SR 50 PD&E Study

From US 301 to CR 33

Hernando, Sumter and Lake Counties

Natural Resources Evaluation

FINAL

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EXECUTIVE SUMMARY

In December 2014, the Florida Department of Transportation (FDOT) District Five requested a Corridor Planning Study to evaluate State Road (SR) 50 within Sumter County and western Lake County, as well as a small portion in eastern Hernando County (FDOT District Seven). This study involved a regional impact evaluation to determine how best to meet the current and future user's needs and to establish a long-term plan to guide the corridor's evolution, appropriately correlating the balance between land use and transportation planning for daily corridor users. The Corridor Study, completed in the fall of 2016, documented the engineering and environmental analysis, and indicated the need to widen SR 50 in Hernando, Sumter, and Lake Counties.

Initiated in December 2016, this Project Development and Environment (PD&E) Study has been conducted to assess various widening alternatives for SR 50. The purpose of this Natural Resources Evaluation (NRE) is to document protected species and their habitat(s) in the project area, analyze potential impacts to those protected species and their habitat(s) due to the proposed alternatives, provide rationale to support effect determinations for those protected species based on the recommended alternative, and evaluate the potential wetland impacts and mitigation needs for the recommended alternative. The NRE is prepared in accordance with Chapter 9, *Wetlands and Other Surface Waters*, and Chapter 16, *Protected Species and Habitat*, of the FDOT's *PD&E Manual* (FDOT, 2017) and the current Natural Resources Evaluation Outline and Guidance.

The recommended alternative will widen SR 50 from two to four lanes from US 301 to County Road (CR) 33. This alternative minimizes impacts to wetlands, protected species and their habitats to the greatest extent practicable. Due to the presence of suitable habitat, the recommended alternative (and other widening alternatives) "**may affect**" the sand skink and blue-tailed mole skink, and a sand skink coverboard survey will be conducted within suitable habitat during the design and permitting phase of the project to confirm whether sand skinks occupy the SR 50 Study Area. Due to the presence of Cooley's water willow within the project corridor, the recommended alternative "**may affect**" Cooley's water willow. Due to the lack of suitable habitat or defined conservation measures for the species, the recommended alternative "**may affect, but is not likely to adversely affect**" the American alligator, eastern indigo snake, Florida scrub-jay, gopher tortoise, Lake Wales Ridge plants, wood stork; and was considered to have "**no effect**" on bald eagle, Everglade snail kite, or red-cockaded woodpecker. Similarly, "**no adverse effect is anticipated**" for the Florida black bear, Florida burrowing owl, Florida pine snake, Florida sandhill crane, Sherman's fox squirrel, short-tailed snake, southeastern American kestrel, or wading birds. Due to the presence of state-listed plants within the project corridor, the recommended alternative has the "**potential for adverse effect**" on state-listed plant species. The USFWS concurred with the proposed effect determinations on December 19, 2018.

Seventy-six (76) wetlands and 7 other surface waters with potential to be affected by the proposed project were identified within the study area. Direct wetland impacts associated with the recommended alternative and recommended pond/floodplain compensation sites are approximately 90.07 acres and 28.09 acres, respectively.

No Essential Fish Habitat (EFH) has been identified within the study area. However, the Little Withlacoochee River drains to areas near the mouth of the Withlacoochee River and ultimately to the Gulf of Mexico where estuarine habitats utilized by federally-managed fish species and their

prey occur. According to their ETDM (Efficient Transportation Decision Making) Summary Report No. 14269, dated December 1, 2016, The National Marine Fisheries Service (NMFS) concluded the project will have no directs impacts to EFH but recommends upgraded stormwater treatment systems to prevent degraded water from entering these areas. An EFH Assessment is not required; however, continued coordination with NMFS is recommended.

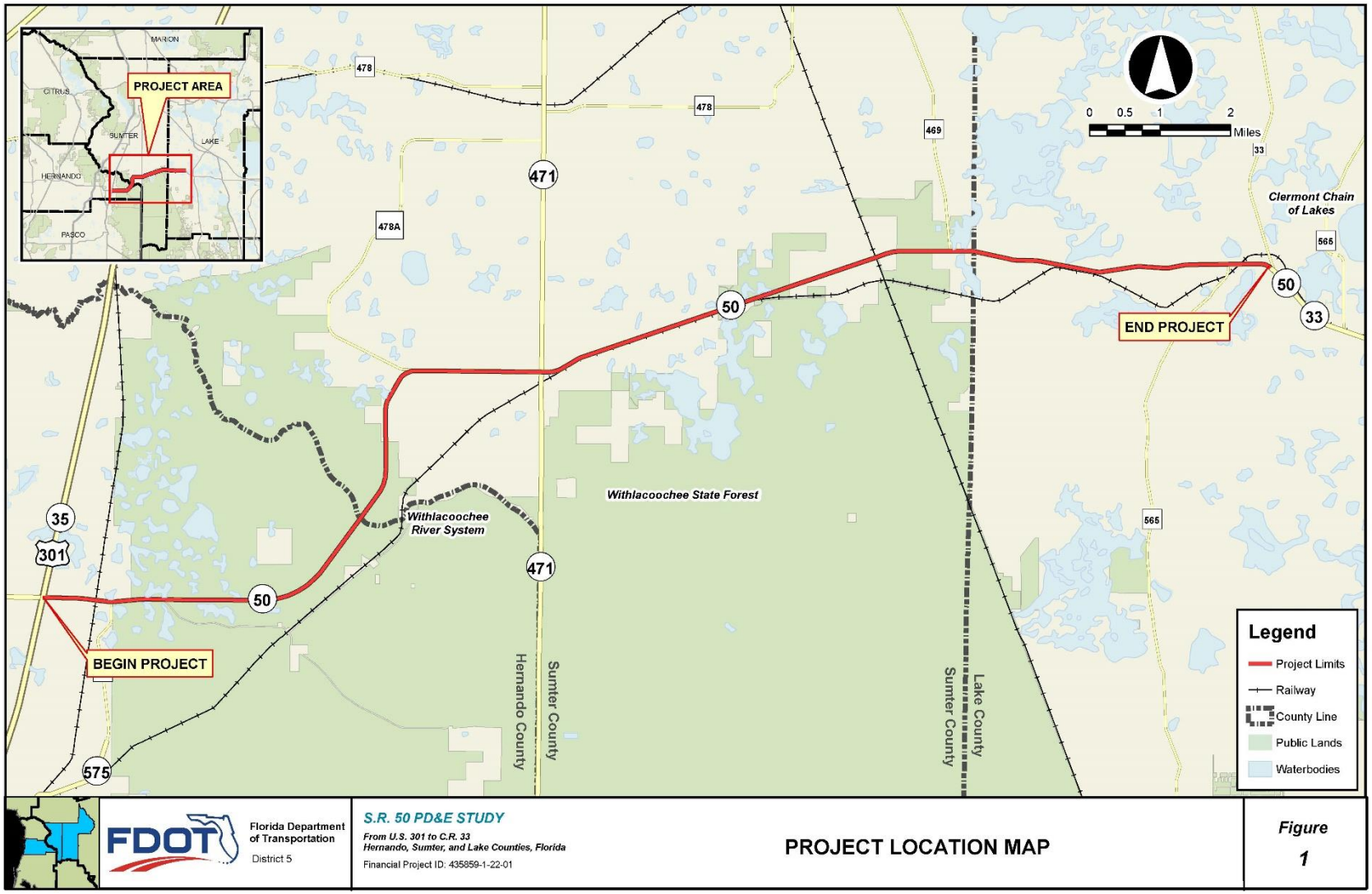
SECTION 1 – PROJECT OVERVIEW

The Florida Department of Transportation (FDOT) District Five has conducted a Project Development and Environment (PD&E) Study to evaluate roadway improvements to increase capacity and safety on SR 50. The limits for this project begin at US 301 in Hernando County and extend approximately 20 miles east to County Road (CR) 33 in the City of Mascotte in Lake County. The project limits are displayed on **Figure 1**. This portion of SR 50 includes key features such as the Withlacoochee State Forest and other environmentally sensitive areas within the vicinity of the Green Swamp.

SR 50 is a principal arterial running east-west across the State of Florida, from Hernando to Brevard County. Within the study area, SR 50 is primarily a two-lane undivided, rural principal arterial with the exception of the eastern portion near the City of Mascotte which is classified as an urban principal arterial. It has also been designated as an Emerging Strategic Intermodal System (SIS) corridor from Interstate (I) 75 to US 27. The entirety of SR 50 within the project limits is designated as an evacuation route by the Florida Division of Emergency Management. SR 50 from just west of CR 469 to CR 478A is also classified as part of the Scenic Sumter Heritage Byway, which is included in the Florida Scenic Highways Program. The goal of the Byway is to "promote and protect the natural beauty, recreational potential, and outstanding historical resources and traditions of the Scenic Sumter Heritage Byway for residents, visitors, and future generations."

According to their ETDM Summary Report No. 14269, dated December 1, 2016, the Florida Fish and Wildlife Conservation Commission (FWC) and Florida Department of Agriculture and Consumer Services (FDACS) indicated the project alternatives may create a "Substantial" Degree of Effect (DOE) on wildlife and habitat resources. The primary issues were the potential loss of public conservation/recreation lands resulting from the expansion of the existing right-of-way through the Withlacoochee State Forest; potential loss of wildlife habitat from expanded roadway and drainage retention area construction; and potential for increased wildlife roadkill on the roadway. The U.S. Environmental Protection Agency (EPA), St. Johns River Water Management District (SJRWMD), and U.S. Army Corps of Engineers (USACE) indicated the project alternatives may create a "Substantial" DOE to wetlands and surface waters. The primary issues were the potential loss of wetland functions; loss of wildlife habitat; degradation of water quality in wetlands and surface waters; and reduction in flood storage and capacity. In order to provide reasonable assurances that direct, indirect, or cumulative impacts from construction, alteration and intended or reasonably expected uses of the proposed alternatives will not contribute to violations of water quality standards or adverse impacts to the functions of wetlands or other surface waters, the FDOT will calculate the appropriate mitigation during the design and permitting phase to satisfy the requirements of 33 U.S.C. § 1344 and Part IV of Chapter 373, F.S.

Figure 1: Project Location



1.1 – Purpose and Need

The purpose of this proposed project is to increase capacity on the study segment of SR 50, as well as improve safety issues in the corridor. There have 12 fatalities along the corridor between 2011 and 2015 and many parts of SR 50 have high safety ratios for one or more years of these years as compared to statewide and district wide averages for similar roadways. This project is part of a greater effort addressing existing and future congestion and delay, improving safety and traffic flow, and allowing the SR 50 corridor to operate at an improved level of service for all users. The corridor's context was also considered, and bicycle and pedestrian facilities were evaluated throughout the corridor.

The project's need is based on six primary factors: system linkage, roadway capacity, legislation/plan consistency, modal interrelationships, safety, and hurricane evacuation. The following summarizes the project's need based on these primary factors.

- *System Linkage* – SR 50 is an east-west facility connecting Brooksville with Clermont and the Orlando Metro area. It is the only regional east-west connection serving Hernando County. It serves regional distribution centers for goods moved by truck as well as aggregate mining operations located along the study corridor. SR 50 is a four/six-lane roadway from US 19/SR 55/Commercial Way to US 98/McKethan Road, with the two-lane portion from US 98/McKethan Road to US 301 programmed to be widened to four-lanes. SR 50 is also a four and six-lane roadway from CR 33 east to Titusville. The 20-miles in the SR 50 PD&E study limits is the only portion of SR 50 with no programmed construction funding for widening to four lanes.
- *Roadway Capacity* – This SR 50 segment is currently operating at an acceptable level of service (LOS) (LOS "C" and "D") with an Annual Average Daily Traffic (AADT) ranging between 7,200 and 15,500, as show in **Table 1**. The target LOS is "D" within the urban area and LOS "C" outside the urban area. The projected future year 2045 LOS is expected to exceed the target LOS in both the corridor's rural and urban segments. Within the project's rural portions, the 2045 AADT ranges between 15,500 to 19,700 resulting in LOS "E". The target LOS "C" service volume threshold of 8,400 daily vehicles is expected to be reached by approximately year 2025 for the project's rural portions. For the urban areas, a projected 2045 volume of 30,500 AADT will result in a LOS "E".

Table 1. SR 50 2017 and 2045 AADT and LOS

Roadway	Segment	No. of Lanes	2017 AADT	2017 LOS[1]	2045 AADT	2045 LOS[1]
SR 50	US 30 to CR 757	2	7,200	C	15,500	E
SR 50	CR 757 to Tuscanooga Rd	2	8,900	D	19,700	E
SR 50	Tuscanooga Rd to CR 33	2	15,500	D	30,500	E

[1]Displayed LOS is for worst peak hour (AM/PM) and peak direction (EB/WB).

- *Legislation/Plan Consistency* – FDOT District 7 has funded the Preliminary Engineering (FY 2018), Right-of-Way (ROW) (FY 2018), and Construction (FY 2019) phases for the two- to four-lane widening of SR 50 from US 98/McKethan Road to US 301. FDOT District 7 has also funded the Preliminary Engineering (FY 2018) phase for the two- to four-lane widening of SR 50 from US 301 to the Hernando/Sumter County Line. The Hernando/Citrus Metropolitan Planning Organization (MPO) identifies a two- to four-lane widening of SR 50 from US 301 to the Sumter County line as an unfunded need in their 2040 Long Range Transportation Plan (LRTP). The SR 50 widening project is the number 5 project in the Hernando County MPO Priority Project List. Improvements to SR 50 from the Hernando/Sumter County line to CR 33 is an unfunded need in the adopted Lake-Sumter MPO 2040 LRTP Needs Plan. The SR 50 widening project is the number 16 project in the Lake-Sumter MPO Priority Project List. FDOT District 5 funded the Preliminary Engineering phase in FY 2018 for the two- to four-lane widening of SR 50 from the Hernando/Sumter County Line to CR 33. FDOT has not identified ROW or construction funding for the two- to four-lane widening of SR 50 from US 301 to CR 33.
- *Modal Interrelationships* –
  - Within the City of Mascotte, sidewalk is intermittently present. Due to the uninterrupted flow conditions west of CR 33, no marked pedestrian crossings are currently provided across SR 50 to serve the elementary school on the study corridor's south side. Throughout the corridor, bicycles are served on the 4' paved shoulder.
  - A 10' shared-use path is planned within the Hernando County from US 301 to the Sumter County Line. The South Sumter Trail portion of the Coast-to-Coast trail, from SR 471 to the Van Fleet Trailhead, is planned to be in the SR 50 ROW. Upon further discussions with FDOT, there is a possibility the Coast-to-Coast trail may extend within SR 50 ROW east of the Van Fleet Trailhead into Mascotte and connect to the South Lake Trail. At SR 471, the South Sumter Connector Trail may head north toward Webster out of the project area or may extend west along SR 50 from SR 471 to the Hernando/Sumter County Line. The study includes coordinated planning for SR 50 improvements to be compatible with implementation of the Coast-to-Coast Trail within the same corridor. The specific

alignment is still to be determined by the South Sumter Connector Trail PD&E Study.

- *Safety* –
  - A total of 189 crashes were reported during the period between 2011 and 2015, 98 resulted in injury and 11 resulted in at least one fatality (12 total fatalities). Due to the length of the corridor, crash types and trends varied by sub-segment, but fatal crashes were distributed throughout most of the corridor. By widening from a two-lane undivided roadway to a four-lane divided roadway, crashes may be reduced by up to 50 percent based on the Highway Safety Manual analysis performed for the study corridor.
  - SR 50 from Tuscanooga Road to CR 33 was the only high crash segment along the study corridor, accounting for 21 of the 189 crashes (11 percent) with 10 crashes resulting in at least one injury.
  - Three high crash intersections were identified along the study corridor. The intersection of SR 50 at US 301 accounted for 25 of the 189 crashes (13 percent) along the study corridor, with 12 crashes resulting in at least one injury. SR 50 at SR 471 accounted for 11 of the 189 crashes (6 percent) along the study corridor, with six crashes resulting in at least one injury. SR 50 at Tuscanooga Road accounted for five of the 189 crashes (3 percent) along the study corridor, with one crash resulting in a fatality and two crashes resulting in at least one injury.
- *Emergency Evacuation* –A possible expansion and enhanced traffic flow of this SR 50 section will enhance the hurricane and emergency evacuation capabilities in Hernando, Sumter, and Lake Counties.

1.2 – Study Area

The SR 50 Study Area was considered to be the areas directly or indirectly affected by the proposed action and not merely the immediate area involved in the action. It encompassed the geographic extent of the environmental changes that may result from the action. For purposes of the SR 50 PD&E Study, the study area included all lands within 2000 feet of the current FDOT right-of-way and included the proposed pond and flood plain compensation sites.

1.3 – Recommended Alternative

The recommended alternative will widen SR 50 from two to four lanes from US 301 to CR 33. Two different, typical sections are present along the corridor:

- US 301 to Lee Road (17.34 miles) –
  - Two-lane to four-lane rural widening alternative.
- Lee Road to CR 33 (2.54 miles) –
  - Two-lane to four-lane urban widening alternative.

The rural four-lane widening, from US 301 to the Hernando/Sumter County Line, utilizes/resurfaces the existing SR 50 lanes as the new westbound lanes and constructs two new lanes for eastbound traffic. For the existing SR 50 lanes, the cross slope will remain the same and the inside travel lane will drain into the median. This is the predominate typical section between US 301 and the Hernando/Sumter County Line. During Value Engineering, a bridge over the CSX railroad tracks, 0.75 miles east of US 301, was recommended for review. Based on engineering review and discussions with FDOT District 7, a bridge over the railroad tracks is proposed as part of the recommended widening concept. The SR 50 section from US 301 to the railroad bridge has a maximum proposed 371' R/W width to account for the railroad bridge approach embankment, a railroad access road and an offsite drainage conveyance ditch. The bridge over the railroad will have the shared use path connected to the south side of the eastbound bridge. Currently, the SR 50 section from the railroad bridge to the Sumter County Line has a 200' R/W width and no R/W acquisition is needed, except for the railroad approaches, the two proposed stormwater retention ponds and floodplain compensation areas. A 10' asphalt shared-use path on the roadway's south side will also be constructed, which was a suggestion from the Alternatives Public Meeting.

The rural widening pavement match, from the Hernando/Sumter County Line to Lee Road, utilizes/resurfaces the existing SR 50 lanes and constructs two new lanes for approximately 4.6 miles of the 12.3-mile section. The remaining 7.7 miles consists of a full rebuild of SR 50 from a two-lane to a four-lane facility. These 7.7 miles include areas where the roadway profile should be raised because the groundwater/vertical base clearance requirements are not met, where the roadway needs to be reconstructed around curves or where the roadway needs new construction changes from eastbound lanes to westbound lanes to minimize R/W impacts. A 12' asphalt shared-use path will also be constructed on the roadway's south side, from the Hernando/Sumter County Line to Lee Road, to accommodate pedestrians and bicyclists. Within this section, the proposed R/W widths range from a minimum of 190' to a maximum of 241' where drainage conveyance ditches are provided on both sides. The existing Withlacoochee River Bridge will remain in place and serve as the new westbound travel lanes for SR 50. A new two-lane bridge across the Withlacoochee River will be constructed for the eastbound lanes. The 12' shared-use path will be included on the south side of the new eastbound bridge.

The urban widening from Lee Road to CR 33 includes a new four-lane roadway, adds curb and gutter, provides a raised median, and incorporates a 6' sidewalk on the north side. A 12' shared-use path will be constructed on the roadway's south side to approximately 500' west of Barry Avenue where it connects to the proposed South Lake Trail and departs the SR 50 corridor. East of Barry Avenue, a 6' sidewalk will be incorporated to CR 33. Seven-foot buffered bicycle lanes will also be provided in this section. This section of SR 50 falls within the urban service boundary and a majority is within the City of Mascotte. The proposed R/W widths range from a minimum of 112' to a maximum of 174' within this section. Typical sections include both the minimum and maximum R/W with the shared use path as well as a typical section with 6' sidewalks on both sides. The urban four-lane section will connect to the existing urban four-lane section near CR 33.

The typical sections considerably throughout and are best reviewed in the typical section package contained in Appendix A of the *Preliminary Engineering Report* (PER).

Roundabouts are also recommended at the intersections of SR 471, CR 469, and Tuscanooga Road. The intersection concepts are shown within the PER as Figures 96, 97 and 98. The CR 33 intersection is recommended to remain signalized and be shifted approximately 0.10 miles to the west.

The concept plans for the recommended alternative are provided in the PER's Appendix B.

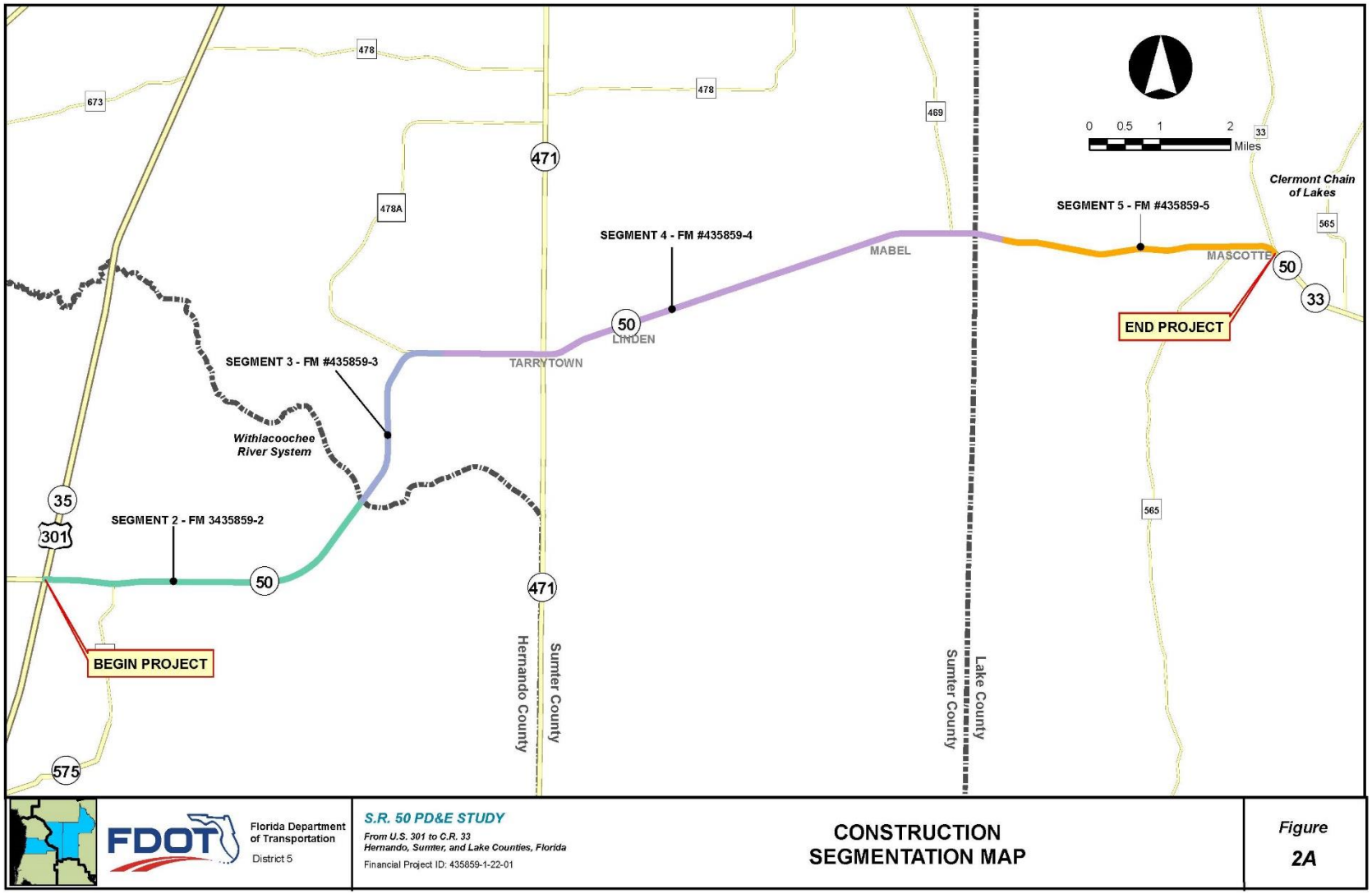
1.4 – Construction Segmentation

The SR 50 study corridor crosses FDOT District boundaries and due to the overall 20-mile length of the project, has been divided into the following four construction segments:

- Segment 2: US 301 to the Hernando/Sumter County Line (4.78 miles)
  - FM Number 4358592 – FDOT District 7 will be managing the design/construction
- Segment 3: The Hernando/Sumter County Line to 0.13 miles west of CR 751 (2.78 miles)
  - FM Number 4358593 – FDOT District 5 will be managing the design/construction.
- Segment 4: 0.13 miles west of CR 751 to 1,000' east of Sloan's Ridge Road (8.21 miles)
  - FM Number 4358594 – FDOT District 5 will be managing the design/construction.
- Segment 5: 1,000' east of Sloan's Ridge Road to CR 33 (3.98 miles)
  - FM Number 4358595 – FDOT District 5 will be managing the design/construction.

Figure 2A displays the construction segmentation for the SR 50 study corridor.

Figure 2A: Construction Segmentation



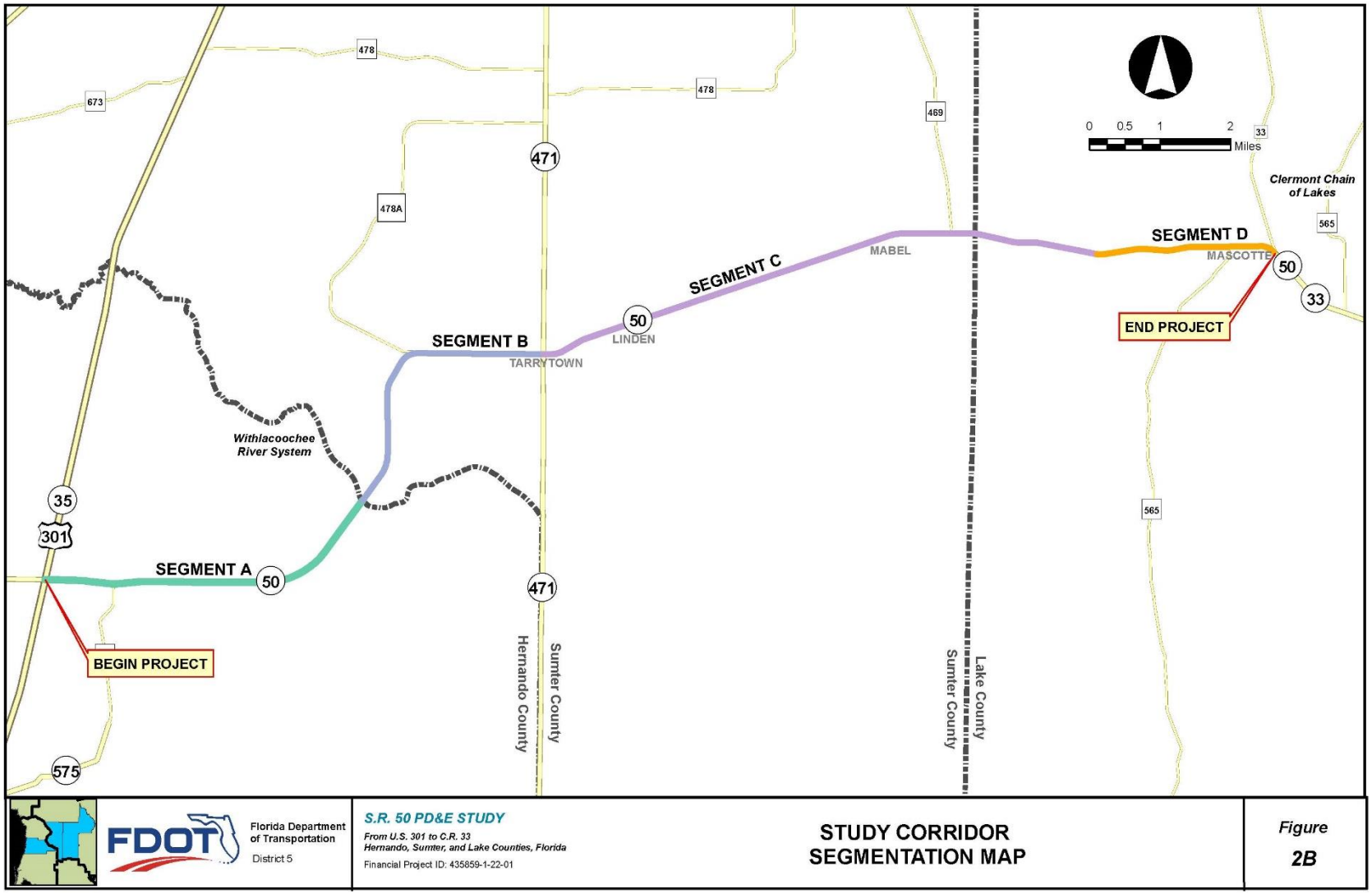
1.5 – Description of Alternatives

The 20-mile project limits were divided into four segments as shown on **Figure 2B**. Generally, two alternatives were developed to provide operational and safety benefits within the project's segments: (1) a three-lane passing alternative and (2) a two-to-four lane widening alternative. Variations (left/center/right) of these alternatives were developed for the four segments of SR 50. Passing lanes were evaluated as a potential solution to break-up the platooning (i.e., feeling of congestion on the corridor that may result in unsafe passing maneuvers) occurring along the SR 50 corridor and improve the LOS. The following limits were selected for further analysis of the passing lanes:

- EB passing lane beginning near CR 575 and ending just west of the Hernando/Sumter County Line, a distance of 2.7-miles; and
- WB passing lane beginning at the end of the EB passing lane and ending just south of CR 757, a distance of 3.2-miles.

Four-lane widening was considered along the entire study corridor in order to increase the overall roadway capacity to meet the system needs through 2045. Widening to four lanes provides opportunities to implement median turn lanes and access management strategies throughout the corridor. A full four-lane widening of SR 50 would improve safety along the corridor and provide enhanced mobility for freight traffic; however, widening the entire 20-mile corridor would require additional right-of-way and would increase the impacts to adjacent properties and environmentally sensitive areas, such as the Withlacoochee State Forest.

Figure 2B: Study Corridor Segmentation



1.5.1 – Segment A: US 301 to Hernando/Sumter County Line (5.00 miles)

Two typical section alternatives were analyzed in Segment A. The first alternative included a two-lane widening with passing lanes. The second alternative included two-to-four-lane widening to right (south) of the existing two-lane roadway.

Build Alternative A-1: The three-lane passing lane alternative is a combination of an eastbound passing lane spanning for 2.7 miles followed by a westbound passing lane with a length of 3.1 miles, approximately 1.3 miles of which is located within Segment A. The east and westbound passing lane typical sections would have similar roadway characteristics: 12-foot travel lanes, 5-foot paved shoulder, and 5-foot outside grass shoulder. SR 50 would be widened to the right (south) to accommodate the passing lanes and the existing roadway would be milled and resurfaced.

Build Alternative A-2: The four-lane rural widening alternative will connect to the SR 50 four-lane widening currently under design by FDOT District 7 from US 98 to just east of US 301. The eastbound and westbound tie-in locations are slightly different. The eastbound construction is anticipated to extend approximately 0.40 miles longer than the westbound construction. In total, the four-lane widening is anticipated to span approximately 4.8 miles along Segment A. The four-lane rural typical section would have the following characteristics: 12-foot travel lanes, 5-foot paved outside shoulder, 5-foot grass outside shoulder, 4-foot paved inside shoulder, 4-foot grass inside shoulder, and 40-foot grass median. SR 50 would be widened to the right (south).

1.5.2 – Segment B: Hernando/Sumter County Line to SR 471 (4.17 miles)

Two typical section alternatives were analyzed in Segment B. The first alternative included a two-lane widening to the left, center, or right with passing lanes. The second alternative included two-to-four-lane widening to the left, center, or right to accommodate new travel lanes.

Build Alternative B-1: The three-lane passing lane alternative is a continuation of the westbound passing lane from Segment A. The total length of the westbound passing lane is 3.1-miles, 1.8-miles of which is located within Segment B. The three-lane westbound passing lane typical sections have similar roadway characteristics: 12-foot travel lanes, 5-foot paved shoulder, and 5-foot outside grass shoulder. For the left (north) and right (south) widening typical sections, the existing two-lane roadway would be milled and resurfaced. The center widening typical section would require the existing two-lane roadway to be reconstructed to account for cross-slope corrections of the travel lanes.

Build Alternative B-2: The four-lane rural widening is a continuation of the four-lane widening from Segment A. The left, center, or right widening typical sections have similar roadway characteristics: 12-foot travel lanes, 5-foot paved outside shoulder, 5-foot grass outside shoulder, 4-foot paved inside shoulder, 4-

foot grass inside shoulder, and 40-foot grass median. For each widening alternative, the existing two-lane roadway would be reconstructed to account for cross-slop corrections of the travel lanes.

1.5.3 – Segment C: SR 471 to Lee Road (8.17 miles)

Two typical section alternatives were analyzed in Segment C. The first alternative included a two-to-four lane rural widening to the left, center, or right. The second alternative included a two-to-four lane urban widening to the left, center, or right.

Build Alternative C-1: The three four-lane rural widening typical sections have similar roadway characteristics: 12-foot travel lanes, 5-foot paved outside shoulder, 5-foot grass outside shoulder, 4-foot paved inside shoulder, 4-foot grass inside shoulder, and 40-foot grass median. In addition to the roadway improvements, the rural widening typical section alternatives include a 10-foot wide shared-use path on the south side of SR 50. For each widening alternative, the existing two-lane roadway would be reconstructed to account for cross-slope corrections of the travel lanes.

Build Alternative C-2: The three four-lane high-speed urban widening typical section alternatives have similar roadway characteristics: 12-foot travel lanes, 6.5-foot bicycle lane, 4-foot paved inside shoulder, Type E (median) and Type F (roadside) curb and gutter, and 22-foot wide raised median. In addition to the roadway improvements, the high-speed urban widening typical section alternatives include a 10-foot wide shared-use path on the south side and a 6-foot sidewalk on the north side of SR 50.

1.5.4 – Segment D: Lee Road to CR 33 (2.54 miles)

One typical section alternative was considered for Segment D. This typical section alternative included a four-lane urban widening to the left, center or right.

Build Alternative D-1: The three four-lane urban widening typical section alternatives have similar roadway characteristics: 12-foot travel lanes, 7-foot buffered bicycle lane, Type E (median) and Type F (roadside) curb and gutter, and 22-foot wide raised median. In addition to the roadway improvements, the high-speed urban widening typical section alternatives include a 10-foot wide shared-use path on the south side and a 6-foot sidewalk on the north side of SR 50.

1.3.5 – 'No-Build' Alternative

The 'No-Build' alternative assumes that SR 50 will remain in its current roadway condition through Design Year 2045 without any facility improvements, which does not include improvements to facilities adjacent to SR 50. The 'No-Build' alternative eliminates costs related to right-of-way acquisition and construction, temporary traffic delays caused by construction, and direct and secondary impacts to the natural and social environments. On the other hand, the 'No-Build' alternative does not fulfill the SR 50 purpose and need to improve system linkage, increase

roadway capacity, consistency with adopted transportation plans, improvement to corridor safety, and enhancement of SR 50 as an emergency evacuation route. The Alternatives Analysis can be found in Section 4 of the PER and the Preferred Analysis can be found in Section 6 of the PER.

SECTION 2 – PRELIMINARY DATA COLLECTION

Prior to field surveys, staff ecologists reviewed the most currently available information to determine location and extent of habitats and land uses within the vicinity of the project area and whether protected species occur or have the potential to occur in these habitats and land uses. This information included land use maps provided by the Southwest Florida Water Management District (SWFWMD) and St. Johns River Water Management District (SJRWMD). The land use descriptions were based on the Florida Land Use, Cover and Forms Classification System (FLUCFCS) (FDOT, 1999). Other information included but was not limited to:

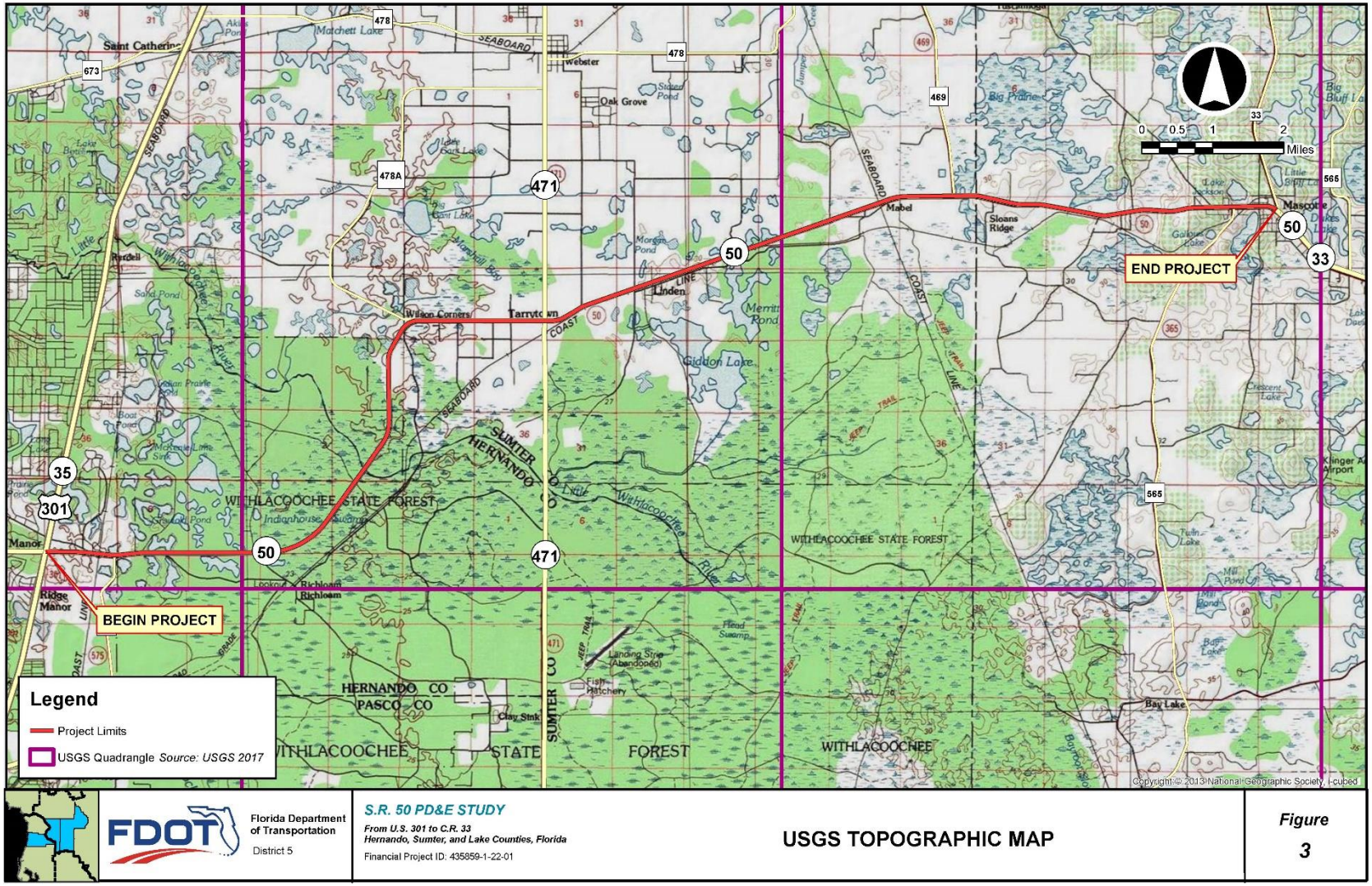
- U.S. Geographic Survey (USGS) Topographic Maps (https://viewer.nationalmap.gov/launch/)
- Natural Resources Conservation Service (NRCS) Soil Maps (https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm)
- Florida Natural Areas Inventory (FNAI) Cooperative Land Cover Maps (http://www.fnai.org/landcover.cfm)
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) Maps (https://www.fws.gov/wetlands/data/mapper.html)
- USFWS Consultation Area and Critical Habitats Maps (https://crithab.fws.gov/)
- USFWS Wood Stork Nesting Colonies and Core Foraging Areas Maps (https://www.fws.gov/northflorida/woodstorks/wood-storks/.htm)
- National Marine Fisheries Service (NMFS) Essential Fish Habitat (EFH) Maps (https://www.habitat.noaa.gov/protection/efh/habitatmapper.html)
- Florida Fish and Wildlife Conservation Commission (FWC) Scrub-Jay Observation Maps (http://myfwc.com/research/gis/)
- FWC Bald Eagle Nesting Territory Maps (https://publictemp.myfwc.com/FWRI/EagleNests/nestlocator.aspx)
- FWC Red-Cockaded Woodpecker Observation Maps (http://geodata.myfwc.com/datasets/red-cockaded-woodpecker-observation-locations)
- FWC Wildlife Occurrence Maps (http://geodata.myfwc.com/datasets)
- FWC Species Action Plans (http://myfwc.com/wildlifehabitats/imperiled/species-action-plans/)
- FDOT Efficient Transportation Decision Making (ETDM) Summary Report #14269 (https://etdmpub.fla-etat.org/est/#)

2.1 – Topography

The SR 50 Study Area lies within the Clermont Uplands and Green Swamp Lake Districts of Florida (Griffith et al., 1997). The general topography includes an extensive area of flatland and swampland that contains the headwaters of the Withlacoochee River and the Withlacoochee State Forest. The SR 50 Study Area is not a continuous expanse of swamp, but rather a composite of

many swamps interspersed with low ridges, hills, and flatlands. According to the USGS, elevations within the SR 50 Study Area vary from approximately 65 feet above sea level near the Little Withlacoochee River to approximately 125 feet above sea level near the City of Mascotte (**Figure 3**).

Figure 3: USGS Topographic Map



2.2 – Land Use

The land uses within the SR 50 Study Area were first characterized by SWFWMD and SJRWMD online resources and later modified or delineated by ecologists to reflect field observations made at the time of the study. The SR 50 Study Area contains a mixture of several FLUCFCS types including urban and built-up, agriculture, range land, upland forests, water, wetland, barren land, and transportation or other linear utilities (**Figures 4A-4D**). The SR 50 Study Area includes a mosaic of low to high quality wetlands, particularly forested wetlands, associated with the Withlacoochee State Forest within the vicinity of the Green Swamp. A detailed list of the land uses within the study area is provided in **Table 2** along with additional descriptions of the land uses in **Appendix A**. Photographs of representative habitats in the study area are provided in **Appendix B**.

Figure 4A: FLUCFCS Map

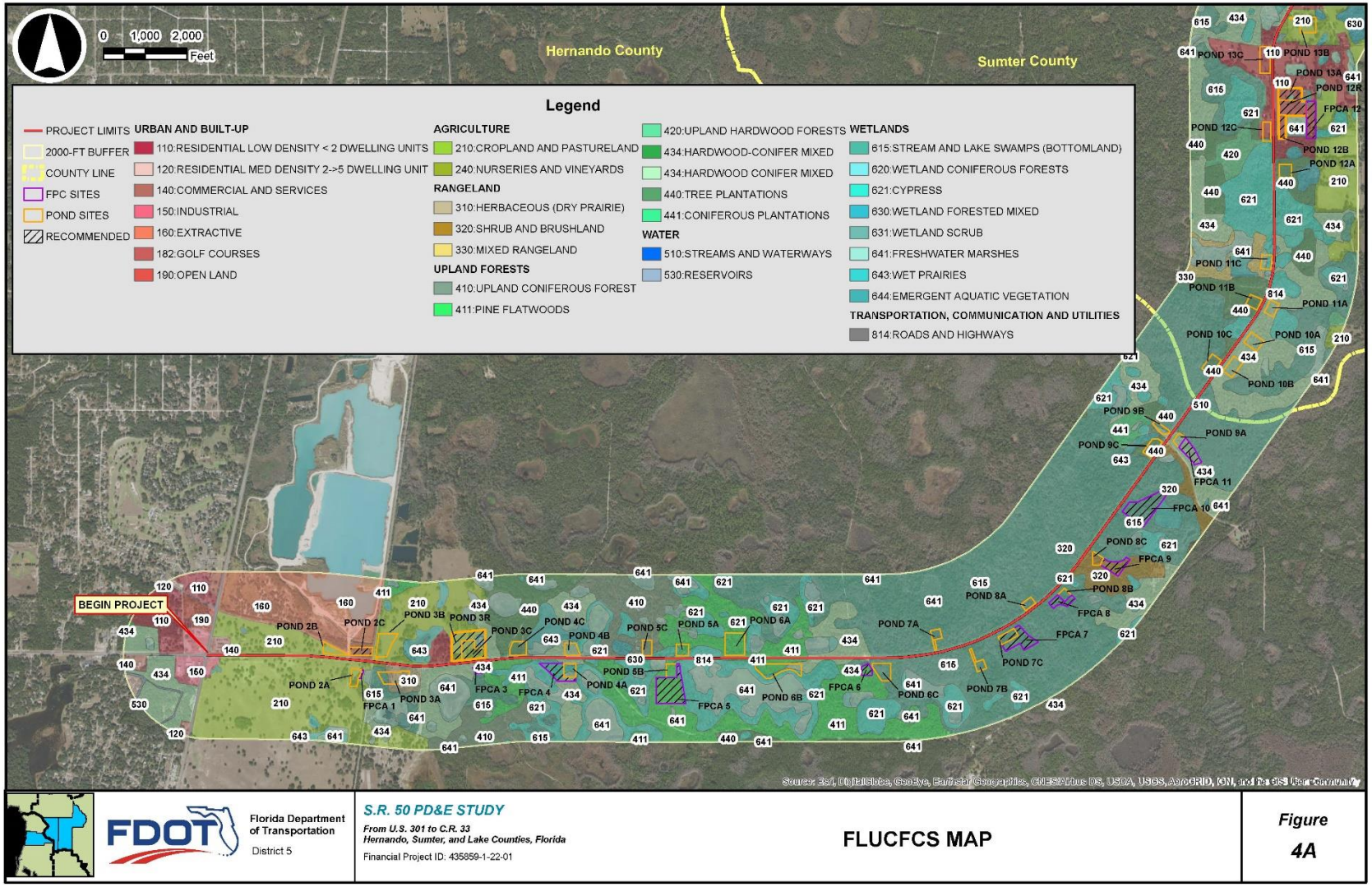


Figure 4B: FLUCFCS Map

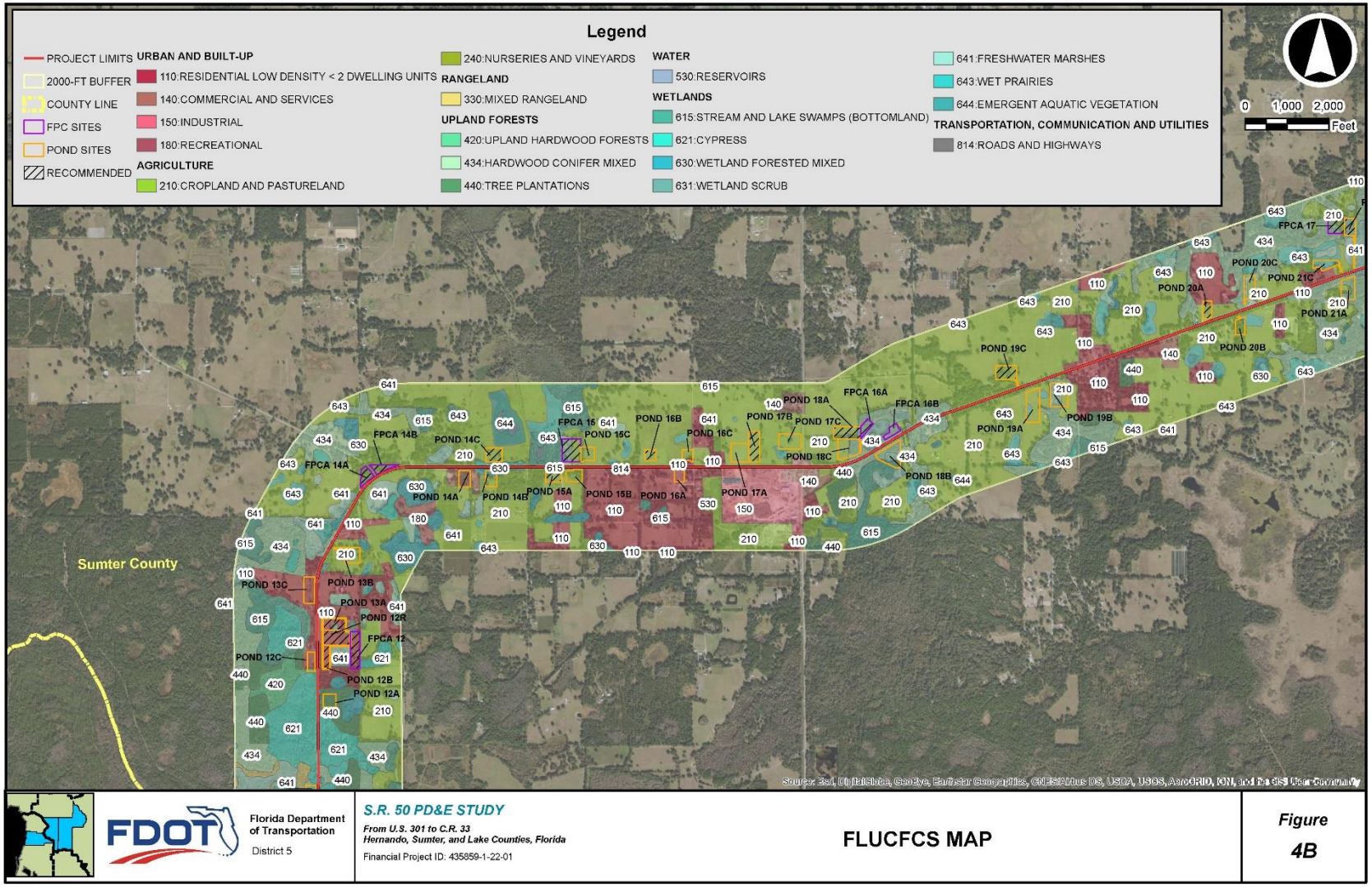


Figure 4C: FLUCFCS Map

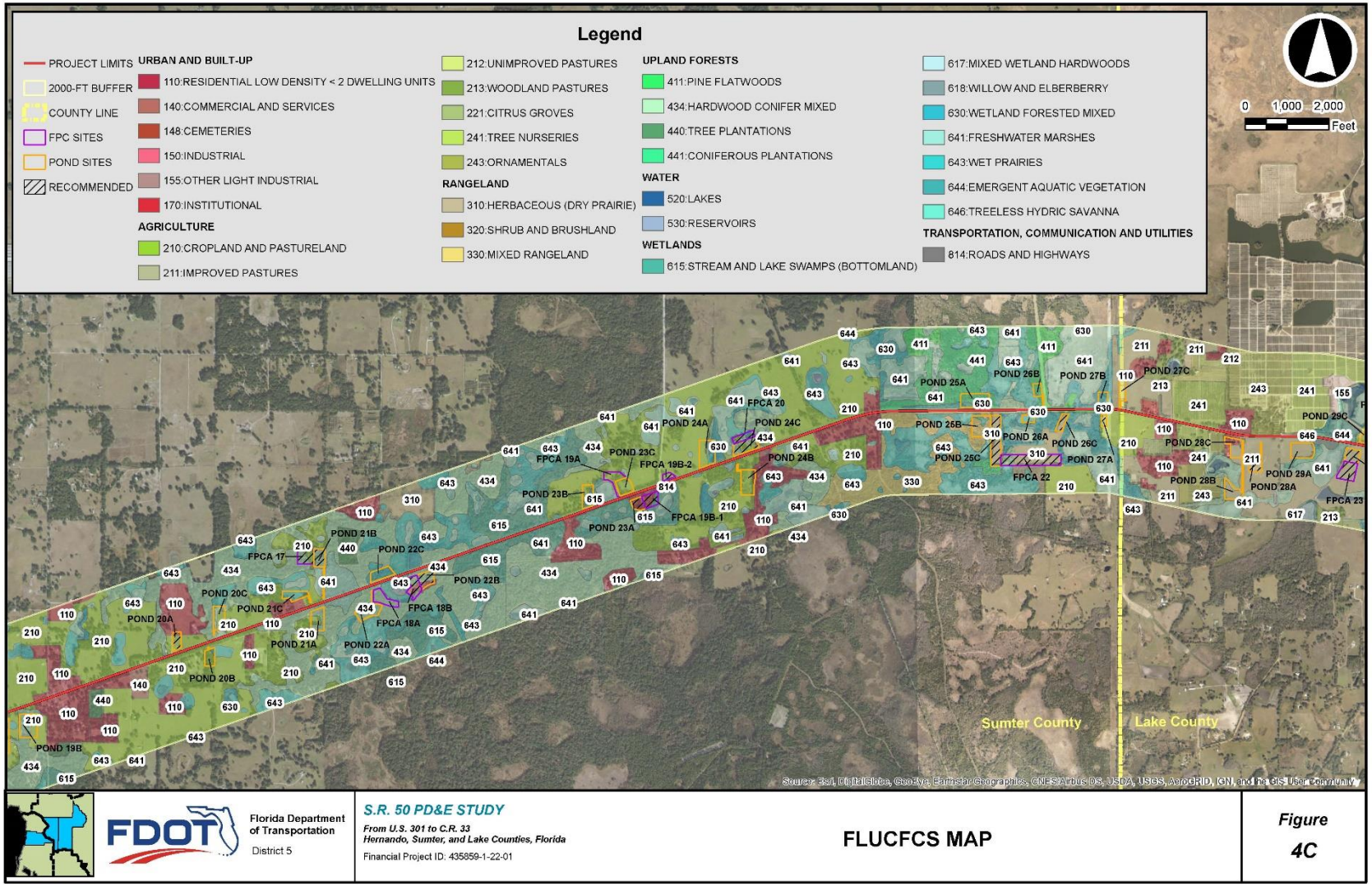


Figure 4D: FLUCFCS Map

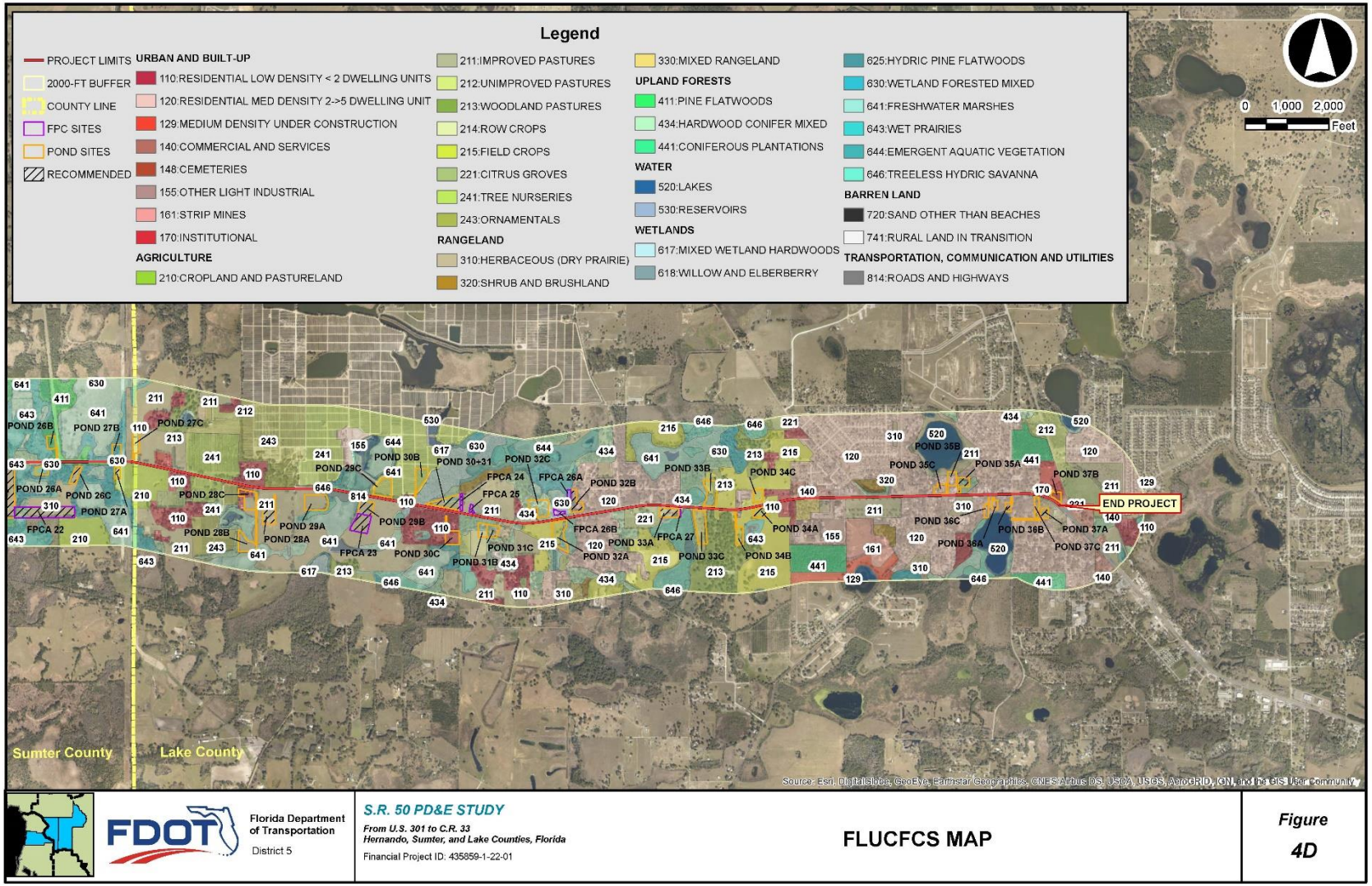


Table 2. FLUCFCS within the SR 50 Study Area

FLUCFCS Code	FLUCFCS Description	Area (ac.)	FLUCFCS Code	FLUCFCS Description	Area (ac.)
110	Residential, Low Density	665	330	Mixed Rangeland	100
120	Residential, Medium Density	470	410	Upland Coniferous Forest	91
129	Medium Density, Under Construction	16	411	Pine Flatwoods	259
140	Commercial and Services	64	420	Upland Hardwood Forests	21
148	Cemeteries	2	434	Hardwood Conifer Mixed	1119
150	Industrial	78	440	Tree Plantations	175
155	Other Light Industrial	40	441	Coniferous Plantations	127
160	Extractive	129	510	Streams and Waterways	1
161	Strip Mines	20	520	Lakes	62
170	Institutional	13	530	Reservoirs	21
180	Recreational	12	615	Stream and Lake Swamps	1214
182	Golf Courses	3	617	Mixed Wetland Hardwoods	34
190	Open Land	11	618	Willow and Elderberry	2
210	Cropland and Pastureland	2115	620	Wetland Coniferous Forests	3
211	Improved Pastures	293	621	Cypress	386
212	Unimproved Pastures	33	625	Hydric Pine Flatwoods	2
213	Woodland Pastures	76	630	Wetland Forested Mixed	195
214	Row Crops	5	631	Wetland Scrub	1
215	Field Crops	153	641	Freshwater Marshes	715
221	Citrus Groves	46	643	Wet Prairies	451
240	Nurseries and Vineyards	2	644	Emergent Aquatic Vegetation	78
241	Tree Nurseries	146	646	Treeless Hydric Savannah	70
243	Ornamentals	92	720	Sand Other than Beaches	1
310	Herbaceous (Dry Prairie)	101	741	Rural Land in Transition	4
320	Shrub and Brushland	60	814	Roads and Highways	128

2.3 – Soils

The soil surveys of Hernando (NRCS, 1977), Sumter (NRCS, 1990), and Lake Counties, Florida (NRCS, 1975) were reviewed to determine the soil types and characteristics within the SR 50 Study Area (**Appendix C**). The soils encountered along the project limits include Hydrologic Soil Group (HSG) A, A/D, B/D, C/D and D. HSG A consists of deep, well to excessively well- drained sand or gravel soils. HSG C consists of moderately fine to fine-textured soil that restricts percolation of water. HSG D consists of soils with permanently high water tables and often indicative of wetlands or depressions. According to the soil surveys, there are 19 different soil types in Hernando County also within the SR 50 Study Area; 30 different soil types located in Sumter County also within the SR 50 Study Area; and 21 different soil types located in Lake County also within SR 50 Study Area. The soil types are depicted on **Figures 5A-5D**.

