliaeetus leucocephalus	Bald Eagle	G5	S3	N	N
Likely					
Drymarchon couperi	Eastern Indigo Snake	G3	S3	LT	FT
Grus canadensis pratensis	Florida Sandhill Crane	G5T2T3	S2S3	N	ST
Mycteria americana	Wood Stork	G4	S2	LE	FE
Potential					
Calopogon multiflorus	Many-flowered Grass-pink	G2G3	S2S3	N	LE
Carex chapmanii	Chapman's Sedge	G3	S3	N	LT
Centrosema arenicola	Sand Butterfly Pea	G2Q	S2	N	LE
Conradina grandiflora	Large-flowered Rosemary	G3	S3	N	LT
Cucurbita okeechobeensis	Okeechobee Gourd	G1	S1	LE	LE
Deeringothamnus pulchellus	Beautiful Pawpaw	G1	S1	LE	LE
Geolycosa xera	McCrone's Burrowing Wolf Spider	G2G3	S2S3	N	N
Gopherus polyphemus	Gopher Tortoise	G3	S3	N	ST
Illicium parviflorum	Star Anise	G2	S2	N	LE
Lechea cernua	Nodding Pinweed	G3	S3	N	LT
Matelea floridana	Florida Spiny-pod	G2	S2	N	LE
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3	S3	N	N
Mycotrupes gaigei	North Peninsular Mycotrupes Beetle	G2	S2	N	N
Nemastylis floridana	Celestial Lily	G2	S2	N	LE
Nolina atopocarpa	Florida Beargrass	G3	S3	N	LT
Panicum abscissum	Cutthroat Grass	G3	S3	N	LE
Peucaea aestivalis	Bachman's Sparrow	G3	S3	N	N
Podomys floridanus	Florida Mouse	G3	S3	N	SSC
Pteronotropis welaka	Bluenose Shiner	G3G4	S3S4	N	SSC
Rana capito	Gopher Frog	G3	S3	N	SSC
Salix floridana	Florida Willow	G2	S2	N	LE
Sciurus niger shermani	Sherman's Fox Squirrel	G5T3	S3	N	SSC
Trichechus manatus	Manatee	G2	S2	LE	FE
Ursus americanus floridanus	Florida Black Bear	G5T2	S2	N	ST*
Warea carteri	Carter's Warea	G3	S3	LE	LE
Matrix Unit ID: 51796					
Documented					
Haliaeetus leucocephalus	Bald Eagle	G5	S3	N	N
Likely					
Drymarchon couperi	Eastern Indigo Snake	G3	S3	LT	FT
Mesic flatwoods		G4	S4	N	N
Mycteria americana	Wood Stork	G4	S2	LE	FE
Potential					
Aphelocoma coerulescens	Florida Scrub-Jay	G2	S2	LT	FT
Athene cunicularia floridana	Florida Burrowing Owl	G4T3	S3	N	SSC

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Florida Natural Areas Inventory

Biodiversity Matrix Report

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Calopogon multiflorus	Many-flowered Grass-pink	G2G3	S2S3	N	LE
Carex chapmanii	Chapman's Sedge	G3	S3	N	LT
Centrosema arenicola	Sand Butterfly Pea	G2Q	S2	N	LE
Coelorachis tuberculosa	Piedmont Jointgrass	G3	S3	N	LT
Corynorhinus rafinesquii	Rafinesque's Big-eared Bat	G3G4	S2	N	N
Cucurbita okeechobeensis	Okeechobee Gourd	G1	S1	LE	LE
Deeringothamnus pulchellus	Beautiful Pawpaw	G1	S1	LE	LE
Deeringothamnus rugelii	Rugel's Pawpaw	G1	S1	LE	LE
Geolycosa xera	McCrone's Burrowing Wolf Spider	G2G3	S2S3	N	N
Gopherus polyphemus	Gopher Tortoise	G3	S3	N	ST
Grus canadensis pratensis	Florida Sandhill Crane	G5T2T3	S2S3	N	ST
Illicium parviflorum	Star Anise	G2	S2	N	LE
Lechea cernua	Nodding Pinweed	G3	S3	N	LT
Matelea floridana	Florida Spiny-pod	G2	S2	N	LE
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3	S3	N	N
Mycotrupes gaigei	North Peninsular Mycotrupes Beetle	G2	S2	N	N
Nemastylis floridana	Celestial Lily	G2	S2	N	LE
Nolina atopocarpa	Florida Beargrass	G3	S3	N	LT
Notophthalmus perstriatus	Striped Newt	G2G3	S2S3	C	N
Panicum abscissum	Cutthroat Grass	G3	S3	N	LE
Peucaea aestivalis	Bachman's Sparrow	G3	S3	N	N
Podomys floridanus	Florida Mouse	G3	S3	N	SSC
Rana capito	Gopher Frog	G3	S3	N	SSC
Salix floridana	Florida Willow	G2	S2	N	LE
Sciurus niger shermani	Sherman's Fox Squirrel	G5T3	S3	N	SSC
Ursus americanus floridanus	Florida Black Bear	G5T2	S2	N	ST*
Warea carteri	Carter's Warea	G3	S3	LE	LE

Matrix Unit ID: 51797

Likely

Grus canadensis pratensis	Florida Sandhill Crane	G5T2T3	S2S3	N	ST
Mesic flatwoods		G4	S4	N	N
Mycteria americana	Wood Stork	G4	S2	LE	FE
Scrub		G2	S2	N	N

Potential

Athene cunicularia floridana	Florida Burrowing Owl	G4T3	S3	N	SSC
Calopogon multiflorus	Many-flowered Grass-pink	G2G3	S2S3	N	LE
Carex chapmanii	Chapman's Sedge	G3	S3	N	LT
Centrosema arenicola	Sand Butterfly Pea	G2Q	S2	N	LE
Coelorachis tuberculosa	Piedmont Jointgrass	G3	S3	N	LT
Conradina grandiflora	Large-flowered Rosemary	G3	S3	N	LT
Corynorhinus rafinesquii	Rafinesque's Big-eared Bat	G3G4	S2	N	N
Cucurbita okeechobeensis	Okeechobee Gourd	G1	S1	LE	LE
Deeringothamnus pulchellus	Beautiful Pawpaw	G1	S1	LE	LE
Deeringothamnus rugelii	Rugel's Pawpaw	G1	S1	LE	LE
Drymarchon couperi	Eastern Indigo Snake	G3	S3	LT	FT
Geolycosa xera	McCrone's Burrowing Wolf Spider	G2G3	S2S3	N	N
Gopherus polyphemus	Gopher Tortoise	G3	S3	N	ST

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Florida Natural Areas Inventory

Biodiversity Matrix Report

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Illicium parviflorum	Star Anise	G2	S2	N	LE
Lechea cernua	Nodding Pinweed	G3	S3	N	LT
Matelea floridana	Florida Spiny-pod	G2	S2	N	LE
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3	S3	N	N
Mycotrupes gaigei	North Peninsular Mycotrupes Beetle	G2	S2	N	N
Nemastylis floridana	Celestial Lily	G2	S2	N	LE
Nolina atopocarpa	Florida Beargrass	G3	S3	N	LT
Panicum abscissum	Cutthroat Grass	G3	S3	N	LE
Peucaea aestivalis	Bachman's Sparrow	G3	S3	N	N
Podomys floridanus	Florida Mouse	G3	S3	N	SSC
Rana capito	Gopher Frog	G3	S3	N	SSC
Salix floridana	Florida Willow	G2	S2	N	LE
Sciurus niger shermani	Sherman's Fox Squirrel	G5T3	S3	N	SSC
Ursus americanus floridanus	Florida Black Bear	G5T2	S2	N	ST*
Warea carteri	Carter's Warea	G3	S3	LE	LE

Matrix Unit ID: 52129

Documented

Scrub		G2	S2	N	N

Likely

Mesic flatwoods		G4	S4	N	N
Mycteria americana	Wood Stork	G4	S2	LE	FE
Sandhill upland lake		G3	S2	N	N

Potential

Aphelocoma coerulescens	Florida Scrub-Jay	G2	S2	LT	FT
Athene cunicularia floridana	Florida Burrowing Owl	G4T3	S3	N	SSC
Calopogon multiflorus	Many-flowered Grass-pink	G2G3	S2S3	N	LE
Carex chapmanii	Chapman's Sedge	G3	S3	N	LT
Centrosema arenicola	Sand Butterfly Pea	G2Q	S2	N	LE
Coelorachis tuberculosa	Piedmont Jointgrass	G3	S3	N	LT
Deeringothamnus pulchellus	Beautiful Pawpaw	G1	S1	LE	LE
Deeringothamnus rugelii	Rugel's Pawpaw	G1	S1	LE	LE
Drymarchon couperi	Eastern Indigo Snake	G3	S3	LT	FT
Geolycosa xera	McCrone's Burrowing Wolf Spider	G2G3	S2S3	N	N
Gopherus polyphemus	Gopher Tortoise	G3	S3	N	ST
Grus canadensis pratensis	Florida Sandhill Crane	G5T2T3	S2S3	N	ST
Heterodon simus	Southern Hognose Snake	G2	S2	N	N
Lechea cernua	Nodding Pinweed	G3	S3	N	LT
Matelea floridana	Florida Spiny-pod	G2	S2	N	LE
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3	S3	N	N
Mycotrupes gaigei	North Peninsular Mycotrupes Beetle	G2	S2	N	N
Nemastylis floridana	Celestial Lily	G2	S2	N	LE
Nolina atopocarpa	Florida Beargrass	G3	S3	N	LT
Notophthalmus perstriatus	Striped Newt	G2G3	S2S3	C	N
Panicum abscissum	Cutthroat Grass	G3	S3	N	LE
Peucaea aestivalis	Bachman's Sparrow	G3	S3	N	N
Podomys floridanus	Florida Mouse	G3	S3	N	SSC

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Biodiversity Matrix Report

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Pteroglossaspis ecristata	Giant Orchid	G2G3	S2	N	LT
Rana capito	Gopher Frog	G3	S3	N	SSC
Salix floridana	Florida Willow	G2	S2	N	LE
Sciurus niger shermani	Sherman's Fox Squirrel	G5T3	S3	N	SSC
Ursus americanus floridanus	Florida Black Bear	G5T2	S2	N	ST*
Warea carteri	Carter's Warea	G3	S3	LE	LE

Matrix Unit ID: 52130

Documented

Scrub		G2	S2	N	N

Likely

Mesic flatwoods		G4	S4	N	N
Mycteria americana	Wood Stork	G4	S2	LE	FE

Potential

Aphelocoma coerulescens	Florida Scrub-Jay	G2	S2	LT	FT
Athene cunicularia floridana	Florida Burrowing Owl	G4T3	S3	N	SSC
Calopogon multiflorus	Many-flowered Grass-pink	G2G3	S2S3	N	LE
Carex chapmanii	Chapman's Sedge	G3	S3	N	LT
Centrosema arenicola	Sand Butterfly Pea	G2Q	S2	N	LE
Coelorachis tuberculosa	Piedmont Jointgrass	G3	S3	N	LT
Deeringothamnus pulchellus	Beautiful Pawpaw	G1	S1	LE	LE
Deeringothamnus rugelii	Rugel's Pawpaw	G1	S1	LE	LE
Drymarchon couperi	Eastern Indigo Snake	G3	S3	LT	FT
Geolycosa xera	McCrone's Burrowing Wolf Spider	G2G3	S2S3	N	N
Gopherus polyphemus	Gopher Tortoise	G3	S3	N	ST
Grus canadensis pratensis	Florida Sandhill Crane	G5T2T3	S2S3	N	ST
Heterodon simus	Southern Hognose Snake	G2	S2	N	N
Lechea cernua	Nodding Pinweed	G3	S3	N	LT
Matelea floridana	Florida Spiny-pod	G2	S2	N	LE
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3	S3	N	N
Mycotrupes gaigei	North Peninsular Mycotrupes Beetle	G2	S2	N	N
Nemastylis floridana	Celestial Lily	G2	S2	N	LE
Nolina atopocarpa	Florida Beargrass	G3	S3	N	LT
Notophthalmus perstriatus	Striped Newt	G2G3	S2S3	C	N
Panicum abscissum	Cutthroat Grass	G3	S3	N	LE
Peucaea aestivalis	Bachman's Sparrow	G3	S3	N	N
Podomys floridanus	Florida Mouse	G3	S3	N	SSC
Pteroglossaspis ecristata	Giant Orchid	G2G3	S2	N	LT
Rana capito	Gopher Frog	G3	S3	N	SSC
Salix floridana	Florida Willow	G2	S2	N	LE
Sciurus niger shermani	Sherman's Fox Squirrel	G5T3	S3	N	SSC
Ursus americanus floridanus	Florida Black Bear	G5T2	S2	N	ST*
Warea carteri	Carter's Warea	G3	S3	LE	LE

Matrix Unit ID: 52465

Likely

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Florida Natural Areas Inventory

Biodiversity Matrix Report

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Mesic flatwoods		G4	S4	N	N
Mycteria americana	Wood Stork	G4	S2	LE	FE
Sandhill upland lake		G3	S2	N	N
Scrub		G2	S2	N	N
Potential					
Aphelocoma coerulescens	Florida Scrub-Jay	G2	S2	LT	FT
Athene cunicularia floridana	Florida Burrowing Owl	G4T3	S3	N	SSC
Carex chapmanii	Chapman's Sedge	G3	S3	N	LT
Centrosema arenicola	Sand Butterfly Pea	G2Q	S2	N	LE
Deeringothamnus pulchellus	Beautiful Pawpaw	G1	S1	LE	LE
Deeringothamnus rugelii	Rugel's Pawpaw	G1	S1	LE	LE
Drymarchon couperi	Eastern Indigo Snake	G3	S3	LT	FT
Geolycosa xera	McCrone's Burrowing Wolf Spider	G2G3	S2S3	N	N
Gopherus polyphemus	Gopher Tortoise	G3	S3	N	ST
Grus canadensis pratensis	Florida Sandhill Crane	G5T2T3	S2S3	N	ST
Heterodon simus	Southern Hognose Snake	G2	S2	N	N
Lechea cernua	Nodding Pinweed	G3	S3	N	LT
Matelea floridana	Florida Spiny-pod	G2	S2	N	LE
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3	S3	N	N
Mycotrupes gaigei	North Peninsular Mycotrupes Beetle	G2	S2	N	N
Nemastylis floridana	Celestial Lily	G2	S2	N	LE
Nolina atopocarpa	Florida Beargrass	G3	S3	N	LT
Notophthalmus perstriatus	Striped Newt	G2G3	S2S3	C	N
Panicum abscissum	Cutthroat Grass	G3	S3	N	LE
Peucaea aestivalis	Bachman's Sparrow	G3	S3	N	N
Podomys floridanus	Florida Mouse	G3	S3	N	SSC
Pteroglossaspis ecristata	Giant Orchid	G2G3	S2	N	LT
Rana capito	Gopher Frog	G3	S3	N	SSC
Salix floridana	Florida Willow	G2	S2	N	LE
Sciurus niger shermani	Sherman's Fox Squirrel	G5T3	S3	N	SSC
Ursus americanus floridanus	Florida Black Bear	G5T2	S2	N	ST*
Warea carteri	Carter's Warea	G3	S3	LE	LE

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Elements and Element Occurrences

An **element** is any exemplary or rare component of the natural environment, such as a species, natural community, bird rookery, spring, sinkhole, cave, or other ecological feature.

An **element occurrence (EO)** is an area of land and/or water in which a species or natural community is, or was, present. An EO should have practical conservation value for the Element as evidenced by potential continued (or historical) presence and/or regular recurrence at a given location.

Element Ranking and Legal Status

Using a ranking system developed by NatureServe and the Natural Heritage Program Network, the Florida Natural Areas Inventory assigns two ranks for each element. The global rank is based on an element's worldwide status; the state rank is based on the status of the element in Florida. Element ranks are based on many factors, the most important ones being estimated number of Element Occurrences (EOs), estimated abundance (number of individuals for species; area for natural communities), geographic range, estimated number of adequately protected EOs, relative threat of destruction, and ecological fragility.

FNAI GLOBAL ELEMENT RANK

G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
G2 = Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
G3 = Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.
G4 = Apparently secure globally (may be rare in parts of range).
G5 = Demonstrably secure globally.
GH = Of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker).
GX = Believed to be extinct throughout range.
GXC = Extirpated from the wild but still known from captivity or cultivation.
G#? = Tentative rank (e.g., G2?).
G#G# = Range of rank; insufficient data to assign specific global rank (e.g., G2G3).
G#T# = Rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have same definition as above (e.g., G3T1).
G#Q = Rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g., G2Q).
G#T#Q = Same as above, but validity as subspecies or variety is questioned.
GU = Unrankable; due to a lack of information no rank or range can be assigned (e.g., GUT2).
GNA = Ranking is not applicable because the element is not a suitable target for conservation (e.g. a hybrid species).
GNR = Element not yet ranked (temporary).
GNRTNR = Neither the element nor the taxonomic subgroup has yet been ranked.

FNAI STATE ELEMENT RANK

S1 = Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
S2 = Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
S3 = Either very rare and local in Florida (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.
S4 = Apparently secure in Florida (may be rare in parts of range).
S5 = Demonstrably secure in Florida.
SH = Of historical occurrence in Florida, possibly extirpated, but may be rediscovered (e.g., ivory-billed woodpecker).
SX = Believed to be extirpated throughout Florida.
SU = Unrankable; due to a lack of information no rank or range can be assigned.
SNA = State ranking is not applicable because the element is not a suitable target for conservation (e.g. a hybrid species).
SNR = Element not yet ranked (temporary).

FEDERAL LEGAL STATUS

Legal status information provided by FNAI for information only. For official definitions and lists of protected species, consult the relevant federal agency.

Definitions derived from U.S. Endangered Species Act of 1973, Sec. 3. Note that the federal status given by FNAI refers only to Florida populations and that federal status may differ elsewhere.

C = Candidate species for which federal listing agencies have sufficient information on biological vulnerability and threats to support proposing to list the species as Endangered or Threatened.
LE = Endangered: species in danger of extinction throughout all or a significant portion of its range.
LE, LT = Species currently listed endangered in a portion of its range but only listed as threatened in other areas
LE, PDL = Species currently listed endangered but has been proposed for delisting.
LE, PT = Species currently listed endangered but has been proposed for listing as threatened.
LE, XN = Species currently listed endangered but tracked population is a non-essential experimental population.
LT = Threatened: species likely to become Endangered within the foreseeable future throughout all or a significant portion of its range.
SAT = Treated as threatened due to similarity of appearance to a species which is federally listed such that enforcement personnel have difficulty in attempting to differentiate between the listed and unlisted species.
SC = Not currently listed, but considered a "species of concern" to USFWS.

STATE LEGAL STATUS

Provided by FNAI for information only. For official definitions and lists of protected species, consult the relevant state agency.

Animals: Definitions derived from "Florida's Endangered Species and Species of Special Concern, Official Lists" published by Florida Fish and Wildlife Conservation Commission, 1 August 1997, and subsequent updates.

FE = Listed as Endangered Species at the Federal level by the U. S. Fish and Wildlife Service
FT = Listed as Threatened Species at the Federal level by the U. S. Fish and Wildlife Service
F(XN) = Federal listed as an experimental population in Florida
FT(S/A) = Federal Threatened due to similarity of appearance
ST = State population listed as Threatened by the FFWCC. Defined as a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future. (ST* for Ursus americanus floridanus (Florida black bear) indicates that this status does not apply in Baker and Columbia counties and in the Apalachicola National Forest. ST* for Neovison vison pop.1 (Southern mink, South Florida population) indicates that this status applies to the Everglades population only.)
SSC = Listed as Species of Special Concern by the FFWCC. Defined as a population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance, or substantial human exploitation which, in the foreseeable future, may result in its becoming a threatened species. (SSC* indicates that a species has SSC status only in selected portions of its range in Florida. SSC* for Pandion haliaetus (Osprey) indicates that this status applies in Monroe county only.)
N = Not currently listed, nor currently being considered for listing.

Plants: Definitions derived from Sections 581.011 and 581.185(2), Florida Statutes, and the Preservation of Native Flora of Florida Act, 5B-40.001. FNAI does not track all state-regulated plant species; for a complete list of state-regulated plant species, call Florida Division of Plant Industry, 352-372-3505 or see: http://www.doacs.state.fl.us/pi/.

LE = Endangered: species of plants native to Florida that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue; includes all species determined to be endangered or threatened pursuant to the U.S. Endangered Species Act.
LT = Threatened: species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in number as to cause them to be Endangered.
N = Not currently listed, nor currently being considered for listing.

Element Occurrence Ranking

FNAI ranks of quality of the element occurrence in terms of its viability (EORANK). Viability is estimated using a combination of factors that contribute to continued survival of the element at the location. Among these are the size of the EO, general condition of the EO at the site, and the conditions of the landscape surrounding the EO (e.g. an immediate threat to an EO by local development pressure could lower an EO rank).

