



SR 400 (I-4) Project Development and Environment (PD&E) Study
FM No.: 432100-1-22-01



Endangered Species Biological Assessment

Segment 2: State Road 400 (SR 400) / Interstate 4 (I-4) from West of SR 528 (Beachline Expressway) to West of SR 435 (Kirkman Road)

Orange County (75280), Florida

July 2016



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1.0 Summary of Project

The Florida Department of Transportation (FDOT) is conducting an update/reevaluation of the Project Development and Environment (PD&E) studies for the extension of proposed express lanes for State Road 400 (SR 400)/Interstate 4 (I-4). The project limits in the original PD&E studies were:

- West of Memorial Boulevard (SR 546) to the Polk/Osceola County Line, (29.5 miles)
- CR 532 (Polk/Osceola County Line) to West of SR 528 Beachline Expressway (13.7 miles), and
- West of SR 528 Beachline Expressway to SR 472 (43 miles).

The corresponding environmental documents associated with these PD&E studies include: Environmental Assessment/Finding of No Significant Impact (EA/FONSI) for SR 400 (I-4) from West of Memorial Boulevard (SR 546) to the Polk/Osceola County Line [Financial Project Number (FPN) 201210 (December 1998)] and from CR 532 (Polk/Osceola County Line) to West of SR 528 (Beachline Expressway) [FPN 242526 and 242483 (December 1999)] and Final Environmental Impact Statement (FEIS) for I-4 from SR 528 (Beachline Expressway) to SR 472 [FPN 242486, 242592 and 242703 (August 2002, Record of Decision Pending)].

The project limits of the current SR 400 (I-4) PD&E reevaluation, herein referred to as I-4 Beyond the Ultimate (BtU) PD&E Reevaluation Study, include a total of approximately 43 miles of roadway sections east and west of the 21-mile, I-4 Ultimate project. The I-4 Ultimate project, which began construction in early 2015, is reconstruction to include new express lanes, of the section of I-4 that extends from west of SR 435 (Kirkman Road) to east of SR 434. For analysis purposes, the current I-4 BtU PD&E study has been divided into the following five segments:

- Segment 1: SR 400 (I-4) from West of CR 532 (Polk/Osceola County Line) to West of SR 528 (Beachline Expressway) - Osceola County (92130) and Orange County (75280)
- Segment 2: SR 400 (I-4) from West of SR 528 (Beachline Expressway) to West of SR 435 (Kirkman Road) - Orange County (75280)
- Segment 3: SR 400 (I-4) from 1 Mile East of SR 434 to East of SR 15-600/US 17-92 (Seminole/Volusia County Line) - Seminole County (77160)
- Segment 4: SR 400 (I-4) from East of SR 15-600/US 17-92 (Seminole/Volusia County Line) to ½ Mile East of SR 472 - Volusia County (79110)
- Segment 5: SR 400 (I-4) from West of SR 25/US 27 to West of CR 532 (Polk/Osceola County Line) Polk County (16320)

Since no record of Decision has been issued by the Federal Highway Administration (FHWA) for Segments 2, 3 and 4, the current PD&E BtU study for these three segments will update the original PD&E study. This Endangered Species Biological Assessment (ESBA) was prepared for Segment 2 of the SR 400 (I-4) BtU PD&E Reevaluation Study and contains detailed information that fulfills the purpose and need for the SR 400 (I-4), from West of 528 (Beachline Expressway) to West of SR 435 (Kirkman Road), PD&E study.

The purpose of this report is to present the findings of an endangered species biological evaluation for the proposed improvements in support of the PD&E update for the I-4 BtU Segment 2 portion of the FEIS for I-4 from SR 528 (Beachline Expressway) to SR 472 (FPN 242486-1, 242592-1, 242703-1, August 2002, Record of Decision pending). This update includes environmental analysis of the original design concept, which showed six general use lanes (GULs) and two high occupancy vehicles (HOV) lanes (6+2), to the current proposed design, which includes six GULs and four express lanes (EL) operating under a variable price toll plan (6+4). Other changes being reanalyzed include stormwater management, access plan and interchange configurations.

1.1 Description of Proposed Action

FDOT is proposing to reconstruct and widen I-4 as part of the I-4 BtU concept. This involves the build-out of I-4 to its ultimate condition through Central Florida, including segments in Polk, Osceola, Orange, Seminole and Volusia Counties. The concept design proposes the addition of two new express lanes in each direction, resulting in a total of ten dedicated lanes. The project limits for the segment analyzed in this report are within a 3.9-mile segment of I-4 which extends from west of SR 528 (MP 5.650) to west of SR 435 (Kirkman Road) [MP 9.528] in Orange County (herein referred to as I-4, Segment 2), as shown in **Figure 1.1**. Although, the interstate is a designated east-west corridor, the alignment follows a north-south orientation through the majority of Segment 2. The study area in this section from west of SR 528 to west of SR 435 (Kirkman Road) includes the interchanges at SR 528, Sand Lake Road, and Universal Boulevard.

Two mainline typical sections are proposed for I-4 Segment 2. The typical section from the begin project limits east of Central Florida Parkway to SR 528 includes a 44-foot rail envelope in the median within a minimum 300 foot right of way (6+4 with rail envelope). The typical section from SR 528 to west of SR 435 does not include the rail corridor and also has a proposed minimum 300 foot right of way (6+4 without rail envelope). Both typical sections have a design speed of 70 miles per hour (mph) and will include three 12-foot general use lanes with a 10-foot inside shoulder and a 12-foot outside shoulder (10-foot paved) and two 12-foot express lanes with a 4-foot inside shoulder and a 10-foot outside shoulder, in each direction. A barrier wall between adjacent shoulders will separate the express lanes from the general use lanes. Additionally, up to three auxiliary lanes in either direction of travel will be provided in some areas. **Figure 1.2** and **Figure 1.3** illustrate the proposed mainline typical sections for I-4 Segment 2.

While the overall typical section remains consistent throughout Segment 2, there are some areas along the I-4 BtU corridor that will have special sections. Special cross sections were developed to meet the needs of the project due to right of way constraints, existing utility easements or other design considerations along the corridor. These special sections may include C-D roads, braided ramp systems, elevated express lanes or elevated general use lanes. Additionally, the median width may vary in certain locations to accommodate changes in the horizontal alignment due to crossroad support structures or other design features. The special sections within the Segment 2 corridor include a C-D system between Central Florida Parkway and SR 528; the eastbound C-D Road is at grade and the westbound C-D Road is elevated. The eastbound C-D road extends approximately 1.9 miles between SR 528 in Segment 2 and the Daryl Carter Parkway interchange located within Segment 1 of the I-4 BtU corridor. The westbound C-D Road extends approximately 5.9 miles between SR 528 in Segment 2 and the Osceola Parkway interchange located within Segment 1 of the I-4 BtU corridor.

1.2 Purpose and Need

The proposed improvements to I-4 include widening the existing six lane divided urban interstate to a ten lane divided highway in order to improve traffic operations, enhance connectivity and improve mobility by providing travel choices to the motoring public. I-4 is an east-west limited access freeway which links the west and east coasts of Florida, from I-275 in Tampa to I-95 in Daytona Beach. I-4 spans across six counties in Central Florida, traversing many cities including Lakeland, Orlando, Altamonte Springs, Sanford and DeLand. I-4 is a critical component of Florida's Strategic Intermodal System (SIS) which links seaports, rail, airports and other intermodal facilities. This aspect of I-4's significance is evidenced through connectivity provided by major junctions with I-275 and I-75 in the Tampa Bay area, SR 429 (Daniel Webster Western Beltway), SR 417 (Southern Connector/Central Florida Greenway/Seminole Expressway), SR 528 (Martin Andersen Beachline Expressway), SR 91 (Florida's Turnpike), SR 408 (Spessard Lindsay Holland East-West Expressway) in Central Florida and I-95 on the east coast.

I-4 serves as the primary corridor in the movement of people and freight between major population, employment and activity centers in the Central Florida region. When the entire Interstate was fully opened in the early 1960's, it was designed to serve intrastate and interstate travel by providing a critical link between the east and west coasts of Central Florida. Although this role continues to be a crucial transportation function of I-4, the highway also serves large volumes of local and commuter traffic with shorter trip distances. Today, the highway serves as the primary link between hotel/resort complexes and tourist attractions such as Walt Disney World, Universal Studios, Sea World, the International Drive Resort Area and downtown Orlando. Since I-4 is the only north-south limited access facility that is centrally located between the predominant employment centers and the major suburbs to the north, it has become the primary commuting corridor in the Central Florida metropolitan area.

Growth in Central Florida over the past decades has made it difficult for the transportation system to accommodate travel demand. Additionally, traffic congestion and crash incidents have resulted in major delays on the Interstate as well as other arterials surrounding the corridor. Increased congestion levels are experienced outside of the typical morning and afternoon rush-hour periods, affecting mobility levels for more hours of the day and impacting other non-commuter/non-weekday travel. The congestion on I-4 is further evidenced by the less than desirable levels of service on the Interstate as well as the crossroads.

Projections of future population and employment in the region indicate that travel demand will continue to increase well into the future. The ability to accommodate the new travel patterns resulting from growth must be provided to sustain the region's economy. Without the improvements, extremely congested conditions are expected to occur for extended periods of time in both the morning and evening peak periods. Due to these congested conditions, user travel times will continue to increase, the movement of goods through the urban area will be slower, and the deliveries of goods within the urban area will be forced to other times throughout the day.

The need for improvements to I-4 is illustrated by the important transportation roles I-4 serves to the Central Florida region and the State of Florida. If no improvements are made to the Interstate, a loss in mobility for the area's residents, visitors, and commuters can be expected, resulting in a severe threat to the continued viability of the economy and the quality of life.



Figure 1.1: Project Location Map

This PD&E update involves revising the original design concept showing 6 GULs + 2 HOV lanes, as recommended in the FEIS for I-4 from SR 528 to SR 472 (FPN No. 242486, 242592 & 242703, August 2002, Record of Decision Pending), to the current proposed design of 6 GUL + 4 EL. The express lanes are tolled lanes and will extend the full length of the project. The access to/from the tolled lanes will be evaluated as part of this effort to determine if changes are needed from the previously approved concept for access to/from the HOV Lanes.

The original I-4 PD&E Studies involved physical separation between the general use lanes and the HOV lanes on I-4, with demand management in the HOV lanes. The original demand management strategy was to control the use of the lanes by requiring a minimum number of occupants per vehicle to maintain an acceptable level of service (Level of Service D). This update also addresses revising the demand management tool to convert the HOV lanes to tolled express lanes. The express lanes will be separated from the general use travel lanes by two shoulders with a barrier wall between the shoulders. A variable pricing tolling plan is proposed for the express lanes. The tolls will vary by time of day and day of week to maintain acceptable levels of service in the express lanes. The tolls will be collected electronically through existing E-Pass, SunPass and other systems currently in place in the Central Florida area. The conversion to express lanes will maintain the same right of way limits as documented previously and will not change the impacts to the social, natural or physical environment. An update to the Systems Access Modification Report (SAMR) prepared in January 2013 is being completed in conjunction with this effort.

In order for this project to proceed, potential environmental impacts must be identified, including impacts to wildlife and natural habitat. This report has been prepared following guidelines presented in the Project Development and Environment (PD&E) Manual, Part 2, Chapter 27 (FDOT, 10/1/91) to identify wildlife species of known or potential occurrence and natural habitat types along the project corridor and to document potential project-related impacts. Particular attention has been given to species that have been provided regulatory protection such as federal or state listed endangered, threatened, or otherwise sensitive species, as well as suitable habitat for those species.

The purpose of this ESBA is to present the findings of the studies conducted for this project, describe the results of the evaluation and document the justification for the recommended improvements. This document describes the potential occurrence of natural habitats and wildlife within the proposed project corridor, and the likelihood of potential impacts from the project to listed species and their habitats. The study area for the project corridor included all potential pond sites, the existing right-of-way of I-4, and a buffer of 500 feet beyond the boundary of the current right-of-way (**See project maps in Appendix A**).