Figure 5A: NRCS Soils Map

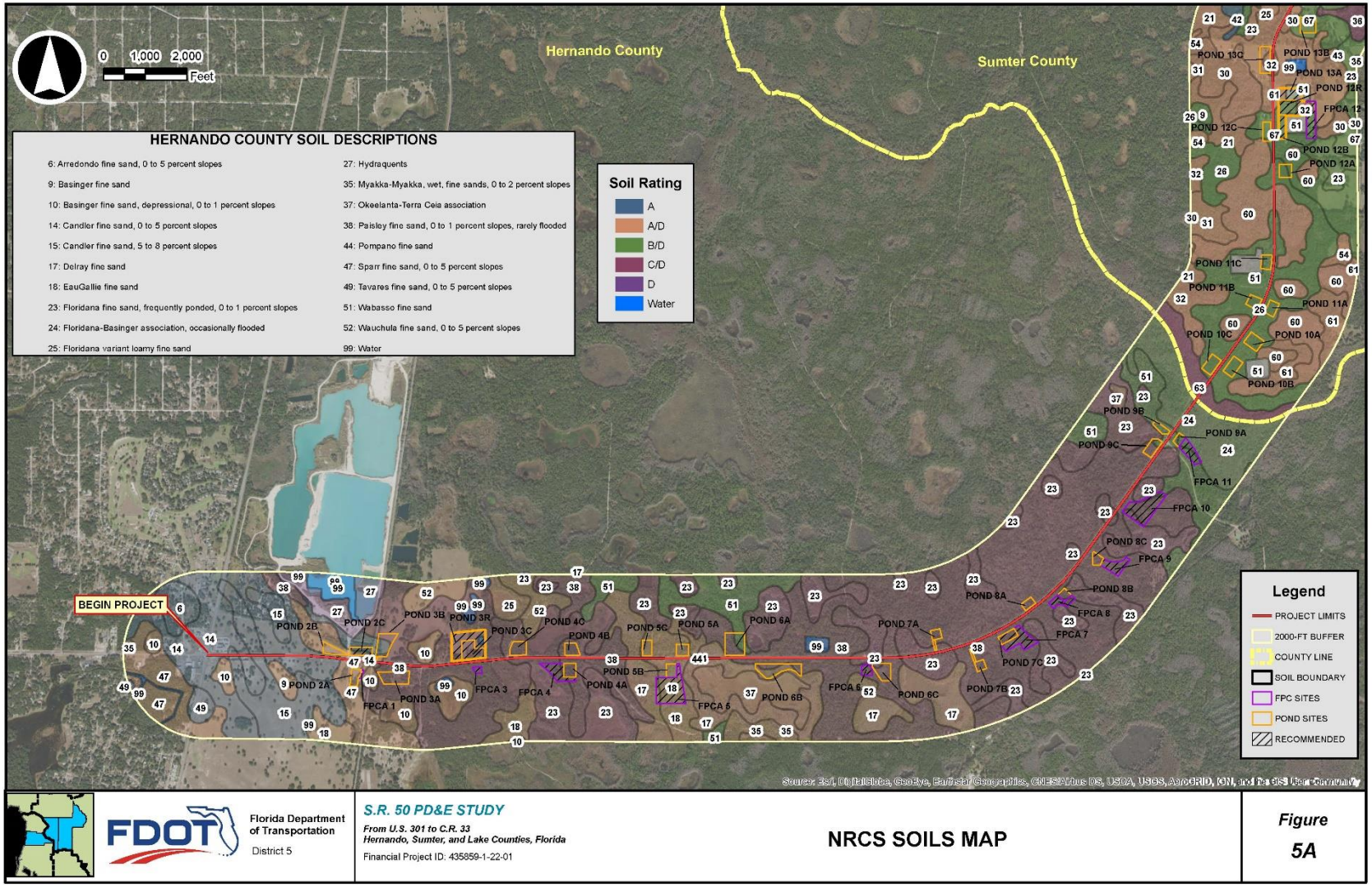


Figure 5B: NRCS Soils Map

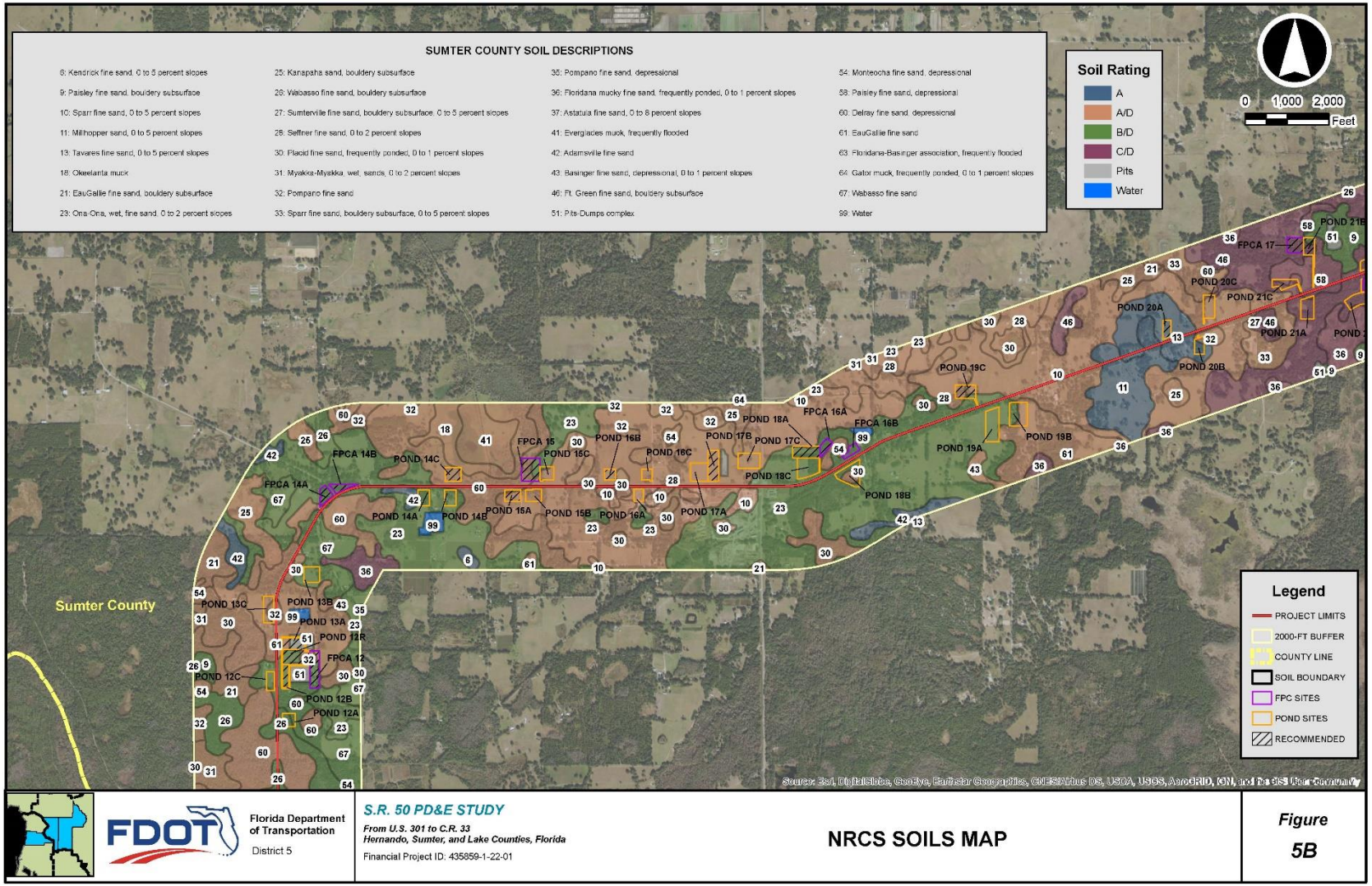


Figure 5C: NRCS Soils Map

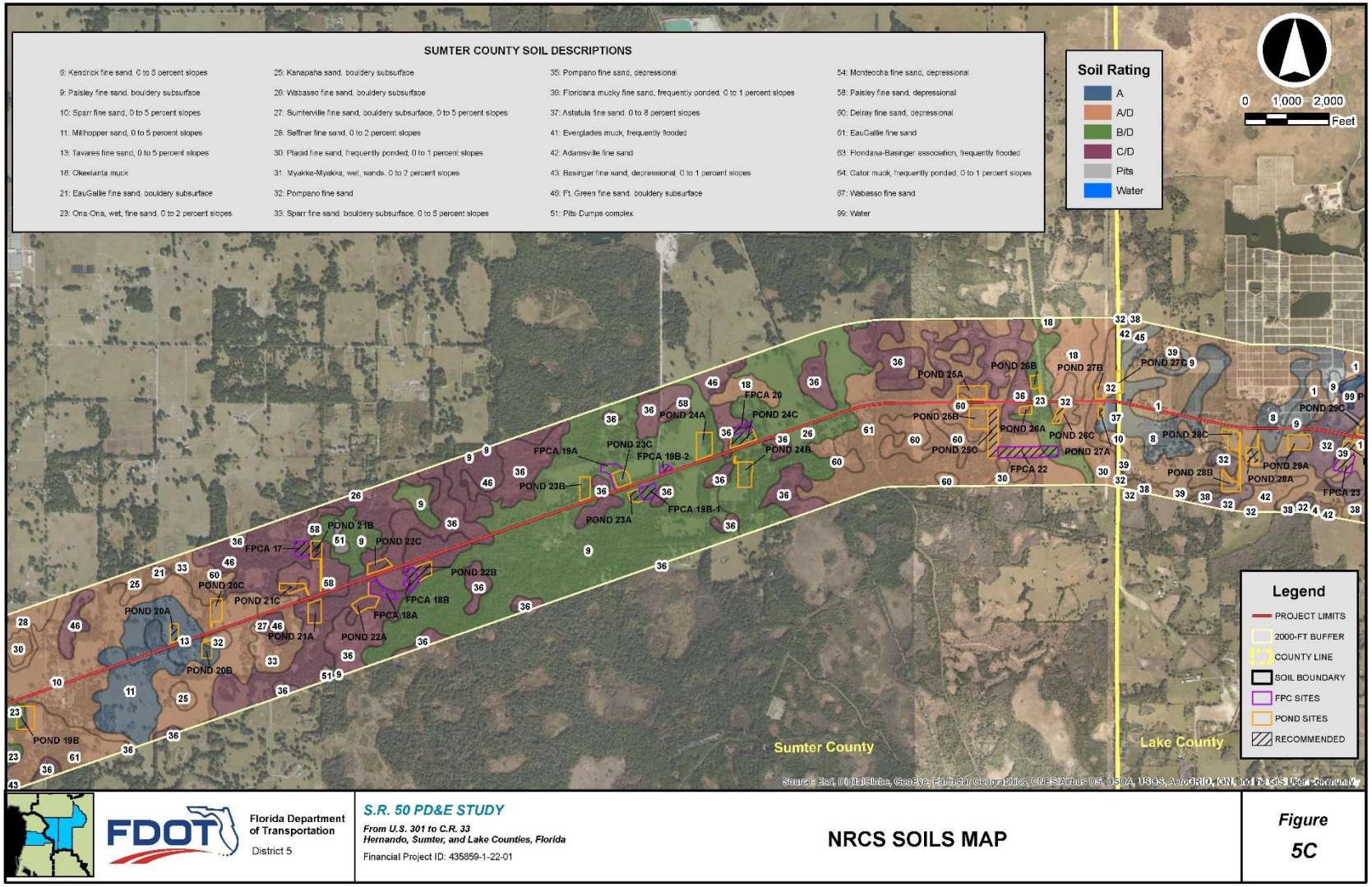
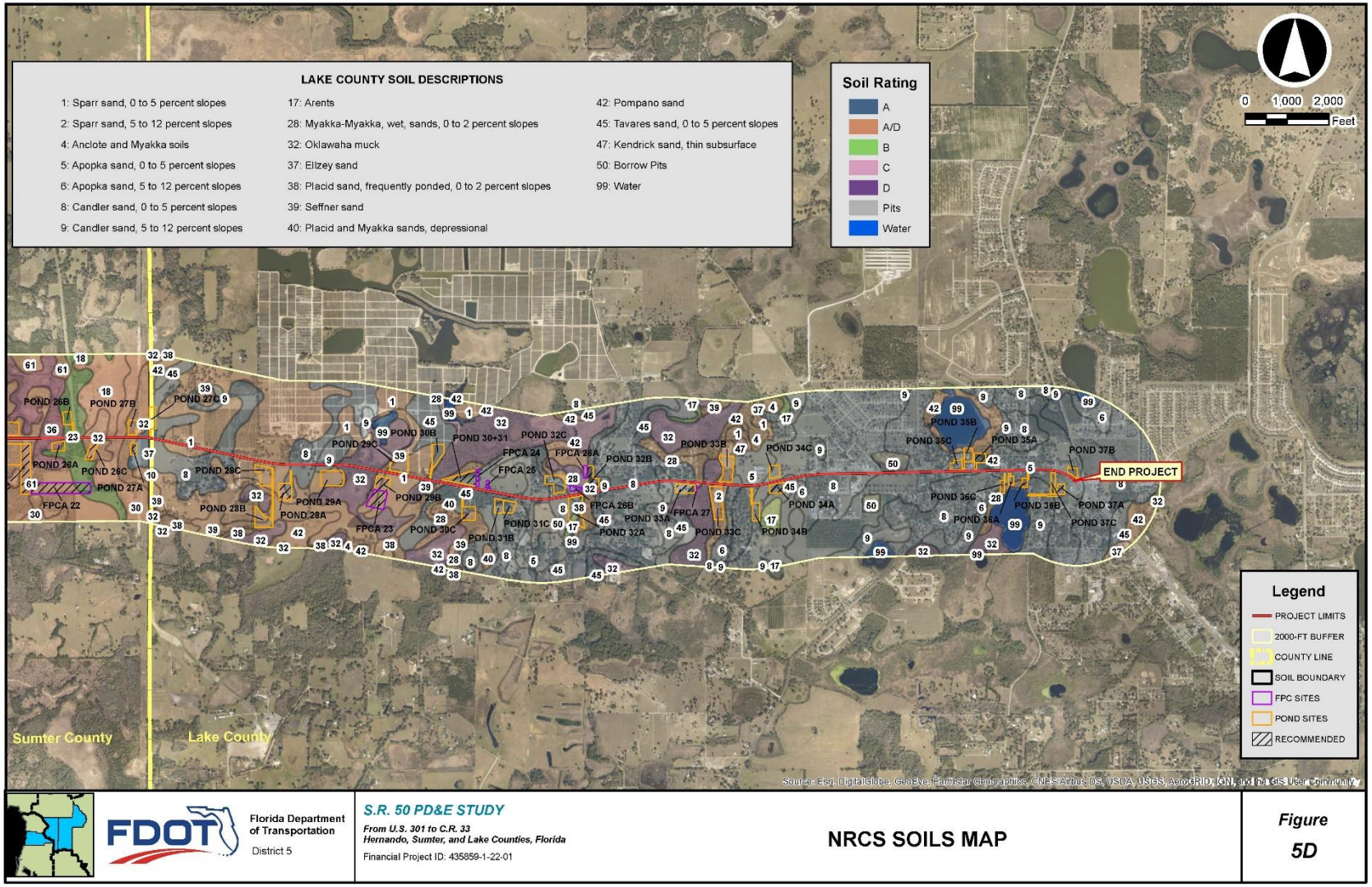


Figure 5D: NRCS Soils Map



2.4 – Drainage

The stormwater runoff from the project corridor will be collected and conveyed in roadside ditches to the proposed offsite dry retention and wet detention ponds. The ponds will discharge at or near the same cross drains that carry the roadway runoff in the existing condition. The proposed ponds were sized to achieve the required water quality treatment and water quantity attenuation and serve as a budget tool for right-of-way estimation for the project to the FDOT.

There are currently 37 drainage basins and 26 floodplain compensation sites within the project limits. Three pond alternatives were analyzed for each basin, except for Basin 1 where the proposed roadway improvements are proposed to drain to a previously permitted stormwater facility as part of the US 301 and SR 50 widening improvements associated with SWFWMD Environmental Resource Permit (ERP) number 47-35030.001. The ponds were sized on the assumption that offsite runoff would bypass the pond site alternative towards its historical path. The pond sizes were also upsized 20 percent as a contingency to account for preliminary information such as the estimated seasonal high water elevation (SHWE), ground elevations and potential natural contouring of the ponds. The **Pond Site Memorandum** detailing impacts to wetlands and protected species is included in **Appendix D**. The recommended pond alternatives are shown on **Table 3**.

Portions of this project traverse the Withlacoochee State Forest. A preliminary analysis was conducted to determine the viability of a dry linear treatment swale within the right-of-way as a fourth alternative for the basins (Basins 4 through 12) crossing State Forest lands, as a means of potentially reducing impacts to floodplains and wetlands in the forest through the elimination of pond sites. These alternatives were determined to be not feasible, as the recommended typical section for the segments containing these basins does not provide the necessary amount of space to construct swales capable of providing adequate treatment for the SR 50 widening.

In order to minimize impacts to the Withlacoochee State Forest, a preliminary analysis was conducted to determine the viability of two regional/compensating treatment ponds for the basins traversing the State Forest (Basins 3 through 12). Stormwater runoff from all existing and proposed lanes in some basins would be collected and treated to compensate for letting an equivalent amount of impervious area runoff (net new lanes) in adjacent basins go untreated. The results of the preliminary analysis are provided in the associated **Pond Siting Report**.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM), the SR 50 Study Area is located within Zone AE of the 100-year flood plain in Hernando County. This Zone AE is associated with wetlands having a hydrologic connection to the Little Withlacoochee River and established 100-year flood elevations. The SR 50 Study Area is located within Zone A of the 100-year flood plain in Sumter County. This Zone A is associated with wetlands and depressional areas having a 1% probability of flooding each year where predicted flood water elevation have not been established. The SR 50 Study Area is located within Zones A and AE in Lake County. There are no federally regulated floodways within the project limits.

Table 3. Recommended Pond Site Alternatives within the SR 50 Study Area

Segment	Basin	Recommended Alternative	Segment	Recommended Alternative
A	2	Pond 2C	A	FPC 1
	3-6	Pond 3R		FPC 3
A/B	7-13	Pond 12R		FPC 4
B	14	Pond 14C		FPC 5
	15	Pond 15A		FPC 6
	16	Pond 16B		FPC 7
	17	Pond 17B		FPC 8
C	18	Pond 18A		FPC 9
	19	Pond 19C		FPC 10
	20	Pond 20A		FPC 11
	21	Pond 21B	B	FPC 12
	22	Pond 22B		FPC 14A & 14B
	23	Pond 23A		FPC 15
	24	Pond 24C		FPC 16A
	25	Pond 25C	C	FPC 17
	26	Pond 26C		FPC 18B
	27	Pond 27A		FPC 19B-1 & 19B-2
	28	Pond 28A		FPC 20
	29	Pond 29B		FPC 22
	30	Pond 30+31		FPC 23
	31			FPC 24
D	32	Pond 32B		FPC 25
	33	Pond 33A		FPC 26B
	34	Pond 34A	D	FPC 27
	35	Pond 35A		
	36	Pond 36B		
	37	Pond 37A		

2.5 – Natural Features

The study area was evaluated for existing natural features and potential impacts to these features. Portions of the SR 50 Study Area are located within Sensitive Karst Areas (SKAs), which reflect areas with hydrogeologic and geologic characteristics relatively more conducive to potential contamination of the Floridan Aquifer System from surface pollutant sources. These areas are detailed in the associated **Pond Siting Report**. The SWFWMD has specific guidelines and precaution measures related to stormwater management ponds within SKAs. For example, stormwater management ponds shall not be excavated through a confining layer as it would allow polluted water to drain into the Floridan Aquifer. If no confining layer is present, the stormwater management ponds should not be excavated to within two feet of the underlying limestone layer. Further geotechnical analysis will be required for the ponds during the design phase to identify sinkhole indicators (i.e., 100% loss of circulations) indicative of SKAs.

SECTION 3 – PROTECTED SPECIES AND HABITAT

Ecologists used online resources and multiple field surveys to determine whether protected species occur or have the potential to occur in the SR 50 Study Area. The term protected species refers to those species that are protected by law, regulation, or rule. Specifically, the term protected species refers to those species listed under the Endangered Species Act of 1973, as amended; those species listed under Florida's Endangered and Threatened Species List, Chapter 68A-27, Florida Administrative Code (FAC); or those species listed under the Preservation of Native Flora of Florida, Chapter 5B-40, FAC.

3.1 – Efficient Transportation Decision Making

A Planning and Programming Screens were prepared for the SR 50 Study Area. Environmental Technical Advisory Team (ETAT) representatives reviewed project information and provided comments about potential direct and indirect effects to resources under their jurisdiction. Additionally, they selected a Degree of Effect (DOE) for each alternative and issue. According to their ETDM Summary Report No. 14269, dated December 1, 2016, the FWC and Florida Department of Agriculture and Consumer Services (FDACS) indicated the project alternatives may create a "Substantial" DOE on wildlife and habitat resources. The primary issues were the potential loss of public conservation/recreation lands resulting from the expansion of the existing right-of-way through the Withlacoochee State Forest; potential loss of wildlife habitat from expanded roadway and drainage retention area construction; and potential for increased wildlife roadkill on the roadway, among other issues. Alternatively, the USFWS indicated the project alternatives may create a "Moderate" DOE on wildlife and habitat resources.

3.2 – Data Collection and Field Surveys

A total of 71 protected species have the potential to occur in the SR 50 Study Area, according to the information obtained during the preliminary data collection described in Section 2. These include the 13 avian, 2 mammal, 7 reptile, and 49 plant species shown on **Table 4**. Ecologists determined a species' potential occurrence in the study area based on its habitat preferences and distributions, existing site conditions, historical data, and multiple field surveys. Listed species occurrences within the SR 50 Study Area are shown on **Figures 6A-6D**.

Ecologists familiar with Florida's protected species and natural habitats conducted preliminary field surveys in February and March 2015 as part of the Feasibility Study, and additional field surveys between May 2017 and June 2018. Meandering pedestrian surveys were conducted during daylight hours over multiple seasons to document the presence or evidence of protected species utilizing the study area. The ecologists also documented habitat types and predominant plant species, including general wetland limits, during the field reviews. Wildlife observed during the field surveys included American alligator (*Alligator mississippiensis*), gopher tortoise (*Gopherus polyphemus*), sandhill crane (*Grus canadensis*), and common wildlife species.

Table 4. Protected Species that May Occur in the SR 50 Study Area

Group	Scientific Name	Common Name	USFWS	FFWCC	FDACS	Potential Occurrence
Avian	*Aphelocoma coerulescens*	Florida scrub jay	T	T		Low
	Athene cunicularia floridana	Burrowing owl		T		Moderate
	Egretta caerulea	Little blue heron		T		High
	Egretta tricolor	Tricolored heron		T		High
	Falco sparverius paulus	Southeastern American kestrel		T		High
	Grus canadensis pratensis	Florida sandhill crane		T		Observed
	Haliaeetus leucocephalus	Southern bald eagle	BGEMA	M		Moderate
	Mycteria americana	Wood stork	E	E		High
	Pandion haliaetus	Osprey				Observed
	Picoides borealis	Red-cockaded woodpecker	E	E		Low
	Rostrhamus sociabilis plumbeus	Everglade snail kite	E	E		Low
	Rynchops niger	Black skimmer		T		Low
	Sterna antillarum	Least tern		T		Low
Mammal	*Sciurus niger shermani*	Sherman's fox squirrel		SSC		Documented
	Ursus americanus floridanus	Florida black bear		M		Documented
Reptile	*Alligator mississippiensis*	American alligator	T(S/A)			Observed
	Drymarchon corais couperi	Eastern indigo snake	T	T		High
	Gopherus polyphemus	Gopher tortoise	T	T		Observed
	Neoseps reynoldsi	Sand skink	T	T		Low
	Plestiodon egregious	Blue-tailed mole skink	T	T		Low
	Pituophis melanoleucus mugitis	Florida pine snake		T		High
	Stilosoma extenuatum	Short-tailed snake		T		Low
Plants	*Agrimonia incisa*	Incised groove-bur			T	Low
	Andropogon arctatus	Pine-woods Bluestem			T	Low
	Asplenium erosun	Auricled spleenwort			E	Documented
	Arnoglossum diversifolium	Variableleaf Indian plantain			T	Low
	Bonamia grandiflora	Florida bonamia	T		E	Low

Table 4. Protected Species that May Occur in the SR 50 Study Area

Group	Scientific Name	Common Name	USFWS	FFWCC	FDACS	Potential Occurrence
Plants (Continued)	*Calamintha ashei*	Ashe's savory			T	Low
	Carex campmanii	Chapman's sedge			T	Low
	Centrosema arenicola	Sand butterfly pea			E	Low
	Chionanthus pygamaeus	Pygmy fringe tree	E		E	Low
	Clitoria fragrans	Pigeon wings	T		E	Low
	Coelorachis tuberculosa	Piedmont jointgrass			T	Low
	Conradina brevifolia	Short-leaved rosemary	E		E	Low
	Dicerandra cornutissima	Longspurred mint	E		E	Low
	Drosera intermedia	Spoon-leaved sundew			T	Low
	Eriogonum floridanum	Scrub buckwheat	T		E	Low
	Forestiera godfreyi	Godfrey's swamp privet			E	Low
	Hartwrightia floridana	Hartwrightia			T	Low
	Illicium parviflorum	Yellow anise tree			E	Low
	Justicia Cooleyi	Cooley's water-willow	E		E	Documented
	Lechea cernua	Nodding pinweed			E	Low
	Liatris ohlingerae	Scrub blazing star	E		E	Low
	Lilium catesbaei	Pine lily			T	Low
	Lobelia cardinalis	Cardinal flower			T	Low
	Matelea floridana	Florida spiny pod			E	Low
	Matelea pubiflora	Trailing milkvine			E	Low
	Monotropsis reynoldsiae	Florida pygmy-pipes			E	Low
	Nemastylis floridana	Celestial Lily			E	Low
	Nolina brittoniana	Britton's beargrass	E		E	Low
	Paronychia chartacea	Paper-like nailwort	T		E	Low
	Panicum abscissum	Cut-throat grass			E	Low
	Pecluma dispersa	Widespread polypody			E	Documented
	Pecluma plumula	Plume polypody			E	Documented

Table 4. Protected Species that May Occur in the SR 50 Study Area

Group	Scientific Name	Common Name	USFWS	FFWCC	FDACS	Potential Occurrence
Plants (Continued)	*Pecluma ptilodon*	Swamp plume polypody			E	Documented
	Platanthera flava	Southern tuberculed orchid			T	Documented
	Peperomia humilis	Low peperomia			E	Documented
	Polygala lewtonii	Lewton's polygala	E		E	Low
	Polygonella myriophylla	Small's jointweed	E		E	Low
	Prunus geniculata	Scrub plum	E		E	Low
	Pteroglossaspis ecristata	Giant orchid			T	Low
	Pycnanthemum floridanum	Florida mountain-mint			T	Low
	Salix floridana	Florida willow			E	Low
	Spigelia loganioides	Pinkroot			E	Moderate
	Schizachyrium niveum	Scrub Bluestem			E	Low
	Trichomanes punctatum	Florida filmy fern	E		E	Low
	Triphora craigheadii	Craighead's nodding-caps			E	Low
	Warea amplexifolia	Clasping warea	E		E	Low
	Warea carteri	Carter's warea	E		E	Low

BGEMA = Bald and Golden Eagle Protection Act
C = Commercially Exploited
E = Endangered
M = Managed
SSC = Species of Special Concern
T = Threatened
T(S/A) = Threatened due to Similarity of Appearance

USFWS = United States Fish and Wildlife Service
FFWCC = Florida Fish and Wildlife Conservation Commission
FDACS = Florida Department of Agriculture and Consumer Services

Figure 6A: Protected Species Map

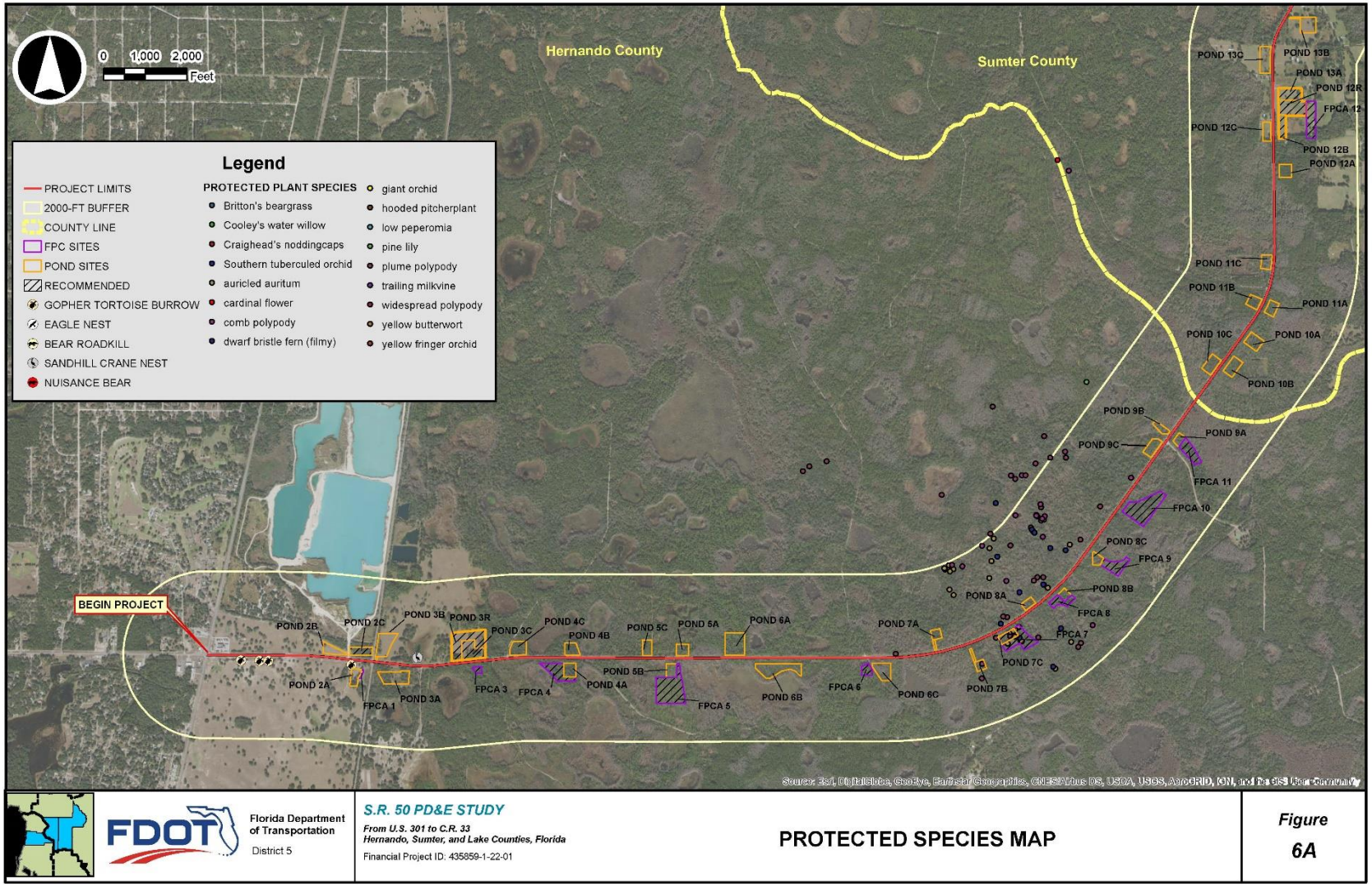


Figure 6B: Protected Species Map

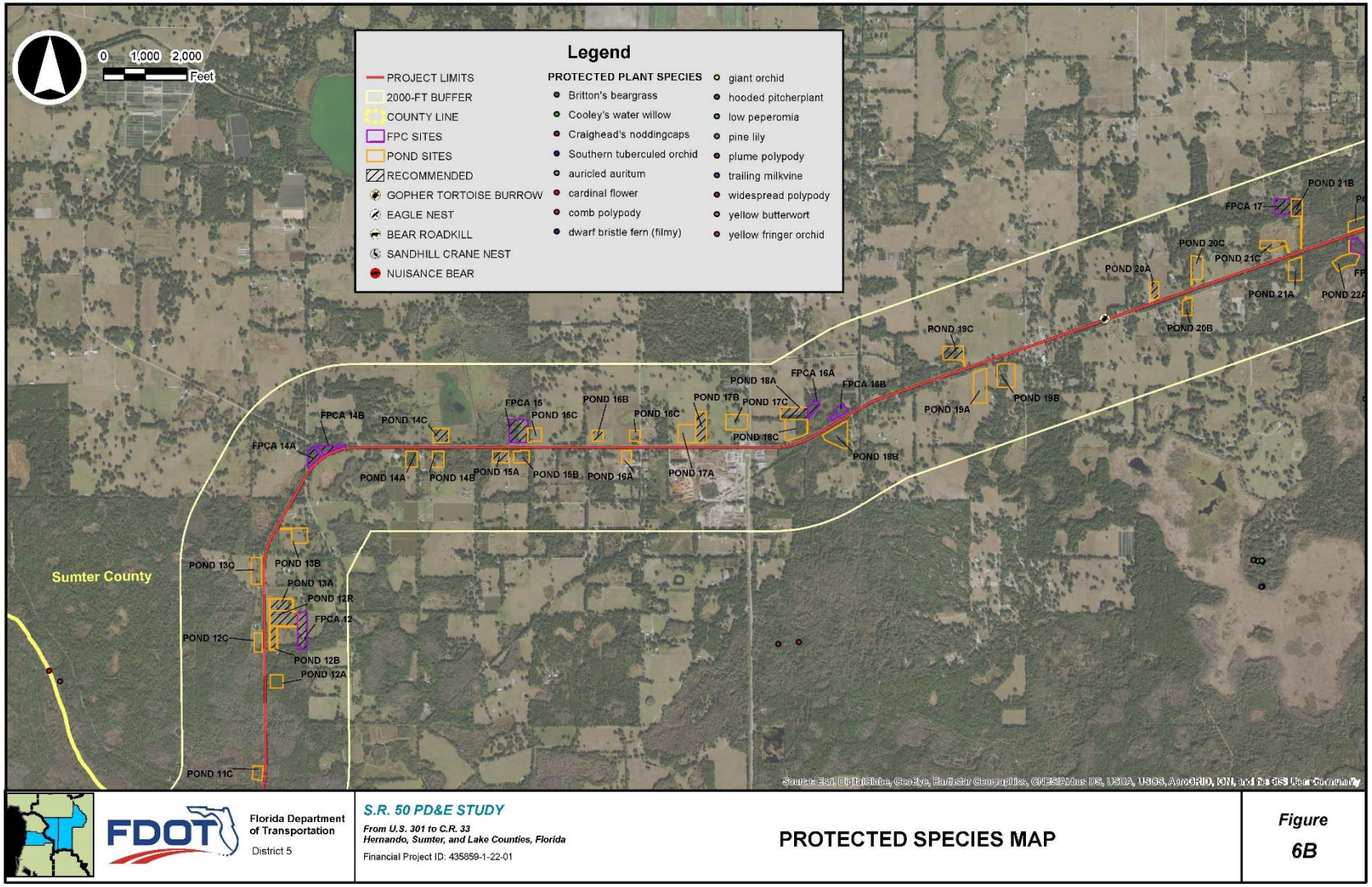


Figure 6C: Protected Species Map

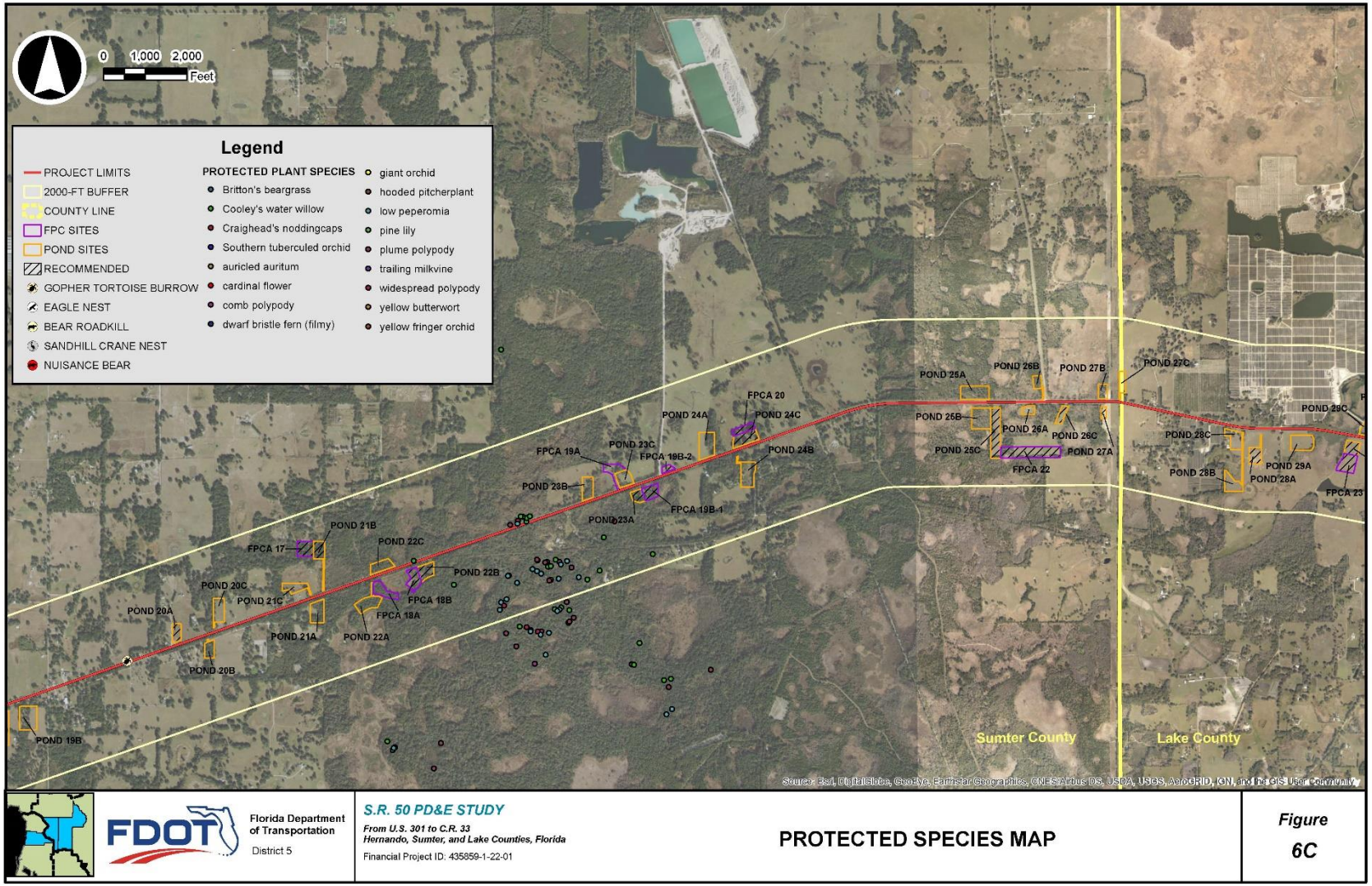
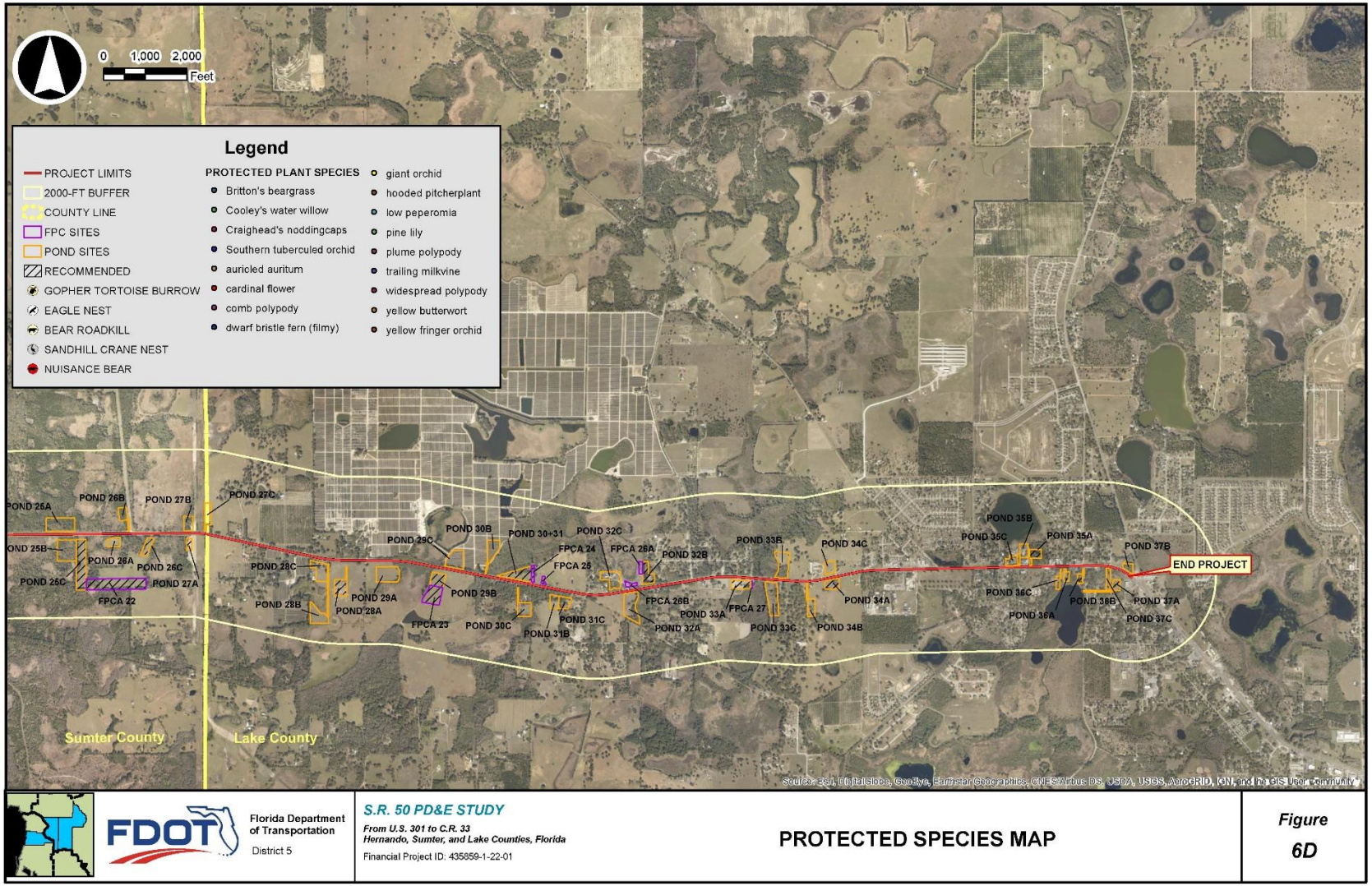


Figure 6D: Protected Species Map



3.3 – Federally Listed Species and Designated Critical Habitat

The study area is located within or partially within the USFWS Consultation Area (CA) of the Everglade snail kite (*Rostrhamus sociabilis plumbeus*), Florida scrub-jay (*Aphelocoma coerulescens*), red-cockaded woodpecker (*Leuconotopicus borealis*), sand skink (*Neoseps reynoldsi*) and blue-tailed mole skink (*Eumeces egregious lividus*), and Lake Wales Ridge plants. A consultation area is intended to identify the geographical landscape where each federally-listed species is most likely to occur. Portions of the study area also fall within three wood stork (*Mycteria americana*) Core Foraging Areas (CFA), which include suitable foraging areas important to the reproductive success of known wood stork nesting colonies. The existing habitats in the study area may also support other federally-protected and ESA candidate species including the American alligator, bald eagle (*Haliaeetus leucocephalus*), eastern indigo snake (*Drymarchon couperi*), and gopher tortoise.

3.3.1 – Everglade Snail Kite

USFWS Everglade snail kite Consultation Area is located on the eastern half of the project. The Everglade snail kite is a member of the Accipitridae family. It is a non-migratory subspecies only found in Florida, particularly near large watersheds (e.g., Everglades, Lake Okeechobee) and the shallow vegetated edges of lakes that support apple snail, the primary component of the snail kite's diet. The snail kite is classified as Endangered due to a "very small population and increasingly limited amount of fresh marsh with sufficient water to ensure an adequate supply of snails" (Bureau of Sport Fisheries and Wildlife, 1973, p. 120). The USFWS has designated critical habitat for snail kites, which consists of mostly in marshes near south Florida. The types of habitats used by snail kites were not observed in the project corridor, which lacks the marshes and large waterbodies suited for snails and snail kites. No snail kites were observed. The proposed project alternatives will have "**no effect**" on the Everglade snail kite.

3.3.2 – Florida Scrub-Jay

USFWS Florida scrub-jay Consultation Area is located over the entire project. The Florida scrub-jay is a member of the Corvidae family. It is located only on ancient dune systems and scrub habitats of peninsular Florida. The entire population of scrub-jays was divided into five sub-regions associated with the major sand deposits of Florida. The scrub-jay is classified as Threatened due to habitat loss, degradation, and fragmentation (USFWS, 1987). The types of habitats often used by scrub-jays (e.g., xeric scrub) were not observed in the project's study area. Rather, the study area contained sub-optimal habitats such as citrus groves isolated from preferred scrub-jay habitats. As part of the ETDM Summary Report, the USFWS stated there was a low potential for scrub-jays within the study corridor. No scrub-jays were observed during multiple field reviews conducted by project ecologists. Since the project is located within the Consultation Area and sub-optimal habitat exists along the study corridor, the proposed project alternatives "**may affect, but are not likely to adversely affect**" the Florida scrub-jay.

3.3.3 – Red-Cockaded Woodpecker

The red-cockaded woodpecker (RCW) is listed by the USFWS and FWC as Endangered. The very western portion, approximately 500 feet, of the project study area is within the RCW CA. The

RCW is a member of the Picidae family. The species is still widely distributed throughout the state, but the largest populations occur on federally managed lands in the panhandle (USFWS, 1999). RCW habitat consists of pine stands or pine-dominated forests with little to no understory and numerous old growth pines, particularly longleaf pines. It excavates cavities in the living part of pine trees, typically choosing trees greater than 80 years old. No critical habitat has been designated for the RCW.

No RCW habitat was observed in the portion of the project that is within the CA. While there are areas within the study corridor that contain longleaf pine and pine dominated forests, the trees are too young and located in habitats not suitable for red-cockaded woodpeckers. No RCWs were observed. The proposed project will have "**no effect**" on the red-cockaded woodpecker.

3.3.4 – Sand Skink and Blue-tailed Mole Skink

The sand skink and blue-tailed mole skink (skinks) are listed by the USFWS and FWC as Threatened. The Lake County portion of the study area is within the sand skink CA. Skinks are members of the Scinidae family and are rarely seen above ground. The geographic range of these skinks is limited to sandy ridges and ancient dunes of the Central Highlands, particularly Lake Wales Ridge, the Winter Haven Ridge, and the Mount Dora Ridge. These areas contain excessively drained, well-drained, and moderately well-drained sandy soils that usually support scrub habitats like sand pine scrub, xeric oak scrub, rosemary scrub, and scrubby flatwoods; high pine habitats like sandhills, longleaf pine-turkey oak, turkey oak barrens, and xeric hammock; and managed lands, such as citrus groves, pine plantations and pastures. Skinks typically occur in habitats that contain a mosaic of open sandy patches interspersed with forbs, shrubs, and trees. According to criteria defined by the USFWS, suitable habitat is considered to be "skink soils" located within the CA at elevations at or above 82 feet above sea level. No critical habitat has been designated for the sand skink.

Portions of the project corridor, including proposed pond site locations, meet the location, soil types, and elevation criteria for suitable skink habitat outlined in the *Peninsular Florida Species Conservation and Consultation Guideline for Sand Skink and Blue-tailed Mole Skink* (**Appendix E**). Due to the presence of suitable habitat, the recommended alternative (and other widening alternatives) "**may affect**" the sand skink and blue-tailed mole skink. The FDOT commits to conducting sand skink coverboard surveys in suitable habitat, as appropriate, during the design phase of the project and coordinating with USFWS to present the results of the surveys.

3.3.5 – Lake Wales Ridge and Other Listed Plants

The Lake Wales Ridge is the remnant of an ancient dune that runs north and south through Florida's peninsula. The eastern portion of the project located in Lake County is within the CA for the Lake Wales Ridge Plants. According to the Florida Natural Areas Inventory (FNAI) and USFWS, seventeen (17) federally-protected plant species commonly associated with the Lake Wales Ridge have been observed in Hernando, Sumter, and Lake Counties (**Table 4**). These include the Endangered Brooksville bellflower, pygmy fringe tree, short-leaved rosemary, longspurred mint, Cooley's water-willow, scrub blazing star, Britton's beargrass, Lewton's polygala, Small's jointweed, scrub plum, Florida filmy fern, clasping warea, and Carter's warea; and the Threatened Florida bonamia, pigeon wings, scrub buckwheat, and paper-like nailwort.

The majority of the protected Lake Wales Ridge plants occur in open sandy habitats maintained by periodic fire, such as high pine, turkey oak barrens, and xeric scrub. These habitats are limited within the study area, particularly in the project footprint. Some of the listed plant species occur in mesic and wetland habitats. Cooley's water willow has been documented near the right-of-way in Sumter County (**Figure 6A-6D**). Ecologists observed Cooley's water willow in the existing right-of-way during the field reviews. ETAT comments from the USFWS stated that surveys for all federally listed plants found in Hernando, Lake, and Sumter County should be conducted by a trained botanist during the appropriate time of year. FDOT will conduct appropriately-timed surveys for listed plant species. The proposed project "**may affect, but is not likely to adversely affect**" Lake Wales Ridge plants, but "**may affect"** Cooley's water willow.

3.3.6 – Wood Stork

The wood stork is listed by the USFWS and FWC as Threatened. It is a member of the Ciconiidae family. Wood storks are associated with freshwater and estuarine wetlands that are used for nesting, roosting and foraging. Nesting typically occurs in medium to tall trees that occur in stands located in swamps or islands surrounded by open water (Odgen, 1991; Rodgers et al. 1996). Preferred foraging habitat includes wetlands with a mosaic of submerged and/or emergent aquatic vegetation, and shallow open-water areas. Particularly attractive feeding sites are depressions in marshes or swamps where fish become concentrated during periods of receding water levels. No critical habitat has been designated for the wood stork.

According to the USFWS's North Florida Ecological Service Office, the habitats within 15 miles of a wood stork breeding colony are considered to be wood stork CFAs. Portions of the study area fall within the CFA of three wood stork breeding colonies: Croom, Devil's Creek, and Little Gator Creek. No wood storks were observed during the field reviews. Ecologists observed Suitable Foraging Habitat (SFH) throughout the study area including proposed pond site locations. A wood stork biomass foraging assessment will be required for impacts greater than 5 acres to SFH to determine the functional value of impacted SFH. According to the *Wood Stork Effect Determination Key for Central and North Peninsular Florida* (USFWS, 2008) (**Appendix F**), the proposed project "**may affect, but is not likely to adversely affect**" the wood stork since unavoidable wetland impacts will be offset at an USFWS-approved mitigation bank within the appropriate CFA.

3.3.7 – American Alligator

The American alligator is listed as Threatened due to its similarity of appearance to the American crocodile (*Crocodylus actus*). The crocodile is distinguished from the alligator by its head shape and color. The crocodile has a narrower snout and the lower jaw teeth are visible when its mouth is shut, unlike the alligator. Crocodiles tend to be brownish in color while alligators tend to be a blackish color. Alligators occur throughout Florida but prefer to use freshwater lakes and slow-moving rivers and their associated wetlands. No critical habitat has been designated for the American alligator.

Suitable habitat for the American alligator is located throughout the study area, including proposed pond site locations. Staff observed one alligator carcass along the roadway that had more than likely been hit by a vehicle. While the project will impact suitable alligator habitat, the

extent of impacts relative to habitat within the corridor will be minimal. The proposed project "**may affect, but is not likely to adversely affect**" the American alligator.

3.3.8 – Eastern Indigo Snake

The eastern indigo snake is listed by the USFWS and FWC as Threatened. It is a member of the Colubidae family and is the largest non-venomous snake in North America (Moler, 1992). The eastern indigo snake is widely distributed throughout central and south Florida. They occur in a broad range of habitats, from scrub and sandhill to wet prairies and mangrove swamps. Indigo snakes are most closely associated with habitats occupied by gopher tortoises whose burrows provide refugia from cold or desiccating conditions (USFWS, 1999). No critical habitat has been designated for the eastern indigo snake.

Suitable habitat exists for the indigo snake throughout undeveloped portions of the study area, including proposed pond and floodplain compensation site locations. Staff did not observe any indigo snakes during the field reviews but did observe gopher tortoises and gopher tortoise burrows within the study area. ETAT comments from the USFWS stated that complete surveys for gopher tortoise burrows should be conducted, which will facilitate the use of the *Eastern Indigo Snake Effect Determination Key* (**Appendix F**). In addition, USFWS comments state that the current standard construction conditions and protections measures for eastern indigo snake should be implemented. Based on the fact that all gopher tortoise burrows within the limits of construction will be excavated and the standard protection measures will be implemented during construction, the proposed project "**may affect, but is not likely to adversely affect**" the eastern indigo snake.

3.3.9 – Gopher Tortoise

The gopher tortoise is a Candidate for listing under the ESA by the USFWS and listed as Threatened by the FWC. It is a member of the Testudinidae family. They occur in the southeastern Coastal Plain from Louisiana to South Carolina; the largest portion of the total population is located in Florida (FWC 2012). Gopher tortoises require well-drained, sandy soils for burrowing and nest construction, with a generally open canopy and an abundance of herbaceous groundcover, particularly broadleaf grasses, wiregrass (*Aristida stricta*), legumes and fruits for foraging. Gopher tortoises can be found in most types of upland communities including disturbed areas and pastures. No critical habitat has been designated for the gopher tortoise.

Ecologists observed gopher tortoises and gopher tortoise burrows within the study area, including proposed pond site locations. ETAT comments from the FWC stated that a permit may be necessary from the FWC if tortoises are present within any permanent or temporary construction area. A 100% gopher tortoise burrow survey will be conducted by FWC authorized agents during the design and permitting phase of the project. If the proposed project cannot avoid impacts to gopher tortoise burrows or habitats within 25 feet of the burrows, then a gopher tortoise relocation permit will be required from FWC. The relocation permit authorizes the excavation of gopher tortoise burrows and relocation of inhabiting tortoises to a FWC-permitted gopher tortoise recipient site. Commensal species that also occupy gopher tortoise burrows will be allowed to vacate the project area before construction activities start, per the *Gopher Tortoise Permitting Guidelines* (FWC, 2017). Based on the permit and conservation program for tortoises in Florida, the proposed project "**may affect, but is not likely to adversely affect**" gopher tortoises.

3.4 – State Listed Species

The FWC maintains the list of animals designated as federally endangered, federally threatened, state threatened, or species of special concern. While the USFWS has primary responsibility for federally endangered or threatened species in Florida, the FWC works as a cooperating agency to help conserve these species and other imperiled species found in the state. Some listed and non-listed species are considered 'managed species' because of the well-developed programs that address their species' conservation, management, or recovery. The FWC has developed a comprehensive management plan and species action plans for the state's 57 state-listed species (FWC, 2016).

3.4.1 – Florida Burrowing Owl

The burrowing owl is listed by the FWC as Threatened. It is a member of the Strigidae family. It is a non-migratory, year-round breeding resident of Florida, and maintains home ranges and territories while nesting. Burrowing owls inhabit upland areas that are sparsely vegetated. Natural habitats include dry prairie and sandhill, but they will make use of ruderal areas such as pastures, airports, parks, and road rights-of-way because much of their native habitat has been altered or converted to other uses.

Ecologists did not observe burrowing owls during multiple pedestrian surveys of the project area. Suitable habitat was observed throughout the study area including proposed pond site locations. Burrowing owls usually dig their own burrows but are known to utilize gopher tortoise burrows and armadillo burrows as well. Gopher tortoise burrows and armadillo burrows were observed within the study area. ETAT comments from the FWC recommended the construction area be surveyed for burrowing owls prior to construction activities. If burrowing owls are observed onsite, FDOT will coordinate with the FWC to discuss avoidance, minimization, and permitting options. FDOT will conduct pre-construction surveys and adhere to the components of the Imperiled Species Management Plan (ISMP) and permitting guidelines; therefore, "**No adverse effect is anticipated**" for the burrowing owl resulting from the proposed project.

3.4.2 – Florida Pine Snake

The Florida pine snake is listed by the FWC as Threatened. It is a member of the Colubridae family. The pine snake is nonvenomous and one of the largest snakes in North America. They inhabit areas that feature well-drained sandy soils with a moderate to open canopy (Franz 1992, Ernst and Ernst 2003). Preferred habitats include sandhill and former sandhill, including old fields and pastures, sand pine scrub, and scrubby flatwoods. The pine snake often coexists with gopher tortoise and pocket gophers, spending the majority of its time underground.

No pine snakes were observed during the field surveys. Suitable habitat was observed throughout the project corridor, including proposed pond site locations. Numerous gopher tortoise and pocket gopher burrows were observed. All gopher tortoises within the construction limits will be excavated. Current FWC guidelines for the relocation of the Florida pine snake state that any incidentally captured pine snake should be released on-site or allowed to escape unharmed if habitat will remain post-development. "**No adverse effect is anticipated**" for the Florida pine snake resulting from the proposed project since suitable habitat will remain and current guidelines for relocating commensal species will be followed.

3.4.3 – Florida Sandhill Crane

The Florida sandhill crane is listed by FWC as Threatened. It is a member of the Gruidae family. It is widely distributed throughout most of peninsular Florida. Sandhill cranes rely on shallow marshes for roosting and nesting and open upland and wetland habitats for foraging (Wood and Nesbitt 2001).

Ecologists observed a Florida sandhill crane nest during preliminary field reviews in 2014, but nesting activity was not observed in subsequent field reviews. The marshes and wet prairies throughout the study area provide potential nesting habitat for the sandhill crane. The pastures and other open uplands provide foraging habitat. Ecologists observed sandhill cranes foraging in these areas during numerous field surveys. ETAT comments from the FWC recommended that surveys for nesting sandhill cranes be conducted during the January through August breeding season prior to construction. Additionally, if there is evidence of nesting during this period, FWC recommends that the nest site be buffered by 400 feet to avoid disturbance by human activity. Further coordination may be needed if the recommended buffer is not possible or if nesting is discovered after construction has begun. FDOT will conduct pre-construction surveys and adhere to the components of the ISMP; therefore, "**No adverse effect is anticipated**" for the Florida sandhill crane resulting from the proposed project.

3.4.4 – Sherman's Fox Squirrel

The Sherman's fox squirrel is listed by the FWC as a Species of Special Concern. It is a member of the Sciuridae family and one of four subspecies of fox squirrel in Florida. The Sherman's fox squirrel can be found throughout the Florida peninsula and up to central Georgia. They inhabit open, fire-maintained longleaf pine, turkey oak, sandhills, and flatwoods (FNAI 2001; FWC, 2013c). They will also utilize mixed hardwood – conifer forest, open areas with pines and oaks, cypress swamps, pastures, and other agricultural lands including the ecotones between these habitats. Sherman's fox squirrels typically have two breeding seasons each year. The winter breeding season occurs from October to February while the summer breeding season occurs from April to August (Woodling, 1997).

Ecologists observed suitable habitat for the Sherman's fox squirrel throughout the study area, including proposed pond site locations. No fox squirrels were observed during the field reviews. However, fox squirrels have been documented in the study area. ETAT comments from the FWC recommended that pre-construction surveys be conducted within 60 days of clearing or construction to determine presence. If fox squirrel nests are found onsite, a 125-foot buffer distance from the nest should be maintained. If it is necessary to work within 125 feet of the nest tree or remove a nest tree, FDOT will coordinate with the FWC. The FWC may authorize the take of an active fox squirrel nest if there is reasonable conclusion that the permitting activity will not be detrimental to the potential survival of the species. The FWC rarely issues incidental take permits for fox squirrels. FDOT will conduct pre-construction surveys and adhere to the components of the ISMP and permitting guidelines; therefore, "**No adverse effect is anticipated**" for the Sherman's fox squirrel resulting from the proposed project.

3.4.5 – Short-Tailed Snake

The short-tailed snake is listed by the FWC as Threatened. It is a member of the Colubridae family. This short-tailed snake is endemic to Florida and is only found from the Suwannee River

south to Highlands County (FNAI 2001). Short-tailed snakes are rarely seen above ground as they spend most of the time burrowed in sandy soils. They primarily inhabit areas with well-drained sandy soils, particularly longleaf pine and xeric oak habitats, but may also be found in scrub and xeric hammock habitats (Van Duyn 1939, Carr 1940, Campbell and Moler 1992, Enge 1997).

Limited habitat for the short-tailed snake occurs within the study area, including proposed pond site locations. No individuals were observed during the field surveys. Since this project will have minimal impacts to xeric habitats where this cryptic species is found, "**No adverse effect is anticipated**" for the short-tailed snake resulting from the proposed project.

3.4.6 – Southeastern American Kestrel

The southeastern American kestrel is listed by the FWC as Threatened. It is a member of the Falconidae family and can be found throughout Florida but is rare in the panhandle. The southeastern American kestrel is the only non-migratory, permanent resident kestrel in Florida. However, the seasonal occurrence of a migratory subspecies of the northern American kestrel (*Falco sparverius sparverius*) occurs from September through March in Florida. Confident identification of southeastern American kestrels can only be made during the portion of the breeding season when migratory species are not present (FWC, 2013d). The southeastern American kestrel is a secondary cavity nester, preferring habitats of sandhill and open pine savannah maintained by fire. They can be found in open pine habitats, woodland edges, prairies, pastures, and other agricultural lands.

Ecologists observed suitable habitat throughout the study area, including proposed pond site locations. ETAT comments from the FWC recommended that surveys for southeastern American kestrels be conducted during their breeding season (April to August), with surveys from May to July being ideal to avoid confusion with the migratory subspecies. FDOT will conduct pre-construction surveys and adhere to the components of the ISMP; therefore, "**No adverse effect is anticipated**" for the southeastern American kestrel resulting from the proposed project.

3.4.7 – Wading Birds

Two wading birds have the potential to occur in the study area. These species are the little blue heron and tricolored heron. Both are listed by the FWC as Threatened. Both species are widely distributed throughout peninsular Florida. Wading birds depend on healthy wetlands and vegetated areas suitable for resting and breeding which are near foraging areas (FWC, 2013e). They forage in freshwater, brackish, and saltwater habitats. They tend to nest in multi-species colonies of a variety of woody vegetation types including cypress, willow, maple, black mangrove, and cabbage palm (FNAI, 2001).

Ecologists observed suitable foraging and nesting habitat for wading birds throughout the study area, including proposed pond sites. No individuals were observed. Two wading bird rookeries are located within the study area. According to the FWC Wading Bird Rookery Data, both of these rookeries are inactive. Rookery #611137 located in Hernando County is approximately 700 feet from the proposed project limits and less than 100 feet from proposed floodplain compensation pond site FPCA10. Rookery #612115 located in Lake County is approximately 1800 feet from the proposed project limits. The area where this rookery was historically located has been developed;

no natural habitat remains to support wading birds. No nesting activity was observed during the field reviews. An updated wildlife survey for wading birds may be warranted prior to construction, since wading birds can build new nests each year. FDOT will adhere to the components of the ISMPs for wading birds; therefore, "**No adverse effect is anticipated**" for wading birds resulting from the proposed project.

3.4.8 – State Listed Plant Species

Through regulation by the FDACS Division of Plant Industry, Florida protects plant species native to the state that are endangered, threatened, or commercially exploited. The Florida Regulated Plant Index includes all plants listed as endangered, threatened, or commercially exploited as defined in Chapter 5B-40.0055, F.A.C. According to the FNAI, and FDACS thirty-two (32) state protected plant species have the potential to occur in Hernando, Sumter, and/or Lake Counties (**Table 4**). Many of these plant species occur in open sandy habitats maintained by periodic fire, such as high pine, turkey oak barrens, and xeric scrub. These habitats are limited within the study area, particularly in the project footprint. However, other state listed species prefer the mesic and wetland habitats that occur throughout the study area.