A = Excellent estimated viability
A? = Possibly excellent estimated viability
AB = Excellent or good estimated viability
AC = Excellent, good, or fair estimated viability
B = Good estimated viability
B? = Possibly good estimated viability
BC = Good or fair estimated viability
BD = Good, fair, or poor estimated viability
C = Fair estimated viability
C? = Possibly fair estimated viability
CD = Fair or poor estimated viability
D = Poor estimated viability
D? = Possibly poor estimated viability
E = Verified extant (viability not assessed)
F = Failed to find
H = Historical
NR = Not ranked, a placeholder when an EO is not (yet) ranked.
U = Unrankable
X = Extirpated

*For additional detail on the above ranks see: http://www.natureserve.org/explorer/eorankguide.htm

FNAI also uses the following EO ranks:

H? = Possibly historical
F? = Possibly failed to find
X? = Possibly extirpated

The following offers further explanation of the H and X ranks as they are used by FNAI:

The rank of H is used when there is a lack of recent field information verifying the continued existence of an EO, such as (a) when an EO is based only on historical collections data; or (b) when an EO was ranked A, B, C, D, or E at one time and is later, without field survey work, considered to be possibly extirpated due to general habitat loss or degradation of the environment in the area. This definition of the H rank is dependent on an interpretation of what constitutes "recent" field information. Generally, if there is no known survey of an EO within the last 20 to 40 years, it should be assigned an H rank. While these time frames represent suggested maximum limits, the actual time period for historical EOs may vary according to the biology of the element and the specific landscape context of each occurrence (including anthropogenic alteration of the environment). Thus, an H rank may be assigned to an EO before the maximum time frames have lapsed. Occurrences that have not been surveyed for periods exceeding these time frames should not be ranked A, B, C, or D. The higher maximum limit for plants and communities (i.e., ranging from 20 to 40 years) is based upon the assumption that occurrences of these elements generally have the potential to persist at a given location for longer periods of time. This greater potential is a reflection of plant biology and community dynamics. However, landscape factors must also be considered. Thus, areas with more anthropogenic impacts on the environment (e.g., development) will be at the lower end of the range, and less-impacted areas will be at the higher end.

The rank of X is assigned to EOs for which there is documented destruction of habitat or environment, or persuasive evidence of eradication based on adequate survey (i.e., thorough or repeated survey efforts by one or more experienced observers at times and under conditions appropriate for the Element at that location).

ON SALE NOW

Atlas of Florida's Natural Heritage

Biodiversity, Landscapes, Stewardship, and Opportunities

The Florida Natural Areas Inventory is pleased to announce the publication of the ***Atlas of Florida's Natural Heritage: Biodiversity, Landscapes, Stewardship, and Opportunities.*** This high-quality, full-color *Atlas* is sure to become a standard reference for anyone involved in the conservation, management, study, or enjoyment of Florida's rich natural resources. We hope the *Atlas* will inspire, educate, and raise awareness of and interest in biodiversity and conservation issues.

Institute of Science and Public Affairs

FLORIDA Natural Areas INVENTORY

AUDIENCE:

The ***Atlas of Florida's Natural Heritage: Biodiversity, Landscapes, Stewardship, and Opportunities*** was envisioned as a resource that would appeal to a wide-ranging audience. Through its use of colorful maps, graphics, and photography, Florida's Natural Heritage and appeal is dramatically highlighted. It is intended to appeal to a wide audience. Hopefully, it will increase awareness of the resources we take for granted, and the challenges we face in preserving them.

It is for those who are informed, interested, and/or influential in environmental issues, but may lack specific information and expertise. These may include planners, policymakers, and environmental/conservation advocates from the local to state level. It is also for environmental/conservation/natural resource managers. While the atlas may not provide "new information" to this audience, it will serve as a useful reference that brings many of the elements of biodiversity together in one publication. The final audience are the citizens of Florida and those who may visit our state.

We want the atlas to inspire, educate, and raise awareness of and the interest in biodiversity and conservation issues. Florida's biodiversity is not only important to maintain our quality of life, but it is a primary reason why so many people visit our state.

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APPENDIX 3

THE CORPS OF ENGINEERS, JACKSONVILLE DISTRICT, AND THE STATE OF FLORIDA EFFECT DETERMINATION KEY FOR THE MANATEE IN FLORIDA

THE CORPS OF ENGINEERS, JACKSONVILLE DISTRICT, AND THE STATE OF FLORIDA EFFECT DETERMINATION KEY FOR THE MANATEE IN FLORIDA
March 2011

Purpose and background of the key

The purpose of this document is to provide guidance to improve the review of permit applications by U.S. Army Corps of Engineers' (Corps) Project Managers in the Regulatory Division regarding the potential effects of proposed projects on the endangered West Indian manatee (*Trichechus manatus*) in Florida, and by the Florida Department of Environmental Protection or its authorized designee or Water Management District, for evaluating projects under the State Programmatic General Permit (SPGP) or any other Programmatic General Permits that the Corps may issue for administration by the above agencies. Such guidance is contained in the following dichotomous key. The key applies to permit applications for in-water activities such as, but not limited to: (1) dredging [new or maintenance dredging of not more than 50,000 cubic yards], placement of fill material for shoreline stabilization, and construction/placement of other in-water structures as well as (2) construction of docks, marinas, boat ramps and associated trailer parking spaces, boat slips, dry storage or any other watercraft access structures or facilities.

At a certain step in the key, the user is referred to graphics depicting important manatee areas or areas with inadequate protection. The maps can be downloaded from the Corps' web page at http://www.saj.usace.army.mil/Divisions/Regulatory/sourcebook.htm or at the Florida Fish and Wildlife Conservation Commission's (FWC) web page at http://www.myfwc.com. We intend to utilize the most recent depiction of these areas, so should these areas be modified by statute, rule, ordinance and/or other legal mandate or authorization, we will modify the graphical depictions accordingly. These areas may be shaded or otherwise differentiated for identification on the maps.

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

Scope of the key

This key should only be used in the review of permit applications for effect determinations on manatees and should not be used for other listed species or for other aquatic resources such as Essential Fish Habitat (EFH). Corps Project Managers should ensure that consideration of the project's effects on any other listed species and/or on EFH is performed independently. This key may be used to evaluate applications for all types of State of Florida (State Programmatic General Permits, noticed general permits, standard general permits, submerged lands leases, conceptual and individual permits) and Department of the Army (standard permits, letters of permission, nationwide permits, and regional general permits) permits and authorizations. The final effect determination will be based on the project location and description; the potential effects to manatees, manatee habitat, and/or manatee critical habitat; and any measures (such as project components, standard construction precautions, or special conditions included in the authorization) to avoid or minimize effects to manatees or manatee critical habitat. 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 U.S. Fish and Wildlife Service (Service) to initiate formal consultation on the manatee. Projects that provide new access for watercraft and key to “may affect, not likely to adversely affect” may or may not need to be reviewed individually by the Service. All applications for new multi-slip facilities in counties other than Bay, Dixie, Escambia, Franklin, Gilchrist, Gulf, Hernando, Jefferson, Lafayette, Monroe (south of Seven Mile Bridge), Nassau, Okaloosa, Okeechobee, Santa Rosa, Suwannee, Taylor, Wakulla and Walton should be coordinated by the Corps since consultation with the Service is required.

MANATEE KEY
Florida[1]
March 2011

The key is not designed to be used by the Corps' Regulatory Division for making their effect determinations for dredging projects greater than 50,000 cubic yards, the Corps' Planning Division in making their effect determinations for civil works projects or by the Corps' Regulatory Division for making their effect determinations for projects of the same relative scope as civil works projects. These types of activities must be evaluated by the Corps independently of the key.

A. Project is not located in waters accessible to manatees and does not directly or indirectly affect manatees (see Glossary).....*No effect*

Project is located in waters accessible to manatees **or** directly or indirectly affects manatees ..... B

B. Project consists of one or more of the following activities, all of which are *May affect*:

1. blasting or other detonation activity for channel deepening and/or widening, geotechnical surveys or exploration, bridge removal, movies, military shows, special events, etc.;

2. installation of structures which could restrict or act as a barrier to manatees;

3. new or changes to existing warm or fresh water discharges from industrial sites, power plants, or natural springs or artesian wells (but only if the new or proposed change in discharge requires a Corps permit to accomplish the work);

4. installation of new culverts and/or maintenance or modification of existing culverts (where the culverts are 8 inches to 8 feet in diameter, ungrated and in waters accessible, or potentially accessible, to manatees)[2];

5. creation of new slips or change in use of existing slips to accommodate docking for repeat use vessels, (*e.g.*, water taxis, tour boats, gambling boats, rental boats, loading/unloading of watercraft from dry stacks, etc; or slips or structures that are not civil works projects, but are frequently used to moor large vessels (>100') for shipping and/or freight purposes). [Note: For projects proposed within Bay, Dixie, Escambia, Franklin, Gilchrist, Gulf, Hernando, Jefferson, Lafayette, Monroe (south of Seven Mile Bridge), Nassau, Okaloosa, Okeechobee, Santa Rosa, Suwannee, Taylor, Wakulla or Walton County, the reviewer should proceed to Couplet C.]

6. any type of in-water activity in a Warm Water Aggregation Area (WWAA) or No Entry Area, other than a residential docking facility with no proposed dredging, (see Glossary and accompanying Maps[3]); [Note: For residential docking facilities in a Warm Water Aggregation Area or No Entry Area with no proposed dredging, the reviewer should proceed to couplet C.]

7. creation or expansion of canals, basins or other artificial shoreline and/or the connection of such features to navigable waters of the U.S.; [Note: For projects proposing a single residential dock, the reviewer should proceed to couplet C; otherwise, project is a *May Affect*] or

8. installation of temporary structures (docks, buoys, etc.) utilized for special events such as boat races, boat shows, military shows, etc., but only when consultation with the U.S. Coast Guard and FWS has not occurred. [Note: See programmatic consultation with the U.S. Coast Guard on manatees dated May 10, 2010.]

Project is other than the activities listed above C

C. Project is located in an Important Manatee Area (IMA) (see Glossary and accompanying Maps[3]) ..... D

Project is not located in an Important Manatee Area (IMA) (see Glossary and accompanying Maps[3]) ..... G

D. Project includes dredging of less than 50,000 cubic yards ..... E

Project does not include dredging ..... G

E. Project is for dredging a residential dock facility or is a land-based dredging operation ..... N

Project not as above ..... F

F. Project proponent **does not elect** to follow all dredging protocols described on the maps for the respective IMA in which the project is proposed ..... *May affect*

Project proponent **elects** to follow all dredging protocols described on the maps for the respective IMA in which the project is proposed ..... G

G. Project provides new[4] access for watercraft, *e.g.*, docks or piers, marinas, boat ramps and associated trailer parking spaces, new dredging, boat lifts, pilings, floats, floating docks, floating vessel platforms, boat slips, dry storage, mooring buoys, or other watercraft access (residential boat lifts, pilings, floating docks, and floating vessel platforms installed in existing slips are not considered new access) or improvements allowing increased watercraft usage ..... H

Project does not provide new[4] access for watercraft, *e.g.*, bulkheads, seawalls, riprap, maintenance dredging, boardwalks and/or the maintenance (repair or rehabilitation) of currently serviceable watercraft access structures provided all of the following are met: (1) the number of slips is not increased; (2) the number of existing slips is not in question; and (3) the improvements do not allow increased watercraft usage ..... N

H. Project is located in the Braden River Area of Inadequate Protection (Manatee County) (see Glossary and accompanying AIP Map[3]) ..... *May affect*

Project is not located in the Braden River Area of Inadequate Protection (Manatee County) (see Glossary and accompanying AIP Map[3]) I

I. Project is for a multi-slip facility (see Glossary) ..... J

Project is for a residential dock facility or is for dredging (see Glossary) ..... N

J. Project is located in a county that currently has a State-approved Manatee Protection Plan (MPP) in place (BREVARD, BROWARD, CITRUS, CLAY, COLLIER, DUVAL, INDIAN RIVER, LEE, MARTIN, MIAMI-DADE, PALM BEACH, ST. LUCIE, SARASOTA, VOLUSIA) or shares contiguous waters with a county having a State-approved MPP in place (LAKE, MARION, SEMINOLE)[5] ..... K

Project is located in a county not required to have a State-approved MPP L

K. Project has been developed or modified to be consistent with the State-approved MPP **and** has been verified by a FWC review (or FWS review if project is exempt from State permitting) **or** the number of slips is below the MPP threshold ..... N

Project has not been reviewed by the FWC or FWS **OR** has been reviewed by the FWC or FWS **and** determined that the project is not consistent with the State-approved MPP..... *May affect*

L. Project is located in one of the following counties: CHARLOTTE, DESOTO[6], FLAGLER, GLADES, HENDRY, HILLSBOROUGH, LEVY, MANATEE, MONROE[6], PASCO[6], PINELLAS, PUTNAM, ST. JOHNS..... M

Project is located in one of the following counties: BAY, DIXIE, ESCAMBIA, FRANKLIN, GILCHRIST, GULF, HERNANDO, JEFFERSON, LAFAYETTE, MONROE (south of the Seven Mile Bridge), NASSAU, OKALOOSA, OKEECHOBEE, SANTA ROSA, SUWANNEE, TAYLOR, WAKULLA, WALTON ..... N

M. The number of slips does not exceed the residential dock density threshold (see Glossary) ..... N

The number of slips exceeds the residential dock density threshold (see Glossary) ..... *May affect*

N. Project impacts to submerged aquatic vegetation[7], emergent vegetation or mangrove will have beneficial, insignificant, discountable[8] or no effects on the manatee[9] ..... O

Project impacts to submerged aquatic vegetation[7], emergent vegetation or mangrove may adversely affect the manatee[9] ..... *May affect*

O. Project proponent **elects** to follow standard manatee conditions for in-water work[10] and requirements, as appropriate for the proposed activity, prescribed on the maps[3]..... P

Project proponent **does not elect** to follow standard manatee conditions for in-water work[10] and appropriate requirements prescribed on the maps[3] ..... *May affect*

P. If project is for a new[4] multi-slip facility and is located in Bay, Dixie, Escambia, Franklin, Gilchrist, Gulf, Hernando, Jefferson, Lafayette, Monroe (south of Seven Mile Bridge), Nassau, Okaloosa, Okeechobee, Santa Rosa, Suwannee, Taylor, Wakulla or Walton County, the determination of "*May affect, not likely to adversely affect"* is appropriate[11] and no further consultation with the Service is necessary.

If project is for a new[4] multi-slip facility and is located in <u>other</u> than Bay, Dixie, Escambia, Franklin, Gilchrist, Gulf, Hernando, Jefferson, Lafayette, Monroe (south of Seven Mile Bridge), Nassau, Okaloosa, Okeechobee, Santa Rosa, Suwannee, Taylor, Wakulla or Walton County, further consultation with the Service is necessary as "*May affect, not likely to adversely affect."*

If project is for repair or rehabilitation of a multi-slip facility and is located in an Important Manatee Area, further consultation with the Service is necessary as "*May affect, not likely to adversely affect."* If project is for repair or rehabilitation of a multi-slip facility and: (1) is <u>not</u> located in an Important Manatee Area; (2) the number of slips is not increased; (3) the number of existing slips is not in question; and (4) the improvements to the existing watercraft access structures do not allow increased watercraft usage, the determination of "*May affect, not likely to adversely affect"* is appropriate[11] and no further consultation with the Service is necessary.

If project is a residential dock facility, shoreline stabilization, or dredging, the determination of "*May affect, not likely to adversely affect"* is appropriate[11] and no further consultation with the Service is necessary. <u>Note</u>: For residential dock facilities located in a Warm Water Aggregation Area or in a No Entry area, seasonal restrictions may apply. See footnote 3 below for maps showing restrictions.

If project is other than repair or rehabilitation of a multi-slip facility, a new[4] multi-slip facility, residential dock facility, shoreline stabilization, or dredging, and does not provide new[4] access for watercraft or improve an existing access to allow increased watercraft usage, the determination of "*May affect, not likely to adversely affect"* is appropriate[11] and no further consultation with the Service is necessary.

[1] On the St. Mary's River, this key is only applicable to those areas that are within the geographical limits of the State of Florida.

[2] All culverts 8 inches to 8 feet in diameter must be grated to prevent manatee entrapment. To effectively prevent manatee access, grates must be permanently fixed, spaced a maximum of 8 inches apart (may be less for culverts smaller than 16 inches in diameter) and may be installed diagonally, horizontally or vertically. Culverts less than 8 inches or greater than 8 feet in diameter are exempt from this requirement. If new culverts and/or the maintenance or modification of existing culverts are grated as described above, the determination of "*May affect, not likely to adversely affect"* is appropriate[11] and no further consultation with the Service is necessary.

[3] Areas of Inadequate Protection (AIPs), Important Manatee Areas (IMAs), Warm Water Aggregation Areas (WWAAs) and No Entry Areas are identified on these maps and defined in the Glossary for the purposes of this key. These maps can be viewed from the Corps' web page at http://www.saj.usace.army.mil/Divisions/Regulatory/sourcebook.htm or from FWC's web page at http://www.myfwc.com. If projects are located in a No Entry Area, special permits may be required from FWC in order to access these areas (please refer to Chapter 68C-22 F.A.C. for boundaries; maps also available at FWC's web page).

[4] New access for watercraft is the addition or improvement of structures such as, but not limited to, docks or piers, marinas, boat ramps and associated trailer parking spaces, boat lifts, pilings, floats, floating docks, floating vessel platforms, (maintenance dredging, residential boat lifts, pilings, floating docks, and floating vessel platforms installed in existing slips are not considered new access), boat slips, dry storage, mooring buoys, new dredging, etc., that facilitates the addition of watercraft to, and/or increases watercraft usage in, waters accessible to manatees. The repair or rehabilitation of any type of currently serviceable watercraft access structure is not considered new access provided all of the following are met: (1) the number of slips is not increased; (2) the number of existing slips is not in question; and (3) the improvements to the existing watercraft access structures do not result in increased watercraft usage.

[5] Projects proposed within the St. Johns River portion of Lake, Marion, and Seminole counties and contiguous with Volusia County shall be evaluated using the Volusia County MPP.

[6] For projects proposed within the following areas: the Peace River in DeSoto County; all areas north of the Seven Mile Bridge in Monroe County, and the Anclote and Pithlachascotee Rivers in Pasco County, proceed to Couplet M. For all other locations in DeSoto, Monroe (south of the Seven Mile Bridge) and Pasco Counties, proceed to couplet N.

[7] Where the presence of the referenced vegetation is confirmed within the area affected by docks and other piling-supported minor structures, the applicant can elect to avoid/minimize impacts to that vegetation. In that instance, where impacts are unavoidable and the applicant elects to abide by or employ construction techniques that exceed the following (see http://www.saj.usace.army.mil/Divisions/Regulatory/sourcebook.htm)

- "Construction Guidelines in Florida for Minor Piling-Supported Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat," prepared jointly by the U.S. Army Corps of Engineers and the National Marine Fisheries Service (August 2001) and

- "Key for Construction Conditions for Docks or Other Minor Structures Constructed in or over Johnson's seagrass (*Halophila johnsonii*)," prepared jointly by the National Marine Fisheries Service and U.S. Army Corps of Engineers (October 2002), for those projects within the known range of Johnson's seagrass occurrence (Sebastian Inlet to central Biscayne Bay in the lagoon systems on the east coast of Florida),

the reviewer should conclude that the impacts to SAV, marsh or mangroves would not adversely affect the manatee or its critical habitat and proceed to couplet O.

For all activities proposed in SAV, marsh, or mangroves other than docks or other piling-supported minor structures that are constructed in compliance with the above Guidelines, (*e.g.*, new dredging, placement of riprap, bulkheads, etc.), if the reviewer determines the impacts to the SAV, marsh or mangroves will not adversely affect the manatee or its critical habitat, proceed to couplet O. Where the applicant does not elect to follow the above Guidelines and/or if the reviewer determines the impacts to the SAV, marsh or mangroves will adversely affect the manatee or its critical habitat, the Corps will need to request formal consultation on the manatee with the Service as *May affect*.

[8] See Glossary, under "is not likely to adversely affect."

[9] Federal reviewers, when making your effects determination, consider effects to manatee designated critical habitat pursuant to section 7(a)(2) of the Endangered Species Act. State reviewers, when making your effects determination, consider effects to manatee habitat within the entire State of Florida, pursuant to Chapter 370.12(2)(b) Florida Statutes.

[10] See http://www.saj.usace.army.mil/Divisions/Regulatory/index.htm for manatee construction conditions. At this time, manatee construction precautions c and f are not required in the following Florida counties: Bay, Escambia, Franklin, Gilchrist, Gulf, Jefferson, Lafayette, Okaloosa, Santa Rosa, Suwannee, and Walton.