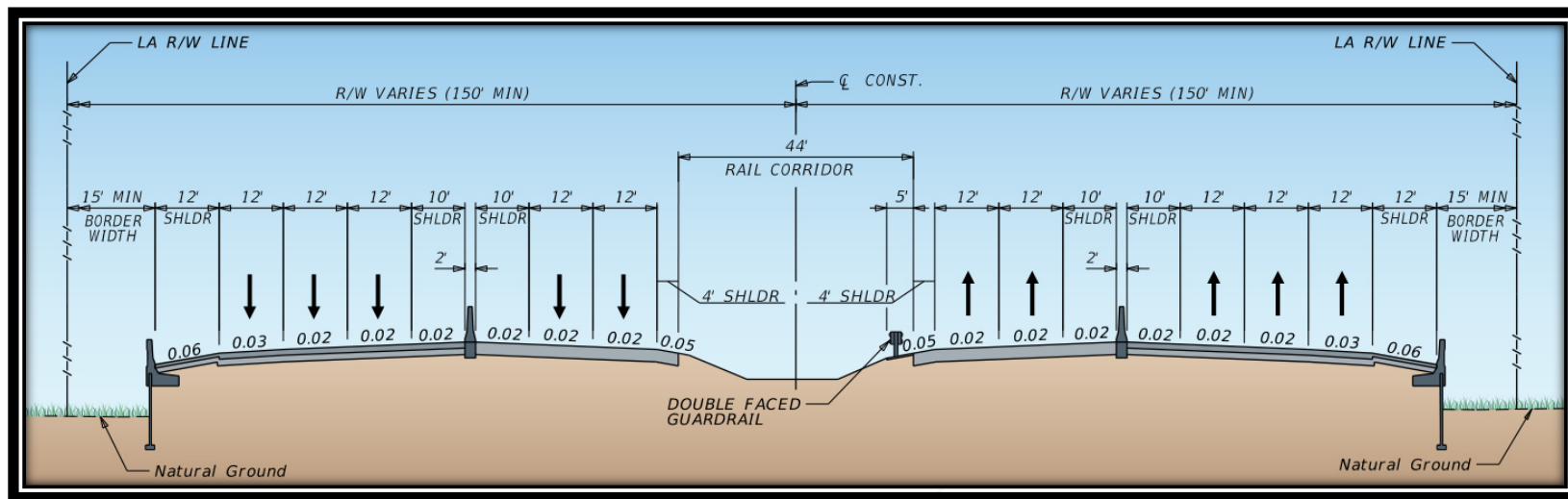


Figure 1.2: Proposed Typical Section (6+4 with rail envelope) – E. of Central Florida Parkway to SR 528

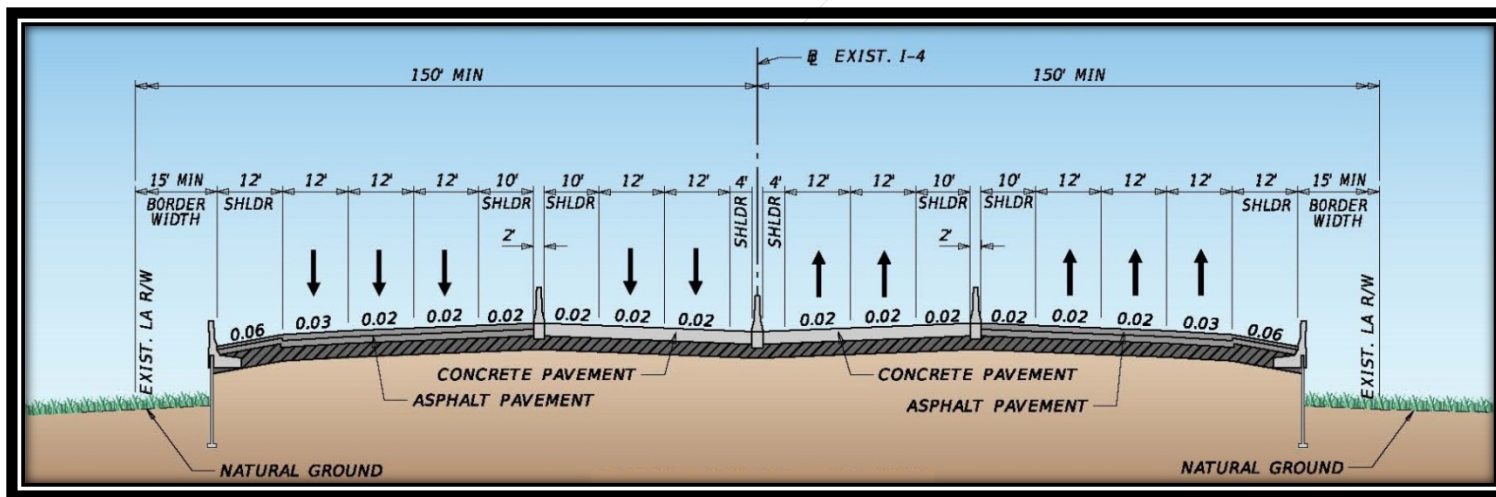


Figure 1.3: Proposed Typical Section (6+4 without rail envelope) – SR 528 to W. of SR 435

2.0 Methodology

2.1 Literature Search

Prior to the initiation of fieldwork, a background records and literature search was conducted to identify federal and state protected plant and animal species of known or potential occurrence in Orange County, FL. The key information source for this effort was a compilation of all the observation and distribution records published by the Florida Natural Areas Inventory (FNAI), the Florida Committee on Rare and Endangered Plants and Animals (FCREPA), the Florida Fish and Wildlife Conservation Commission (FFWCC), the U.S. Fish and Wildlife Service (USFWS), and information gathered from relevant scientific literature. A database for this report is included in the project files and was last updated in January 2015.

Appendix B provides a list of animal (see Table 1) and plant (see Table 2) species of known or potential occurrence within Orange County, and a summary of the habitat type(s) typically utilized by each. 52 species of animals and 56 species of plants have been identified as potentially occurring in Orange County, though suitable habitat may not be available for all of them along the project corridor. Of these, 10 are federally listed animals, 12 are federally listed plants, 28 are state listed animals, and 56 are state listed plants.

2.2 Agency Coordination

Information regarding the I-4 Ultimate PD&E project was provided to Jane Monaghan representing the USFWS North Florida Ecological Services Office and to Jane Chabre representing the FFWCC Office of Conservation Planning Services. Proposed wildlife survey methods and a species list were included within the information provided, and are included in **Appendix D**.

2.3 Field Survey

The project area includes approximately 3.9 linear miles of right-of-way and 20 proposed stormwater ponds. Ground-based biological surveys were conducted in April and May of 2013 and February 2015 to identify natural habitat types, anthropogenic land use types and to investigate wildlife (including listed species) occurrence along the project corridor. Additional field visits were conducted in January 2015 when design changes including new pond site locations were proposed. Habitat and land use types were categorized according to the Florida Land Use, Cover, and Forms Classification System (FLUCFCS) (FDOT, 1999). Results of the habitat and land use evaluation, including descriptions of types observed along the project corridor, are provided in Section 3.1.2.

Wildlife surveys were conducted during daylight hours and followed species-specific survey guidelines as outlined by FFWCC and USFWS. During the field visits, all observations of listed plant and wildlife species or indicators of their presence (i.e., remnants, tracks, burrows, calls, scat) within the study corridor were noted by staff biologists. General wildlife observations were also documented during the field visits.

In order to ensure a thorough assessment of potential impacts to state and federal listed plant species, project team scientists conducted the field surveys within all suitable habitats in the proposed widening area and proposed stormwater pond sites. Prior to onset of the surveys, typical habitat and other relevant life history information were gathered for each of the listed plant species of potential occurrence along the project corridor. Aerial photographic maps and ground-truthing were used to delineate the different habitat types present along the corridor. Site surveys generally consisted of meandering transects that covered at least 25% of each site. In areas where listed plant species

were discovered, the location was recorded using a sub-meter global positioning system (GPS) unit, for later depiction on aerial photographic maps. Section 3.2 provides a summary of wildlife, including listed species, of known or potential occurrence.

2.3.1 Scrub-Jay Survey

A scrub-jay survey was conducted during the original PD&E (I-4 PD&E Study Section 2 FEIS from SR 528 to SR 472, with field work from 1996 – 1998) within this alignment corridor. Two stations were sampled for the presence of scrub-jays: Station 1 was located just west of the westbound on-ramp of I-4 from eastbound Sand Lake Road, and Station 2 was located west of the westbound I-4 off-ramp onto Sand Lake Road, between the off-ramp and Turkey Lake Road. Field investigations conducted during this study indicated that both of these areas have been developed since the previous study. Station 1 is now the site of a commercial/retail development and Station 2 is the site of a hotel. Typically, a standard survey is conducted in accordance with the techniques outlined by the FFWCC (Florida Scrub-Jay Survey Guidelines, updated 08/24/2007). The survey consists of the playback of recorded scrub-jay vocalizations throughout all potential habitats. This includes the “classic” xeric oak scrub, along with scrubby pine flatwoods, sand pine scrub, and any other type of habitat containing scrub oaks. No potential habitat was identified in either of these locations, or in any other area within this segment of the project. As such, no formal scrub-jay survey was conducted.

2.3.2 Gopher Tortoise Survey

A gopher tortoise survey was conducted in April, May, and June of 2013, April of 2014, and in February of 2015 in accordance with the FFWCC technical publication titled Gopher Tortoise Permitting Guidelines, April 2008, revised April 2013 (and subsequently revised in February 2015). Habitats that were suspected of supporting tortoise populations because of the nature of the vegetation, hydrology and soils, were selected for the survey, as well as cleared areas within the right-of-way and along the right-of-way fence line with suitable soil conditions. The activity classification and GPS location of all burrows within the I-4 right-of-way and potential pond sites were collected for post-processing and mapping. Burrows found during the survey were classified as Potentially Occupied (PO) or Abandoned (AB). Those classified as PO were further described as either Active (POA) or Inactive (POI): Active burrows are in good repair, with the classic half-moon shaped entrance, and appear to be in use by a tortoise. They have obvious tortoise tracks or shell scraping signs on the burrow floor or the mound, often contain loose soil on the burrow floor, and may contain recently excavated soil. Inactive burrows are in good repair, but do not show recent tortoise use. They have the classic half-moon shaped entrance, but the soil on the burrow floor is usually hard packed, as is the burrow mound. There are no tortoise tracks or shell scraping signs, no recently excavated soil, and the burrow mound may have vegetation growing on it or be partially covered with fallen leaves. The POI classification of burrows has the potential to change due to seasonal dormancy, inactivity due to weather conditions, and the affinity of the gopher tortoise to utilize more than one burrow. Activity classification can and often does change from survey to survey. Both POI and AB burrows can serve as a refuge for burrow commensals, including gopher frogs, Florida mice, and indigo snakes, and should be considered in the same manner as active burrows. The location of each burrow was depicted on an aerial to indicate its location (see Species Location Map, **Figure D, Appendix A**). Survey methods were developed to cover 100% of the suitable habitat within the right-of-way and 50% of suitable habitat within each proposed pond site.

2.3.3 Sand Skink Survey

Because the project area occurs within the USFWS Consultation Area for sand skinks, there is a higher likelihood of skink occupancy within suitable habitats. No previous evidence of skinks was noted in the original PD&E report from May 2000 (I-4 PD&E Study Section 2 FEIS from SR 528 to SR 472, with field work from 1996 – 1998), nor was a species-specific survey performed. However, guidance from USFWS on the skink now classifies areas with skink soils as potential skink

habitat, whether or not natural xeric scrub habitat occurs over the soils. Areas over skink soils that are altered for human uses include (but are not limited to) pine plantations, active or inactive citrus groves, pastures, residential developments, and neglected vegetative cover like old fields and overgrown scrub, all present opportunities for potential skink habitat. For this project, the right-of-way and potential pond sites were surveyed for all potential listed wildlife species including skinks. This pedestrian survey was conducted to identify suitable habitat and included searching for skink trails in areas of open sand. Skink soils were also mapped for the project corridor to identify the areas of coverage overlap with proposed roadway and pond site improvements (see Sand Skink Survey Report in **Appendix E**). Coordination with USFWS staff (Jane Monaghan) indicated that a skink cover board survey would need to be performed over areas of soil coverage within the project footprint that were identified as “swimmable soils” suitable for skinks. Areas could be excluded from survey coverage if there were areas with a dense root mass or areas that were previously affected by roadway construction activities such as roadway front slopes, drainage areas, and right-of-way areas with sodded grass that no longer exhibited the appropriate characteristics of the skink soils. Based upon the results of this, the mapped soils were amended, and coverboard surveys were subsequently conducted over any remaining areas that were determined to still contain potential skink soils. The coverboard survey was conducted according to the USFWS Survey Protocol for Peninsular Florida for the Sand Skink and Blue-tailed Mole Skink (USFWS 2012) during April and May of 2014.

2.3.4 Listed Plant Survey

A survey for listed plant species was performed during May 2013 and April 2014 to coincide with the flowering period of most Florida plants. Newly proposed ponds in January 2015 were surveyed as well, though this did not take place during flowering season. The survey was conducted using pedestrian transects that covered 100% of the existing right-of-way and at least 25% of each pond site location. Any listed plants or obvious indicators of the possible presence of listed plants were noted. In the event that listed plants were encountered during field surveys, their position was marked using sub-meter GPS technology. Species observational data was collected in field books, describing the condition, density, and areal coverage. Any recorded data related to listed plant species was projected on an aerial map.

3.0 Results

3.1 Natural Habitat and Human Land Use Assessment

3.1.1 Soils

According to the Soil Survey of Orange County, Florida (1989), the proposed study area (I-4 with 500 ft. buffer) consists of fourteen mapped soil types including Archbold fine sand, 0 to 5 percent slopes (2), Basinger fine sand, depressional (3), Candler-Apopka fine sands, 5 to 12 percent slopes (6), Immokalee fine sand (20), Ona fine sand (26), Ona-Urban land complex (27), Pomello fine sand, 0 to 5 percent slopes (34), Pomello-Urban land complex, 0 to 5 percent slopes (35), St. Johns fine sand (37), St. Lucie fine sand, 0 to 5 percent slopes (38), Sanibel muck (42), Smyrna fine sand (44), Tavares fine sand, 0 to 5 percent slopes (46), and Urban land (50) (See NRCS Soils Map, **Figure B, Appendix A**).