Six (6) state listed plant species have been documented within or near the study area, with some occurring immediately adjacent to the current right-of-way and within proposed pond sites. These include the Endangered auricled spleenwort, widespread polypody, plume polypody, swamp plume polypody, and low peperomia; and the Threatened southern tuberculed orchid. Ecologists did not observe state listed plants during the field surveys. FDOT will conduct appropriately-timed surveys for listed plant species. The proposed project has the "**potential for adverse effect**" on state listed plant species.

3.5 – Other Protected Species or Habitats

3.5.1 – Bald Eagle

The bald eagle was removed from the ESA in 2007 and Florida's Endangered and Threatened Species list in 2008; however, it remains protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. The bald eagle is a member of the Accipitridae family. Bald eagles tend to nest in the tops of very tall trees that provide unobstructed lines of sight to nearby habitats, particularly lakes and other open waters. Because eagles are piscivorous (fish-eating) raptors, nearly all eagles' nests occur within 1.8 miles of water (Wood et at., 1989). No critical habitat has been designated for the bald eagle.

According to the FWC's Eagle Nest locator, which maintains the location of known eagles' nests in the state, three nests are located within one mile of the study area. The nearest eagle's nest (Nest SU032) is located approximately 1850 feet from the project area (Figure 6A-6D). Nest SU021 is located approximately 2700 feet from the project area; however, it was last known to be active in 1999. Nest SU010 is located approximately 4500 feet from the project area. Suitable habitat for the bald eagle was observed throughout the study area. No bald eagles or nests were observed during the field reviews. Bald eagles tend to use the same nest year after year and may construct one or two additional nests near the primary nest. The proposed project will have "**no**

effect" on the bald eagle since the proposed activities are well outside the 660-foot eagle nest protection buffer.

3.5.2 – Florida Black Bear

The Florida black bear was removed from Florida's Endangered and Threatened Species list in 2012; however, it remains protected under Chapter 68A-4.009 F.A.C., the Florida Black Bear Conservation Plan. The study area is centrally located between the Chassahowitzka, Glades, and Ocala subpopulations, but remains outside the primary and secondary ranges of these populations. The Hernando portion of the study area is located in an occasional bear area of the Big Bend Bear Management Unit (BMU), while the Lake and Sumter County portions are located within an occasional bear area of the Central BMU.

The black bear requires large amounts of space for its home range and a variety of forested habitats, including flatwoods, swamps, scrub oak ridges, bayheads, and hammocks. Self-sustaining populations of bears are generally found on large tracks of contiguous forests with understories of berry producing shrubs or trees. These types of habitats occur on the Withlacoochee State Forest and Green Swamp near the study area; however, bears seldom occur within these properties, as evidenced by roadkill data, nuisance incidence data, and telemetry data published by FWC. "**No adverse effect is anticipated**" for the Florida black bear resulting from the proposed project.

3.5.3 – Strategic Habitat Conservation Areas

Strategic Habitat Conservation Areas (SHCA) are lands in need of protection to maintain natural communities and viable populations of many species that are indicators of the state's biological diversity. In 1994, FWC biologists completed a project entitled *Closing The Gaps in Florida's Wildlife Habitat Conservation System* (Cox et al 1994), which assessed the security of rare and imperiled species on existing conservation lands in Florida. This research identified important habitat areas in Florida with no conservation protection. These SHCA serve as a foundation for conservation planning for species protection through habitat conservation. SHCA occur throughout the study area. ETAT comments provided by FWC reference SHCA for black bears, swallow-tailed kites, and Cooper's hawks in the study area. No regulatory action is required for impacts to SHCA.

3.5.4 – Wildlife Management Areas

A portion of the study area traverses the Richloam Wildlife Management Area (WMA), one of the tracts of land that make up the Withlacoochee Sate Forest. The State Forest provides habitat for a variety of plants and animals, including rare and listed species. This area also provides public use recreational opportunities. The potential for further habitat fragmentation within these areas would be associated with the widening of the existing roadway. ETAT comments associated with substantial DOEs primarily focus on the proximity to the State Forest and impacts to listed species and habitat, land management, and recreational use. FDOT will continue coordination with the FWC and the Florida Forest Service (FFS) to minimize impacts to the WMA and determine appropriate mitigation for unavoidable impacts to the WMA.

3.5.5 – Aquatic Preserves and Outstanding Waters

The study area is not located in an Aquatic Preserve as established by the State of Florida, Board of Trustees through the Florida Aquatic Preserve Act of 1975, as amended. The Withlacoochee River System, which the proposed project traverses, and the Chassahowitzka Wildlife Refuge, which is hydrologically connected, are designated as Outstanding Florida Waters (OFW). Special protection is given to OFWs per Section 62-302.700, F.A.C. Activities or discharges within an OFW, or which significantly degrade an OFW, must meet a more stringent public interest test as outlined in Section 373.414 (1)(a), F.S. (2010). The OFWs are located within the SWFWMD jurisdiction of the project. FDOT will continue to coordinate with the SWFWMD to ensure the OFW criteria are met.

3.5.6 – Habitat Connectivity and Wildlife Crossings

A request was made by the FFS to consider the inclusion of wildlife crossing structures or other habitat connectivity enhancements to reduce habitat fragmentation and facilitate wildlife movement within the SR 50 corridor. Project ecologists conducted a preliminary evaluation of potential crossing locations based on the cross-drain analysis conducted as part of the study. The cross-drain analysis recommended that several of the existing cross drains within the WSF be replaced if SR 50 were to be widened. Following the preliminary crossing evaluation, a field review was conducted with representatives from the FDOT (Districts 5 & 7), FFS, and FWC in order to gain consensus from the agency representatives on several key factors related to each crossing location, including the suitability of the crossing location, limits or restrictions to incorporating exclusionary fencing, anticipated target species for each location, and engineering constraints associated with the inclusion of crossing structures as each location.

A total of twenty-one potential crossing locations were reviewed on April 16, 2018. These locations consisted of seventeen existing cross drains, the Withlacoochee River bridge, one upland crossing identified by FFS, the Florida Trail crossing, and one additional upland crossing identified by project ecologists. The locations of the potential crossing stations are included below in **Figures 7A** and **7B**. Since much of the project corridor is wetland, especially in the areas of the cross drains, habitat connectivity enhancement recommendations for these areas primarily consist of complementary structures located in the general area of the cross drains but with invert elevations set above (approximately 1 foot) the associated cross drain. This difference in invert elevations between the two structures will allow wildlife utilizing the structures to stay dry during normal rainfall events and will assist in facilitating the movement of upland/terrestrial species during the wet season. These structures will be sized to accommodate small to medium-sized mammals and herps such as raccoons, snakes, and turtles. Aquatic species such as alligators, otters, and amphibians will be able to utilize either the cross drain itself or the complementary structure.

Of the seventeen cross drains evaluated, eight were determined to be worthy of additional evaluation during the design phase of the project. The Withlacoochee River bridge is currently planned to include a wildlife shelf, but additional accommodations may be included during the design phase to increase the permeability of the river corridor itself. The three additional locations, two upland crossings and the Florida Trail crossing, were also recommended for further

evaluation and are shown as WC-1, WC-2, and WC-3. These are shown in in **Figures 7A** and **7B**.

The FFS requested that additional considerations by made for the crossing at WC-2, which corresponds with the existing SR 50 crossing of the Florida Trail. FFS requested that a large animal crossing, with a minimum size of 8'x8', be included to accommodate both wildlife and trail users. Engineering considerations such as road height, tie-downs, and increased wetland impacts would be resolved during the design phase if this recommendation is implemented. **Table 5** below includes the results of the Wildlife Crossing and Habitat Connectivity Enhancement Evaluation along with recommendations supported by the representative agencies.

Table 5. Wildlife Crossings and Habitat Connectivity Enhancement Evaluation

Structure	MP	Station	Description	South Side FLUCFCS	North Side FLUCFCS	Remarks	Recommended for Further Evaluation
CD-4	2.813	1925+79	Single 30" RCP	Freshwater Marsh (641)	Cypress (621)	Adjacent to intersection	No
CD-5	3.382	1955+73	Double 30"RCP	Cypress (621)	Cypress (621)	Deepwater cypress system	No
CD-6	4.37	2007+79	Double 36" RCP	Stream and Lake Swamps (615)	Stream and Lake Swamps (615)	Deepwater cypress system	No
CD-7	4.811	2031+63	Quadruple 48" RCP	Stream and Lake Swamps (615)	Stream and Lake Swamps (615)	Large existing cross drain - fencing feasible	Yes
CD-8	5.055	2044+55	Single 30" RCP	Stream and Lake Swamps (615)	Stream and Lake Swamps (615)	Deepwater cypress system	No
CD-9	5.207	2051.52	Single 30" RCP	Shrub and Brushland (320)	Stream and Lake Swamps (615)	Uplands on south side - riparian habitat connection	Yes
CD-10	5.539	2070+22	Double 42" RCP	Stream and Lake Swamps (615)	Stream and Lake Swamps (615)	Deepwater cypress system	Yes
CD-11	5.977	2093+10	Single 48" RCP	Stream and Lake Swamps (615)	Stream and Lake Swamps (615)	Deepwater cypress system	No
Withlacoochee River Bridge	0.0-0.047	2098+00	250' Bridge	Stream and Lake Swamps (615)	Stream and Lake Swamps (615)	LRE Estimate $40 million additional – does not seem viable	To be finalized during design
CD-12	0.137	46+46	Single 48" RCP	Hardwood-Conifer Mixed Forest (434)	Wet Prairie (643)	Uplands on south side – riparian habitat connection	Yes
CD-13	0.437	62+32	Double 8'x3' CBC	Hardwood-Conifer Mixed Forest (434)	Cypress (621)	Uplands on south side – riparian habitat connection	Yes

Table 5. Wildlife Crossings and Habitat Connectivity Enhancement Evaluation

Structure	MP	Station	Description	South Side FLUCFCS	North Side FLUCFCS	Remarks	Recommended for Further Evaluation
CD-14	0.993	91+94	Single 8'x5' CBC	Cypress (621)	Cypress (621)	Large existing cross drain – fencing feasible	Yes
CD-15	1.225	103+92	Single 48" RCP	Tree Plantation (440)	Cypress (621)	Too close to FFS boundary – fencing not feasible on both sides	No
CD-30	2.752	164+77	Single 36" RCP	Freshwater Marsh (641)	Freshwater Marsh (641)	~500 ft from western FFS boundary – connects freshwater marsh system surrounded by uplands – fencing feasible	Yes
CD-31	3.031	179+58	Single 24" RCP	Hardwood-Conifer Mixed Forest (434)	Wet Prairie (643)	South side of location is outside of FFS lands	No
CD-32	3.451	201+63	Single 24" RCP	Stream and Lake Swamps (615)	Freshwater Marsh (641)	Connects marsh/shrub system surrounded by forested uplands – fencing feasible	Yes
CD-33	3.708	215+22	Single 24" RCP	Stream and Lake Swamps (615)	Stream and Lake Swamps (615)	~100 feet from eastern FFS boundary – fencing not feasible	No
CD-38	5.952	333+21	Single 36" RCP	Wet Prairie (643)	Hardwood-Conifer Mixed Forest (434)	South side of location is outside of FFS lands	No
WC-1	TBD	TBD	Upland Area	Pine Flatwoods (411), Hardwood-Conifer Mixed Forest (434), Cypress (621)	Pine Flatwoods (411), Hardwood-Conifer Mixed Forest (434), Freshwater Marsh (641)	Mosaic area near western WSF boundary just east of McKinney Sink Rd. Most likely small structure for small/med herps and mammals	Yes

Table 5. Wildlife Crossings and Habitat Connectivity Enhancement Evaluation

Structure	MP	Station	Description	South Side FLUCFCS	North Side FLUCFCS	Remarks	Recommended for Further Evaluation
WC-2	TBD	TBD	Florida Trail	Pine Flatwoods (411)	Pine Flatwoods (411)	Florida Trail crossing. FFS requested large animal (bear) crossing that could also facilitate trail users. The crossing would be located somewhere between CD-5 and Porter Gap Rd.	Yes
WC-3	TBD	TBD	Upland/Wetland Mosaic	Mixed Rangeland (330), Wet Prairie (643)	Coniferous Plantation (441), Mixed Wetland Forest (630)	Mosaic habitat within eastern section of WSF	Yes

Figure 7A: Wildlife Crossing/Habitat Connectivity Map

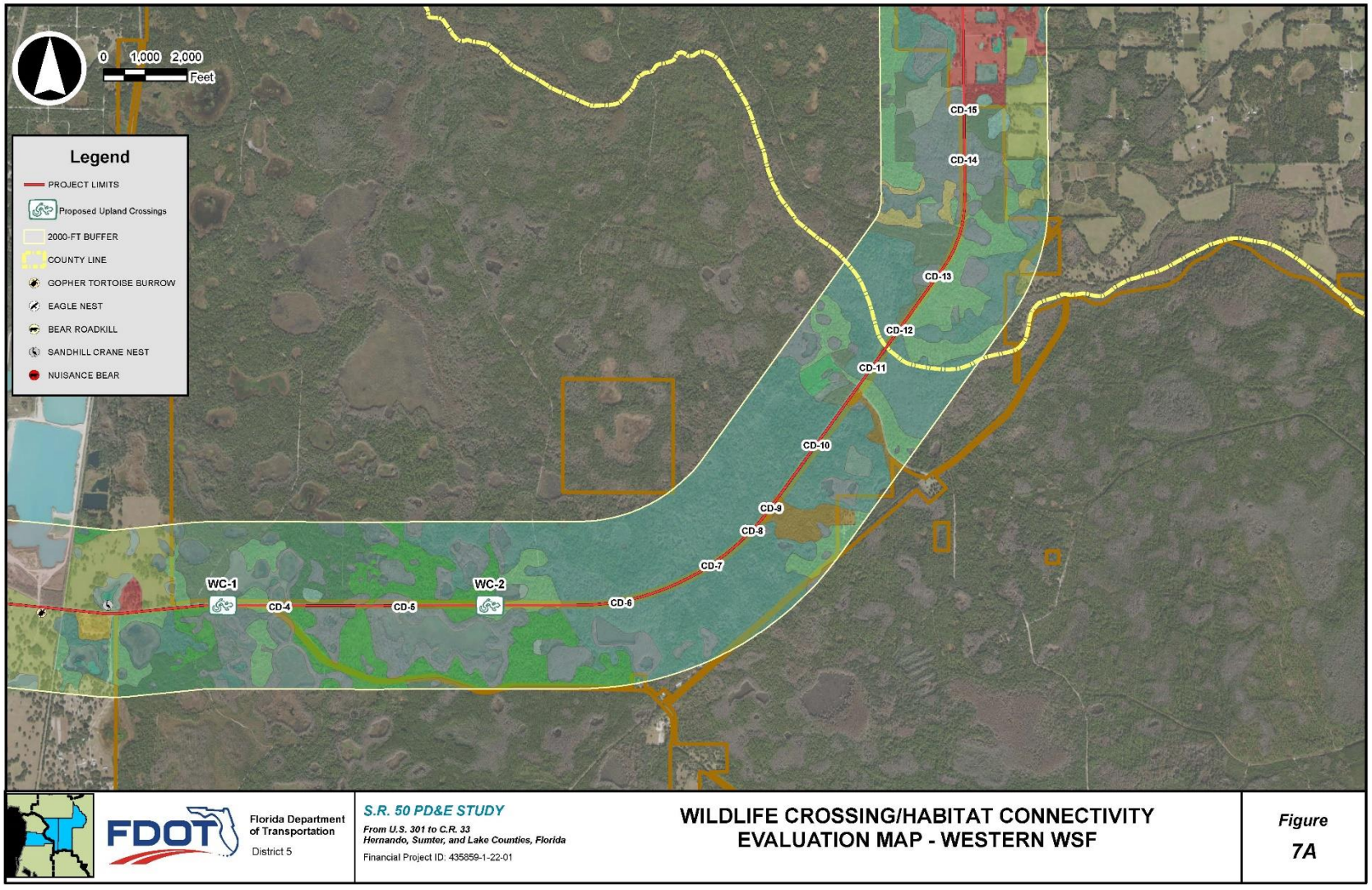
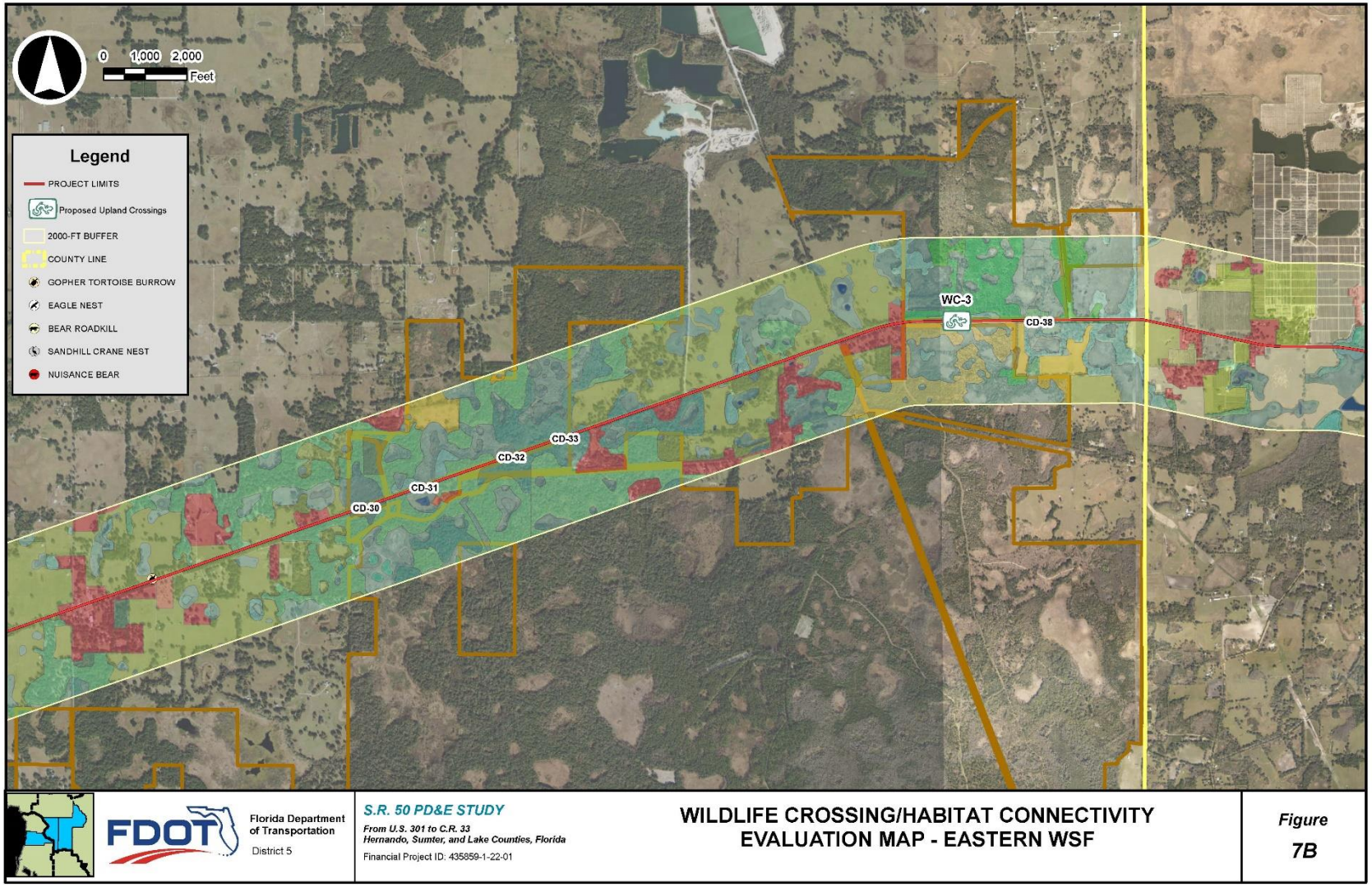


Figure 7B: Wildlife Crossing/Habitat Connectivity Map



SECTION 4 – WETLAND EVALUATION

Ecologists performed a wetland evaluation of the study area. The wetland evaluation relied on literature reviews and field surveys to identify the location, extent, and functional value of wetlands in the study area; the potential direct, indirect, or cumulative effects of the project's actions to those wetlands; and available mitigation options to satisfy permit requirements from regulatory agencies. This wetland evaluation was performed in accordance with the Presidential Executive Order 11990 ("Protection of Wetlands"); U.S. Department of Transportation Order 5660.1A ("Preservation of the Nation's Wetlands"); Federal Highway Administration Technical Advisory T6640.8A regarding the preparation of environmental documents; and Part 2, Chapter 9, *Wetlands and Other Surface Waters,* of the FDOT's PD&E Manual.

4.1 – Efficient Transportation Decision Making

According to their ETDM Summary Report No. 14269, dated December 1, 2016, the U.S. Environmental Protection Agency (EPA), SJRWMD, and U.S. Army Corps of Engineers (USACE) indicated the project alternatives may create a "Substantial" DOE to wetlands and surface waters. The primary issues were the potential loss of wetlands function; loss of wildlife habitat; degradation of water quality in wetlands and surface waters; and reduction in flood storage and capacity. Other issues of concern included increased stormwater runoff and the increased pollutants into surface waters and wetlands as a result of the project and other point and nonpoint sources. Alternatively, the USFWS and SWFWMD indicated the project alternatives may create a "Moderate" DOE on wetlands and surface waters, while the NMFS assigned a "Minimal" DOE.

4.2 – Data Collection and Field Surveys

Ecologists familiar with Florida's natural plant communities performed an assessment of the study area to identify wetland vegetation, wetland hydrology, and hydrologic indicators to determine the presence of wetlands and other surface waters within the study area. A formal wetland delineation to determine jurisdictional boundaries was not performed; however, the general limits of wetlands and other surface waters were identified in the field using the criteria established in in Rule 62-340, F.A.C., and the USACE's *Corps of Engineers Wetland Delineation Manual* (USACE, 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region* (USACE, 2010). The wetland limits have not been reviewed by the SWFWMD, SJRWMD, or USACE. Ecologists used the Uniform Mitigation Assessment Method (UMAM), per Chapter 62-345, F.A.C., for the functional assessment of wetlands within the study area.

4.3 – Wetland Habitats and Surface Waters

Seventy-six (76) wetlands and 7 other surface waters with potential to be affected by the proposed project were identified within the study area (**Figure 8A-8D**). Forested and non-forested wetlands were observed. The surface waters consist of the Little Withlacoochee River, artificial impoundments, Lake Jackson, and Sunset Lake. These wetlands are principally located at the toe-of-slope of SR 50 within but not limited to the boundary of the Richloam Tract of the Withlacoochee State Forest. The following section includes a brief description of each wetland type and other surface water within the study area. **Table 6** provides details identifying each

wetland including the wetland number, NWI classification, FLUCFCS classification, and a brief description. FLUCFCS classifications are based on the results of the field reviews of the study area. NWI classifications were not altered and are based upon the listed classification of the nearest NWI wetland system.

Figure 8A: Wetlands and Surface Waters Map

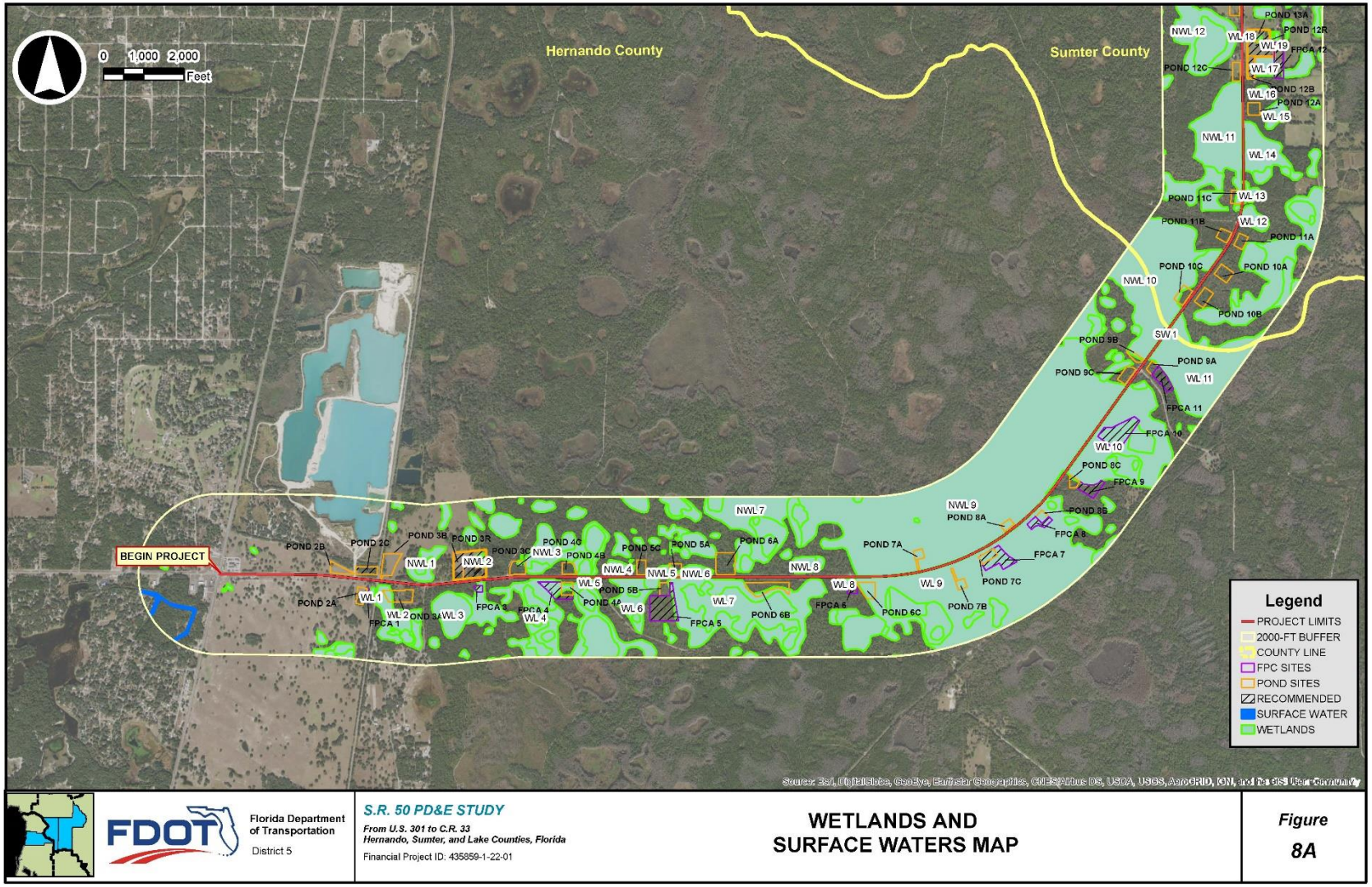


Figure 8B: Wetlands and Surface Waters Map

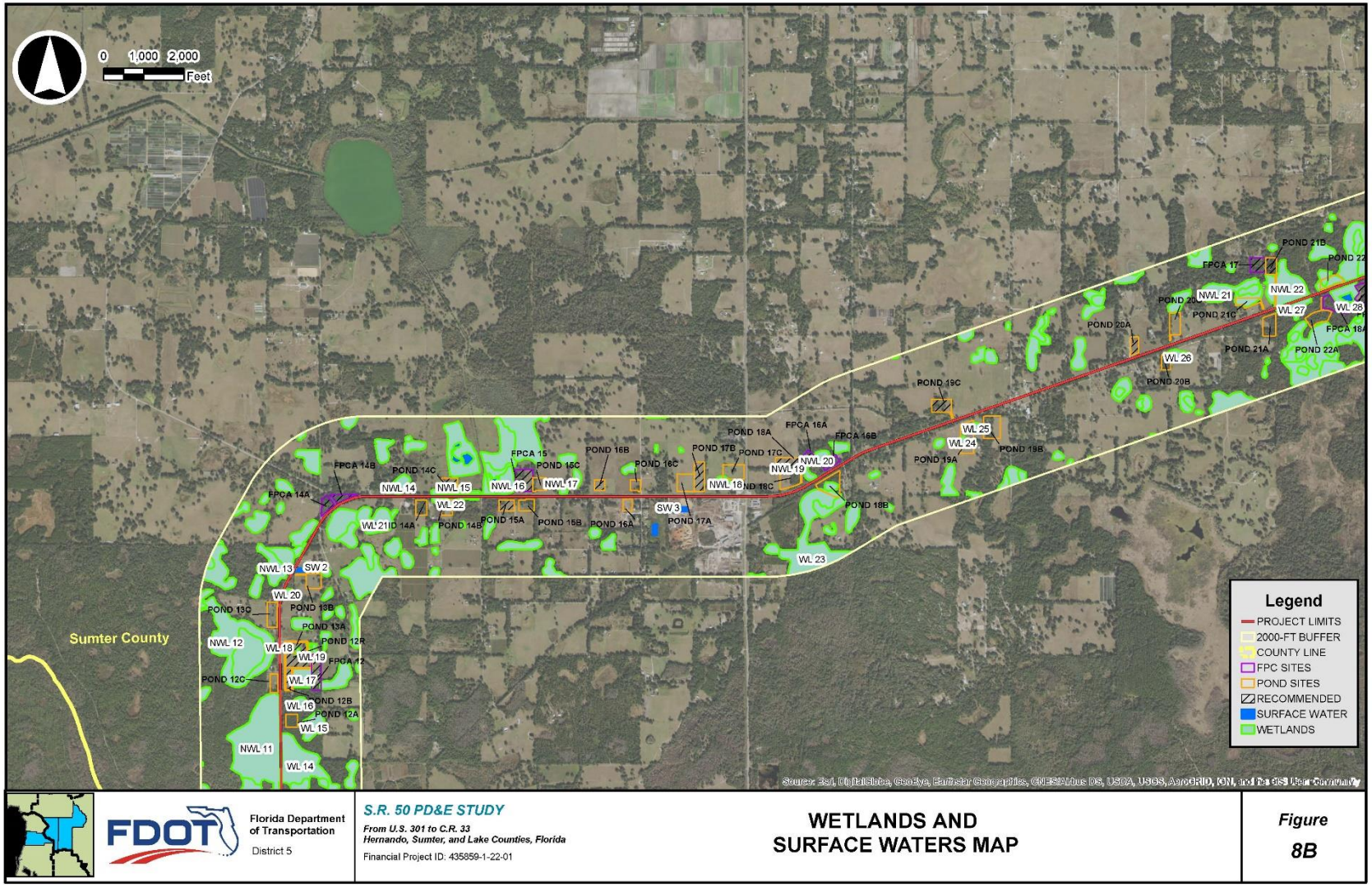


Figure 8C: Wetlands and Surface Waters Map

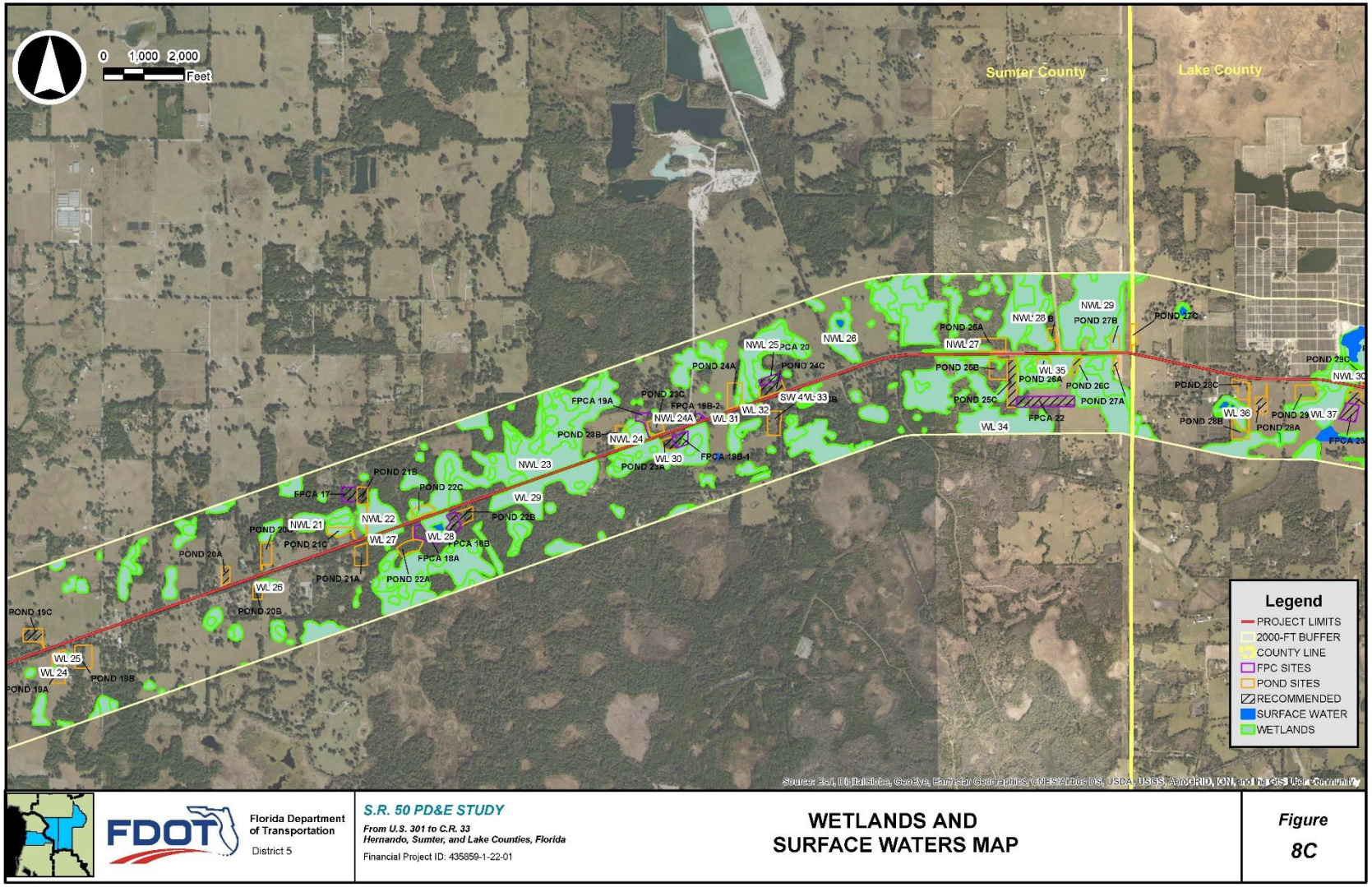


Figure 8D: Wetlands and Surface Waters Map

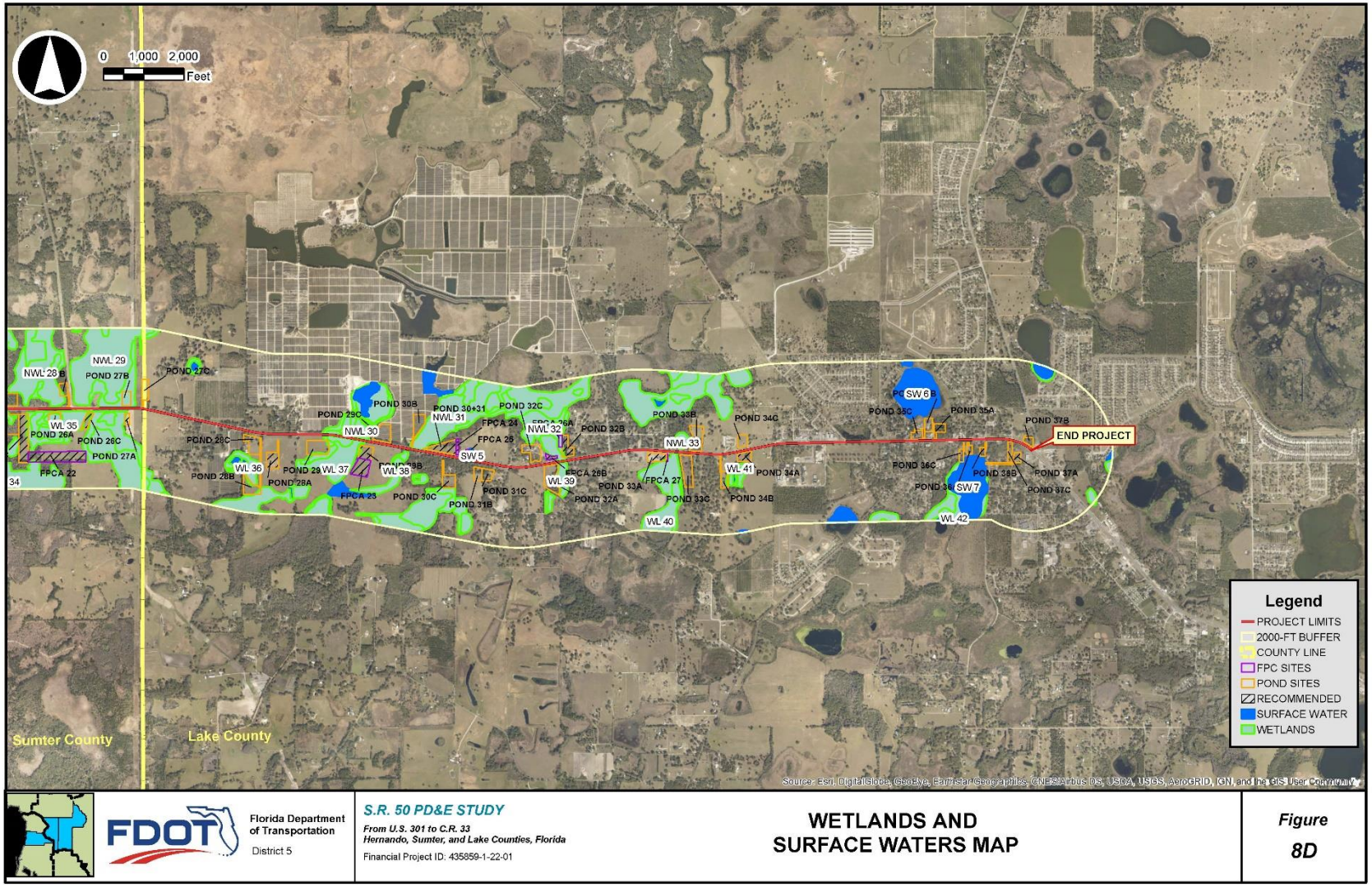


Table 6. Wetlands and Surface Waters in the SR 50 Study Area

Segment	Wetland ID	FLUCFCS	NWI Code
A	WL 1	641	PEM1G
	WL 2	615	PEM1G/PFO1A
	WL 3	641/615	PEM1G/PFO1A
	WL 4	621/641	PEM1G/PFO1A
	WL 5	621	PFO
	WL 6	621/641	PFO2F/PFO4C/PEM1G
	WL 7	621/641	PFO2F/PEM1G
	WL 8	615	PEM1F
	WL 9	615/621/641	PEM1F/PFO4A/PSS6G
	WL 10	615/641	PFO1A/PEM1/PSS6G
A/B	WL 11	615	PFO4C/PFO6F
B	WL 12	621	PFO6F
	WL 13	621	PFO6F
	WL 14	621	PFO6F/PFO4C
	WL 15	630	PFO2F
	WL 16	630	PFO2F
	WL 17	641	PEM1G
	WL 18	643	PEM1F
	WL 19	644	PUBHx
	WL 20	631	PSS
	WL 21	641/630/621	PEM1F/PFO2F
	WL 22	630	PFO6C
C	WL 23	615/641	PFO2F/PEM1G
	WL 24	643	PEM1F
	WL 25	643	PEM1F
	WL 26	643	PEM1F
	WL 27	641	PSS1F
	WL 28	643	PAB3H
	WL 29	615/641	PFO1C/PEM1F
	WL 30	615/641/643	PFO6F/PEM1C
	WL 31	643	PAB3H
	WL 32	641	PEM1C
	WL 33	641/643	PEM1F
	WL34	643	PEM1F
	WL 35	630/641/643	PFO4A/PEM1C/PFO6C
	WL 36	641	PEM 1F

Table 6. Wetlands and Surface Waters in the SR 50 Study Area

Segment	Wetland ID	FLUCFCS	NWI Code
C	WL 37	618/630/641/646	PEM1C/F
	WL 38	617/641/646	PFO6F
D	WL 39	641	PEM1F
	WL 40	625/646	PEM1F/PSS1F
	WL 41	643/644	PEM1F/PAB4Hx
	WL 42	646	PEM1G
A	NWL 1	643/644	PAB3H
	NWL 2	641/643	PAB3H
	NWL 3	621/641/643	PEM1G
	NWL 4	630	PFO4A
	NWL 5	621	PFO
	NWL 6	621	PFO
	NWL 7	615/621/641	PFO2F/PEM1G
	NWL 8	620/641	PFO2/PEM1G
	NWL 9	615/643	PFO1A/PFO4C/PFO6C
A/B	NWL 10	615/621	PFO1C/PFO2F
B	NWL 11	621	PFO2F
	NWL 12	615	PFO2F
	NWL 13	630/641/643	PEM1G/PAB3H
	NWL 14	641	PEM1G
	NWL 15	621	PFO2F
	NWL 16	615	PSS1F/PFO6C
	NWL 17	643	PEM1F
	NWL 18	643	PEM1A
C	NWL 19	641	PEM1G
	NWL 20	641	PEM1F
	NWL 21	643	PEM1F
	NWL 22	641	PEM1F/PSS1F
	NWL 23	615/630/641/643	PEM1F/PFO1C/PFO2F
	NWL 24	615/641	PEM1F
	NWL 24A	643	PEM1F
	NWL 25	630/641/643	PFO6C/PEM1C
	NWL 26	643	PEM1F
	NWL 27	630	PEM1F
	NWL 28	641/643	PSS7C
	NWL 29	630/641	PEM1G/PFO6C
	NWL 30	630/644/646	PEM1F
	NWL 31	617	PFO2F

Table 6. Wetlands and Surface Waters in the SR 50 Study Area

Segment	Wetland ID	FLUCFCS	NWI Code
D	NWL 32	630/641	PEM1F/PFO7C
	NWL 33	646	PEM1F
A	SW 1	510	PFO6F
B	SW 2	530	PUBHx/PEM1F
	SW 3	530	PUBHx
C	SW 4	530	PEM1F
	SW 5	530	PUBHx
D	SW 6	520	PUBH
	SW 7	520	PUBH

4.3.1 – Stream and Lake Swamps (Bottomland)

FLUCFCS: 615
NWI: PFO1A, PFO1C, PFO2F, PFO6C, PSS6G, PFO6F
Wetlands: WL 2, WL 3, WL 8, WL 9, WL 10, WL11, WL 23, WL 29, WL 30, NWL 9, NWL 10, NWL 12, NWL 16, NWL 23, NWL 24

Bottomland usually occurs in floodplain or overflow areas. Within the study areas, these habitats are predominantly associated with the Withlacoochee River System. Vegetation observed in wetlands classified as Bottomland includes a canopy comprised of: bald cypress (*Taxodium distichum*), pond cypress (*Taxodium ascendens*), water hickory (*Carya aquatica*), laurel oak (*Quesrcus laurifolia*), American elm (*Ulmus americana*), sweetgum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), swamp tupelo (*Nyssa sylvatica*), and slash pine (*Pinus elliottii*). Understory consists of immature canopy species, buttonbush (*Cephalanthus occidentalis*), saltbush (*Baccharis halimifolia*), dahoon holly (*Ilex cassine*), Carolina willow (*Salix caroliniana*), and elderberry (*Sambucus canadensis*). Groundcover species include cinnamon fern (*Osmunda cinnamomea*), royal fern (*Osmunda regalis*), Virginia chainfern (*Woodwardia virginica*), and sawgrass (*Cladium jamaicense*).

4.3.2 – Mixed Wetland Hardwoods

FLUCFCS: 617
NWI: PFO6F, PFO2F
Wetlands: WL 38, NWL 31

Mixed Wetland Hardwoods consist of a variety of hardwoods species that are tolerant of hydric conditions. Observed canopy species include red maple, sweet gum, water oak (*Quercus nigra*), bald cypress, and pond cypress. Observed shrub layer species include red maple and sweet gum saplings, saltbush, buttonbush, and Carolina willow. Groundcover consists of cinnamon fern, swamp fern, softrush (*Juncus* sp.), and beggarticks (*Bidens alba*).

4.3.3 – Willow and Elderberry

FLUCFCS: 618
NWI: PEM1C/PSS
Wetlands: WL 37

The Willow and Elderberry classification consists of a vegetative community that is dominated by Carolina willow. A portion of WL 37 is classified as Willow and Elderberry. Other observed shrub and groundcover species include elderberry, sapling red maple, wax myrtle, buttonbush, salt bush, Peruvian water primrose (*Ludwigia peruviana*), and cattail (*Typha latifolia*).

4.3.4 – Wetland Coniferous Mixed

FLUCFCS: 620
NWI: PFO2
Wetlands: NWL 8

Wetland Coniferous Forests are wetlands which meet the crown criteria for coniferous forests and are usually found in the interior wetlands in river floodplains, bogs, bayheads, and sloughs. A portion of NWL 8 is classified as Wetland Coniferous Forests. Observed canopy species include slash pine, bald cypress, pond cypress, and red maple. Understory species include wax myrtle. Groundcover was limited by dense pine straw.

4.3.5 – Cypress

FLUCFCS: 621
NWI: PFO1A, PFO1C, PFO2F, PFO6C, PSS6G, PFO6F
Wetlands: WL 4, WL 5, WL 6, WL 7, WL 12, WL 13, WL 14, WL 21, NWL 3, NWL 5, NWL 6, NWL 7, NWL 10, NWL 11, NWL 15

Cypress wetlands are composed of pond cypress or bald cypress which is either pure or predominant. Cypress wetlands are found throughout the study area. Observed canopy species are predominantly bald cypress and pond cypress, and include water hickory, sweetgum, red maple, and water oak. Shrub species include saltbush, button bush, and wax myrtle. Groundcover species consist of sawgrass, soft rush, flatsedge (*Cyperus* sp.), swamp fern (*Blechnum serrulatum*), and netted chain fern (*Woodwardia areolata*).

4.3.6 – Hydric Pine Flatwoods

FLUCFCS: 625
NWI: PFO2
Wetlands: WL 40

Hydric pine flatwoods have a moderate canopy of slash pine and understory grasses and forbs, with occasional sparse saw palmetto (*Serenoa repens*). A portion of WL 40, near proposed pond site 33C, contains hydric pine flatwoods.

4.3.7 – Wetland Forested Mixed

FLUCFCS: 630
NWI: PFO1A, PFO1C, PFO2F, PFO6C, PSS6G, PFO6F
Wetlands: WL 15, WL 16, WL 21, WL 22, WL 35, WL 37, NWL 4, NWL 13, NWL 23, NWL 25, NWL 27, NWL 29, NWL 30, NWL 32

Wetland Forested Mixed wetlands contain communities in which neither hardwoods or conifers achieve 66 percent canopy composition. This type of forested wetland occurs throughout the study area. Species observed in these communities include a canopy of bald cypress, sweet bay (*Magnolia virginiana*), pond cypress, red maple, cabbage palm (*Sabal palmetto*), sweetgum, slash pine, laurel oak, swamp tupelo, loblolly pine (*Pinus taeda*), and American elm. The shrub layer consists of wax myrtle, saltbush, button bush, Carolina willow, elderberry, and Peruvian water primrose. Observed groundcover species include cinnamon fern, swamp fern, soft rush, and caric sedges (*Carex* spp.).

4.3.8 – Wetland Scrub

FLUCFCS: 631
NWI: PSS
Wetlands: WL 20

Wetland Scrub communities typically contain low scrub species with no dominant species and are associated with topographic depressions and poorly drained soils. WL 20 consists of wetland scrub and is comprised of saltbush, Peruvian water primrose, and elderberry.

4.3.9 – Freshwater Marshes

FLUCFCS: 641
NWI: PEM1G, PEM1C, PEM1F
Wetlands: WL 1, WL 3, WL 6, WL 7, WL 17, WL 21, WL 23, WL 27, WL 32, WL 33, WL 35, WL 36, WL 37, WL 38, WL 39, NWL 2, NWL 3, NWL7, NWL 8, NWL 13, NWL 14, NWL 19, NWL 20, NWL 22, NWL 23, NWL 24, NWL 25, NWL 29, NWL 32

Freshwater marshes are non-forested wetlands that are usually confined to relatively low-lying areas. Freshwater marshes occur throughout the study area. Observed vegetation includes sawgrass, saltbush, arrowhead (*Sagitaria latifolia*), maidencane (*Panicum hemitomon*), soft rush, pickerel weed (*Pontederia cordata*), button bush, St. John's wort (*Hypericum* sp.), alligator flag (*Thalia geniculata*), spike rush (*Eleocharis* sp.) and Carolina red root (*Lachnanthes caroliniana*).

4.3.10 – Wet Prairies

FLUCFCS: 643
NWI: PEM1G, PEM1C, PEM1F
Wetlands: NWL 1, NWL 2, NWL 3, NWL 21, WL 18, NWL 13, NWL 17, NWL 18, WL 24, WL 25, WL 26, NWL 23, NWL 24A, NWL 25, WL 33, WL 34, WL 35, NWL 26, NWL 28, WL 41, WL 31, WL 28

Wet Prairies are non-forested wetlands composed predominately of grassy vegetation and usually distinguished from marshes by having less water and shorter herbage. Wet Prairies were observed throughout the study area. Vegetation observed in these areas include spike rush, yellow-eyed grass (*Xyris* sp.), maidencane, St. John's wort, cordgrass (*Spartina bakeri*), and white-top star rush (*Rhynchospora* sp.).

4.3.11 – Emergent Aquatic Vegetation

FLUCFCS: 644
NWI: PUBHx, PEM1F, PAB4Hx, PAB3H
Wetlands: WL 19, WL 41, NWL 1, NWL 30

Emergent Aquatic Vegetation includes both floating vegetation and vegetation which is found either partially or completely above the surface. Wetlands throughout the study area are partially comprised of Emergent Aquatic Vegetation. Vegetation includes spatterdock (*Nuphar* spp.), duck weed (*Lemna minor*), common cattail, pickerel weed, water lily (*Nymphaea lotus*), and alligator weed (*Alternanthera philoxeroides*).

4.3.12 – Treeless Hydric Savanna

FLUCFCS: 646
NWI: PEM1G, PEM1F, PSS1F
Wetlands: WL 37, WL 38, WL 40, WL 42, NWL 30, NWL 33

Treeless Hydric Savannas are the treeless variant of hydric pine savannas and are typically dominated by wiregrass or cutthroat grass along with wetland plant associates. Vegetation occurring in these areas include seedling and sapling pine predominantly along the edges of the savanna. Groundcover species include yellow-eyed grass, wiregrass (*Aristida stricta*), hooded pitcher-plant (*Sarracenia minor*), meadow beauty (*Rhexia* spp.), white-top star rush, and umbrella grass (*Fuirena* sp).

4.3.13 – Streams and Waterways

FLUCFCS: 510
NWI: R3SB
Surface Water: Little Withlacoochee River

Streams and Waterways include rivers, creeks, canals, and other linear bodies of water. The Little Withlacoochee River is the only stream and waterway located within the study area. It is located near the Hernando and Sumter County line. The Little Withlacoochee River is part of the Withlacoochee River System which drains to the Gulf of Mexico, including areas that contain estuarine habitats utilized by federally-managed fish species and their prey. However, no EFH or critical habitat has been designated for the Little Withlacoochee River. The Little Withlacoochee River may be within State Owned Sovereign Submerged Lands (SSL). A determination from FDEP will be required to verify the presence and/or location of SSL within the study area. Use of SSL will require authorization in the form of modifying the existing Public Easement or recording a new Public Easement per Chapter 18-21, F.A.C.

4.3.14 – Lakes

FLUCFCS: 520
NWI: PUBHx
Surface Water: Lake Jackson; Surface Water 7 – Sunset Lake

Lakes include extensive inland water bodies, excluding man-made reservoirs. Two Lakes occur within the study area, near proposed pond site locations, and have the potential to incur impacts. Surface Water 6 – Lake Jackson is located on the north side of SR 50, near the eastern terminus of the study area. Proposed pond site 35B is located near the southern bank of the lake. Surface Water 7 – Sunset Lake is located on the south side of SR 50, near the eastern terminus of the study area. Proposed pond sites 36B, 36 C, and 37 Basin Easement may have impacts on this surface water. Both Surface Waters 6 and 7 are considered to be waters of the state and U.S.

4.3.15 – Reservoirs

FLUCFCS: 530
NWI: PUBHx, PEM1F
Surface Water: 2, 3, 4, and 5

Reservoirs are artificial impoundments of water used for irrigation, flood control, municipal and rural water supplies. Reservoirs are located along the project corridor, particularly in low-density residential areas. These reservoirs are less than 10 acres.

Surface Waters 2, and 4 area isolated man-made cattle ponds within pasturelands with no connectivity to waters of the state or U.S.

Surface Water 3 is part of the permitted stormwater management system (ERP 2506.006) for the Robbins Manufacturing Company. Impacts to this surface water are not anticipated.

Surface Water 5 is a depressional area that appears to have been excavated to create an agricultural pond within pasturelands. Culverts under SR 50, and along the existing right-of-way, and swales connect this surface water to nearby forested wetlands and thus it is considered to be waters of the state and U.S.

4.4 – Potential Impacts

Several alternatives were evaluated during the SR 50 PD&E Study to determine if the alternatives could meet the purpose and need of this project. These alternatives included a 'No-Build' alternative for the entire study area; use of the existing two-lanes with a third passing lane or a four-lane rural widening alternative in Segment A; use of the existing two-lanes with a third passing lane alternative with left/center/right widening options or a four-lane rural widening alternative with left/center/right options in Segment B; four-lane rural widening alternative with left/center/right options or a high-speed urban four-lane widening with left/center/right options in Segment C; and a four-lane urban widening alternative with left/center/right options in Segment D.

The alternatives considered future traffic needs, input from the public and local governments, standard engineering practices, and the environment. The alternatives included a full range of typical sections, intersections, and alignments to meet the identified capacity needs for the road while avoiding temporary and permanent wetland impacts to the greatest extent practicable. Avoidance and minimization of wetlands was and remains an important component of this SR 50 PD&E Study.

The following subsection examines the proposed direct, indirect, and cumulative effects of the proposed project alternatives on wetlands and other surface waters. According to the Council on Environmental Quality, direct effects (i.e., impacts) are caused by the proposed action and occur at the same time and place; indirect effects are caused by the action at a later time, but are still reasonably certain to occur; and, cumulative impacts are those caused from the incremental impact of the action when considering other past, present and reasonably foreseeable future actions. The proposed impacts to wetlands and State Forest are shown on **Table 7 and Table 8**.

4.4.1 – Direct Impacts

The 'No-Build' alternative avoids direct wetland and other surface water impacts in the SR 50 Study Area but contributes to a declining LOS on SR 50. In Segments A and B, the four-lane alternative would have approximately 3.5 times more wetland, flood plain, and State Forest impacts than the three-lane passing alternatives. In Segment C, the four-lane rural alternatives would have approximately 1.5 to 2.1 times more wetland, flood plain, and State Forest impacts than the four-lane urban alternatives. In Segment D, the four-lane urban alternatives would have only minor impacts to wetlands and no impacts to State Forests.

4.4.2 – Indirect Impacts

The 'No-Build' alternative avoids indirect wetland and other surface water impacts in the SR 50 Study Area but contributes to a declining LOS on SR 50. In order to provide reasonable assurances that indirect (i.e., secondary) impacts from construction, alteration and intended or reasonably expected uses of the proposed alternatives will not contribute to violations of water quality standards or adverse impacts to the functions of wetlands or other surface waters, indirect impacts were assessed 25 feet beyond the limits of direct impacts to wetlands and other surface waters.

4.4.3 – Cumulative Impacts

The 'No-Build' alternative avoids cumulative wetland and other surface water impacts in the SR 50 Study Area but contributes to a declining LOS on SR 50. In order to provide reasonable assurances that a regulated activity will not cause unacceptable cumulative impacts upon wetlands and other surface waters in the SR 50 Study Area, the FDOT will seek to provide mitigation for adverse wetland and other surface water impacts within the same drainage basin as the anticipated impacts or develop a regional mitigation plan pursuant to Section 373.4137, Florida Statutes.

Table 7. Proposed State Forest and Wetland Impacts from Recommended Alternative

Segment	State Forest Impacts (ac.)	Forested Wetland Impacts (ac.)	Herbaceous Wetland Impacts (ac.)	**Surface Water Impacts (ac.)**
No Build	0	0	0	0
A	0	44.95	1.25	0.50
B	11.68	13.53	1.73	0
C	9.59	18.02	9.9	.10
D	0	0	0.34	0

Table 8. Proposed State Forest and Wetland Impacts from Recommended Pond and FPC Sites

Segment	State Forest Impacts (ac.)	Forested Wetland Impacts (ac.)	Herbaceous Wetland Impacts (ac.)	**Surface Water Impacts (ac.)**
No Build	0	0	0	0
A	39.47	21.16	1.87	0
B	0	0.53	0.56	0
C	0	1.89	1.48	0
D	0	0.25	0.31	0

4.5 – Avoidance and Minimization

The avoidance and minimization of wetlands (and other habitat) impacts were considered throughout the SR 50 PD&E Study and will continue to be evaluated during the design and permitting phases of the project. For example, the study considered different build alternatives and evaluated best fit options, including widening left/center/right for specific segments of the corridor to avoid or reduce wetland impacts, particularly within the Withlacoochee State Forest. Pond and flood plain compensation sites were selected to avoid direct impacts to wetlands and other surface waters when practicable. Additionally, coordination with the Florida Forest Service revealed several unique habitats within the State Forest that may provide habitat(s) to protected species. The FDOT will make efforts to avoid these unique habitats during the design and pond site selection process when practicable.

4.6 – Wetland Assessment

A wetland assessment was performed for wetlands and other surface waters in the SR 50 Study Area. The wetland assessment was conducted in accordance with the Uniform Mitigation Assessment Method (UMAM), as described in Chapter 62-345, FAC. The UMAM is the state-wide methodology for determining the functional value provided by wetlands and other surface waters

and the amount of mitigation required to offset adverse impacts to those areas for regulatory permits. The results of the UMAM assessment are provided in **Table 9**. These values may be refined during the design and permitting phases of the project

Table 9. Proposed Functional Loss Due to Direct Impacts from Recommended Alternative

Segment	Basin	WL ID	Type	LLS	WE	CS	Impact Area (ac.)	Functional Loss
A	WRB	WL 1	Herb	7	7	7	0.08	0.06
	WRB	WL 2	For	7	7	7	0.80	0.56
	WRB	WL 3	For	8	8	8	0.37	0.29
	WRB	WL 4	For	8	8	8	1.37	1.10
	WRB	WL 5	For	8	8	8	0.60	0.48
	WRB	WL 6	Herb	8	8	8	0.97	0.78
	WRB	WL 6	For	8	8	8	2.14	1.71
	WRB	WL 7	For	8	8	8	4.61	3.69
	WRB	WL 8	For	8	8	8	0.86	0.69
	WRB	WL 9	For	8	8	8	14.40	11.52
	WRB	WL 10	For	8	8	8	6.94	5.55
A/B	WRB	WL 11	For	8	8	8	3.13	2.50
B	WRB	WL 12	For	8	8	8	0.88	0.70
	WRB	WL 13	For	8	8	8	1.05	0.84
	WRB	WL 14	For	8	8	8	3.01	2.41
	WRB	WL 20	Herb	5	5	5	0.37	0.19
	WRB	WL 21	Herb	7	7	7	0.31	0.16
	WRB	WL 22	For	6	6	6	0.59	.036
	WRB	WL 27	Herb	8	8	8	1.87	1.50
	WRB	WL 28	Herb	8	8	8	1.22	0.98
	WRB	WL 29	For	8	8	8	6.23	4.98
	WRB	WL 30	For	8	8	8	3.32	2.66
	WRB	WL 31	Herb	6	6	6	0.29	0.17

LLS = Landscape and Location Support
WE = Water Environment
CS = Community Structure
WRBMB = Withlacoochee River Cumulative Impact Basin
SOR = Southern Ocklawaha River Cumulative Impact Basin

Table 9. Proposed Functional Loss Due to Direct Impacts from Recommended Alternative

Segment	Basin	WL ID	Type	LLS	WE	CS	Impact Area (ac.)	Functional Loss
C	WRB	WL 32	Herb	7	7	7	0.44	0.31
	WRB	WL 33	Herb	7	7	7	0.48	0.34
	WRB	WL 34	Herb	8	8	8	1.96	1.57
	WRB	WL 35	Herb	7	7	7	2.93	2.05
	SOR	WL 37	Herb	6	6	6	2.39	1.43
	SOR	WL 38	For	6	6	6	0.08	.05
D	SOR	WL 39	Herb	6	6	6	0.11	.07
	SOR	WL 40	Herb	7	7	7	0.11	.07
A	WRB	NWL 3	Herb	8	8	8	0.16	.13
	WRB	NWL 4	For	8	8	8	0.01	.08
	WRB	NWL 5	For	8	8	8	0.30	0.24
	WRB	NWL 6	For	8	8	8	0.94	0.75
	WRB	NWL 9	For	8	8	8	8.61	6.89
A/B	WRB	NWL 10	For	8	8	8	1.60	1.28
B	WRB	NWL 11	For	8	8	8	2.20	1.76
	WRB	NWL 13	Herb	7	7	7	1.25	.88
	WRB	NWL 14	Herb	7	7	7	0.47	0.33
	WRB	NWL 15	For	5	5	5	1.75	.88
	WRB	NWL 16	For	7	7	7	1.20	0.84
	WRB	NWL 17	Herb	6	6	6	0.28	0.17
C	WRB	NWL 20	Herb	7	7	7	0.17	0.12
	WRB	NWL 22	Herb	8	8	8	1.00	0.8
	WRB	NWL 23	Herb	8	8	8	2.04	1.63

LLS = Landscape and Location Support
WE = Water Environment
CS = Community Structure
WRBMB = Withlacoochee River Cumulative Impact Basin
SOR = Southern Ocklawaha River Cumulative Impact Basin

Table 9. Proposed Functional Loss Due to Direct Impacts from Recommended Alternative

Segment	Basin	WL ID	Type	LLS	WE	CS	Impact Area (ac.)	Functional Loss
C	WRB	NWL 24	Herb	7	7	7	0.76	0.53
	WRB	NWL 24A	Herb	5	5	5	0.07	0.03
	WRB	NWL 25	Herb	7	7	7	0.09	0.06
	WRB	NWL 27	For	8	8	8	0.56	0.44
	WRB	NWL 28	Herb	8	8	8	0.01	0.01
	WRB	NWL 29	Herb	8	8	8	0.97	0.77
	SOR	NWL 30	Herb	6	6	6	0.76	.05
	SOR	NWL 31	For	6	6	6	0.28	0.17
D	SOR	NWL 32	Herb	6	6	6	0.11	.07

LLS = Landscape and Location Support
WE = Water Environment
CS = Community Structure
WRBMB = Withlacoochee River Cumulative Impact Basin
SOR = Southern Ocklawaha River Cumulative Impact Basin

4.7 – Conceptual Mitigation

In order to provide reasonable assurances that direct, indirect, or cumulative impacts from construction, alteration and intended or reasonably expected uses of the proposed alternatives will not contribute to violations of water quality standards or adverse impacts to the functions of wetlands or other surface waters, the FDOT will calculate the appropriate mitigation during the design and permitting phase to satisfy the requirements of 33 U.S.C. § 1344 and Part IV of Chapter 373, FS. The SR 50 Study Area is located within the approved Service Areas of Boarshead Ranch, Hammock Lake, Lake Louisa, Green Swamp, and Withlacoochee Wetland Mitigation Banks. Permittee responsible on-or-off-site mitigation is also an option pursuant to Section 373.4137, FS.