[11] By letter dated March 17, 2011, the Corps received the Service's concurrence with "*May affect, not likely to adversely affect*" determinations made pursuant to this key for the following activities: (1) selected non-watercraft access projects; (2) watercraft-access projects that are residential dock facilities, excluding those located in the Braden River AIP; (3) launching facilities solely for kayaks and canoes, and (4) new multi-slip facilities located in Bay, Dixie, Escambia, Franklin, Gilchrist, Gulf, Hernando, Jefferson, Lafayette, Monroe (south of Seven Mile Bridge), Nassau, Okaloosa, Okeechobee, Santa Rosa, Suwannee, Taylor, Wakulla or Walton County.

Additionally, in the same letter dated March 17, 2011, the Corps received the Service's concurrence for "*May affect, not likely to adversely affect*" determinations specifically made pursuant to Couplet G of the key for the repair or rehabilitation of currently serviceable multi-slip watercraft access structures provided all of the following are met: (1) the project is not located in an IMA, (2) the number of slips is not increased; (3) the number of existing slips is not in question; and (4) the improvements to the existing watercraft access structures do not allow increased watercraft usage. Upon receipt of such a programmatic concurrence, no further consultation with the Service for these projects is required.

GLOSSARY

Areas of inadequate protection (AIP) – Areas within counties as shown on the maps where the Service has determined that measures intended to protect manatees from the reasonable certainty of watercraft-related take are inadequate. Inadequate protection may be the result of the absence of manatee or other watercraft speed zones, insufficiency of existing speed zones, deficient speed zone signage, or the absence or insufficiency of speed zone enforcement.

Critical habitat – For listed species, this consists of: (1) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 4 of the Endangered Species Act (ESA), on which are found those physical or biological features (constituent elements) (a) essential to the conservation of the species and (b) which may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 4 of the ESA, upon a determination by the Secretary that such areas are essential for the conservation of the species. Designated critical habitats are described in 50 CFR 17 and 50 CFR 226.

Currently serviceable – Currently, serviceable means usable as is or with some maintenance but not so degraded as to essentially require reconstruction.

Direct effects – The direct or immediate effects of the project on the species or its habitat.

Dredging – For the purposes of this key, the term dredging refers to all in-water work associated with dredging operations, including mobilization and demobilization activities that occur in water or require vessels.

Emergent vegetation – Rooted emergent vascular macrophytes such as, but not limited to, cordgrass (*Spartina alterniflora and S. patens*), needle rush (J*uncus roemerianus*), swamp sawgrass (*Cladium mariscoides*), saltwort (*Batis maritima*), saltgrass (*Distichlis spicata*), and glasswort (*Salicornia virginica*) found in coastal salt marsh-related habitats (tidal marsh, salt marsh, brackish marsh, coastal marsh, coastal wetlands, tidal wetlands).

Formal consultation – A process between the Services and a Federal agency or applicant that: (1) determines whether a proposed Federal action is likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat; (2) begins with a Federal agency's written request and submittal of a complete initiation package; and (3) concludes with the issuance of a biological opinion and incidental take statement by either of the Services. If a proposed Federal action may affect a listed species or designated critical habitat, formal consultation is required (except when the Services concur, in writing, that a proposed action "is not likely to adversely affect" listed species or designated critical habitat). [50 CFR 402.02, 50 CFR 402.14]

Important manatee areas (IMA) – Areas within certain counties where increased densities of manatees occur due to the proximity of warm water discharges, freshwater discharges, natural springs and other habitat features that are attractive to manatees. These areas are heavily utilized

for feeding, transiting, mating, calving, nursing or resting as indicated by aerial survey data, mortality data and telemetry data. Some of these areas may be federally-designated sanctuaries or state-designated "seasonal no entry" zones. Maps depicting important manatee areas and any accompanying text may contain a reference to these areas and their special requirements. Projects proposed within these areas must address their special requirements.

Indirect effects – Those effects that are caused by or will result from the proposed action and are later in time, but are still reasonably certain to occur. Examples of indirect effects include, but are not limited to, changes in water flow, water temperature, water quality (*e.g.*, salinity, pH, turbidity, nutrients, chemistry), prop dredging of seagrasses, and manatee watercraft injury and mortality. Indirect effects also include watercraft access developments in waters not currently accessible to manatees, but watercraft access can, is, or may be planned to waters accessible to manatees by the addition of a boat lift or the removal of a dike or plug.

Informal consultation – A process that includes all discussions and correspondence between the Services and a Federal agency or designated non-Federal representative, prior to formal consultation, to determine whether a proposed Federal action may affect listed species or critical habitat. This process allows the Federal agency to utilize the Services' expertise to evaluate the agency's assessment of potential effects or to suggest possible modifications to the proposed action which could avoid potentially adverse effects. If a proposed Federal action may affect a listed species or designated critical habitat, formal consultation is required (except when the Services concur, in writing, that a proposed action "is not likely to adversely affect" listed species or designated critical habitat). [50 CFR 402.02, 50 CFR 402.13]

In-water activity – Any type of activity used to construct/repair/replace any type of in-water structure or fill; the act of dredging.

In-water structures – watercraft access structures – Docks or piers, marinas, boat ramps, boat slips, boat lifts, floats, floating docks, pilings (depending on use), boat davits, etc.

In-water structures – other than watercraft access structures – Bulkheads, seawalls, riprap, groins, boardwalks, pilings (depending on use), etc.

Is likely to adversely affect – The appropriate finding in a biological assessment (or conclusion during informal consultation) if any adverse effect to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions and the effect is not: discountable, insignificant, or beneficial (see definition of "is not likely to adversely affect"). An "is likely to adversely affect" determination requires the initiation of formal consultation under section 7 of the ESA.

Is not likely to adversely affect – The appropriate conclusion when effects on listed species are expected to be discountable, insignificant, or completely beneficial. **Discountable effects** are those extremely unlikely to occur. **Insignificant effects** relate to the size of the impact and should never reach the scale where take occurs. **Beneficial effects** are contemporaneous positive effects without any adverse effects to the species. Based on best judgment, a person would not

(1) be able to meaningfully measure, detect, or evaluate insignificant effects or (2) expect discountable effects to occur.

Manatee Protection Plan (MPP) – A manatee protection plan (MPP) is a comprehensive planning document that addresses the long-term protection of the Florida manatee through law enforcement, education, boat facility siting, and habitat protection initiatives. Although MPPs are primarily developed by the counties, the plans are the product of extensive coordination and cooperation between the local governments, the FWC, the Service, and other interested parties.

Manatee Protection Plan thresholds – The smallest size of a multi-slip facility addressed under the purview of a Manatee Protection Plan (MPP). For most MPPs, this threshold is five slips or more. For Brevard, Clay, Citrus, and Volusia County MPPs, this threshold is three slips or more.

Mangroves – Rooted emergent trees along a shoreline that, for the purposes of this key, include red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*) and white mangrove (*Laguncularia racemosa*).

May affect – The appropriate conclusion when a proposed action may pose <u>any</u> effects on listed species or designated critical habitat. When the Federal agency proposing the action determines that a "may affect" situation exists, then they must either request the Services to initiate formal consultation or seek written concurrence from the Services that the action "is not likely to adversely affect" listed species. For the purpose of this key, all "may affect" determinations equate to "likely to adversely affect" and Corps Project Managers should request the Service to initiate formal consultation on the manatee or designated critical habitat. **No effect** – the appropriate conclusion when the action agency determines its proposed action will not affect a listed species or designated critical habitat.

Multi-slip facility – Multi-slip facilities include commercial marinas, private multi-family docks, boat ramps and associated trailer parking spaces, dry storage facilities and any other similar structures or activities that provide access to the water for multiple (five slips or more, except in Brevard, Clay, Citrus, and Volusia counties where it is three slips or more) watercraft. In some instances, the Corps and the Service may elect to review multiple residential dock facilities as a multi-slip facility.

New access for watercraft – New dredging and the addition or improvement of structures such as but not limited to docks or piers, marinas, boat ramps and associated trailer parking spaces, boat lifts, pilings, floats, floating docks, floating vessel platforms, (residential boat lifts, pilings, floats, and floating vessel platforms installed in existing slips are not considered new access), boat slips, dry storage, mooring buoys, etc., that facilitates the addition of watercraft to, and/or increases watercraft usage in, waters accessible to manatees.

Observers – During dredging and other in-water operations within manatee accessible waters, the standard manatee construction conditions require all on-site project personnel to watch for manatees to ensure that those standard manatee construction conditions are met. Within important manatee areas (IMA) and under special circumstances, heightened observation is needed. **Dedicated Observers** are those having some prior experience in manatee observation,

are dedicated only for this task, and must be someone other than the dredge and equipment operators/mechanics. **Approved Observers** are dedicated observers who also must be approved by the Service (if Federal permits are involved) and the FWC (if state permits are involved), prior to work commencement. Approved observers typically have significant and often project-specific observational experience. Documentation on prior experience must be submitted to these agencies for approval and must be submitted a minimum of 30 days prior to work commencement. When dedicated or approved observers are required, observers must be on site during all in-water activities, and be equipped with polarized sunglasses to aid in manatee observation. For prolonged in-water operations, multiple observers may be needed to perform observation in shifts to reduce fatigue (recommended shift length is no longer than six hours). Additional information concerning observer approval can be found at: http://www.myfwc.com/.

Residential boat lift – A boat lift installed on a residential dock facility.

Residential dock density ratio threshold – The residential dock density ratio threshold is used in the evaluation of multi-slip projects in some counties without a State-approved Manatee Protection Plan and is consistent with 1 boat slip per 100 linear feet of shoreline (1:100) owned by the applicant.

Residential dock facility – A residential dock facility means a private residential dock which is used for private, recreational or leisure purposes for single-family or multi-family residences designed to moor no more than four vessels (except in Brevard, Clay, Citrus, and Volusia counties which allow only two vessels). This also includes normal appurtenances such as residential boat lifts, boat shelters with open sides, stairways, walkways, mooring pilings, dolphins, etc. In some instances, the Corps and the Service may elect to review multiple residential dock facilities as a multi-slip facility.

Submerged aquatic vegetation (SAV) – Rooted, submerged, aquatic plants such as, but not limited to, shoal grass (*Halodule wrightii*), paddle grass (*Halophila decipiens*), star grass (*Halophila engelmanni*), Johnson's seagrass (*Halophila johnsonii*), sago pondweed (*Potamogeton pectinatus*), clasping-leaved pondweed (*Potamogeton perfoliatus*), widgeon grass (*Ruppia maritima*), manatee grass (*Syringodium filiforme*), turtle grass (*Thalassia testudinum*), tapegrass (*Vallisneria americana*), and horned pondweed (*Zannichellia palustris*).

Warm Water Aggregation Areas (WWAAs) and **No Entry Areas** – Areas within certain counties where increased densities of manatees occur due to the proximity of artificial or natural warm water discharges or springs and are considered necessary for survival. Some of these areas may be federally-designated manatee sanctuaries or state-designated seasonal "no entry" manatee protection zones. Projects proposed within these areas may require consultation in order to offset expected adverse impacts. In addition, special permits may be required from the FWC in order to access these areas.

Watercraft access structures – Docks or piers, marinas, boat ramps and associated trailer parking spaces, boat slips, boat lifts, floats, floating docks, pilings, boat davits, dry storage, etc.

Waters accessible to manatees – Although most waters of the State of Florida are accessible to the manatee, there are some areas such as landlocked lakes that are not. There are also some weirs, salinity control structures and locks that may preclude manatees from accessing water bodies. If there is any question about accessibility, contact the Service or the FWC.

APPENDIX 4

USFWS CONCURRENCE LETTER

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:
FWS Log No. 41910-2014-I-0176

May 29, 2014

Mr. William G. Walsh
Environmental Administrator
FDOT District 5
719 South Woodland Blvd
DeLand FL 32720-6800

RE: Widen SR 46 from east of SR 415 to CR 426.
Financial ID No. 240216-4-28-01
Federal Aid No. TCSP-045-U
ETDM #4972

Dear Mr. Walsh:

The United States Fish and Wildlife Service (Service) has completed its review of a proposal to widen SR 46 from SR 415 to CR 426 and construct an additional two-lane bridge over Lake Jesup in Seminole County.

Project description
SR 46 is currently a two-lane rural roadway connecting SR 415 to CR 326 in eastern Seminole County. The project length is approximately 7.4 miles. The western terminus connects to SR 415, which is under construction to a four-lane divided facility. The eastern terminus of the project occurs at CR 426 in Geneva, which provides a direct connection to the City of Oviedo. Additional stormwater ponds and access roads are also included in this proposal.

The PD&E study divided the project into 4 segments:

1. Widen SR 46 from SR 415 to west end of Lake Jesup Bridge
2. Construct additional two-lane bridge over Lake Jesup
3. Widen SR 46 from east of bridge to Hart road
4. Widen SR 46 from Hart road to CR426

Based on the information provided by FDOT in the draft WEBAR and draft ESBA (dated March 2014) regarding the presence or absence of species within the action area the Service provides the following comments and recommendations.

Endangered Species Act Coordination

Our comments are for the purpose of providing informal consultation in accordance with section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 *et seq.*), the Fish and Wildlife Coordination Act (FWCA) (16 U.S.C. 661 *et seq.*), and the Migratory Bird Treaty Act of 1918 (MBTA), as amended (16 U.S.C. 703-712 *et seq.*).

Florida Manatee (*Trichechus manatus latirostris*)
The new two-lane bridge across the St. John's River and Lake Jesup will impact manatee habitat and may affect manatees. The WEBAR concluded a 'may affect, not likely to adversely affect' (MANLAA) determination for the Florida manatee and FDOT listed several action items in the WEBAR to protect manatees for the duration of the project. Critical habitat for this species has been designated within the St. John's River. The level of manatee use in the area is considered low. The Service concurs with a determination of MANLAA if the conditions listed below are incorporated into the project.

- 2011 In-Water Construction Conditions (or current version) will be followed. In the future, current guidelines and contact numbers could be found on our office website or the Army Corps website.

- Any culverts larger than eight inches in diameter should be grated to prevent manatee entrapment. The spacing between the bridge pilings will be at least 60 inches apart to allow for manatee movement in between the pilings.

- Barges will be equipped with fender systems that provide a minimum standoff distance of four feet between wharves, bulkheads and vessels moored together to prevent crushing manatees between the barges or between the barge and work site. All existing slow speed or no wake zones will apply to all work boats and barges associated with the construction.

- No dredging is proposed at this time. If dredging is needed, consultation should be reinitiated.

- No blasting is proposed at this time. FDOT understands that blasting will result in a 'may affect' determination and FDOT would initiate formal ESA consultation.

Wood Stork (*Mycteria Americana*)
The project corridor is approximately 7.4 miles long and is right on the edge (15-16 miles) of the Core Foraging Area (CFA) of at least two active nesting colonies (#612320 and Mud Lake) of the endangered wood stork. Extensive canals, ditches and forested wetlands are within and adjacent to the ROW. Wood storks have been documented foraging in these wetlands. The Service has determined that the loss of wetlands within a CFA due to an action could result in the

loss of foraging habitat for the wood stork. To minimize adverse effects to the wood stork and other wetland dependent species, we recommend that impacts to suitable foraging habitat be avoided. The amount of direct wetland impacts for Alternative 2 is approximately 27 acres, according to the WEBAR. FDOT should utilize the Wood Stork Effect Determination Key developed with the Army COE to reach an effect determination. The amount of wetland mitigation needed and where it will be purchased should also be disclosed in order to reach a MANLAA determination. The Service recommends investigating options within the vicinity of Lake Jesup and the St. John's River to improve connectivity and water quality for this severely impaired water body or provide additional nesting habitat for wading birds and wood storks with dredge spoil if any dredging is needed. Recommendations provided by resource agencies during the ETDM screening exercise stressed spanning the floodplains and wetlands with the new bridge to reduce the footprint of this structure.

Audubon's Crested Caracara (*Polyborus plancus)*
The caracara is a resident, diurnal, non-migratory species that occurs in Florida as well as the Southwestern U.S. and Central America. Only the Florida population, which is isolated from the remainder of the species, is listed as threatened under the ESA. Suitable habitat for this species includes wet and dry prairies, improved pastures and lightly wooded areas. Cabbage palms, cypress, scrub oaks and saw palmetto may be habitat indicators as to the presence or absence of this species. According to the ESBA, two adult caracara's were observed flying south near the western terminus. The exact location and date of the observation was not included. Suitable habitat can be found within the project corridor and may be impacted by this proposal directly and indirectly. The presence of road kill, which will increase after the road is widened, can negatively affect this species and bald eagles, especially young birds, as they learn to forage near roadways. FDOT has committed in the ESBA to conducting field surveys for caracaras prior to construction. The Service recommended surveys for this species 2010 and we have a history of sightings near SR 415. Once surveys are complete, consultation can be reinitiated.

Eastern Indigo Snake (*Drymarchon corais couperi*)
Suitable habitat for this species can be found within the project corridor and this species has been documented on the Lake Jesup Conservation Tract. Wider, divided, highways are likely to increase the number of amphibian and reptile deaths as the animals attempt to cross a wider barrier with increased levels of traffic. Direct effects for this species include mortality from additional vehicle traffic and the need to cross wider roadways. Indirect effects from increased commercial and residential development in this portion of Seminole and Brevard County, as a result of the new roadway, will result in further habitat fragmentation and mortality. FDOT has agreed to utilize the new eastern indigo snake guidelines (dated August 2013) found on our office website, http://www.fws.gov/northflorida/. Generally, a complete gopher tortoise survey is needed within the ROW in order to utilize the effect determination key. The Service also recommends that plastic netting, frequently used on roadsides under grass or seed, be eliminated from the construction design. Studies have shown that plastic netting entraps many species of snakes and does not deteriorate over time. Biodegradable matting or a similar material should be used to reduce direct, indirect and cumulative effects to this federally listed species and many other common species of snakes found in this area. The Service recommends integrating wildlife-friendly components within culverts and providing additional dry culverts with natural

bottoms to allow for wildlife crossing under the roadway. All of these recommendations were included in the ETDM screening process.

Gopher Tortoise (*Gopherus polyphemus*)
Gopher tortoises are long-lived reptiles that occupy upland habitat throughout Florida including forests, pastures, and yards. They dig deep burrows for shelter and forage on low-growing plants. Gopher tortoises share these burrows with more than 350 other species, and are therefore referred to as a keystone species. In July 2011, the Service determined that listing the eastern population of the tortoise as Threatened under the Endangered Species Act is warranted. However, it is precluded from doing so at this time due to higher priority actions and a lack of sufficient funds. Therefore, the tortoise was placed on the candidate conservation list and should be listed as a candidate species in FDOT documents. Gopher tortoises are a State threatened wildlife species and are protected by state law. State permitting guidelines for avoidance, minimization and mitigation should be followed. The ESBA notes that abundant suitable habitat exists in the area for this species. Therefore, FDOT has committed to a complete survey for this species prior to construction. A complete survey will facilitate the use of the eastern indigo snake effect determination key.

Florida Scrub-Jay (*Aphelocoma coerulescens*)
At one time this species could be found throughout Seminole County in suitable habitats (scrub and scrubby pine flatwoods). Recent declines are attributable to habitat conversion and lack of management. FNAI data indicated that patches of scrub habitat can be found in the action area but they are fragmented by residential areas and some have been disturbed from sand mining. Florida scrub-jays can be found to the west at Yankee Lake wastewater treatment plant. No records of this species exist for the eastern portion of Seminole county. Therefore, the Service can concur with FDOT that this project will have 'No Effect' on the Florida scrub-jay.

Sand Skink (*Neoseps reynoldsi*)
The proposed expansion corridor does not support suitable habitat for this species. Recent aerial photos on GOOGLE Earth reveal that the elevations along this proposed expansion range from approximately 5-75 feet above sea level. The Service concurs with the 'No Effect' determination made by FDOT.

The FDOT has determined the project 'May Affect but is Not Likely to Adversely Affect' (MANLAA) the following species: Florida manatee, Audubon's crested caracara, bald eagle, wood stork, eastern indigo snake and Atlantic sturgeon. In a letter, dated April 14, 2014, FDOT requested a concurrence with a MANLAA determination for all of these species at this time. As stated earlier, the Service concurs with this determination of effect for the Florida manatee. The consultation for the Atlantic sturgeon should be coordinated with NMFS.

The Service does not have enough information to provide concurrence or non-concurrence with FDOT's determination [pursuant to Section 7 of the ESA, as described in 50 § CFR402.14]. In order to comply with Section 7 of the ESA, FDOT has committed to reinitiate consultation with the Service prior to advancing the project to construction. At the time of re-initiation, FDOT will provide additional information, as needed, which will allow the Service to complete our analysis of the project's effects on the species noted above and complete consultation on the project. The

FDOT must document this commitment in the final environmental document for the project and in documents for any subsequent re-evaluations of the project.

Bald eagles are no longer listed under the ESA. Early coordination with the FFWCC and the Office of Migratory Birds is needed for this project. Information about the new eagle guidelines can be found at (http://www.fws.gov/migratorybirds/BaldEagle.htm). Seminole County is considered a core nesting area for the State of Florida. The ESBA indicates that nest tree SE36 (active in 2012) is within 100 feet of existing ROW and will be disturbed. Also, nest tree SE51 may be within the boundary of compensation pond #1 and may be disturbed or taken. A new nest tree that has not yet been numbered or mapped by FFWCC could also be taken with the construction of compensation pond #2.