A brief description of each of the mapped soil types occurring within the project site is provided below.

Archbold fine sand, 0 to 5 percent slopes (2) – Archbold fine sand soils are moderately well drained, nearly level to gently sloping soils found on low ridges and knolls within flatwoods. Typically, the surface layer is dark gray fine sand about 2 inches thick. The underlying material is usually white fine sand to a depth of about 80 inches.

The water table during extended wet periods can rise to a depth of 24 inches; however its seasonal fluctuation is between 42-80 inches deep; stabilizing between 42-60 inches for approximately six months and 60-80 inches for the remainder of the year. Extended drought conditions can drive the water table below 80 inches. Natural canopy vegetation consists of scattered slash pine, sand pine, and sand live oak. The understory and ground cover includes pineland threawn, prickly pear cactus, saw palmetto, and various weeds and grasses.

This soil type occurs directly adjacent to the current placement of I-4.

Basinger fine sand, depressional (3) – Basinger fine sand soils, depressional, are poorly drained, nearly level sandy soils found mainly in depressions, sloughs, and along the edges of freshwater marshes and streams. Typically, the surface layer is black fine sand nearly 7 inches thick. The underlying layers are sand to a depth of 80 inches. The upper subsurface layer is gray fine sand to a depth of 32 inches; dark brown and light brownish gray fine sand comprise the next 15 inches, and the substratum is pale brown fine sand.

The water table is above the surface for 6 to 9 months or more each year and is within 12 inches of the surface for the rest of the year under natural conditions. The natural canopy vegetation is mixed stands of pond cypress, sweet gum, and scattered pond pine. The understory and ground cover includes chalky bluestem, blue maidencane, sedges, and other water tolerant grasses.

This soil type occurs directly under and within 500 feet of the current placement of I-4.

Candler-Apopka fine sand, 5 to 12 percent slopes (6) – Candler-Apopka fine sands soils are excessively drained, sloping and strongly sloping soils found in uplands, occurring in a regular repeating pattern. Candler soil is sloping and occurs on lower side slopes of summits. Apopka soil is strongly sloping and occurs on upper side slopes of summits. Typically, the surface layer of Candler soil is very dark grayish brown fine sand about 6 inches thick. The upper part of the subsurface layer, to a depth of about 38 inches is yellowish brown fine sand. The lower part is pale brown fine sand to a depth of about 69 inches, and the subsoil is light gray fine sand that has thin, discontinuous strong brown loamy sand lamellae to a depth of about 80 inches. Typically, the surface layer of Apopka soil is dark grayish brown fine sand about 5 inches thick. The subsurface layer is very pale brown sand to a depth of about 69 inches, and the subsoil is reddish yellow sandy clay loam to a depth of about 80 inches.

The water table is seasonally high at a depth of 72 inches for the Apopka soils and at a depth greater than 80 inches in the Candler soil. Natural canopy vegetation is scattered sand pine, slash pine, longleaf pine, bluejack oak, Chapman oak, live oak and turkey oak. In addition, scattered loblolly pine is common for Apopka soil. The understory and ground cover includes grassleaf goldaster, eastern bracken, lopsided Indian grass, dwarf huckleberry, creeping bluestem, pineland threawn, and various weeds and grasses.

This soil type occurs within 500 feet of the current placement of I-4, but not directly under.

Immokalee fine sand (20) – Immokalee fine sand soils are poorly drained, nearly level sandy soils found in broad flatwoods. Typically, the surface layer of this soil is black fine sand about 5 inches thick. The upper part of the subsurface layer is grayish brown fine sand to a depth of about 35 inches. The upper part of the subsoil is black fine sand to a depth of about 41 inches, the middle part is dark brown fine sand to a depth of about 48 inches, and the lower part is brown fine sand to a depth of about 67 inches. The substratum is light brownish gray fine sand to a depth of about 80 inches.

The water table is within 10 inches of the surface for 1 to 3 months of the year and recedes to a depth of 10 to 40 inches for more than 6 months. The natural canopy vegetation is slash pine. The understory and ground cover is saw palmetto, running oak, inkberry, fetterbush, creeping bluestem, lopsided Indian grass, pineland threeawn, chalky bluestem, and wax myrtle.

This soil type occurs directly under and within 500 feet of the current placement of I-4.

Ona fine sand (26) – Ona fine sand soils are poorly drained, nearly level sandy soils found in broad areas on the flatwoods. Typically, this soil has a surface layer of black fine sand about 6 inches thick. The subsoil is dark reddish brown fine sand to a depth of about 15 inches. The upper part of the substratum is grayish brown fine sand to a depth of about 42 inches, the middle part is light gray fine sand to a depth of about 60 inches, and the lower part is very pale brown fine sand to a depth of 80 inches or more.

The water table is seasonally high at a depth no greater than 10 inches for 1 to 2 months a year. It recedes to a depth between 10 and 40 inches for periods of 6 months or more. Natural canopy vegetation consists of longleaf pine and slash pine. The understory and ground cover includes inkberry, running oak, saw palmetto, wax myrtle, fetterbush, pineland threeawn, bluestem, panicum, and other grasses.

This soil type occurs within 500 feet of the current placement of I-4, but not directly under.

Ona-Urban land complex (27) – Ona-Urban land complex soils consists of Ona soil that is nearly level and poorly drained typically occurring in flatwoods but has been converted to urban land. Typically, the surface layer of Ona soil is black fine sand about 3 inches thick. The subsoil is dark reddish brown fine sand to a depth of about 16 inches. The upper part of the substratum is gray fine sand to a depth of about 31 inches, and the lower part is light gray fine sand to a depth of about 80 inches.

Drainage systems have been established in most areas with Ona-Urban land complex soils, but the seasonal high water table is within 10 inches of the surface for 1 to 2 months in un-drained areas.

This soil type occurs within 500 feet of the current placement of I-4, but not directly under.

Pomello fine sand, 0 to 5 percent slopes (34) – Pomello fine sand soils are moderately well drained, nearly level to gently sloping soils found mainly in low ridges and knolls within flatwoods. The surface layer is gray fine sand about 3 inches thick. The subsurface layer is white fine sand to a depth of about 40 inches. The upper part of the subsoil is black fine sand to a depth of about 48 inches, and the lower part is dark reddish brown fine sand to a depth of about 55 inches. The substratum is pale brown fine sand to a depth of about 80 inches.

The water table is at a depth of 24 to 40 inches for 1 to 4 months a year, and recedes to 40 to 60 inches deep during dry periods. Longleaf pine, sand pine, and slash pine commonly comprise the canopy structure. The understory and ground cover includes creeping bluestem, lopsided Indian grass, running oak, saw palmetto, and pineland threeawn.

This soil type occurs directly under and within 500 feet of the current placement of I-4. It is the most prevalent soil type currently under I-4 besides Urban Land (50).

Pomello-Urban land complex, 0 to 5 percent slopes (35) – Pomello-Urban land complex soils consist of Pomello soil that is moderately well drained, nearly level to gently sloping found on low ridges and knolls within flatwoods but has been

converted to urban land. The surface layer is typically dark gray fine sand to a depth of 5 inches. The subsurface layer is fine white sand to a depth of about 42 inches. The upper part of the subsoil is dark reddish brown fine sand to a depth of about 48 inches, and the lower part is dark brown fine sand to a depth of about 80 inches.

The water table is at a depth between 24 and 40 inches for 1 to 4 months and recedes to a depth between 40 and 60 inches during dry periods. The water table may be at a greater depth where drainage systems have been installed.

This soil type occurs within 500 feet of the current placement of I-4, but not directly under.

St. Johns fine sand (37) – St. Johns fine sand soils are poorly drained, nearly level sandy soils found on broad flats within flatwoods. Typically, the upper part of the surface layer is black fine sand to a depth of about 7 inches, and the lower part is very dark gray fine sand to a depth of about 12 inches. The subsurface layer is gray fine sand to a depth of about 24 inches. The upper part of the subsoil is fine black sand to a depth of about 30 inches, the middle part is dark reddish brown fine sand to a depth of 36 inches, and the lower part is pale brown fine sand to a depth of about 44 inches. The upper part of the substratum is light gray fine sand to a depth of 58 inches, and the lower part is pale brown sand to a depth of about 80 inches.

The water table is within 10 inches of the surface for 6 to 12 months a year and between 10 and 40 inches deep for the rest of the year. During wet periods, the water table may rise to the surface for brief amounts of time. The natural canopy vegetation includes longleaf pine, slash pine, and laurel oak. The understory and ground cover is wax myrtle, inkberry, saw palmetto, pineland threeawn, bluestem, and various weeds and grasses.

This soil type occurs within 500 feet of the current placement of I-4, but not directly under.

St. Lucie fine sand, 0 to 5 percent slopes (38) – St. Lucie fine sand soils are sandy excessively drained, deep, nearly level to gently sloping found in the uplands. Typically, the surface layer is gray fine sand about 2 inches thick. The upper part of the underlying material is light gray fine sand to a depth of about 6 inches, and the lower part is white fine sand to a depth of 80 inches or more.

The water table extends to a depth no shallower than 72 inches, however may recede deeper during dry periods. Sand pine, Chapman oak, scrub live oak, and sand live oak commonly dominate the canopy. The understory and ground cover is scattered saw palmetto, prickly pear cactus, gold-leaf goldaster, deer moss, bluestem, and pineland threeawn.

This soil type occurs directly under the current placement of I-4 at the southern end of the Segment.

Sanibel muck (42) – Sanibel muck soils are very poorly drained, nearly level soils occurring in depressions, freshwater swamps and marshes, and in poorly defined drainage ways. Typically, this soil has an organic surface layer of black muck about 11 inches thick with a layer of black fine sand below it to a depth of about 15 inches. The upper part of the underlying material is gray fine sand to a depth of about 28 inches, and the lower part is light gray fine sand to a depth of 80 inches or more and has brown mottles.

The water table is ponded at the surface for 6 to 9 months a year and no deeper than 10 inches below the surface for 2 to 6 months a year in un-drained areas. The organic material will rapidly lose thickness when soils are drained or during extended dry periods. The natural canopy is commonly mixed stands of bald cypress, red maple, sweet gum, and black tupelo. The understory and ground cover includes cattail, St. John's wort, pickerelweed, sawgrass, maidencane, ferns, sedges, and other water-tolerant grasses.

This soil type occurs within 500 feet of the current placement of I-4, but not directly under.

Smyrna fine sand (44) – Smyrna fine sand soils are poorly drained, nearly level sandy soils found within broad flatwoods. Typically, the surface layer is black fine sand about 4 inches thick. The subsurface layer is gray fine sand to a depth of about 17 inches. The upper part of the substratum is pale brown fine sand to a depth of about 53 inches, and the lower part is light gray fine sand to a depth of 80 inches or more.

The water table is within 10 inches of the surface for 1 to 4 months a year and recedes to a depth of 10 to 40 inches for the rest of the year. Longleaf pine and slash pine dominate the canopy vegetation. The understory and ground cover includes lopsided Indian grass, inkberry, saw palmetto, pineland threeawn, wax myrtle, bluestem, panicum, and other grasses.

This soil type occurs directly under and within 500 feet of the current placement of I-4.

Tavares fine sand, 0 to 5 percent slopes (46) – Tavares fine sand soils are moderately well drained, nearly level to gently sloping soils found on low ridges and knolls in uplands. Typically, the surface layer is very dark gray fine sand about 6 inches thick. The upper part of the underlying material is brown fine sand to a depth of about 16 inches, the middle part is pale brown fine sand to a depth of about 41 inches, and the lower part is fine white sand to a depth of about 80 inches.

The water table is at a depth between 40 and 80 inches during the seasonally high period of 6 months or more. It recedes to a depth greater than 80 inches during extended dry periods. The natural canopy vegetation is water oak, laurel oak, live oak, turkey oak, slash pine, and longleaf pine. The understory and ground cover includes creeping bluestem, lopsided Indian grass, and pineland threeawn.

This soil type occurs within 500 feet of the current placement of I-4, but not directly under.

Urban land (50) – Urban land is a miscellaneous area covered by urban facilities including shopping centers, parking lots, industrial buildings, houses, streets, sidewalks, and airports. The natural soil cannot be observed and the depth to seasonal high water table is dependent on the functionality of established drainage systems.

The current placement of I-4 is within this category for almost the entire northern half of this Segment.

3.1.2 Land Use Types

Twenty-one (21) land use types were identified within the study area (See Land Use and Habitat Coverage Map, **Figure C, Appendix A**) and are described below:

Residential (1000-1300) – This range of land use codes consists of areas containing low, medium, and high density residential housing. These areas are found west of Turkey Lake Road, between SR 528 and Kirkman Road. The most densely populated areas are in the Toscana Development north of Sand Lake Road, and in the Sand Lake Town Homes and Sand Lake Residences near the Dr. P. Phillips Hospital. This land use has a low likelihood for wildlife occurrence.