The proposed project is not expected to adversely affect protected species; however, species-specific surveys for sand skinks will be conducted in suitable habitat during the design and permitting phase to determine presence or absence of the species in the project area, and whether and to what extent mitigation may be required. The SR 50 Study Area is located within the approved Service Areas of Collany, Hatchineha Ranch Phase 1 and 2, Lake Wales Ridge, Morgan Lake, Scrub, and Tiger Creek Conservation Banks. These Conservation Banks provide mitigation for sand skinks. Mitigation will be required for impacts to SFH greater than 0.5 acres based on guidance from the *Effect Determination Key for the Wood Stork in Central and North Florida* (USACE, 2008). Any unavoidable impacts to SFH may be compensated in accordance with the Section 404(b)(1) of the Clean Water Act via the purchase of wetland mitigation at a USFWS-approved wetland mitigation bank whose service area coincides with the core foraging area of the affected wood stork SFH. Surveys for protected plant species will be conducted at the appropriate time of year to determine presence of these species within the project area. Currently, no mitigation is required for impacts to protected plant species occurring within the project area.

Potential habitat impacts to the Withlacoochee State Forest will be addressed through the consideration and development of the roadway design and pond and flood plain compensation alternatives. Currently, the FDOT is exploring options to reduce or eliminate pond and FPC sites in the State Forest via the use of bio-sorption activated media (BAM) along the roadside. However, the FDOT may also need to consider other mitigation strategies such as incorporating wildlife crossings to alleviate potential wildlife-vehicle collisions and desired mitigation options provided by the FFS.

SECTION 5 – ESSENTIAL FISH HABITAT

The National Marine Fisheries Service (NMFS) is the regulatory agency responsible for the nation's living marine resources and their habitats, including essential fish habitat (EFH). This authority is designated by the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), as amended. The MSFCMA defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 U.S.C. § 1802(10)].

In accordance with the MSFCMA, Section 7 of the ESA, and Part 2, Chapter 17, Essential Fish Habitat, of the FDOT's PD&E Manual, the SR 50 Study Area was evaluated for potential EFH. According to their ETDM Summary Report No. 14269, dated December 1, 2016, NMFS staff concluded that the project will not directly impact any NMFS trust resources and would result in "Minimal" DOE on those resources. However, the roadway crosses the Little Withlacoochee River which drains to the Withlacoochee River which outfalls to the Gulf of Mexico near Yankeetown. The Gulf of Mexico contains estuarine habitats used by federally-managed species. Therefore, the NMFS recommended upgrades to the stormwater treatment systems in order to prevent degraded water from entering the Little Withlacoochee River, the Withlacoochee River, and the Gulf of Mexico. An EFH Assessment is not required but coordination is recommended during the design and permitting phase.

SECTION 6 – ANTICIPATED PERMITS

FDOT construction and maintenance activities are regulated by numerous environmental laws and regulations administered by state and federal agencies. These agencies have established environmental programs to conserve, protect, manage, and control the air, land, water and natural resources of the state or U.S. The following is a list of anticipated permits needed from the state and federal agencies for the proposed project.

6.1 – Federal Dredge and Fill Permit/Standard Permit

The USACE regulates the discharge of dredge and fill material into waters of the United States, including wetlands, under Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act of 1899. Section 404 requires issuance of a permit before dredge or fill material may be discharged into waters of the United States, unless the activity is exempt from this regulation (e.g., certain farming and silviculture activities). The issuance of a Water Quality Certification, under Section 401 of the CWA, is required prior to the issuance of a Section 404 Dredge and Fill Permit. This Water Quality Certification is obtained with the issuance of a state Environmental Resource Permit issued by the FDEP or a Water Management District. A Federal

dredge and fill permit would be required for impacts to surface waters and wetlands within the project area.

6.2 – Biological Opinion/Incidental Take Permit

The ESA of 1973, as amended, requires all Federal agencies to work to conserve endangered and threatened species and to use their authorities to further the purposes of the ESA. Section 7(a)(2) of the ESA is the mechanism by which Federal agencies ensure the action they take, including those they fund or authorize (i.e., Federal permit), do not jeopardize the existence of any listed species. When a Federal action "may affect, and is likely to adversely affect" a listed endangered or threatened species, the lead Federal agency submits a request to the USFWS for formal consultation. Then the USFWS prepares a biological opinion (BO) on whether the proposed activity will jeopardize the continued existence of a listed species. This process would occur during Section 404 Dredge and Fill permitting if jurisdictional wetlands to waters of the U.S. would be impacted by the proposed project. Otherwise, an incidental take permit (ITP) would be necessary under Section 10(a)(1)(B) of the ESA for impacts to federally-listed species without nexus to a federal action. A Habitat Conservation Plan is required as part of an ITP from the USFWS. As the project does not include federal funds, the Federal action used to initiate ESA Section 7 consultation will be the Section 404 review by the USACE.

Due to the presence of suitable sand skink habitat, the project "**may affect**" the sand skink and blue-tailed mole skink. A BO would be required if survey results found them to be present within the project area. The USFWS concurred with this effect determination on December 19, 2018 (**Appendix H**).

6.3 – NPDES Permit

As authorized by the CWA, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. The Environmental Protection Agency (EPA) delegated its authority to implement the NPDES program to the FDEP. This permit is required because the proposed project will disturb more than one acre of land, and the stormwater runoff will discharge to waters of the state. A Stormwater Pollution Prevention Plan (SWPPP) is required to be developed as part of the NPDES and implemented during construction. The objectives of the SWPPP are to prevent erosion where construction activities occur, prevent pollutants from mixing with stormwater, and prevent pollutants from being discharged by trapping them on-site, before they can affect the receiving waters. The applicant must submit a Notice of Intent with the FDEP at least two days prior to the commencement of construction.

6.4 – Environmental Resource Permit

The Florida Department of Environmental Protection (FDEP) and Florida's five Water Management Districts implemented Chapter 62-330, FAC, Environmental Resource Permitting (ERP) to govern certain regulated activities, such as works in waters of the state, including wetlands, and construction of stormwater management systems. The proposed project is located within the jurisdictions of the SWFWMD and the SJRWMD. The proposed project is expected to require an ERP for a stormwater management plan and impacts to wetlands and other surface waters.

SECTION 7 – CONCLUSIONS

This PD&E Study has been conducted to assess various widening alternatives for SR 50 between US 301 in Hernando County to CR 33 in Lake County. The recommended alternative will widen SR 50 from two-to-four lanes from US 301 to CR 33, including a rural typical section between US 301 and Lee Road and an urban typical section between Lee Road and CR 33 in the City of Mascotte. This alternative minimizes impacts to wetlands, protected species and their habitats to the greatest extent practicable. However, due to the presence of suitable habitat, the recommended alternative (and other widening alternatives) "**may affect**" sand skinks at this time. Coverboard surveys will be conducted in suitable sand skink habitat during the design phase to confirm whether sand skinks occur within the study area. Additionally, the recommended alternative "**may affect**" Cooley's water willow. The recommended alternative "**may affect, but is not likely to adversely affect**" the American alligator, eastern indigo snake, Florida scrub-jay, gopher tortoise, Lake Wales Ridge plants, wood stork; and will have "**no effect**" on the Everglade snail kite, red-cockaded woodpecker, and bald eagle. "**No adverse effect is anticipated**" for the Florida black bear, Florida burrowing owl, Florida pine snake, Florida sandhill crane, Sherman's fox squirrel, short-tailed snake, southeastern American kestrel, or wading birds. The recommended alternative has the "**potential for adverse effect**" on the auricled spleenwort, widespread polypody, plume polypody, swamp plume polypody, and low peperomia and southern tuberculed orchid.

The recommended alternative is expected to result in unavoidable wetland and State Forest impacts as previously shown on **Table 6**. The recommended pond site alternatives and flood plain compensation sites may also require additional wetland impacts as depicted on **Table 7**. However, the FDOT is exploring options to reduce or eliminate pond sites in the State Forest via the use of regional ponds and compensating storage. The FDOT is also exploring other mitigation strategies such as incorporating wildlife crossings to alleviate potential wildlife-vehicle collisions and reduce or eliminate some wetland impact on the project. In addition, the FDOT will continue to coordinate with the FFS to identify desired mitigation options for impacts to State Forests. During the design phase the FDOT will calculate the appropriate mitigation, including the use of wildlife crossings, during the design and permitting phase to satisfy the requirements of 33 U.S.C. § 1344 and Part IV of Chapter 373, FS.

7.1 – Implementation Measures/Design Considerations

Implementation measures are actions that FDOT would be required to take per procedure, standard specifications, or other agency requirements that will be implemented at a later project phase, but which will help address or reduce project effects and that need to be relayed to the agencies during review of the NRE. These measures are not tracked as commitments since they would already be required at some stage of the project. The FDOT intends to implement the following for this SR 50 Study:

- Conduct gopher tortoise survey and complete permit for relocation of tortoises;
- Conduct pre-construction survey for Florida burrowing owls;
- Conduct pre-construction survey for Florida sandhill cranes;
- Conduct pre-construction survey for Sherman's fox squirrels;
- Conduct pre-construction survey for southeastern American kestrel;

- Conduct listed plant survey during the design phase;
- Use best management practices for erosion and sediment control.

7.2 – Commitments/Recommendations

The FDOT has taken steps to avoid and minimize impacts to protected species and wetlands when practicable and further measures to avoid and minimize impacts to these resources will be considered during the design and permitting phase of this project. However, due to the presence of suitable sand skink habitat and the presence of gopher tortoise burrows within the SR 50 Study Area, the FDOT commits to the following:

Commitments

- Conduct sand skink coverboard surveys in suitable sand skink habitat per USFWS protocol;
- Implement the *Standard Protection Measures for the Eastern Indigo Snake* during project construction;
- Continue to evaluate the inclusion of wildlife crossings and/or habitat connectivity enhancements during design.

Recommendations

- Coordinate with the Florida Native Plant Society or similar organization to facilitate the relocation of rare and protected plants within the project footprint
- Coordinate with FFS to include an appropriate trail/large animal crossing in the vicinity of the existing Florida Trail crossing.

7.3 – Agency Coordination

7.3.1 – Prior Coordination

In December 1, 2016, the FDOT received agency comments from the USACE, USEPA, USFWS, NMFS, SWFWMD, SJRWMD, FWC, and FFS in the ETDM Summary Report No. 14269. Depending on the resource agency and potentially affected resource, the DOE ranged from "Minimal" to "Substantial" mostly due to the potential impacts to the Withlacoochee State Forest and other resources within the vicinity of the Green Swamp. Through the PD&E process, the FDOT has continued to meet with and address the concerns from the commenting agencies as documented in this report. Meeting minutes and additional coordination documentation are included in **Appendix H**.

7.3.2 – Continuing Coordination

The FDOT will continue to meet with the FFS to discuss their desired mitigation options for proposed impacts to the State Forest. Likewise, the FDOT will coordinate with the USFWS and

FWC during and after species-specific surveys identify whether protected resources occur in the study area. The USFWS concurred within the effect determinations made in this document for resources protected by the ESA on December 19, 2018. AS copy of that correspondence is included in **Appendix H**.

Additionally, the FDOT will continue to coordinate with NMFS through the design and permitting phases to ensure downstream EFH habitats are not impacted. Similarly, the FDOT will conduct pre-application meetings with the USACE and SWFWMD and SJRWMD to review wetland limits and discuss mitigation during the permitting phase of the project.

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APPENDIX A

Land Use and Habitat Descriptions

Urban and Built-Up (FLUCFCS 100)

This land use type consists of areas of intensive use with much of the land occupied by man-made structures. Residential, commercial, recreational, industrial, and institutional developments are included in this category. Within the project corridor, identified Urban Land uses include: Low Density Residential (FLUCFCS 110), Medium Density Residential (FLUCFCS 120), Medium Density Under Construction (FLUCFCS 129), Cemeteries (FLUCFCS 148), Commercial and Services (FLUCFCS 140), Industrial (FLUCFCS 150), Other Light Industrial (FLUCFCS 155), Extractive (FLUCFCS 160), Strip Mines (FLUCFCS 161), Institutional (FLUCFCS170), Recreational (FLUCFCS 180), Golf Courses (FLUCFCS 182) and Open Land (FLUCFCS 190). This FLUCFCS type, found throughout the project, comprises a large portion of land use within the project corridor, particularly in the eastern segment. These areas lack natural habitat, and as a result, provided little to no habitat for listed species.

Agriculture (FLUCFCS 200)

Agricultural lands are lands which are cultivated to produce food crops and livestock. Included in this category are pastures, crops, citrus groves, nurseries and orchards. Within the project corridor, identified Agriculture includes: Cropland and Pastureland (FLUCFCS 210), Improved pastures (FLUCFCS 211), Unimproved Pastures (FLUCFCS 212), Woodland Pastures (FLUCFCS 213), Row Crops (FLUCFCS 214), Field Crops (FLUCFCS 215), Citrus Groves (FLUCFCS 221), Nurseries and Vineyards (FLUCFCS 240), Tree Nurseries (FLUCFCS 241) and Ornamentals (FLUCFCS 243).

The project corridor is comprised of agricultural lands consisting of mostly pasturelands, many with active cattle operations. Pasture lands are dominated by herbaceous species and grasses associated with active cattle grazing, while canopy and shrub species are limited. Canopy species include slash pine (Pinus elliottii), live oak (*Quercus virginiana*), laurel oak (*Quercus laurifolia*), and cabbage palm (*Sabal palmetto*). Shrub species include Brazilian pepper (*Schinus terebinthifolius*), wax myrtle (*Myrica cerifera*), and saw palmetto (*Serenoa repens*). Ground cover species include bahiagrass (*Paspalum notatum*), panic grass (*Panium* spp.) and various other grasses, sedges, and forbs. These agricultural lands provide large areas of contiguous, undeveloped land which provide valuable foraging habitat for listed species and common wildlife species.

Rangeland (FLUCFCS 300)

Rangeland is defined as "land where the potential natural vegetation is predominantly grasses, grasslike plants, forbs or shrubs and is capable of being grazed." This category includes herbaceous (dry prairie), shrub and brushland, and mixed rangeland. Within the project corridor, identified Rangeland includes: Herbaceous - dry prairie (FLUCFCS 310), Shrub and Brushland (FLCUFCS 320), and Mixed Rangeland (FLUCFCS 330).

Rangeland is scattered throughout the project corridor. These areas are surrounded by active agricultural lands. Vegetation in these areas include live oak, sand live oak (), slash pine, dogfennel (*Eupatorium capillifolium*), saw palmetto, beggarticks, chalky

bluestem, false shrubby buttonweed (*Spermacoce verticillata*), least pepperwort, and ragweed. These lands provide large areas of contiguous, undeveloped land which provide valuable foraging habitat for listed species and common wildlife species.

Upland Forests (FLUCFCS 400)

Upland Forests consist of upland areas which support a tree canopy closure of ten percent or more. This category includes both xeric and mesic forest communities. Within the project corridor, identified Upland Forests include: Upland Coniferous Forest (FLUCFCS 410), Pine Flatwoods (FLUCFCS 411), Upland Hardwood Forests (FLUCFCS 420), Hardwood Coniferous Mixed (FLUCFCS 434), Tree Plantations (FLUCFCS 440), and Coniferous Plantations (FLUCFCS 441).

This FLUCFCS type occurs throughout the project corridor, but is most prevalent in the western portion of the corridor, especially area within the Withlacoochee State Forest. Harwood-coniferous mixed forests are the dominant upland forest type. Canopy species include slash pine, and longleaf pine (*Pinus palustris*), laurel oak, and live oak. Understory species include wax myrtle, saw palmetto, and gallberry (*Ilex glabra*. The upland forests within the project corridor provide large areas of contiguous, undeveloped land which provide valuable habitat for listed species and common wildlife species.

Water (FLUCFCS 500)

Water includes all areas within the land mass of the United States that are predominantly or persistently water covered. Within the project corridor, identified Water includes: Streams and Waterways (FLUCFCS 510), Lakes (FLUCFCS), and Reservoirs (FLUCFCS 530). This land use type is found throughout the project corridor and consists of the Little Withlacochee River, cattle ponds, and existing stormwater ponds. These areas provide valuable foraging habitat for listed species, especially wading birds.

Wetlands (FLUCFCS 600)

Wetlands consist of areas where the water is at, near or above the land surface for a significant portion of most years. This category includes forested and non-forested wetlands. Within the project corridor, identified Wetland land use types include: Stream and Lake Swamps (FLUCFCS 615), Mixed Wetland Hardwoods (FLUCFCS 617), Willow and Elderberry (FLUCFCS 618), Cypress (FLUCFCS 621), Hydric Pine Flatwoods (FLUCFCS 625), Wetland Forested Mixed (FLUCFCS 630), Wetland Shrub (FLUCFCS 631), Freshwater Marshes (FLUCFCS 641), Wet Prairies (FLUCFCS 643), Emergent Aquatic Vegetation (FLUCFCS 644), and Treeless Hydric Savanna (FLUCFCS 646).

Forested and nonforested wetlands are common throughout the project corridor, particularly in the western half near the Withlacoochee State Forest.

Stream and lake swamp (bottomland) is the most common forested wetland community in the study area. Bottomland is usually found on but not restricted to river, creek, and lake flood plain or overflow areas. Vegetation in these areas include bald cypress (*Taxodium distichum*), pond cypress (*Taxodium ascendens*), swamp tupelo (*Nyssa*

sylvatica var. *biflora*), red maple (*Acer rubrum*), slash pine dahoon holly (*Ilex cassine*), swamp bay (*Persea palustris*), sweetbay (*Magnolia virginiana*), loblolly bay (*Gordonia lasianthus*), laurel oak (*Quercus laurifolia*), sweetgum (*Liquidambar styraciflua*), water oak (*Q. nigra*), and American elm (*Ulmus americana*).

Depression marsh is the most common non-forested wetland community in the study area. A depression marsh is characterized by concentric bands of herbaceous or subshrub vegetation related to the length of the hydroperiod and depth of water. The driest part of a depression marsh is generally comprised of longleaf threeawn (*Aristida palustris*), beaksedges (*Rhynchospora* sp.), Elliott's yellow-eyed grass (*Xyris elliottii*), St. John's wort (*Hypericum* sp.), and blue maidencane (*Amphicarpum muhlenbergianum*). The deepest portions of a depression marsh typically consist of maidencane (*Panicum hemitomon*), pickerelweed (*Pontederia cordata*), bulltongue arrowhead (*Sagittaria lancifolia*), or sawgrass (*Cladium jamaicense*). Floating-leaved plants such as white waterlily (*Nymphaea odorata*) can be observed in instances where water is persistent. Both forested and nonforested wetlands provide valuable habitat for listed species.

Barren Land (FLUCFCS 700)

Barren Land has very little or no vegetation and limited potential to support vegetative communities. Within the project corridor, identified Barren Land includes Sand Other Than Beaches (FLUCFCS 7 20), and Rural Land in Transition (FLCUFCS 741). These areas are not common within the project corridor and provide little to no habitat for listed species.

Transportation, Communication, and Utilities (FLUCFCS 800)

Roads and Highways (FLUCFCS 814) is the only land use type in this category and includes SR 50. Highways include areas used for interchanges, limited access rights-of-way, and service facilities.

APPENDIX B

Photographs

Photo 1: Freshwater marsh, located within a pasture observed south of SR 50.

Photo 2: Pine reforestation area within the Withlacoochee State Forest located south of SR 50.

Photo 3: Forested wetland within the Withlacoochee State Forest located south of SR 50.

Photo 4: Apiary located within the Withlacoochee State Forest north of SR 50.

Photo 5: Representative photo of tree plantations within the Withlacoochee State Forest located north of SR 50.

Photo 6: Forested wetland within the Withlacoochee State Forest south of SR 50.

Photo 7: Representative of wetland within pasture north of SR 50.

Photo 8: Freshwater marsh located within the Withlacoochee State Forest north of SR 50.

Photo 9: Upland forest south of SR 50.

Photo 10: Representative photo of pasture located north of SR 50.

Photo 11: Gopher tortoise burrow near fence line of pasture lands north of SR 50.

Photo 12: Representative photo of maintained right-of-way.

APPENDIX C

Soil Descriptions

HERNANDO COUNTY SOIL DATA							
Soil No.	**USDA Soil Name**	**Seasonal High Ground Water**		**HSG**	**Soil Classification**		
		Depth* (feet)	**Duration (months)**		**Depth (inches)**	**Unified**	**AASHTO**
6	Arredondo Fine Sand, 0 to 5 Percent Slopes	>6.0	---	A	0-62	SP-SM, SM	A-2-4, A-3
					62-69	SM, SM-SC	A-2-4
					69-99	SC	A-2-6, A-6
9	Basinger Fine Sand	0-1.0	Jun-Nov	A/D	0-80	SP, SP-SM	A-3
10	Basinger Fine Sand, Depressional	+2-1.0	Jan-Dec	A/D	0-80	SP, SP-SM	A-3, A-2-4
14	Candler Fine Sand, 0 to 5 Percent Slopes	>6.0	---	A	0-48	SP, SP-SM	A-3
					48-80	SP-SM	A-3, A-2-4
15	Candler Fine, 5 to 8 Percent Slopes	>6.0	---	A	0-48	SP, SP-SM	A-3
					48-80	SP-SM	A-3, A-2-4
17	Delray Fine Sand	+2-1.0	Jun-Feb	A/D	0-13	SP-SM, SM	A-3, A-2-4
					13-55	SP-SM	A-3, A-2-4
					55-80	SM, SM-SC, SC	A-2-4, A-2-6
18	EauGallie Fine Sand	0-1.0	Jun-Feb	B/D	0-17	SP	A-3
					17-36	SP-SM, SM	A-3, A-2-4
					36-72	SP, SP-SM	A-3, A-2-4
					72-80	SM, SM-SC, SC	A-2-4, A-2-6
23	Floridana Fine Sand	+2-1.0	Jun-Feb	A/D	0-16	SP-SM, SM	A-3, A-2-4
					16-27	SP, SP-SM	A-3
					27-80	SM-SC, SC	A-2-4, A-2-6
25	Floridana Variant Loamy Fine Sand	2-1.0	Jun-Feb	A/D	0-8	SM	A-2-4
					8-22	SM	A-2-4
					22-42	SC	A-2-4, A-2-6, A-6
					42-59	SM	A-2-4, A-2-6, A-4
					59-80	SC, CL, CH	A-4, A-6, A-7
27	Hydraquents	+1-0.5	Jan-Dec	D	0-80	MH, CH	A-7
35	Myakka Fine Sand	0-1.0	Jun-Feb	A/D	0-23	SP, SP-SM	A-3
					23-37	SM, SP-SM	A-3, A-2-4
					37-80	SP, SP-SM	A-3
37	Okeelanta	+1-0	Jun-Jan	A/D	0-27	Pt	A-8
					27-60	SP, SP-SM, SM	A-3, A-2-4
	Terra Ceia	+1-1.0	Jun-Apr	A/D	0-65	Pt	---
38	Paisley Fine Sand	0-1.0	Jun-Nov	D	0-13	SP-SM	A-3, A-2-4
					13-95	CH, CL	A-7
41	Pits	---	---	---	---	---	---
44	Pompano Fine Sand	0-1.0	Jun-Nov	A/D	0-80	SP, SP-SM	A-3, A-2-4

Soil No.	USDA Soil Name	Seasonal High		HSG	Soil Classification		
		Depth* (feet)	Duration (months)		Depth (inches)	Unified	AASHTO
47	Sparr Fine Sand, 0 to 5 Percent Slopes	1.5-3.5	Jul-Oct	A	0-61	SP-SM	A-3, A-2-4
					61-64	SM-SC, SM	A-2-4
					64-80	SC, SM-SC	A-2-4, A-2-6, A-4, A-6
49	Tavares Fine Sand, 0 to 5 Percent Slopes	3.5-6.0	Jun-Dec	A	0-80	SP, SP-SM	A-3
51	Wabasso Fine Sand	0-1.0	Jun-Oct	B/D	0-21	SP, SP-SM	A-3
					21-30	SP-SM, SM	A-3, A-2-4
					30-38	SP, SP-SM	A-3
					38-80	SC, SM-SC, SM	A-2-4, A-2-6
52	Wauchula Fine Sand, 0 to 5 Percent Slopes	0-1.0	Jun-Feb	B/D	0-8	SP-SM	A-3, A-2-4
					8-24	SP-SM	A-3, A-2-4
					24-31	SP-SM, SM	A-3, A-2-4
					31-38	SP-SM, SM	A-3, A-2-4
					38-80	SM, SM-SC, SC	A-2-4, A-2-6, A-4, A-6

*Seasonal High Ground water table: Depth is referenced below existing grade, except where indicated as “+”.

SUMTER COUNTY SOIL DATA							
Soil No.	**USDA Soil Name**	**Seasonal High Ground Water**		**HSG**	**Soil Classification**		
		Depth* (feet)	**Duration (months)**		**Depth (inches)**	**Unified**	**AASHTO**
6	Kendrick Fine Sand, 0 to 5 Percent Slopes	>6.0	---	A	0-33	SP-SM, SM	A-3, A-2-4
					33-68	SC, SM-SC	A-2-6, A-2-6
					68-80	SC	A-2-6, A-6
9	Paisley Fine Sand, Bouldery Subsurface	0-1.0	Jun-Nov	D	0-16	SP-SM, SM	A-2-4, A-3
					16-25	SC	A-6, A-7
					25-80	CH, CL	A-7
10	Sparr Fine Sand, 0 to 5 Percent Slopes	1.5-3.5	Jul-Oct	C	0-9	SP-SM, SM	A-3, A-2-4
					9-45	SP-SM, SM	A-3, A-2-4
					45-51	SM-SC, SC, SM	A-2-4
					51-80	SC, SM-SC	A-2, A-4, A-6, A-7
11	Millhopper Sand, 0 to 5 Percent Slopes	3.5-6.0	Aug-Oct	A	0-50	SP-SM, SM	A-3, A-2-4
					50-80	SM, SM-SC, SC	A-2-4, A-2-6, A-4, A-6
13	Tavares Fine Sand, 0 to 5 Percent Slopes	3.5-6.0	Jun-Dec	A	0-8	SP, SP-SM	A-3
					8-80	SP, SP-SM	A-3
18	Okeelanta Muck	+1-0	Jun-Jan	B/D	0-38	PT	A-8
					38-80	SP, SP-SM, SM	A-3, A-2-4
21	EauGallie Fine Sand, Bouldery Subsurface	0-1.0	Jun-Oct	B/D	0-8	SP	A-3
					8-25	SP	A-3
					25-36	SP-SM, SM	A-3, A-2-4
					36-57	SP, SP-SM	A-3, A-2-4
					57-80	SM, SM-SC, SC	A-2-4, A-2-6
24	Basinger Fine Sand	0-1.0	Jun-Feb	B/D	0-8	SP	A-3
					8-27	SP, SP-SM	A-3, A-2-4
					27-45	SP, SP-SM	A-3, A-2-4
					45-80	SP, SP-SM	A-3, A-2-4
25	Kanapaha Sand, Bouldery Subsurface	0-1.0	Jul-Sep	B/D	0-3	SP-SM	A-3, A-2-4
					3-55	SP-SM	A-3, A-2-4
					55-80	SC, SM-SC	A-2-4, A-4, A-6
26	Vero Fine Sand, Bouldery Subsurface	0-1.0	Jun-Oct	B/D	0-4	SP-SM	A-3, A-2-4
					4-15	SP-SM	A-3, A-2-4
					15-21	SP-SM, SM	A-2-4, A-3
					21-60	SC, CL, CH	A-7, A-6, A-2-6, A-2-7
					60-80	SM-SC, SC, SM	A-6, A-4, A-2-4, A-2-6
27	Sumterville Fine Sand, Bouldery Subsurface, 0 to 5 Percent Slopes	1.5-3.0	Jul-Oct	C	0-9	SP-SM, SM	A-3, A-2-4
					9-29	SP-SM, SM	A-3, A-2-4
					29-80	CL, CH	A-7

Soil No.	USDA Soil Name	Seasonal High Ground Water		HSG	Soil Classification		
		Depth* (feet)	Duration (months)		Depth (inches)	Unified	AASHTO
28	Seffner Fine Sand	1.5-3.5	Jun-Nov	C	0-12	SP-SM, SP	A-3, A-2-4
					12-18	SP-SM, SP	A-3, A-2-4
					18-80	SP-SM, SP	A-3, A-2-4
30	Placid Fine Sand, Depressional	+2-1.0	Jun-Mar	D	0-16	SP, SP-SM, SM	A-3, A-2-4
					16-80	SP, SP-SM, SM	A-3, A-2-4
31	Myakka Sand	0-1.0	Jun-Nov	B/D	0-25	SP, SP-SM	A-3
					25-40	SM, SP-SM	A-3, A-2-4
					40-80	SP, SP-SM	A-3
32	Pompano Fine Sand	0-1.0	Jun-Nov	B/D	0-80	SP, SP-SM	A-3, A-2-4
33	Sparr Fine Sand, Bouldery Subsurface, 0 to 5 Percent Slopes	1.5-3.5	Jul-Oct	C	0-8	SP-SM	A-3, A-2-4
					8-46	SP-SM	A-3, A-2-4
					46-58	SM, SC, SM-SC	A-2-4
					58-80	SC, SM-SC	A-2-4, A-2-6, A-4, A-6
35	Pompano Fine Sand, Depressional	+2-1.0	Jun-Feb	D	0-80	SP, SP-SM	A-3, A-2-4
36	Floridana Mucky Fine Sand, Depressional	+2-1.0	Jun-Feb	D	0-12	SP-SM, SM	A-3, A-2-4
					12-25	SP, SP-SM	A-3
					25-80	SM-SC, SC	A-2-4, A-2-6
41	Everglades Muck, Frequently Flooded	0-1.0	Jan-Dec	B/D	0-8	PT	A-8
					8-28	PT	A-8
					28-80	PT	A-8
42	Adamsville Fine Sand	2.0-3.5	Jun-Nov	C	0-8	SP-SM	A-3, A-2-4
					8-80	SP-SM, SP	A-3, A-2-4
43	Basinger Fine Sand, Depressional	+2-1.0	Jun-Feb	D	0-6	SP	A-3
					6-15	SP, SP-SM	A-3, A-2-4
					15-30	SP, SP-SM	A-3, A-2-4
					30-80	SP, SP-SM	A-3, A-2-4
46	Ft. Green Fine Sand, Bouldery Subsurface	0-1.0	Jun-Jan	D	0-28	SP-SM, SM	A-3, A-2-4
					28-38	SC, SM-SC, SM	A-2-6, A-6, A-2-4, A-4
					38-58	SC	A-2-6, A-6, A-4, A-7-6
					58-80	SC, SM-SC, SM	A-2-6, A-6, A-2-4, A-4
51	Pits-Dumps Complex	---	---	---	---	---	---
54	Monteocha Fine Sand, Depressional	+2-0	Jun-Feb	D	0-11	SP-SM, SM	A-3, A-2-4
					11-65	SP, SP-SM, SM	A-3, A-2-4
					65-80	SM, SM-SC, SC	A-2-4, A-2-6

Soil No.	USDA Soil Name	Seasonal High		HSG	Soil Classification		
		Depth* (feet)	Duration (months)		Depth (inches)	Unified	AASHTO
58	Paisley Fine Sand, Depressional	+2-0	Jun-Feb	D	0-13	SP-SM	A-2-4, A-3
					13-80	CH, CL	A-7
60	Delray Fine Sand, Depressional	+2-1.0	Jun-Dec	D	0-16	SP-SM, SM, SM-SC	A-3, A-2-4
					16-60	SP-SM	A-3, A-2-4
					60-80	SM, SM-SC, SC	A-2-4, A-2-6
61	EauGallie Fine Sand	0-1.0	Jun-Oct	B/D	0-21	SP, SP-SM	A-3
					21-34	SP-SM, SM	A-3, A-2-4
					34-50	SP, SP-SM	A-3, A-2-4
					50-65	SM, SM-SC, SC	A-2-4, A-2-6
					65-80	SP-SM, SM	A-3, A-2-4
63	Floridana, Frequently Flooded	0-1.0	Jun-Feb	D	0-11	SP-SM, SM	A-3, A-2-4
					11-26	SP, SP-SM	A-3
					26-80	SM-SC, SC	A-2-4, A-2-6
	Basinger, Frequently Flooded	0-1.0	Jun-Feb	D	0-22	SP	A-3
					22-40	SP, SP-SM	A-3, A-2-4
					40-80	SP, SP-SM	A-3, A-2-4
64	Gator Muck	+2-1.0	Jun-Dec	D	0-38	PT	A-8
					38-42	SP-SM	A-3, A-2-4
					42-80	SM-SC, SC, SM	A-2-4, A-2-6
67	Vero Fine Sand	0-1.0	Jun-Oct	B/D	0-21	SP-SM, SM	A-3, A-2-4
					21-32	SM	A-2-4
					32-65	SM, SM-SC, SC	A-2-4, A-2-6, A-6, A-4
					65-80	SM, SM-SC, SC	A-2-4, A-2-6, A-6, A-4

*Seasonal High Ground water table: Depth is referenced below existing grade, except where indicated as “+”.

LAKE COUNTY SOIL DATA							
Soil No.	**USDA Soil Name**	**Seasonal High Ground Water**		**HSG**	**Soil Classification**		
		Depth* (feet)	**Duration (months)**		**Depth (inches)**	**Unified**	**AASHTO**
1	Sparr Sand, 0 to 5 Percent Slopes	1.5-6.0	Jul-Oct	A/D	0-8	SM, SP-SM	A-2-4, A-3
					8-57	SM, SP-SM	A-2-4, A-3
					57-80	SC-SM, SC	A-2-6, A-2-4, A-7-6
2	Sparr Sand, 5 to 12 Percent Slopes	1.0-6.0	Aug-Oct	A/D	0-6	SP, SP-SM	A-2-4, A-3
					6-45	SP, SP-SM	A-2-4, A-3
					45-80	SC	A-2-4
4	Anclote	0-6.0	Jan-Dec	A/D	0-12	SP-SM	A-2-4, A-3
					12-80	SM, SC-SM	A-2-4
	Myakka	0-6.0	Jan-Dec	A/D	0-6	SP, SP-SM	A-3
					6-20	SP, SP-SM	A-3
					20-36	SM, SP-SM	A-2-4, A-3
					36-80	SP, SP-SM	A-3
5	Apopka Sand, 0 to 5 Percent Slopes	---	---	A	0-6	SP-SM	A-3
					6-55	SP-SM	A-3
					55-80	SC-SM, SC, CL	A-2-4, A-6, A-7-6
6	Apopka Sand, 5 to 12 Percent Slopes	---	---	A	0-6	SP, SP-SM	A-3, A-2-4
					6-55	SP, SP-SM	A-3, A-2-4
					55-80	SC, SC-SM	A-2-6, A-2-4, A-4
8	Candler sand, 0 to 5 Percent Slopes	---	---	A	0-6	SP, SP-SM	A-3
					6-83	SP, SP-SM	A-3, A-2-4
					63-80	SP-SM	A-2-4, A-3
9	Candler sand, 5 to 12 Percent Slopes	---	---	A	0-5	SP-SM, SP, SM	A-3, A-2-4
					5-67	SP-SM, SP, SM	A-3, A-2-4
					67-80	SP-SM, SC-SM	A-2-4, A-3
17	Arents	2.5-6.0	Jan-Dec	B	0-80	SC, SC-SM, SM	A-2-4, A-2-6, A-4, A-6
28	Myakka-Myakka, Wet, Sands, 0 to 2 Percent Slopes	0-6.0	Jan-Dec	A/D	0-6	SP-SM	A-3
					6-20	SP-SM	A-3, A-2-4
					20-36	SP-SM, SM	A-3, A-2-4
					36-80	SP-SM	A-3, A-2-4
32	Oklawaha Muck	0-6.0	Jan-Dec	D	0-9	PT	A-8
					9-25	PT	A-8
					25-31	SC-SM	A-2-4, A-4
					31-54	CH	A-7
37	Ellzey Sand						
	Ellzey, Non-hydric	0.5-6.0	Jan-Dec	A/D	0-5	SP, SP-SM	A-2-4, A-3
					5-32	SP, SP-SM	A-2-4, A-3
					32-80	SC	A-2-4
	Ellzey, Hydric	0-6.0	Jan-Dec	B/D	0-5	SP-SM	A-3
					5-32	SP, SP-SM	A-3
					32-80	SC	A-2-4

Soil No.	USDA Soil Name	Seasonal High		HSG	Soil Classification		
		Depth* (feet)	Duration (months)		Depth (inches)	Unified	AASHTO
38	Placid Sand, Frequently Ponded, 0 to 2 Percent Slopes	0-6.0	Jan-Dec	A/D	0-18	SP-SM, SM	A-3, A-2-5
					18-80	SP-SM, SC-SM	A-2-4, A-3
39	Seffner Sand	0.5-6.0	Jan-Dec	A/D	0-6	SP, SP-SM	A-2-4, A-3
					6-19	SP, SP-SM	A-2-4, A-3
					19-80	SP, SP-SM	A-2-4, A-3
40	Placid, Depressional	0-6.0	Jan-Dec	A/D	0-18	SP, SP-SM	A-2-4, A-3
					18-80	SP, SP-SM	A-2-4, A-3
	Myakka, Depressional	0-6.0	Jan-Dec	A/D	0-6	SP, SP-SM	A-3
					6-20	SP, SP-SM	A-3
					20-36	SM, SP-SM	A-2-4, A-3
					36-80	SP, SP-SM	A-3
42	Pompano Sand						
	Pompano, Non-Hydric	0.5-6.0	Jan-Dec	A/D	0-5	SP, SP-SM	A-2-4, A-3
					5-80	SP, SP-SM	A-2-4, A-3
	Pompano, Hydric	0-6.0	Jan-Dec	A/D	0-5	SP, SP-SM	A-3
					5-80	SP, SP-SM	A-3
44	Swamp						
	Mineral soil	0-6.0	Jan-Dec	---	0-18	SP, SP-SM	A-2-4, A-3
					18-80	SP, SP-SM	A-2-4, A-3
	Organic soil	0-6.0	Jan-Dec	---	0-80	PT	A-8
45	Tavares Sand, 0 to 5 Percent Slopes	3.5-6.0	Jun-Dec	A	0-7	SM, SP-SM	A-2-4, A-3
					7-80	SP-SM, SM	A-2-4, A-3
46	Orsino Sand	2.0-6.0	Jan-Dec	A	0-3	SP	A-3
					3-22	SP	A-3
					22-80	SP, SP-SM	A-3
47	Kendrick Sand, Thin Subsurface	---	---	C	0-5	SP, SP-SM	A-2-4, A-3
					5-15	SP, SP-SM	A-2-4, A-3
					15-80	SC, SC-SM	A-2-6, A-4, A-6
49	Wauchula Sand	0-6.0	Jan-Dec	B/D	0-6	SP, SP-SM	A-2-4, A-3
					6-22	SP, SP-SM	A-3, A-2-4
					22-35	SP, SP-SM	A-2-4, A-3
					35-38	SP-SM	A-2-4, A-3
					38-80	SC	A-2-6, A-6
50	Pits	---	---	---	---	---	---

*Seasonal High Ground water table: Depth is referenced below existing grade, except where indicated as “+”.

APPENDIX D

Pond Site Memorandum

Inwood consulting engineers

Memo

3000 Dovera Drive, Suite 200, Oviedo, FL 32765 I P: 407-971-8850 I F: 407-971-8955 I www.inwoodinc.com

DATE: 6/18/2018

TO: **Renato Chuw, PE**

FROM: Jada Barhorst

RE: SR 50 from US 301 to CR 33, Hernando, Sumter, and Lake Counties, Florida
Wetlands and Listed Species Pond Siting Memo

Proposed Pond Sites and Floodplain Compensation (FPC) Site Analysis

Inwood biologists conducted an ecological assessment to identify the presence of jurisdictional wetlands and surface waters and potential utilization of habitat by state and federally listed species within the proposed pond sites and FPC sits. Field reviews were conducted between June 2017 through June 2018 to document the occurrence of wetlands and the likelihood of occurrence of listed species within the proposed pond sites and FPC sites.

The following is a description of the conditions observed within each pond and FPC alternative.

Pond 2A

Pond 2A is located south of SR 50 at approximately station 1868+98.57 (RT). This pond site is located in pasture land with active cattle operations. This site is dominated by herbaceous species and grasses associated with active cattle grazing. A sparse canopy consisting of live oak (*Quercus virginiana*) was observed. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 2A.

Suitable habitat was observed for the eastern indigo snake (EIS) (*Drymarchon corais couperi*), burrowing owl (*Athene cunicularia*), Florida pine snake (*Pituophis melanoleucus mugitus*), gopher tortoise (*Gopherus polyphemus*), and southeastern American kestrel (*Falco sparverius paulus*) within and adjacent to this proposed pond site location. Multiple gopher tortoises as well as potentially occupied burrows were observed during the field reviews. Pond 2A may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, and southeastern American kestrel. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

Pond 2B

Pond 2B is located north of SR 50 at approximately station 1863+83.70 (LT). This pond site is located in pasture land with active cattle operations. A sparse live oak canopy was observed. Dominant vegetation includes pasture grasses, bahiagrass (*Paspalum notatum*), American beautyberry (*Callicarpa americana*), and dog fennel (*Eupatorium capillifolium*). No wetlands were observed within Pond 2B; therefore, no wetland impacts are anticipated.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, and gopher tortoise within and adjacent to this proposed pond site location. No gopher tortoises or burrows were observed within the proposed pond site. Pond 2B may incur impacts to the EIS, Florida pine snake, gopher tortoise and burrowing owl. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

Pond 2C

Pond 2C is located north of SR 50 at approximately station 1870+25.13 (LT). This site is located in an upland forest. Observed canopy species include live oak, laurel oak (*Quercus laurifolia*), red cedar (*Juniperus virginiana*), and cabbage palm (*Sabal palmetto*). Shrub species include immature canopy species, American beautyberry, and saw palmetto (*Serenoa repens*). Observed groundcover species include cogongrass (*Imperata cylindrica*), woodsgrass (*Oplismenus hirtellus*), greenbrier (*Smilax* sp.), and muscadine grape (*Vitus rotundifolia*). No wetlands were observed within the proposed pond site; therefore, no impacts to wetlands are anticipated.

No listed species were observed. Suitable habitat was observed for the EIS and gopher tortoise within and adjacent to this proposed pond site location. However, no gopher tortoises or burrows were observed within the proposed pond site. Pond 2C may incur impacts to the EIS and gopher tortoise and a gopher tortoise survey would likely be required and/or the need for relocation if potentially occupied burrows were located within the pond site.

Pond 3A

Pond 3A is located south of SR 50 at approximately station 1874+57.56 (RT). The majority of this pond site is upland herbaceous prairie with forested uplands and wetlands. The herbaceous prairie consists of sparse scattered longleaf pine (*Pinus palustris*) and slash pine (*Pinus elliotti*). Observed understory and groundcover species include winged sumac (*Rhus copallinum*), dog fennel, American beautyberry, lantana (*Lantana camara*), blackberry (*Rubus* sp.), and muscadine grape. The mixed hardwood forest contains a canopy of live oak, water oak (*Quercus nigra*), mockernut hickory (*Carya tomentosa*), cabbage palm, and camphor tree (*Cinnamomum camphora*). The shrub layer consists of sapling oaks, winged sumac, and America beautyberry. Observed groundcover species include common ragweed (*Ambrosia artemisiifolia*), tropical soda apple (*Solanum viarum*), littleleaf sensitive-briar (*Mimosa microphylla*), Virginia creeper (*Parthenocissus quinquefolia*), and muscadine grape. The forested bottomland wetland is located on the western side of the pond site. Observed canopy species include water oak, sweet gum (*Liquidambar styraciflua*), red maple (*Acer rubrum*) and American elm (*Ulmus Americana*). Understory and groundcover species consist of saltbush (*Baccharis halimifolia*), wax myrtle (*Myrica cerifera*), buttonbush (Cephalanthus occidentalis), and cinnamon fern (*Osmunda cinnamomea*).

Pond 3A will incur approximately 1.10 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, and southeastern American kestrel within and adjacent to the proposed pond site location. No gopher tortoises or burrows were observed within the proposed pond site. Pond 3A may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, and

southeastern American kestrel. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

Pond 3B

Pond 3B is located north of SR 50 at approximately station 1874+37.18 (LT). This pond site consists of pasture land with a sparse live oak and slash pine canopy along the western boundary. The dominant vegetation includes bahiagrass and other pasture grasses, American beautyberry, tropical soda apple, dog fennel and cogongrass. No wetlands were observed within the proposed pond site; therefore, no impacts to wetlands are anticipated.

No listed species were observed. Suitable habitat for the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel (*Sciurus niger shermani*), and southeastern American kestrel was observed within and adjacent to the proposed pond site location. Pond 3B may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel and southeastern American kestrel. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

Pond 3C

Pond 3C is located north of SR 50 at approximately station 1895+33.13 (LT). The majority of this pond site is located within pasture land. There is a freshwater marsh located on the northeastern boundary of the proposed pond site. Observed canopy species include slash pine, live oak, and longleaf pine. The open pasture consists of pasture grasses, tropical bushmint (*Cantinoa mutabilis*), American beautyberry, and blackberry. Observed vegetation in the freshwater marsh includes pickerel weed (*Pontederia cordata*), soft rush (*Juncus* sp.), and arrowhead (*Sagittaria* sp.)

Pond 3C will incur approximately 0.01 acres of direct wetland impacts. No listed species were observed. Suitable habitat for the EIS, wood stork (*Mycteria americana*), burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, Sherman's fox squirrel, southeastern American kestrel, and wading birds was observed within and adjacent to the proposed pond site location. Pond 3C may incur impacts to the EIS, wood stork, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, Sherman's fox squirrel, southeastern American kestrel, and wading birds. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

Pond 3R

Pond 3R is located north of SR 50 at approximately station 1893+93.04 (LT). The majority of this pond site is located within pasture land. There is a wetland consisting of freshwater marsh and wet prairie located in the northeastern portion of the proposed pond site. Observed canopy species include slash pine, live oak, and longleaf pine. The open pasture consists of pasture grasses, tropical bushmint (*Cantinoa mutabilis*), American beautyberry, and blackberry. Observed vegetation in the wetland includes pickerel weed, soft rush, and arrowhead.

Pond 3R will incur approximately 1.56 acres of direct wetland impacts. No listed species were observed. Suitable habitat for the EIS, wood stork (*Mycteria americana*), burrowing owl, Florida

pine snake, Florida sandhill crane, gopher tortoise, Sherman's fox squirrel, southeastern American kestrel, and wading birds was observed within and adjacent to the proposed pond site location. Pond 3C may incur impacts to the EIS, wood stork, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, Sherman's fox squirrel, southeastern American kestrel, and wading birds. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

Pond 4A

Pond 4A is located south of SR 50 at approximately station 1919+75.58 (RT). This proposed pond site is within the Withlacoochee State Forest. The majority of this pond site is located within a forested wetland. Observed canopy species include bald cypress (*Taxodium distichum*), pond cypress (*Taxodium ascendens*) water oak, and sweetgum. Understory species consist of sapling canopy species, saltbush, and buttonbush, wax myrtle. Observed groundcover species include swamp fern (*Blechnum serrulatum*), soft rush, cinnamon fern, greenbrier, and muscadine grape.

Pond 4A will incur approximately 1.02 acres of direct wetland impacts. No listed species or critical habitat was observed. No impacts to listed species are anticipated to be associated with Pond 4A. Construction of this proposed pond site will result in impacts to state lands.

Pond 4B

Pond 4B is located north of SR 50 at approximately station 1920+56.91 (LT). This proposed pond site is within the Withlacoochee State Forest. The majority of this pond site is comprised of a hardwood conifer mixed upland forest. The eastern boundary of the proposed pond site is located within a forested wetland. Observed canopy species include live oak, slash pine, and cherry laurel (*Prunus caroliniana*). Understory and groundcover species consist of American beautyberry, saw palmetto, beggarticks (*Bidens alba*), and muscadine grape. Vegetation observed within the wetland include a canopy of cypress, laurel oak, sweet gum and water tupelo (*Nyssa aquatica*). Observed understory and groundcover species include wax myrtle, buttonbush, Carolina willow (*Salix caroliniana*), saw-grass (*Cladium jamaicense*), and soft rush.

Pond 4B will incur approximately 0.09 acres of direct wetland impacts. No listed species were observed. Construction of this proposed pond site will result in impacts to state lands.

Pond 4C

Pond 4C is located north of SR 50 at approximately station 1906+84.73 (LT). This proposed pond site is within the Withlacoochee State Forest. The majority of this pond site is comprised of a hardwood conifer mixed upland forest with a freshwater marsh located along the northern and eastern boundaries. Observed canopy species include slash pine, long leaf pine, live oak, sweet gum, and laurel oak. The shrub layer is comprised of immature oaks, wax myrtle, saw palmetto, and beautyberry. Groundcover species include bracken fern (*Pteridium aquilinum*), common ragweed, and muscadine grape. Observed vegetation within the ecotone between the upland forest and the freshwater marsh includes pond cypress, bald cypress, red maple, sweetgum, dahoon holly (*Ilex cassine*), and buttonbush. The observed vegetation in the marsh includes sparse immature cypress, buttonbush, dog fennel, maiden cane (*Panicum hemitomon*), duck

potato (*Sagittaria lancifolia*), Virginia chain fern (*Woodwardia virginica*), St. John's wort (*Hypericum* sp.), and pickerel weed (*Pontederia* cordata).

Pond 4C will incur approximately 0.28 acres of direct wetland impacts. No listed species were observed. Suitable habitat for the EIS, wood stork, Florida sandhill crane and wading birds was observed within and adjacent to the proposed pond site location. Pond 4C may incur impacts to the EIS, wood stork, Florida sandhill crane, and wading birds. Species specific surveys will likely be required to confirm absence and minimize impacts to these species. Construction of this proposed pond site will result in impacts to state lands.

Pond 5A

Pond 5A is located north of SR 50 at approximately station 1947+12.17 (LT). This proposed pond site is within the Withlacoochee State Forest. The majority of this pond site is located within pine flatwoods. Areas of forested wetlands occur on the western and eastern limits of the pond site. Observed canopy species included slash pine, longleaf pine, and live oak. Shrub layer species include immature canopy species, winged sumac, American beautyberry, and saw palmetto. Groundcover includes common ragweed, beggerticks, brackenfern, greenbrier, and muscadine grape. Wetland areas consist of canopy species including bald cypress, slash pine, water tupelo, and red maple. Shrub species include immature red maple, wax myrtle, and dahoon holly. Groundcover includes soft rush, cinnamon fern, and swamp fern.

Pond 5A will incur approximately 0.52 acres of direct wetland impacts. No listed species were observed. Suitable habitat for the EIS, Florida pine snake, gopher tortoise, and southeastern American kestrel was observed. Pond 5A may incur impacts to the EIS, Florida pine snake, gopher tortoise, and southeastern American kestrel. Species specific surveys will likely be required to confirm absence and minimize impacts to these species. Construction of this proposed pond site will result in impacts to state lands.

Pond 5B

Pond 5 B is located south of SR 50 at approximately station 1944+81.23 (RT). This proposed pond site is within the Withlacoochee State Forest. The majority of this pond site is located within pine flatwoods with a small portion near the northeast corner containing forested wetlands. The interior of the pond site has a fairly open canopy consisting of slash pine. Understory and groundcover species include winged sumac, saw palmetto, gallberry (*Ilex glabra*), lantana, beautyberry, and blackberry. Wetland vegetation includes bald cypress, red maple, American elm, and water oak. Shrub species include wax myrtle, elderberry, buttonbush, and Peruvian water primrose (*Ludwigia peruviana*). Groundcover consists of swamp fern, netted chain fern, and soft rush.

Pond 5B will incur approximately 0.08 acres of direct wetland impacts. No listed species were observed. Suitable habitat for the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel was observed. Pond 5B may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. Species specific surveys will likely be required to confirm

absence and minimize impacts to these species. Construction of this proposed pond site will result in impacts to state lands.

Pond 5C

Pond 5C is located north of SR 50 at approximately station 1928+62.50 (LT). This proposed pond site is within the Withlacoochee State Forest. This pond site consists of coniferous upland forest with nearby forested wetlands. A dense canopy coverage is dominated by slash pine. Other canopy species include laurel oak and live oak. Understory species consist of immature pines and oaks, wax myrtle, beautyberry, winged sumac, and saw palmetto. Groundcover species include dog fennel, ragweed, beggarticks, and bracken fern. The western boundary of the pond site is adjacent to cypress wetlands. No direct impacts to wetlands are anticipated.

No listed species or suitable habitat was observed. No impacts to listed species are anticipated to be associated with Pond 5C. Construction of this proposed pond site will result in impacts to state lands.

Pond 6A

Pond 6A is located north of SR 50 at approximately station 1958+30.47 (LT). This proposed pond site is within the Withlacoochee State Forest. This pond site is located entirely in densely covered pine flatwoods surrounded by cypress wetlands. Observed canopy species include slash pine, live oak, water oak, and cabbage palm. Understory and groundcover species consist of gallberry, saw palmetto, shiny blueberry (*Vaccinium myrsinites*), winged sumac, and muscadine grape.

Pond 6A will incur approximately 0.05 acres of direct wetland impacts. No listed species or suitable habitat was observed. No impacts to listed species are anticipated to be associated with Pond 6A. Construction of this proposed pond site will result in impacts to state lands.

Pond 6B

Pond 6B is located south of SR 50 at approximately station 1965+59.82 (RT). This proposed pond site is within the Withlacoochee State Forest. The majority of this pond site is located within pine flatwoods. Areas of wetlands occur along the southern boundary of the site. Observed canopy species include longleaf pine, and slash pine. The understory consists of immature pines, winged sumac, wax myrtle, saw palmetto, gallberry, beautyberry, and shiny blueberry. Groundcover species include dog fennel, pawpaw (*Asimina reticulata*), broomsedge (*Andropogon virginicus*), blackberry, and muscadine grape.

Pond 6B will incur approximately 1.4 acres of direct wetland impacts. No listed species were observed. Suitable habitat for the EIS, wood stork, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, Sherman's fox squirrel, southeastern American kestrel, and wading birds. Pond 6B may incur impacts to the EIS, wood stork, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, Sherman's fox squirrel, southeastern American kestrel, and wading birds. Species specific surveys will likely be required to confirm absence and minimize impacts to these species. Construction of this proposed pond site will result in impacts to state lands.

Pond 6C

Pond 6C is located south of SR 50 and at approximately station 1993+58.47 (RT). This proposed pond site is within the Withlacoochee State Forest. This site is located within forested wetlands. Observed canopy species include bald cypress, pond cypress, red maple, sweetgum, water hickory, and laurel oak. Under story species consist of immature canopy species, laurel cherry, salt bush, buttonbush, and Carolina willow. Groundcover species include netted chain fern and cinnamon fern.

Pond 6C will incur 3.11 acres of direct wetland impacts. No listed species or suitable habitat was observed. No impacts to listed species are anticipated to be associated with Pond 6C. Construction of this proposed pond site will result in impacts to state lands.

Pond 7A and Easement

Pond 7A is located north of SR 50 and at approximately station 2008+72.58 (LT). This proposed pond site is within the Withlacoochee State Forest. The entire pond site and easement are located within forested wetlands. Observed canopy species include bald cypress, water tupelo, red maple, water oak, and sweetgum. Shrub species include immature maple and water oak, wax myrtle and buttonbush. Groundcover species consist of cinnamon fern, soft rush, and netted chain fern.

Pond 7A, including the easement, will incur approximately 1.50 acres of direct wetland impacts. No listed species or suitable habitat was observed. No impacts to listed species are anticipated to be associated with Pond 7A. Construction of this proposed pond site will result in impacts to state lands.

Pond 7B and Easement

Pond 7B is located south of SR 50 and at approximately station 2016+90.78 (RT). This proposed pond site is within the Withlacoochee State Forest. The entire pond site and easement are located within forested wetlands. Observed canopy species include bald cypress, red maple, water hickory, and laurel oak. Shrub species include immature canopy species, dahoon holly, elderberry, buttonbush, and wax myrtle. Groundcover species include cinnamon fern, netted chain fern, royal fern, soft rush and flat sedge (*Cyperus* sp.).

Pond 7B, including the easement, will incur approximately 1.60 acres of direct wetland impacts. No listed species were observed. Plume polypody (*Pecluma plumula*), a state listed plant, has been documented within the pond site limits. Construction of this proposed pond site will result in impacts to state lands.

Pond 7C

Pond 7C is located south of SR 50 and at approximately station 2024+21.11 (RT). This proposed pond site is within the Withlacoochee State Forest. The entire pond site and easement are located within forested wetlands. Observed canopy species include bald cypress, red maple, sweet gum, water hickory, and laurel oak. Shrub species include immature canopy species, dahoon holly, elderberry, buttonbush, and wax myrtle. Groundcover species include cinnamon fern, netted chain fern, royal fern, soft rush and flat sedge.

Pond 7C, including the easement, will incur approximately 2.01 acres of direct wetland impacts. No listed species were observed. State endangered plant species, including plume polypody and auricled auritum (*Asplenium erosum*), have been documented within the pond limits and surrounding areas. Construction of this proposed pond site will result in impacts to state lands.

Pond 8A

Pond 8A is located north of SR 50 and at approximately station 2033+13.46 (LT). This proposed pond site is within the Withlacoochee State Forest. The entire pond site and easement are located within forested wetlands. Observed canopy species include bald cypress, water tupelo, red maple, water oak, laurel oak, and sweetgum. Shrub species include immature canopy species, wax myrtle, and buttonbush. Groundcover species consist of cinnamon fern, soft rush, and netted chain fern.

Pond 8A will incur approximately 1.27 acres of direct wetland impacts. No listed species or suitable habitat was observed. No impacts to listed species are anticipated to be associated with Pond 8A. Construction of this proposed pond site will result in impacts to state lands.

Pond 8B

Pond 8B is located southeast of SR 50 and at approximately station 2041+43.31 (RT). This proposed pond site is within the Withlacoochee State Forest. The entire pond site is located within forested wetlands. Observed canopy species include laurel oak, water oak, bald cypress, sweetgum, water hickory, pond cypress, American elm, and red maple. Shrub species include immature canopy species, wax myrtle, dahoon holly, and button bush. Groundcover includes netted chain fern, soft rush, flat sedge, and cinnamon fern.

Pond 8B will incur approximately 1.27 acres of direct wetland impacts. No listed species or suitable habitat was observed. No impacts to listed species are anticipated to be associated with Pond 8B. Construction of this proposed pond site will result in impacts to state lands.

Pond 8C

Pond 8C is located southeast of SR 50 and at approximately station 2053+25.06 (RT). This proposed pond site is within the Withlacoochee State Forest. This site is located within a forested wetland system with uplands occurring along the western portion of the site. Observed canopy species within the forested wetland include pond cypress, bald cypress, red maple, sweetgum, American elm, and laurel oak. Sub canopy consists of immature canopy species, buttonbush, elderberry, dahoon holly, and wax myrtle. Groundcover is comprised of netted chain fern, dog fennel, and saw grass. Observed upland vegetation includes slash pine, laurel oak, and live oak. Shrub species include, saw palmetto, wax myrtle, and gallberry. Groundcover consists of bushy broomsedge, dog fennel, and beggarticks.

Pond 8C will incur approximately 0.25 acres of direct wetland impacts. No listed species or suitable habitat were observed. No impacts to listed species are anticipated to be associated with Pond 8C. Construction of this proposed pond site will result in impacts to state lands.

Pond 9A

Pond 9A is located southeast of SR 50 at approximately station 2087+61.30 (RT). This proposed pond site is located within the Withlacoochee State Forest. This proposed pond site is located within hardwood conifer mixed upland forest. Vegetation includes a canopy comprised of water oak, laurel oak, and slash pine. Understory consists of winged sumac, wax myrtle, and saw palmetto. Groundcover includes bracken fern and muscadine grapevine. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 9A.

No listed species or suitable habitat were observed. No impacts to listed species are anticipated to be associated with Pond 9A. Construction of this proposed pond site will result in impacts to state lands.

Pond 9B

Pond 9B is located northwest of SR 50 at approximately station 2087+19.33 (LT). This proposed pond site is located within the Withlacoochee State Forest. This proposed pond site is located within hardwood conifer mixed hardwood upland forest as well as bottomland. Vegetation within the upland forest includes a canopy comprised of slash pine, red cedar, laurel cherry, water oak, and sweet gum. Understory includes immature canopy species and saw palmetto. Groundcover consists of bracken fern and muscadine grapevine. Vegetation within the forested wetland includes a canopy comprised of pond cypress, bald cypress, water hickory, laurel oak, and red maple. Understory consists of immature canopy species, saltbush, button bush, Peruvian primrose willow and Carolina willow. Groundcover includes cinnamon fern and swamp fern.

Pond 9B will incur approximately 0.60 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, Florida pine snake, and gopher tortoise. No gopher tortoises or gopher tortoise burrows were observed. Pond 9B may incur impacts to the EIS, Florida pine snake, and gopher tortoise. Species specific surveys may be required to confirm absence and minimize impacts to these species. Construction of this proposed pond site will result in impacts to state lands.