No federally listed plants are known to occur in Seminole County, Florida.

Fish and Wildlife Coordination Act

The FDOT is statutorily obligated to mitigate all wetland impacts according to the Clean Water Act and the Section 404 permitting process through the Army Corps of Engineers. In addition, the State of Florida also requires the demonstration of avoidance, minimization and mitigation of wetland impacts. During the design and permitting phase the FDOT committed to avoiding and minimizing the direct and indirect effects of this project on wetland ecosystems. The January 2013 WEBAR states that the Preferred Alternative will impact approximately 27 acres of forested wetlands, 10 acres of secondary impacts, 1.33 acres of wetland-cut ditches, 6 acres of upland-cut ditches, 4.26 acres of shading impacts from the new bridge and 17.59 acres of impacts to the Lake Jesup Conservation Area.

FHWA and USFWS requested Section 4(f) analysis for this project due to the proposed impacts to the Lake Jesup Conservation Area. Avoidance and minimization measures were demonstrated by selecting Alternative 2 with the least amount of impacts to numerous ecologically significant conservation easements adjacent to SR 46, such as the Rolf Bergman Tract. The easements and conservation areas were set aside to mitigate for past wetland impacts as a result of new road construction or improvement. The Service has determined that the Lake Jesup conservation area meets the definition of a Section 4(f) property under the Transportation Act of 1966, as amended. Spanning the floodplains of the St. John's River and the conservation area with a longer bridge may be one solution to avoiding ~18 acres of impact to public land. The Service also requests consideration of recommendations to reduce the footprint of the highway by choosing a design that minimizes the width of the roadway, including eliminating the median.

The need to reinitiate consultation will allow the Service to review the final design for the interchange as well as all of the pond locations, wildlife crossings and wetland impacts.

This letter does not represent a biological opinion as described in Section 7 of the ESA nor a final concurrence with project effects on listed species as determined by the FDOT. New information regarding species presence, changes to and refinement of the proposed project design, and potential adverse effects not initially considered may increase the risk of adverse

effects to a level at which take is reasonably certain to occur. All additional information available will be evaluated when ESA consultation is reinitiated.

If you have any questions, please contact Jane Monaghan at (904)731-3119.

Sincerely,

for Jay B. Herrington
Field Supervisor

cc: Scott Sanders-FFWCC
Andrew Phillips-ACOE
Ulgonda Kirkpatrick-USFWS

APPENDIX 5

STANDARD MANATEE CONDITIONS FOR IN-WATER WORK

STANDARD MANATEE CONDITIONS FOR IN-WATER WORK

2011

The permittee shall comply with the following conditions intended to protect manatees from direct project effects:

a. All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with and injury to manatees. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act, the Endangered Species Act, and the Florida Manatee Sanctuary Act.

b. All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.

c. Siltation or turbidity barriers shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement.

d. All on-site project personnel are responsible for observing water-related activities for the presence of manatee(s). All in-water operations, including vessels, must be shutdown if a manatee(s) comes within 50 feet of the operation. Activities will not resume until the manatee(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.

e. Any collision with or injury to a manatee shall be reported immediately to the FWC Hotline at 1-888-404-3922. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-731-3336) for north Florida or Vero Beach (1-772-562-3909) for south Florida, and to FWC at ImperiledSpecies@myFWC.com

f. Temporary signs concerning manatees shall be posted prior to and during all in-water project activities. All signs are to be removed by the permittee upon completion of the project. Temporary signs that have already been approved for this use by the Florida Fish and Wildlife Conservation Commission (FWC) must be used (see MyFWC.com/manatee). One sign which reads *Caution: Boaters* must be posted. A second sign measuring at least 81/2" by 11" explaining the requirements for “Idle Speed/No Wake” and the shut down of in-water operations must be posted in a location prominently visible to all personnel engaged in water-related activities. Questions concerning these signs can be sent to the email address listed above.

CAUTION: MANATEE HABITAT

All project vessels

IDLE SPEED / NO WAKE

When a manatee is within 50 feet of work
all in-water activities must

SHUT DOWN

Report any collision with or injury to a manatee:

Wildlife Alert:

1-888-404-FWCC(3922)

cell *FWC or #FWC

APPENDIX 6

BURROWING OWL PROTECTION GUIDELINES AND PROCEDURES IN URBAN AREAS

BURROWING OWL NEST PROTECTION GUIDELINES AND PROCEDURES IN URBAN AREAS

The Florida burrowing owl (*Athene cunicularia floridana*) is listed by the State of Florida, Fish and Wildlife Conservation Commission (Commission) as a Species of Special Concern (Florida Administrative Code [F.A.C.] 68A-27.005). This classification means that the burrowing owl has a high vulnerability to factors that may lead to its becoming a threatened species in the absence of appropriate protection or management. As a Species of Special Concern, it is illegal to take (pursue, hunt, capture, molest, or kill) burrowing owls and their nest burrows and eggs without a permit issued by the Executive Director of the Commission (68A-9.002 & 68A-27.005 F.A.C.). Burrowing owls and their nests are also afforded protection under the Federal Migratory Bird Treaty Act. Rules promulgated under this act (Title 50, Code of Federal Regulations, Part 21) prohibit the destruction of active (i.e., nests which contain eggs or flightless young) nests without a federal permit, which is issued by the U.S. Fish and Wildlife Service Regional Office in Atlanta, Georgia.

The Commission's policy is to issue permits to destroy burrowing owl nest burrows only as a last resort, after all reasonable alternatives (such as realigning development to avoid the nest) have been shown to be impractical. When such permits are issued, they apply only to inactive nests (i.e., burrows containing no eggs or flightless young). Burrowing owl nests can generally be considered inactive from 10 July to 15 February, although some nesting occurs as early as October each year. Between 15 February and 10 July, burrows attended by one or more burrowing owls are considered active nests unless information is available to suggest otherwise (i.e., proof that young fledged from the nest prior to 10 July).

Burrowing owls often nest on vacant lots in rapidly developing suburban areas. In these areas, home construction is a major cause of burrow destruction. However, Commission studies in Cape Coral, Lee County, have shown that if development is conducted in such a way that the area within 50 ft of the burrow is protected from disturbance, nesting is seldom interrupted. No Commission permit is needed to build a home on a lot when at least a 50-ft radius circle can be provided around the burrow, but cautionary measures must be taken to guard against accidental destruction of the nest. A larger buffer, ideally 150 ft, will decrease chances the nest burrow will be adversely impacted. We recommend that the buffer circle around the burrow entrance be staked and roped-off prior to initiating construction. Sod may be laid within the protected area outside the "active" nesting period, but the burrow entrance must be left open. Plugging the burrow entrance or causing the burrow to collapse would effectively destroy the nest, and as such, require a permit. As a cautionary measure, we recommend that after completion of the home, the homeowners place a T-perch (see enclosed brochure) near the burrow or stake-off the area around the burrow to prevent someone from accidentally stepping into the entrance.

At present, the Commission has no guidelines for management of burrowing owls in other than urban/suburban areas. Protection criteria for these situations, or situations where numerous burrows will be impacted, will be developed on a case-by-case basis.

To request a permit to take a burrowing owl nest, submit an application via the Online Permitting System The application requests the following: (1) burrow location and status information, (2) a statement as to why the burrow(s) must be destroyed (i.e. nest burrow conflicts with proper installation/functioning of a structure or prohibits construction in a certain manner) in detail, (3) requires you to attach digital photographs and a detailed site plan or scaled diagram of the property that clearly indicates the location of the burrow(s) and it's proximity/distance to the proposed structure/construction activity, and (4) a statement of mitigation measures that will be enacted to offset the loss of nesting habitat for this species. You may contact the Permitting Office via email at WildlifePermits@myfwc.com or by mail attention Protected Species Permit Coordinator, Species Conservation Planning Section, Florida Fish and Wildlife Conservation Commission, 620 South Meridian St., Mail Station 2A, Tallahassee, FL 32399-1600, (850) 921-5990, ext. 17310.

*Federal permits are required **only** if the nest is active (i.e., has flightless young or eggs present). Please contact the U.S. Fish and Wildlife Service.*

APPENDIX 7

CRESTED CARACARA TECHNICAL MEMORANDUM

Florida Department of Transportation

RICK SCOTT
GOVERNOR

719 South Woodland Boulevard
DeLand, FL 32720

JIM BOXOLD
SECRETARY

MEMORANDUM

DATE: September 3, 2015

TO: Lourdes Mena, Fish and Wildlife Biologist, USFWS

FROM: William Walsh, Environmental Manager, FDOT District 5

COPIES: Mary McGehee, Catherine Owen, FDOT District 5; Kathy Hale, EMD

SUBJECT: **Crested Caracara Survey Results**
SR 46 PD&E Study from SR 415 to CR 426
Financial Project ID: 240216-4-28-01
Seminole County, Florida

Introduction

State Road (SR) 46 is an integral component of Central Florida's transportation and evacuation system that traverses Lake, Seminole, and Brevard Counties with interchanges at I-4 and I-95. SR 46 is currently a two-lane rural roadway extending between SR 415 and County Road (CR) 426 in eastern Seminole County. The project length is approximately 7.4 miles. The western terminus connects to SR 415, which is under construction to be widened to a four-lane divided facility. Lake Mary Boulevard, which was recently extended to SR 415, provides a direct connection to the Orlando-Sanford International Airport and the Seminole Expressway (SR 417). The eastern terminus of the project occurs at CR 426 (Geneva), which provides a direct connection to the City of Oviedo. The SR 46 widening project will serve as an improvement to a major hurricane evacuation route for northern Brevard and southern Volusia Counties. This evacuation route is imperative for those counties since the nearest east-west evacuation routes are located approximately 8 miles to the south (SR 50) and approximately 25 miles to the north (SR 44). SR 50, the nearest alternative route, is anticipated to be over capacity by year 2035.

In an effort to gather information needed for the U.S. Fish and Wildlife Service (USFWS) to provide concurrence or non-concurrence with the effect determination and at the request of USFWS, a formal crested caracara (*Caracara cheriway*) survey of the SR 46 project corridor was conducted between January 1 and April 30, 2015. This survey was conducted in accordance with the USFWS Caracara Survey Protocol (USFWS 2004) and email correspondence. The objective of this memorandum is to present the caracara survey methodologies, to document coordination efforts to obtain technical information, and to provide the survey results. The information within this memorandum is also intended to provide technical support for the

findings presented in the Endangered Species Biological Assessment (ESBA) prepared for the SR 46 Project Development and Environment (PD&E) Study (PD&E Study).

PD&E Study

Seminole County, in consultation with the Florida Department of Transportation (FDOT), is conducting a PD&E Study to evaluate possible alternative improvements to widen SR 46 from east of SR 415 to CR 426 (see Figure 1 in Appendix 1). As part of the SR 46 PD&E Study, an ESBA was conducted that followed procedures outlined in the Project Development and Environment Manual, Part 2, Analysis and Documentation, Chapter 27: Wildlife and Habitat Impacts (FDOT, 1991).

During the PD&E process, a review of protected (listed) species was performed in fulfillment of the National Environmental Policy Act (NEPA) requirements. A review of existing databases and literature was conducted using the USFWS and Florida Fish and Wildlife Conservation Commission (FFWCC) online databases for protected plants and wildlife, Florida Natural Areas Inventory (FNAI), Florida Committee on Rare and Endangered Plants and Animals (FCREPA) texts, and a variety of other sources based on suitable habitat available onsite compared to species whose geographic ranges occur in Seminole and Volusia (due to adjacency) Counties. Published lists of state and federally protected species documented to occur in Seminole and Volusia Counties were reviewed to evaluate the potential of species occurrences within the project limits. Additional FFWCC databases were queried to determine occurrences of bald eagles (*Haliaeetus leucocephalus*), breeding birds, and wading bird colonies. Resources used during the ESBA and relevant to the crested caracara survey are listed in the references section of this memorandum.

Assessments of the ecological communities were conducted to evaluate current conditions with respect to the presence of threatened and endangered species and to determine if significant changes to natural habitats and corridors within the project area have occurred. Pedestrian wildlife surveys were conducted in February (8 and 29) and March (16, 20, 23, 26 and 27) 2012. Vehicular and pedestrian transects were used to traverse the various land uses and observations of wildlife species were recorded. Results of the assessments and surveys were documented in the ESBA dated March 2014. The following results of the crested caracara were documented in the ESBA:

> *Two adult birds were observed flying south near the western terminus of the project. Seminole County is the extreme northern limit of their nesting range and little nesting habitat has been identified within the project study area. However, the project is within the USFWS crested caracara consultation area. It is anticipated that this project will have a "may affect, but not likely to adversely affect" determination for this species.*

Formal Crested Caracara Surveys

Environmental Management & Design, Inc. (EMD) (environmental consultant) conducted formal field surveys to document and assist in the determination of the presence of crested

caracara and their nests within the SR 46 PD&E Study area between January 1 and April 30, 2015. This survey was conducted at the request of the USFWS, North Florida Ecological Services Office (NFESO), Jacksonville, Florida due to the following comment dated May 29, 2014:

> *The caracara is a resident, diurnal, non-migratory species that occurs in Florida as well as the Southwestern U.S. and Central America. Only the Florida population, which is isolated from the remainder of the species, is listed as threatened under the ESA. Suitable habitat for this species includes wet and dry prairies, improved pastures and lightly wooded areas. Cabbage palms, cypress, scrub oaks and saw palmetto may be habitat indicators as to the presence or absence of this species. According to the ESBA, two adult caracara's were observed flying south near the western terminus. The exact location and date of the observation was not included. Suitable habitat can be found within the project corridor and may be impacted by this proposal directly and indirectly. The presence of road kill, which will increase after the road is widened, can negatively affect this species and bald eagles, especially young birds, as they learn to forage near roadways. FDOT has committed in the ESBA to conducting field surveys for caracaras prior to construction. The Service recommended surveys for this species 2010 and we have a history of sightings near SR 415. Once surveys are complete, consultation can be reinitiated.*

Crested Caracara Survey Methodology

The 2015 crested caracara survey was developed using the USFWS (April 20, 2004) survey protocol. The surveys began the first week in January and continued through the end of April. Because the protective area (nest territory) for the caracara is 1,500 meters (4,920 feet) around the nest, the area surveyed around the project area included a 1,500-meter buffer to account for off-site territories that might overlap onto the project area.

Five zones within the SR 46 PD&E Study area containing potential suitable habitat and buffers were delimited and surveyed for caracaras and their nests (see Figures 2 and 3 in Appendix 2). Each zone had one primary survey station and one or more secondary stations and contained no more than 500 hectares of caracara habitat which is the largest area easily observable from one point. Zones were selected by using aerial photography, augmented by National Wetlands Inventory Maps, USGS Topographic Survey Quadrangle Maps, and Natural Resources Conservation Service Maps, to identify areas of suitable habitat and to map observations to facilitate surveying the entire area. Strategic Observations Points (SOPs), where caracaras are more likely to be seen going to and from potential nesting sites, were identified within each zone using maps/aerials and field reviews. Primary and secondary survey stations were selected from the SOP's. A Primary Station is that observation point within a zone which provides the greatest caracara visibility within the zone for the observer. It is the location to which the observer returns after each cycle/rotation of observations repeated every other week. There is one Primary Station within each zone. The observer remains at the Primary Station for a minimum of 15 minutes before and 3 hours after sunrise. A Secondary Station is an observation point or points within a zone which the observer may visit to provide a more thorough coverage of the zone.

Observations by a qualified biologist with over 10 years of conducting bird surveys (including caracara) were recorded on field data sheets to document the results of each survey. Following protocols, field surveys at SOPs were repeated every two weeks to the end of April 2015. Access to Primary Stations 1 and 2 was initially limited for Rotation 1 until owner permission could be obtained. The selection of which zone to survey within a rotation was intended to be sequential (1, 2, 3…), but became randomized due to access limitations following weather events (heavy precipitation). Both Zones 1 and 2 were frequently flooded.

Monitoring within each zone began at early Civil Twilight (at least 15 minutes prior to sunrise) for a duration of at least three hours following sunrise. Ambient light at civil (twilight) sunrise is sufficient for most diurnal raptors to see forms moving and to begin flying. From the SOPs the observer scanned the zone for caracara activity, (especially birds moving to the nest tree carrying sticks or food) and for other birds [(such as American crows (*Corvus brachyrhynchos*), bald eagles (*Haliaeetus leucocephalus*), red-tailed hawks (*Buteo jamaicensis*), Cooper's hawks (*Accipiter cooperii*), turkey vultures (*Cathertes aura*), and black vultures (*Coragyps atratus*)] which might elicit an aggressive or defensive response from caracaras. Nesting caracaras frequently chase potential predators away from their nest territories, thus revealing their presence. In addition, circling vultures can indicate the presence of naturally occurring carrion that may attract caracaras. Following protocol, the observer would reposition to improve observing the bird's behavior upon siting a potential nest. Weather conditions adequate to clearly view the entire area (zone), including temperature, wind speed and direction, cloud cover, visibility, and precipitation, were included in the survey protocol and were recorded on the field data sheets at the beginning and end of each survey period. The opportunity for caracara observation was further enhanced by placing fresh road kills at strategic locations within the zones and observing fresh road kills following the morning survey allowing birds to be tracked back to their nest trees. During that time, the observer remained in a portable field blind or vehicle (mobile blind) minimizing disturbance to the birds. If an active nest was observed, no foot traffic was allowed within 300 meters until immatures had fledged. Foot traffic in general was minimized, using a vehicle or cover as a buffer. After the sunrise survey, potential nest trees were examined close up for evidence of nests. All caracara activity observed was recorded by time of day and distinguished between juvenile and adult birds. Flight direction to identify foraging areas and nest trees was recorded. Nest tree locations were mapped and Global Positioning System (GPS) coordinates obtained.

Coordination

Coordination with USFWS regarding the crested caracara survey and the SR 46 PD&E Study project began in December 2014 with Jane Monaghan (NFESO-since retired). Coordination continued with Heather Tipton (South Florida Ecological Services Office) and Heath Rauschenberger (NFESO) in January 2015 regarding the survey in progress. In February, March, and April 2015 additional coordination was conducted with Zakia Williams (NFESO) to discuss the results of the survey. A conference call between Zakia Williams and Catherine Owen (FDOT) documented in an email (3/26/15) detailed survey protocol requirements and established conditions for a USFWS finding of "may affect, not likely to adversely affect" (see Email Correspondence in Appendix 3). Additional information was requested and provided to USFWS.

Previous observations of caracaras have been made at the western terminus of the project (SR 46/SR 415 intersection) by the following organizations and experts:

- EMD scientists/biologists (2012);
- Seminole Audubon Society (individual scientists and Econ Christmas bird counts);
- Friends of the Wekiva River (individual scientists and Wekiva Christmas bird counts);
- Seminole County environmental staff;
- St. Johns River Water Management District's Land Manager and staff of the Lake Monroe and Lake Jesup Conservation Areas;
- FFWCC; and
- Land owners and property managers/leaser for the properties adjacent to SR 46 (City of Sanford, Lake Jesup Groves, River Run-Berman properties, the Lukas property, and the Delgado property).

During the current caracara survey, coordination with the above experts and others revealed that a "loose" caracara nest was previously observed in 2005 in a cluster of palm trees located over 4,000 feet northwest of the SR 46 PD&E Study project western terminus (near the intersection of Beardall Avenue and Hughey Street). For the next decade, these experts have sporadically observed caracaras close to this nest tree.

Coordination and interviews with local experts and others continued throughout the survey period. The more informative discussions are summarized below:

Coordination with the compilers and participants of the Econ and Wekiva Christmas bird counts was conducted from 12/29/14 to 1/19/15 to obtain their observations of caracaras during the recent and previous Christmas bird counts within the project area. They indicated that caracaras have been observed just west of the project area (west of Zone 1) since 2005. Caracaras have also been observed east of Geneva and the Lake Jesup marl flats to the south (over four miles from the SR 46 PD&E Study project).

Mr. Peter Henn is the St. Johns River Water Management District land manager for the Lake Monroe Conservation Area (Zones 1 and 3), Lake Jesup Conservation Area (LJCA) (Zone 2), and numerous other District lands. He was interviewed on 1/7/15. Mr. Henn discussed sightings of caracara within the area and was aware of birds on the St. Johns River east of Geneva and on the Lake Jesup marl flats. He reported that one of his crew observed a caracara foraging within the recently (2013-2014) cleared area south of SR 46 and west of the bridge (Zone 2). The number of individuals and dates observed are uncertain and subsequent surveys did not substantiate these observations. He was not aware of any other sightings along SR 46.

Mr. Terry Alday, City of Sanford on-site employee for the City's spray fields, was interviewed on 1/8/15. He indicated that he has never seen a caracara within the spray fields (Zone 4). Mr. Alday was aware of caracaras east of Geneva.