Commercial and Services (1400) – This land use was observed throughout the project corridor along Turkey Lake Road, International Drive, Sand Lake Road, and Kirkman Road. It includes numerous types of businesses in strip malls and stand-alone establishments throughout the corridor. This land use has a low likelihood for wildlife occurrence.

Retail Sales and Services (1410) – This land use was observed throughout the project corridor which consisted of office complexes, shopping centers, and other service/retail oriented businesses along the adjacent roadways. Big-box stores like Wal-Mart and Whole Foods are located on Turkey Lake Road, and numerous other stores and restaurants can be found along the corridor. This land use has a low likelihood for wildlife occurrence.

Professional Services (1430) – Medical offices, dental offices, banks, and other professional offices are located along Turkey Lake Road and Sand Lake Road in the project area. This land use has a low likelihood for wildlife occurrence.

Tourist Services (1450) – There are a number of hotels and resorts located along the corridor, especially along International Drive to the east of I-4. The Westgate Lakes Resort is located on Turkey Lake Road near the SR 528 interchange, and there are three resort hotels associated with Universal Studios Orlando on Kirkman Road. This land use has a low likelihood for wildlife occurrence.

Institutional (1700) – This land use consisted of the Orange County Convention Center located at the SR 528 / I-4 Interchange in the northeast quadrant. The convention center is a large sprawling complex, with numerous parking lots and limited natural habitat. This land use has a low likelihood for wildlife occurrence.

Medical and Health Care (1740) – The Dr. P. Phillips Hospital is located on the western side of Turkey Lake Road north of the SR 528 interchange. The hospital is set back off the road, and is composed of a number of buildings with multiple parking lots. This land use has a low likelihood for wildlife occurrence.

Community Recreational Facilities (1860) – The YMCA Aquatic and Family Center is located on the western side of International Drive south of Sand Lake Road and abuts I-4. The complex is enclosed by a roof and has several pools, though sections of the roof are open or removed. This land use has a low likelihood for wildlife occurrence.

Other Recreational (1890) – The Air Florida Helicopter facility is a tourist attraction offering helicopter rides over the local area and is located on the western side of International Drive, adjacent to I-4, south of Sand Lake Road. Helicopters are taking off and landing several times per hour every day of the week, and the site offers little available habitat for wildlife. This land use has a low likelihood for wildlife occurrence.

Inactive land (1920) – This land use consists of undeveloped open land. There are several hundred acres of inactive land on the Universal Studios property between Turkey Lake Road and I-4. This land use has a moderate likelihood for wildlife occurrence.

Herbaceous- Dry Prairie (3100) – This land use consists of open, dry treeless areas containing grasses, forbs, sedges, rushes and other herbaceous vegetation. This habitat was observed within the central median between Kirkman Road and Sand Lake Road, and at the SR 528 interchange. This land use has a high likelihood for wildlife occurrence.

Pine Flatwoods (4110) – This land use consists of natural pine flatwoods, and is located at the SR 528 interchange on the southeast side of I-4. Dominant vegetation in this community consists of slash pine and saw palmetto. This land use has a high likelihood for wildlife occurrence.

Sand Pine (4130) – This pine community grows on deep, infertile deposits of marine sands and clays. It consists of densely-stocked, pure, even-aged stands of sand pine, with no other canopy species. The sand pine found within the project corridor occurs at the interchange of I-4 eastbound with SR 528, along the right-of-way in the southeastern corner and within the center of interchange, and has a high likelihood for wildlife.

Upland Hardwood Forests (4200) – Vegetation within this land use consisted of oaks, pine, and other shrubs. This habitat was mostly observed on the west side of Turkey Lake Road south of Sand Lake Road. This land use has a high likelihood for wildlife occurrence.

Live Oak (4270) – The dominant vegetation within this land use consisted of live oaks and was observed along the western side of Turkey Lake Road near the residential and hospital areas. This land use has a moderate likelihood for wildlife occurrence.

Ditches (5130) – These man-made water retention and conveyance areas were observed along the right-of-way throughout most of the project area. This land use has a moderate likelihood for wildlife occurrence.

Reservoirs (5300) – This land use designates all retention ponds and other artificial impoundments used for irrigation and flood control along the project corridor and within residential developments. This land use has a high likelihood for wildlife occurrence.

Willow and Elderberry (6180) – This community has willow as the pure or predominant species and was observed between Turkey Lake Road and the on-ramp to SR 528 from westbound I-4. This land use has a moderate likelihood for wildlife occurrence.

Exotic Wetland Hardwoods (6190) – The category is a wetland with a dominant exotic species present. In the areas surrounding the Kirkman Road interchange, Brazilian Pepper wetlands were observed within the median and right-of-way. This land use has a moderate likelihood for wildlife occurrence.

Cypress (6210) – Dominant vegetation consisted of cypress and was observed at the northwest corner of the Orange County Convention Center, and rimming Big Sand Lake on the western side of Turkey Lake Road. This land use has a high likelihood for wildlife occurrence.

Roads and Highways (8140) – This land use designates all major and minor roads throughout the project corridor. This land use has a low likelihood for wildlife occurrence.

3.1.3 Existing and Proposed Right-of-Way

The existing unpaved right-of-way within the project corridor consists primarily of areas of maintained grass. The median widens considerably between Sand Lake Road and Kirkman Road, and contains some patches of landscaped vegetation, as well as smaller areas of natural vegetation. Some forested areas occur within the interchanges around Kirkman Road and SR 528, but these are not connected to systems outside of the right-of-way.

The project is developing alternatives for the proposed expansion, all of which will be assumed to impact the existing right-of-way in its entirety. In order to achieve the goals of the project (expansion to 6 general use lanes plus 4 managed use lanes), the designers must utilize as much of the existing right-of-way as possible, though the potential for the need to acquire minor amounts of additional right-of-way for the improvements remains. New right-of-way for pond sites will be required as the existing right-of-way does not contain sufficient areas to provide the necessary treatment and retention, along with the capacity expansions. The project right-of-way is depicted on the project maps (See **Appendix A**).

3.1.4 Proposed Stormwater Management Areas

Twenty (20) potential stormwater management facilities were evaluated for this segment; four (4) are existing facilities which were previously permitted and are being modified or enlarged to meet the requirements of the project, while two (2) are existing and will be utilized with no modifications. Eleven (11) new pond sites (Ponds 200B, 205C, 205D, and 206A are outside of the right-of-way; Ponds 201, 202A, 202B, 202C, 202D, 206, and 206B are within the existing right-of-way) are proposed. These ponds, along with three (3) alternative ponds (Ponds 200A, 205A, and 205B) are described in detail below. The proposed pond sites are depicted on the project maps (see **Figure C, Appendix A**) and photographs of each pond site are included in **Appendix C**.

The existing pond sites that will not require modifications are pond sites 207 and 208.

Pond Site 207

Pond Site 207 is an existing pond site located on the west side of the off-ramp from I-4 westbound to Sand Lake Road. The pond contains some natural vegetation along its edges such as primrose willow, Carolina willow, and cattail, as well as landscaped plantings including pine, bald cypress, maple, and live oak. This pond site is not being reconfigured or altered for the project. There is a **moderate** likelihood for wildlife occurrence on this pond site.

Pond Site 208

Pond Site 208 is an existing pond site located west of I-4, between the off-ramp from I-4 westbound to Universal Studios and the on-ramp from Universal to I-4. The pond site contains some natural vegetation along its edges such as cattail and arrowhead, and planted cypress ringing the entire edge of the pond. This pond site is not being reconfigured or altered for this project. There is a **moderate** likelihood for wildlife occurrence on this pond site.

The existing pond sites that will require modifications for project include ponds 203A, 203B, 204A, and 204B.

Pond Site 203A

Pond Site 203A is located within the interchange of SR 528 at International Drive, on the south side of SR 528 adjacent to the off ramp from SR 528 to International Drive. This pond site was permitted during the construction of this interchange and is being slightly reconfigured to meet the needs of this project. It is primarily a forested system, with a mixture of pines, palmetto, bays, and a thick edge of Brazilian Pepper. There is a **moderate** likelihood for wildlife occurrence on this pond site.

Pond Site 203B

Pond Site 203B is located within the same interchange as Pond 203A, only slightly east between the off-ramp from SR 528 and the on-ramp to SR 528 from International Drive. This pond was permitted during the construction of the interchange and will be slightly reconfigured to meet the needs of this project. Much of the pond is covered in pine, with a heavy edge of Brazilian pepper surrounding the site. There is a **moderate** likelihood for wildlife occurrence on this pond site.

Pond Site 204A

Pond Site 204A is located within the interchange of SR 528 at International Drive, on the north side of SR 528 adjacent to the on-ramp to SR 528 westbound from International Drive. This pond was permitted during the construction of the interchange and will be slightly reconfigured to meet the needs of this project. The pond is primarily pines, though there is an area of open water in the southwestern corner of the site. There is a **moderate** likelihood for wildlife occurrence on this pond site.

Pond Site 204B

Pond Site 204B is located within the same interchange as Pond 204A, only slightly east between the off-ramp from SR 528 westbound to International Drive and the on-ramp to SR 528 from International Drive. This pond was permitted during the construction of this interchange and will be slightly reconfigured to meet the needs of this project. The pond is a mixture of pine, saw palmetto, wax myrtle, and bays with a heavy edge of Brazilian pepper, especially on the south and western sides. There is a **moderate** likelihood for wildlife occurrence on this pond site.

Newly proposed ponds include ponds 200A, 200B, 201, 202A, 202B, 202C, 202D, 205A, 205B, 205C, 205D, 206, 206A, and 206B.

Pond Site 200A

Pond Site 200A is located south of the SR 528 Interchange and west of Turkey Lake Road just south of the Post Office. This is an alternative pond site. This pond site is located on an abandoned development site, where some existing paved paths/roads were identified, and the vegetation had been recently mown. Vegetation observed included pasture grasses, prickly pear cactus, long leaf pine, and cabbage palm. Several gopher tortoise burrows were observed on the site, including some that were classified as active (See **Figure D, Appendix A**). Mapped sand skink soils are present over a large portion of this pond site. There is a **high** likelihood for wildlife occurrence on this pond site.

Pond Site 200B (Recommended)

Pond Site 200B is located adjacent to Pond Site 200A to the south along Turkey Lake Road. This is a recommended pond site. The terrain is sloping from south to north, with a depressional wetland in the northeast corner. The remainder of the site, which has been previously cleared, consists of scattered sand pine, saw palmetto, and a wide variety of opportunistic pioneer species. Soil composition in some areas, based upon field observations, appear to be drier fine sands, with prickly pear cactus occurring. These observations were further supported by Natural Resource Conservation Service (NRCS) mapped soil units. No gopher tortoise burrows were identified, though some suitable habitat was observed. Mapped sand skink soils are present over portions of this pond site. There is a **high** likelihood for wildlife occurrence on this pond site.

Pond Site 201

Pond Site 201 is located along the east side of Turkey Lake Road adjacent to the SR 528 flyover on-ramp to I-4 westbound. The pond is located at the bottom of the fill slope supporting the on-ramp at the SR 528 / I-4 interchange. The area is primarily wetland, with a mix of pines, red maple, bay, and Brazilian pepper as the dominant vegetation. The area becomes drier at the north and south ends, though a heavy cover of vines dominates the herbaceous vegetation, limiting the use for fauna. Mapped sand skink soils are present over a portion of this pond site. There is a **moderate** likelihood for wildlife occurrence on this pond site.

Pond Site 202A

Pond Site 202A is located within the SR 528 / I-4 interchange, between the eastbound SR 528 off-ramp from I-4 eastbound and the through lanes on I-4 eastbound. It is currently a densely covered upland consisting of longleaf pine, live oak, saw palmetto, scrub oak, and yaupon holly. The clear zones for the roadway are mown grasses, with drainage swales along the edges. The area is too thickly covered to be suitable habitat for gopher tortoises, and no signs of utilization were identified. Mapped sand skink soils were identified over a portion of this pond site. There is a **moderate** likelihood for wildlife occurrence on this pond site.

Pond Site 202B

Pond Site 202B is located within the infield of the same interchange just to the east of Pond Site 202A. It consists of mowed grasses, with no other habitat types identified. Due to the regular maintenance of the grass, little potential habitat is available within this pond site though mapped sand skink soils were identified over a portion of the pond site. There is a **low** likelihood for wildlife occurrence on this pond site.

Pond Site 202C

Pond Site 202C is an existing wet pond within the SR 528 / I-4 interchange that will be reconfigured to meet the needs of this project. This pond was already permitted, though it does provide suitable foraging habitat for wading birds, and mapped sand skink soils were identified over a portion of the pond site. There is a **high** likelihood for wildlife occurrence on this pond site.

Pond Site 202D

Pond Site 202D is located within the SR 528 / I-4 interchange in the area below the existing ramp from SR 528 westbound to I-4 westbound. The site consists entirely of mowed grass which is bisected by the asphalt ramp. There is a **low** likelihood for wildlife occurrence on this pond site.