Pond 9C

Pond 9C is located northwest of SR 50 at approximately station 2082+01.57 (LT). This proposed pond site is located within the Withlacoochee State Forest. This proposed pond site is located within a tree plantation. An apiary was observed within the boundaries of this pond site. Vegetation includes a canopy comprised of slash pine, water oak, laurel oak, and sweetgum. Understory species includes saw palmetto. Groundcover consists of bracken fern and muscadine grapevine. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 9C.

No listed species were observed. Suitable habitat was observed for the EIS, Florida pine snake, and gopher tortoise. No gopher tortoises or gopher tortoise burrows were observed. Pond 9C may incur impacts to the EIS, Florida pine snake, and gopher tortoise. Species specific surveys

may be required in order to confirm absence and minimize impacts to these species. Construction of this proposed pond site will result in impacts to state lands.

Pond 10A

Pond 10A is located southeast of SR 50 at approximately station 58+69.90 (RT). This proposed pond site is located within the Withlacoochee State Forest. This proposed pond site is located within and adjacent to hardwood conifer mixed upland forest. Vegetation includes a canopy comprised of sweet gum, slash pine, and American elm. Understory species includes immature slash pine, American beauty berry, saw palmetto, and winged sumac. Groundcover consists of muscadine grapevine. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 10A.

No listed species or suitable habitat were observed. No impacts to listed species are anticipated to be associated with Pond 10A. Construction of this proposed pond site will result in impacts to state lands.

Pond 10B

Pond 10B is located southeast of S.R 50 at approximately station 50+23.52 (RT). This proposed pond site is located within the Withlacoochee State Forest. This proposed pond site is within and adjacent to hardwood conifer mixed upland forests. Vegetation includes a canopy comprised of slash pine and laurel oak. Understory species include immature oaks, mulberry, and saw palmetto. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 10B.

No listed species or suitable habitat were observed. No impacts to listed species are anticipated to be associated with Pond 10B. Construction of this proposed pond site will result in impacts to state lands.

Pond 10C

Pond 10C is located northwest of SR 50 at approximately station 47+72.81 (LT). This proposed pond site is located within the Withlacoochee State Forest. This proposed pond site is located within and adjacent to bottomland and tree plantations. Vegetation within the forested wetland includes a canopy comprised of bald cypress, pond cypress, sweet gum, laurel oak, laurel cherry, American elm, and red maple. Understory species include immature canopy species and saw palmetto. Groundcover consists of swamp fern, greenbrier, and muscadine grapevine. The wetland portion of this pond site is a healthy habitat. Vegetation within the upland forest includes a canopy comprised of slash pine and laurel oak. Understory species include American beauty berry and winged sumac.

Pond 10C will incur approximately 0.90 acres of direct wetland impacts. No listed species or suitable habitat were observed. No impacts to listed species are anticipated to be associated with Pond 10C. Construction of this proposed pond site will result in impacts to state lands.

Pond 11A

Pond 11A is located southeast of SR 50 at approximately station 67+53.76 (RT). This proposed pond site is located within the Withlacoochee State Forest. This proposed pond site is located within and adjacent to hardwood conifer mixed upland forest. Vegetation includes a canopy comprised of slash pine, laurel oak, and live oak. Understory consists of saw palmetto and winged sumac. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 11A.

No listed species or suitable habitat were observed. No impacts to listed species are anticipated to be associated with Pond 11A. Construction of this proposed pond site will result in impacts to state lands.

Pond 11B

Pond 11B is located northwest of SR 50 at approximately station 66+82.68 (LT). This proposed pond site is located within the Withlacoochee State Forest. This proposed pond site is located within and adjacent to tree plantations. Vegetation includes a canopy comprised of slash pine, sweet gum, and red maple. Understory species include winged sumac, wax myrtle, and gallberry, and false indigo bush. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 11B.

No listed species were observed. Suitable habitat was observed for the EIS, Florida pine snake, and gopher tortoise. No gopher tortoises or gopher tortoise burrows were observed. Pond 11B may incur impacts to the EIS, Florida pine snake, and gopher tortoise. Species specific surveys may be required to confirm absence and minimize impacts to these species. Construction of this proposed pond site will result in impacts to state lands.

Pond 11C

Pond 11C is located west of SR 50 at approximately station 77+39.09 (LT). This proposed pond site is located within the Withlacoochee State Forest. This proposed pond site is located within and adjacent to a cypress forest and hardwood conifer mixed upland forest. Vegetation within the forested wetland includes a canopy comprised of pond cypress, bald cypress, red maple, slash pine, and sweet gum. Understory species include wax myrtle, buttonbush, salt bush, elderberry, and Peruvian primrose willow. Groundcover consists of flat sedge, swamp fern, and saw grass. Standing water was also observed within this wetland. Vegetation within the upland forest includes slash pine, loblolly pine, laurel oak, water oak, and mockernut hickory. Understory species include American beauty berry, cabbage palm, and saw palmetto. Groundcover species includes bracken fern and false indigo bush.

Pond 11C is anticipated to incur approximately 0.93 acres of direct wetland impacts. No listed species or suitable habitat were observed. No impacts to listed species are anticipated to be associated with Pond 11C. Construction of this proposed pond site will result in impacts to state lands.

Pond 12A

Pond 12A is located east of SR 50 at approximately station 100+37.77 (RT). This proposed pond site is located within the Withlacoochee State Forest. This proposed pond site is located within a tree plantation. Vegetation includes canopy comprised of slash pine, laurel oak, and elm. Understory species include immature canopy species and American beauty berry. Groundcover consists of muscadine grapevine and greenbrier. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 12A.

No listed species were observed. Suitable habitat was observed for the EIS, Florida pine snake, and gopher tortoise. No gopher tortoises or gopher tortoise burrows were observed. Pond 12A may incur impacts to the EIS, Florida pine snake, and gopher tortoise. Species specific surveys may be required to confirm absence and minimize impacts to these species. Construction of this proposed pond site will result in impacts to state lands.

Pond 12B

Pond 12B is located east of SR 50 at approximately station 108+96.22 (RT). This proposed pond site is within a pasture located in a low density residential area. Vegetation includes a fringe canopy comprised of live oak and slash pine. Groundcover includes dog fennel and Bahia grass. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 12B.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. No gopher tortoises or gopher tortoise burrows were observed. Pond 12B may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 12C

Pond 12C is located west of SR 50 at approximately station 109+31.50 (LT). This proposed pond site is within a pasture located in a low density residential area with the southern portion within upland hardwood forests. Vegetation within the pasture includes groundcover comprised of herbaceous species and grasses associated with an active goat operation. Vegetation within the upland forest includes a canopy comprised of slash pine, loblolly pine, laurel oak, and live oak. The understory consists of American beauty berry and winged sumac. Groundcover species includes muscadine grapevine and greenbrier. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 12C.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. No gopher tortoises or gopher tortoise burrows were observed. Pond 12C may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 12R

Pond 12R is located west of SR 50 at approximately station 108+92.38 (RT). This proposed pond site is within a pasture and wet prairie located in a low density residential area. Vegetation within the pasture includes a sparse canopy comprised of live oak and slash pine. Groundcover species include dog fennel, beggarticks, Bahia grass, big carpet grass, tropical soda apple, and frogs fruit. Vegetation within the wet prairie includes dog fennel, soft rush, penny wort, and Bahia grass.

Pond 12R will incur approximately 0.23 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, Sherman's fox squirrel, southeastern American kestrel, wading birds, and wood stork. No gopher tortoises or gopher tortoise burrows were observed. Pond 13A may incur impacts to the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, Sherman's fox squirrel, southeastern American kestrel, wading birds, and wood stork. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 13A

Pond 13A is located east of SR 50 at approximately 118+60.85 (RT). This proposed pond site is within a pasture and wet prairie located in a low density residential area. Vegetation within the pasture includes a sparse canopy comprised of live oak and slash pine. Groundcover species include dog fennel, beggarticks, Bahia grass, big carpet grass, tropical soda apple, and frogs fruit. Vegetation within the wet prairie includes dog fennel, soft rush, penny wort, and Bahia grass.

Pond 13A is anticipated to incur approximately 0.32 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, Sherman's fox squirrel, southeastern American kestrel, wading birds, and wood stork. No gopher tortoises or gopher tortoise burrows were observed. Pond 13A may incur impacts to the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, Sherman's fox squirrel, southeastern American kestrel, wading birds, and wood stork. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 13B

Pond 13B is located southeast of SR 50 at approximately station 137+8.96 (RT). This proposed pond site is located within pastureland. Vegetation within the pasture includes a sparse canopy comprised of slash pine and live oak. Groundcover species include dog fennel, beggarticks, Bahia grass, big carpet grass and frogs fruit. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 13B.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. No gopher tortoises or gopher tortoise burrows were observed. Pond 13B may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern

kestrel. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 13C

Pond 13C is located west of S.R 50 at approximately station 125+88 (LT). This proposed pond site is within a pasture located in a low density residential area. Vegetation within the pasture includes a sparse canopy comprised of loblolly pine, slash pine, live oak, and sweet gum. Understory species include pine saplings. Groundcover species include dog fennel, beggarticks, Bahia grass, and frogs fruit. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 13C.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. No gopher tortoises or gopher tortoise burrows were observed. Pond 13C may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern kestrel. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 14A

Pond 14A site is located south of SR 50 at approximately station 179+86.36 (RT). This proposed pond located within a forested portion of a commercial area. The southern boundary is within and adjacent to cropland and pastureland. The forested area is dived by what appears to be a powerline easement. Vegetation includes a canopy comprised of laurel oak and live oak. Understory species include oak saplings and winged sumac. Groundcover consists of Bahia grass, beggarticks, and ragweed. Observed vegetation within the pasture includes a groundcover consisting of Beggar ticks, dog fennel, big carpet grass, and Bahia grass. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 14A.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, and southeastern American kestrel. No gopher tortoises or gopher tortoise burrows were observed. Pond 14A may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, and southeastern American kestrel. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 14B

Pond 14B is located south of SR 50 at approximately station 185+39.72 (RT). This proposed pond site is located within wetland forested mixed and pasture. Vegetation within the forested wetland includes a canopy consisting of bald cypress and pond cypress. Understory species include immature canopy species, elderberry, and salt bush. Groundcover species include beggarticks. Vegetation within the pasture includes a sparse oak and pine canopy. Groundcover species include Bahia grass, beggarticks, lantana, frogs fruit, and big carpet grass.

Pond 14B is anticipated to incur approximately 0.82 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine

snake, gopher tortoise, Sherman's fox squirrel, and southeastern kestrel. No gopher tortoises or gopher tortoise burrows were observed. Pond 14B may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern kestrel. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 14C

Pond 14C is located north of SR 50 at approximately station 186+6.47 (LT). This proposed pond site is located in pasture and adjacent to a wetland located to its south. Vegetation consists of a sparse canopy of live oak and slash pine. Groundcover species include Bahia grass, big carpet grass, beggarticks, frogs fruit, dog fennel, and bush mint. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond14C.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern kestrel. No gopher tortoises or gopher tortoise burrows were observed. Pond 14C may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern kestrel. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 15A

Pond 15A is located south of SR 50 at approximately station 199+79.46 (RT). Vegetation includes a canopy along the northern edge comprised of long leaf pine, slash pine, and laurel oak. Groundcover consists of Bahia grass, big carpet grass, beggarticks, frogs fruit, dog fennel, and common ragweed. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 15A.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern kestrel. No gopher tortoises or gopher tortoise burrows were observed. Pond 15A may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern kestrel. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 15B

Pond 15B is located south of SR 50 at approximately station 204+71.61 (RT). This proposed pond site is located within cropland and pastureland. Vegetation includes a canopy along the northern edge comprised of long leaf pine, slash pine, and laurel oak. Groundcover consists of Bahia grass, big carpet grass, beggarticks, frogs fruit, dog fennel, and common ragweed. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 15B.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern kestrel. No gopher tortoises or gopher tortoise burrows were observed. Pond 15B may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern kestrel. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 15C

Pond 15C is located north of SR 50 at approximately station 208+19.41 (LT). This proposed pond site is located within cropland and pastureland. Vegetation includes a canopy along the western edge comprised of longleaf pine, loblolly pine, laurel oak, and live oak. Groundcover species include Bahia grass, big carpet grass, beggarticks, frogs fruit, dog fennel, lantana, bush mint, and common ragweed. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond15C.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern kestrel. No gopher tortoises or gopher tortoise burrows were observed. Pond 15C may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern kestrel. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 16A

Pond 16A is located south of SR 50 at approximately station 231+23.91 (RT). This proposed pond site is located within a lumber yard. The majority of this pond site is disturbed. Vegetation includes a sparse patches of Bahia grass, dog fennel, and beggarticks. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 16A.

No listed species or critical habitat was observed. No impacts to listed species are anticipated to be associated with Pond 16A.

Pond 16B

Pond 16B is located north of S.R 50 at approximately station 222+2.37 (LT). This proposed pond site is located within cropland and pastureland. Vegetation includes a groundcover consisting of Bahia grass, big carpet grass, beggarticks, frogs fruit, dog fennel, lantana, bush mint, and common ragweed. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 16B.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, and gopher tortoise. No gopher tortoises or gopher tortoise burrows were observed. Pond 16B may incur impacts to the EIS, burrowing owl, Florida pine snake, and gopher tortoise. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 16C

Pond 16C is located north of SR 50 at approximately station 233+11.82 (LT). This proposed pond site is located immediately adjacent to a single-family residence in cropland and pastureland. Vegetation includes an oak canopy along the southern edge. Groundcover species include Bahia grass, big carpet grass, beggarticks, frogs fruit, dog fennel, and common ragweed. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 16C.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. No gopher tortoises or gopher tortoise burrows were observed. Pond 16C may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 17A

Pond 17A is located north of SR 50 at approximately station 244+48.36 (LT). This proposed pond site is located within and adjacent to cropland and pastureland. Vegetation includes groundcover comprised of lantana, Bahia grass, big carpet grass, frogs fruit, dog fennel, and common ragweed. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 17A.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, and gopher tortoise. No gopher tortoises or gopher tortoise burrows were observed. Pond 17A may incur impacts to the EIS, burrowing owl, Florida pine snake, and gopher tortoise. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 17B

Pond 17B is located north of SR 50 at approximately station 248+43.25 (LT). This proposed pond site is located within cropland and pastureland. Vegetation includes a canopy along the eastern edge of live oak and laurel oak. Groundcover consists of Bahia grass, big carpet grass, frogs fruit, dog fennel, and common ragweed. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 17B.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. No gopher tortoises or gopher tortoise burrows were observed. Pond 17B may incur impacts to the EIS, burrowing owl, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 17C

Pond 17C is located north of SR 50 at approximately station 255+58.47 (LT). This proposed pond site is located within cropland and pasture land. The southwestern corner of this pond site is located within and adjacent to a wet prairie. Vegetation within the cropland and pastureland includes a sparse canopy of live oak, laurel oak and longleaf pine. Groundcover species include Bahia grass, big carpet grass, St. Augustine grass, dog fennel, and common ragweed. Vegetation within the wet prairie includes dog fennel, soft rush, and arrowhead.

Pond 17C is anticipated to incur approximately 0.15 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida Pine Snake, Florida sandhill crane, gopher tortoise, Sherman's fox squirrel, southeastern American kestrel, wading birds, and wood stork. No gopher tortoises or gopher tortoise burrows were

observed. Pond 17C may incur impacts to the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, Sherman's fox squirrel, southeastern American kestrel, wading birds, and wood stork. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 18A

Pond 18A and its associated easement are located north of SR 50 at approximately station 27+63.61 (LT). This proposed pond site is located within cropland and pasture land and within and adjacent to hardwood conifer mixed upland forest along the southeastern and eastern boundaries. Pond 18A also entirely encompasses a freshwater marsh. Vegetation within the cropland and pasture land includes a canopy of live oak and slash pine along the southern edge. Groundcover species include lantana, bush mint, dog fennel, beggarticks, and frogs fruit. Vegetation within the upland forest includes a canopy comprised of laurel oak, live oak, cedar, and slash pine. Understory species include cabbage palm and winged sumac. Groundcover consists of bracken fern, common ragweed, muscadine grapevine, and greenbrier. Vegetation within the freshwater marsh includes arrowhead, St. John's wort, and soft rush.

Pond 18A is anticipated to incur approximately 0.27 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, Sherman's fox squirrel, southeastern American kestrel, wading birds, and wood stork. No gopher tortoises or gopher tortoise burrows were observed. Pond 18A may incur impacts to the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, Sherman's fox squirrel, southeastern American kestrel, wading birds, and wood stork. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 18B

Pond 18B is located south of S.R 50 at approximately station 37+14.66 (RT). This proposed pond site is located within and adjacent to hardwood conifer mixed upland forest with cropland and pasture land. This proposed pond site is also located within bottomland and freshwater marshes. Vegetation within the upland forest includes a canopy comprised of laurel oak, live oak, water oak, slash pine, and long leaf pine. Understory species include American beauty berry, winged sumac, cabbage palm, and saw palmetto. Groundcover species include bracken fern, and beggarticks. Vegetation within the forested wetland includes a canopy comprised of pond cypress, bald cypress, sweet gum, red maple, and sweet bay. Understory species include saltbush, wax myrtle, and cabbage palm. Groundcover consists of swamp fern, cinnamon fern, and arrowhead. Vegetation within the freshwater includes an understory comprised of Carolina willow, and immature cypress. Groundcover species include cattails, pickerel weed, arrowhead, St. John's wort, and cinnamon fern.

Pond 18B is anticipated to incur approximately 2.34 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, southeastern American kestrel, wading birds, and wood stork. No gopher tortoises or gopher tortoise burrows were observed. Pond 18B may incur

impacts to the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, southeastern American kestrel, wading birds, and wood stork. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 18C

Pond 18C is located north of SR 50 at approximately station 28+43.30 (LT). This proposed pond site is located within cropland and pasture land as well as hardwood conifer mixed upland forest. Vegetation within the cropland and pasture land includes broom sedge, lantana, bush mint, dog fennel, beggarticks, and frogs fruit. Vegetation within the forest includes a canopy comprised of laurel oak, live oak, water oak, slash pine, and long leaf pine. Understory species include American beauty berry, winged sumac, cabbage palm, and saw palmetto. Groundcover species include bracken fern, beggarticks, and common ragweed.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. No gopher tortoises or gopher tortoise burrows were observed. Pond 18C may incur impacts to the EIS, burrowing owl, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 19A

Pond 19A is located south of SR 50 at approximately station 74+63.07 (RT). This proposed pond site is located within cropland and pasture land. This proposed pond site is also located within and adjacent to two wet prairies. Vegetation within the cropland and pasture land includes dog fennel, common ragweed, beggarticks, broom sedge, Bahia grass, big carpet grass, lantana, and bush mint. Vegetation within the wet prairies include a sparse canopy or pond cypress and bald cypress. Understory species include of cabbage palm, Carolina willow, salt bush, elderberry, and sweet gum saplings. Groundcover consists of arrowhead, soft rush, dog fennel, common ragweed, greenbriar, muscadine grapevine and penny wart.

Pond 19A is anticipated to incur approximately 0.75 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, southeastern American kestrel, wading birds, and wood stork. No gopher tortoises or gopher tortoise burrows were observed. Pond 19A may incur impacts to the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, southeastern American kestrel, wading birds, and wood stork. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 19B and Easement

Pond 19B and its associated easement are located south of SR 50 at approximately station 81+05.19 (RT). This proposed pond site is located within hardwood conifer mixed upland forest with cropland and pastureland. Vegetation within the upland forest includes a canopy comprised of laurel oak, live oak, and longleaf pine. Understory species include cabbage palm, saw palmetto, American beauty berry, and wax myrtle. Groundcover species includes Bahia grass, greenbriar, muscadine grapevine, and bracken fern. Vegetation within the cropland and pastureland includes

dog fennel, common ragweed, beggarticks, broom sedge, Bahia grass, big carpet grass, lantana, and bush mint. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 19B.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. No gopher tortoises or gopher tortoise burrows were observed. Pond 19B may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel and southeastern American kestrel. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 19C

Pond 19C is located north of SR 50 at approximately station 76+43.89 (LT). This proposed pond site is located within and adjacent to cropland and pastureland. Vegetation includes a sparse canopy comprised of loblolly pine, slash pine, laurel oak, and live oak. Ground cover species include Bahia grass, dog fennel, common ragweed, beggarticks, broom sedge, lantana, and bush mint. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 19C.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. No gopher tortoises or gopher tortoise burrows were observed. Pond 19C may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 20A

Pond 20A is located north of SR 50 at approximately station 122+31.50 (LT). This proposed pond site is located within cropland and pastureland. Vegetation includes groundcover consisting of dog fennel, beggarticks, common ragweed, Bahia grass, big carpet grass, bush mint, and lantana. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 20A.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, and gopher tortoise. No gopher tortoises or gopher tortoise burrows were observed. Pond 20 may incur impacts to the EIS, burrowing owl, Florida pine snake, and gopher tortoise. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 20B and Easement

Pond 20B and its associated easement are located south of SR 50 at approximately station 128+55.79 (RT). This proposed pond site is located within and adjacent to cropland and pasture land as well as wet prairie. Vegetation within the cropland and pasture land includes a scattered canopy of laurel oak, live oak, and slash pine. Groundcover species includes dog fennel, beggarticks, common ragweed, Bahia grass, and lantana. Vegetation within the wet prairie

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contains an understory comprised of Carolina willow, salt bush, elderberry, and sweet gum saplings. Groundcover consists of arrowhead, soft rush, dog fennel, common ragweed, and penny wart.

Pond 20B is anticipated to incur approximately 0.27 acres of direct wetland impacts. Suitable habitat was observed for the EIS, Florida pine snake, Florida sandhill crane gopher tortoise, southeastern American kestrel, wading birds, and wood stork. No gopher tortoises or gopher tortoise burrows were observed. Pond 20B may incur impacts to the EIS, Florida pine snake, Florida sandhill crane, gopher tortoise, southeastern American kestrel, wading birds, and wood stork. Species specific surveys may be required to confirm absence and minimize impacts to these species.

<u>Pond 20C and Easement</u>

Pond 20C and its associated easement are located north of SR 50 at approximately station 133+45.08 (LT). This proposed pond site is located within hardwood conifer mixed upland forest as well as cropland and pastureland. The northern edge is within and adjacent to wet prairie. Vegetation within the forest includes a canopy comprised of laurel oak, live oak, longleaf pine, slash pine, and water oak. Understory species include American beauty berry, cabbage palm, saw palmetto, and winged sumac. Groundcover consists of bracken fern, ragweed, and muscadine grapevine. Vegetation within the cropland and pasture land includes a fringe canopy of laurel oak, live oak, and slash pine. Groundcover species includes dog fennel, beggarticks, common ragweed, Bahia grass, and lantana. Vegetation within the wet prairie is comprised of arrowhead, soft rush, dog fennel, common ragweed, penny wart, and Bahia grass.

Pond 20C is anticipated to incur approximately 0.04 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, Sherman's fox squirrel, southeastern American kestrel, wading birds, and wood stork. No gopher tortoises or gopher tortoise burrows were observed. Pond 20C may incur impacts to the EIS, burrowing owl, Florida sandhill crane, Florida pine snake, gopher tortoise, Sherman's fox squirrel, southeastern American kestrel, wading birds, and wood stork. Species specific surveys may be required to confirm absence and minimize impacts to these species.

<u>Pond 21A</u>

Pond 21A is located south of SR 50 at approximately station 155+25.08 (RT). This proposed pond site is located within hardwood conifer mixed upland forest as well as cropland and pastureland. Vegetation within the forest includes a canopy comprised of laurel oak, live oak, longleaf pine, slash pine, and water oak. Understory species include American beauty berry, cabbage palm, saw palmetto, and winged sumac. Groundcover consists of bracken fern, ragweed, and muscadine grapevine. Vegetation within the cropland and pasture land includes a fringe canopy of laurel oak, live oak, and slash pine. Groundcover species includes dog fennel, beggarticks, common ragweed, Bahia grass, and lantana. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 21A.

No listed species were observed. Suitable habitat was observed for the EIS, gopher tortoise, burrowing owl, Sherman's fox squirrel, Florida pine snake and southeastern American kestrel. FPC

15 may incur impacts to the EIS, gopher tortoise, burrowing owl, Sherman's fox squirrel, Florida pine snake and southeastern American kestrel. Species specific surveys will be required to confirm absence and minimize impacts to these species.

Pond 21B and Easement

Pond 21B and its associated easement are located north of SR 50 at approximately station 159+97.53 (LT). This proposed pond site is located within and adjacent to freshwater marsh and hardwood conifer mixed upland forest, with a portion within cropland and pastureland. Vegetation within the freshwater marsh includes arrowhead, pickerel weed, soft rush, and St. John's wart. Vegetation in the upland forest canopy includes slash pine, laurel oak, and live oak. Understory and groundcover species include American beauty berry, cabbage palm, saw palmetto, beggarticks, ragweed, greenbrier, and muscadine grapevine. Vegetation within the pasture includes dogfennel, Bahia grass, and thistle.

Pond 21B and its associated easement are anticipated to incur approximately 0.47 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, Florida pine snake, Florida sandhill crane, gopher tortoise, Sherman's fox squirrel, southeastern American kestrel, wading birds, and wood stork. No gopher tortoises or gopher tortoise burrows were observed. Pond 21B may incur impacts to the EIS, Florida pine snake, Florida sandhill crane, gopher tortoise, Sherman's fox squirrel, southeastern American kestrel, wading birds, and wood stork. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 21C and Easement

Pond 21C and its associated easement are located north of SR 50 at approximately station 151+19.43 (LT). The majority of this proposed pond site is located within a wet prairie; however, the southern edge is located within and adjacent to cropland and pastureland as well as low density residential area. Vegetation within the wetland includes soft rush, dog fennel, common ragweed, penny wart, and Bahia grass. Vegetation within the cropland and pastureland consists of a sparse live oak canopy. Groundcover species include dog fennel, ragweed, beggarticks, Bahia grass, big carpet grass, and frogs fruit.

Pond 21C is anticipated to incur approximately 2.19 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, Sherman's fox squirrel, southeastern American kestrel, wading birds, and wood stork. No gopher tortoises or gopher tortoise burrows were observed. Pond 21C may incur impacts to the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, Sherman's fox squirrel, southeastern American kestrel, wading birds, and wood stork. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 22A and Easement

Pond 22A and its associated easement are located south of SR 50 at approximately station 166+43.99 (RT). This proposed pond site is located within the Withlacoochee State Forest. This

proposed pond site is located within and adjacent to hardwood conifer mixed upland forest. Vegetation within the forest includes a canopy comprised of laurel oak, live oak, longleaf pine, slash pine, and water oak. Understory species include American beauty berry, cabbage palm, saw palmetto, and winged sumac. Groundcover consists of bracken fern, ragweed, and muscadine grapevine. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 22B.

No listed species or critical habitat was observed. No impacts to listed species are anticipated to be associated with Pond 22A. Construction of this proposed pond site will result in impacts to state lands.

Pond 22B

Pond 22B is located south of SR 50 at approximately station 183+50.94 (RT). This proposed pond site is located in hardwood conifer mixed upland forest with the southern portion within an industrial area. Vegetation within the upland forest includes a canopy comprised of live oak, longleaf pine, slash pine, and sweet gum. Understory species include cabbage palm, saw palmetto, and American beauty berry. Groundcover consists of beggarticks, dog fennel, common ragweed, and muscadine grapevine. The industrial portion is mostly cleared with a sparse oak canopy, Bahia grass, and dog fennel. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 22B.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, southeastern American Kestrel. Construction of this proposed pond site will result in impacts to state lands.

Pond 22C

Pond 22C is located north of SR 50 at approximately station 172+40 (LT). This proposed pond site is located within the Withlacoochee State Forest. This proposed pond site is located within forested wetlands and wet prairie with the northeastern corner in conifer hardwood mixed upland forest. Vegetation within the forested wetland includes a canopy comprised pond cypress, bald cypress, sweet gum, and red maple. Understory species include immature canopy species and sweet bay. Groundcover consists of swamp fern. Vegetation within the wet prairie includes Carolina willow, St. John's wort, arrowhead root, and pickerel weed. The upland forest contains a canopy comprised of slash pine, water oak, mockernut hickory, and laurel oak. Understory species include American beauty berry, pine saplings, winged sumac, and cabbage palm. Groundcover consists of common ragweed, bracken fern, dog fennel, and broom sedge.

Pond 22C is anticipated to incur approximately 2.73 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the Florida sandhill crane, wading birds and wood stork. Pond 22C may incur impacts to the Florida sandhill crane, wading birds, and wood stork. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 23A

Pond 23A is located south of SR 50 at approximately station 237+80.78 (RT). This proposed pond site is located within the cropland and pastureland located within a low density residential area. The southwestern corner of this pond site is located within and adjacent to bottomland. Vegetation within pasture includes a scattered and sparse canopy comprised of slash pine, loblolly pine, laurel oak, and live oak. Understory species include immature oaks. Groundcover consists of beggarticks, winged sumac, dog fennel, Bahia grass, St. Augustine grass, big carpet grass, and frogs fruit. Vegetation within the forested wetland includes a canopy comprised of cypress and red maple. The groundcover consists of swamp fern.

Pond 23A will incur approximately 0.01 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, southeastern American kestrel. No gopher tortoises or gopher tortoise burrows were observed. Pond 23A may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 23B

Pond 23B is located north of SR 50 at approximately station 226+39.24 (LT). This proposed pond site is located within cropland and pasture land as well as bottomland. Vegetation within the cropland and pasture land includes a scattered and sparse canopy of laurel oak, live oak, and slash pine. Groundcover species includes dog fennel, beggarticks, common ragweed, Bahia grass, and lantana. Vegetation within the bottomland includes a canopy comprised of pond cypress, bald cypress, sweet gum, elm, water oak, and red maple. Understory species include immature canopy species, saw palmetto, and buttonbush. Groundcover species include swamp fern, cinnamon fern, and soft rush.

Pond 23B will incur approximately 1.49 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. No gopher tortoises or gopher tortoise burrows were observed. Pond 23B may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 23C

Pond 23 C is located north of SR 50 at approximately station 235+66.88 (LT). This proposed pond site is located within and adjacent to cropland and pastureland. The southwestern corner of this pond site is located within bottomland. Vegetation within the cropland and pasture land includes a scattered and sparse canopy of laurel oak, live oak, and slash pine. Groundcover species includes dog fennel, beggarticks, common ragweed, Bahia grass, and lantana. Vegetation within the forested wetland includes a canopy comprised of sweet gum and red maple. Understory species consist of Carolina willow. Ground cover species consist of swamp fern and muscadine grapevine.

Pond 23C will incur approximately 0.07 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. No gopher tortoises or gopher tortoise burrows were observed. Pond 23C may incur impacts to the EIS, burrowing owl, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 24A

Pond 24A is located north of SR 50 at approximately station 255+75.30 (LT). This proposed pond site is located within and adjacent to pasture land with portions within upland forest as well as both forested and non-forested wetlands. Vegetation within the pasture includes dog fennel, Bahia grass, and ragweed. The forested wetland area contains a canopy comprised of sweetgum, red maple, pond cypress, and bald cypress. The understory and groundcover include immature canopy species, swamp fern, and elderberry. Vegetation within the freshwater marsh includes soft rush, dogfennel, arrowhead, and pickerelweed.

Pond 24A will incur approximately 1.87 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, southeastern American kestrel, wading birds, and wood stork. Pond 24A may incur impacts to the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, southeastern American kestrel, wading birds, and wood stork. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

Pond 24B and Easement

Pond 24B and its associated easement are located south of SR 50 at approximately station 263+28.75 (RT). The majority of this pond site is located within and adjacent to cropland and pasture land. The eastern edge of this pond site is located within and adjacent to low density residential area. Vegetation within the cropland and pastureland include a sparse canopy comprised of live oak. Groundcover consists of dog fennel, common ragweed, Bahia grass, broom sedge, and frogs fruit. Vegetation within the residential area includes a border canopy comprised of laurel oak and live oak. Ground cover species include Bahia grass, dog fennel, and common ragweed. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 24B.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. No gopher tortoises or gopher tortoise burrows were observed. Pond 24B may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 24C

Pond 24C is located north of SR 50 at approximately station 264+79.13 (LT). This proposed pond site is located within cropland and pastureland, hardwood conifer mixed forest, and wet prairie.

Vegetation within the cropland and pasture land includes a scattered canopy comprised of live oak and laurel oak. Groundcover species include St. Augustine grass, dog fennel, frogs fruit, beggar ticks, Bahia grass, and big carpet grass. Vegetation within the upland forest includes a canopy comprised of laurel oak and live oak. Groundcover species include common ragweed, dog fennel, Bahia grass, and frogs fruit. Vegetation within the wet prairie includes dog fennel, soft rush, and pickerel weed. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 24C.

No listed species were observed. Suitable habitat was observed for the EIS, Florida pine snake, burrowing owl, gopher tortoise, Sherman's fox squirrel and southeastern American kestrel. No gopher tortoise or gopher tortoise burrows were observed. Pond 24 C may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 25A

Pond 25A is located north of SR 50 at approximately station 320+67.44 (LT). This proposed pond site is located within the Withlacoochee State Forest. The majority of this wetland is located within coniferous plantations. However, the southwestern portion is located within and adjacent to forested wetland. Vegetation within the coniferous plantation includes a canopy comprised of slash pine and scattered laurel oak and live oak. Understory species include immature slash pine, saw palmetto, and winged sumac. Groundcover species include bracken fern, dog fennel, common ragweed, Bahia grass, big carpet grass, and frogs fruit. Vegetation within the forested wetland includes a canopy comprised of red maple and sweet gum. Understory species include Carolina willow, buttonbush, saltbush, elderberry, and wax myrtle. Groundcover species include ragweed, dog fennel, and beggarticks.

Pond 25A will incur approximately 0.86 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the Suitable habitat for the EIS, Florida pine snake, and gopher tortoise. No gopher tortoises or gopher tortoise burrows were observed. Pond 25A may incur impacts to the EIS, Florida pine snake, and gopher tortoise. Species specific surveys may likely be required to confirm absence and minimize impacts to these species. Construction of this proposed pond site will result in impacts to state lands.

Pond 25B

Pond 25B is located south of SR 50 at approximately station 322+99.31 (RT). This proposed pond site is located within the Withlacoochee State Forest. This pond site is located within and adjacent to mixed rangeland and wet prairie. Canopy species within the mixed rangeland include slash pine, laurel oak, mockernut hickory, and live oak. Understory species include immature live oak, winged sumac, and pine saplings. Groundcover species include beggarticks, broom sedge, common ragweed, Bahia grass, and pine seedlings. Vegetation within the wetland includes an understory comprised of Carolina willow, elderberry, cabbage palm, and saltbush. Groundcover species include maiden cane, common ragweed, swamp fern, dog fennel, arrowhead, and passion flower vine.

Pond 25B will incur approximately 0.85 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, southeastern American kestrel, wading birds, and wood stork. No gopher tortoises or gopher tortoise burrows were observed. Pond 25 B may incur impacts to the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, southeastern American kestrel, wading birds, and wood stork. Species specific surveys may be required to confirm absence and minimize impacts to these species. Construction of this proposed pond site will result in impacts to the state lands.

Pond 25C

Pond 25C is located south of SR 50 at approximately station 327+47.17 (RT.). This proposed pond site is located within and adjacent to herbaceous dry prairie with smaller portions within and adjacent to shrub and brushland and forested wetlands. This proposed pond site is located immediately adjacent to the Withlacoochee State Forest. Vegetation within the dry prairie consists of groundcover species including common ragweed, big carpet grass, dog fennel, beggarticks, lantana, and Bahia grass. Vegetation within the shrub and brushland includes an understory comprised of sand live oak, saw palmetto, and gallberry. Groundcover species include broom sedge, common ragweed, dog fennel, beggarticks, lantana, muscadine and grapevine. Vegetation within the forested wetland includes a canopy comprised of red maple and sweet gum. Understory species consist of immature canopy species, Carolina willow, wax myrtle, and buttonbush. Groundcover species include maiden cane, dog fennel, swamp fern, and arrowhead.

Pond 25C will incur approximately 0.42 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, burrowing owls, Florida pine snake, gopher tortoise, Florida sandhill crane, Sherman's fox squirrel, southeastern American kestrel, wading birds, and wood stork. No gopher tortoises or gopher tortoise burrows were observed. Pond 25C may incur impacts to the EIS, burrowing owls, Florida pine snake, Florida sandhill crane, gopher tortoise, Sherman's fox squirrel, southeastern American kestrel, wading birds, and wood stork. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 26A

Pond 26A is located south of SR 50 at approximately station 335+74.38 (RT.) This proposed pond site is located within forested wetland and wet prairie. Vegetation within the forested wetland includes a canopy comprised of red maple and sweetgum. Understory species include salt bush, wax myrtle, Carolina willow, elderberry and buttonbush. Groundcover species include Peruvian primrose willow, swamp fern, common ragweed, beggarticks, dogfennel, muscadine grapevine, and passionflower. The groundcover of the wet prairie consists of St. John's wort, cattails, dog fennel, saw grass, swamp fern, and cinnamon fern.

Pond 26A is anticipated to incur approximately 1.38 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the Florida sandhill crane, wading birds and wood storks. Pond 26A may incur impacts to the Florida sandhill crane, wading birds, and

wood storks. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 26B

Pond 26B is located north of SR 50 at approximately station 337+75.82 (LT.). This proposed Pond site is within the Withlacoochee State Forest. This proposed pond site is located within and adjacent to coniferous plantations and a wet prairie. Vegetation within the coniferous plantation includes a canopy comprised of slash pine and scattered laurel oak and live oak. Understory species include immature slash pine, saw palmetto, and winged sumac. Groundcover species include bracken fern, dog fennel, common ragweed, Bahia grass, big carpet grass, and frogs fruit. The wet prairie consists of a subcanopy comprised of Carolina willow, wax myrtle, and buttonbush. The groundcover includes cattails, Peruvian primrose willow, penny wort, St. John's wort, and arrowhead.

Pond 26B is anticipated to incur approximately 0.20 acres of direct wetland impacts. No listed species were observed. Suitable habitat for the EIS, Florida pine snake, Florida sandhill crane, gopher tortoise, wading birds, and wood stork. No gopher tortoises or gopher tortoise burrows were observed. Pond 26B may incur impacts to the EIS, Florida pine snake, Florida sandhill crane, gopher tortoise, wading birds, and wood stork. Species specific surveys will likely be required to confirm absence and minimize impacts to these species. Construction of this proposed pond site will result in impacts to state lands.

Pond 26C

Pond 26C is located south of SR 50 at approximately station 343+31.53 (RT). This majority of this proposed pond site is located within and adjacent to herbaceous dry prairie and forested wetland. Vegetation within the herbaceous dry prairie includes Bahia grass, spiderwort, dog fennel, common ragweed, and muscadine grapevine. The forested wetland includes a canopy comprised of red maple and sweetgum. Understory species include buttonbush, elderberry, salt bush, wax myrtle, and red maple saplings. Groundcover species include Peruvian primrose willow, dog fennel, ragweed, swamp fern, and muscadine grapevine.

Pond 26C will incur approximately 0.41 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, and gopher tortoise. No gopher tortoises or gopher tortoise burrows were observed. Pond 26C may incur impacts to the EIS, burrowing owl, Florida pine snake, and gopher tortoise. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 27A

Pond 27A is located south of SR 50 at approximately station 353+94.99 (RT). The majority of this pond site is located within cropland and pastureland with a portion within wetland forested mixed. The pastureland and cropland appear to have been tilled recently and contains little vegetation. Vegetation within this area includes sparse patches of dog fennel, common ragweed, beggarticks, and Bahia grass. The forested wetland component includes a canopy comprised of cypress, sweet gum, slash pine and red maple. Subcanopy is comprised of Carolina willow, cabbage palm, and

wax myrtle. Groundcover species include beggarticks, swamp fern, common ragweed, and penny wort.

Pond 27A is anticipated to incur approximately 0.10 acres of direct wetland impacts. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, and gopher tortoise. No gopher tortoises or gopher tortoise burrows were observed. Pond 27A may incur impacts to the EIS, burrowing owl, Florida pine snake and gopher tortoise. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 27B

Pond 27B is located north of SR 50 at approximately station 354+0.29 (LT). This proposed pond site is located within a wetland forest. Vegetation within this pond site includes a canopy comprised of cypress, red maple, sweet gum, and slash pine. Understory species include immature canopy species, Carolina willow, wax myrtle, button bush, and salt bush. Groundcover species include Peruvian primrose willow, cattail, arrowhead, swamp fern, and ragweed.

Pond 27B is anticipated to incur approximately 1.72 acres of direct impacts to wetlands. No listed species or critical habitat was observed. No impacts to listed species are anticipated for Pond 27B.

Pond 27C and Easement

Pond 27A and its associated easement are located north of SR 50 at approximately station 357+69.69 (LT). This proposed pond site is located within improved pasture. Vegetation within this pond site includes a sparse canopy comprised of live oak. Groundcover species include dog fennel, pawpaw, lantana, common ragweed, and Bahia grass. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 27C.

No listed species were observed. Suitable habitat was observed for the EIS, sand skink, burrowing owl, Florida pine snake, and gopher tortoise. No gopher tortoises or gopher tortoise burrows were observed. Pond 27C may incur impacts to the EIS, sand skink, burrowing owl, Florida pine snake, and gopher tortoise. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 28A and Easement

Pond 28A and its associated easement are located south of SR 50 at approximately station 390+64.38 (RT). This pond site is located entirely within improved pasture. The vegetation within this pasture includes lantana, dog fennel, bushmint, big carpet grass, Bahia grass, beggarticks, frogs fruit, and spiderwort. No wetlands were observed within this pond site; therefore, no impacts to wetlands are anticipated.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, and sand skink. No gopher tortoises or gopher tortoise burrows were observed. Pond 28A may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, and sand skink. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 28B and Easement

Pond 28B and its associated easement are located south of SR 50 at approximately station 386+35.44 (RT). The majority of this pond site is located within improved pasture with areas of hardwood conifer mixed forest and freshwater marsh. Vegetation within the pasture includes lantana, dog fennel, Bahia grass, pawpaw, and beggarticks. Vegetation within the forest includes a canopy comprised of slash pine, loblolly pine, laurel oak, live oak, and mockernut hickory. Understory species include immature canopy species, saw palmetto, and American beauty berry. Groundcover consists of lantana, broom sedge, winged sumac, bracken fern, and common ragweed. The freshwater marsh consists of St. John's wort, soft rush, pickerelweed, arrowhead, and cattails.

Pond 28B and its associated easement are anticipated to incur approximately 0.59 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, southeastern American kestrel wading birds, and wood stork. No gopher tortoises or gopher tortoise burrows were observed. Pond 28B may incur impacts to the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, southeastern American kestrel, wading birds, and wood stork. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 28C

Pond 28C is located south of SR 50 at approximately station 384+32.99 (RT). This pond site is within both a residential area as well as an improved pasture. At least one residence occurs within this proposed pond site. Vegetation within the improved pasture includes a sparse canopy of live oak, laurel oak, and mimosa. Groundcover species include lantana, dog fennel, partridge pea, common ragweed, Bahia grass, big carpet grass, St. Augustine grass, frogs fruit, Virginia creeper, and muscadine grapevine. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, and gopher tortoise. No gopher tortoises or gopher tortoise burrows were observed. Pond 28C may incur impacts to the EIS, burrowing owl, Florida pine snake, and gopher tortoise. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 29A

Pond 29A is located south of SR 50 at approximately station 400+28.51 (RT). This majority of this proposed pond site is located within improved pasture; however, the southern boundary is located within and adjacent to treeless hydric savanna and wet prairie, and the northeastern corner is located within and adjacent to forested wetland. Vegetative species within the pasture include big carpet grass, dog fennel, Bahia grass, and beggarticks. Vegetation within the treeless hydric savanna includes Carolina willow, salt bush, elderberry, cattails, dog fennel, pickerel weed, arrowhead, and soft rush. Vegetation within the wet prairie includes cattails, St. John's wort, pickerel weed, arrowhead, saw grass, and swamp fern. Vegetation within the forested wetland

includes a canopy comprised of cypress, sweet gum, red maple, sweet bay, and slash pine. The understory is comprised of elderberry, salt bush, and button bush. Groundcover species include soft rush, pickerel weed, arrowhead, and St. John's wort.

Pond 29A is anticipated to incur approximately 0.48 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl Florida pine snake, Florida sandhill crane, gopher tortoise, sand skink, wading birds and wood stork. No gopher tortoises or gopher tortoise burrows were observed. Pond 29A may incur impacts to the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, sand skink, wading birds, and wood stork. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 29B

Pond 29B is located south of SR 50 at approximately station 413+66.95 (RT). This proposed pond site is located in improved pasture and freshwater marsh. Vegetative species within the pasture include sparse cabbage palm, dog fennel, Bahia grass, and beggarticks. Vegetation within the freshwater marsh includes a subcanopy species consisting of Carolina willow and red maple; groundcover consisting of Peruvian primrose willow, buttonbush, salt bush, cattails, and ragweed.

Pond 29B is anticipated to incur approximately 0.16 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, wading birds and wood stork. No gopher tortoises or gopher tortoise burrows were observed. Pond 29B may incur impacts to the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, wading birds and wood stork. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 29C

Pond 29C is located north of SR 50 at approximately station 416+41.37 (LT). This pond site is located within an active tree nursery. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated.

No listed species or critical habitat was observed. No impacts to listed species are anticipated to be associated with Pond 29C.

Pond 30+31

Pond 30+31 is located north of S.R.50 at approximately station 428+97.78 (LT). This pond site is located within improved pasture, hardwood conifer mixed forest, and mixed wetland hardwood forest. Vegetation within the improved pasture is comprised of lantana, dog fennel, Bahia grass, St. Augustine grass, frogs fruit, and beggarticks. The upland forest includes a canopy consisting of live oak, laurel oak, water oak, mockernut hickory and slash pine. Understory species include water oak saplings and saw palmetto. Groundcover species include lantana, dog fennel, winged sumac, and muscadine grapevine. The forested wetland includes a canopy comprised of red maple, sweet gum, and cypress. The understory consists of Carolina willow, red maple saplings, and elderberry. Groundcover species include dog fennel, ragweed, and muscadine grapevine.

Pond 30+31 will incur approximately 0.05 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, sand skink, Sherman's fox squirrel, southeastern American kestrel. No gopher tortoises or gopher tortoise burrows were observed. Pond 30+31 may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, sand skinks, Sherman's fox squirrel, southeastern American kestrel. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 30B and Easement

Pond 30B is located north of SR 50 at approximately station 425+48.53 (LT). This pond site is located entirely within an active tree nursery. A forested wetland occurs south of this pond site. The easement associated with Pond 30B is partially located within the wetland. Vegetation within this wetland includes a canopy comprised of red maple, sweet gum, and cypress. The understory consists of Carolina willow, red maple saplings, and elderberry. Groundcover species include dog fennel, ragweed, and muscadine grapevine.

Pond 30B will incur 0.10 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the sand skink and gopher tortoise. No gopher tortoises or gopher tortoise burrows were observed. Pond 30B may incur impacts to the sand skink and gopher tortoise, sand skinks. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 30C and Easement

Pond 30C and its associated easement are located south of SR 50 at approximately station 435+16.61 (RT). This proposed pond site is located within a pasture located in a low density residential area. Vegetation within the pasture includes a sparse canopy comprised of live oak. Groundcover consists of Bahia grass, beggar ticks, lantana, dog fennel, and common ragweed.

No listed species were observed. Suitable habitat was observed for the EIS, sand skink, burrowing owl, Florida pine snake, and gopher tortoise. No gopher tortoises or gopher tortoise burrows were observed. Pond 30C may incur impacts to the EIS, sand skink, burrowing owl, Florida pine snake, and gopher tortoise. Species specific surveys mat be required to confirm absence and minimize impacts to these species.

Pond 31B

Pond 31B is located south of SR 50 at approximately station 442+38.62 (RT). This pond site is located in hardwood conifer mixed forest and row crops. The forested area includes a canopy comprised of laurel oak, live oak, slash pine, and laurel cherry. Understory consists of live oak saplings, American beauty berry, and saw palmetto. Groundcover species include dog fennel, common ragweed, big carpet grass, broom sedge, spiderwort, and Bahia grass. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated.

No listed species were observed. Suitable habitat for EIS, sand skink, Florida pine snake, gopher tortoise, and southeastern American kestrel. No gopher tortoises or gopher tortoise burrows were observed. Pond 31C may incur impacts to EIS, sand skink, Florida pine snake, gopher tortoise,

and southeastern American kestrel. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

Pond 31C

Pond 31C is located south of SR 50 at approximately station 444+52.75 (RT). This pond site is divided between hardwood conifer mixed forest and herbaceous dry prairie. The forested area includes a canopy comprised of laurel oak, live oak, slash pine, and laurel cherry. Understory consists of live oak saplings, American beauty berry, and saw palmetto. Groundcover species include dog fennel, common ragweed, big carpet grass, broom sedge, spiderwort, and Bahia grass. Vegetation within the prairie includes a canopy of scattered and sparse live oaks. Groundcover includes Bahia grass, spiderwort, dog fennel, common ragweed, and muscadine grapevine. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated.

No listed species were observed. Suitable habitat for EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and Sand skinks. No gopher tortoises or gopher tortoise burrows were observed. Pond 31C may incur impacts to EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, skinks, and Southeastern American kestrel. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

Pond 32A

Pond 32A is located south of SR 50 at approximately station 458+93.17 (RT). The majority of this pond site is located in field crops, with the eastern and southeastern boundaries within and adjacent to hardwood conifer mixed forest. Vegetation within the field crops includes a sparse live oak canopy. Groundcover species includes grasses used in the production of hay as well as dog fennel, bushmint, and lantana. The forest contains a canopy comprised of laurel oak, live oak, mockernut hickory, slash pine, and long leaf pine. Understory species include immature canopy species, American beauty berry, winged sumac, and saw palmetto. Groundcover species include dog fennel, common ragweed, lantana, Bahia grass, frogs fruit, big carpet grass, and beggarticks.

Pond 32A will incur approximately 0.02 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, sand skink, and southeastern American kestrel. No gopher tortoises or gopher tortoise burrows were observed. Pond 32A may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, sand skink, and southeastern American kestrel. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

Pond 32B

Pond 32B is located north of SR 50 at approximately station 464+68.01 (LT). The majority of this pond site location is developed or disturbed. Several residences occur within this pond site location, and a residential community is adjacent to the northeast border. The south, east, and northern boundaries are dominated by mixed upland hardwoods. A wetland occurs within and adjacent to the western boundary. This wetland appears to have been cleared recently. The

portion of the pond site located within the residential area is surrounded by a canopy of laurel oak, live oak, slash pine, and water oak. Understory consists of oak saplings, mimosa, and paper mulberry. Groundcover includes beggarticks, common ragweed, Cesar weed, Bahia grass, frogs fruit, lantana, Virginia creeper, greenbriar, and muscadine grapevine. The remaining vegetation within the wetland includes a canopy of red maple. Understory species include red maple saplings and elderberry. Groundcover is comprised of common ragweed, dog fennel, and muscadine grapevine.

Pond 32B will incur approximately 0.35 acres of direct wetland impacts. No listed species were observed. Although residences occur within this proposed pond site, portions of this pond site still meet suitable habitat criteria for the Florida sandhill crane, gopher tortoise, sand skink, wading birds, and wood stork. No gopher tortoises or gopher tortoise burrows were observed within this proposed pond site. Pond 32B may incur impacts to the Florida sandhill crane, gopher tortoise, sand skink, wading birds, and wood stork. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

Pond 32C

Pond 32C is located north of SR 50 at approximately station 454+70.61 (LT). The majority of this pond site location appears to have been recently cleared. Several structures exist along the western boundary of this proposed pond site. Remaining vegetation is sparse. The site contains a sparse canopy comprised of live oak, laurel oak, water oak, and slash pine. Groundcover species include common ragweed, Bahia grass, and muscadine grapevine. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated.

No listed species were observed. Although the majority of this site has been cleared, portions still meet the criteria for suitable gopher tortoise and sank skink habitat. No gopher tortoises or gopher tortoise burrows were observed within this proposed pond site. Pond 32C may incur impacts to the gopher tortoise and sand skink. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

Pond 33A

Pond 33A is located south of SR 50 at approximately station 486+12.06 (RT). This pond site is located in the remains of a citrus grove and herbaceous dry prairies with the southeastern corner located within a treeless hydric savanna. The majority of this pond site location appears to have been recently disturbed. Vegetation within the upland portion includes a sparse canopy of slash pine, laurel oak, and live oak. Groundcover species include dog fennel, ragweed, beggarticks, muscadine grapevine, Bahia grass, and big carpet grass. Vegetation within the treeless hydric savanna includes an understory comprised of salt bush, elderberry, and wax myrtle. Groundcover consists of patches of Bahia grass and dog fennel.

Pond 33A will incur approximately 0.08 acres of direct wetland impacts. No listed species were observed. Although the majority of this proposed pond site appears to have been recently disturbed, some areas remain suitable habitat for the EIS, Florida pine snake, and gopher tortoise. Additionally, Pond 33A meets criteria for the sand skink. No gopher tortoises or gopher tortoise burrows were observed. Pond 33A may incur impacts to the EIS, Florida pine snake, gopher

tortoise, and sand skink. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 33B

Pond 33B is located north of SR 50 at approximately station 496+27.64 (LT). This pond site consists of hardwood conifer mixed forest, field crops, and woodland pasture. Observed vegetation within the forested area includes live oak, laurel oak, cherry laurel, loblolly pine, and slash pine. Understory consists of immature canopy species, American beauty berry, and saw palmetto. Groundcover includes common ragweed, dog fennel, muscadine grapevine, greenbriar, and Virginia creeper. The field crop is dominated by herbaceous species and grasses. The woodland pasture contains a sparse scattered canopy of oak trees. Groundcover includes the same vegetation found in the field crop. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with pond 33B.

No listed species were observed. Suitable habitat for the EIS, burrowing owl, Florida pine snake, gopher tortoise, skinks, and southeastern American kestrel within and adjacent to this pond site location. No gopher tortoises or gopher tortoise burrows were observed within this proposed pond site location. Pond 33B may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, skinks, and southeastern American kestrel. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

Pond 33C

Pond 33C is located south of SR 50 at approximately station 494+20.28 (LT). The majority of this pond site is located within improved pasture land with woodland pasture along the western edge. The improved pasture consists of sparse scattered live, oak, laurel oak, and cabbage palm. Understory species include sparse, immature canopy species. Observed groundcover species include Bahia grass, big carpet grass, ragweed, thistle, muscadine grapevine, beggarticks, partridge pea, lantana, and dogfennel. Vegetation within the canopy of the woodland pasture include laurel oak and live oak. Groundcover species observed includes partridge pea, ragweed, dog fennel, and muscadine grapevine. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 33C.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, sand skink, and southeastern American kestrel within and adjacent to this pond site. No gopher tortoises or gopher tortoise burrows were observed within the proposed pond site. Pond 33C may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, sand skink, and southeastern American kestrel. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

Pond 34A

Pond 34A is located south of SR 50 at approximately station 507+23.66 (RT). This proposed pond site is within a field crop. This proposed pond site includes a sparse canopy comprise of live oak. Observed groundcover species include lantana, Bahia grass, dog fennel, beggarticks, big carpet

grass, frogs fruit, and partridge pea. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 34A.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, southeastern American kestrel, and sand skink within and adjacent to this proposed pond site location. No gopher tortoises or gopher tortoise burrows were observed within the proposed pond site. Pond 34A may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, southeastern American kestrel and sand skink. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

Pond 34B and Easement

Pond 34B and its associated easement are located south of SR 50 at approximately station 503+89.45 (RT). The majority of this pond site is located within a field crop with areas of woodland pasture and wet prairie. A portion of the easements eastern boundary is within a residential area. Vegetation within the field crop includes a sparse canopy of live oak. Groundcover species include Bahia grass, beggarticks, ragweed, dog fennel, frogs fruit, and other grasses associated with field crops. Vegetation within the woodland pasture includes a canopy of live oak and laurel oak. Groundcover species within the woodland are the identical to those in the field crop. Vegetation within the wet prairie includes arrowhead, dog fennel, white-top star rush, pickerel weed, and soft rush.

Pond 34B will incur approximately 0.16 acres of direct wetland impacts. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, sand skink, southeastern kestrel, wading birds and wood storks within and adjacent to this proposed pond site location. No gopher tortoises or gopher tortoise burrows were observed within the proposed pond site. No listed species were observed. Pond 34B may incur impacts to the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, sand skink, southeastern kestrel, wading birds, and wood stork. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

Pond 34C

Pond 34C is located north of SR 50 at approximately station 509+21.14 (LT). This pond site is located entirely within a field crop. The vegetation within this pond site includes three immature live oaks, as well as various grasses associated with field crops, including Bahia grass. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 34C.

Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, sand skink, and southeastern kestrel. No listed species were observed within and adjacent to this proposed pond site location. No gopher tortoises or gopher tortoise burrows were observed within the proposed pond site. Pond 34C may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, sand skink, and southeastern kestrel. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

Pond 35A and Easement

Pond 35A and its associate easement are located north of SR 50 at approximately station 557+85.13 (LT.). The majority of this pond site is located in hardwood-mixed conifer upland forest. Vegetation within the forested area includes a canopy comprised of laurel oak, live oak, slash pine, and loblolly pine. Understory species include cabbage palm, chinaberry, and paper mulberry. Groundcover species include beggarticks, ragweed, Cesar weed, Bahia grass, big carpet grass, and frogs fruit. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated for Pond 35A.

No listed species were observed. Suitable habitat was observed for the EIS, gopher tortoise, and sand skink within and adjacent to this proposed pond site location. No gopher tortoises or gopher tortoise burrows were observed within the proposed pond site. Pond 35A may incur impacts to the EIS, gopher tortoise, and sand skink. Species specific surveys may be required to confirm absence and minimize impacts to these species.

Pond 35B and Easement

Pond 35B and its associated easement are located north of SR 50 at approximately station 555+47.01 (LT.). This proposed pond is within a disturbed and undeveloped portion of a commercial parcel. Vegetation within this area includes a sparse canopy comprised of live oak and a sparse understory of cabbage palm. Groundcover species include common ragweed, Bahia grass, big carpet grass, and St. Augustine grass. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated for pond 35C.

No listed species were observed. Although this proposed pond site is disturbed it meets criteria for the gopher tortoise and sand skink. No gopher tortoises or gopher tortoise burrows were observed. Pond 35B may incur impacts to the gopher tortoise and sand skink. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

Pond 35C

Pond 35C is located north of SR 50 at approximately station 552+04.19 (LT.). This pond is located within a commercial area used for storing recreational vehicles. Vegetation within this area includes canopy species along the perimeter that include live oak, laurel oak, and cabbage palm. Understory species include cabbage palm and loquat (*Eriobotrya japonica*). Groundcover species include lantana, common ragweed, beggarticks, Bahia grass, muscadine grapevine, and Virginia creeper. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated for Pond 35C.

No listed species were observed. Although this proposed pond site is disturbed it meets criteria for suitable habitat for both gopher tortoise and sand skink. No gopher tortoises or gopher tortoise burrows were observed. Pond 35C may incur impacts to the gopher tortoise and sand skinks. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

Pond 36A and Easement

Pond 36A and its associated easement are located south of SR 50 at approximately station 565+94.7 (RT.). This pond is located within an undeveloped portion of a residential parcel containing herbaceous dry prairie. The canopy species occur along the eastern border of the pond site and include laurel oak, live oak, and water oak. Groundcover is comprised of St. Augustine grass, Bahia grass, and beggarticks. No wetlands were observed within this pond site; therefore, no impacts to wetlands are anticipated for Pond 36A.

No listed species were observed. Suitable habitat was observed for the gopher tortoise, and skinks. No gopher tortoises or gopher tortoise burrows were observed. Pond 36A may incur impacts to the gopher tortoise, and skinks. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

Pond 36B and Easement

Pond 36B and its associated easement are located south of SR 50 at approximately station 569+15.41 (RT.). This proposed pond site is located within an undeveloped portion of a commercial parcel containing disturbed and developed upland forest and herbaceous dry prairie. The canopy of the forested area is comprised of live oak and laurel oak. Groundcover species include sparse patches of partridge pea, beggarticks, Bahia grass, and Virginia creeper. Vegetation within the prairie includes Bahia grass, St. Augustine grass, big carpet grass, and common ragweed. No wetlands were observed within this pond site; therefore, no impacts to wetlands are anticipated for Pond 36B.

No listed species were observed. This proposed pond site is disturbed; however, it meets the criteria for suitable gopher tortoise and skink habitat. No gopher tortoises or gopher tortoise burrows were observed. Pond 36B may incur impacts to the gopher tortoise let me and skinks. Species specific surveys will likely be necessary to confirm absence and minimize impacts to these species.

Pond 36C and Easement

Pond 36C and its associated easement are located south of SR 50 at approximately station 563+95.25 (RT.). This proposed pond site is located within an herbaceous dry prairie with the southeastern corner within Knight Lake. It is also an undeveloped parcel within a residential area. Canopy species occurring along the eastern edge of the pond include live oak and laurel oak. Groundcover species throughout the site consists of those grasses associated with a lawn.

Pond 36C will incur approximately 0.02 acres of direct impacts to surface water. No listed species were observed. Suitable habitat was observed for the American alligator, Florida sandhill crane, sand skinks, wading birds, and wood storks. No gopher tortoises or gopher tortoise burrows were observed. Pond 36C may incur impacts to the American alligator, Florida sandhill crane, sand skinks, wading birds, and wood storks. Species specific surveys will likely be necessary to confirm absence and minimize impacts to these species.