Ms. Angela Mcelray, a field hand working cattle on the City of Sanford Spray Field (Zone 4), was interviewed on 1/12/15. She has worked the property for several years and has observed caracara on the St. Johns River east of Geneva, but has never seen them on her site.

Mr. Kurt Lingle is a rancher and citrus grower holding the lease on the City of Sanford Spray Field Citrus Groves (Zone 5). His family has held the lease over the groves for over 25 years and he actively hunts his lands. He was interviewed on 1/12/15 and while he has observed caracara east of Geneva, he has never observed them within the groves.

Mr. Todd Glenn has held the cattle lease on the mitigation property (Bergman Tract) north of SR 46 and west of the bridge for a number of years. Mr. Glenn is a long time resident of the area. He was interviewed on 1/22/15 and while he has observed caracara east of Geneva, he has never observed them on the mitigation lands (Zone 1).

Mr. Jim Lefile, a cattleman holding the lease over a portion of the LJCA (Zone 2) since 2003, was interviewed on 2/3/15. He is a long time resident of the area and a past chairman of the Environmental Committee for the Florida Cattlemen's Association. He has cattle holdings throughout the state of Florida. As a boy he hunted the area and has had a hand in clearing the wet prairie to improve cattle production. Mr. Lefile was familiar with the species and reported their occurrence within the marl flats off Lake Jesup to the south and near the St. Johns River crossing at SR 46 east of Geneva. He has not observed them on his lease site.

Jim Duby, Seminole County Natural Lands Program Manager, was interviewed on 2/11/15. He reported that he travels on SR 46 most work days and that last year (2014) he observed caracara foraging the recently cleared area at the southwest quadrant of the bridge within the LJCA (Zone 2). Mr. Duby further stated that he has not observed caracara in that area this year.

Mr. W.D. Ainsworth was interviewed on 4/29/15. He holds leases on several pastures surrounding the caracara nest identified near the intersection of Beardall Avenue and Hughey Street. He stated that he has observed caracara in the area for a number of years. He was knowledgeable of the current nest site but stated that he has seen them nest in other nearby locations as well.

Crested Caracara Survey Results

A summary of the crested caracara field survey observations conducted from January to April 2015 is provided within Table 1 (Appendix 4). During these surveys, no caracaras were observed within any of the five zones delimited at the onset of the project.

In response to interviews and coordination with representatives of the Christmas bird counts participants and the Audubon Society, additional survey stations were established within a zone (Zone CT) outside of the SR 46 PD&E Study project area (Appendix 2). This zone lies west of SR 415 and is centered on an abandoned house located in the southeast quadrant of the intersection of Beardall Avenue and Hughey Street (which is approximately 4,000 feet northwest of the western terminus of the SR 46 PD&E Study project).

Between January and April 2015, caracaras were observed by the EMD observer on separate days within Zone CT or near the copse of palm trees adjacent to the abandoned house where the nest was reported in 2005 (Appendix 4). Roadkills were infrequent along SR 46 within the SR 46 PD&E Study area and on no occasion were crested caracaras observed near or feeding roadside. On two occasions (2/3/15 and 2/18/15) roadkills observed outside the SR 46 PD&E Study Area were relocated to the pasture immediate south of the abandoned house within Zone CT. Subsequently, caracaras were observed feeding and interacting with vultures.

On 3/3/15 during an on-site inspection of the grounds surrounding the abandoned house within Zone CT, the EMD observer was overflown by an adult caracara which perched on an abandoned garage south of the palms. Shortly after, the observer heard a caracara alarm call coming from the palms. The vocalizing caracara remained hidden. On 4/14/15 two juvenile caracaras were observed perched on a rooftop of that abandoned house. While no nest was identified within the copse of palms during a survey conducted on 4/30/15, the cryptic and primitive nature of the caracara nest can make identification difficult. Behavior of the adults on 3/3/15, and the later presence of juveniles nearby, suggests the presence of a nest in this area.

Conclusions

Coordination with USFWS regarding crested caracaras within the SR 46 PD&E Study area was initiated on 12/16/14 with Jane Monahan (USFWS North Florida Ecological Services Office). The SR 46 PD&E Study crested caracara survey plan following the USFWS published "DRAFT Survey Protocol for Finding Caracara Nests" (April 20, 2004) was forwarded to USFWS on 12/17/14 and the survey commenced 1/5/15. Subsequent coordination continued with Heather Tipton (USFWS South Florida Ecological Services Office) and Zakia Williams (NFESO) following Ms. Monahan's retirement. Coordination with USFWS continued throughout the duration of the survey.

A conference call between Zakia Williams (NFESO) and Catherine Owen (FDOT) documented in an email (3/26/15) detailed survey protocol requirements and established conditions for a USFWS finding of "may affect, not likely to adversely affect" (Appendix 3). Additional information was requested and provided to USFWS. The crested caracara survey resulted in no crested caracaras being observed nesting or foraging within the SR 46 PD&E Study area during the survey conducted between January and April 2015. In conclusion, since no crested caracaras or their nests have been found within the SR 46 corridor from SR 415 to CR 426 during the current survey, a determination has been made that the construction of the SR 46 roadway improvements "may affect, not likely to adversely affect" the regional population of crested caracaras. The Department is committed to performing another field survey for crested caracaras closer to the time of construction and after further coordination with USFWS.

References

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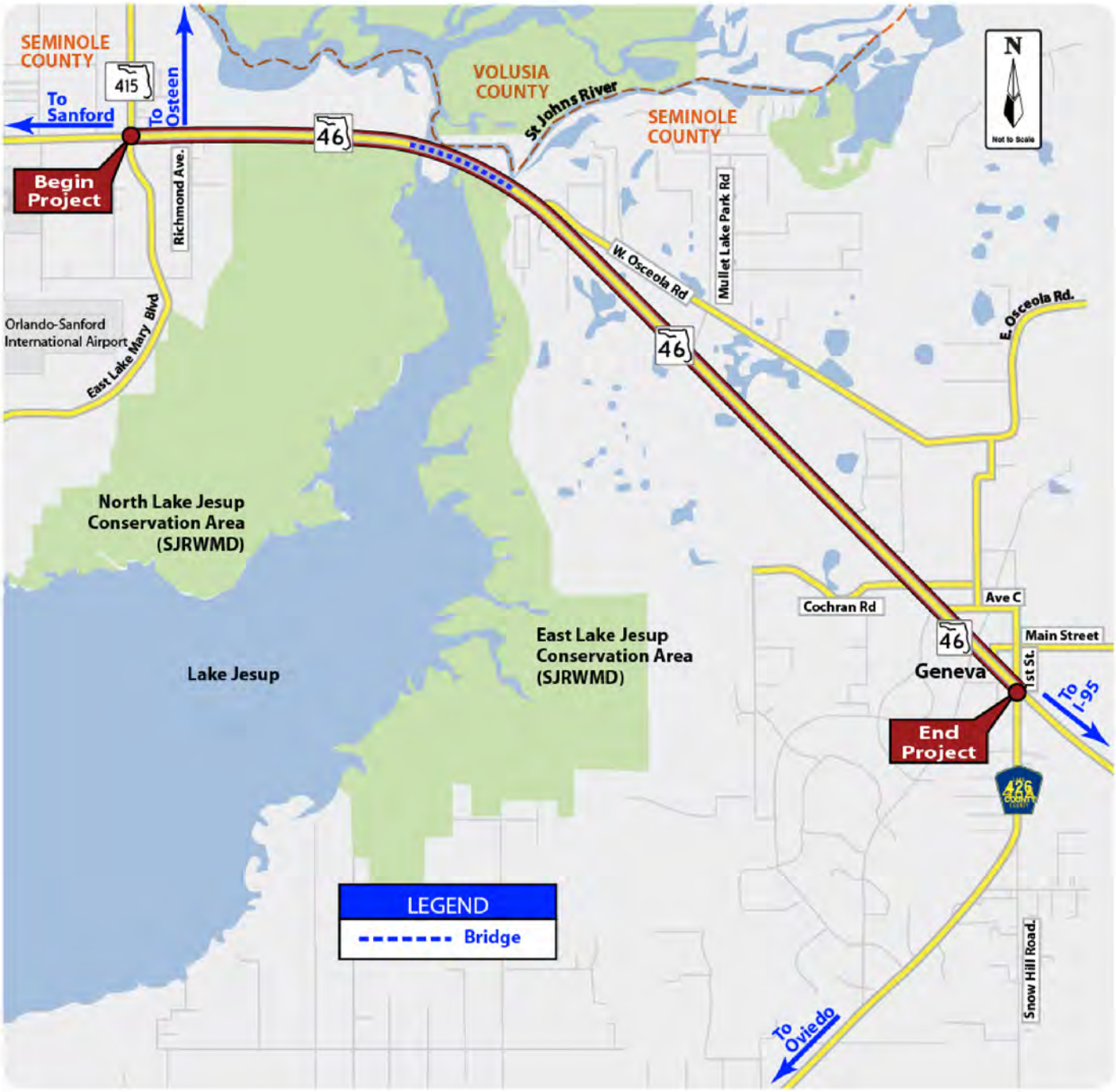
APPENDIX 1

Figure 1 - Project Location Map



STATE RD 46 PD&E STUDY

Project Location Map

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 1

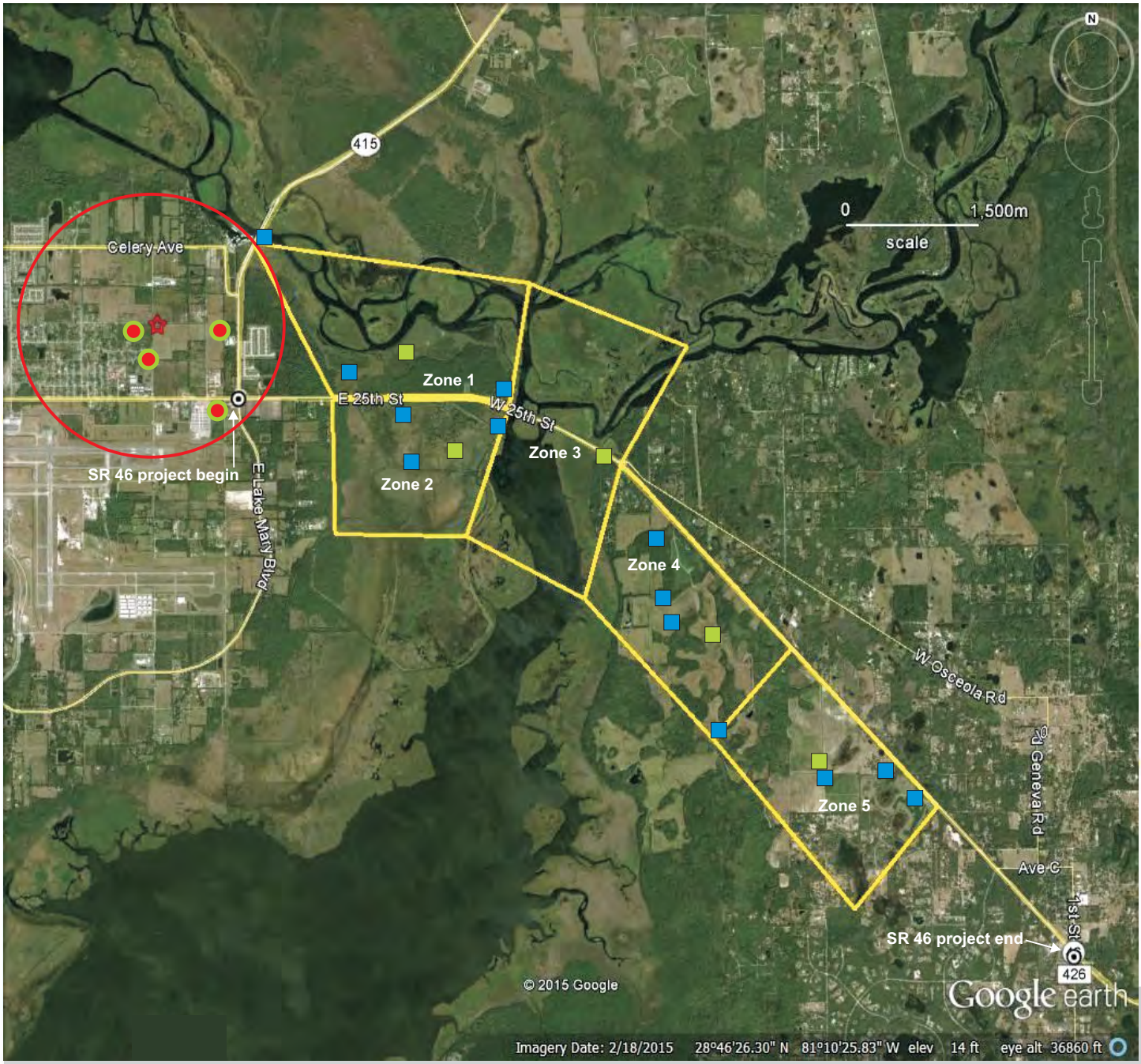
SCALE: NTS

JOB NO.: 10.20

DATE: 11/19/2013

APPENDIX 2

Figure 2 - Crested Caracara Survey Map
Figure 3 - Crested Caracara Nest Zone



Survey Zone Area

Nest Zone (1,500 meters)

Crested Caracara Observation

Crested Caracara Nest

Primary Survey Station

Secondary Survey Station

STATE RD 46 PD&E STUDY

Crested Caracara Survey Map

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

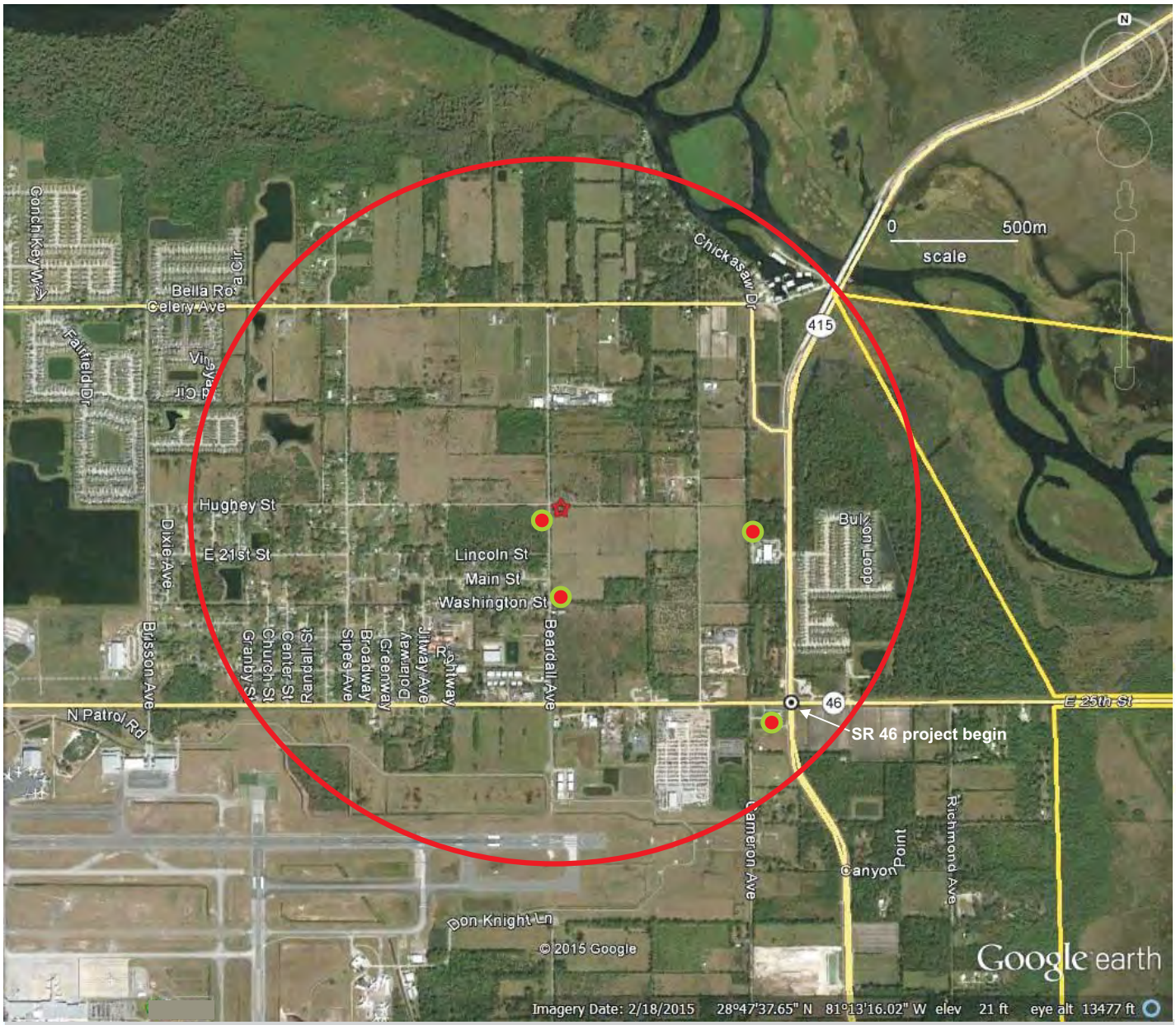
Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 2

SCALE: SEE BAR SCALE

JOB NO.: 10.20

DATE: 08/27/2015



Nest Zone (1,500 meters)

Crested Caracara Observation

Crested Caracara Nest

Survey Zone Area

STATE RD 46 PD&E STUDY

Crested Caracara Nest Zone

SR 46 PD&E Study

SR 46 from SR 415 to CR 426

Sections 34 and 35, Township 19S, Range 31E, Sections 1, 2 and 3, Township 20S, Range 31E, and Sections 6, 7, 8, 16, 17, 21 and 22, Township 20S, Range 32 E, Seminole County, Florida

FIGURE: 3

SCALE: SEE BAR SCALE

JOB NO.: 10.20

DATE: 08/27/2015

APPENDIX 3

Conference Call Notes Between USFWS and FDOT

Owen, Catherine

From: Williams, Zakia <zakia_williams@fws.gov>
Sent: Thursday, March 26, 2015 2:46 PM
To: Owen, Catherine
Cc: McGehee, Mary; Lyon, Casey
Subject: Re: DRAFT Conference Call Notes w/USFWS RE: SR 46 PD&E Study (#240216-4)

Cathy,

- Zakia recognizes we are in the PD&E phase on several projects, and as they move further into design/construction she knows the surveys will exceed their life expectancy and need to be redone. For SR 46, she asked if subsequent surveys for caracara would be conducted and Casey replied yes. Mary and Cathy assured her that FDOT will ensure there will be a PD&E Study Commitment to reinitiate species surveys if the timeframe (e.g., 2 years-caracara, 2 years-scrub jays, gopher tortoise-90 days) exceeds the PD&E Study - which for SR 46 it will. Concur

- Zakia understands in order for FHWA to approve our NEPA document they are requiring an Effects Determination from FWS, and that we need one of two things from FWS: Concurrence w/MANLAA or enter into a Biological Opinion (which would entail a plan for mitigation). Concur

- Zakia expressed concerns that the Draft survey protocol is not being completely followed on the SR 46 project. Casey noted that the currently approved survey protocol is being followed (one observer covering each of 5 stations within the same one-week period, i.e., changing stations each day within the week of survey). Cathy noted various other surveys are occurring which follow the newer Draft survey protocol per Heather Tipton (multiple surveyors at different stations on the same day, in coordination with each other). Concur

- Zakia then indicated some concern that consultants are following the draft protocol distributed by the species recovery lead and not the currently approved survey protocol. She did seem to also have concerns with the approach the Vero Beach office takes, where an observer can move from station to station within the three-hour survey window. The USFWS' Jacksonville and Vero Beach offices are in coordination to try to address the issue of survey discrepancies. Concur

- The SR 46 consultant has reported that a "potential" caracara nest has been located, and Zakia will attempt to make a field visit to verify as soon as possible. I am requesting additional information from the consultant such as pictures of the potential nest, a map with the nest location and daily survey data sheets to determine if a site visit is necessary.

- Mary asked if the current survey would be accepted by FWS, and Zakia indicated that this will still be considered a "valid" survey. If there are no caracara found within the corridor she would be comfortable granting a MANLAA letter (not a conditional MANLAA) – a fully clear "may affect, not likely to affect determination" -- which in turn, for FDOT means that FHWA would be able to grant LDCA. FWS will concur with a MANLAA if there are no caracra found within the corridor and it is understood that FDOT will conduct subsequent surveys closer to construction. If at that time the survey reveals additional nest, the FDOT will reiniate consultation with the FWS.

Thank you,

On Fri, Mar 20, 2015 at 11:34 AM, Owen, Catherine <Catherine.Owen@dot.state.fl.us> wrote:

Zakia – could you please review/comment on this draft summary of the March 17, 2015 teleconference regarding the SR 46 PD&E Study's ongoing caracara survey:

- Zakia recognizes we are in the PD&E phase on several projects, and as they move further into design/construction she knows the surveys will exceed their life expectancy and need to be redone. For SR 46, she asked if subsequent surveys for caracara would be conducted and Casey replied yes. Mary and Cathy assured her that FDOT will ensure there will be a PD&E Study Commitment to reinitiate species surveys if the timeframe (e.g., 2 years-caracara, 2 years-scrub jays, gopher tortoise-90 days) exceeds the PD&E Study - which for SR 46 it will.