Pond Site 205A

Pond Site 205A is located along the western side of Turkey Lake Road, north of the SR 528 interchange, in an undeveloped parcel near Boo Boo's Lake. This is an alternative pond site. The site is primarily composed of Live Oak, with some overgrown herbaceous species such as dog fennel and various pasture grasses making up most of the ground cover. Little suitable habitat for listed species was observed, though its proximity to the lake and adjacent undeveloped lands does increase the potential for wildlife utilization. Mapped sand skink soils were identified over a portion of this pond site. There is a **moderate** likelihood for wildlife occurrence on this pond site.

Pond Site 205B

Pond Site 205B is located northwest of Pond Site 205A, on the north side of Boo Boo's Lake. This is an alternative pond site. The site is primarily composed of live oak, with a healthy ground cover of pioneer species, such as dog fennel and ragweed, and numerous species of pasture grasses. Cogon grass was also present over a large area on the site. Little suitable habitat for listed species was observed, though its location surrounding Boo Boo's Lake, and proximity to Big Sand Lake does increase the potential for wildlife utilization. Mapped sand skink soils were identified over a large portion of this pond site. There is a **moderate** likelihood for wildlife occurrence on this pond site.

Pond Site 205C (Recommended)

Pond Site 205C is located along the western side of Turkey Lake Road, north of the SR 528 interchange, in an undeveloped parcel near Boo Boo's Lake. This is a recommended pond site. The site is primarily composed of live oak, with some overgrown herbaceous species such as dog fennel and various pasture grasses making up most of the ground cover. Little suitable habitat for listed species was observed, though its location surrounding Boo Boo's Lake, and proximity to Big Sand Lake does increase the potential for wildlife utilization. Mapped sand skink soils were identified over a large portion of this pond site. There is a **moderate** likelihood for wildlife occurrence on this pond site.

Pond Site 205D (Recommended)

Pond Site 205D is located to the west of I-4 and Turkey Lake Road, south of Wal-Mart Supercenter #4332. This is a recommended pond site. The site is primarily composed of live oak and laurel oak, with numerous Brazilian pepper and

saw palmetto with some ear pod trees. A private residence is located along Turkey Lake Road at the pond site. There is a **moderate** likelihood for wildlife occurrence on this pond site.

Pond Site 206

Pond Site 206 is located at the interchange of I-4 and Sand Lake Road in the northwestern quadrant, adjacent to the on-ramp to I-4 westbound from Sand Lake Road, and the off-ramp from I-4 westbound to Sand Lake Road. This is an existing dry pond that was permitted during the design of this interchange, and will be converted to a wet pond for the purposes of this project. The site is primarily open grass, though a rim-ditch is found along the perimeter to convey runoff, and the area in the southeastern portion contains wetland vegetation such as Carolina willow, primrose willow, and Brazilian pepper. Little potential habitat exists for wildlife, other than potential foraging in the ditch when water levels are high. Mapped sand skink soils cover this entire pond site. There is a **low** likelihood for wildlife occurrence on this pond site.

Pond Site 206A

Pond Site 206A is located to the southwest of the interchange of I-4 and Sand Lake. This is a proposed new pond site. The site is primarily open grass with some slash pine and cabbage palm along the northeastern portion of the site. Mapped sand skink soils occur on this pond site. There is a **low** likelihood for wildlife occurrence on this pond site.

Pond Site 206B

Pond Site 206B is located at the interchange of I-4 and Sand Lake Road in the northwestern quadrant, partially overlapping the existing ramp from westbound I-4 to Sand Lake Road. This is a proposed new pond site. The site is primarily open grass which is bisected by paved asphalt. Mapped sand skink soils are identified on this pond site. There is a **low** likelihood for wildlife occurrence on this pond site.

3.2 Wildlife, Including Listed Species

During the field investigation, individuals or evidence of at least twenty-one (21) different mammal, bird, and reptile species were identified along the project corridor (See Species Location Map, **Figure D, Appendix A**). Of those species, the following species appear on protected species lists developed by the USFWS, the FFWCC, FNAI or FCREPA (See Tables 1 and 2 in **Appendix B** for the listing status):

Alligator mississippiensis -- American alligator
Ardea alba – Great egret
Egretta caerulea -- Little blue heron
Eudocimus albus -- White ibis
Gopherus polyphemus -- Gopher tortoise
Grus canadensis pratensis -- Florida sandhill crane
Mycteria americana -- Wood stork
Pandion haliaetus – Osprey
Plegadis falcinellus – Glossy ibis

Additional wildlife species observed during the field investigations included:

Anolis sagrei – Cuban brown anole
Bubulcus ibis – Cattle egret
Buteo jamaicensis – Red tailed hawk
Buteo lineatus – Red shouldered hawk

Charadrius vociferus – Killdeer
Coragyps atratus – Black vulture
Corvus brachyrhynchos – American crow
Cyanocitta cristata – Blue jay
Mimus polyglottos – Mockingbird
Quiscalus quiscula – Common grackle
Sciurus carolinensis – Eastern gray squirrel
Zenaida macroura – Mourning dove

Numerous other wildlife and plant species, many of which are protected, have the potential to occur in Orange County (See Tables 1 & 2 in **Appendix B**). Although evidence of the occurrence of those species was not observed during field inspections of the existing right-of-way or proposed pond sites, suitable habitat might exist in those areas. A discussion of species that might be impacted by the proposed project is provided in Section 4.0.

4.0 Impact Analysis

4.1 Potentially Impacted Listed Species and Other Sensitive Species

During field investigations, wildlife and plant surveys were conducted in potential impact areas such as proposed pond site areas and the existing right-of-way that contain habitat for one or more listed species. Listed below are those species with the potential to occur within the study limits and be impacted by the project

4.1.1 Federally Listed Species

Informal Consultation for federally listed species was completed with USFWS and documented in the letter dated February 28, 2016 in which the USFWS concurred with the proposed effects determinations described below. All federally listed species within the segment were granted either “No Effect” or “May Affect, But not Likely to Adversely Affect”.

Reptiles

Eastern Indigo Snake (*Drymarchon corais couperi*) – The eastern indigo snake, listed by both the FFWCC and the USFWS as Threatened, is a habitat generalist, using a variety of habitats from mangrove swamps to xeric uplands. These snakes are cold-sensitive and require gopher tortoise burrows, other animal holes, or stumps for protection during winter months. These snakes require large tracts of natural, undisturbed habitat, and prefer to forage in and around wetlands for their preferred prey – other snakes. Several burrows were located within the project area but the potential for indigo snakes is low due to the limited amount of habitat available in this developed area. No indigo snakes were observed during field studies and the closest documented sighting is located approximately 36 miles northeast of the project area (2008 sighting near Blue Springs State Park). If an eastern indigo snake is observed during construction, the contractor will be required to cease any operation that might cause harm to the snake. If the eastern indigo snake does not move away from the construction area, both FFWCC and USFWS will be contacted for further guidance. According to the USFWS Programmatic Key for the Eastern Indigo Snake (January 2010, updated August 2013), as the project will implement the Standard Protection Measures for the Eastern Indigo Snake (USFWS, 2013), which specify education of the construction contractor concerning avoidance of indigo snakes and post-construction reporting, will impact less than 25 acres of xeric habitat (scrub, sandhill, or scrubby flatwoods) and there are less than 25 active and inactive gopher tortoise burrows, and will have permits conditioned such that all active and inactive gopher tortoise burrows will be

evacuated prior to site manipulation in the vicinity of the burrow; therefore, the project **may affect, but is not likely to adversely affect** the eastern indigo snake.

Sand Skink (*Neoseps reynoldsi*) – The sand skink is listed as Threatened by the USFWS and FFWCC. 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, including Orange and Osceola County. They are found within these geographic areas typically at elevations of 82 feet above sea level and higher. They occur in excessively drained, well-drained, and moderately well-drained sandy soils, with suitable soil types including: Apopka, Arrendondo, 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, though these may be degraded by impacts to overgrown scrub, pine plantation, citrus grove, old field, or pasture. Skinks have been documented to occur in all these degraded conditions where soil types are suitable regardless of vegetative cover. This makes habitat condition of secondary importance in determining if skinks are present. 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. As the project occurs within the USFWS consultation area for sand skinks, both a pedestrian survey and full coverboard survey were conducted. The survey occurred between April 10, 2014 and May 6, 2014. Results of the survey (See **Appendix E** for survey report) indicated that no skinks were observed within any of the survey areas, and was sent to the USFWS to determine if impacts to the sand skink will occur as a result of the project. The USFWS has advised (email October 22, 2014 from Jane Monaghan, **Appendix D**) that the Service would agree that due to the fact that no direct or indirect observations of sand skinks were made during the survey, the project **may affect, but is not likely to adversely affect** the sand skink. A subsequent meeting on December 17, 2015 was held at the Jacksonville office of USFWS with Lourdes Mena where it was determined that no additional sand skink surveys would be required for this segment.

Avian

Florida Scrub-Jay (*Aphelocoma coerulescens*) – The Florida scrub-jay, listed as Threatened by both the FFWCC and USFWS, is an endemic species found in Florida scrub habitats. This gregarious jay is a habitat specialist and typically lives in scrub and scrubby flatwoods habitats. No suitable scrub habitat is located within the project corridor. The previous PD&E study (May 2000) conducted surveys for scrub-jays in two areas near Sand Lake Road and I-4. Both of these areas have been developed since that study, and no longer contain any scrub or scrub-like habitat. Regardless, cursory surveys for scrub-jays were conducted in April and May of 2013 and April and May of 2014 to evaluate the potential for the presence of this species. No scrub-jays were observed within any proposed right-of-way or pond site areas of Segment 2. The proposed widening and stormwater ponds are not expected to have any impact on scrub-jays or scrub-jay habitat. Therefore, this project will have **no effect** on this species.

Crested caracara (*Polyborus plancus audubonii* = *Caracara cheriway*) – The crested caracara is listed by both the USFWS and the FFWCC as Threatened. This large raptor inhabits Florida's prairies and rangelands. They forage on many kinds of insects, fish, reptiles, birds, and mammals. They will feed on live captured prey, but also on roadkill. Nests are usually constructed within cabbage palms. Sensitivity to human disturbance varies in this species with many tolerating human activities, especially when human influence is already present within their home range. If a caracara nest is found to be within the project area, management practices outlined within the *Habitat Management Guidelines for Audubon's Crested Caracara in Central and Southern Florida* should be employed. The project occurs at the northernmost edge of the consultation area for this bird in Central Florida. No birds, nests, or suitable habitat have

been observed or were documented within the project corridor either during the current study or during the previous PD&E Study (May 2000), therefore, the project will have **no effect** on this species.

Snail kite (*Rostrhamus sociabilis plumbeus*) – The snail kite is listed as Endangered by both the USFWS and the FFWCC. This non-migratory, medium-sized raptor utilizes large open freshwater marsh habitats and lakes with shallow water. Nests are usually located in a low tree or shrub at the water's edge. The main staple of their diet is the apple snail, lending to their name. The project does occur within the USFWS consultation area for the snail kite though no observations have been documented within or near the project corridor. Nesting snail kites have been documented well to the east of the project in Kissimmee at both Lake Tohopekaliga and East Lake Toho. No adequate nesting or foraging habitat is located adjacent to the project area, within the proposed right-of-way or pond site areas. Therefore, this project will have **no effect** on this species.

Red-Cockaded Woodpecker (*Picoides borealis*) – This species is listed as Endangered by the USFWS and Threatened by the FFWCC. The colonial red-cockaded woodpecker (RCW) is a habitat specialist, requiring stands of over-mature pine that have contracted the red-heart disease. RCW's require diseased trees for cavity building, which they use for nest and roost cavities. Preferred pine stands need to have a fairly open canopy, with a sparse subcanopy to allow easy flight. RCWs must also have ample foraging habitat consisting of younger pines surrounding the cavity trees. No suitable nesting habitat was observed in the impact area within the project limits. The project occurs near (3.5 miles) to an area previously designated by USFWS as "Occurrence Area"; though the previous PD&E Study (May 2000) indicated no suitable habitat or any documented RCW sightings within the proposed right-of-way or pond sites. Additionally, no suitable habitat for nesting or foraging was identified within the vicinity of the project during field surveys. Therefore, this project will have **no effect** on the red-cockaded woodpecker.

Wood Stork (*Mycteria americana*) – This species, now listed as Threatened by the USFWS, is the only true species of stork nesting in the United States. This reclassification does not change any conservation or protection measures for the wood stork under the Endangered Species Act (ESA), rather it recognizes the recovery and the positive impact that conservation efforts have had on breeding populations of storks. Feeding areas for wood storks include marshes, pools or ditches in which fish congregate. This species typically nests in mixed woodlands comprised of such overstory species as cypress, gum, and southern willow; pond apple and mangrove swamps may also be utilized for nesting.