Pond 37A

Pond 37A is located south of SR 50 at approximately station 579+15.97 (RT.). This pond is located in herbaceous dry prairie. This pond site contains a sparse canopy comprised of laurel oak and live oak. Groundcover species include Bahia grass and other grasses commonly found in dry prairie. This pond also contains large sandy patches throughout the entire area. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with Pond 37A.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, and sand skinks, southeastern American kestrel within and adjacent to this proposed pond site location. No gopher tortoises or gopher tortoise burrows were observed within the proposed pond site. Pond 37A may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, and sand skinks, southeastern American kestrel. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

Pond 37B

Pond 37B is located north of SR 50 at approximately station 579+77.01 (LT.). Vegetation within this pond site includes a canopy comprised of laurel oak, live oak, mimosa, and magnolia. Understory species include immature canopy species, paper mulberry, and winged sumac. Groundcover species include big carpet grass, Bahia grass, Virginia creeper, and muscadine grapevine. No wetlands were observed within this proposed pond site; therefore, no impacts are anticipated to be associated with Pond 37B.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, and sand skink within and adjacent to this proposed pond site location. No gopher tortoises or gopher tortoise burrows were observed within the proposed pond site. Pond 37B may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, and sand skink. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

Pond 37C

Pond 37C and its associated easement are located south of S.R 50 at approximately station 576+19.98 (RT.). This proposed pond site is in an area that is classified as residential and herbaceous dry prairie. Existing vegetation within the residential portion includes a canopy of live oak and laurel oak and a maintained groundcover consisting of Bahia grass, St. Augustine grass, big carpet grass, and Virginia creeper. Vegetation within the herbaceous dry prairie is the same as the residential portion with fewer canopy species. No wetlands were observed within this proposed pond site; therefore, no impacts to wetlands are anticipated for Pond 37C.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, sand skink, and southeastern American kestrel within and adjacent to this proposed pond site location. No gopher tortoises or gopher tortoise burrows were observed within the proposed pond site. Pond 37C may incur impacts to the EIS, burrowing owl, Florida

pine snake, gopher tortoise, sand skink, and southeastern American kestrel. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

FPC 1

FPC 1 is located south of SR 50 at approximately station 1870+74.57 (RT) and is directly adjacent to the 100-year floodplain boundary. This proposed FPC is located in pasture land with active cattle operations. This site is dominated by herbaceous species and grasses associated with active cattle grazing. A sparse canopy consisting of live oak was observed. No wetlands were observed within this proposed FPC site; therefore, no impacts to wetlands are anticipated to be associated with FPC 1.

Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern American Kestrel within and adjacent to this proposed FPC site location. Multiple gopher tortoises as well as potentially occupied gopher tortoise burrows were observed during the field reviews. FPC 1 may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

FPC 3

FPC 3 is located south of SR 50 at approximately station 1897+74.19 (RT) and is directly adjacent to the 100-year floodplain boundary. This proposed site is within the Withlacoochee State Forest. The majority of FPC 3 is located within forested bottomland wetlands with forested uplands. The forested bottomland wetland is located in the eastern portion of the FPC site. Observed canopy species include water oak, sweet gum, red maple, and American elm. Understory and groundcover species consist of saltbush, wax myrtle, buttonbush, and cinnamon fern. The upland forested is a mix of hardwoods and coniferous species. Observed canopy species include loblolly pine (*Pinus taeda*), live oak, and laurel oak. Shrub species include American beauty berry, and saw palmetto. Groundcover species consist of common ragweed, Virginia creeper, and muscadine grape.

FPC 3 will incur approximately 0.51 acres of direct wetland impacts. No listed species were observed. No impacts to listed species are anticipated to be associated with FPC. Construction of this proposed site will result in impacts to state lands.

FPC 4

FPC 4 is located south of SR 50 at approximately station 1913+88.66 (RT) and is directly adjacent to the 100-year floodplain boundary. This proposed FPC site is within the Withlacoochee State Forest. The majority of this FPC site is located within a forested wetland. Observed canopy species include bald cypress, pond cypress, water oak, and sweetgum. Understory species consist of sapling canopy species, saltbush, buttonbush, and wax myrtle. Observed groundcover species include swamp fern, soft rush, cinnamon fern, greenbrier, and muscadine grape.

FPC 4 will incur approximately 3.03 acres of direct wetland impacts. No listed species or critical habitat was observed. 4. Construction of this proposed FPC site will result in impacts to state lands.

FPC 5

FPC 5 is located south of SR 50 at approximately station 1941+84.45 (RT) and is directly adjacent to the 100-year floodplain boundary. This proposed FPC site is within the Withlacoochee State Forest. FPC 5 is comprised of both upland forests and wetland forests. Vegetation within the pine flatwoods component includes a canopy comprised of longleaf pine, slash pine, and laurel oak. Understory species include immature canopy species, saw palmetto, and American beauty berry. Observed understory includes wire grass, broom sedge, muscadine grapevine, and Virginia creeper. The wetland of FPC 5 includes a canopy consisting of pond cypress, bald cypress, water oak, sweet gum, red maple, American elm, and hickory. Understory consists of immature canopy species, wax myrtle, and elderberry. Ground cover species include swamp fern, netted chain fern, cinnamon fern, arrowhead, maiden cane, and sedges

FPC 5 will incur approximately 1.27 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, Florida pine snake, gopher tortoise, and southeastern American kestrel within and adjacent to the proposed FPC site location. FPC 5 may incur impacts to the EIS, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and kestrel. Species specific surveys will likely be required to confirm absence and minimize impacts to these species. Construction of this proposed FPC site will result in impacts to state lands.

FPC 6

FPC 6 is located south of S.R 50 at approximately station 1991+1.25(RT) and is directly adjacent to the 100-year floodplain boundary. This proposed site is within the Withlacoochee State Forest. FPC 6 includes both upland and wetland forests. The pine flatwoods component includes a canopy comprised of longleaf pine, slash pine, and laurel oak. Understory species include immature canopy species, saw palmetto, and American beauty berry. Observed understory includes wire grass, broom sedge, muscadine grapevine, and Virginia creeper. The wetland component of this FPC is forested bottomland. Canopy species observed include red maple, bald cypress, pond cypress, and slash pine. Observed understory species include dahoon holly, saltbush, and buttonbush. Groundcover species include alligator flag, arrowhead, and netted chain fern.

FPC 6 will incur approximately 0.01 acres of direct wetland impacts. No listed species were observed. No listed species or suitable habitat were observed. No impacts to listed species are anticipated to be associated with FPC 6. Construction of the proposed FPC site will result in impacts to state lands.

FPC 7

FPC 7 is located southeast of SR 50 at approximately station 2024+21.12 (RT) and is directly adjacent to the 100-year floodplain boundary. This proposed site is within the Withlacoochee State Forest. FPC 7 is entirely within a forested wetland. Observed canopy within this bottomland consists of pond cypress, bald cypress, red maple, sweetgum, American elm, and laurel oak.

Observed sub-canopy includes immature canopy species, dahoon holly, buttonbush, and elderberry. Groundcover is comprised of saw grass, chain fern, royal fern, and dogfennel.

FPC 7 will incur approximately 5.08 acres of direct wetland impacts. State endangered plant species, including plume polypody and auricled auritum, have been documented within the pond limits and surrounding areas. Construction of this proposed pond site will result in impacts to state lands. Construction of this proposed FPC site will result in impacts to state lands.

FPC 8

FPC 8 is located southeast SR 50 at approximately station 2038+60.25 (RT) and is directly adjacent to the 100-year floodplain boundary. This proposed site is within the Withlacoochee State Forest. FPC 8 is entirely within a forested wetland. Observed canopy within this bottomland consists of pond cypress, bald cypress, red maple, sweetgum, American elm, and laurel oak. Observed sub-canopy includes immature canopy species, dahoon holly, buttonbush, and elderberry. Groundcover is comprised of saw grass, chain fern, royal fern, and dogfennel.

FPC 8 will incur approximately 2.15 acres of direct wetland impacts. No listed species were observed. No impacts to listed species are anticipated to be associated with FPC 8. Construction of this proposed FPC site will result in impacts to state lands.

FPC 9

FPC 9 is located southeast of SR 50 at approximately station 2053+8.29 (RT) and is directly adjacent to the 100-year floodplain boundary. This proposed site is within the Withlacoochee State Forest. FPC 9 contains a forested wetland component as well, however, the majority is comprised of shrub and brushland. The canopy of the bottomland is comprised of pond cypress, bald cypress, red maple, sweetgum, American elm, and laurel oak. Sub canopy and groundcover includes immature canopy species, buttonbush, elderberry, dahoon holly, wax myrtle, chain fern, dogfennel, and saw grass.

FPC 9 will incur approximately 0.13 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, Florida pine snake, gopher tortoise, and southeastern American kestrel within and adjacent to the proposed FPC site location. FPC 9 may incur impacts to the EIS, Florida pine snake, gopher tortoise and southeastern American kestrel. Species specific surveys will likely be required to confirm absence and minimize impacts to these species. Construction of the proposed FPC site will result in impacts to state lands.

FPC 10

FPC 10 is located southeast of SR 50 at approximately station 2066+53.53 (RT) and is directly adjacent to the 100-year floodplain boundary. This proposed site is within the Withlacoochee State Forest. FPC 10 is comprised of both forested and non-forested wetlands. The forested component is bottomland with a canopy comprised of bald cypress. Pond cypress, sweetgum, American elm, red maple, and hickory. Vegetation observed in the understory includes wax myrtle, buttonbush, elderberry, sweet bay, and dahoon holly. Groundcover consists royal fern, chain fern, swamp fern, dogfennel, and arrowhead. The wet prairie is comprised of arrowhead, pickerelweed, duckweed, and St. John's wort.

FPC 10 will incur approximately 9.28 acres of forested wetland impacts and 0.31 acres of non-forested wetland impacts. No listed species were observed. Suitable habitat was observed for the Florida sandhill crane, wading birds, and wood stork. Species specific surveys may be required to confirm absence and minimize impacts to these species. Construction of this proposed FPC site will result in impacts to state lands.

FPC 11

FPC 11 is located southeast of SR 50 at approximately station 2085+66.25 (RT) and is directly adjacent to the 100-year floodplain boundary. This proposed site is within the Withlacoochee State Forest. FPC 11 consists of upland forests. Observed canopy species include slash pine, loblolly pine, water oak, and laurel oak. Understory and groundcover species include saw palmetto, winged sumac, wax myrtle, bracken fern, and muscadine grapevine. No wetlands were observed within this proposed FPC site; therefore, no impacts to wetlands are anticipated to be associated with FPC 11.

No listed species or suitable habitat were observed. No impacts to listed species are anticipated to be associated with FPC 11. Construction of this proposed pond site will result in impacts to state lands.

FPC 12

FPC 12 is located east of SR 50 at approximately station 108+84.01 (RT) and is directly adjacent to the 100-year floodplain boundary. This proposed pond site is within a pasture located in a low density residential area. Vegetation includes a fringe canopy comprised of live oak and slash pine. Groundcover includes dog fennel and Bahia grass. Non-forested wetlands were observed within this proposed pond site.

FPC 12 will incur approximately 0.39 acres of wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. No gopher tortoises or gopher tortoise burrows were observed. FPC 12 may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. Species specific surveys may be required to confirm absence and minimize impacts to these species.

FPC 13

FPC 13 is located southeast of SR 50 at approximately station 136+48 and station 140+22 and is directly adjacent to the 100-year floodplain boundary. This proposed FPC site contains pasture. This site is dominated by herbaceous species and grasses as well as a sparse oak canopy. Additional groundcover observed includes dog fennel, tropical soda apple, and Bahia grass. No wetlands were observed within this proposed FPC site; therefore, no impacts to wetlands are anticipated to be associated with FPC 13.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. FPC 13 may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox

squirrel, and southeastern American kestrel. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

This FPC site is no longer under consideration

FPC 14A & 14B

FPC 14A & 14B is located northwest of SR 50 at approximately station 154+33.92 (LT) and is directly adjacent to the 100-year floodplain boundary. This proposed FPC site is bound by roadway restricting habitat connectivity. FPC 14A & 14B contains cropland and pastureland. Observed canopy species include laurel oak, live oak, and slash pine. Understory and groundcover species include immature canopy species, cabbage palm, saw palmetto, muscadine grapevine, beggarticks, and ragweed. No wetlands were observed within this proposed FPC site; therefore, no impacts to wetlands are anticipated to be associated with FPC 14A & 14B.

No listed species or critical habitat was observed. No impacts to listed species are anticipated to be associated with the FPC 14A & 14B.

FPC 15

FPC 15 is located north of SR 50 at approximately station 203+60.33 (LT) and is directly adjacent to the 100-year floodplain boundary. This proposed FPC site contains forested, upland forests and pasture lands. Wetland vegetation includes a canopy of cypress, red maple, and laurel oak. Understory species included saltbush, wax myrtle, and cinnamon fern. Vegetation in the upland forest component includes a canopy comprised of live oaks, laurel oaks, and slash pine. Understory and groundcover species include broom sedge, muscadine grapevine, Bahia grass, big carpet grass, dog fennel, and beggarticks. Vegetation within the pasture includes dogfennel, ragweed, and Bahia grass.

FPC 15 will incur approximately 0.47 acres of forested wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, gopher tortoise, burrowing owl, Sherman's fox squirrel, Florida pine snake and southeastern American kestrel. No gopher tortoises or gopher tortoise burrows were observed. FPC 15 may incur impacts to the EIS, gopher tortoise, burrowing owl, Sherman's fox squirrel, Florida pine snake and southeastern American kestrel. Species specific surveys will be required to confirm absence and minimize impacts to these species.

FPC 16 A

FPC 16A is located north of SR 50 at approximately station 36+18.88 (LT) and is directly adjacent to the 100-year floodplain boundary. FPC 16A is located within hardwood conifer mixed forest. Canopy species observed in the forested component include live oak, laurel oak, slash pine, and long leaf pine. Understory and groundcover consists of saw palmetto, American beauty berry, beggarticks, ragweed, and muscadine grapevine. No listed species were observed. No listed species or suitable habitat was observed within or adjacent to FPC 16A. No impacts to listed species are anticipated for FPC 16A.

Suitable habitat was observed for the EIS, Florida pine snake, gopher tortoise, burrowing owl, Sherman's fox squirrel, and southeastern American kestrel within FPC 16B. FPC 16B may incur

impacts to the EIS, Florida pine snake, gopher tortoise, burrowing owl, Sherman's fox squirrel, and southeastern American kestrel. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

FPC 16 B

FPC B is located north of SR 50 between at approximately station 41+2.07 (LT) and is directly adjacent to the 100-year floodplain. The majority of FPC 16B is located within hardwood conifer mixed forest with the same vegetation; however, a portion of the eastern boundary is located within pasture. The pasture is dominated by herbaceous species and grasses. No wetlands were observed within this proposed FPC site; therefore, no impacts to wetlands are anticipated to be associated with FPC 16B.

Suitable habitat was observed for the EIS, Florida pine snake, gopher tortoise, burrowing owl, Sherman's fox squirrel, and southeastern American kestrel within FPC 16B. FPC 16B may incur impacts to the EIS, Florida pine snake, gopher tortoise, burrowing owl, Sherman's fox squirrel, and southeastern American kestrel. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

FPC 17

FPC 17 is located north of SR 50 at approximately station 157+60.58 (LT) and is directly adjacent to the 100-year floodplain boundary. This FPC site contains both upland forest and pasture. Vegetation in the upland forest canopy includes slash pine, laurel oak, and live oak. Understory and groundcover species include American beauty berry, cabbage palm, saw palmetto, beggarticks, ragweed, greenbrier, and muscadine grapevine. Vegetation within the pasture includes dogfennel, Bahia grass, and thistle. No wetlands were observed within this proposed FPC site; therefore, no impacts to wetlands are anticipated to be associated with FPC 17.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, Gopher tortoise, Sherman's fox squirrel, and southeastern American Kestrel. FPC 17 may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, Sherman's fox squirrel, and southeastern American kestrel. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

FPC 18A

FPC 18A is located south of SR 50 at approximately station 171+60.58 (RT) and is directly adjacent to the 100-year floodplain boundary. The majority of this proposed FPC site is upland hardwood conifer mixed forest; however, a small area is within a wet prairie. The vegetation within the forest consists of laurel oak, live oak, ragweed, beggarticks, and big carpet grass. Vegetation within the wet prairie includes sweetgum, Carolina willow, salt bush, beggarticks, and elderberry.

FPC 18A will incur approximately 0.02 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the Florida sandhill crane, wading birds, and wood stork. FPC 18 may incur impacts to the Florida sandhill crane, wading birds, and wood stork.

Species specific surveys may be required to confirm absence and minimize impacts to these species.

FPC 18B

FPC 18 is located south of SR 50 at approximately station 179+74.93 (RT) and is directly adjacent to the 100-year floodplain boundary. This FPC site consists of upland forest and wet prairie with industrial development. The site contains limited habitat for listed species due to the current land use; however, suitable habitat was observed for the Florida sandhill crane, wading birds, and wood stork.

FPC 18B will incur approximately 0.01 acres of direct wetland impacts. FPC 18B may incur impacts to the Florida sandhill crane, wading birds, and wood stork. Species specific surveys may be required to confirm absence and minimize impacts to these species.

FPC 19A

FPC 19 is located north of S.R 50 at approximately station 232+24.03 (LT) and is directly adjacent to the 100-year floodplain boundary. The majority of this pond site is located within cropland and pastureland. Though the southwestern corner is located within and adjacent to freshwater marshes and bottomland. Vegetation within the pasture includes a sparse canopy comprised of laurel oak, live oak, and slash pine. Vegetation within the freshwater marsh includes Carolina willow, salt bush, and wax myrtle. Groundcover consists of pickerelweed. Vegetation within the forested wetland includes a canopy comprised of sweet gum and red maple. Understory consists of salt bush. Understory species include swamp fern.

FPC 19 will incur approximately 0.14 acres of direct wetland impacts. No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, Sherman's fox squirrel, southeastern American kestrel, wading birds, and wood stork. No gopher tortoises or gopher tortoise burrows were observed. FPC 19 may incur impacts to the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, Sherman's fox squirrel, southeastern American kestrel wading birds, and wood stork. Species specific surveys may be required to confirm absence and minimize impacts to these species.

FPC 19B1

FPC 19B1 is located north of S.R 50 at approximately station 240+40.69 (RT). This site is located within low density residential development and forested wetlands. Limited habitat for listed species was observed.

FPC 19B1 will incur approximately 0.88 acres of direct impacts. FPC 19B1 may incur impacts to the gopher tortoise, wading birds and wood stork. Species specific surveys may be required to confirm absence and minimize impacts to these species.

FPC 19B2

FPC 19B2 is located north of S.R 50 at approximately station 246+40.81 (LT). This site is located in pasture and is adjacent to SR 50 and access road to an active quarry. The conditions of site

are altered by debris from the quarry. A small wet prairie is located within FPC 19B2. Observed vegetation includes soft rush, white-top star rush, and arrow head.

FPC 19B2 will incur approximately 0.07 acres of direct impacts. No listed species were observed. FPC 19B1 may incur impacts to the gopher tortoise, wading birds and wood stork. Species specific surveys may be required to confirm absence and minimize impacts to these species.

FPC 20

FPC 20 is located north of S.R 50 at approximately station 265+48.13 (LT) and is directly adjacent to the 100-year floodplain boundary. This proposed pond site is located within cropland and pasture land, hardwood conifer mixed upland forest, and wet prairies. Vegetation within the cropland includes a sparse canopy comprised of live oak. Groundcover comprised of ragweed, dog fennel, Bahia grass, and frogs fruit. Vegetation within the upland forest includes a canopy comprised of live oak, laurel oak, and slash pine. Groundcover comprised of dogfennel, beggarticks, and Bahia grass. Vegetation within the wet prairie includes soft rush, pickerel weed, dog fennel and Bahia grass.

FPC 20 will incur approximately 0.35 acres of direct impacts to forested wetlands and approximately 0.08 acres of direct impacts to non-forested wetlands. No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, southeastern American kestrel, wading birds, and wood stork. FPC 20 may incur impacts to the EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, southeastern American kestrel, wading birds, and wood stork. Species specific surveys will likely be required to confirm absence and minimize impacts to these species.

FPC 22

FPC 22 is located north of SR 50 at approximately station 329+79.01 (LT) and is directly adjacent to the 100-year floodplain boundary. The majority of this proposed pond site is located within herbaceous prairie. The western most portion is located within hardwood conifer mixed upland forest with wet prairies. The northeastern corner is forested wetland. Vegetation within the herbaceous prairie includes Bahia grass, spiderwort, dog fennel, common ragweed, and muscadine grapevine. Vegetation within the upland forest includes a canopy comprised of live oak, laurel oak, and slash pine. Understory species include American beauty berry and saw palmetto. Vegetation within the wet prairie includes soft rush, pickerel weed, dog fennel and Bahia grass. Vegetation within the forested wetland includes a canopy comprised of sweet gum. Ground cover species include dog fennel and swamp fern.

FPC 22 will incur approximately 0.17 acres of direct impacts to non-forested wetlands. No listed species were observed. Suitable habitat was observed for EIS, gopher tortoise, Florida pine snake, Florida sandhill crane, southeaster American kestrel, wading birds, and wood stork. No gopher tortoises or gopher tortoise burrows were observed. This proposed FPC site may incur impacts to the EIS, gopher tortoise, Florida pine snake, Florida sandhill crane, southeastern American kestrel, wading birds, and wood stork. Species specific surveys may be required to confirm absence and minimize impacts to these species.

FPC 23

FPC 23 is located south of SR 50 at approximately station 412+51.05 (RT) and is directly adjacent to the 100-year floodplain boundary. This proposed FPC site is located in improved pasture. Vegetative species within the pasture include sparse cabbage palm, dog fennel, Bahia grass, and beggarticks. No wetlands were observed within this proposed FPC site; therefore, no impacts to wetlands are anticipated to be associated with FPC 23.

Suitable habitat was observed for gopher tortoise and the southeastern kestrel. FPC 23 may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, and kestrel. No gopher tortoises or gopher tortoise burrows were observed. FPC 23 may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, and kestrel. Species specific surveys may be required to confirm absence and minimize impacts to these species.

FPC 24

FPC 24 is located north of SR 50 at approximately station 436+82.95 (LT) and is directly adjacent to the 100-year floodplain boundary. This proposed pond site is located within cropland and pasture land as well as hardwood conifer mixed forest. Vegetation within the improved pasture is comprised of lantana, dog fennel, Bahia grass, St. Augustine grass, frogs fruit, and beggarticks.

The upland forest includes a canopy consisting of live oak, laurel oak, water oak, mockernut hickory and slash pine. Understory species include water oak saplings and saw palmetto.

Groundcover species include lantana, dog fennel, winged sumac, and muscadine grapevine. No listed species or suitable habitat were observed. No impacts to listed species are anticipated to be associated with FPC 24.

No listed species were observed. Suitable habitat was observed for the EIS, burrowing owl, Florida pine snake, gopher tortoise, sand skink, Sherman's fox squirrel, southeastern American kestrel. No gopher tortoises or gopher tortoise burrows were observed. FPC 24 may incur impacts to the EIS, burrowing owl, Florida pine snake, gopher tortoise, sand skinks, Sherman's fox squirrel, southeastern American kestrel. Species specific surveys may be required to confirm absence and minimize impacts to these species.

FPC 25

FPC 25 is located north of SR 50 at approximately station 439+79.27 (LT) and is directly adjacent to the 100-year floodplain boundary. The majority of this FPC site is within improved pasture; however, a small area is within a lake. The pasture is vegetated with dog fennel, Bahia grass, frogs fruit, and partridge pea. Vegetation within and along lake edges include Carolina willow, salt bush, and dog fennel.

FPC 25 will incur approximately 0.04 acres of direct impacts to wetlands. Suitable habitat was observed for American alligator, EIS, Florida Pine Snake, Florida sandhill crane, gopher tortoise, sand skink, southeastern kestrel, wading birds, and wood stork. No gopher tortoises or gopher tortoise burrows were observed. This proposed FPC site may incur impacts to the American alligator, EIS, burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise,

southeastern American kestrel, wading birds, and wood stork. Species specific surveys may be required to confirm absence and minimize impacts to these species.

FPC 26 Options A and B

FPC 26A is located north of SR 50 at approximately station 464+25.73 (LT) and is directly adjacent to the 100-year flood plain boundary. FPC 26A is located within forested wetlands. Vegetation includes a canopy comprised of pond cypress, bald cypress, and red maple. Understory species include cabbage palm and saw palmetto. Groundcover is comprised of swamp fern, soft rush, and arrowhead root.

FPC 26A will incur approximately 0.56 acres of direct wetland impacts. No listed species or suitable habitat were observed. No impacts to listed species are anticipated to be associated with FPC 26A.

FPC 2B6 is located north of SR 50 between station 461+21.10 (LT) and is directly adjacent to the 100-year floodplain boundary. The majority of this proposed site appears to have been cleared for development. However, a small portion of this site is freshwater marsh. Vegetation within the freshwater marsh includes red maple, Carolina willow, elderberry, winged sumac, and muscadine grapevine.

FPC 26B will incur approximately 0.06 acres of direct impacts to wetlands. No listed species were observed. Suitable habitat was observed for the Florida sandhill crane, wading birds, and wood stork. Species specific surveys may be required to confirm absence and minimize impacts to these species.

FPC 27

FPC 27 is located north of SR 50 at approximately station 490+65.37 (LT) and is directly adjacent to the 100-year floodplain boundary. This proposed FPC site is located in an herbaceous prairie and treeless hydric savanna. The majority of this pond site location appears to have been recently disturbed. Vegetation within the upland portion includes a sparse canopy of slash pine, laurel oak, and live oak. Groundcover species include dog fennel, ragweed, beggarticks, muscadine grapevine, Bahia grass, and big carpet grass. Vegetation within the treeless hydric savanna includes an understory comprised of salt bush, elderberry, and wax myrtle. Groundcover consists of patches of Bahia grass and dog fennel.

FPC 27 is anticipated to incur approximately 0.06 acres of direct wetland impacts. No listed species or suitable habitat were observed. No listed species were observed. Although the majority of this proposed pond site appears to have been recently disturbed, some areas remain suitable habitat for the EIS, Florida pine snake, and gopher tortoise. Additionally, Pond FPC 27 meets criteria for the sand skink. No gopher tortoises or gopher tortoise burrows were observed. Pond 33A may incur impacts to the EIS, Florida pine snake, gopher tortoise, and sand skink. Species specific surveys may be required to confirm absence and minimize impacts to these species.

APPENDIX E

Sand Skink Guidance

Peninsular Florida
Species Conservation and Consultation Guide

Sand Skink and Blue-tailed (Bluetail) Mole Skink

This guide for sand skink (*Neoseps reynoldsi)* and blue-tailed mole skink (*Eumeces egregius lividus*) conservation and Endangered Species Act (ESA) consultation is intended to assist project proponents to determine if or how a proposed action may affect sand skinks or blue-tailed mole skinks.

The sand skink and blue-tailed mole skink are listed as threatened pursuant to the ESA. The ESA prohibits the unauthorized "take"[a] of threatened and endangered species. Individuals and entities intending to conduct projects that may affect listed species may lawfully incidentally take those species after consulting with the U.S. Fish and Wildlife Service (Service) pursuant to section 7 or 10 of the ESA. When a project is conducted, funded, or authorized by a Federal agency, listed species consultation occurs through section 7 of the ESA. When there is no Federal nexus (*e.g.*, Federal authorization or funding), a non-Federal entity who wishes to conduct an activity may legally "take" listed species after obtaining an Incidental Take[b] Permit (ITP) from the Service in accordance with section 10 of the ESA.

In this guide, we first summarize sand skink and blue-tailed mole skink status, life history, distribution, habitat, and threats. Then we discuss the consultation steps, including: assessing the effects of the proposed action, making effect determinations, and incorporating conservation measures into proposed actions to maximize beneficial effects and to avoid or minimize negative effects to listed skinks and their habitat. Appendix A provides a recommended skink survey protocol and Appendix B provides a variety of possible Conservation Measures, including conservation, compensation, and mitigation guidance. The current guide will be updated as new information becomes available and will be posted on the Service's South Florida website at http://www.fws.gov/verobeach/.

For more information on sand skink and blue-tailed mole skink biology, habitat needs, threats, taxonomy, and recovery criteria and goals, see the Bluetail Mole Skink and Sand Skink 5-Year Status Review (Service 2007) and the South Florida Multi-Species Recovery Plan (Service 1999). Published literature as well as unpublished reports, information, and data referenced in the skink conservation and consultation guide are available at the Service's South Florida

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[a] "Take" is defined as harm, harass, pursue, hunt, shoot, wound, kill, trap, capture, collect, or to attempt to engage in any such conduct. The term "harm" includes any act which actually kills or injures fish or wildlife, and emphasizes that such acts may include significant habitat modification or degradation that significantly impairs essential behavioral patterns of fish and wildlife. The term "harass" is defined as any act that creates the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include but may not be limited to breeding, feeding, or sheltering.

[b] "Incidental Take" is defined as take that results from, but is not the purpose of, carrying out an otherwise lawful activity.

Ecological Services Office (SFESO) in Vero Beach, Florida (by phone at 772-562-3909 or by mail at 1339 20th Street, Vero Beach, Florida 32960-3559).

Status

The Service listed the sand skink and the blue-tailed mole skink as threatened under the ESA in 1987 primarily due to modification and destruction of xeric upland communities in central Florida. Habitat loss, habitat fragmentation, and changes in land use still threaten sand skinks and blue-tailed mole skinks. In addition, lack of habitat management, competition from non-native and invasive plant species, and loss of genetic diversity threaten sand skink and blue-tailed mole skink existence (Service 1999; 2007).

Life History

Little is known about sand skink and blue-tailed mole skink population or reproduction ecology. Both sand skinks and blue-tailed mole skinks are difficult to detect and study due to their small size and semi-fossorial to fossorial habits. Sand skinks and blue-tailed mole skinks generally partition rather than compete with one another for resources. Sand skinks are primarily fossorial; they move or "swim" below the surface of the ground in sandy soils and take prey below the surface. Blue-tailed mole skinks are semi-fossorial; they hunt at the soil surface and consume mostly terrestrial arthropods (Smith 1977).

No data are available on sand skink or blue-tailed mole skink home ranges, or blue-tailed mole skink dispersal. Information on sand skink dispersal and movement patterns is limited. Sand skinks can move more than 3,280 feet (ft) (1 kilometer [km]) at appropriate elevations where suitable soils are contiguous and there are no natural or manmade barriers to movement (Mushinsky et al. 2011a).

Sand skink studies in the early 2000s documented dispersal distances of more than 460 ft (140 meters [m]) (Mushinsky et al. 2001, Penney 2001, Penney et al. 2001) to more than 780 ft (240 m) (Penney 2001). Evidence suggested smaller sand skinks might move greater distances than larger individuals. Researchers believed these documented sand skink dispersal distances likely underestimated dispersal capability. More recent studies documented the longest sand skink movement at 26,250 ft (8 km) and an average movement of 5,250 ft (1.6 km) in naturally fragmented scrubby flatwoods at the Archbold Biological Station (Mushinsky et al. 2011a).

Sand skink dispersal distances documented in field studies are supported by sand skink genetic research. Genetic relatedness of sand skinks was similar between individuals captured as far as 3,280 to 6,560 ft (1 to 2 km) from one another (Schrey et al. 2010). Sand skink genetic relatedness tended to decline beyond the 1 km distance, although it appeared to be influenced by the time since fire (Schrey et al. 2010, Mushinsky et al. 2011b). Fires that occur too frequently could negatively decrease sand skink genetic diversity. Although dispersal data is not available for blue-tailed mole skinks, research suggests that they likely disperse shorter distances than sand skinks (Schrey et al. in press).

Distribution

Reptile research and incidental observations to date indicate blue-tailed mole skinks typically occur with sand skinks. Only sand skinks leave visible signs, or tracks, on sandy soil surfaces. Therefore, sand skink occurrence is used as an indicator of blue-tailed mole skink occurrence where the two species overlap in distribution. Blue-tailed mole skink genetic studies indicate that conservation actions for sand skinks will also likely benefit blue-tailed mole skinks (Schrey et al. in press).

Both sand skinks and blue-tailed mole skinks are endemic to, which means they occur only on, the sandy ridges of central Florida. Skink distribution is defined by three factors: county, elevation, and soil types. Primary populations of sand skinks occur on the Lake Wales, Winter Haven, and Mt. Dora Ridges in Highlands, Lake, Marion, Orange, Osceola, Polk, and Putnam Counties. Blue-tailed mole skinks seem to be restricted to the Lake Wales Ridge in Highlands, Polk, and Osceola Counties.

Skinks are generally found at elevations 82 ft above sea level and higher (Florida Natural Areas Inventory 2007). Recent skink occurrences documented at 70 ft above sea level indicate skinks occur at lower elevations where suitable soil conditions for skinks continue down slope (Service unpubl. data).

Skinks occur in excessively drained, well-drained, and moderately well-drained sandy soils that include the Apopka, Arredondo, Archbold, Astatula, Candler, Daytona, Duette, Florahome, Gainesville, Hague, Kendrick, Lake, Millhopper, Orsino, Paola, Pomello, Satellite, St. Lucie, Tavares, and Zuber soil series, referred to as “skink soils” in this guide. Soil series maps are available online (http://soildatamart.nrcs.usda.gov/) and through county extension offices.

Habitat

Skink habitat identified in this guide includes skink soils at and above 82 ft above sea level. Skink searches or surveys following a standardized protocol (Appendix A) should be conducted in all skink soils above 82 ft elevation to determine skink occupancy before project-related soil or vegetation disturbance. Additional skink surveys, monitoring, and observations will likely improve knowledge of skink occurrence and distribution, as well as understanding of skink habitat use.

Skink soils typically support scrub, sandhill, or xeric hammock natural ecological communities, such as oak-dominated scrub, turkey oak (*Quercus laevis*) barrens, high pine, and xeric hammocks. Typical upland habitat for both sand skinks and blue-tailed mole skinks consists of sand pine (*Pinus clausa*)-rosemary (*Ceratiola ericoides*) scrub or longleaf pine (*Pinus palustris*)-turkey oak association. Sand skinks have also been documented in skink soils where natural vegetative cover has been altered for human uses such as pine plantations, active or inactive citrus groves, pastures, and residential developments, as well as neglected vegetative cover like old fields and overgrown scrub (Pike et al. 2008). Blue-tailed mole skinks occur in habitat

similar to that used by sand skinks. Habitat condition or vegetative cover alone cannot be used to exclude areas that might be used by sand skinks or blue-tailed mole skinks.

Both sand skinks and blue-tailed mole skinks typically occur in areas that contain a mosaic of open sandy patches interspersed with forbs, shrubs, and trees. Sand skink tracks are usually observed in open sandy areas, yet both skink species use a variety of micro-habitats within xeric vegetative communities. Sand skink tracks appear most abundant in the ecotone, or edges, between areas with abundant leaf litter and vegetative cover and adjacent open sands. Blue-tailed mole skinks are typically found under leaf litter, logs, palmetto fronds, and other ground debris (Christman 1992).

Specific physical structures of habitat that sustain sand skink populations, and likely blue-tailed mole skink populations as well, include a well-defined leaf litter layer on the ground surface and shade from either a tree canopy or a shrub layer, but not both. Leaf litter likely provides important skink foraging opportunities. Shade provided by a tree canopy or a shrub layer likely helps skinks regulate body temperature to prevent overheating. However, having both a tree canopy and a shrub layer appears to be detrimental to skinks (McCoy 2011, University of South Florida, pers. comm.).

Either natural fires started by lightning or prescribed burns are necessary to maintain habitat in natural scrub ecosystems. However, if fire occurs too frequently, leaf litter might not build up sufficiently to support skink populations. At Archbold Biological Station, sand skinks appear to be most abundant after 10 years of leaf litter development. The ideal fire frequency to maintain optimal leaf litter development for skinks likely varies by site and other environmental conditions (Mushinsky 2011, University of South Florida, pers. comm.).

Threats

Habitat loss, fragmentation, and changes in land use continue to threaten sand skinks and blue-tailed mole skinks. Development and agricultural conversion have resulted in the loss of approximately 85 percent of the scrub and sandhill habitats on the Lake Wales Ridge (Turner et al. 2006). Habitat degradation and fragmentation also continue to affect populations, even on protected lands. Active management is necessary to maintain suitable habitat for skinks. Much of the remaining habitat occurs in small, isolated patches surrounded by residential areas or citrus groves, making the suitable habitat patches and connections between patches difficult to protect and manage. Many habitat patches are overgrown and in need of restoration, but vegetation restoration and management programs are costly and depend upon availability of funding. Privately-owned sites remain at risk of being developed, and destruction or habitat modification due to improper or lack of management remains a concern. Conversion of rural lands to urban use in central Florida where skinks occur is projected to continue over the next 50 years. In addition, fire suppression, improper stand management, competition from invasive plant species, and loss of genetic diversity continue to threaten the existence of the sand skink and blue-tailed mole skink.

Critical Habitat

Critical habitat has not been designated for either sand skinks or blue-tailed mole skinks.

Consultation Area

The Service delineated a consultation area (Figure 1) to assist project proponents to determine if a proposed action might affect sand skinks or blue-tailed mole skinks. The consultation area is intended to guide project proponents of both Federal and non-Federal actions. The consultation area includes: (1) known sand skink and blue-tailed mole skink locations, (2) skink soils at appropriate elevations defined as skink habitat, and (3) natural and developed ecosystems that are known to support sand skinks or blue-tailed mole skinks. Experts cannot determine the location of each sand skink and blue-tailed mole skink throughout the year, or the exact areas that support sand skink and blue-tailed mole skink feeding, breeding, and sheltering, even if extensive continuous year-long research is conducted in south Florida. Therefore, the consultation area outlines a geographic landscape with a higher likelihood of skink occupancy than the landscape outside of the consultation area.

In general, proposed actions inside the consultation area are more likely to affect sand skinks and blue-tailed mole skinks, and proposed actions outside the consultation area are less likely to affect skinks. Though the consultation area provides an initial analysis tool, users evaluating a proposed action should not consider the consultation area as the only factor in deciding whether or not consultation is required. The consultation area is based on best available information to date. We expect that more information will improve and refine our knowledge of skink occurrence in the future. Consultation is required if proposed actions outside the delineated consultation area may affect sand skinks or blue-tailed mole skinks. Similarly, consultation may not be required if proposed actions inside the consultation area will not affect sand skinks or blue-tailed mole skinks (*e.g.*, if the project location is not within the appropriate elevation or does not contain suitable skink soils).

Consultation

Federal and non-Federal project proponents have different responsibilities for conducting consultations to ensure compliance with the ESA. All project proponents should follow Steps 1 and 2 regardless of whether they are consulting on Federal actions through section 7 or seeking technical assistance through section 10. Federal project proponents should continue with Steps 3 and 4. Non-Federal project proponents seeking incidental take authorization through section 10 of the ESA should contact the Service at 772-562-3909 in South Florida or 904-731-3336 in North Florida for additional information.

Federal Action Agencies

In addition to this guide, the ESA section 7 Consultation Handbook (Services 1998) and the Species Conservation Guidance Introduction (Service 2004a) provide information on consultation for Federal actions. The Guide to a Complete Initiation Package (Service 2004b) provides details on how to prepare a complete consultation initiation package. The Species

Conservation and Consultation Guide flowchart (Figure 2) can help the user evaluate the potential effects of a proposed Federal action on sand skinks and blue-tailed mole skinks.

Non-Federal Entities

When an action, such as clearing vegetation, conducting development activities, or permitting of such activities, is proposed within the Skink Consultation Area and there is no Federal nexus, we recommend that non-Federal entities (*i.e.;* private land owners; businesses; state, county, or local municipalities) request technical assistance from the Service under section 10 of the ESA prior to initiating or authorizing the proposed activity. The Service will review the information provided to assess if the action has the potential to result in take of sand skinks or blue-tailed mole skinks or other listed animal or plant species. If the proposed action is likely to take listed species, the Service recommends that the non-Federal entity apply for an Incidental Take Permit (ITP) to ensure compliance with the ESA and to minimize the risk of third party law suits. As part of the ITP application, applicants develop a Habitat Conservation Plan (HCP). Among other things, the HCP describes the actions that the applicant will implement to minimize and mitigate negative impacts to listed species, demonstrates that there will be no appreciable reduction in the survival of the species, and demonstrates that there is adequate funding and other assurances to ensure the plan will be fully implemented. For more information, contact the Service at 772-562-3909 in South Florida or 904-731-3336 in North Florida. Additional information on section 10 consultation can be found on the Service's national website (http://www.fws.gov/endangered/what-we-do/hcp-overview.html) and the South Florida Ecological Services (SFESO) website (http://www.fws.gov/verobeach/).

Step 1: Describe the Proposed Action

Fully describe all features and activities related to the proposed action, such as: proposed project purpose; all aspects of proposed construction, including road access, staging areas, and any associated land clearing and filling; information on surveys and monitoring; and anticipated post-project operations, maintenance, and management. Describe the project location, habitat, soil types, and elevations affected. Develop and provide maps of all project locations, boundaries, county lines, soil types, elevation, and habitat. On the maps, delineate project boundaries, map suitable soils and elevations, and quantify the acreage of proposed impact.

Interrelated and interdependent activities should be considered and described as part of the proposed action. Interrelated activities are part of a larger action and depend on the larger action for their justification. An example is constructing a road to access a proposed action site. The access road would not be necessary but for the proposed action. Interdependent activities have no independent utility apart from the proposed action. An example is annual maintenance of the access road. Maintenance would not be necessary but for continued need for access to the proposed action.

More information on complete proposed action descriptions can be found in the Species Conservation Guidance Introduction. Early coordination with the Service can reduce requests for additional information and reduce consultation time frames.

Step 2: Determine and Describe Species, Habitat, or Critical Habitat that May Be Affected.

2a: Species Location by County. Check to determine if the proposed action is in a county where sand skinks or blue-tailed mole skinks occur. Skink habitat typically supports federally listed plants and other species that should be consulted on, as well (See Figure 1, the species-county matrix, or the Service's website at http://ecos.fws.gov/ipac/).

2b: Consultation Area. If the proposed action is in a county where sand skinks or blue-tailed mole skinks generally occur, check the skink consultation area map (Figure 1) to see if the proposed action is in or close to the delineated consultation area. Keep in mind that a proposed action may affect skinks whether or not it is within the consultation area boundary (*e.g.*, where skink soils are found or skinks or skink sign are detected outside of the boundary). Additional analysis may be needed.

2c: Species Occurrence by Habitat. If the proposed action is in the consultation area or otherwise might affect skinks, determine if skink habitat may be affected. Potential skink habitat includes all areas with skink soils (Apopka, Arredondo, Archbold, Astatula, Candler, Daytona, Duette, Florahome, Gainesville, Hague, Kendrick, Lake, Millhopper, Orsino, Paola, Pomello, Satellite, St. Lucie, Tavares, and Zuber soil series) at or above 82 ft elevations on ridges in Highlands, Lake, Marion, Orange, Osceola, Polk, and Putnam Counties. Skink habitat consists of natural xeric vegetative cover and areas altered for human uses, including but not limited to: pine plantations, active or inactive citrus groves, pastures, residential developments, and neglected vegetative cover like old fields and overgrown scrub.

Check the species-community matrix to determine if the proposed action is in or might affect natural ecological communities that traditionally indicated skink habitat. Because of the cumulative conversion of natural xeric communities for human uses, remaining natural xeric scrub is particularly important to maintain and support remaining skink populations.

A proposed action's potential to affect skinks is not dependent on the action's location relative to natural, managed, or altered skink habitat. Additional analysis may be needed. Site-specific assessments of parcels proposed for modification are necessary to determine if the proposed action may affect potential skink habitat.

2d: Survey or Opt to Assume Presence. Because skinks spend most of their time below ground, they are difficult to detect. Therefore, if it is determined that skink habitat is present or may be affected following the evaluation of 2a through 2c (above), a project proponent may choose to assume skink presence in all suitable areas and proceed directly to step 3. If occupancy is verified on all or most of the proposed site through observation of skinks or skink sign (such as "S"-shaped tracks), the project proponent should also proceed directly to step 3.

Otherwise, a project proponent may choose to conduct skink surveys for proposed actions in potential skink habitat to provide additional information regarding skink occupancy. See Appendix A for the Service's recommended survey protocol. Survey procedures should be followed closely and surveyors should have qualifications that include prior skink survey experience to increase the probability of detecting listed skinks where they occur. As stated in the protocol, the Service strongly recommends that project proponents contact us prior to initiating surveys.

If the project proponent opts to assume skink presence or skinks are confirmed to occur within all or part of a proposed action area, whether inside or outside of the consultation area (Figure 1), the site where skinks occur is considered occupied. The proposed action must be evaluated to determine if it may affect skinks.

Because skinks spend most of their time below ground and are difficult to detect, it is important to note that failure to find skinks with a coverboard survey does not necessarily mean that the site is not occupied. If skinks or skink sign, are detected at any time after surveys are completed, including during project construction, the site is considered occupied. See Reinitiation of Consultation section below.

The risk of a proposed action affecting occupied skink habitat does not depend solely on whether or not the action is located within known occupied skink habitat. Additional analysis (as described in Step 3a-b below) is needed to determine if project activities might affect skinks. A project may be so benign as to not affect skinks. If an analysis indicates a project presents only insignificant (small in size) or discountable (extremely unlikely to occur) negative risks to skinks, the applicant may consider incorporating conservation measures (see Step 3c and Appendix B), as appropriate, into the project design to further avoid or minimize direct or indirect negative effects to skinks. If a project will adversely affect skinks, it may be necessary to incorporate compensation or mitigation into the project design (Appendix B) to help offset anticipated incidental take.

Contact the Service or other sources early in the project planning and development process for more information on sand skinks and blue-tailed mole skinks and their habitat that may be affected by a proposed action.

Step 3: Evaluate Effects of the Proposed Action and Incorporate Conservation Measures.

3a: Describe potential effects of the proposed action, as well as interrelated and interdependent activities, which may affect sand skinks or blue-tailed mole skinks. Proposed actions that would alter sites occupied by listed skinks that contain preferred soil types above 82 ft elevation in the consultation area could potentially affect sand skinks or blue-tailed mole skinks (*e.g.*, ground-disturbing or soil-compacting activities; clearing; construction, access, and staging activities; operation and maintenance activities; chemical applications; etc.)(Figure 1).

3b: Describe potential cumulative effects which are the effects of future State or private activities, not involving Federal activities, which are reasonably certain to occur within the action area of the Federal action subject to consultation. These include effects that result in abiotic disturbances like chemical, radiation, or temperature changes and biotic disturbances like water quality, soil condition, vegetation cover, or topographic changes.

3c: Describe conservation measures incorporated into the project plan to avoid or minimize negative effects, in particular avoidance or minimization of adverse effects to sand skinks and blue-tailed mole skinks or their habitat. Describe conservation measures applied to compensate for anticipated incidental take. See more on Conservation Measures in Appendix B.

Contact the Service early in the consultation process for assistance in evaluating effects of the proposed action on sand skinks and blue-tailed mole skinks.

Step 4: Document methods, evidence, analyses, and reasoning and make a determination; prepare and submit a complete consultation initiation package, which includes:

4a. A complete description of the proposed action.

4b. A complete description of federally listed resources (listed species and, if applicable, designated critical habitats) that may be affected.

4c. A complete description of potential direct (caused by the action, likely to affect listed resources, reasonably certain to occur), indirect (similar to direct effects but occur later in time), and cumulative (non-Federal actions reasonably certain to occur in the action area) effects and conservation measures incorporated to avoid, minimize, or compensate for negative and adverse effects. Also, provide a complete description of conservation measures applied to compensate for adverse effects anticipated to result in incidental take.

4d. Reasoning or logic statements that connect the proposed action, affected listed resources, potential effects, and conservation measures; the reasoning should provide logical support and justification for the effect determinations.

4e. (An) effect determination(s), or a conclusion(s), and further coordination with the Service. Three effect determinations are possible:

i. “No effect” - If the proposed action is outside the consultation area or inside the consultation area but contains no suitable habitat and will not affect sand skinks or blue-tailed mole skinks, the proposed action determination might be “no effect.” To reach this determination, one should document surveys and their results, effects analysis, and reasoning. You may obtain optional written concurrence from the Service, if desired. If evidence of sand skink or blue-tailed mole skink use is detected, a “no effect”

determination is not warranted, and you should contact the Service to develop or implement conservation measures and initiate consultation.

ii. "May affect, not likely to adversely affect" - If the proposed action is in the consultation area and contains suitable habitat, the project proponent may assume sand skinks and blue-tailed mole skinks are present or conduct a survey (see Step 2). If sand skinks, blue-tailed mole skinks, or sign are not detected or presumed to be present or the proposed action will have only beneficial, insignificant, or discountable effects on sand skinks or blue-tailed mole skinks, the proposed action determination might be "not likely to adversely affect." Contact the Service early to help develop conservation measures and clearly document surveys and their results, effects analysis, and reasoning. Written concurrence from the Service is required for a "not likely to adversely affect" determination.

iii. "May affect, likely to adversely affect" - Whether or not the proposed action is within or outside of the consultation area, if sand skinks or blue-tailed mole skinks are known, detected, or assumed to be present and the proposed action will adversely affect sand skinks or blue-tailed mole skinks, contact the Service early to help determine conservation measures. If the proposed action will have any adverse effects on skinks that are not insignificant or discountable, the proposed project may be "likely to adversely affect" sand skinks or blue-tailed mole skinks. If so, request formal consultation with the Service.

Reinitiation of Consultation

While the issuance of the Service's biological opinion or concurrence letter concludes consultation, reinitiation of consultation is required if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals the action may affect listed species or critical habitat in a manner or to an extent not considered; (3) the action is modified which causes an effect not previously considered; or (4) a new species is listed or critical habitat designated that may be affected by the action. Any operation causing incidental take which exceeds the amount or extent anticipated must cease, and the Service must be contacted immediately.

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GIS Data

Skinks_CA_20110920 Consultation Area for sand skinks and blue-tailed mole skinks

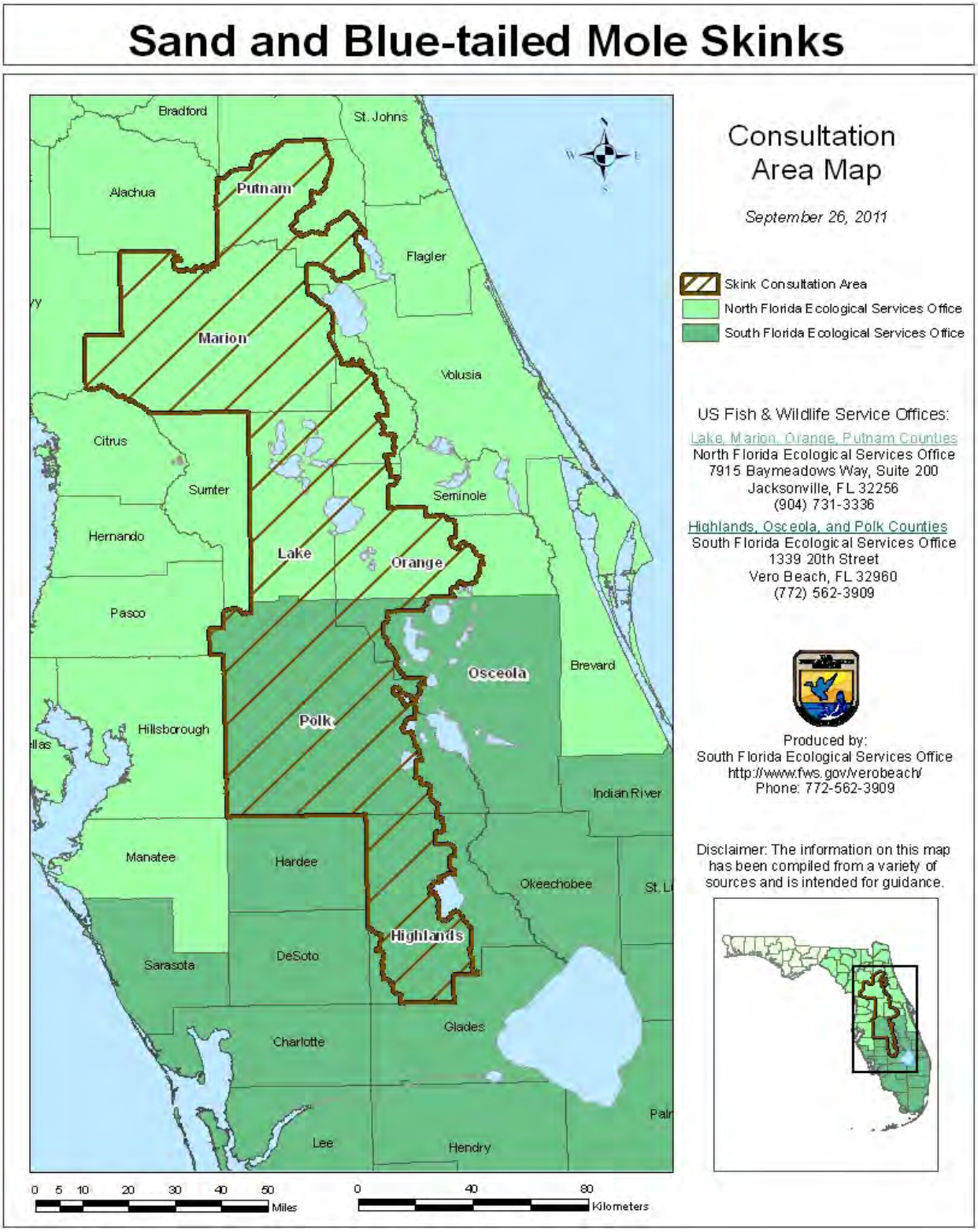

Figure 1. Sand skink and blue-tailed mole skink consultation area. County names depicted in shadowed bold text indicate the counties where skinks are known to occur.

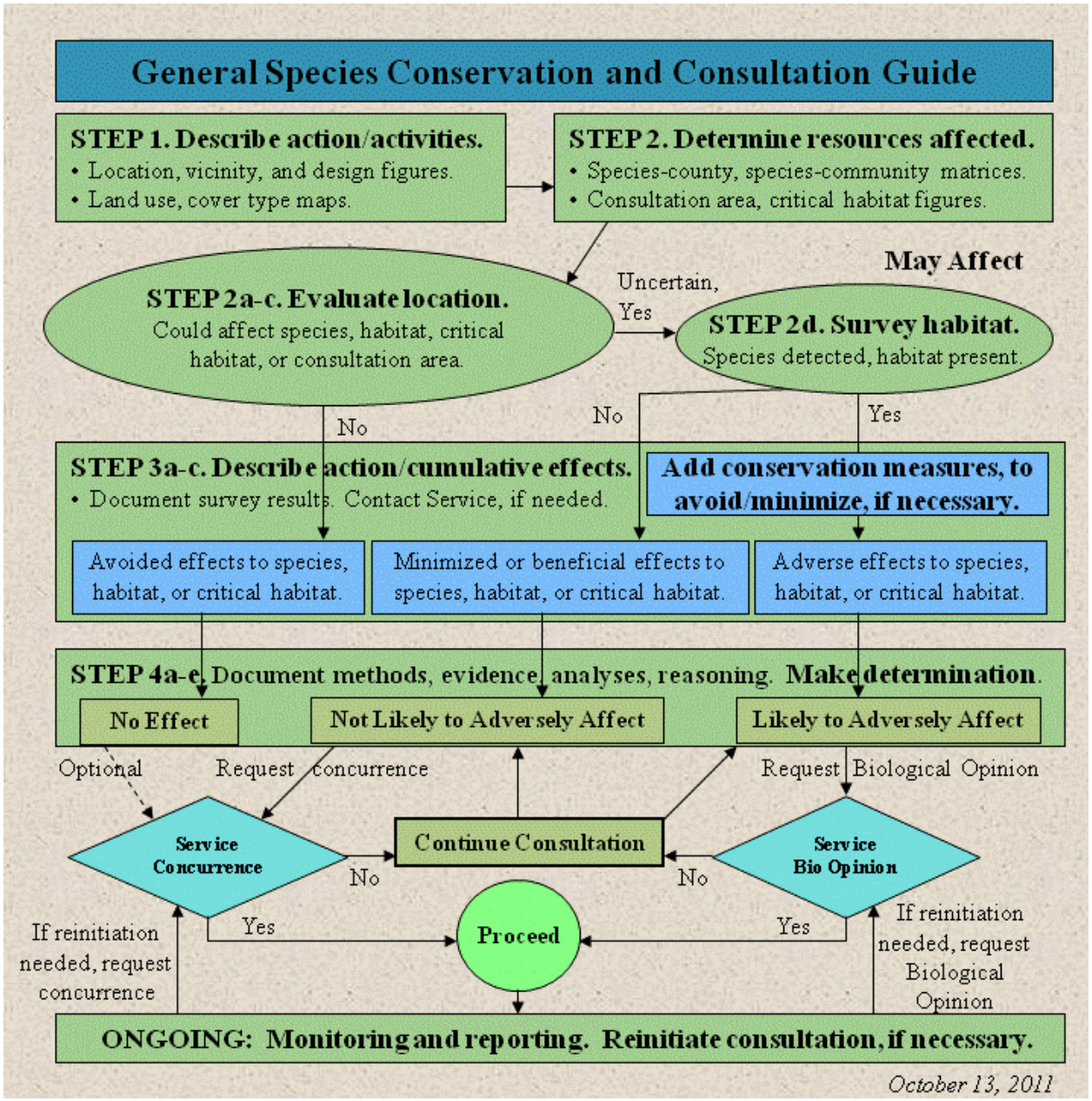

Figure 2. General species conservation and consultation chart for Federal actions that may impact federally listed species. Each step corresponds to a description in the text of the document.

APPENDIX A

Sand Skinks and Blue-tailed Mole Skinks

Survey Protocol
Peninsular Florida

Appendix A

Sand Skinks and Blue-tailed Mole Skinks

Survey Protocol
Peninsular Florida

The U.S. Fish and Wildlife Service (Service) provides this revised skink survey protocol for all counties in Florida in which the sand skink (*Neoseps reynoldsi*) and blue-tailed (bluetail) mole skink (*Eumeces egregius lividus*) occur based on the 5-year status review of the two species (Service 2007) and our assessment of skink surveys to date. The purpose of this recommended survey protocol is to standardize survey and data collection procedures among project proponents to ensure consistent and comparable information that may improve our knowledge of the species' occurrence and habitat use over space and time. The current guidance will be updated as new information becomes available.

The three most important factors in determining the presence of skinks are location, elevation, and suitable soils. Sand skinks occur on sandy ridges of interior central Florida. The extant range of the sand skink includes Highlands, Lake, Marion, Orange, Osceola, Polk, and Putnam Counties (Christman 1988; Telford 1998). Principal populations occur on the Lake Wales Ridge, Winter Haven Ridge, and Mount Dora Ridge (Christman 1970; Christman 1992; Mushinsky and McCoy 1995). Blue-tailed mole skinks are only known to occur on the Lake Wales Ridge in Highlands, Osceola, and Polk Counties (Mount 1965; Christman 1978). Both skink species are found in this geographic area typically at elevations 82 feet (ft) (25 meters [m]) above sea level or higher (Florida Natural Areas Inventory 2007). A reference map depicting the consultation area can be found along with this protocol on our webpage (www.fws.gov/verobeach). Sand skinks are more numerous, broadly distributed, and easily detected than blue-tailed mole skinks. As such, sand skinks will be used as a proxy for both species in the counties in which they co-occur (See Skink Conservation and Consultation Guide for additional information).

Within appropriate geographic area and elevation, skinks are found in excessively drained, well-drained, and moderately well-drained sandy soils. Suitable soil types include: Apopka, Arredondo, Archbold, Astatula, Candler, Daytona, Duette, Florahome, Gainesville, Hague, Kendrick, Lake, Millhopper, Orsino, Paola, Pomello, Satellite, St. Lucie, Tavares, and Zuber. These soil types typically support scrub, sandhill, or xeric hammock natural communities, although they may be degraded by human impacts to overgrown scrub, pine plantation, citrus grove, old field, or pasture. Skinks have been found in all these degraded conditions where soil types are suitable regardless of vegetative cover (Pike et al. 2008a). Thus, habitat condition is of secondary importance in determining whether a site is occupied by skinks. If a site has suitable soils at the appropriate elevation within the counties where skinks are known to occur, there is a likelihood of presence, and potential effects to skinks should be considered.

When the location, elevation, and soil type are suitable and the proposed action may disturb the soils on-site, then either: (1) a skink survey is necessary to determine if the site is occupied or (2)

presence may be assumed by the applicant and the appropriate avoidance, minimization, mitigation, or conservation measures should be implemented.

If presence of the species is not assumed, then skink surveys are needed. A two-tiered approach is used to survey for presence of skinks. A visual pedestrian survey to detect skink tracks should be conducted first. This survey can be performed at any time of the year, but tracks are most detectable in the spring (March through May) and fall (October through November) (Ashton and Telford 2006; Pike et al. 2008b). We recommend a thorough pedestrian survey be completed during one of these periods prior to proceeding with a more intensive coverboard survey. Sand skinks leave a sinusoidal ("S"-shaped) track (Figure 1) at the surface that can be readily identified through a visual pedestrian survey. All open, exposed sandy areas on the property should be surveyed. The survey route (preferably global positioning system [GPS] based) should be recorded and depicted in map form with all locations of skink sign (skinks or skink tracks) marked. A photo documentation log of the skink signs should also be provided. A coverboard survey is not required if the site is determined occupied by the pedestrian survey.

If the pedestrian survey is negative on some or all portions of the site, then a coverboard survey, with boards regularly dispersed across suitable soils, is necessary on those portions with negative pedestrian survey results. Prior to initiating coverboard surveys, we strongly encourage you to contact a Service biologist in the appropriate field office (Figure 2) to confirm survey dates, obtain guidance on placement of the boards across the landscape, and determine if a site visit is needed to verify sampling protocol.

Coverboard surveys should be conducted from March 1st through May 15th. Negative results obtained outside this period of time are not considered adequate to presume absence of skinks. Surveys should be conducted a minimum of four times during four consecutive weeks within the survey time period to presume that skinks are not present. Coverboards must be lifted and checked for tracks a minimum of once per week over the four consecutive weeks. It is important to conduct surveys when survey conditions are suitable for detecting skinks (*i.e.*, the surrounding soil is not compacted as a result of rainfall or other events that may preclude skink movement, such as atypical weather conditions).

Coverboards should be placed within suitable soil types at a minimum density of 100 coverboards per hectare (40 per acre). Coverboards should be located in areas of bare sand or sparse vegetation adjacent to leaf litter or detritus. Carefully rake or grade the soil to ensure full contact of the coverboard with the soil surface. Removal of soil from surrounding areas and placement under coverboards may be necessary where stems or roots preclude full contact of the coverboard with the soil surface. The additional soil must be deep enough to allow skinks to move through it and for tracks from their movements to be detectable (5 centimeters [cm]). Certain conditions (overgrown scrub, old fields, pastures) may require vegetation to be removed to place sufficient coverboards. Xeric scrub habitat where skinks occur may also be occupied by rare, State and federally listed plants. While setting up coverboard surveys, minimize effects to rare plant communities (For more information on plants, see http://www.archbold-station.org/fai/species4.html#Plants).