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THANK YOU and Regards

Catherine B. Owen, M.S.

Senior Environmental Scientist

District Cultural Resources Coordinator

FDOT District Five

719 S. Woodland Blvd.

DeLand FL 32720

phone (386) 943-5383

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Zakia Williams

Fish and Wildlife Biologist

US Fish and Wildlife Service

7915 Baymeadows Way Ste. 200

Jacksonville, FL 32256

(o) 904-731-3326

APPENDIX 4

Table 1 - Crested Caracara Field Survey Observations Summary

Table 1: Crested Caracara (CRCA) field survey observations summary.

Rotation	Date	Location		Zone ID[1]	Station type[2]	Start time	End time	Results
		lat	lon					
1	01/05/15	28.793887	-81.222475	CT	SS	9:30	10:00	CRCA observed on old house
1	01/06/15	28.748241	-81.131935	5	SS	6:52	11:00	no CRCA observed
1	01/06/15	28.788713	-81.200664	1	SS	12:00	13:00	no CRCA observed
1	01/07/15	28.801955	-81.210661	1	SS	6:53	11:00	no CRCA observed
1	01/07/15	28.785690	-81.191729	2	SS	12:00	13:15	no CRCA observed
1	01/08/15	28.781910	-81.170320	3	PS	6:53	9:30	no CRCA observed
1	01/08/15	28.786111	-81.181101	3	SS	9:30	11:00	no CRCA observed
1	01/08/15	28.786043	-81.181505	2	SS	12:00	13:00	no CRCA observed
1	01/12/15	28.763956	-81.156443	4	PS	7:00	11:00	no CRCA observed
1	01/12/15	28.754237	-81.156674	4	SS	11:30	13:00	no CRCA observed
1	01/12/15	28.750771	-81.144481	5	SS	14:00	15:15	no CRCA observed
2	01/19/15	28.754330	-81.144270	5	PS	6:52	11:00	no CRCA observed
2	01/19/15	28.794147	-81.223140	CT	SS	11:15	12:30	no CRCA observed
2	01/20/15	28.789870	-81.196690	1	PS	6:57	11:00	no CRCA observed
2	01/22/15	28.780440	-81.189750	2	PS	6:51	11:00	no CRCA observed
2	01/22/15	28.792985	-81.216573	CT	SS	12:00	13:30	CRCA observed on old house
2	01/23/15	28.781760	-81.170270	3	PS	6:51	11:00	no CRCA observed
2	01/23/15	28.793000	-81.216560	CT	SS	12:52	14:40	CRCA observed on house & earpod tree
2	01/26/15	28.764260	-81.156750	4	PS	6:51	11:00	no CRCA observed
2	01/26/15	28.792981	-81.216606	CT	SS	12:00	12:30	CRCA observed on house & earpod tree
2	01/26/15	28.793268	-81.222695	CT	SS	12:30	14:00	CRCA observed on house & earpod tree
3	02/02/15	28.781820	-81.170300	3	PS	6:30	10:00	no CRCA observed
3	02/02/15	28.793000	-81.216560	CT	SS	11:00	12:15	no CRCA observed
3	02/03/15	28.780440	-81.189750	2	PS	6:20	10:00	no CRCA observed
3	02/03/15	28.794310	-81.222750	CT	SS	10:45	11:45	no CRCA observed
3	02/03/15	28.786110	-81.181110	3	SS	12:30	13:30	no CRCA observed
3	02/03/15	28.792707	-81.222718	CT	SS	14:15	15:00	CRCA responded to placement of roadkill
3	02/04/15	28.789870	-81.196690	1	PS	6:46	10:00	no CRCA observed
3	02/04/15	28.786120	-81.181690	2, 3	SS	10:45	13:00	no CRCA observed
3	02/04/15	28.792070	-81.222720	CT	SS	13:15	14:15	CRCA around previously placed roadkill
3	02/05/15	28.764270	-81.156720	4	PS	6:45	10:00	no CRCA observed
3	02/05/15	28.767200	-81.162130	4	SS	10:15	13:00	no CRCA observed
3	02/05/15	28.794150	-81.223140	CT	SS	14:00	14:30	CRCA observed on old house
3	02/09/15	28.754330	-81.144270	5	PS	6:44	10:00	no CRCA observed
3	02/09/15	28.747112	-81.135145	5	SS	10:30	12:30	no CRCA observed
3	02/09/15	28.792985	-81.216573	CT	SS	13:30	14:30	CRCA observed on earpod tree
4	02/16/15	28.781744	-81.170320	3	PS	6:38	10:00	maybe 1 CRCA near boat ramp//obs from distance
4	02/16/15	28.786122	-81.181576	2, 3	SS	10:30	12:30	no CRCA observed
4	02/16/15	28.794297	-81.222727	CT	SS	12:45	13:45	CRCA observed on old house
4	02/17/15	28.780882	-81.189203	2	PS	6:38	10:00	no CRCA observed
4	02/17/15	28.780866	-81.191743	2	SS	10:15	12:30	no CRCA observed
4	02/17/15	28.794211	-81.223227	CT	SS	13:15	14:00	CRCA M & F observed flying around old house
4	02/18/15	28.764253	-81.156926	4	PS	6:37	10:30	no CRCA observed
4	02/18/15	28.792759	-81.216547	CT	SS	11:00	13:00	CRCA responded to placement of roadkill
4	02/23/15	28.789851	-81.196485	1	PS	6:32	10:30	no CRCA observed
4	02/24/15	28.754370	-81.144359	5	PS	6:31	10:00	no CRCA observed
4	02/24/15	28.747140	-81.135157	5	SS	10:15	13:00	no CRCA observed
5	03/03/15	28.781535	-81.170129	3	PS	6:24	10:00	no CRCA observed
5	03/03/15	28.792000	-81.222671	CT	SS	10:30	13:00	CRCA M & F observed flying around old house
5	03/04/15	28.764317	-81.156753	4	PS	6:23	10:00	no CRCA observed
5	03/04/15	28.765107	-81.161631	4	SS	10:15	13:15	no CRCA observed
5	03/05/15	28.780868	-81.189169	2	PS	6:08	10:00	no CRCA observed
5	03/05/15	28.786045	-81.181607	2, 3	SS	10:30	13:30	no CRCA observed
5	03/06/15	28.754247	-81.144372	5	PS	6:21	10:00	no CRCA observed
5	03/06/15	28.747220	-81.135225	5	SS	10:30	13:30	no CRCA observed
5	03/09/15	28.789876	-81.196572	1	PS	7:12	10:18	no CRCA observed
5	03/09/15	28.792672	-81.216641	CT	SS	10:50	13:50	CRCA observed on earpod tree
6	03/16/15	28.763956	-81.156443	4	PS	7:10	10:10	no CRCA observed
6	03/16/15	28.773794	-81.166201	4	SS	10:30	13:30	no CRCA observed
6	03/16/15	28.792672	-81.216641	CT	SS	14:00	15:00	CRCA observed on earpod tree

Table 1: Crested Caracara (CRCA) field survey observations summary.

Rotation	Date	Location		Zone ID[1]	Station type[2]	Start time	End time	Results
		lat	lon					
6	03/17/15	28.781016	-81.188576	2	PS	7:09	10:15	no CRCA observed
6	03/17/15	28.786156	-81.181574	2, 3	SS	11:00	14:00	no CRCA observed
6	03/18/15	28.754169	-81.144061	5	PS	7:08	10:15	no CRCA observed
6	03/24/15	28.789876	-81.196572	1	PS	7:01	10:15	no CRCA observed
6	03/24/15	28.792985	-81.216573	CT	SS	10:45	13:45	CRCA obs on sentinel tree
6	03/25/15	28.781730	-81.170350	3	PS	6:59	10:10	no CRCA observed
7	03/30/15	28.754169	-81.144061	5	PS	6:53	10:15	no CRCA observed
7	03/31/15	28.764234	-81.156769	4	PS	6:52	10:15	no CRCA observed
7	04/01/15	28.789782	-81.196713	1	PS	6:51	10:15	no CRCA observed
7	04/02/15	28.780838	-81.189101	2	PS	6:50	10:15	no CRCA observed
7	04/06/15	28.781778	-81.170287	3	PS	6:45	10:00	no CRCA observed
7	04/06/15	28.792985	-81.216573	CT	SS	10:15	13:15	no CRCA observed
8	04/13/15	28.764287	-81.156756	4	PS	6:37	10:00	no CRCA observed
8	04/14/15	28.792053	-81.222597	CT	SS	6:36	10:00	numerous sightings from blind: 2A/2J
8	04/15/15	28.781031	-81.187511	2	PS	6:35	10:00	no CRCA observed
8	04/20/15	28.789782	-81.196713	1	PS	6:30	10:00	no CRCA observed
8	04/21/15	28.781744	-81.170335	3	PS	6:29	10:00	no CRCA observed
9	04/27/15	28.754304	-81.144305	5	PS	6:23	10:00	no CRCA observed
9	04/28/15	28.764409	-81.156583	4	PS	6:22	10:00	no CRCA observed
9	04/29/15	28.781744	-81.170335	3	PS	6:21	10:00	no CRCA observed
9	04/30/15	28.781111	-81.187716	2	PS	6:20	10:00	no CRCA observed

Legend

[1]Zone ID CT = caracara territory outside of project limits

[2]Station type: PS = Primary Station

SS = Secondary Station

APPENDIX 8

USFWS/FFWCC
BALD EAGLE COORDINATION

Florida Department of Transportation

RICK SCOTT
GOVERNOR

719 S. Woodland Boulevard
DeLand, Florida 32720-6834

JIM BOXOLD
SECRETARY

December 1, 2016

Ms. Michelle van Deventer
Bald Eagle Plan Coordinator
Florida Fish and Wildlife Conservation Commission
620 S. Meridian Street, Mail Station 2A
Tallahassee, Florida 32399-1600

RE: State Road 46 Project Development and Environment (PD&E) Study from East of State Road 415 (SR 415) to County Road 426 (CR 426)
Bald Eagle Coordination
FPID: 240216-4-28-1
Seminole County, Florida

Dear Ms. van Deventer:

Seminole County, in coordination with the Florida Department of Transportation (FDOT), District Five, is conducting a Project Development and Environment (PD&E) Study to evaluate possible alternative improvements to widen State Road 46, from east of State Road 415 to County Road 426 (**Figure A**). The build alternatives include a roadway widening from a two-lane undivided roadway to a four-lane divided roadway. The proposed four-laning would result in the construction of a new bridge causeway over Lake Jesup, a parallel structure and of the same length, on the north side of the newly constructed Lake Jesup Bridge.

The SR 46 widening project will serve as an improvement to a major hurricane evacuation route for northern Brevard and southern Volusia Counties. This evacuation route is imperative for those counties since the nearest east-west evacuation routes are located approximately 8 miles to the south (State Road 50) and approximately 25 miles to the north (State Road 44). State Road 50, the nearest alternative route, is anticipated to be over capacity by year 2035.

The overall project will alleviate traffic congestion and correct safety and roadway deficiencies. The specific transportation needs include:

- Provide a higher capacity east-west travel facility in Seminole County.
- Improve safety to reduce vehicle crash fatalities and injuries on SR 46.
- Develop a transportation facility that minimizes impacts to the area's resources.

The Florida Fish and Wildlife Conservation Commission (FFWCC) bald eagle (*Haliaeetus leucocephalus*) nest database provided a source of information statewide regarding nest identification numbers, nest locations, and status of nest activities within the past five years.

Reported nest locations are accurate to within 0.1 miles. Four nests have been reported within ½ mile of the proposed project. These nests include SE 034, SE 036, SE 051, and SE 082 (see attached **Figures A & B**). These figures also include the locations of several additional avian nests that were identified during the PD&E Study (2012-2013) as "uninventoried nests." All nests proximal to the project improvements are discussed below.

Nest SE 034 – Nest SE 034 is located approximately 2,100 feet southwest of the SR 46 right of way within the City of Sanford Water Reclamation Facility. The last FFWCC eagle nest survey within this County (2015) documented that this nest was active. This project does not propose any construction activity within 660 feet of this nest.

Nest SE 051 – According to the FFWCC eagle nest database, the location of SE 051 is approximately 350 feet west of a proposed compensating storage pond. The FFWCC database documents that the nest has been inactive since 2008. Aerial photographs indicate that the location of this eagle nest is within a residential subdivision that was constructed in 2009. Project biologists verified that this nest was no longer present in 2016.

Residents of the Sterling Meadows subdivision reported (in 2012) that a pair of eagles had successfully nested in a nearby cell tower located approximately 2,300 feet southwest of SE 051. It has not been confirmed whether eagles or osprey are using this new nest. However, the project does not propose any construction activity within 660 feet of this nest.

Nest SE 082 –Nest SE 082 is located approximately 2,500 feet northeast of the SR 46 right-of-way. The last FFWCC eagle nest survey within this County (2015) documented that this nest was active. This project does not propose any construction activity within 660 feet of this nest.

Uninventoried eagle nest – Field reviews of the project area during the PD&E Study (2012-2013) determined that an eagle nest was located approximately 850 feet northeast of the SR 46 right-of-way within the boundary of a proposed compensating storage pond. In 2015 and 2016, additional field reviews were conducted to determine the exact location of this nest; however, the nest could not be located either year. It is therefore assumed that this nest no longer exists.

Nest SE 036 – The nearest active eagle nest, SE 036, is located approximately 100 feet northeast of the maintained SR 46 right-of-way, opposite the entrance road to the City of Sanford Water Reclamation Facility. The last FFWCC eagle nest survey within this County (2015) documented that this nest was active. In 2016 this nest was verified as still active. [As you may recall, coordination with Casey Lyon occurred with you in September 2016 for the interim safety improvements proximal to this nest.]

The proposed construction activities within 330 feet of this nest include roadway widening, bike lanes, and a shared use path (see attached **Figure C**). In an effort to avoid a disturbance of the use of this nest, the roadway widening and right of way expansion was designed to occur entirely along the southeast bound side of SR 46, further away than the existing roadway asphalt. As such, the proposed travel lanes will not be any closer to the eagle nest than the existing roadway. The activities proposed along northwest bound SR 46 include a bike lane and shared use path that will

occur within the existing cleared right of way. No new pavement of any kind is proposed within 100 feet of this nest. Please refer to the attached **typical section**.

The proposed project may cause a disturbance to eagle nest ***SE 036*** due to the proximity of these project improvements. Commitments that impose work restrictions that correspond to the bald eagle non-nesting season can be implemented. However, the design phase of this project is not scheduled until 2021. Therefore, we would like to request that additional surveys for eagle nests and agency coordination occur during design, to ascertain whether a disturbance permit is necessary.

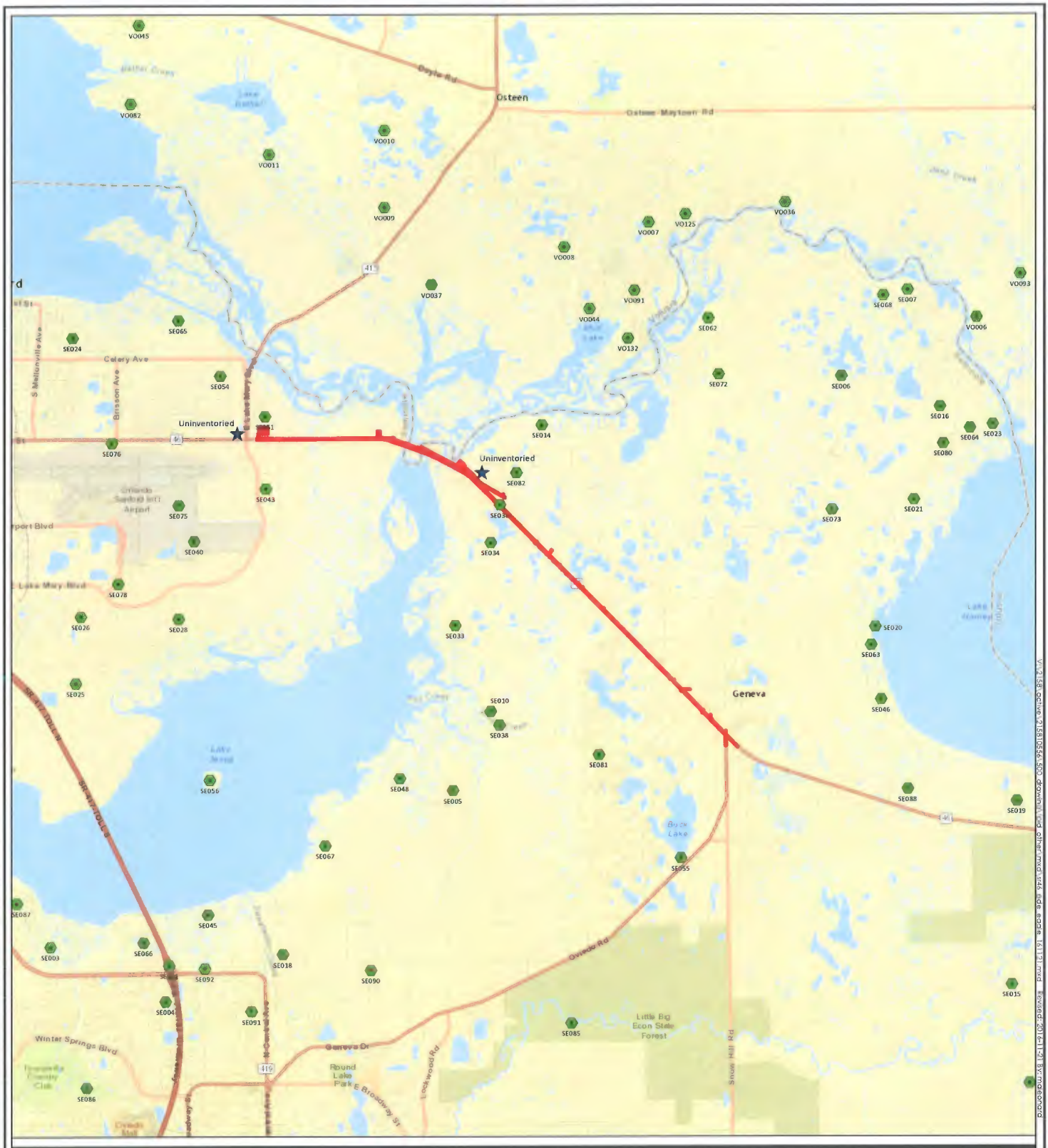
I appreciate your assistance with this project. If you have any questions, require additional information, or would like to visit the site, please contact Catherine Owen at (386) 943-5383 / catherine.owen@dot.state.fl.us or me at (386) 943-5411 / William.Walsh@dot.state.fl.us.

Sincerely,

FOR William G. Walsh
Environmental Manager
FDOT, District Five

Enclosures: Figures A, B, C and typical section

cc w/encl.: Terry Gilbert, FFWCC
Ulgonda Kirkpatrick, USFWS
Casey Lyon, FDOT D5
Chris Rizzolo, P.E., AECOM
Christian H. Miller, 3E Consultants, Inc.