Based upon the updated colony map prepared by the USFWS in June of 2014, the study area is located within the Core Foraging Areas (CFA - 15 miles from an active nesting colony in Central Florida) of two wood stork colonies (See Species Location Map in **Figure D, Appendix A**). A wood stork was observed within the project area during field surveys, though foraging areas within the study area are limited to roadside swales and retention ponds. Utilizing the *Corps of Engineers and U. S. Fish and Wildlife Service Effect Determination Key for the Wood Stork in Central and North Peninsular Florida* (2008), the project is not within 2,500 feet of an active colony site, will likely impact Suitable Foraging Habitat (SFH) of greater than 0.5 acres, and is located within the CFA of 2 wood stork colonies (*Lawne Lake, Gatorland*). The estimated direct impacts to wetlands include approximately **4.43 acres** of forested systems, and **9.32 acres** of other surface waters.

Additionally, FDOT commits to provide SFH compensation within the Service Area of a Service-approved wetland mitigation bank(s) within the CFA, and the Project is not contrary to the Service's *Habitat Management Guidelines for the Wood Stork in the Southeast Region* and in accordance with the Clean Water Act section 404(b)(1) guidelines. There are nine currently permitted mitigation banks that include the project corridor within the bank service area that have credits available to offset impacts to SFH. FDOT will coordinate with the permitting agencies during the permitting

phase of the project on compensatory mitigation and minimization of impacts to suitable foraging habitat. These actions should result in no net loss of foraging habitat; therefore, the project **may affect, but is not likely to adversely affect** the wood stork.

Southern Bald Eagle (*Haliaeetus leucocephalus*) – The southern bald eagle was delisted from both the U.S. Endangered Species Act and FFWCC imperiled list, though it is still protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. The USFWS issued the National Bald Eagle Management Guidelines in May 2007 while Florida adopted a Bald Eagle Management Plan (BEMP) in April 2008, written closely to follow the federal guidelines. The BEMP provides guidelines and recommendations to help people avoid violating state and federal eagle laws. The BEMP also outlines strategies to maintain the Florida population of bald eagles at or above current levels. The BEMP goal is to, “maintain a stable or increasing population of eagles in Florida in perpetuity.” Bald eagles almost always nest in the tops of living or dead tall trees along or very near lakes and rivers; these water bodies provide fish, typically their preferred food. Bald eagles generally avoid areas with extensive human activity, so management guidelines must be considered before any construction can be initiated within 660 feet of an active southern bald eagle nest. Four bald eagle nests are recorded to be in the general vicinity (within 1 mile) of the project corridor (OR014, OR015, OR047 and OR077). However, none of these nests is located within 660 feet of the proposed right-of-way or any of the proposed pond sites. For that reason, the project will have **no effect** on the southern bald eagle.

FEDERALLY LISTED PLANT SPECIES

A review of agency databases and a field review of the project corridor indicate that there have been few reported occurrences of federally listed plant species within the proposed project area. Twelve federally listed species have been demonstrated to have the potential to occur within Orange County, though not all habitat types are represented within the project area (see Table 2, **Appendix B**). Information from the previous PD&E Study (May 2000) indicated that one listed plant was observed, the scrub lupine (*Lupinus aridorum*). The observation was made west of Turkey Lake Road, to the west of the SR 528 Interchange at westbound I-4. A follow up protected plant field survey covering the area of proposed right-of-way widening and pond sites was conducted in May 2013 and April 2014 (and in January 2015 at the newly proposed alternative pond site) by project botanists and other biologists. No federally listed plant species were identified within the proposed widening impact area or pond sites during the field investigations. Based on field work conducted, no direct or indirect impacts to federally listed plant species are likely to occur; the project **may affect, but not likely adversely affect** any of the federally listed plant species.

4.1.2 State Listed Species

Mammals

Florida Mouse (*Podomys floridanus*) – This mouse, listed as a Species of Special Concern by the FFWCC, is one of the two mammal species that are endemic to Florida. It typically lives within gopher tortoise burrows in fire-maintained, xeric uplands. Sub-optimal habitat exists in the xeric uplands that contain gopher tortoise burrows, such as mesic flatwoods (4110), sand pine scrub (4130), and sand pine plantations (4410). Several gopher tortoise burrows were located within the project area, but no Florida mice were observed during field surveys. If gopher tortoise burrows are proposed to be impacted, then the relocation of gopher tortoises and their burrow commensals will be conducted prior to construction. Because of this, the project is **not likely to adversely affect** the Florida mouse.

Sherman’s Fox Squirrel (*Sciurus niger shermani*) – The Sherman's fox squirrel, listed by the FFWCC as a Species of Special Concern, is the largest of the three fox squirrel subspecies that occur in Florida. They have large ranges that can

span over 80 acres. Optimum habitat for this subspecies is predominantly longleaf pine-turkey oak sandhills, although they are also reported to occur in mesic forested areas, as well. Some potential habitat is present within the project area, although Sherman's fox squirrels were not observed during the site investigations for this project. The amount of potential habitat for this species impacted by the project will be minimal. Therefore, the proposed project is **not likely to adversely affect** the Sherman's fox squirrel.

Florida Black Bear (*Ursus americanus floridanus*) – The Florida black bear is a very wide-ranging species formerly listed as Threatened by the FFWCC. Preferred habitat of the black bear includes dense forest, both upland and wetland, but the bear is often encountered in other areas during its seasonal movements. The bear was removed from the list in August 2012 after the approval of the Florida Black Bear Management Plan. The plan was implemented to set a strategy in place to address challenges in bear management, to manage for a sustainable bear population state-wide, and reduce human-bear conflicts. Going forward, FFWCC will continue to engage with landowners and regulating agencies to guide future land use to be compatible with the objectives of the Bear Management Plan. The plan divides the state into seven Bear Management Units (BMU's) which support the seven sub-populations of bear across the state. The unit closest to the project corridor is the Ocala/St. Johns Unit, though nearest Primary or Secondary Bear range within this unit is located in northwestern Orange County and not near the location of the project. As it is unlikely that a black bear will travel through the project corridor, and no further fragmentation of bear habitat is proposed, the project is **not likely to adversely affect** the Florida black bear.

Reptiles

Gopher Tortoise (*Gopherus polyphemus*) – The occurrence of this species, listed as Threatened by the FFWCC (and designated as a Candidate species for listing by the USFWS), is a key factor in the determination of habitat suitability for certain other listed species because of the large number of other animals that use tortoise burrows for one or more of their life requisites. While it is common to find gopher tortoise burrows in most types of upland communities, the preferred habitats include xeric uplands and disturbed, ruderal areas.

Six (6) gopher tortoise burrows were observed within pond site 200A, and suitable habitat was identified at pond 200B. If impacts to these areas cannot be avoided, then relocation of the tortoises and their commensals will be necessary. During permitting, all potential gopher tortoise habitat that could be impacted by the project will be systematically surveyed according to the current guidelines published by the FFWCC. If gopher tortoise burrows are found, all practicable design measures will be employed to avoid impacts to the burrows. For burrows which cannot be avoided, a permit will be obtained from FFWCC for relocation of gopher tortoises and commensals, and relocation will be performed at a time as close as practicable to the start of construction activities at the site of the burrows (See **Figure D, Appendix A**). Therefore, the project is **not likely to adversely affect** the gopher tortoise.

Florida Pine Snake (*Pituophis melanoleucus mugitus*) – This snake, listed as a Species of Special Concern by the FFWCC, is another tortoise burrow commensal organism, utilizing both tortoise burrows and also the tunnels of pocket gophers (*Geomys pinetis*) for feeding and shelter. Preferred habitat of the pine snake is xeric uplands, and to a lesser extent, flatwoods and other mesic uplands. Some habitat is available within the project, especially where gopher tortoise burrows were observed (see **Figure D, Appendix A**). Both the pocket gophers and the pine snakes live nearly their whole lives underground and are very hard to observe directly. Earth work in suitable habitat may impact subterranean pine snakes. With the relocation of commensal organisms from gopher tortoise burrows if impacted, the project is **not likely to adversely affect** the Florida pine snake.

Short-tailed snake (*Stilosoma extenuatum*) – The short-tailed snake, listed as Threatened by the FFWCC, belongs to a monotypic genus that is endemic to Florida. Rarely seen due to its earth-burrowing tendencies, it is restricted to xeric uplands, primarily longleaf pine-turkey oak sandhills and sand pine scrub, for its habitat requirements. Herpetologist Paul Moler (FFWCC-retired) reports short-tailed snakes occur in a wider range of ecosystems than indicated in the scant literature on the species, and may be found where prey (small snakes) and loose soils occur in North-Central Florida. Suitable habitat (sand pine scrub) is not present on this project, nor was any of these snakes observed during any field surveys. Due to the lack of xeric habitat, it is anticipated that this project is **not likely to adversely affect** the short-tailed snake.

Amphibians

Gopher Frog (*Rana capito*) – The gopher frog, listed by the FFWCC as a Species of Special Concern, is a gopher tortoise burrow commensal organism, using tortoise burrows for shelter. Prime gopher frog habitat includes xeric uplands, especially longleaf pine-turkey oak associations with nearby (i.e., within one mile) seasonally flooded marshes or ponds. Field biological surveys have shown that gopher tortoise burrows were located within pond site 200-A though no gopher frogs were observed. If gopher tortoise burrows are impacted, then this species could be impacted as well, though the excavation of any potentially occupied burrows and the relocation of any gopher tortoises and their burrow commensals should offset any impacts to this species. Therefore, the project is **not likely to adversely affect** the gopher frog.

Avian

Florida Burrowing Owl (*Speotyto cunicularia*) – The Florida burrowing owl is listed as a Species of Special Concern by the FFWCC. The breeding range of the Florida burrowing owl includes Orange County. Preferred habitats are treeless areas on well-drained soil where herbaceous ground cover is fairly short, such as dry prairies and edges of depressional marshes during the dry season. Florida burrowing owls have also been observed along canal banks, pastures, golf courses, mowed residential lawns, and airports (Rodgers, 1996). No Florida burrowing owls or their burrows were observed during the field surveys and no direct or indirect impacts are anticipated for this species. Therefore, the project is **not likely to adversely affect** the Florida burrowing owl.

Florida Sandhill Crane (*Grus canadensis pratensis*) – This non-migratory subspecies, listed as Threatened by the FFWCC, can often be seen foraging in improved pastures, open fields and along the roadside. During the winter months, it is distinguished from its migratory northern cousins by its smaller size and more delicate stature. Sandhill cranes nest in freshwater marshes and feed in adjacent fields and pastures. Some adequate nesting habitat is found within the freshwater marshes located adjacent to the project corridor, and foraging habitat was found within the project limits. Sandhill cranes were observed flying over the project area several times during multiple surveying events, however were not observed foraging or nesting within the project area. The proposed project is **not likely to adversely affect** the sandhill crane.

Southeastern American Kestrel (*Falco sparverius paulus*) – This resident subspecies of the kestrel, listed as Threatened by the FFWCC, can be distinguished from its cousin, *F. s. sparverius*, a winter migrant, by its smaller size. The Southeastern kestrel requires three components for optimal habitat: large, open fields for foraging, snags for nesting, and snags, fence lines or telephone poles as perching sites from which to hunt. No kestrels were observed along the project corridor, nor within any pond sites or along the portion of the project to be widened. Therefore, this project is **not likely to adversely affect** this species.

Least tern (*Sterna antillarum*) – Historically, least terns nested on sandy beaches and lakeshores, but presently, they nest almost exclusively on man-made substrates such as spoil islands and gravel rooftops. This small tern, listed as Threatened by the FFWCC, is still fairly common in localized areas. However, none have been reported in the project study area. Prime nesting areas are minimal, so this species has only a low possibility of occurring along the project corridor, therefore the proposed project will have **no effect** on the least tern.

Wading Birds – Wading bird rookeries were not observed and are not known to occur within or adjacent to the study area. Potential foraging habitat for limpkin (*Aramus guarana*), little blue heron (*Egretta caerulea*), roseate spoonbill (*Ajaia ajaja*), white ibis (*Eudocimus albus*), reddish egret (*Egretta rufescens*), tri-colored heron (*Egretta tricolor*), and snowy egret (*Egretta thula*), all classified as Species of Special Concern (SSC) by the FFWCC, occurs within the limits of the study area. Both little blue heron and white ibis were observed during field surveys. No wetlands providing critical foraging or nesting habitat for these avian species will be impacted by the proposed project and indirect impacts to wading birds are not anticipated. Therefore, the proposed project is **not likely to adversely affect** the wading bird population in the region.

STATE LISTED PLANT SPECIES

A review of available information revealed that 57 state listed plant species have the potential to occur within the habitats located within the project area in Orange County (see Table 2, **Appendix B**). No state listed plant species were observed during the field assessment of project area, though during the previous PD&E Study (May 2000), nodding pinweed (*Lechea cernua*) was observed along Turkey Lake Road. Improvements to Turkey Lake Road since this study have eliminated the habitat areas that this plant occurred in, and no evidence of the plant was observed during the field surveys in May 2013. Therefore, the proposed project is **not likely to adversely affect** any state-listed plant species.