Coverboards should be 61 cm by 61 cm (2 ft by 2 ft) in dimension and may be constructed of 1.2 cm (0.5 in) or greater thick plywood, masonite, rigid insulation board (without metallic sheathing), or other rigid material of the same dimensions. Record the geographic coordinates of all coverboards. Coverboards should be allowed to acclimate for 7 days before the first sampling event. Therefore, the latest date that one could deploy coverboards and complete the survey according to protocol in a given year is April 17. Check for tracks upon lifting each coverboard. The use of gloves during sampling is highly recommended as coverboards often attract venomous insects and reptiles. We recommend lifting the coverboards from the edge farthest from you to keep the coverboard between you and any potential threats. After checking for tracks and skinks, carefully smooth the soil surface with the edge of the coverboard and replace the coverboard. During each site visit, look for and record tracks in sandy patches between coverboard locations. Once tracks or skinks are detected in an area, the survey can be concluded in that area. Do not leave coverboards in the field between sampling seasons as weathering can degrade the effectiveness of the boards to detect skink tracks (Pike et al. 2008b).

A survey report that includes the following, as applicable, should then be forwarded to the Service:

1. Project description of the action including site-specific habitat and vegetative descriptions, habitat structure (*i.e.*, the extent of canopy, understory, and ground cover, etc.) and fire history, if available.

2. Soil map over a topographical map or aerial photograph of the project area including the path of the pedestrian surveys, coverboard locations, and locations of skinks and skink signs.

3. Photo documentation of tracks.

4. Field data sheets that include:
   A. Survey dates with starting and ending times of all surveys conducted and personnel conducting surveys;
   B. Weather conditions during all surveys, including average temperature, wind speed and direction, visibility, and precipitation;
   C. Total number of skink tracks observed; and
   D. All skink observations.

5. The following ArcGIS layer files in shapefile format that include accurate metadata (the preferred projection is Florida Albers NAD83 in meters):
   A. Project boundary;
   B. GPS locations of survey routes;
   C. Coverboard locations; and
   D. Skink and skink track/sign locations.

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Figure 1. Typical "S"-shaped track of the sand skink (photographs courtesy of Randy Mejeur; Glatting Jackson Kercher Anglin Lopez Rinehart, Inc; 2000).

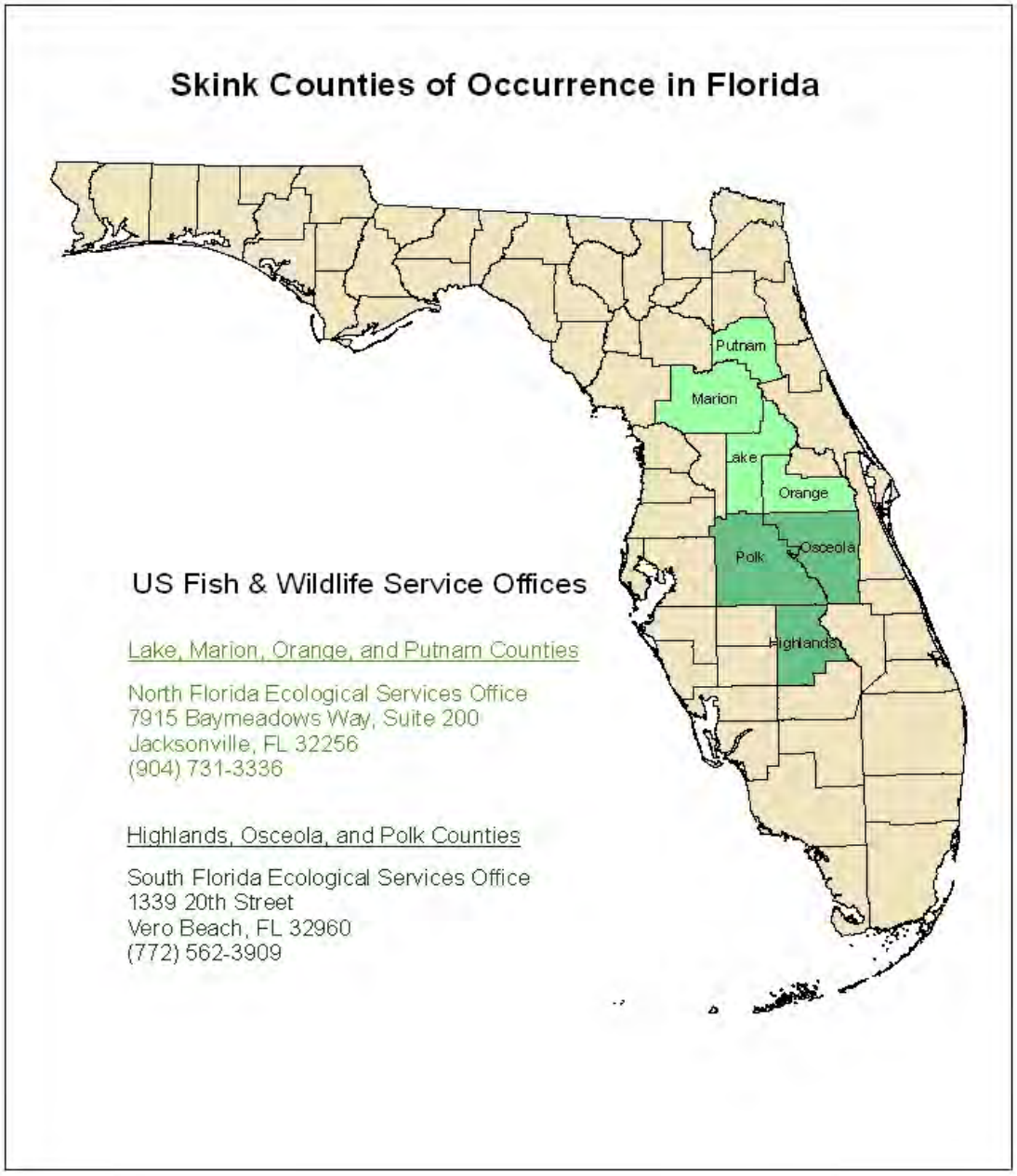

Figure 2. Skink survey protocol: US Fish and Wildlife Service areas of responsibility.

APPENDIX B

Sand Skinks and Blue-tailed Mole Skinks

Conservation Measures
Peninsular Florida

Appendix B

Sand Skinks and Blue-tailed Mole Skinks

Conservation Measures
Peninsular Florida

The purpose of this document is to provide a suite of potential conservation measures that project proponents may incorporate into their projects in order to avoid, minimize, compensate, and mitigate the effects of those projects on listed skinks. Federal project proponents are required to ensure proposed actions are not likely to jeopardize the continued existence of federally listed species by avoiding and minimizing the potential negative effects of their projects. Non-Federal project proponents developing a Habitat Conservation Plan (HCP) for an Incidental Take Permit for federally listed species are required to minimize and mitigate impacts to the maximum extent practicable. The best opportunity to avoid and minimize the potential impacts of a proposed project on listed species, including skinks, is during project planning and design. Project proponents should describe what conservation measures they are incorporating into their projects when preparing Biological Assessments or HCPs for submittal to the U.S. Fish and Wildlife Service (Service). Contact the Service early for additional assistance when planning or designing projects.

The most effective way to minimize the potential effects of a project on skinks is to avoid impacting occupied skink habitat. This includes avoiding both direct impacts to the habitat (*e.g.*, minimizing the project footprint), and indirect impacts to the habitat (*e.g.*, altering the hydrology of a site through modifications on- or off-site). Project proponents should consider limiting the impacts of all project components on skinks including, but not limited to, access and staging areas, land clearing and filling, construction, road building, landscaping, and anticipated project operations, maintenance and management.

In addition to avoiding skink habitat, the following avoidance and minimization measures should be considered:

- Limit roads, lanes, or other paths accessed by heavy equipment in and around skink habitat.

- Limit activities likely to disturb or compact soil in and around skink habitat (*e.g.*, disking, roller-chopping, use of heavy equipment, material storage, etc.).

- Limit black pavement that builds up heat during the day and increases air temperatures. Break up larger expanses of pavement to provide natural drainage and water filtration and to provide shade for paved areas.

- Incorporate green spaces and connectors into residential, residential-recreation, and other multi-use-residential developments.

- Set mower height at greater than 4 inches to avoid or minimize adverse effects to ground-dwelling wildlife.

- Implement appropriate best management practices (*e.g.*, http://www.dep.state.fl.us/water/nonpoint/pubs.htm#URBAN%20POLLUTION%20PREVENTION).

- Limit use of chemicals, if practicable, and follow all product labels when applying chemicals such as fertilizers, herbicides, and pesticides.

- Landscape with local and appropriate native plant species (for examples, see county extension websites).

- Designate any areas to be avoided as environmentally sensitive, delineate with temporary fencing or flagging to prevent accidental disturbance during project activities, and mark with signs (signs need to include information regarding the presence of listed skinks and any other federally protected species).

In some situations, it will not be possible to avoid taking skinks through the destruction or conversion of their habitat. In those cases, project proponents should propose appropriate compensation or mitigation to offset potential adverse impacts to skinks and their habitat. An analysis of how the compensation or mitigation will offset the habitat loss as a result of the proposed action will be required. If compensation or mitigation is proposed off-site, the order of preference for location is: first, on the same ridge as the impact (preferably within the same genetic unit[a]); second, on the ridge adjacent to the impact; and third, elsewhere in the range of the listed skink being affected by the proposed action.

The following compensation or mitigation options may be available and are presented in priority order:

1. In the case of a project that is covered by a regional HCP, mitigate consistent with the HCP.

2. If credits are available at a Service-approved conservation bank whose service area covers the proposed project, mitigate or compensate by purchasing the appropriate number of credits from the bank.

3. Protect, restore, and perpetually manage occupied skink habitat that is off-site and adjacent to existing conservation lands acceptable to the Service. In some instances, a parcel that is

[a] Emerging research (e.g., Mushinsky et al. 2011) indicates that there are different sand skink genetic units that should be considered in conservation priorities. Project proponents should work with Service staff regarding genetic considerations for proposed compensation or mitigation.

shown occupied by skinks but is not adjacent to existing conservation lands could be a suitable option, if large enough and managed appropriately.

4. In rare cases, on-site compensation or mitigation may be acceptable to the Service. On-site conservation of occupied skink habitat may be appropriate when: none of the previous options are available, it is adjacent to existing conservation lands, it provides a connection among populations, or is otherwise desirable under the recovery plan. While skinks can persist on small parcels, on-site lands that are isolated by development have not been demonstrated to consistently support long-term viability of skink populations and are difficult to manage and maintain.

Requirements for compensation and mitigation areas (both on- and off-site)

If project compensation or mitigation involves skink habitat protection, restoration (if needed), and management, then the following are needed to ensure the habitat is protected and managed in perpetuity:

- Permanent site protection: A conservation easement that is granted to a Service-approved non-profit entity (government or non-government) and allows the Service third-party rights of enforcement is the Service's preferred mechanism of permanent site protection. The non-profit entity should have experience in habitat conservation, be independent of the applicant, and be willing to monitor the easement annually and report its findings to the Service. The easement should be recorded in the county in which the protected property is located. Other site protection measures, such as deed restrictions and restrictive covenants, are considered on a case-by-case basis.

- Restoration: A detailed restoration plan, including a thorough budget, is required if the mitigation or compensation parcel requires restoration. The project proponent should describe how they will fund the restoration and provide funding assurances upfront. The preferred funding mechanism is the establishment of a Trust Fund to be held by a non-profit entity with experience in managing money for conservation purposes and to be drawn upon as restoration activities are conducted. Other funding mechanisms, such as a letter of credit or a bond, are considered on a case-by-case basis.

- Long-term management: A detailed Habitat Management Plan that includes a burn plan, invasive species management, skink monitoring, vegetation monitoring, and reporting of all results is required. In addition, an entity that is willing to manage the compensation or mitigation parcel and has demonstrated their ability to manage skink habitat should be identified. A management agreement with this entity is recommended when the applicant is not the manager. Additional information regarding Habitat Management Plans is provided below.

- Funding for management activities in perpetuity: A non-wasting Trust Fund (a fund in which only the interest generated is used to fund management activities) held by a non-profit entity

with experience in managing money for conservation purposes is the Service's preferred method to secure permanent management funding. The non-profit entity should be independent of the applicant. The principal amount placed in the Trust Fund should take into account all costs associated with the compensation or mitigation parcel, the fee charged by the Trust Fund holder, and the interest and inflation that are expected to occur after the money is deposited. Other funding mechanisms, such as a letter of credit or a bond, are considered on a case-by-case basis.

Habitat Management Plans

A Habitat Management Plan should be created to support any on- or off-site compensation or mitigation. A Habitat Management Plan includes a detailed description of how the habitat will be managed; what steps will be taken to improve the habitat, how it will be maintained over time, and funding mechanisms to ensure beneficial management in perpetuity. The plan should also include any survey reports and any land preservation covenants. If habitat improvements or restoration are proposed, the management plan needs to include a habitat monitoring component.

Research indicates overgrown scrub to be less suitable or unsuitable for skinks. Management practices beneficial to skinks may include, but are not limited to:

- Prescribed burns (not more than once every 10 years) or other activities that mimic natural disturbances in xeric scrub habitat,

- Non-native or invasive wildlife and vegetation removal, and

- Native vegetation restoration.

Structural characteristics of scrub habitat that can be managed to benefit skinks include a well-defined litter layer and shade in the form of a scattered shrub or tree overstory, but having both shrub and tree overstory can be detrimental to skinks. These structural characteristics are necessary for skinks to be able to regulate their body temperature. See the Habitat section in the main text of the *Skink Conservation and Consultation Guide* for more information on skink habitat characteristics.

Where monitoring is incorporated into the habitat management plan, a coverboard survey should be carried out once per year for 5 years during the appropriate period, then once every 5 years in perpetuity (see Appendix A for survey protocol). A survey report should be sent to the Skink Lead Biologist, South Florida Ecological Services Office, 1339 20th Street, Vero Beach, Florida 32960. Other observations of skinks, skink sign, and other listed species should be included in the survey report.

Additional items to consider for inclusion in a Habitat Management Plan for skinks include, but are not limited to:

- Implementing the avoidance and minimization measures beginning on page 1,
- Controlling overgrowth and managing overgrown scrub by thinning, burning, mowing, or other techniques to reduce vegetative density and create patchy, sandy open areas,
- Protecting habitat from detrimental off-road vehicle traffic and commercial forestry practices,
- Controlling domestic predators, such as cats, using traps or other deterrents,
- Developing and incorporating listed species conservation strategies, such as natural history kiosks and brochures, and
- Reporting land management activities and natural disturbances (*e.g.*, wildfire, controlled burns, etc.).

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Mushinsky, H.R., E.D. McCoy, A. Catenazzi, E. Britt, A. Schrey, and J.S. Godley. 2011. Research to benefit the conservation of the Florida sand skink. Final report submitted to U.S. Fish and Wildlife Service. Vero Beach, Florida.

United States Department of the Interior

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

October 20, 2017

Memorandum

To: Jay Herrington, Project Leader, North Florida Ecological Services Office
Roxanna Hinzman, Project Leader, South Florida Ecological Services Office

From: Larry Williams, State Supervisor, Florida Ecological Services

Subject: Statewide radius for sand skink (*Plestiodon [Neoseps] reynoldsi*) incidental take

The North and South Florida Ecological Services Offices consult on projects affecting habitat that is potentially occupied by the sand skink. In order to achieve a consistent approach across the State, staff and supervisors from the North Florida Ecological Services Office; South Florida Ecological Services Office; the Service Scientific Integrity Officer; and the State Supervisor met on July 18, 2017, to discuss and decide on a legally and scientifically defensible radius around a sand skink track for the purpose of quantifying and issuing incidental take. The provisional decision that day was to change the radius from 188 feet (ft) to 80 ft from a skink track. From the date of this memo forward, both offices will use the 80 ft radius. If scientific information becomes available that demonstrates 80 ft may no longer be scientifically and legally defensible, the Service will consider the new information and, if appropriate, adjust the radius.

The purpose of this memo is to document this decision and provide standard language that can be inserted into a biological opinion (BO) or Habitat Conservation Plan/Incidental Take Permit (HCP/ITP) that explains the scientific basis for the 80 ft radius. The standard language and associated references are found below.

Standard Language to use in drafting BOs and HCP/ITPs

When quantifying the amount or extent of take, the Service uses the best scientific and commercial data available to establish a radius around a sand skink track where the species is reasonably certain to occur. While no studies have established a home range (the area in which an individual usually confines its daily feeding, breeding, and sheltering activities) for sand skinks, the Service has evaluated the best scientific and commercial data available relative to sand skink movements, as well as the home ranges of other similar-sized lizards. After reviewing this information, the Service has determined that sand skinks are reasonably certain to feed, breed, and shelter within 80 ft of a sand skink track when the habitat is suitable.

The information that supports 80 ft as the radius includes: 1) Penney (2001), who reported translocated sand skinks moved a median distance of 25.6 meters (m) (84 ft; n = 64); 2) Schrey et al. (2011, p. 63), who conducted a genetic analysis of sand skinks (n = 470) within

25 m of each other, and reported "the Florida sand skink occurs with higher genetic similarity than expected by chance within 25 m (82 ft)"; and 3) Perry and Garland (2002, p. 1877), who reviewed the literature and examined home range as a function of snout-vent length in lizards. Of the 489 data sets they examined, 108 met their criteria for their analysis. Lizards of the Autarchoglossa (the clade that contains all skink species) with snout-vent lengths ranging from 30 millimeters (mm) to 100 mm (*i.e.*, the range representative of sand skinks) had home ranges of approximately 10 m^2 to approximately 1,700 m^2 (p. 1877). A 1,700 m^2 area has a radius of 23 m (75 ft). Therefore, the Service's opinion is any suitable habitat within 80 ft of a sand skink track is reasonably certain to be occupied, and any activities that occur within that radius which are reasonably certain to harm or harass sand skinks would be considered incidental take as defined by the Endangered Species Act.

The Service acknowledges that some sand skinks move (disperse) farther than an 80 ft radius. However, the Service has made a range-wide determination for Florida that any sand skink on a given site is reasonably certain to occupy all suitable habitat within 80 ft of a track. In applying this radius, a circle will be drawn around a radius that extends 80 ft outward from a track. If circles do not overlap, the space between circles will not be considered occupied when quantifying incidental take.

REFERENCES

Penney, K.M. 2001. Factors affecting translocation success and estimates of dispersal and movement patterns of the sand skink *Neoseps reynoldsi* on restored scrub. Master's thesis. University of South Florida; Tampa, Florida.

Perry, G. and T. Garland. 2002. Lizard home ranges revisited: effects of sex, body size, diet, habitat, and phylogeny. Ecology 83(7):1870–1885.

Schrey, A.W., A.M. Fox, H.R. Mushinsky, and E.D. McCoy. 2011. Fire increases variance in genetic characteristics of Florida sand skink (*Plestiodon reynoldsi*) local populations. Molecular Ecology 20:56-66.

APPENDIX F

Wood Stork Effect Determination Key

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 G

Eastern Indigo Snake Effect Determination Key and Standard Protection Measures

United States Department of the Interior

U. S. FISH AND WILDLIFE SERVICE

7915 BAYMEADOWS WAY, SUITE 200
JACKSONVILLE, FLORIDA 32256-7517

IN REPLY REFER TO:
August 13, 2013

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

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

Dear Colonel Dodd:

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

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

On Page 2

The following replaces the last paragraph above the signatures:

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

On Page 3

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

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

On Page 4

The following replaces the first paragraph under Conservation Measures:

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

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

On Page 4 and Page 5 (Couplet D)

The following replaces D. under Conservation Measures:

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

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

On Page 5

The following replaces footnote #3:

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

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

Sincerely,

Dawn Jennings
Acting Field Supervisor

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

United States Department of the Interior

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

January 25, 2010

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

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

Dear Mr. Hobbie:

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

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

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

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

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

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

Sincerely,

Paul Souza
Field Supervisor
South Florida Ecological Services Office

David L. Hankla
Field Supervisor
North Florida Ecological Services Office

Enclosure

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

Eastern Indigo Snake Programmatic Effect Determination Key

Scope of the key

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

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

Habitat

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

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

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

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

Conservation Measures

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

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

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

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

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

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

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

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

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

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

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

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

---

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

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

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

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.

IF YOU SEE A LIVE EASTERN INDIGO SNAKE ON THE SITE:

- Cease clearing activities and allow the 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 U.S. Fish and Wildlife Service (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 DEAD 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.

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

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

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.

Killing, harming, or harassing indigo snakes is strictly prohibited and punishable under State and Federal Law.

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.

LEGAL STATUS: 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.

August 12, 2013

ATTENTION:

THREATENED EASTERN INDIGO SNAKES MAY BE PRESENT ON THIS SITE!!!

Please read the following information provided by the U.S. Fish and Wildlife Service to become familiar with standard protection measures for the eastern indigo snake.

APPENDIX H

Agency Coordination

Meeting Minutes

3000 Dovera Drive, Suite 200, Oviedo, FL 32765 I P: 407-971-8850 I F: 407-971-8955 I www.inwoodinc.com

DATE: May 8, 2017

TO: **Jack Freeman, P.E., PTOE**

FROM: Jason Houck, GISP, PWS

RE: FPID 435859-2-22-01
SR 50 PD&E Study from US 301 to CR 33 in Hernando, Sumter, and Lake Counties
Coordination meeting with Florida Forest Service and Florida Department of Environmental Protection

CC: Attendees

A meeting was held between the Florida Department of Transportation (FDOT), the Florida Forest Service (FFS), and the Florida Department of Environmental Protection (FDEP) to discuss the on-going PD&E study along the SR 50 corridor from US 301 to CR 33. Attendees included Vince Morris and Colleen Werner (FFS); Cheryl McCall and Brad Richardson (FDEP, via phone); Lorena Cucek, Casey Lyon, Cathy Owen (via phone), and Heather Chasez (FDOT); Jack Freeman (Kittleson); and Jason Houck (Inwood). A copy of the sign-in sheet and agenda has been included as an attachment to this memorandum. The following provides a summary of the issues discussed at the meeting.

Jack began the meeting with introductions and a brief summary of the previous work completed and the on-going work to date. He walked through the feasibility study that was completed in 2016 that included the recommendation to move the project forward to the PD&E phase.

Jack stated that the project is approximately 20 miles long. FDOT District 7 is in the process of widening SR 50 west of 301 and that design is approximately 60% complete. The feasibility study indicated that two build alternatives should be further analyzed in the PD&E: a 3-lane alternative with passing lanes and a full 4-lane configuration through the entire corridor. The current schedule has the PD&E study beginning in January 2017 and being completed in October 2018. Currently, the project is in the data collection phase, which includes the development of build alternatives, identification of sensitive resources within the corridor, and stakeholder coordination. Jack provided several roll plots that depicted the build options and their respective footprints. He indicated that the 3-lane alternative would include a passing lane from US 301 eastbound for approximately one mile and westbound east of the Little Withlacoochee River through the curves. Except where the passing lanes are provided, the remainder of SR 50 between US 301 and SR 471 would remain 2-lanes for this alternative. The traffic model shows the need for 4 lanes from SR 471 east to the end of the project. Jack then expounded on the traffic projections and the Level of Service Criteria used to determine the location and amount of capacity improvement.

Vince stated that it sounded like FDOT had already made their decision regarding widening the road. He indicated that, at a previous meeting held in Mascotte, the FDOT had stated that they were not sure yet what improvements would happen, that improvements may be limited to intersection improvements, and that the no-build option was still being considered. Jack responded by stating that the no-build option would be carried through the study and would be included in the analysis.

Colleen requested that the team make sure they identified all resources within the corridor. Jason responded by saying that the identification of sensitive resources played a large part in the need for coordination with the FFS and FDEP early in the process.

Jack stated that he would post the roll plots on Kittleson's FTP site. He further explained the differences between the 3 and 4 lane build alternatives adding that the FDOT currently has 200 feet of existing right-of-way (ROW) within the corridor's Hernando County portion bisecting the Richloam Tract of the Withlacoochee SF and the

existing roadway is not centered in that right-of-way. The current configuration of SR 50 is approximately 68 feet south of the northern right-of-way limit.

Jack stated that the 3-lane option could fit on the south side of SR 50 within the existing right-of-way, but there would be some questions regarding how to accommodate drainage. The 4-lane option could also be accommodated within the existing right-of-way. In Sumter County, the right-of-way drops to 100 feet. The plan would be to build a new bridge over the Little Withlacoochee River on the south side of SR 50. It is approximately 2,000 feet from the bridge to the first big curve, so the team would evaluate left, right, and center widening options in that area.

Colleen mentioned that she has GIS data available for several sensitive environmental resources in the area. Her staff regularly updates the Florida Natural Areas Inventory (FNAI) databases, especially those related to rare plants. Heather stated that it would be very helpful if Colleen could provide that information.

Heather then mentioned that the FDOT was also looking at the South Sumter Trail. Vince stated that he did not currently know where the trail was going to go. Lorena responded saying that the trail study was behind the SR 50 PD&E, but that she thought it would parallel SR 50 from SR 471 to Mascotte. Heather asked if Vince had a preference regarding which side of the road the trail should be located. Vince stated that when it connects to the Van Fleet Trail, he did not have a preference. Heather added that we should continue to talk about the trail since it may end up affecting the same resources as the roadway.

Jack explained that he would be developing two typical sections (3-lanes with passing lane and 4 lanes within existing ROW) for the portion of SR 50 from US 301 to the Hernando County line. Those would be followed by left, right, center alternatives past the Hernando/Sumter County Line to SR 471.East of SR 471, typical section alternatives include 4-lane high speed urban and rural typicals section with left, right and center alternatives. The number of variations could lead to as many as 160 build alternatives through the study corridor.

Vince stated that the public seemed very receptive to the proposed improvements.

Colleen added that there is a long-standing dog hunting culture in the area with a large user group hunting on both sides of SR 50. The hunt is managed by the FWC. Widening the road could lead to increased deer/vehicle collisions.

Vince stated that the roadway typical sections were provided and one option included 3 lanes. Colleen added that two lanes east of the bridge could be very helpful. Jack responded saying that is an ideal location for a passing lane and then transition out before the curve. Colleen responded by saying that they recommended a no-build option east of the bridge. Jack stated that, east of the river, he was concerned about the number of driveway connections in the 3-lane section and the westbound two lanes if the passing lane is provided closer to SR 471.

Vince asked if the existing bridge would be altered. Jack responded by saying that geotechnical investigations are underway but the bridge may not be affected. Jason added that the area around the bridge is very wet and that, if the geotechnical report showed a normal high water elevation at or above the ground level, he would likely go out and set nails using biological indicators for seasonal high water levels. Jack stated that the bridge was currently in good shape.

Vince asked why the recommendations includes four lanes east of SR 471. Jack responded by saying that new developments in the area were affecting the anticipated traffic volumes. Colleen mentioned that there were sensitive environmental areas on both sides of SR 50 in that area. Vince stated that he mentioned those resources in the comments he provided to the ETAT.

Jason referred to the FFS/DEP segment of the agenda and asked if the management plan available on the FFS website was current. Vince confirmed that it was. Jason asked since the listed species data was updated routinely by FFS, if he could contact Colleen directly. Vince stated that was no problem but added that a Special Use Permit would be needed prior to any field reviews. Colleen added that she could help with getting the Special Use Permit approved adding that Brian Camposano would ultimately be the person approving it. Cheryl added that SEARCH was familiar with the process and would know what to do.

Colleen asked about the potential for wildlife crossings. Jason responded by saying that we would look at improvements that could be made for habitat connectivity within the confines of the final recommended improvements. Jason mentioned a similar process was used on SR 40 through Silver Springs SP and Ocala NF. Colleen mentioned potentially bringing in Dr. Dan Smith to discuss the crossings. Jason and Heather mentioned that they worked with Dr. Smith on SR 40. Casey stated that if the FFS chose to bring Dr. Smith in as a consultant then it needed to be understood that Dr. Smith only represented the FFS, not the FDOT. Colleen stated that there are swamps, hammocks, and flatwoods within the corridor and each had endemic species that could be affected.

Vince asked about human crossings within the corridor and if it would be possible to retrofit the bridge to make it easier for wildlife passage. Jason responded by saying that it would depend on the recommended improvements. Adding connectivity enhancements, especially for upland species, would require raising the profile of the road and would likely increase impacts. However, FDOT would look into it if additional work in the area of the bridge was proposed, or if the final recommendation included a build section through the forest. Colleen also wanted the FDOT to consider human crossings due to the aforementioned dog hunting popularity.

Jason added that, on SR 40, the FDOT had worked with DEP, OGT, and the USFS to incorporate alternatives to traditional stormwater ponds. These included BAM, which is an activated media, used to reduce nutrients in areas where attenuation is not a concern. He added that the Richloam Tract was very similar to SR 40 in that it is a large, publicly-owned tract where flooding would not be a concern. This method was successful in reducing wetland impacts on SR 40 and was supported by the St. Johns River Water Management District, the FDEP, the OGT, and the USFS. The FFS was agreeable to this idea, as they did not like the idea of ponds being placed on FFS land.

Brad stated that impacts to state lands would also need to be considered in addition to wetlands. Vince asked who ultimately agreed on the mitigation to be provided. Brad responded by reminding everyone not to confuse mitigation with “net positive benefit” stating that, “ARC puts everyone through the ringer”. Net positive benefits discussed were the potential for land acquisition, increased habitat connectivity, exotic control, staff hours, and translocation of rare plants that may be impacted.

Colleen identified another sensitive area on the east side of the project and provided maps to the team. She stated that this project could also affect the current burn plan for the forest. Hammocks in the area contain several sensitive plants. She mentioned secondary impacts adding that time spent by FFS staff assisting consultants could be considered a secondary impact.

Casey asked what the FDOT could do to help. Vince responded that variable message signs would be a good idea. Casey asked that, if the FDOT impacted uplands supporting gopher tortoises, if the any tortoises being impacted could be relocated onto FFS lands. Vince responded saying that he is working on creating a recipient site in Croom.

Jason mentioned that portions of the study corridor in Lake County met the USFWS criteria for supporting sand skinks and asked if FFS was aware of any skinks on their lands. Vince stated that he did not know of any.

Colleen stated that there is significant Duke’s skipper habitat along the corridor including two known host plants. Jason responded that they would look into that and asked for any documentation Colleen could provide.

Vince added some final thoughts. The trail crosses SR 50 in two places. Indian House Hammock contains several listed species. There is some concern about habitat impacts to the Little Withlacoochee River. He would like to see some accommodations made to assist small animals that are trying to cross the road. The FFS burn interval in flatwoods is every 2-4 years. They have documented swallow-tailed kite nesting near the project corridor. There are some cultural resource areas near the river. Increased speed and volume of traffic could cause additional problems to the forest not the least of which is the increase in exotic/nuisance plants that are introduced.

Next steps in the project include obtaining the required Special Use Permit and identifying sensitive areas within the forest where staging of equipment during construction would be restricted.

*Note: The above reflects the writer’s understanding of the content of the discussions that took place at the meeting. If any misrepresentations, inaccuracies or omissions are identified, please contact Jason Houck at (407) 971-8850 (*JHOUCK@INWOODINC.COM*) as soon as possible for resolution and revision, if necessary.*

SR 50 PD&E Study
FL Forest Service Coordination Meeting

FPID: 435859-2-22-01

April 28, 2017

Name	Organization	Address	E-mail
Jason Houck	Inwood	7000 Dovera Drive Suite 200 Oviedo, FL 32765	jhouck@inwoodinc.com
Casey Lyon	FDOT	719 S. Woodland Blvd, DeLand, FL	casey.lyon@dot.state.fl.us
~~Jack~~ Freeman	Kittelson	225 E. Robinson St Suite 450 Orlando, FL 32801	JFreeman@Kittelson.com
Heather Chasez	FDOT	719 S Woodland Blvd. Deland FL	heather.Chasez@dot.state.fl.us
Lorena Cucek	FDOT	719 Swoodland Blvd, Deland FL	lorena.cucek@dot.state.fl.us
Vincent Morris	FFS	15019 Broad Street Brooksville, FL 34601	Vincent.morris@freshfromflorida.com
Colleen Werner	FFS	" " " "	Colleen.Werner@freshfromflorida.com

Mitigation Desires for State Road Widening DRAFT

Vincent Morris Resource Administrator, Withlacoochee State Forest

This is list of mitigation elements that could provide a net positive to the forest and make the project more acceptable to the Florida Forest Service. These mitigation measures have not been vetted with state office staff and are provided as a starting point for negotiations.

1- There should be a land acquisition that protect some of the appropriate species affected by the project. The most obvious choices would be the out parcel at Indian House Hammock, Pineola Hammock (Istachatta), or property associated with Jumper Creek. Exact property to be discussed later.
2- There should be a good human/wildlife crossing near the western hiking trail crossing (Segment A)
3- There should be additional small wildlife crossing(s) west of 471, possibly culverts (Segment A).
4- There should be an additional human crossing of some sort for the eastern hiking trail crossing possibly associated with the Little Withlacoochee River bridge.
5- There should be some minor animal crossing (culvert perhaps) in the eastern portion of the road (Segment C).
6- A SR 50 road option that is narrower (3 lanes) should be selected in the sweeping Indian House Hammock turn to narrow the footprint in this most valuable conservation area.
7- Rock that is removed from the project should be moved to places where it can serve as habitat (particularly rocks that already have flora growing on them).
8- Retention ponds should be designed to keep water flow patterns the same, and not damage mesic hammock/existing wetlands.
9- There should be permanent smoke signs that can be illuminated to warn motorists about prescribed burning/wildfire.
10- Equipment and road materials should not be stored where adverse impacts could occur to rare of sensitive species.
11- DOT should provide invasive weed control on disturbed road edges, retention ponds, floodplain compensation storage ponds.

Meeting Minutes

3000 Dovera Drive, Suite 200, Oviedo, FL 32765 I P: 407-971-8850 I F: 407-971-8955 I www.inwoodinc.com

DATE: August 1st, 2017

TO: **Lorena Cucek**

FROM: Sean Carrigan, PE

RE: FPID 435859-2-22-01 | West SR 50 PD&E Study from US 301 to CR 33 | SWFWMD Pre-App Meeting - Brooksville

CC: All attendees, Jesse Blouin, Ferrell Hickson, Karen Snyder, Jason Houck

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A Pre-application meeting was held at the Southwest Florida Water Management District (SWFWMD) office in Brooksville, Florida on July 27th, 2017 to discuss the drainage approach for the subject project. Meeting attendees were:

- Monte Ritter (SWFWMD)
- Kim Dymond (SWFWMD)
- Jack Freeman (Kittelson)
- Renato Chuw (Inwood)
- Sean Carrigan (Inwood)
- Jada Barhorst (Inwood)
- Casey Lyon (FDOT) – via teleconference
- Lorena Cucek (FDOT) – via teleconference

Jack Freeman began the meeting by providing a brief overview of the project location and the scope of work. The project consists of widening approximately 19 miles of SR 50 between US 301 in Hernando County and CR 33 in Lake County, FL. Several typical sections are currently being evaluated through four (4) project segments.

- Segment A – From US 301 to Hernando/Sumter County Line
  - Two (2) lanes with passing lanes – Rural section with three (3) 12-foot lanes and 5-foot paved shoulders.
  - Four lanes – Rural divided highway with four (4) 12-foot travel lanes, a 40-foot median, and paved inside and outside shoulders.
- Segment B – From Hernando/Sumter County Line to SR 471
  - Two (2) lanes with passing lanes – Left, Center, and Right widening options. Rural section with three (3) 12-foot lanes and 5-foot paved shoulders.
  - Four Lanes – Left, Center, and Right widening options. Rural divided highway with four (4) 12-foot travel lanes, a 40-foot median, and paved inside and outside shoulders.
- Segment C – From SR 471 to Lee Road
  - Four Lanes – Left, Center, and Right widening options. Rural divided highway with four (4) 12-foot travel lanes, a 40-foot median, and paved inside and outside shoulders and a concrete sidewalk on the south side of the roadway.
  - Four lanes – Left, Center, and Right widening options. High speed urban divided highway with four (4) 12-foot travel lanes, a 30-foot median, paved inside and outside shoulders, and a concrete sidewalk on both sides of the roadway.
- Segment D – From Lee Road to CR 33
  - Four Lanes – Left, Center, and Right widening options. Urban section with four (4) 12-foot travel lanes, a 22-foot median, 7-foot buffered bike lanes, and a concrete sidewalk on both sides of the roadway.

- The PD&E Study is anticipated to be completed by October 2018 in which the design phase will begin.
- SWFWMD asked if the study was going to be designed as a single project and if it is, an inter-agency agreement will have to be pursued with SJRWMD for a single water management district to take as the leading permitting agency. However, Inwood and Kittelson indicated the design will be separated into individual segments and one segment is from the Sumter/Lake County line to CR 33 which is also the jurisdictional line between SWFWMD and SJRWMD, therefore, the inter-agency agreement may not be necessary.

The study is evaluating stormwater management alternatives along with floodplain impacts / compensation and documenting them in the Pond Siting Report and Location Hydraulics Report.

Existing Drainage Conditions

- The project is located within the Green Swamp Basin and traverses several Waterbody ID's (WBIDs). WBID 1378 – Big Gant Canal is the only WBID impaired for nutrients (Chlorophyll-a). WBID 1329F – Withlacoochee River is impaired for mercury. All others are not impaired.
- SWFWMD indicated there are smaller sub-basins that were delineated based on watershed studies the WMD has completed or are in the process of being completed. Monte suggested we contact Jessica Hendrix for information about these sub-basins and the watershed reports.
- Two (2) Outstanding Florida Waterbodies (OFW) exist along the project limits: Withlacoochee River System and Chassahowitzka National Wildlife Refuge.
- Stormwater runoff from the existing roadway is collected in roadside swales and conveyed to several existing cross drains along the corridor. There are 46 cross drain, one (1) bridge over the Withlacoochee River and one (1) bridge culvert along the project limits.
- The FEMA 100-yr floodplain is located extensively throughout the project limits. Zone AE within Hernando County, Zone A throughout Sumter County, areas of Zone A and Zone AE within Lake County.
- Inwood indicated the Zone AE floodplain elevations within Hernando County are based on FEMA maps and more than likely, these were approved by FEMA from the SWFWMD Withlacoochee River watershed model.
- Majority of the project within Hernando and Sumter Counties are in Karst Areas.
- Discussions about existing permits indicated that a permit was issued to FDOT District 7 for the widening of SR 50 just west of the intersection with US 301 but it also included improvements associated with tying down to the existing two lanes east of US 301. Inwood indicated that since our study begins at the intersection with US 301, a basin (Basin 1) was identified but the stormwater management is already accommodated in the permitted SR 50 project and no ponds are being evaluated for this basin as part of the study. The permitted SR 50 widening identified a stormwater pond to accommodate the four-lanes of SR 50 to a certain extent east of the intersection.

SWFWMD Water Quality/Quantity and Permitting Criteria.

- 1" over Directly Connected Impervious areas (DCIA) for wet detention and 0.5" over DCIA for dry retention for public highway transportation projects.
- Must provide treatment for all DCIA draining to the treatment facility, therefore, treatment can be provided for the net new impervious area if the runoff is separated from the existing impervious area runoff. Compensating treatment is allowed if it provides benefit to the same outfall.
- 50% additional water quality volume for ponds discharging to OFW. Monte confirmed this rule only applies to ponds that discharge directly into the OFW.
- Must demonstrate nutrient loading reductions for direct discharges to impaired waterbodies. Confirmed by Monte.
- Karst areas – Do not excavate through the confining layer as it would allow polluted water to drain into the Florida aquifer. If no confining layer is present, do not excavate to within two (2) feet of the underlying limestone layer. Geotechnical analysis will be required for the ponds which should look for sinkhole indicators (i.e. 100% loss of circulation).

- Water Quantity:
  - Open Basins – 25yr/24hr storm event for peak rate attenuation.
  - Closed Basins – 100yr/24hr storm event for volume attenuation.

Proposed Stormwater Management

- Three (3) stormwater pond alternatives are being evaluated for each basin
  - 37 total basins along the corridor
    - 27 basins within SWFWMD
    - 10 basins within SJRWMD
  - SWFWMD mentioned if any contamination is found within a pond site, that we will need to coordinate with DEP. SWFWMD will not issue a permit unless the pond is cleared of any contamination issues.

Floodplain Impacts & Compensation

- Approximately 122 ac-ft of impacts throughout the corridor based on the 4-lane widening alternative and a conservative approximation of the proposed roadway fill in cross sections.
- Monte confirmed that floodplain models are available and the results are considered the most recent flood elevations by the WMD. If a model is not available for areas designated as Zone A, or if depressional areas exist and are not zoned as floodplains, the consultant must provide a model which establishes the 100-year flood elevation of this area.
- Renato stated the FDOT's position is to not create floodplain models for these areas, but to use the FEMA adopted floodplain information and in areas of Zone A, compare the FEMA 100-year floodplain boundaries to the topographic information available to establish 100-year flood elevations. Renato indicated that FDOT will want written documentation of this request by the Water Management District. Monte concurred.

Compensation approach for the PD&E project is to provide offsite compensation ponds on a cup-for-cup basis. Monte stated that the floodplain compensation sites must be located within the same basin in which the impacts occur and should not impact stormwater conveyance.

Withlacoochee State Forest

- Basins 3 through 12 of the PD&E Study are located within the Withlacoochee State Forest.
- As part of this study and to conservatively estimate right of way needs, several stormwater management facilities have been sited within the State Forest property.
- A meeting with State Forest staff indicated that they prefer to not have stormwater or floodplain compensation ponds within their property as these would impact their maintenance operations.
  - Renato asked if SWFWMD had any specific criteria for dry detention linear treatment swales. One concept Inwood will evaluate is the option to provide stormwater management within the right-of-way. Monte explained that SWFWMD does not have criteria regarding dry detention swales, however, if the consultant can demonstrate they provide the same or greater pollutant removal efficiency as a wet detention pond, then they would be acceptable.
  - Another option Monte suggested is the detention with filtration (underdrains) that is acceptable by SWFWMD.
  - Renato also asked if Bio-activated Media (BAM) is acceptable by SWFWMD, which is currently being utilized on the SR 40 project within the Ocala National Forest in Marion County. Monte reiterated that the consultant must demonstrate that the BAM can provide the same or greater pollutant removal efficiency as a wet detention pond and it will be acceptable if this is demonstrated.

  - Another option Monte suggested is providing treatment within isolated wetlands by placing a control structure within a wetland which is also acceptable by SWFWMD. However, this would be considered an impact by the Army Corps of Engineers and would require mitigation. A pre-treatment sump can be provided prior to discharging to the wetland to try and offset the impacts. SWFWMD indicated they will not require long term monitoring.
- Several floodplain compensation sites are also located within the State Forest property.
  - Monte suggested that coordination with the State Forest will be needed to verify if they would accept the displaced floodplain volume within their property in lieu of compensation sites. Monte also stated this would require a floodplain analysis to verify the increase in runoff would not impact adjacent properties.
  - SWFWMD will require documentation from the State Forest regarding whether they will accept the displaced floodplain volume in lieu of floodplain compensation sites.

Environmental Look Arounds / Regional Stormwater Opportunities

- Inwood mentioned that the FDOT is considering regional stormwater opportunities or Environmental Look Arounds (ELA) in an effort to provide the most benefit to the environment.
- Monte and Kim were not aware of any regional stormwater opportunities along the project corridor.
- Monte suggested contacting David Kramer, the SWFWMD Environmental Resource Permit (ERP) Manager for regional stormwater discussions.

Environmental Discussions

- Wetland impacts have been estimated for the roadway widening alternatives but not the alternatives stormwater ponds. Inwood indicated the pond sites have been located to avoid impacting wetlands as much as possible and where feasible.
- State Forest staff also expressed concerns regarding the placement of pond sites in uplands within the Forest as these areas support concentrations of listed species.
- Monte inquired about mitigation. Casey stated no credits have been set aside for this project. This project could potentially be a candidate for Senate Bill, Permittee-Responsible Mitigation, or other innovative mitigation options. Kim suggested contacting Philip Rhinesmith. Mr. Rhinesmith reviews Senate Bill projects in the project area.
- Kim inquired about the status of the Sovereign Submerged Lands (SSL) designation over the Withlacoochee River. If there is an existing SSL easement, it will potentially need to be amended. If there is not an existing SSL easement, one will need to be obtained.

West SR 50 PD&E Study from US 301 to CR 33
Hernando, Sumter and Lake County
FPID 435859-2-22-01
SWFWMD Pre App Meeting

July 27th, 2017, 3:00 PM
SWFWMD Brooksville Office

Sign-in Sheet

Name	Representing	Phone	E-mail
Lorena Cucek – via phone	FDOT	386-943-5392	Lorena.cucek@dot.state.fl.us
Casey Lyon	FDOT	386-943-5436	Casey.lyon@dot.state.fl.us
Karen Snyder	FDOT	386-943-5434	Karen.snyder@dot.state.fl.us
Monte Ritter	SWFWMD	352-796-7211	Monte.Ritter@swfwmd.state.fl.us
Kim Dymond	SWFWMD	352-796-7211	Kim.Dymond@swfwmd.state.fl.us
Melissa Gulvin	SWFWMD	352-796-7211	Melissa.Gulvin@swfwmd.state.fl.us
Jack Freeman	Kittelson & Associates	407-540-0555	jfreeman@kittelson.com
Renato Chuw	Inwood	407-971-8850	rchuw@inwoodinc.com
Sean Carrigan	Inwood	407-971-8850	scarrigan@inwoodinc.com
Jada Barhorst	Inwood	407-971-8850	jbarhorst@inwoodinc.com

West SR 50 PD&E Study from US 301 to CR 33
Hernando, Sumter and Lake County, FL
FPID 435859-2-22-01
FDOT ETDM 14269
Thursday, July 27th, 2017
SWFWMD Pre App Meeting – Brooksville

AGENDA

- **Introductions**

- **Project Overview**
  - Project limits from US 301 to CR 33 (Hernando, Sumter and Lake Co.)
  - Approximately 19.5-mile corridor
  - Evaluate widening alternatives of SR 50
  - Four project segments
    - A – US 301 to Hernando/Sumter Co. Line
    - B – Hernando/Sumter Co. Line to SR 471
    - C – SR 471 to Lee Road
    - D – Lee Road to CR 33
    - Typical sections evaluated (passing lanes, 4-lane rural divided, 4-lane urban divided
  - Evaluate stormwater management alternatives and floodplain impacts and compensation
    - Document in the Pond Siting Report
    - Document in the Location Hydraulic Report

- **Existing Drainage**
  - Green Swamp Basin
  - SWFWMD jurisdiction west of Sumter/Lake Co Line
  - SJRWMD jurisdiction east of Sumter/Lake Co Line
  - Roadside swales, side drains and cross drains
    - 46 cross drains, bridge over Withlacoochee River and a bridge culvert
  - Floodplains (Zone AE – west of the river, Zone A east of the river)
    - Established model? FEMA or SWFWMD?
  - OFW – Withlacoochee River System and Chassahowitzka National Wildlife Refuge
  - WBID impairments
    - 1329F – Withlacoochee River – mercury only
    - 1378 – Big Gant Canal – nutrients (Chlorophyll-a)
    - Others – not impaired
  - Karst areas
  - Existing permits

- **SWFWMD water quality/quantity and permitting criteria**
  - Public transportation projects

        - 1” over DCIA
        - Net new vs. total impervious, reconstruction vs. overbuild
    - 50% additional treatment for OFW
        - Direct or indirect discharges?
    - Nutrient loading reductions in impaired waterbodies
        - BMPTRAINS
        - Direct or indirect connections?
    - Karst areas criteria
        - Pond depth
    - Quantity
        - Open and closed basins
        - Over-attenuation in some areas

- **Proposed Stormwater Management**
    - Evaluating 3 stormwater ponds per basin
    - 37 total basins for entire corridor
        - 27 basins within SWFWMD
        - 10 basins within SJRWMD

- **Floodplain impacts/compensation**
    - Approximately 122 ac-ft of impacts (total corridor)
    - Conservative estimate – based on 4-lane widening alternative
    - Zone AE elevations from US 301 to Hernando/Sumter Co Line
    - Mostly Zone A east of Hernando/Sumter Co Line
    - Compensation approach – cup for cup, dedicated offsite floodplain comp. sites

- **Withlacoochee State Forest**
    - Basins 3 through 12
    - Stormwater management alternatives other than offsite ponds
        - Linear swales within R/W – dry detention acceptable?
        - BAM
        - Compensating treatment
        - Other?
    - Floodplain compensation alternatives

- **Environmental Look Arounds / Regional Stormwater Opportunities**

- **Environmental Discussions**

THIS FORM IS INTENDED TO FACILITATE AND GUIDE THE DIALOGUE DURING A PRE-APPLICATION MEETING BY PROVIDING A PARTIAL "PROMPT LIST" OF DISCUSSION SUBJECTS. IT IS NOT A LIST OF REQUIREMENTS FOR SUBMITTAL BY THE APPLICANT.

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
RESOURCE REGULATION DIVISION
PRE-APPLICATION MEETING NOTES

FILE NUMBER:

PA 404764

Date:	7/27/2017
Time:	3:00
Project Name:	FDOT West SR50 PD&E Study
District Engineer:	Monte Ritter
District ES:	Kim Dymond
Attendees:	Renato Chuw, Jack Freeman, Jada Barhorst,, Sean Carrigan, Casey Lyon (via telephone), Lorena Cucek (via telephone)

County:	Hernando/Sumter/Lake	**Sec/Twp/Rge:**	12/23/21;3-4,7-9/23/22;22-24,27,34 /22/22;12-16,19-21/22/23;14-18/22/24
Total Land Acreage:		**Project Acreage:**	acres

Prior On-Site/Off-Site Permit Activity:

- ETDM 14269; ERP 4773.006

Project Overview:

- PD&E study evaluating widening alternatives for SR 50 from US 301 to CR 33. Four phases of construction: (1) Us 301 to Hernando/Sumter county line; (2) Hernando/Sumter county line to SR 471; (3) SR 471 to Sumter/Lake county line; (4) Sumter/Lake county line to CR 33. Discussion focused on water quality and quantity requirements. For portions of the project discharging to the Withlacoochee State Forest, alternative treatment and attenuation methods, other than typical off-site stormwater ponds, were discussed. Acceptable treatment alternatives can include the use of isolated wetlands treatment within the forest (which would require an easement or other legal evidence of control by FDOT) with pre-treatment swales being provided in the R/W or providing full treatment in roadside swales. Water quantity attenuation or floodplain compensation may not be required for discharges to the forest if concurrence documentation is provided from the State and increased flooding does not occur on other privately owned lands.
- Project lies within SWFWMD and SJRWMD jurisdictions. If entire project is to be permitted by the SWFWMD, an Interagency Agreement with SJRWMD will be required.

Environmental Discussion: (Wetlands On-Site, Wetlands on Adjacent Properties, Delineation, T&E species, Easements, Drawdown Issues, Setbacks, Justification, Elimination/Reduction, Permanent/Temporary Impacts, Secondary and Cumulative Impacts, Mitigation Options, SHWL, Upland Habitats, Site Visit, etc.)

- Provide the limits of jurisdictional wetlands.
- Project will entail unknown acres of wetland impacts, depending on which design alternative is used.
- Provide appropriate mitigation using UMAM for impacts, if applicable.
- Will need to address elimination/reduction criteria in detail since project occurs within OFW and preserved lands.
- Maintain minimum 15 foot, average 25 foot wetland conservation area setback or address secondary impacts.
- Maintain wildlife corridors.
- Outstanding Florida Water rules apply. Project area is within the Withlacoochee River System and Chassahowitzka National Wildlife Refuge.
- The project may propose to attenuate/treat in wetlands. Need to demonstrate that adverse impacts to the wetland hydroperiods will not occur by providing hydrographs of the 2.33 year mean annual storm. The graph should start and end at the pop-off elevation with Existing Condition and Proposed Condition hydrographs superimposed for comparison. Need to provide a supporting narrative for the hydrographs explaining any variations that are shown. The invert of the agricultural ditches may be the existing 'pop-off' elevation, or SHWL of the wetland and may need to be considered when designing the storm water management system.
- Federal Supplemental Application Form - to be used with the Joint Application form under SWERP 2 (SWERP 2 has not been approved yet). This form will not be incorporated into rule but will be added to the

electronic application. The Corps has requested that we begin using this form now to help them gather the information they need to process their permits. This should be provided during any pre-application meeting that proposed work in, on or over wetlands or surface waters.

Site Information Discussion: (SHW Levels, Floodplain, Tailwater Conditions, Adjacent Off-Site Contributing Sources, Receiving Waterbody, etc.)

- Watersheds (within SWFWMD boundaries) – Eastern Hernando, Little Withlacoochee, Gant Lake, Jumper Creek, and Big Prairie. To date, 100-year flood elevations have been determined in each watershed, except for Jumper Creek.
- The project lies within WBIDs 1390, 1388, 1329F, 1381, 1378, 1383, 1360B, and 1359D. All of the listed WBIDs, except for WBID 1378 (Big Gant Canal) are not currently listed as impaired. Big Gant Canal is currently listed as impaired for nutrient related pollutants. WBIDs need to be independently verified by the consultant
- Open and closed basins
- Document/justify SHWE's at pond locations, wetlands, and OSWs.
- Determine normal pool elevations of wetlands (if isolated wetlands treatment is proposed.).
- Determine 'pop-off' locations and elevations of wetlands.
- Provide documentation to support tailwater conditions for quality and quantity design. Can use data from listed watershed studies.
- Proposed control structures in wetlands should be consistent with existing 'pop-off' elevations of wetlands; demonstrate no adverse impacts to wetland hydroperiod for up to 2.33yr mean annual storm.
- OFW's – Withlacoochee River System and Chassahowitzka National Wildlife Refuge.
- Contamination issues need to be resolved with the FDEP. Check FDEP MapDirect layer for possible contamination points within the project area. FDEP MapDirect Link
- Any wells on site should be identified and their future use/abandonment must be designated.
- District data collection site may be impacted by proposed construction. Contact Granville Kinsman at Ext 4284 or granville.kinsman@watermatters.org to coordinate relocation of District data collection site.

Water Quantity Discussions: (Basin Description, Storm Event, Pre/Post Volume, Pre/Post Discharge, etc.)

- Demonstrate that post development peak discharges from proposed project area will not cause an adverse impact for a 25-year, 24-hour storm event.
- For projects or portions of projects that discharge to a closed basin, limit the post-development 100-year discharge volume to the pre-development 100-year, 24-hour volume.
- Demonstrate that site will not impede the conveyance of contributing off-site flows.
- Demonstrate that the project will not increase flood stages up- or down-stream of the project area(s).
- Provide equivalent compensating storage for all 100-year, 24-hour floodplain impacts if applicable. Providing cup-for-cup storage in dedicated areas of excavation is the preferred method of compensation, if no impacts to flood conveyance are proposed and storage impacts and compensation occur within the same basin. In this case, tabulations should be provided at 0.5-foot increments to demonstrate encroachment and compensation occur at the same levels. Otherwise, storage modeling will be required to demonstrate no increase in flood stages will occur on off-site properties, using the mean annual, 10-year, 25-year, and 100-year storm events for the pre- and post-development conditions.

Water Quality Discussions: (Type of Treatment, Technical Characteristics, Non-presumptive Alternatives, etc.)

- Presumptive Water Quality Treatment for Alterations to Existing Public Roadway Projects:
  -Refer to Section 4.5 A.H.V.II for Alterations to Existing Public Roadway Projects.
  -Refer to Sections 4.8, 4.8.1 and 4.8.2 A.H.V.II for Compensating Stormwater Treatment, Overtreatment, and Offsite Compensation.
  -All co-mingled existing & new impervious that is proposed to be connected to a treatment pond will require treatment for an area equal to the co-mingled existing & new impervious (times ½" for dry treatment or 1" for wet treatment). This applies whether or not equivalent treatment concepts are used.
  -However, if equivalent treatment concepts are used it is possible to strategically locate the pond(s) so that the minimum treatment requirement may be for an area equivalent to the new impervious area only. That is, co-mingled existing & new impervious that is not connected to a treatment pond may bypass treatment (as per Section 4.5(2), A.H.V.II); if the 'total impervious area' that is connected to the treatment pond(s) is at least equivalent to the area of new impervious only. The 'total impervious area' that is connected to the pond(s) may be composed of co-mingled existing & new impervious.
  -Offsite impervious not required to be treated; but may be useful to be treated when using equivalent treatment concepts.

-Existing treatment capacity displaced by any road project will require additional compensating volume. Refer to Subsection 4.5(c), A.H.V.II.

- Will acknowledge compensatory treatment to offset pollutant loads associated with portions of the project area that cannot be physically treated.
- Provide additional 50% treatment for any direct discharges to OFW. Refer to ERP Applicant's Handbook Vol. II Subsection 4.1(f).
- Please be advised that although use of isolated wetlands for ERP treatment purposes is permittable as per Section 4.1(a)(3), A.H.V.II, use of isolated wetlands for treatment purposes may not necessarily meet US Army Corps criteria.
- Net improvement
  -Refer to rule 62-330.301(2), F.A.C.
  -Please verify accuracy of WBID boundaries and status of impairment.
  -The application must demonstrate a net improvement for nutrients within WBID 1378. Applicant may demonstrate a net improvement for the parameters of concern by performing a pre/post pollutant loading analysis based on existing land use and the proposed land use. Refer to ERP Applicant's Handbook Vol. II Subsection 4.1(g).
  -Effluent filtration is known to be ineffective for treating nutrient related impairments, unless special nutrient adsorption media provided. However, please note special nutrient adsorption media has extremely low conductivity values compared to typical sand type effluent filtration filter media. Note: if treatment volume required for net improvement is less than the treatment volume required for 'presumptive' treatment, then use of effluent filtration is ok.

Sovereign Lands Discussion: (Determining Location, Correct Form of Authorization, Content of Application, Assessment of Fees, Coordination with FDEP)

- The project may be located within state owned sovereign submerged lands (SSSL) (i.e. Little Withlacoochee River). Be advised that a title determination will be required from FDEP to verify the presence and/or location of SSSL.
- If use of SSSL is proposed, authorization will be required in the form of modifying the existing Public Easement or recording a new Public Easement. Refer to Chapter 18-21, F.A.C. and Chapter 18-20, F.A.C. for guidance on projects that impact SSSL and Aquatic Preserves.

Operation and Maintenance/Legal Information: (Ownership or Perpetual Control, O&M Entity, O&M Instructions, Homeowner Association Documents, Coastal Zone requirements, etc.)

- The permit must be issued to entity that owns or controls the property.
- Provide evidence of ownership or control by deed, easement, contract for purchase, etc.

Application Type and Fee Required:

- SWERP Individual – Sections A, C, and E of the ERP Application. Fee will be based on project size and wetland impacts.
- Consult the fee schedule for different thresholds.

Other: (Future Pre-Application Meetings, Fast Track, Submittal Date, Construction Start Date, Required District Permits – WUP, WOD, Well Construction, etc.)

- An application for an individual permit to construct or alter a dam, impoundment, reservoir, or appurtenant work, requires that a notice of receipt of the application must be published in a newspaper within the affected area. Provide documentation that such noticing has been accomplished. Note that the published notices of receipt for an ERP can be in accordance with the language provided in Rule 40D-1.603(10), F.A.C.

- The plans and drainage report submitted electronically must include the appropriate information required under Rule 61G15-23.005(3)(d), F.A.C. The following text is acceptable to the Florida Board of Professional Engineers (FBPE) to meet this requirement and must appear where the signature would normally appear:

  [Licensee] State of Florida, Professional Engineer, License No. X
  This item has been electronically signed and sealed by [Licensee, PE] on [DATE] using a SHA-1 authentication code. Printed copies of this document are not considered signed and sealed and the SHA-1 authentication code must be verified on any electronic copies
- Provide soil erosion and sediment control measures for use during construction. Refer to ERP Applicant's Handbook Vol. 1 Part IV Erosion and Sediment Control.
- Demonstrate that excavation of any stormwater ponds does not breach an aquitard (see Subsection 2.1.1, A.H.V.II) such that it would allow for lesser quality water to pass, either way, between the two systems. In

those geographical areas of the District where there is not an aquitard present, the depth of the pond(s) shall not be excavated to within two (2) feet of the underlying limestone which is part of a drinking water aquifer. [Refer to Subsection 5.4.1(b), A.H.V.II]

- If lowering of SHWE is proposed, then burden is on Applicant to demonstrate no adverse onsite or offsite impacts as per Subsection 3.6, A.H.V.II. Groundwater drawdown 'radius of influence' computations may be required to demonstrate no adverse onsite or offsite impacts. Please note that new roadside swales or deepening of existing roadside swales may result in lowering of SHWE. Proposed ponds with control elevation less than SHWE may result in adverse lowering of onsite or offsite groundwater.

Meeting Minutes

3000 Dovera Drive, Suite 200, Oviedo, FL 32765 I P: 407-971-8850 I F: 407-971-8955 I www.inwoodinc.com

DATE: July 26, 2017

TO: **Jack Freeman, P.E., PTOE**

FROM: Jason Houck, GISP, PWS

RE: FPID 435859-2-22-01
SR 50 PD&E Study from US 301 to CR 33 in Hernando, Sumter, and Lake Counties
Coordination meeting with Florida Forest Service and Florida Department of Environmental Protection

CC: Attendees

A meeting was held between the Florida Department of Transportation (FDOT), the Florida Forest Service (FFS), the Florida Fish and Wildlife Conservation Commission (FWC), and the Florida Department of Environmental Protection (FDEP) to discuss the on-going PD&E study along the SR 50 corridor from US 301 to CR 33. Attendees included Vince Morris, Colleen Werner, and Keith Mousel (FFS); Rick Spratt (FWC); Brad Richardson (FDEP, via phone); Lorena Cucek, Casey Lyon (via phone), Cathy Owen, Bill Walsh, Heather Chasez , Su Hao (via phone), Jesse Blouin (via phone), and Todd Helton (via phone) (FDOT); Jack Freeman (Kittleson); Steven RabbySmith (via phone)(SEARCH); and Jason Houck and Renato Chuw (via phone) (Inwood). A copy of the sign-in sheet and agenda has been included as an attachment to this memorandum. The following provides a summary of the issues discussed at the meeting.

Jack began the meeting with introductions, a brief summary of the previous work completed, and the on-going work to date. He discussed the recent public workshop where the 3 and 4-lane roadway alternatives, stormwater management site alternatives, and floodplain compensation (FPC) sites were presented to the public. He stated the project team was getting close to completing the project's data collection phase including most of the engineering and environmental data collection. It was also discussed the week-long Value Engineering Study will be conducted on September 11-15.