Legend

- Project Limits
- FWC Eagle Nest Locator (2015)
- Uninventoried Nests

N

0 4,500 9,000

Feet

1:108,000 (at original document size of 8.5x11)

Notes

1. Coordinate System: Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet
2. Base features produced under license with ESRI, USA.
3. Background Images: Labins Seminole Co. 2012

Project Location: TRS	215810556 REVA
19S31E33-36 | 20S31E01-04 | 20S32E06-08,16,17,21,22	Prepared by RPeters on 11/21/2016
Seminole County, Florida	Technical Review by MDinardo on 11/21/2016
	Independent Review by MLeonard on 11/21/2016

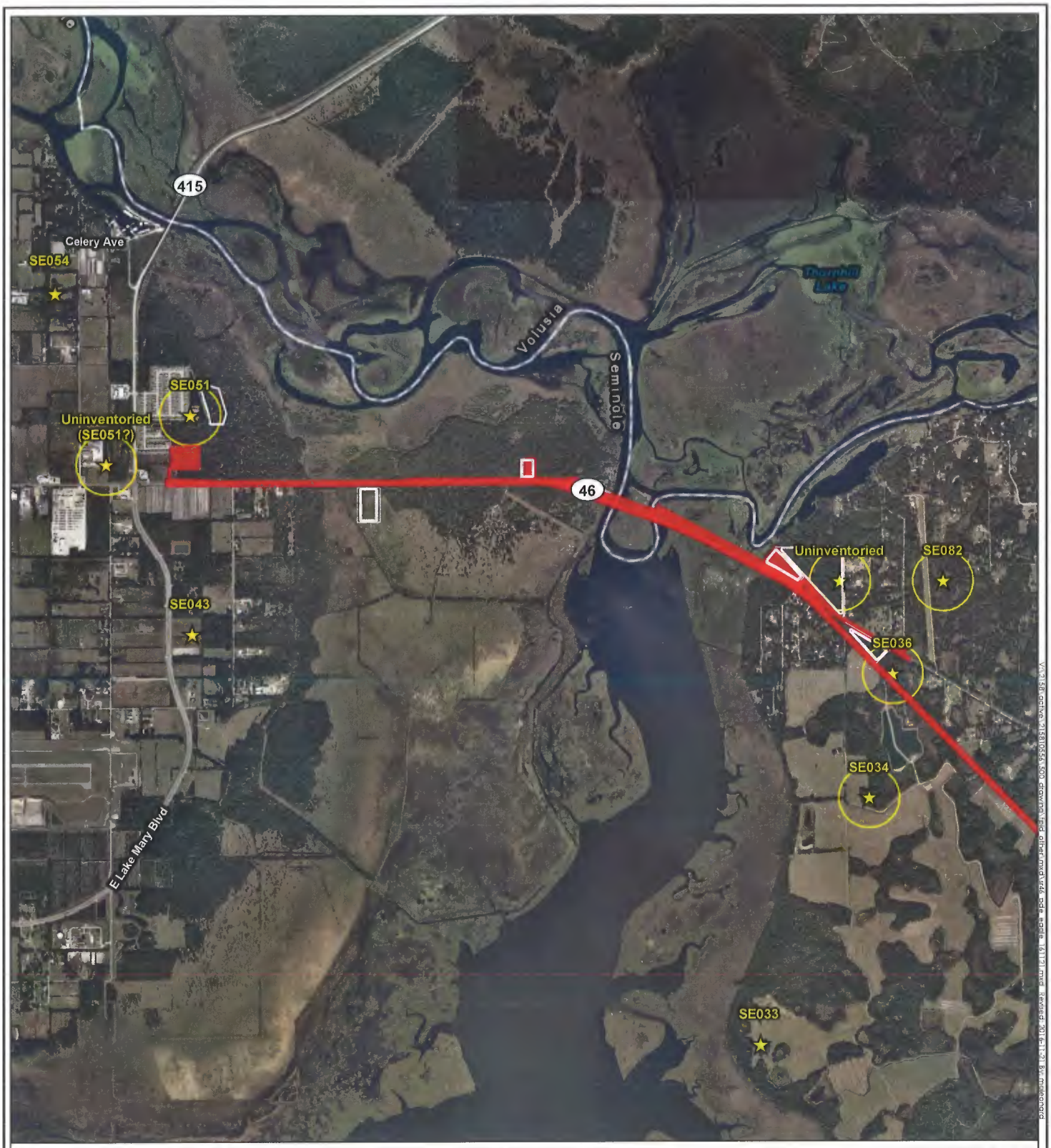
Client/Project

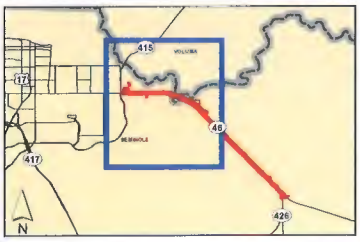
State Road 46 Project Development and Environment (PD&E) Study from east of State Road 415 (SR415) to County Road 426 (CR 426)
Bald Eagle Coordination
FDIP: 240216-4-28-1

Figure No.	Sheet No.	Status
A	1	FINAL

Title

Location Map





Notes
1. Coordinate System: Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet
2. Base features produced under license with ESRI, USA.
3. Background Images: Labins Seminole Co. 2012

Legend

- Project Right of Way
- Eagle Nest
- 660 Ft. Buffer

FDOT

N

0 1,500 3,000
Feet
1:36,000 (at original document size of 8.5x11)

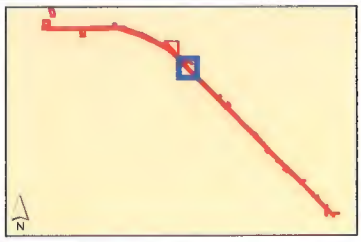
Project location: TRS
19S31E33-36 | 20S31E01-04 |
20S32E06-08,16,17,21,22
Seminole County, Florida

215810556 REVA
Prepared by RPeters on 11/21/2016
Technical Review by MDinardo on 11/21/2016
Independent Review by MLeonard on 11/21/2016

Client/Project
State Road 46 Project Development and Environment (PD&E) Study from east of State Road 415 (SR415) to County Road 426 (CR 426)
Bald Eagle Coordination
FDIP: 240216-4-28-1

Figure No. B | Sheet No. 1 | Status FINAL

Title
Aerial Map



Notes
1. Coordinate System: Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet
2. Base features produced under license with ESRI, USA.
3. Background Images: Labins Seminole Co. 2012

Legend

- Eagle Nest
- Retention Areas

FDOT

N

0 125 250

Feet

1:3,100 (at original document size of 8.5x11)

Project Location: TRS
19S31E33-36 | 20S31E01-04 |
20S32E06-08,16,17,21,22
Seminole County, Florida

215810556 REVA
Prepared by RPeters on 11/30/2016
Technical Review by MDinardo on 11/30/2016
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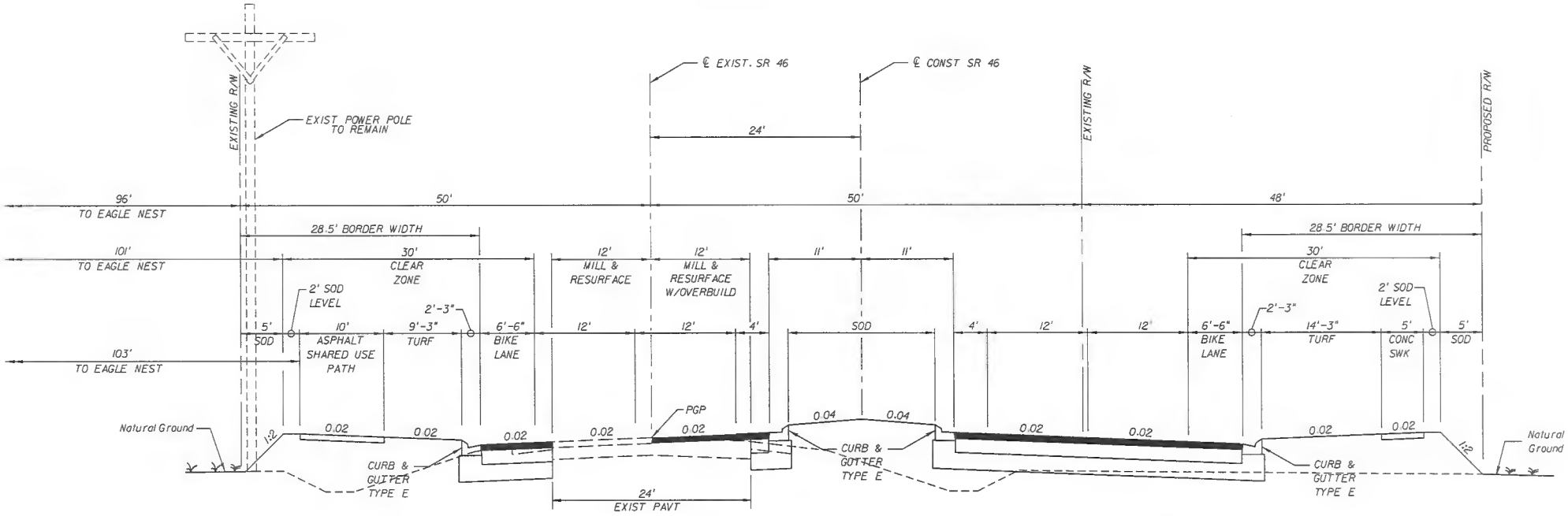
Client/Project
State Road 46 Project Development and Environment (PD&E) Study from east of State Road 415 (SR415) to County Road 426 (CR 426)
Bald Eagle Coordination
FDIP: 240216-4-28-1

Figure No.	Sheet No.	Status
C	1	FINAL

Title

Eagle Nest SE 036



Northwestbound

Southeastbound

Typical Section adjacent to Bald Eagle Nest SE 036

FDOT

Florida Department of Transportation

RICK SCOTT
GOVERNOR

719 S. Woodland Boulevard
DeLand, Florida 32720-6834

JIM BOXOLD
SECRETARY

December 1, 2016

Ms. Resee Collins
Regional Eagle Coordinator
US Fish & Wildlife Service, Southeast Region
PO Box 49208
Atlanta, GA 30359

RE: State Road 46 Project Development and Environment (PD&E) Study from East of State Road 415 (SR 415) to County Road 426 (CR 426)
Bald Eagle Coordination
FPID: 240216-4-28-1
Seminole County, Florida

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Nest SE 034 – Nest SE 034 is located approximately 2,100 feet southwest of the SR 46 right of way within the City of Sanford Water Reclamation Facility. The last FFWCC eagle nest survey within this County (2015) documented that this nest was active. This project does not propose any construction activity within 660 feet of this nest.

Nest SE 051 – According to the FFWCC eagle nest database, the location of SE 051 is approximately 350 feet west of a proposed compensating storage pond. The FFWCC database documents that the nest has been inactive since 2008. Aerial photographs indicate that the location of this eagle nest is within a residential subdivision that was constructed in 2009. Project biologists verified that this nest was no longer present in 2016.

Residents of the Sterling Meadows subdivision reported (in 2012) that a pair of eagles had successfully nested in a nearby cell tower located approximately 2,300 feet southwest of SE 051. It has not been confirmed whether eagles or osprey are using this new nest. However, the project does not propose any construction activity within 660 feet of this nest.

Nest SE 082 –Nest SE 082 is located approximately 2,500 feet northeast of the SR 46 right-of-way. The last FFWCC eagle nest survey within this County (2015) documented that this nest was active. This project does not propose any construction activity within 660 feet of this nest.

Uninventoried eagle nest – Field reviews of the project area during the PD&E Study (2012-2013) determined that an eagle nest was located approximately 850 feet northeast of the SR 46 right-of-way within the boundary of a proposed compensating storage pond. In 2015 and 2016, additional field reviews were conducted to determine the exact location of this nest; however, the nest could not be located either year. It is therefore assumed that this nest no longer exists.

Nest SE 036 – The nearest active eagle nest, SE 036, is located approximately 100 feet northeast of the maintained SR 46 right-of-way, opposite the entrance road to the City of Sanford Water Reclamation Facility. The last FFWCC eagle nest survey within this County (2015) documented that this nest was active. In 2016 this nest was verified as still active. [As you may recall, coordination with Casey Lyon occurred with you in September 2016 for the interim safety improvements proximal to this nest.]

The proposed construction activities within 330 feet of this nest include roadway widening, bike lanes, and a shared use path (see attached **Figure C**). In an effort to avoid a disturbance of the use of this nest, the roadway widening and right of way expansion was designed to occur entirely along the southeast bound side of SR 46, further away than the existing roadway asphalt. As such, the proposed travel lanes will not be any closer to the eagle nest than the existing roadway. The activities proposed along northwest bound SR 46 include a bike lane and shared use path that will

occur within the existing cleared right of way. No new pavement of any kind is proposed within 100 feet of this nest. Please refer to the attached **typical section**.

The proposed project may cause a disturbance to eagle nest ***SE 036*** due to the proximity of these project improvements. Commitments that impose work restrictions that correspond to the bald eagle non-nesting season can be implemented. However, the design phase of this project is not scheduled until 2021. Therefore, we would like to request that additional surveys for eagle nests and agency coordination occur during design, to ascertain whether a disturbance permit is necessary.

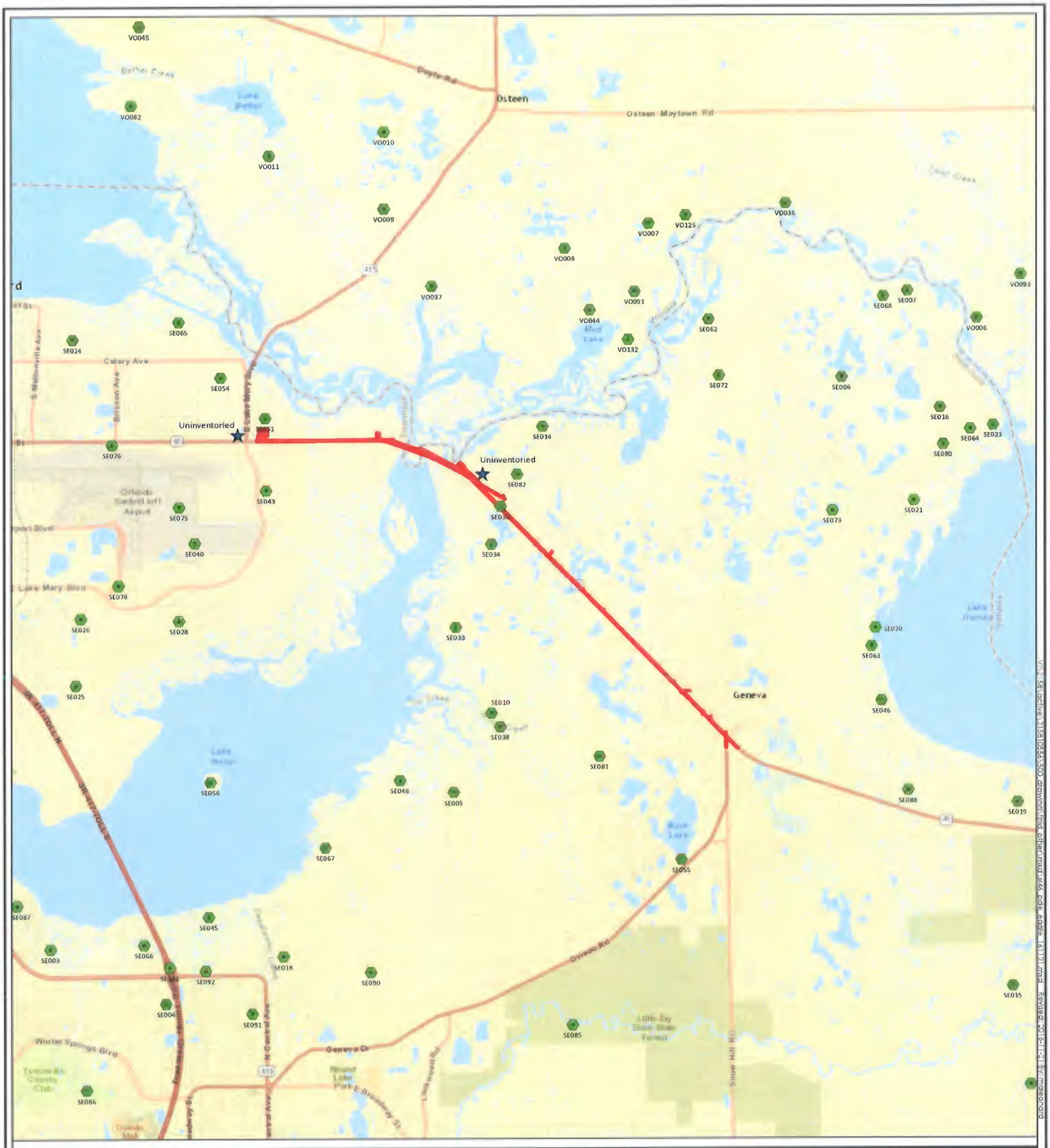
I appreciate your assistance with this project. If you have any questions, require additional information, or would like to visit the site, please contact me at (386) 943-5411 or William.Walsh@dot.state.fl.us.

Sincerely,

FOR William G. Walsh
Environmental Manager
FDOT, District Five

Enclosures: Figures A, B, C and typical section

cc w/encl.: Ulgonda Kirkpatrick, USFWS
Zakia Williams, USFWS
Casey Lyon, FDOT District 5
Chris Rizzolo, P.E., AECOM
Christian H. Miller, 3E Consultants, Inc.



Legend

- Project Limits
- FWC Eagle Nest Locator (2015)
- ★ Uninventoried Nests

N

0 4,500 9,000

Feet

1:108,000 (at original document size of 8.5x11)

Notes

1. Coordinate System: Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet
2. Base features produced under license with ESRI, USA.
3. Background Images: Labins Seminole Co. 2012

Project Location: TRS
19S31E33-36 | 20S31E01-04 |
20S32E06-08,16,17,21,22
Seminole County, Florida

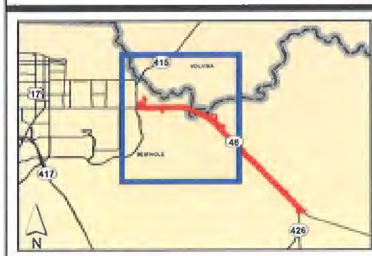
215810556 REVA
Prepared by RPeters on 11/21/2016
Technical Review by MDinardo on 11/21/2016
Independent Review by MLeonard on 11/21/2016

Client/Project
State Road 46 Project Development and Environment (PD&E) Study from east of State Road 415 (SR415) to County Road 426 (CR 426)
Bald Eagle Coordination
FDIP: 240216-4-28-1

Figure No.	Sheet No.	Status
A	1	FINAL

Title

Location Map



Legend

- Project Right of Way
- Eagle Nest
- 660 Ft. Buffer

Notes

1. Coordinate System: Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet
2. Base features produced under license with ESRI, USA.
3. Background Images: Labins Seminole Co. 2012

Service Layer Credits: Esri, HERE, DeLorme, TomTom, Mapmyindia, © OpenStreetMap contributors, and the GIS user community

N

0 1,500 3,000
Feet
1:36,000 (at original document size of 8.5x11)

Project Location: TRS
19S31E33-36 | 20S31E01-04 |
20S32E06-08,16,17,21,22
Seminole County, Florida

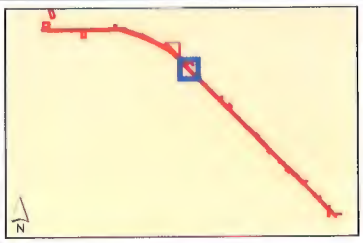
215810556 REVA
Prepared by RPeters on 11/21/2016
Technical Review by MDinardo on 11/21/2016
Independent Review by MLeonard on 11/21/2016

Client/Project
State Road 46 Project Development and Environment (PD&E) Study from east of State Road 415 (SR415) to County Road 426 (CR 426)
Bald Eagle Coordination
FDIP: 240216-4-28-1

Figure No.	Sheet No.	Status
B	1	FINAL

Title

Aerial Map



Notes
1. Coordinate System: Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet
2. Base features produced under license with ESRI, USA.
3. Background Images: Labins Seminole Co. 2012

Legend

- Eagle Nest
- Retention Areas

FDOT

N

0 125 250
Feet
1:3,100 (at original document size of 8.5x11)

Project Location: TIS
19531E33-36 | 20531E01-04 | 20532E06-08,16,17,21,22
Seminole County, Florida

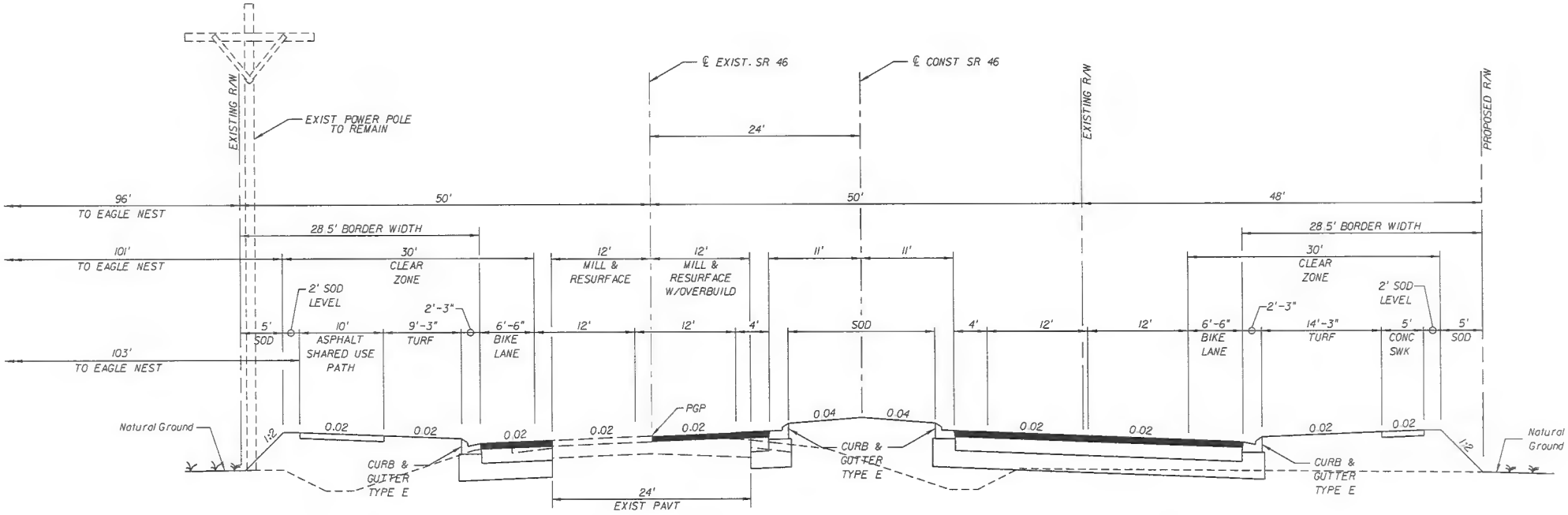
215810556 REVA
Prepared by RPeters on 11/30/2016
Technical Review by MDinardo on 11/30/2016
Independent Review by MLeonard on 11/30/2016

Client/Project
State Road 46 Project Development and Environment (PD&E) Study from east of State Road 415 (SR415) to County Road 426 (CR 426)
Bald Eagle Coordination
FDIP: 240216-4-28-1

Figure No. C | Sheet No. 1 | Status FINAL

Title

Eagle Nest SE 036



Northwestbound

Southeastbound

Typical Section adjacent to Bald Eagle Nest SE 036

APPENDIX 9

FFWCC COORDINATION

Christian H. Miller

From: Stearns, Janice <Janice.Stearns@MyFWC.com>
Sent: Friday, September 14, 2012 1:38 PM
To: Christian H. Miller
Subject: RE: Wading bird/wood stork colonies and foraging ranges
Attachments: 2012_5855h.pdf

Mr. Miller,

I created this map with a ten mile radius of the project site. I included wood stork foraging areas, shore birds telemetry and nests, and wading bird rookeries; there were no telemetry points for wood storks. Please let me know if I can be of further assistance.