4.1.3 Other Sensitive Species

MIGRATORY BIRDS

The Migratory Bird Conservation Commission was established on February 18, 1929 by the passage of the Migratory Bird Conservation Act. It was created and authorized to consider and approve any areas of land and/or water recommended by the Secretary of the Interior for purchase or rental by the U.S. Fish and Wildlife Service under the Act. In 1989, the Commission acquired the additional responsibility to approve project funding under the North American Wetland Conservation Act. This Act provides for Federal funding to encourage partnerships to protect, enhance, restore, and manage wetland and other habitats for migratory birds and other fish and wildlife to carry out the North American Waterfowl Management Plan. Waterfowl are the most prominent and economically important group of migratory birds of the North American Continent. National Migratory Bird Areas in Florida include Arthur R. Marshall, Caloosahatchee, Cedar Key, Chassahowitzka, Egmont Key, Great White Heron, Hobe Sound, J.N. Ding Darling, Lake Woodruff, Matlacha Pass, Merritt Island, Okefenokee, Pine Island, Pinellas, St. Marks, and St. Vincent. None of these National Migratory Bird Areas are located within a one-mile radius of the project corridor. If the project results in direct impacts to wetland habitat or surface water features (i.e. roadside ditches) that could be utilized by migratory birds there may be an impact on these species. Impacts to wetlands will be mitigated for at approved mitigation sites within the affected watershed and will offset any potential impacts to migratory birds from this project.

5.0 Conclusions, Recommendations, and Commitments

The proposed project will avoid and minimize impacts to wildlife and their habitat to the greatest practicable extent. Unavoidable impacts will be mitigated through a combination of actions designed to enhance local and regional ecological and hydrologic connectivity where possible. Those actions constitute the current recommendations developed and refined by staff and consulting environmental scientists representing various federal and state agencies and nongovernmental organizations, using the most current record and project specific scientific information available. The FDOT routinely reevaluates PD&E Study results and commitments prior to and during the project design phase, and again prior to right-of-way acquisition and construction. Therefore, the wildlife and recommendations proposed herein will be subject to reevaluation in the future. Appropriate modifications to the recommended actions may be made in the event that the latest science, design constraints or other relevant changes in circumstance so dictate.

Project Commitments

The following specific wildlife and habitat commitments will be incorporated into all appropriate project PD&E documents and will be carried over into the design phases.

1. As required by FDOT Standard Specifications, the construction of equipment staging areas for storage of oils, greases, fuel, road bed material, and equipment maintenance will be sited in previously disturbed areas not adjacent to any streams, wetlands, or surface water bodies. The staging areas will be surveyed for listed species prior to their use. Also as required by FDOT Standard Specifications, if protected species are identified unexpectedly within the construction area during construction, coordination will be initiated with the appropriate resource agencies to avoid or mitigate impacts.
2. Eastern indigo snake habitat has been identified within the project limits. Utilize the US Fish and Wildlife Service Standard Protection Measures for the Eastern Indigo Snake, at the US Fish and Wildlife Service Link: http://www.fws.gov/northflorida/IndigoSnakes/20130812_Eastern_indigo_snake_Standard_Protection_Measures.htm
3. During permitting, all potential gopher tortoise habitat that could be impacted by the project will be systematically surveyed according to the current guidelines published by the Florida Fish and Wildlife Conservation Commission. If gopher tortoise burrows are found, all practicable design measures will be employed to avoid impacts to the burrows. For burrows which cannot be avoided, a permit will be obtained from FWC for relocation of gopher tortoises and commensals, and relocation will be performed at a time as close as practicable to the start of construction activities at the site of the burrows.
4. During permitting, FDOT will coordinate with the permitting agencies to quantify and provide compensation for any unavoidable impacts to wood stork suitable foraging habitat (SFH). Mitigation for these impacts will be provided within the service area of a USFWS-approved wetland mitigation bank that provides an amount of habitat and foraging function equivalent to that of the impacted SFH in accordance with the *Corps of Engineers and U.S. Fish and Wildlife Service Effect Determination Key for the Wood Stork in Central and North Peninsular Florida*.

The utilization of these commitments and mitigation measures for unavoidable impacts are recommended to minimize the overall impacts to wildlife from this project.

6.0 References

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APPENDIX A
MAPS AND FIGURES

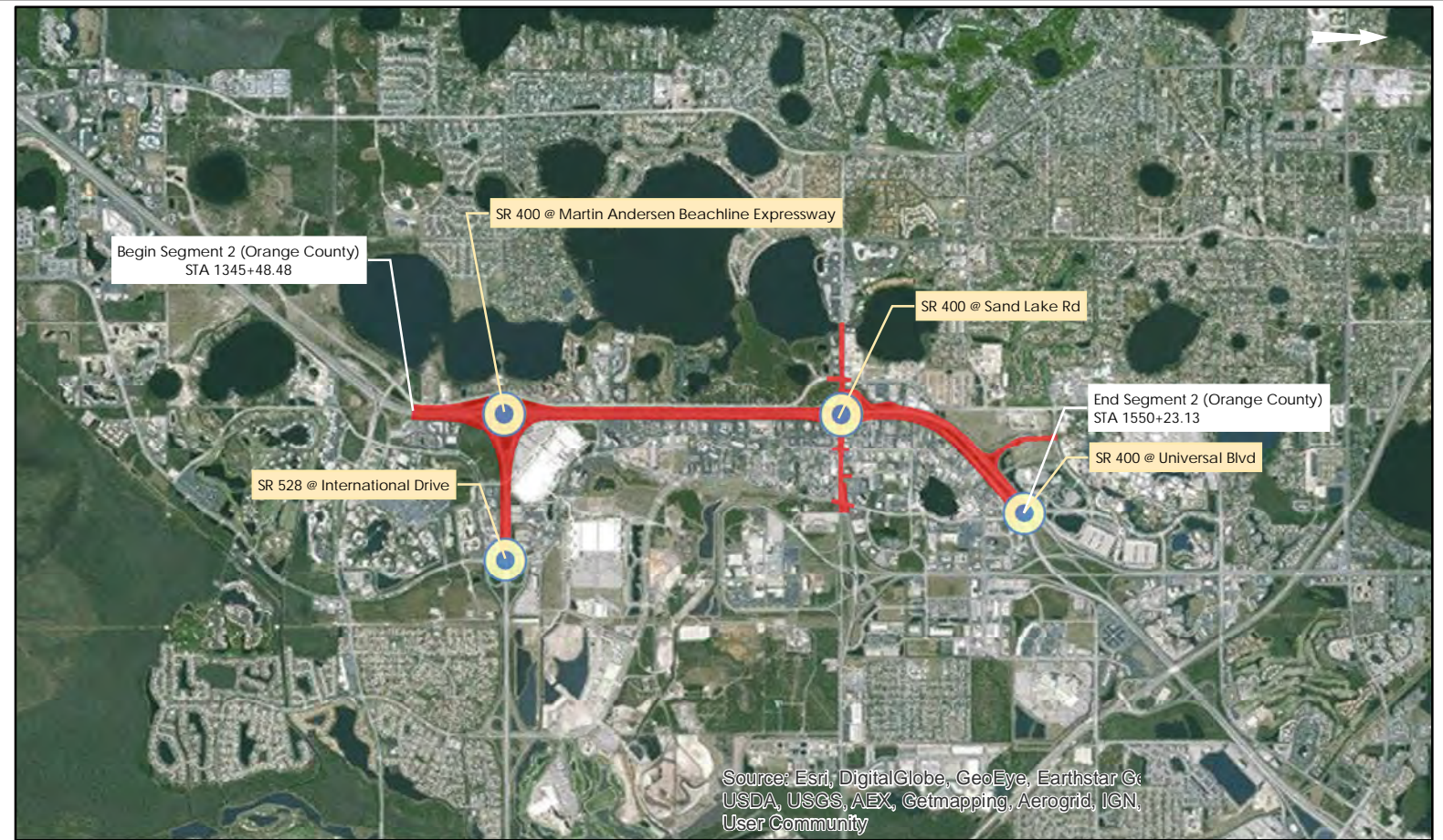
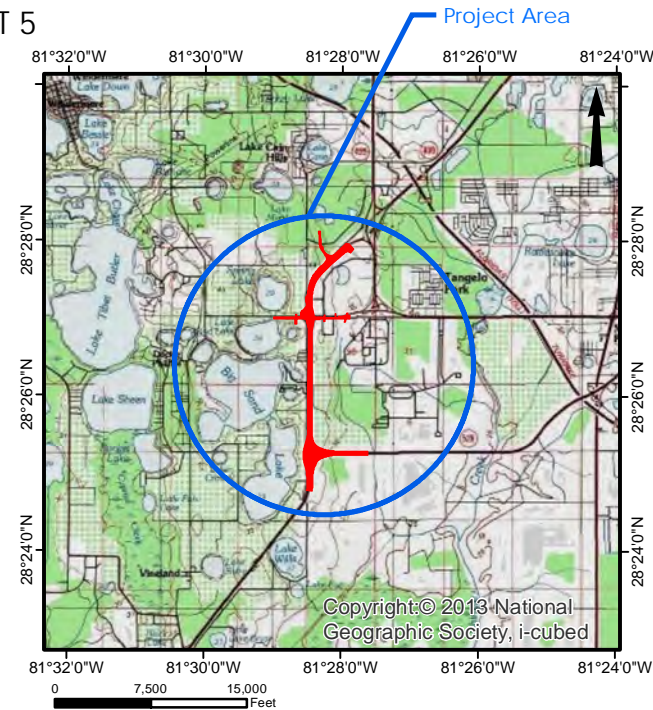
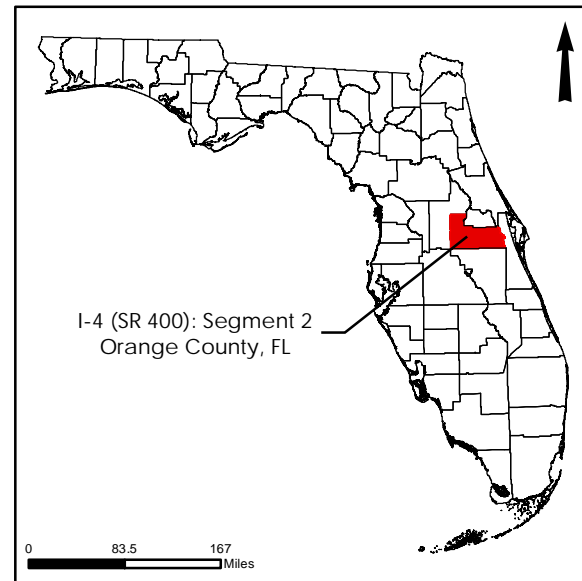
I-4 (SR 400) PROJECT DEVELOPMENT AND ENVIRONMENT (PD&E) STUDY
BEYOND THE ULTIMATE

SEGMENT 2

FDOT FM NO. 432100-1-22-01

ENDANGERED SPECIES BIOLOGICAL ASSESSMENT

ORANGE COUNTY
FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT 5



MAP SHEET INDEX		
FIGURE NO.	SHEET NO.	TITLE
Figure A	Single Sheet	USGS Topographical Map
Figure B	Single Sheet	NRCS Soils Map
Figure C	Single Sheet	Land Use and Habitat Coverage Map
Figure D	Single Sheet	Species Location Map