Jack discussed how the project had been broken into four segments:

Segment A: US 301 to the Hernando/Sumter C/L (Little Withlacoochee River bridge) – includes 3 and 4-lane options

Segment B: Hernando/Sumter C/L to SR 471 – includes 3 and 4-lane options

Segment C: SR 471 to Lee Road – includes 4-lane rural and 4-lane high speed urban options

Segment D: Lee Road to CR 33 – includes 4-lane urban (45 mph) option

Jack added the evaluation of the 3 and 4-lane options was ongoing and the No-Build option would continue to be evaluated through the course of the study.

Renato stated there is a total of 37 basins in the project and three stormwater management ponds were being evaluated per basin. Vince asked if basins were the same thing as watersheds. Jason added they were similar, but to a smaller extent. Keith added they were based on local topography.

Casey asked about the Environmental Look Around process. Renato responded by stating it was ongoing. Keith responded by asking how many ponds were located within the Forest (Withlacoochee State Forest). Renato responded by saying the Forest included Basins 3-12 but Basin 12 has some pond alternatives located outside of the Forest boundary.

Colleen requested a digital file for the pond and FPC sites. Jason responded saying Inwood would provide an ArcGIS shapefile with the information requested.

Vince asked how the ponds and FPC sites were sized. Jack responded saying they were sized for the 4-lane option showing the "worst case" scenario. Vince responded by asking which were the preferred ponds and what was the philosophy behind the sizing and selection of the locations. Keith added the pond locations have the potential to restrict fire management, especially from the road. Casey responded by saying the Environmental Look Around will include this.

Jason stated there may be options to reduce or eliminate ponds within the Forest. Two options to consider were (1) activated media and (2) compensatory treatment.

> Activated Media – This consists of a substrate (usually ground tires) that has been inoculated with a bacterial culture that can remove nutrients, primarily nitrogen and phosphorus, from stormwater. It can be installed in swales or on roadway side slopes where the water can sheet flow over. It is advantageous to use in environmentally sensitive areas where there is less concern with attenuation and you want to eliminate the increase footprint caused by a traditional stormwater pond. The FDOT has permitted the use of activated media on SR 40 in Marion County where the roadway is adjacent to Silver River State Park, the Marjory Harris Greenway, and the Ocala National Forest.
>
> Compensatory Treatment – This consists of "over treating" a portion of the roadway outside of an environmentally-sensitive area and not treating the area within the environmentally-sensitive area in order to eliminate the increased footprint associated with the construction of stormwater ponds resulting in no net water quality impacts. For example, if the 4-lane section was adopted, the FDOT would be required to treat the "new" impervious area, which would be two new lanes within the corridor. If compensatory treatment was utilized, FDOT would treat both the existing and new lanes in areas where a larger pond would constitute less of an environmental impact and eliminate ponds in the areas where the pond footprint would be problematic.

It was mentioned that a meeting will be held with SWFWMD on July 27 to discuss the drainage for this project and specifically any other alternatives in lieu of having offsite ponds.

Brad asked if any of the basins in the project were closed. Renato responded by stating that ultimately everything discharges to the Little Withlacoochee River and we did not have any closed basins.

Keith asked how many FPC sites there were. Renato responded by stating that there are a total of 45 acres of FPC sites within the Forest. Casey added that FPC sites are generally located within the ROW, but can be placed elsewhere with a drainage easement. Keith responded that portions of the project outside of the existing DOT ROW may have been originally purchased under the Land Resettlement Act in the 1930's. This agreement has a reverter clause saying if the land is not used for conservation it reverts back to the federal government. Using this land for stormwater ponds of FPC sites may require federal approval. He suggested reaching out to FDOT District 7 regarding a similar situation on the I-75 widening. Lorena responded saying that she would contact District 7 for details. Keith noted the Forest land east of SR 471 is CARL land, which would go to ARC.

Jason gave an update on the environmental work completed to date. Vince asked about using an existing borrow pit within the Forest. Jason responded saying the water management district is generally not favorable in doing this as borrow pits are deep and can have more impact on the aquifer. Jason also noted the borrow pit will become a natural wetland over time. Casey asked about an MOU that would allow for gopher tortoises relocated as part of the project remain on FFS lands. Vince stated that they did not have many gopher tortoises along the corridor, but there were some, and he would be interested in that.

Colleen said she would send FDOT an updated GIS file of rare plants in the Forest.

Cathy asked Steve t give an overview of the archeological survey that was conducted. Steve stated that a total of eight lithic sites had been identified thus far, six of which were thought to be new sites. He noted that analysis was ongoing regarding the significance of these resources. Cathy told Colleen that she could provide a copy of the CRAS to FFS.

Keith stated the Forest was used as a bombing range during World War II. FFS has some documentation from the US Army Corps of Engineers regarding work they have done. A CD of this work plan was provided.

Jack provided a handout summarizing the written comments received at the two Alternatives Public Workshops. There were approximately 60 persons attending the July 11th meeting in Mascotte and 70 persons attending the July 13th meeting in Ridge Manor. We received 32 written comments providing 42 different comments. Twenty-two of the comments provided a typical section preference. About 5% said no-build and 5% said the 3-lane improvement. The remainder 90% expressed support of the 4-lane widening. The handout (copy attached) provided greater detail regarding the typical section comments received.

Jack discussed the project's Purpose and Need stating the two fundamental reasons for the study is to improve traffic service and safety. Using the Alternative Public Workshop graphic, he explained by the 2045 design year the existing roadway would be operating at level of service (LOS) E and F throughout the corridor. With adding the passing lanes between US 301 and SR 471, LOS C can be attained in 2045 but the passing lanes were sized to meet the LOS C minimum requirement. The target LOS for the rural areas is LOS C. For the 4 lanes, LOS A can be achieved between US 301 and SR 471. Regarding safety, there have been 5 fatalities in using the 2011 to 2015 crash data. This can be expanded for the roadway improvement's 20 year life cycle to be 20 fatalities. From Highway Safety Manual analysis, it is forecasted the 3 lane roadway will have a 15 to 25% reduction in crashes where the 4-lane roadway will have a 50 to 60% reduction. If we build 3 lanes, this will reduce to 15 to 17 deaths. If we build 4 lanes, this will reduce the deaths to less than 10 over the 20 years. Jack also noted hurricane evacuation and system connectivity with existing 4 lanes both east and west of the project's study area and Purpose and Need considerations.

Keith asked when the project would get started (construction). Lorena responded by giving a timeline of the process, adding that there is currently no funding for anything past design but, assuming a perfect scenario, construction could take place in 2024-2027. Keith asked what was FDOT's preference for the alternatives. Lorena responded by stating that the analysis is on-going and a preferred alternative had not been selected yet.

Vince discussed the need to accommodate the SR 50 crossing of the two existing hiking trails. We discussed the potential of combining the hiking and wildlife crossings together. Both Vince and Rick said there are currently few bears in the Forest and the wildlife crossings are primarily need to accommodate snakes and alligators. FWC would negotiate the wildlife crossings. There is the potential to add a shelf above design high water for animals to cross. We also discussed having an overpass for humans to cross. A similar example on SR 200 was noted. The need for ADA compliance was noted and the expense of these crossings. The potential to reroute one trail to have the crossing associated with the Withlacoochee River bridge was discussed.

Jack continued the discussion of ROW needs stating that it was likely that no ROW would be needed for the roadway widening in Hernando County. In Sumter County, the Segment B 3-lane option needs 22 feet on each side for the north and south widening and 16 on each side for the centered widening. The Segment B 4-lane option needs 88 feet on each side for the north and south widening or 44 feet for the centered widening. He added that the MPO has requested that a multi-use trail be included between US 301 and SR 471 along the SR 50 corridor. This request is currently being evaluated.

Regarding mitigation, Vince has developed a list of desired mitigation options developed by local FFS staff and agreed to provide it. Casey asked if he had or would be willing to identify potential parcels for acquisition to offset any ROW takes. Vince said he could.

*Note: The above reflects the writer's understanding of the content of the discussions that took place at the meeting. If any misrepresentations, inaccuracies or omissions are identified, please contact Jason Houck at (407) 971-8850 (*JHOUCK@INWOODINC.COM*) as soon as possible for resolution and revision, if necessary.*

SR 50 PD&E Study
FL Forest Service/FDEP Coordination Meeting

FPID: 435859-2-22-01

July 25, 2017

Name	Organization	Address	E-mail
Jason Houck	Inwood	3000 Dovera Drive Oviedo, FL 32765	jhouck@inwoodinc.com
Colleen Werner	FFS	15019 Broad St Brooksville 34601	Colleen.Werner@freshfromflorida.com
Vincent Morris	FFS	"	Vincent.morris@freshfromflorida.com
Keith Mousel	FFS	"	Keith.mousel@freshfromflorida.com
Rick Spratt	FWC	8864 CR 247 Lake Panasoffkee, FL 33538	Rick.Spratt@MyFWC.com
Heather Chasez	FDOT	719 S. Woodland Blvd DeLand	heather.chasez@dot.state.fl.us
Bill Walsh	FDOT	" "	william.walsh@dot.state.fl.us
Lorena Cucek	FDOT	" "	Lorena.cucek@dot.State.FL.us
Cathy Owen	FDOT	" "	Catherine.owen@dot.state.FL.us
Jack Freeman	Kittelson	225 E. Robinson St Suite 450 Orlando, FL	Jfreeman@Kittelson.com

From the 32 completed comment forms, the public provided 42 different comments. Twenty of the 42 were unrelated to a preferred typical section – those are provided at the end of this summary.

For comments pertaining to preferred typical sections, people indicated if they wanted the no-build, 3-lane, or 4-lane options (and which direction they wanted it widened). No one specified between rural or high speed east of S.R. 471.

U.S. 301 to S.R. 471

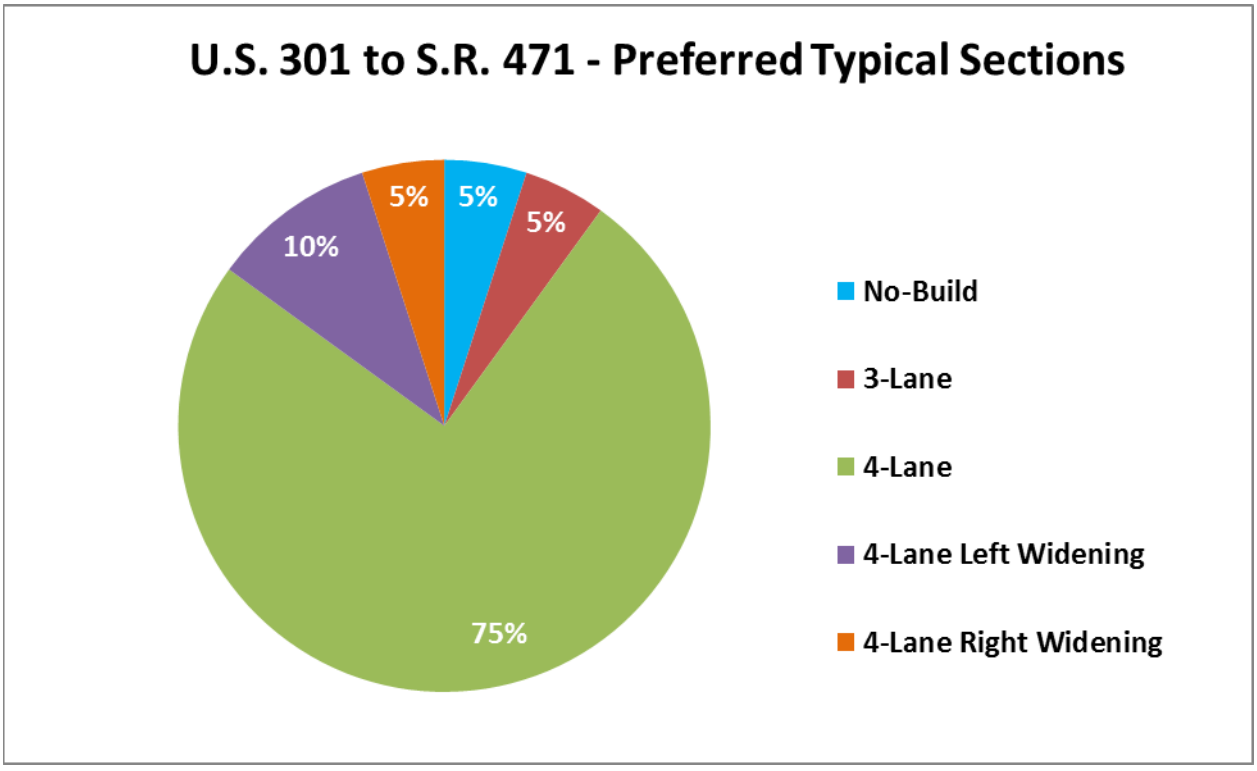
- 1 comment for no-build through the forest
- 1 comment for 3-lanes
- 7 comment for 4-lanes
- 2 comment for 4-lanes widened to the north

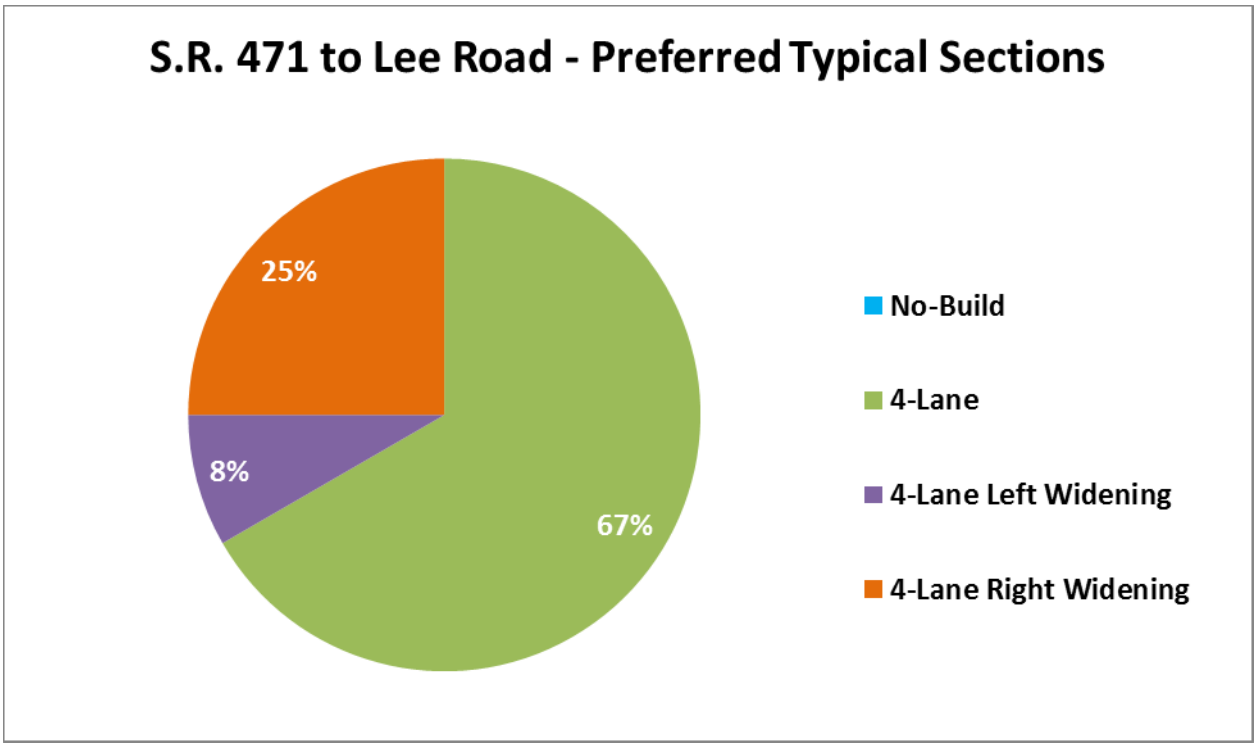
S.R. 471 to Lee Road

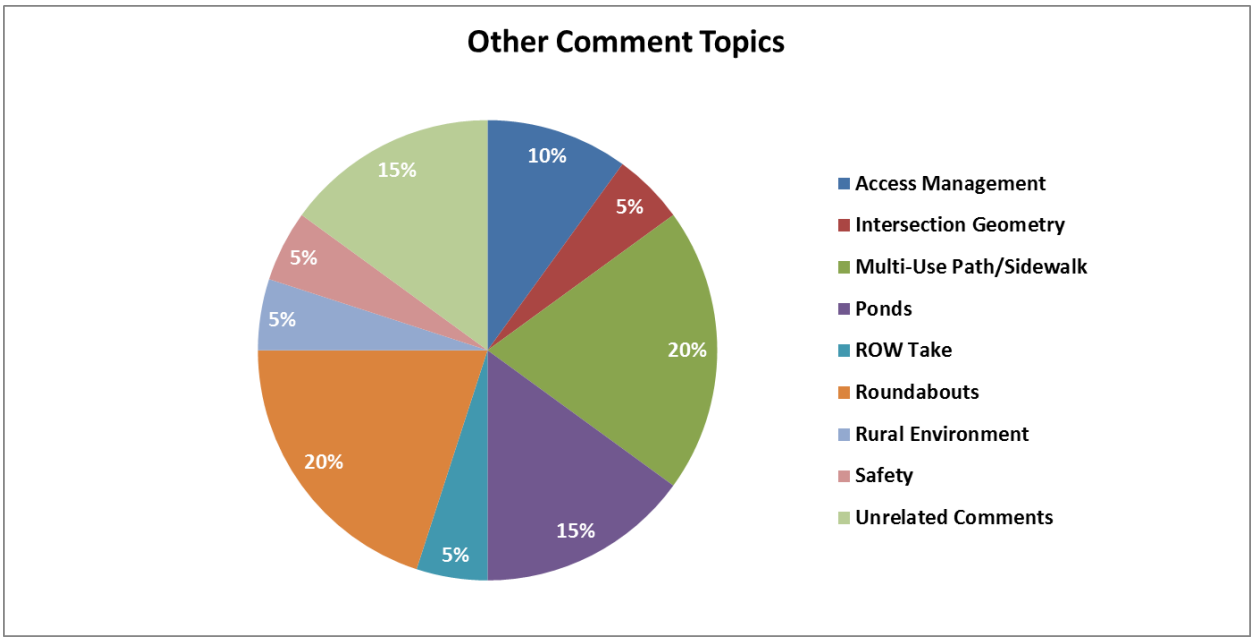
- 1 comment for 4-lanes widened to the north
- 2 comment for 4-lanes widened to the south

Entire Corridor

- 8 comments for 4-lanes
- 1 comment for 4-lanes widened to the south




S.R. 471 to Lee Road - Preferred Typical Sections
25%
8%
67%
No-Build
4-Lane
4-Lane Left Widening
4-Lane Right Widening


Other Comment Topics
10%
5%
20%
15%
5%
20%
5%
5%
15%
Access Management
Intersection Geometry
Multi-Use Path/Sidewalk
Ponds
ROW Take
Roundabouts
Rural Environment
Safety
Unrelated Comments

Comments on Preferred Typical Sections:

1. No-build
    a. No widening through segment A due to state forest/rare plants & animals (implies no widening in segment B)
2. 3-Lane
    a. Prefer A-1, B-1, B-2, and B-3 to minimize impacts to environment but help safety and traffic
3. 4-Lane
    a. 4-lanes all the way widened to the south side
    b. 4-lanes widened to north side west of Lee Road
    c. 4-lanes widened to south side west of Lee Road
    d. 4-lanes for storm evacuation traffic
    e. A-1, **A-2**, B-1, B-2, and B-3 are unacceptable (implies 4-lanes preferred)
    f. 4-lane to the north side near SR 471
    g. 3-lanes are dangerous (implies 4-lanes preferred)
    h. 4-lanes all the way
    i. Prefer A-2, B-4, C-3, C-6
    j. 4-lane, no 3-lane
    k. 4-lane, no 3-lane
    l. 4-lane all the way
    m. 4-lane, no 3-lane
    n. 4-lane all the way
    o. 4-lane all the way
    p. 4-lane all the way
    q. 4-lane, no 3-lane
    r. 4-lane all the way, no 3-lane
    s. 4-lane to SR 471, no 3-lane
    t. "Think ahead about purchasing land for a 6-lane widening – just in case – because it is probably more cost effective to do that now versus purchasing land for 4-lanes later when S.R. 50 is widened."

Comments Unrelated to Preferred Typical Sections:

1. “We like to see Tuscanooga Roundabout and Bay Lake Roundabout installed.”
2. “Why do we need sidewalk in the county?”
3. “There is a proposed retention pone over our house? Pond 32C”
4. “Need more median crossing spots from Tuscanooga to Lee.”
5. “All 3 retention ponds proposed on Marian Gardens property are a problem.”
6. “Concerning ROW take to my property, I’d like to understand and negotiate prices before anything is final”
7. “Concerned about access management to my business near SR 471.”
8. “Turn lanes for Tuscanooga, Lee, and Sloan Ridge.”
9. “I have existing problems from a DOT project concerning flooding – please call.”
10. “How safe can you get without dampening the rural atmosphere through Sumter – avoid commercial development along improved roadway.”
11. “Choose alternative that maximizes safety of motoring public.”
12. Bicycle traffic on 5-foot paved shoulder is completely unacceptable – take the long term solution even if it costs more money.”
13. “Roundabouts at major intersections will save lives.”
14. “Why does east Hernando always get the shaft; Springhill gets everything; we pay taxes and want our share of the pie.”
15. “Roundabouts are accident prone – make this safer, not more dangerous.”
16. “Consider separated multi-use path where sidewalk is proposed.”
17. “Consider building sub-base under medians for future lanes and to prevent more widening.”
18. “Interested in looking at currents plans for S.R. 50 from I-75 into Brooksville – should be in construction plans stage.”
19. “I like the proposed roundabouts – traffic calming and safer.”
20. “Prefer a multi-use path along 50 instead of the paved shoulder option.”

Mitigation Desires for State Road Widening DRAFT

Vincent Morris Resource Administrator, Withlacoochee State Forest

This is list of mitigation elements that could provide a net positive to the forest and make the project more acceptable to the Florida Forest Service. These mitigation measures have not been vetted with state office staff and are provided as a starting point for negotiations.

1- There should be a land acquisition that protect some of the appropriate species affected by the project. The most obvious choices would be the out parcel at Indian House Hammock, Pineola Hammock (Istachatta), or property associated with Jumper Creek. Exact property to be discussed later.
2- There should be a good human/wildlife crossing near the western hiking trail crossing (Segment A)
3- There should be additional small wildlife crossing(s) west of 471, possibly culverts (Segment A).
4- There should be an additional human crossing of some sort for the eastern hiking trail crossing possibly associated with the Little Withlacoochee River bridge.
5- There should be some minor animal crossing (culvert perhaps) in the eastern portion of the road (Segment C).
6- A SR 50 road option that is narrower (3 lanes) should be selected in the sweeping Indian House Hammock turn to narrow the footprint in this most valuable conservation area.
7- Rock that is removed from the project should be moved to places where it can serve as habitat (particularly rocks that already have flora growing on them).
8- Retention ponds should be designed to keep water flow patterns the same, and not damage mesic hammock/existing wetlands.
9- There should be permanent smoke signs that can be illuminated to warn motorists about prescribed burning/wildfire.
10- Equipment and road materials should not be stored where adverse impacts could occur to rare of sensitive species.
11- DOT should provide invasive weed control on disturbed road edges, retention ponds, floodplain compensation storage ponds.

Meeting Minutes

3000 Dovera Drive, Suite 200, Oviedo, FL 32765 I P: 407-971-8850 I F: 407-971-8955 I www.inwoodinc.com

DATE: May 8, 2018

TO: **Jack Freeman, P.E., PTOE**

FROM: Jason Houck, GISP, PWS

RE: FPID 435859-2-22-01

SR 50 PD&E Study from US 301 to CR 33 in Hernando, Sumter, and Lake Counties

Wildlife Crossings/Habitat Connectivity Coordination Field Review with Florida Forest Service, Florida Fish and Wildlife Conservation Commission, and Florida Department of Transportation Districts 5 & 7

CC: Attendees

A field review was held on April 16, 2018 between the Florida Department of Transportation (FDOT) Districts 5 and 7, the Florida Forest Service (FFS), and the Florida Fish and Wildlife Conservation Commission (FWC) to evaluate potential wildlife crossing/habitat connectivity enhancement locations along the SR 50 PD&E corridor from US 301 to CR 33 in Hernando, Sumter, and Lake counties. Attendees included Lorena Cucek, Heather Chasez, and Casey Lyon (FDOT D-5); Lilliam Escalera, Nicole Selly, and Ed Cronyn (FDOT D-7); Vince Morris (FFS); Terry Gilbert, Rick Spratt, and Sean Greene (FWC); Carolyn Malphurs (DRMP); Jason Houck and Ben Shepherd (Inwood).

A total of 21 potential crossing locations were reviewed consisting of 17 existing cross drains, the Withlacoochee River bridge, one upland crossing identified by FFS, the Florida Trail crossing, and one additional upland crossing identified by Inwood. The crossing locations evaluated are included in the attached matrix along with maps depicting their approximate locations. The goal of the field review was to gain consensus from the attending agency representatives on several key factors related to each location:

- Suitability of the location
- Exclusionary fencing limits/restrictions
- Target species/anticipated utilization
- Engineering constraints

Prior to the field review, the group was provided with a matrix containing the preliminary crossing evaluation conducted by Inwood following the March 1, 2018 meeting with FFS and FWC in which the desire to include wildlife crossings/habitat connectivity enhancements was expressed by FFS. The preliminary evaluation was based on the cross drain analysis conducted by Inwood drainage staff as part of the PD&E study. Existing cross drains within the Withlacoochee State Forest (WSF) were analyzed and recommended to be replaced if SR 50 was to be widened. As much of the corridor is wetland, the cross drains are located in areas unlikely to be traversed by large species such as bear or deer, which tend to move along riparian areas and ecological gradients. As such, recommendations for crossing structures in the immediate areas of existing cross drains will likely target small to medium-sized mammals and herps such as raccoons, snakes, and turtles. These crossings are anticipated to consist of complementary structures with invert elevations set higher (approx. 1 ft.) than the associated cross drains. This will allow the wildlife crossing to stay dry during normal rainfall events and facilitate movement of upland/terrestrial species during the wet season. Aquatic species such as alligators, otters, and amphibians will be able to use either the cross drain itself or the complementary structure.

Of the 17 cross drains evaluated, eight were determined to be worthy of additional evaluation. The Withlacoochee River bridge is currently planned to include a wildlife shelf, but additional accommodations may be made during the design phase of the project to increase the permeability of the river corridor itself. In addition, the three added locations, shown on the attached figures as WC-1, WC-2, and WC-3 were also recommended for further evaluation.

A specific request was made by Vince for the crossing at the WC-2 location which corresponds with the existing SR 50 crossing for the Florida Trail. He requested a large animal crossing, mostly likely a minimum size of 8'x8', to accommodate bears and also trail users. There was discussion amongst the group that introducing a potential human/bear conflict could be an issue or that the utilization by humans may decrease or discourage utilization by bears. Further discussion included implications associated with road height, tie-downs, and potential increased impacts. The consensus was that structures can be designed to accommodate both and that bears would learn to avoid the area when humans are around and would likely utilize the crossing when trail usage was low such as during nighttime hours.

3000 Dovera Drive, Suite 200, Oviedo, FL 32765 I P: 407-971-8850 I F: 407-971-8955 I www.inwoodinc.com

Vince expressed concerns regarding potential safety issues associated with at at-grade crossing for the Florida Trail once the road was widened. He recommended a grade-separated crossing as part of the proposed improvements to further enhance safety for trail users in the 4-lane condition. Further discussion revolved around whether a grade-separated crossing would consist of the above-mentioned dual purpose crossing or a separate facility.

Vince also requested an accommodation for the eastern hiking trail crossing in the area of CD-11 immediately west of the Little Withlacoochee River bridge. Factors discussed that would influence the decision regarding the structure included engineering constraints, acquisition of mitigation parcels, and permitting.

Terry expressed support for the potential modification of the Little Withlacoochee River Bridge landing areas (east and west) to increase passage by wildlife. He added that he would more strongly support the modification of the existing bridge using the new design released by the FDOT OEM (attached) for enhanced habitat connectivity under bridges.

Jason advised the group that the recommendations made during the PD&E study regarding wildlife crossing/habitat connectivity enhancements would be incorporated into the final Natural Resources Evaluation (NRE) report and would likely remain recommendations and not commitments. He added that additional engineering considerations would be required to finalize structure type and size, fencing limits, roadway profiles, environmental impacts, and permitting considerations. These steps would not be completed during the PD&E study and, if incorporated into the project, would be done so during the design and permitting phase.

Note: The above reflects the writer's understanding of the content of the discussions that took place at the meeting. If any misrepresentations, inaccuracies or omissions are identified, please contact Jason Houck at (407) 971-8850 (JHOUCK@INWOODINC.COM*) as soon as possible for resolution and revision, if necessary.*

Wildlife Crossings/Habitat Connectivity Preliminary Evaluation Matrix

Structure	Milepost	Station	Description	South Side FLUCFCS	North Side FLUCFCS	Remarks	Further Evaluation
CD-4	2.813	1925+79	Single 30" RCP	Freshwater Marsh (641)	Cypress (621)	Adjacent to intersection	N
CD-5	3.382	1955+73	Double 30"RCP	Cypress (621)	Cypress (621)	Deepwater cypress system	N
CD-6	4.37	2007+79	Double 36" RCP	Stream and Lake Swamps (615)	Stream and Lake Swamps (615)	Deepwater cypress system	N
CD-7	4.811	2031+63	Quadruple 48" RCP	Stream and Lake Swamps (615)	Stream and Lake Swamps (615)	Large existing crossdrain - fencing feasible	Y
CD-8	5.055	2044+55	Single 30" RCP	Stream and Lake Swamps (615)	Stream and Lake Swamps (615)	Deepwater cypress system	N
CD-9	5.207	2051+62	Single 30" RCP	Shrub and Brushland (320)	Stream and Lake Swamps (615)	Uplands on south side - riparian habitat connection	Y
CD-10	5.539	2070+22	Double 42" RCP	Stream and Lake Swamps (615)	Stream and Lake Swamps (615)	Deepwater cypress system	Y
CD-11	5.977	2093+10	Single 48" RCP	Stream and Lake Swamps (615)	Stream and Lake Swamps (615)	Deepwater cypress system	N
WITHLACOOCHEE RIVER BRIDGE	0.000-0.047	2098+00	250' Bridge	Stream and Lake Swamps (615)	Stream and Lake Swamps (615)	LRE estimate $40 million additional - Does not seem viable - look for enhancement for shorter bridge	Pending
CD-12	0.137	46+46	Single 48" RCP	Hardwood-Conifer Mixed Forest (434)	Wet Prairie (643)	Uplands on south side - riparian habitat connection	Y
CD-13	0.437	62+32	Double 8'x3' CBC	Hardwood-Conifer Mixed Forest (434)	Cypress (621)	Uplands on south side - riparian habitat connection	Y
CD-14	0.993	91+94	Single 8'x5' CBC	Cypress (621)	Cypress (621)	Large existing crossdrain - fencing feasible	Y
CD-15	1.225	103+92	Single 48" RCP	Tree Plantation (440)	Cypress (621)	Too close to FFS boundary - fencing not feasible on both sides	N
CD-30	2.752	164+77	Single 36" RCP	Freshwater Marsh (641)	Freshwater Marsh (641)	~500 feet from western FFS boundary - connects freshwater marsh system surrounded by forested uplands, fencing feasible	Y
CD-31	3.031	179+58	Single 24" RCP	Hardwood-Conifer Mixed Forest (434)	Wet Prairie (643)	South side of location is outside FFS lands	N
CD-32	3.451	201+63	Single 24" RCP	Stream and Lake Swamps (615)	Freshwater Marsh (641)	Connects march/shrub system surrounded by forested uplands, fencing feasible	Y
CD-33	3.708	215+22	Single 24" RCP	Stream and Lake Swamps (615)	Stream and Lake Swamps (615)	~100 feet from eastern FFS boundary, fencing not feasible	N
CD-38	5.952	333+21	Single 36" RCP	Wet Prairie (643)	Hardwood-Conifer Mixed Forest (434)	South side of location is outside FFS lands	N
WC-1	TBD	TBD	Upland Area	Pine Flatwoods (411), Hardwood-Conifer Mixed Forest (434), Cypress (621)	Pine Flatwoods (411), Hardwood-Conifer Mixed Forest (434), Freshwater Marsh (641)	Mosaic area near weatern WSF boundary just east of McKinney Sink Road. Most likely small structure for small/meso herps and mammals	Y
WC-2	TBD	TBD	Florida Trail	Pine Flatwoods (411)	Pine Flatwoods (411)	Florida Trail crossing. FFS requested large aniaml (bear) crossing that could potentiall accommodate trail users as well. The crossing would be located somewhere between CD-5 to the west and Porter Gap Rd. to the east.	Y
WC-3	TBD	TBD	Upland/Wetland Mosaic	Mixed Rangeland (330), Wet Prairie (643)	Coniferous Plantation (441), Mixed Wetland Forest (630)	Upland/wetland mosaic area within eastern section of WSF.	Y

0 1,000 2,000 Feet

Legend

- PROJECT LIMITS
- Proposed Upland Crossings
- Existing Trails
- 2000-FT BUFFER
- COUNTY LINE
- GOPHER TORTOISE BURROW
- EAGLE NEST
- BEAR ROADKILL
- SANDHILL CRANE NEST
- NUISANCE BEAR

CD-15
CD-14
CD-13
CD-12
CD-11
CD-10
CD-9
CD-8
CD-7
CD-6
CD-5
CD-4
WC-1
WC-2

Florida Department of Transportation
District 5

WEST S.R. 50 PD&E STUDY

From U.S. 301 to C.R. 33
Hernando, Sumter, and Lake Counties, Florida

Financial Project ID: 435859-1-22-01

WILDLIFE CROSSING/HABITAT CONNECTIVITY EVALUATION MAP - WESTERN WSF

Figure
1

0 1,000 2,000 Feet

Legend

- PROJECT LIMITS
- Proposed Upland Crossings
- Existing Trails
- 2000-FT BUFFER
- COUNTY LINE
- GOPHER TORTOISE BURROW
- EAGLE NEST
- BEAR ROADKILL
- SANDHILL CRANE NEST
- NUISANCE BEAR

WC-3

CD-38

CD-33

CD-32

CD-31

CD-30

Florida Department of Transportation

District 5

WEST S.R. 50 PD&E STUDY

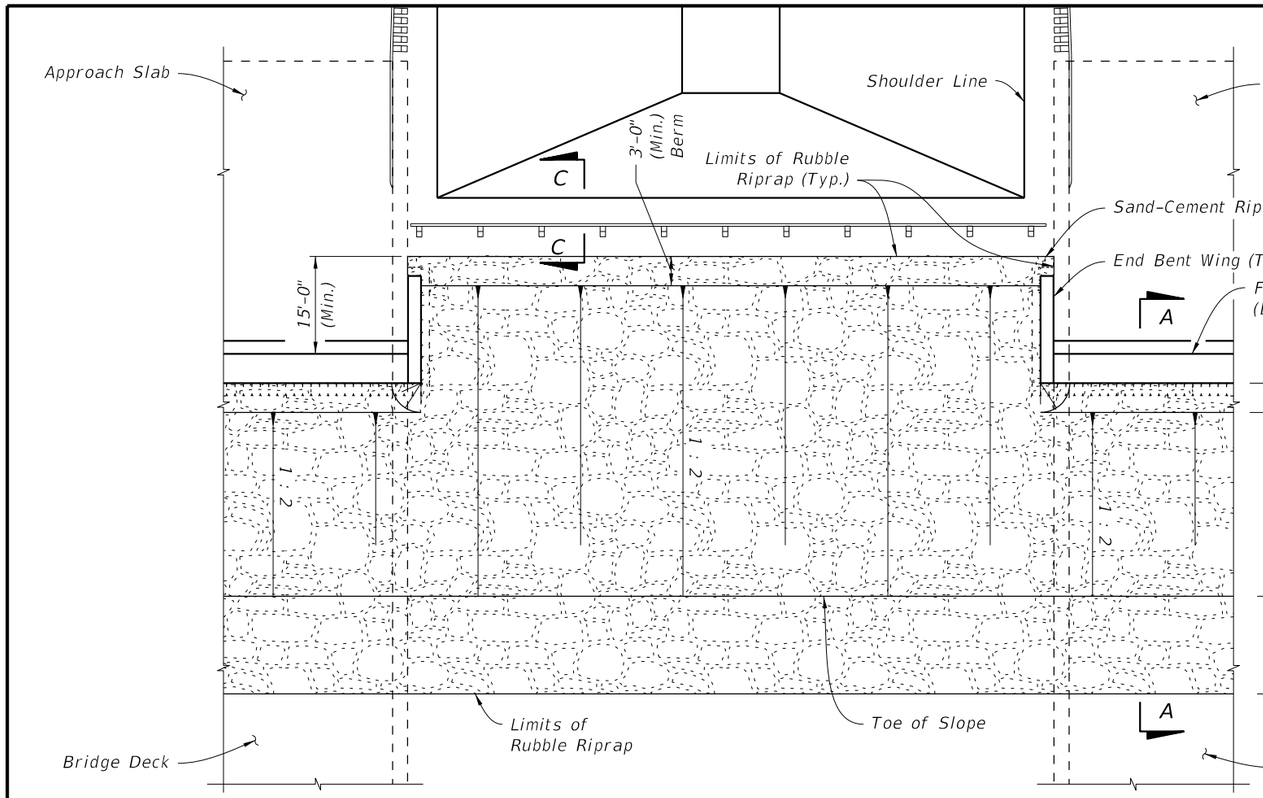
From U.S. 301 to C.R. 33
Hernando, Sumter, and Lake Counties, Florida

Financial Project ID: 435859-1-22-01

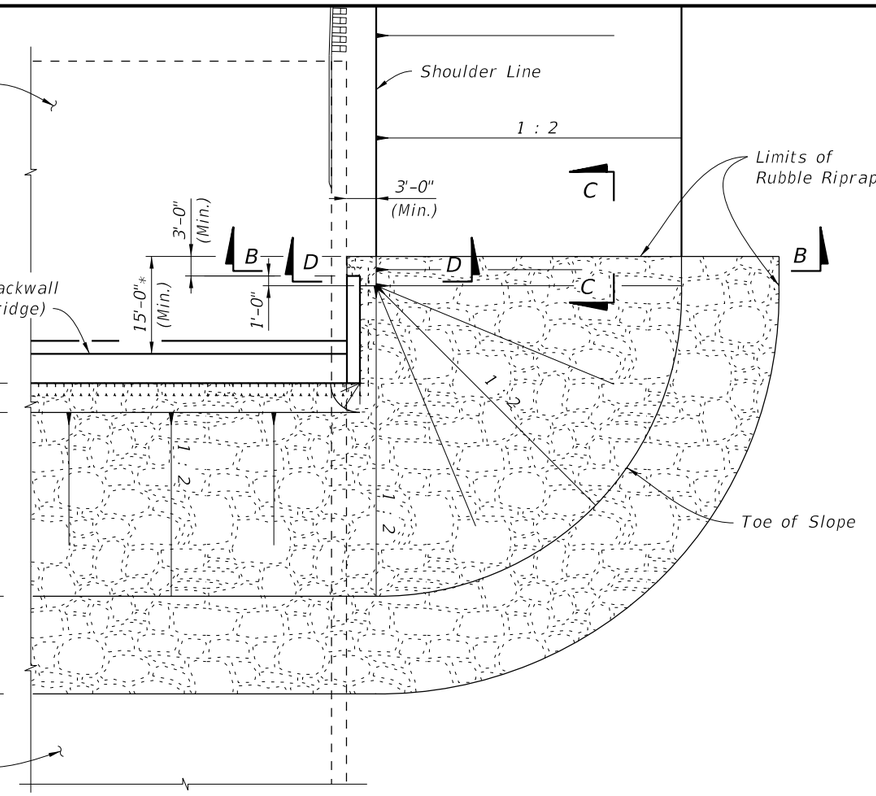
WILDLIFE CROSSING/HABITAT CONNECTIVITY EVALUATION MAP - EASTERN WSF

Figure

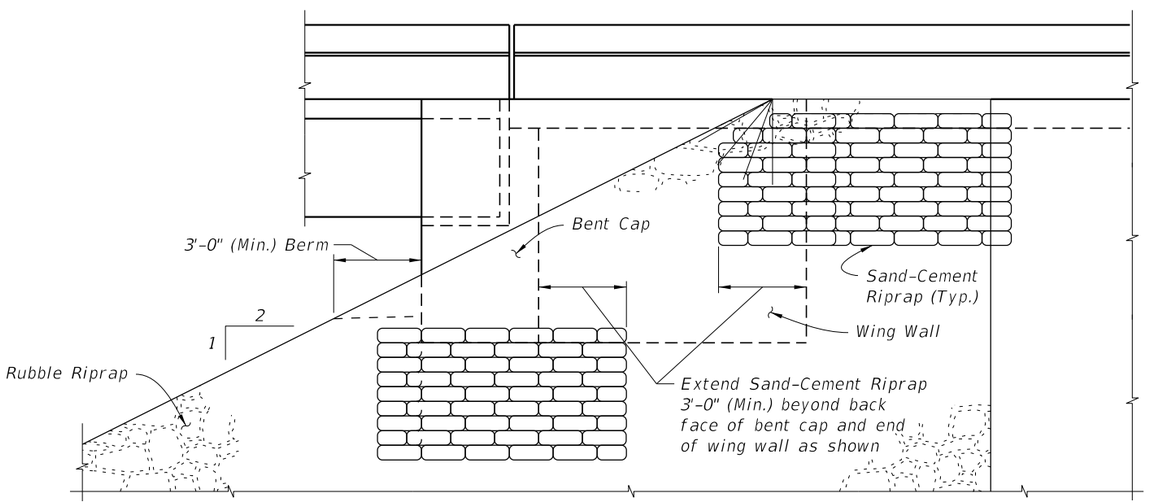
2



PARTIAL PLAN VIEW INSIDE AREA (MEDIAN) DUAL BRIDGES
(Bridge Deck and Approach Slab shown Dashed)



PARTIAL PLAN VIEW OUTSIDE AREA SINGLE OR DUAL BRIDGES
(Bridge Deck and Approach Slab shown Dashed)



PARTIAL SIDE ELEVATION

NOTE:
For Section A-A, B-B, C-C & D-D see Sheet 2 of 2.

NOTES TO DESIGNER:

All minimum values shown are design minimums. Actual values are determined by the designer and included in the plans.

* Longitudinal extent of riprap shall be extended beyond 15' from front Face of Backwall if required by the Engineer.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DRAWN BY:
CHECKED BY:
DESIGNED BY:
CHECKED BY:

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

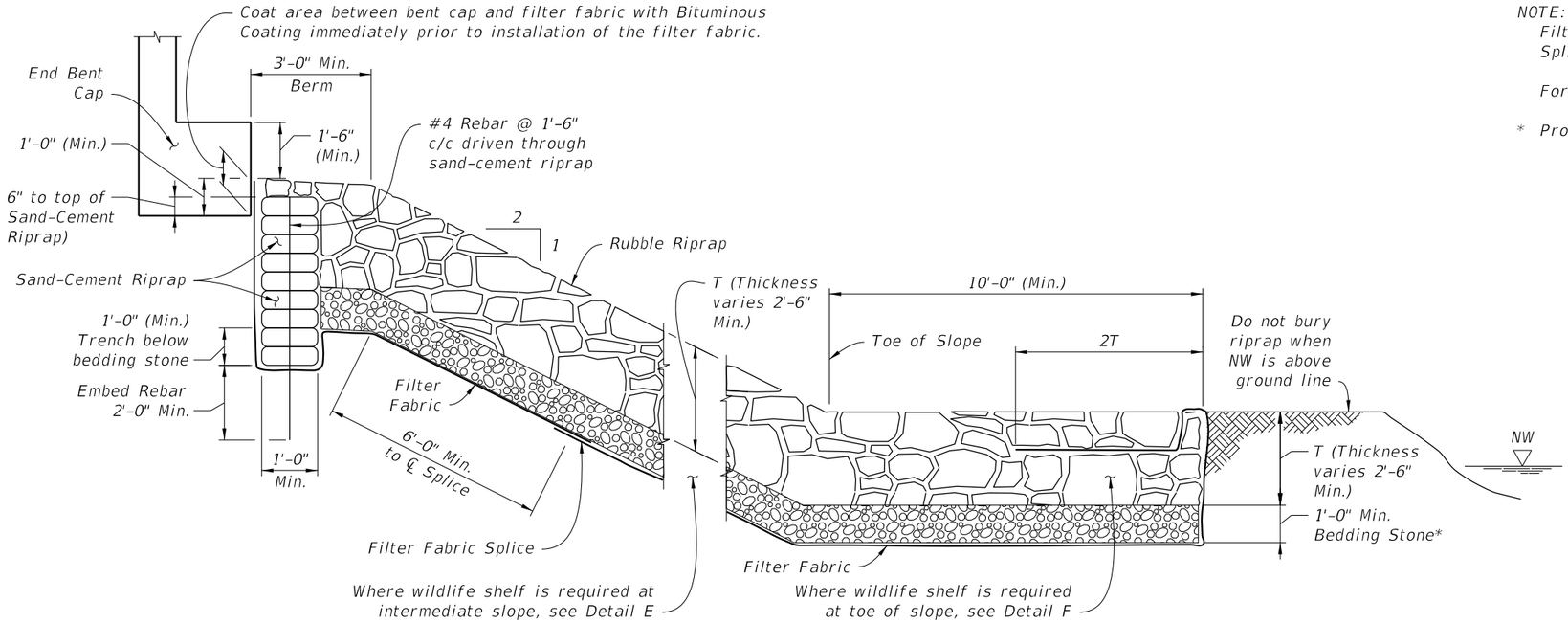
ROAD NO.	COUNTY	FINANCIAL PROJECT ID

SHEET TITLE:
RUBBLE RIPRAP SLOPE PROTECTION DETAILS
(SHEET 1 OF 3)

PROJECT NAME:
EXAMPLE

REF. DWG. NO.

SHEET NO.

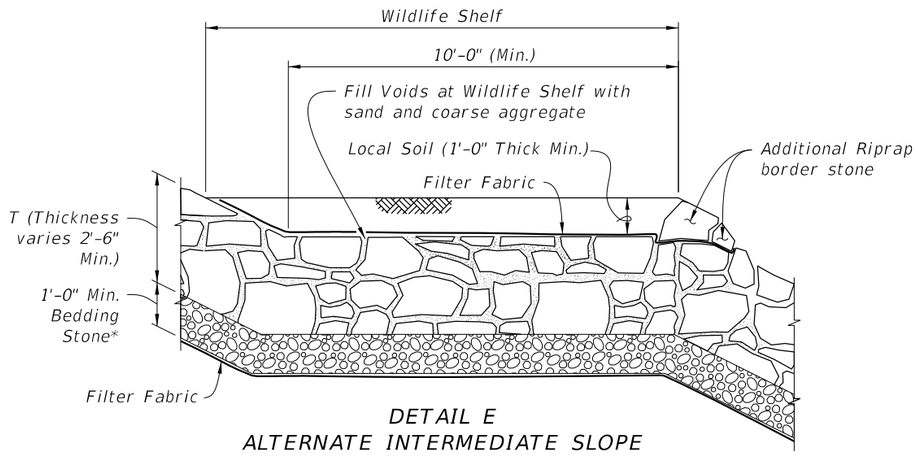


SECTION A-A

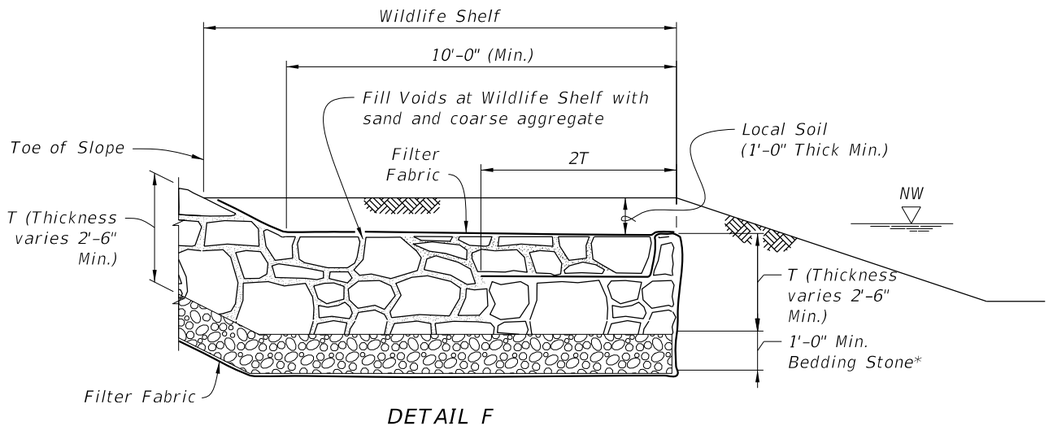
NOTE:
Filter Fabric shall be Type D-2, in accordance with Specifications Section 985.
Splice length shall be in accordance with Specifications Section 514.

For location of Section A-A see Sheet 1 of 3.

* Provide Bedding Stone unless otherwise recommended by hydraulics engineer.



DETAIL E
ALTERNATE INTERMEDIATE SLOPE
WHERE WILDLIFE SHELF IS REQUIRED
(AT SECTION A-A SHOWN, OTHER LOCATIONS SIMILAR)



DETAIL F
ALTERNATE TOE OF SLOPE
WHERE WILDLIFE SHELF IS REQUIRED
(AT SECTION A-A SHOWN, OTHER LOCATIONS SIMILAR)

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DRAWN BY:
CHECKED BY:
DESIGNED BY:
CHECKED BY:

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

SHEET TITLE:
RUBBLE RIPRAP SLOPE PROTECTION DETAILS
(SHEET 2 OF 3)

PROJECT NAME:
EXAMPLE

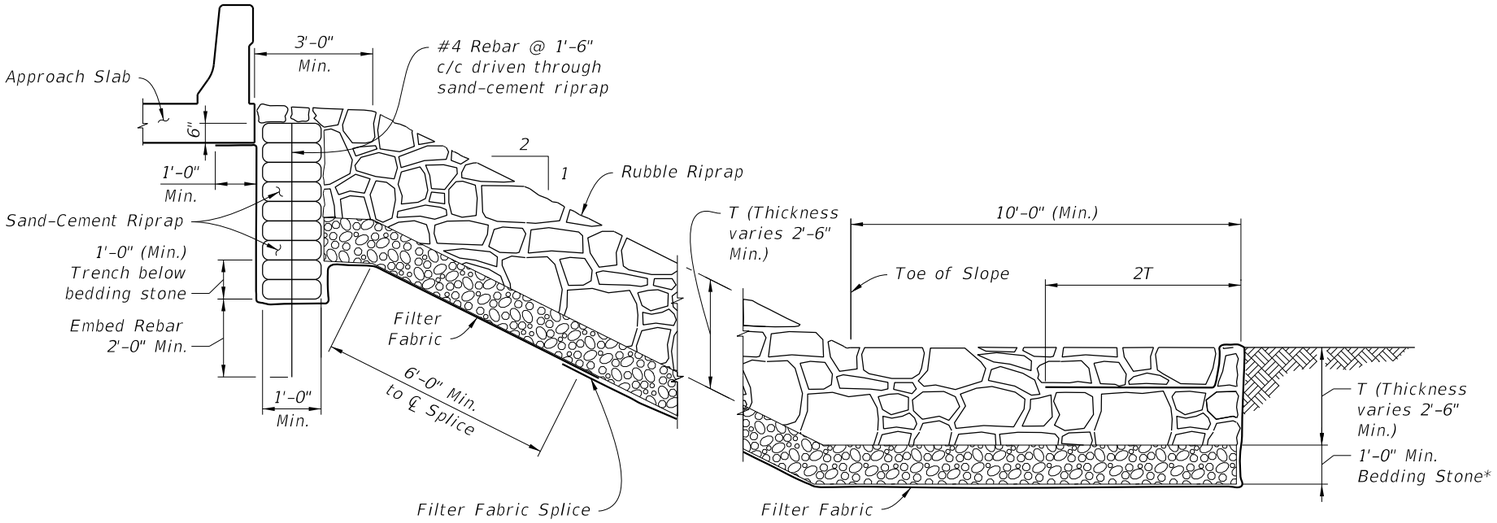
REF. DWG. NO.

SHEET NO.

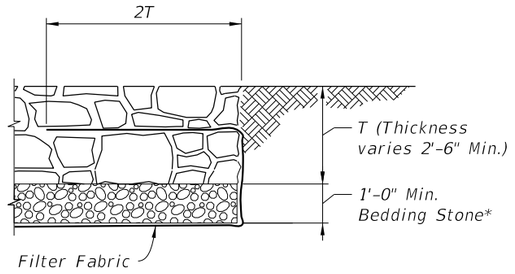
NOTE:
Filter Fabric shall be Type D-2, in accordance with Specifications Section 985.
Splice length shall be in accordance with Specifications Section 514.

For location of Sections B-B, C-C & D-D see Sheet 1 of 3.

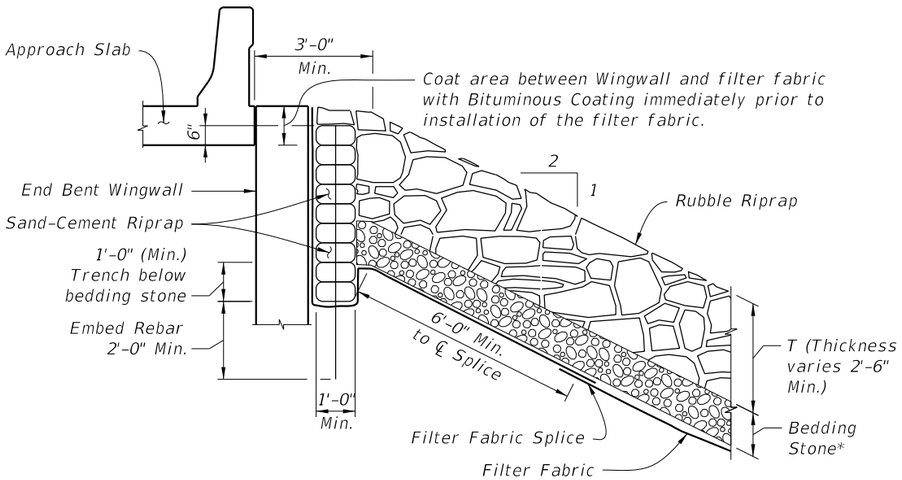
* Provide Bedding Stone unless otherwise recommended by hydraulics engineer.



SECTION B-B



SECTION C-C



SECTION D-D

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DRAWN BY:
CHECKED BY:
DESIGNED BY:
CHECKED BY:

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

SHEET TITLE:
RUBBLE RIPRAP SLOPE PROTECTION DETAILS
(SHEET 3 OF 3)

PROJECT NAME:
EXAMPLE

REF. DWG. NO.

SHEET NO.

KITTELSON & ASSOCIATES
225 E ROBINSON STREET, SUITE 450
ORLANDO, FL 32801
P 407.540.0555 F 407.540.0550

MEETING NOTES

Date: December 18, 2017 Project #: 17923.02

To: See Distribution

From: Jack Freeman

Project: SR 50 PD&E Study - 435859

Subject: FDOT District 5 – SWFWMD and FFS Coordination Meeting; December 14, 2017

On Thursday, December 14, 2017, FDOT District 5 conducted a project coordination meeting with Southwest Florida Water Management District (SWFWMD) and Florida Forest Service (FFS) at the SWFWMD office in Brooksville, FL. The attendees were:

Present
Monte Ritter – SWFWMD
Al Gagne – SWFWMD
Vince Morris - FFS
Ferrell Hickson – FDOT
Casey Lyon – FDOT
Lorena Cucek - FDOT
Karen Snyder – FDOT
Su Hao – FDOT
Heather Chasez – FDOT

By Phone/Go To Meeting
John Browne– FFS
Brian Camposano – FFS
Nona Schaffner– FDOT Central Office
Amy Sirmans – FDOT
Jesse Blouin – FDOT
Todd Helton – FDOT
Brandon Kelley - Kittelson

The meeting was opened with discussing changes since meeting with FFS and SWFWMD in July 2017 prior to Alternatives Public Meetings. The addition of a shared use path in Hernando County and across the Withlacoochee River bridge and then wider 7 ft paved shoulders in Sumter County was discussed. Vince Morris questioned the additional shared use path's need with the Coast to Coast trail to the north. We discussed the legislation for Coast to Coast does not allow FDOT eminent domain to obtain ROW and this may be the alternative should there be ROW acquisition issues along the proposed Coast to Coast alignment. We are also doing this east of the Van Fleet Trail. He asked about additional floodplain impacts and we acknowledged this will require additional fill into the floodplain. FDOT suggested the

Kittelson team provide an estimate of additional encroachment anticipated in the 100-year floodplain for the shared use path.

We discussed the impact of keeping the existing lanes on drainage retention requirements. Ferrell Hickson mention HB 599 allows the comingling of water but we do not need to treat all runoff. Monte Ritter said thru equivalent compensatory treatment FDOT will get credit for the areas of pavement that cannot be treated. He also said the area for the shared use path is considered exempt from stormwater treatment and does not need to be treated if 14 feet or less in width.

Ferrell Hickson said FDOT has been using "A line easement" where water flows across this easement into state land. This gives FFS/FDEP more flexibility to manage their property and he feels it is better than a "flowage easement". The SWFWMD staff had not used this type of easement but seemed willing to consider.

Vince Morris said the most important area to minimize or eliminate stormwater ponds and floodplain compensating storage areas is between Porter Gap Road and the Withlacoochee River. This is where FFS has noted the most environmental resources/protected species. We discussed the potential to do extra treatment in other areas to compensate for less treatment in this area. Vince noted ponds and floodplain compensating areas west of Old 50 or the hiking trail would have less impact on protected species. He also noted the bluffs area to be of significance. He also said there are recorded archaeological sites throughout the state forest.

Monte Ritter said we need to note the floodplain impacts due to the increased fill. To avoid having floodplain compensating storage areas, FDOT will need to demonstrate all increases in flood levels are contained within the state forest. He noted this generally needs modeling to demonstrate. It was noted the SWFWMD Applicants Handbook Volume II is considered adopted by rule. Ferrell Hickson noted the expense to model this large area, particularly if not model exists. We discussed there is a model available for Hernando County but nothing in Sumter County. Ferrell asked if the Zone AE limits were the best information available in Sumter County. Monte said FDOT needs to show "reasonable assurance" the increased flood stage would be self-contained within the state forest and if a conservative method could be used to demonstrate floodplain impacts would be contained within the forest without modeling, the WMD could accept it. Ferrell noted the Location Hydraulics Report done for this PD&E study is showing a conservative estimate providing cup for cup compensation for the estimated 100-year floodplain encroachment.

Monte asked if we are going to raise SR 50 through the state forest. While this is still under evaluation, likely we will not raise SR 50. Vince Morris noted he does not know of a time when flood waters have overtopped SR 50 in the state forest. Monte said if we raise SR 50, this could be a conveyance issue.

We discussed the existing bridge will remain as the new westbound lanes and will not be widened. The eastbound lanes will have a new bridge and will also accommodate the shared use path. Vince discussed whether we can accommodate the hiking trail under the bridge (also made this comment in the July 2017 meeting). Jack Freeman noted we have considered cutting back the rip-rap wall and adding a concrete sidewalk for passage under the bridge. Jack also noted the hiking trail approaches to the sidewalk will likely flood before the sidewalk.

Vince? recommended we consider the use of Bio-Absorption Activated Media (BAM) in the state forest to reduce the need for stormwater retention ponds.

Casey Lyon suggested we create something similar to an Environmental Advisory Group but smaller with just Forestry and SWFWMD and have regular meetings during the project. The agencies liked this idea since final design is right on the heels of PD&E. They noted they would like for these meetings to be tied to upcoming project events rather than be regularly scheduled.

Karen Snyder requested the Kittelson Team provide a drainage map showing drainage basin boundaries for future meetings.

Vince Morris noted a potential mitigation area within the state forest north of SR 50 near the northern end of the Withlacoochee State Forest. This is a shovel ready project but has not received Army Corps approval and is not funded. It is basically a restoration project. Brian Camposano said FFS does not like to manage mitigation areas for state forest impacts. Vince was to provide Brian more information. In addition, Casey requested FDOT receive a preferred parcel list of potential land acquisitions from FFS.

We discussed the next meeting in being in mid-to late January after the preferred alternative is selected.

Copies to: All Attendees

FDOT

Florida Department of Transportation

RICK SCOTT
GOVERNOR

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FWS Log No 2019-TA-0196

The Service concurs with your effect determination(s) for resources protected by the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.). This finding fulfills the requirements of the Act.

Annie Dziegowski 12-19-18

Jay B. Herrington
Field Supervisor

Date

Zakia Williams
Fish and Wildlife Biologist
North Florida Ecological Services Office
US Fish and Wildlife Service
7915 Baymeadows Way, Suite 200
Jacksonville, Florida 32256

SUBJECT: **Natural Resources Evaluation Report**
SR 50 Project Development and Environment Study
SR 50 from US 301 to CR 33 in Hernando, Sumter, and Lake Counties
FM No. 435859-1-22-01
ETDM No. 14269

Dear Ms. Williams,

The Florida Department of Transportation (FDOT), District 5, is conducting a Project Development and Environment (PD&E) Study to evaluate the widening of SR 50 from US 301 in Hernando County to CR 33 in Lake County. The proposed improvements include two-to-four lane widening of SR 50 including new stormwater treatment facilities and floodplain compensation sites. A portion of the project corridor traverses the Richloam Tract of the Withlacoochee State Forest. The project has been evaluated for impacts to Threatened and Endangered species in compliance with Section 7(c) of the Endangered Species Act, as amended (16 U.S.C. 1531 et seq.) and a *Natural Resources Evaluation Report* (NRE) has been prepared. A copy of the NRE is enclosed for your review.

Agency coordination to obtain species and habitat related information has occurred through the Efficient Transportation Decision Making (ETDM) Program Screening and the Advance Notification (AN) process. The AN for this project was published on August 18, 2016 and the final ETDM Summary Report was published on December 1, 2016. A summary of the wildlife-related comments received from the resource agencies charged with commenting on project-specific effects to the natural resources and wildlife is provided in the NRE. The project's class of action is a State Environmental Impact Report (SEIR) and the project is only State funded.

In accordance with Section 7(c) of the Endangered Species Act of 1973, as amended, and Chapter 68A-27, Florida Administrative Code (FAC), Rules Pertaining to Endangered and Threatened