Jan Stearns
FWRI/IS&M
850-488-0588

From: Christian H. Miller [mailto:cmiller@emd-inc.net]
Sent: Thursday, September 13, 2012 11:20 AM
To: Stearns, Janice
Subject: Wading bird/wood stork colonies and foraging ranges

Janice,

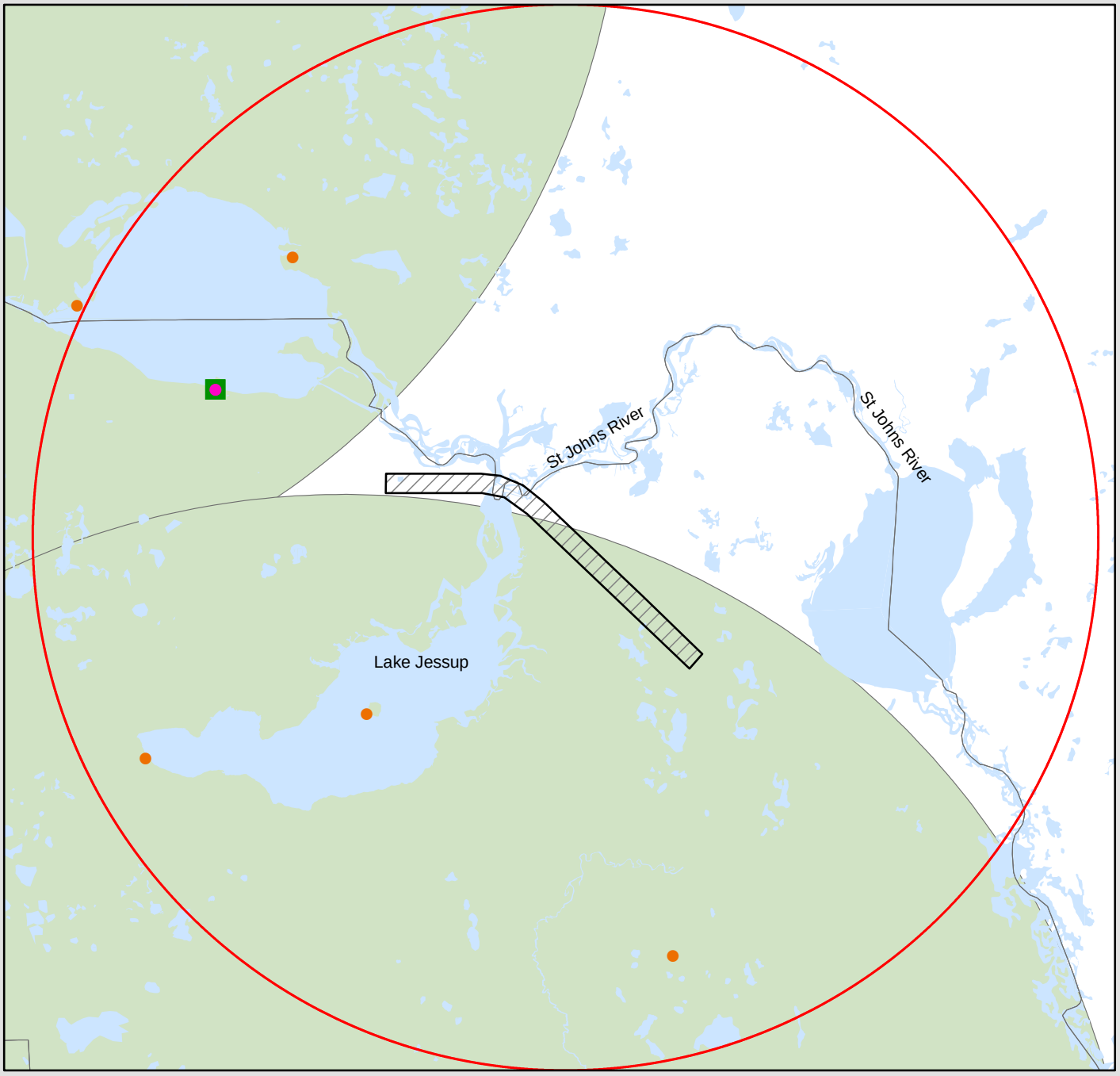
Would you please provide me with information and/or data reflecting wading bird/wood stork colonies and foraging ranges within the effective range of this project? An FWS map showing 15 mile CORE ranges suggests that one WOST colony may be in distance but I have no location information for that colony.

Thank you

Christian H. Miller, MBA, PWS
Environmental Management & Design, Inc.
1615 Edgewater Drive, Suite 100
Orlando, Florida 32804
Web site: emd-inc.net
Phone: 407.843.0615
FAX: 407.843.0616
Cell: 321.663.8242

Breeding Birds Telemetry, Nesting and Foraging Sites

SR 46 Road Improvement



- Shorebirds
- Wading Bird Rookeries 1999
- Shore Birds Nests 2002
- Wood Stork Foraging Areas
- County Boundary
- Project Site

0 3 6 9 Miles

N

2012_5855

APPENDIX 10

THE CORPS OF ENGINEERS, JACKSONVILLE DISTRICT, U.S. FISH AND WILDLIFE SERVICE, JACKSONVILLE ECOLOGICAL SERVICES FIELD OFFICE AND THE STATE OF FLORIDA 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.

APPENDIX 11

STANDARD PROTECTION MEASURES FOR THE EASTERN INDIGO SNAKE

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 12

USFWS/FFWCC
BALD EAGLE COORDINATION

Christian Miller

From: Kathy Hale <khale@emd-inc.net>
Sent: Tuesday, October 11, 2016 5:35 PM
To: Maurice Pearson
Cc: Christian Miller
Subject: FW: request for bald eagle coordination from FDOT
Attachments: Quick Reference Info FLEagle Regs.pdf

EMD Project #191.02 - This is the response from FWC. Please let me know what I should ask of Matthew Gibbs.
Kathy

From: Kathy Hale [mailto:khale@emd-inc.net]
Sent: Monday, October 10, 2016 5:07 PM
To: 'Matthew Robert Gibbs, P.E.'
Subject: FW: request for bald eagle coordination from FDOT

FYI

From: Vandeventer, Michelle [mailto:Michelle.Vandeventer@MyFWC.com]
Sent: Friday, October 07, 2016 3:05 PM
To: Lyon, Casey; Williams, Angela
Cc: Kathy Hale
Subject: RE: request for bald eagle coordination from FDOT

Casey

Thank you for contacting FWC for coordination on the FDOT project relative to bald eagle nest SE036.

While no longer listed under the Endangered Species Act, the bald eagle remains protected under the state eagle rule (F.A.C. 68A-16.002) and the federal Bald and Golden Eagle Protection Act. Activities within 660 feet of a bald eagle nest should be conducted consistent with the FWC Eagle Management Guidelines unless state and federal eagle permits are issued. Bald eagle nest SE036 was first documented by FWC in 1991, and was most recently confirmed to be active in a live native pine tree during the 2014 FWC aerial nest survey. The nest tree is shown as located ~100 feet northeast of the SR 46 right-of-way.

The work described for this project would appear to meet the definition of TEMPORARY as it will not permanently alter the habitat and will be occurring along the existing road and right-of-way. However, the **construction work within 660 feet of the nest should be scheduled outside of the nesting season** as the equipment and activities described are more intense than existing routine activities of similar scope at that distance from the nest. While every effort should be made to avoid impacts within the nest buffer while the nest is active, nest monitoring in accordance with USFWS guidelines can be implemented for any work located between 330 – 660 feet from the nest.

State and federal bald eagle disturbance permits are recommended if construction work is planned to occur within 330 feet of the nest during the nesting season. Page 34 of the FWC Bald Eagle Management Plan (Permitting Framework) describes that "When activities would likely cause disturbance during only one nesting season, conservation measures need not be provided if they would only affect an alternate nest, but **conservation measures should be provided if they will affect an active nest**." The permit application should include an explanation of why the work within the nest buffer cannot be scheduled for outside the nesting season, along with all minimization measures that will be implemented to avoid impacts to nesting bald eagles.

Please be sure to contact USFWS (Ulgonda Kirkpatrick) for technical assistance specific to federal eagle regulations and permitting. If you have any additional questions or need further assistance, don't hesitate to contact me.

Best regards,

Michelle van Deventer
FFWCC, Bald Eagle Plan Coordinator
Office: 941.894.6675
Cell: 941.356.6551 ***(please note new number)***

Florida Fish and Wildlife
Conservation Commission
MyFWC.com

From: Lyon, Casey [mailto:Casey.Lyon@dot.state.fl.us]
Sent: Monday, October 03, 2016 8:24 AM
To: Vandeventer, Michelle <Michelle.Vandeventer@MyFWC.com>; Williams, Angela <Angela.Williams@MyFWC.com>
Cc: Kathy Hale <khale@emd-inc.net>
Subject: request for bald eagle coordination from FDOT

Good morning,

Please find attached the FDOT District 5's formal request for coordination and please advise if a disturbance permit is necessary. Thank you for your time and assistance!

Casey Lyon, M.S.
District Environmental Permit Coordinator
Florida Department of Transportation – District Five
719 S. Woodland Blvd.
DeLand, FL 32720
Office: (386) 943-5436
Main: (386) 943-5000
DOTNET: 885-5436
Email: casey.lyon@dot.state.fl.us

Christian Miller

From: Rizzolo, Chris <chris.rizzolo@aecom.com>
Sent: Tuesday, April 11, 2017 11:30 AM
To: Christian Miller; Maurice Pearson
Subject: FW: FW: SR 46 improvements

Importance: High

Christian/Maurice – this takes care of everything! Please see my last email and prepare your final submittal. Thank you and this should be it (fingers crossed)!

Chris

Chris Rizzolo, P.E.
Senior Project Engineer, Transportation Planning, Florida
D +1-407-992-5794
chris.rizzolo@aecom.com

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315 E. Robinson St.
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Orlando, FL 32801, USA
T +1-407-422-0353
aecom.com

Built to deliver a better world

LinkedIn Twitter Facebook Instagram

From: Dinardo, Mike [mailto:mike.dinardo@stantec.com]
Sent: Tuesday, April 11, 2017 11:23 AM
To: McGehee, Mary (Mary.McGehee@dot.state.fl.us); Rizzolo, Chris; Catherine Owen
Subject: FW: FW: SR 46 improvements

Team,
Please see the below email. It is not much, but it allows us to wrap up the environmental with the commitment to resurvey and coordinate with state and federal agencies in regards to listed wildlife and eagles.

Mike Dinardo
Senior Environmental Manager
Stantec
300 Primera Boulevard Suite 300, Lake Mary FL 32746-2145
Phone: (407) 823-8966
Cell: (407) 242-8650
Fax: (407) 823-8826
mike.dinardo@stantec.com

From: Kirkpatrick, Ulgonda [mailto:ulgonda_kirkpatrick@fws.gov]
Sent: Tuesday, April 11, 2017 11:01 AM

To: Dinardo, Mike <mike.dinardo@stantec.com>
Subject: Fwd: FW: SR 46 improvements

Ulgonda Kirkpatrick
USFWS Migratory Bird Division

Mailing Address:
MIGRATORY BIRD PERMIT OFFICE
1875 CENTURY BOULEVARD, NE
ATLANTA, GEORGIA 30345
321-972-9089 office (MAIN)
352-406-6780 cell
For more information on eagles in the Southeast Region, please visit: http://www.fws.gov/southeast/birds/eagle.html

---------- Forwarded message ----------
From: **Kirkpatrick, Ulgonda** <ulgonda_kirkpatrick@fws.gov>
Date: Tue, Apr 11, 2017 at 10:58 AM
Subject: Re: FW: SR 46 improvements
To: "Vandeventer, Michelle" <Michelle.Vandeventer@myfwc.com>
Cc: "Dinardo, Mike" <IMCEAMAILTO-mike+2Edinardo+40stantec+2Ecom@namprd09.prod.outlook.com>

I concur with Michelle. If the project will not occur for several years, a nest survey of the area within 660ft of project activities is advised to best determine how to proceed.

Please let me know if you need anything further.

Ulgonda Kirkpatrick
USFWS Migratory Bird Division

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On Tue, Feb 28, 2017 at 2:37 PM, Vandeventer, Michelle <Michelle.Vandeventer@myfwc.com> wrote:

Good morning Mike

Thank you again for coordinating on this project and potential impacts to nesting bald eagles along the roadway project plan. As we discussed, while there are several eagle nest territories within the area of the planned project, the only active or alternate nest currently identified as located within 660 feet of the project is nest SE036. New activities associated with the project within 330 feet of the nest include bike lanes and sidewalks within the existing right-of-way, located 100 – 330 feet from the nest tree.

The FWC recommends that new activities being conducted within 660 feet of an eagle nest follow the FWC Eagle Management Guidelines unless a permit is issued. Relevant guidelines for SE036 and this project include:

- All new proposed construction should not be closer to the eagle nest than existing right-of-way and similar scope activities.

- Exterior construction and site work within 330 feet of the nest should be scheduled for outside the nesting season (nesting season = October 1 – May 15, unless young fledge prior to May 15).

- Exterior construction and site work between 330 – 660 feet from the nest should be scheduled for outside the nesting season unless nest monitoring in accordance with USFWS guidance is implemented.

- Shield new exterior lighting so that lights do not shine directly onto the nest.

- Create, enhance, or expand the visual vegetative buffer between new activities and the nest by planting appropriate native plantings.

    - Note: this measure is important if new sidewalks will cross through the 330 foot buffer. Increasing the vegetative screening between sidewalk or bike lane and nest can prevent people from congregating in close proximity to the nest and potentially disturbing nesting eagles. It can also assist with directing the public to safe viewing areas through strategic use of planting and vegetative buffer.

If it is determined that the guidelines cannot be followed and a permit is needed, please contact Ulgonda Kirkpatrick at USFWS (copied here) to confirm the recommendations under the federal eagle permitting process rule revisions effective January 17, 2017 (http://eagleruleprocess.org/files/Federal_Register_Published_FR.pdf). Project plans may also be submitted to FWC Conservation Planning Services for assistance and recommendations on any fish and wildlife resources, in addition to bald eagles, that may be affected by the project.

Given the timeframes of the project, and the possibility that eagle nest locations may shift over time, follow up on the project may be appropriate closer to the design phase in the planning process to confirm relevant guidelines and permitting recommendations at that time.

If you have any additional questions or need further assistance, please don't hesitate to contact me.

Best regards,

Michelle van Deventer

Office: 941.894.6675

Cell: 941.356.6551

Florida Fish and Wildlife Conservation Commission

MyFWC.com

APPENDIX 13

NMFS
COORDINATION

Christian Miller

From: Rizzolo, Chris <chris.rizzolo@aecom.com>
Sent: Monday, September 19, 2016 1:36 PM
To: Kathy Hale (khale@emd-inc.net); Christian Miller (cmiller@emd-inc.net)
Subject: FW: SR 46 draft letters in review

You probably already knew this – just passing it along!

From: Owen, Catherine
Sent: Monday, September 19, 2016 12:37 PM
To: McGehee, Mary; Rizzolo, Chris
Cc: Walsh, William; Dinardo, Mike
Subject: SR 46 draft letters in review

Hello again - can discuss further, but looks like the draft effects consultation letter for Atl sturgeon to NMFS may be N/A

Also I checked ETDM and NMFS stated white shrimp EFH is N/A for this project:

ETAT Reviews: Coastal and Marine Issue: 1 found
2 *Minimal* assigned 05/15/2010 by Brandon Howard, National Marine Fisheries Service
Coordination Document: To Be Determined: Further Coordination Required
Dispute Information:N/A
Identified Resources and Level of Importance: NOAA's National Marine Fisheries Service (NMFS) conducted a site inspection on March 16, 2005, and responded to the Planning Screen for this project on April 6, 2005. Lacustrine, palustrine, and riverine wetlands are present in the project area. NMFS staff identified highly functional wetlands, such as bay swamps, cabbage palm hammock, emergent aquatic vegetation, freshwater marsh, wet prairies, and a mix of scrub-shrub, hardwoods, and forested wetlands, within the proposed project corridor. The project involves an additional bridge adjacent to the existing bridge across the St. Johns River. Our comments to the Planning Screen indicated that wetlands in the project corridor are designated as essential fish habitat (EFH) by the South Atlantic Fishery Management Council (SAFMC). At that time, SAFMC managed red drum under the Magnuson-Stevens Act. Effective November 5, 2008, management of Atlantic stocks of red drum was no longer authorized through the Magnuson-Stevens Act, which also removed the EFH designations for red drum. Based on these changes, NMFS determines that wetlands likely to be affected by the project are not EFH (Lake Monroe essentially is the upstream extent of white shrimp in the St. Johns River, and the site of the proposed project is upstream of Lake Monroe). While these wetlands are not EFH, they nonetheless are important to downstream fisheries in the St. Johns River.
Comments on Effects to Resources: The wetlands along the proposed roadway expansion provide water quality functions, such as removal of sediments, excess nutrients, and contaminants, which benefit and support these aquatic ecosystems. Through hydrological connections, these wetlands also contribute plant material and other useable nutrients (both dissolved and particulate organic matter) into aquatic food webs that include recreationally, commercially, or ecologically important species within downstream estuaries. If wetland impacts are unavoidable, sequential minimization and mitigation should take place.

Catherine B. Owen, M.S.
Environmental Specialist IV
District Cultural Resources Coordinator
FDOT District Five
719 S. Woodland Blvd.
DeLand FL 32720
phone (386) 943-5383

From: Dinardo, Mike [mailto:mike.dinardo@stantec.com]
Sent: Monday, September 19, 2016 12:25 PM
To: Owen, Catherine
Subject: Fwd: Re: Re:

Sent from my iPhone

Begin forwarded message:

> **From:** Brandon Howard - NOAA Federal <brandon.howard@noaa.gov>
> **Date:** September 19, 2016 at 12:19:54 PM EDT
> **To:** "Dinardo, Mike" <mike.dinardo@stantec.com>
> **Subject: Re: Re:**
>
> Hi Mike.
>
> Only 3 Atlantic sturgeon have been reported in the SJR over the last decade leading scientist to believe they are only a vagrant occurrence in the river. In the late 1800's they were very abundant; however, extensive sampling for shortnose sturgeon by FWC between 1999 and 2002 resulted in no Atlantic sturgeon captures and only 1 shortnose. FWC lists their habitat in the river as being north of Palatka which is well outside the limits of this project it seems. NMFS' 1998 status review lists them as extirpated in both the St. Johns and St. Mary's Rivers. We do know that they occur in the river as vagrants, however. Having said all of that, I don't recall seeing a consultation south of Duval County. Unless FDOT is proposing something major that would permanently block passage of sturgeon (which I can't imagine) I would make a "no effect" determination. That is their call though.
>
> Brandon
>
> On Mon, Sep 19, 2016 at 10:42 AM, Dinardo, Mike <mike.dinardo@stantec.com> wrote:
>
> > Brandon,
> > D5 informed me that the consultation is species based (Atlantic sturgeon) rather than EFH. Which office would handle species for NMFS?
> >
> > The project is SR 46 project in Seminole and Volusia County. I believe sturgeon migrate south as far as Lake George but do not believe them to be in this region....
> >
> > **Mike Dinardo**
> > Senior Environmental Manager
> > Stantec
> > 300 Primera Boulevard Suite 300 Lake Mary FL 32746-2145
> > Cell: (407) 242-8650
> > Fax: (407) 823-8826
> > mike.dinardo@stantec.com