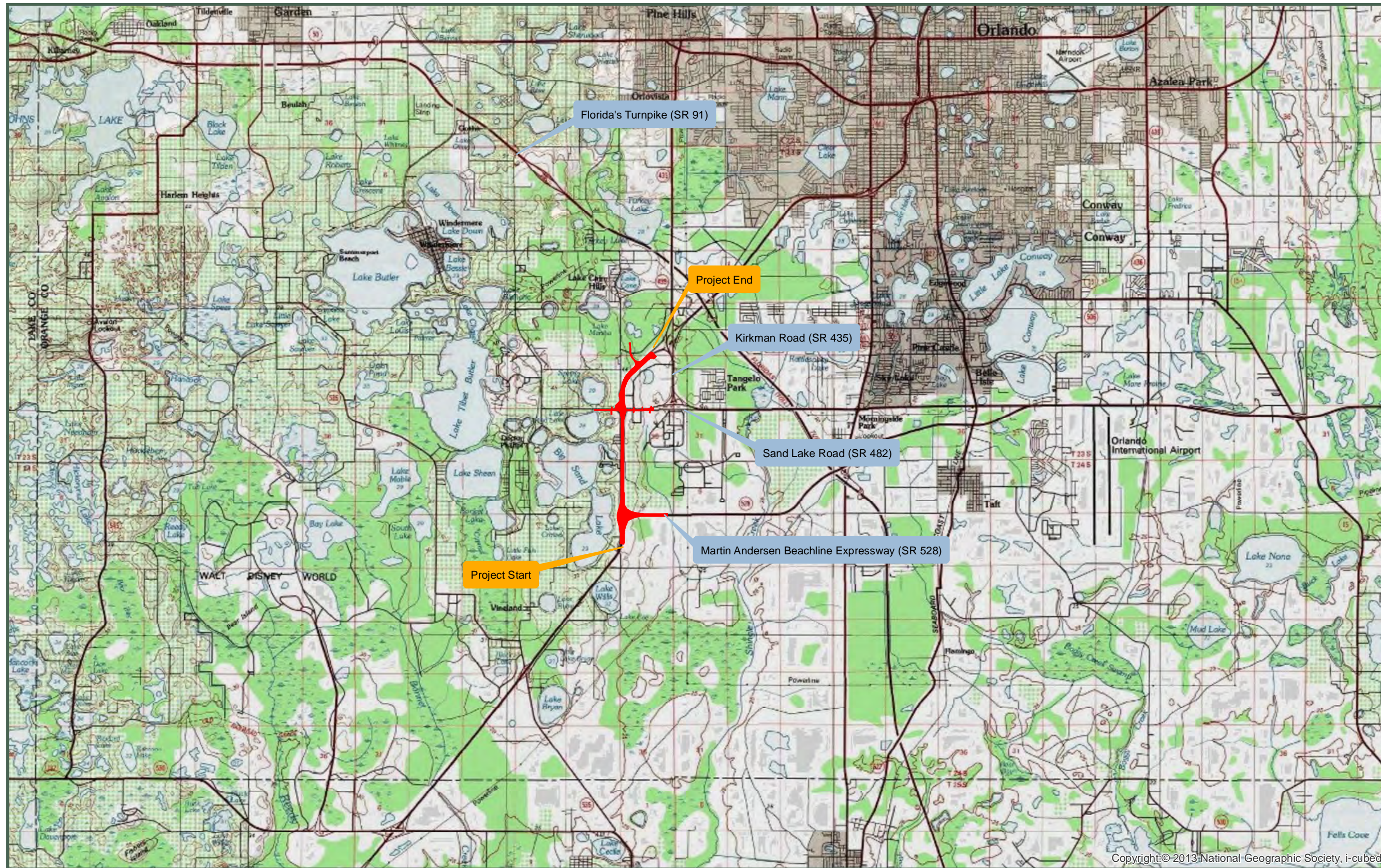
PROJECT DETAILS

ENDANGERED SPECIES BIOLOGICAL ASSESSMENT REPORT:
Segment 2 - Report Maps

SR 400 (I-4) from West of SR 528 Beachline Expressway
to West of SR 435 Kirkman Road - Orange County (75280)

75280 Orange County
STA 1345+48.48 (Begin) - MP 5.65
STA 1550+23.13 (End) - MP 9.562





Map Key

SR 400 (I-4) PD&E Limits

- I-4 Beyond the Ultimate-Segment 2 Right of Way

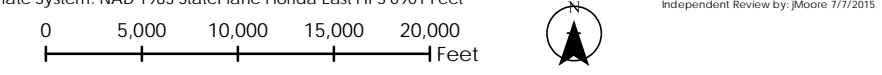
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 ENDANGERED SPECIES BIOLOGICAL ASSESSMENT REPORT: Segment 2 - USGS Topographical Map

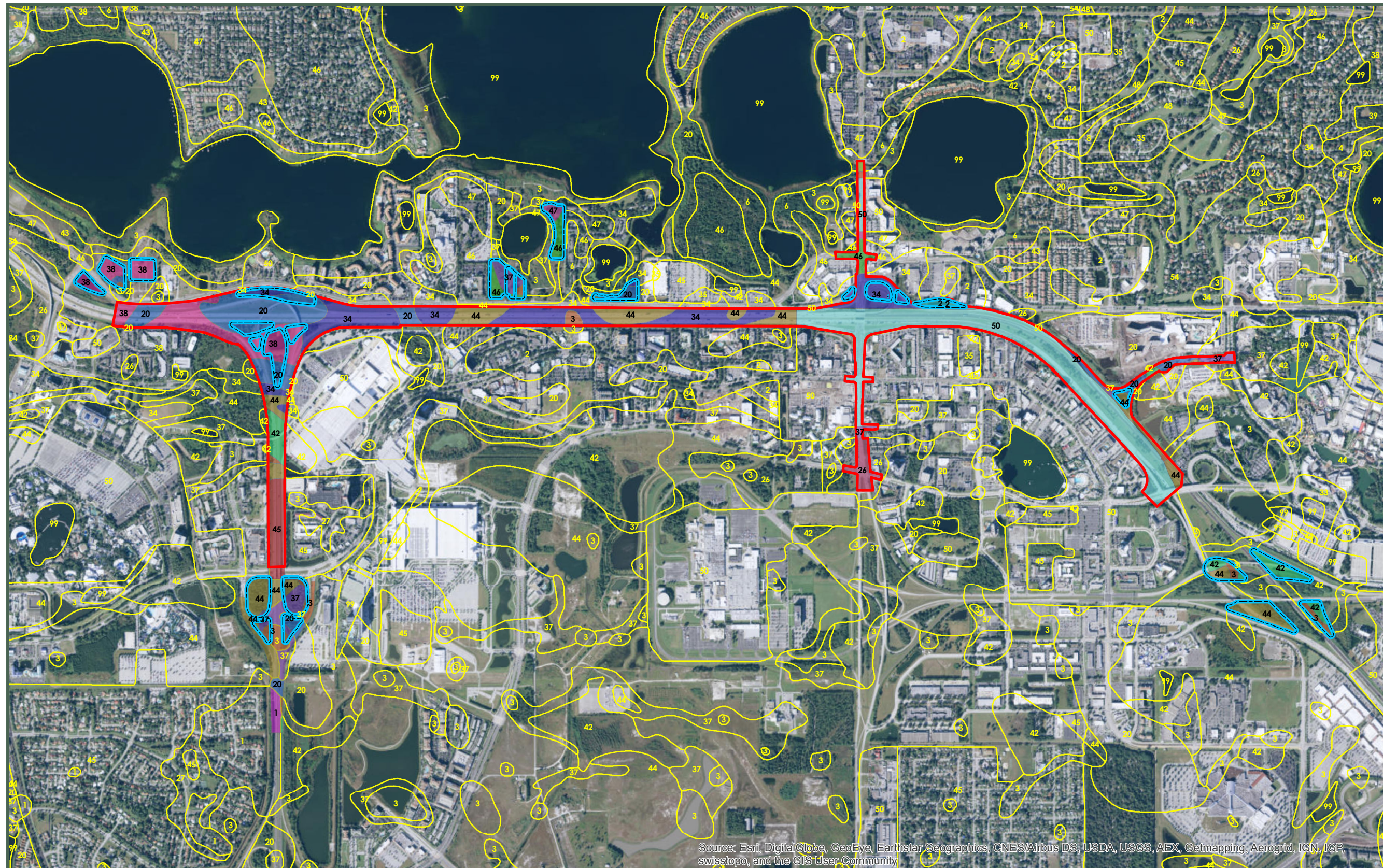
Client/Project:
 Florida Department of Transportation- D5
 SR 400 Project Development & Environment Study
 Segment 2: SR 400 (I-4) from W of SR 528 Beachline Expressway to W of SR 435 Kirkman Road

Project Location:
 75280 Orange County
 STA 1345+48.48 (Begin) - MP 5.65
 STA 1550+23.13 (End) - MP 9.562

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 Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet

Figure A: USGS Topographical Map





Map Key

SR 400 (I-4) PD&E Limits

- I-4 Beyond the Ultimate-Segment 2 Right of Way
- Pond Sites (02/02/15)

NRCS Soil Coverage

- ARCHBOLD FINE SAND, 0 TO 5 PERCENT SLOPES;2
- ARENTS, NEARLY LEVEL;1
- BASINGER FINE SAND, DEPRESSIONAL;3
- CANDLER-APOPKA FINE SANDS, 5 TO 12 PERCENT SLOPES;6
- IMMOKALEE FINE SAND;20
- ONA FINE SAND;26
- POMELLO FINE SAND, 0 TO 5 PERCENT SLOPES;34
- SANIBEL MUCK;42
- SMYRNA FINE SAND;44
- SMYRNA-URBAN LAND COMPLEX;45
- ST. JOHNS FINE SAND;37
- ST. LUCIE FINE SAND, 0 TO 5 PERCENT SLOPES;38
- TAVARES FINE SAND, 0 TO 5 PERCENT SLOPES;46
- TAVARES-MILLHOPPER FINE SANDS, 0 TO 5 PERCENT SLOPES;47
- URBAN LAND;50
- Expanded Soil Coverage

Title:
ENDANGERED SPECIES BIOLOGICAL ASSESSMENT REPORT: Segment 2 - NRCS Soils Map

Client/Project:
 Florida Department of Transportation- D5
 SR 400 Project Development & Environment Study
 Segment 2: SR 400 (I-4) from W of SR 528 Beachline Expressway to W of SR 435 Kirkman Road

Project Location:
 75280 Orange County
 STA 1345+48.48 (Begin) - MP 5.65
 STA 1550+23.13 (End) - MP 9.562

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet

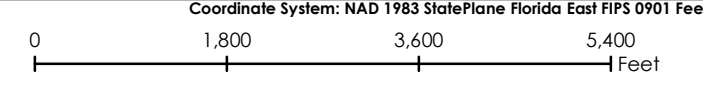


Figure B: NRCS Soils Map

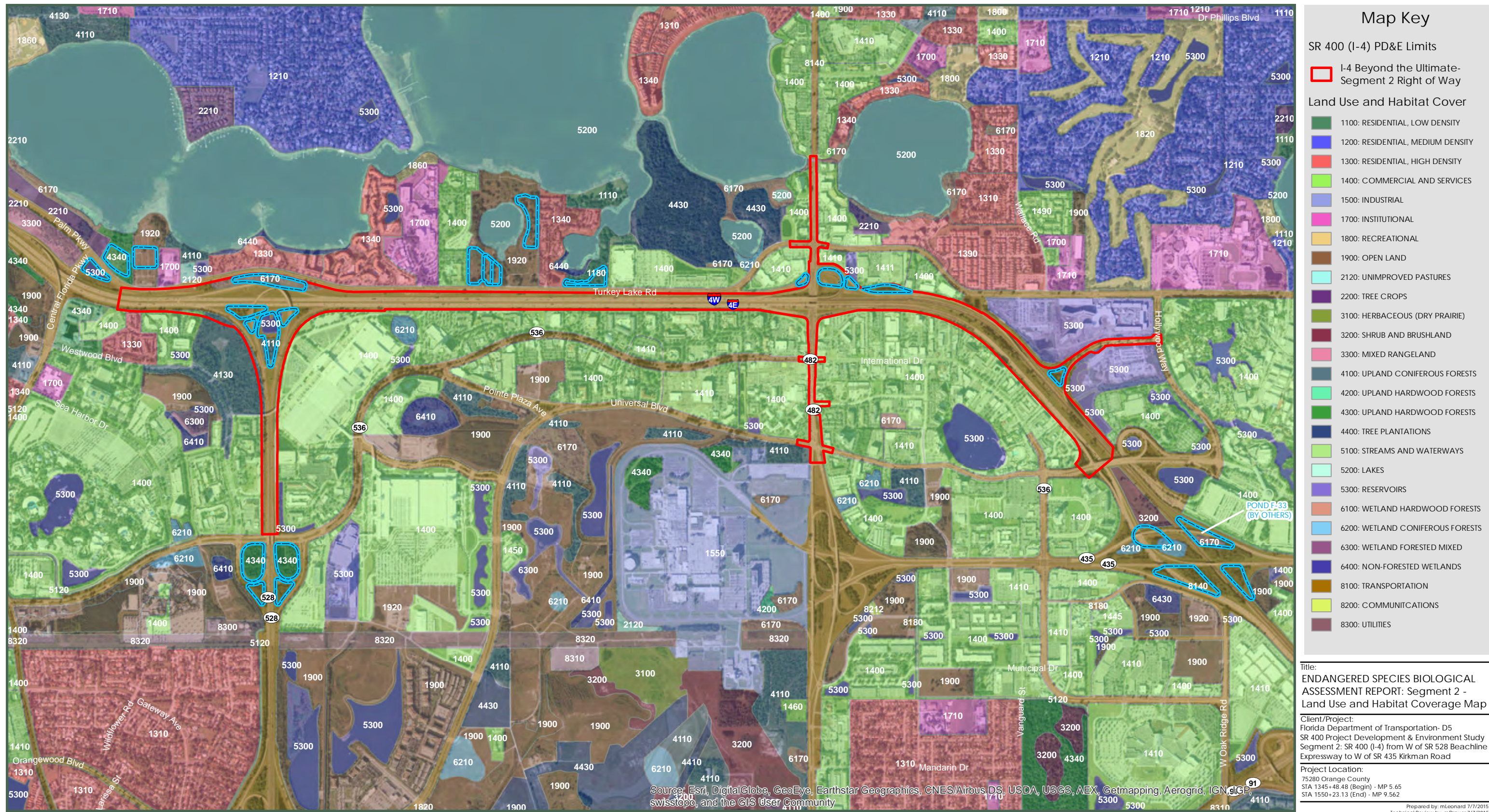


Figure C: Land Use and Habitat Coverage Map

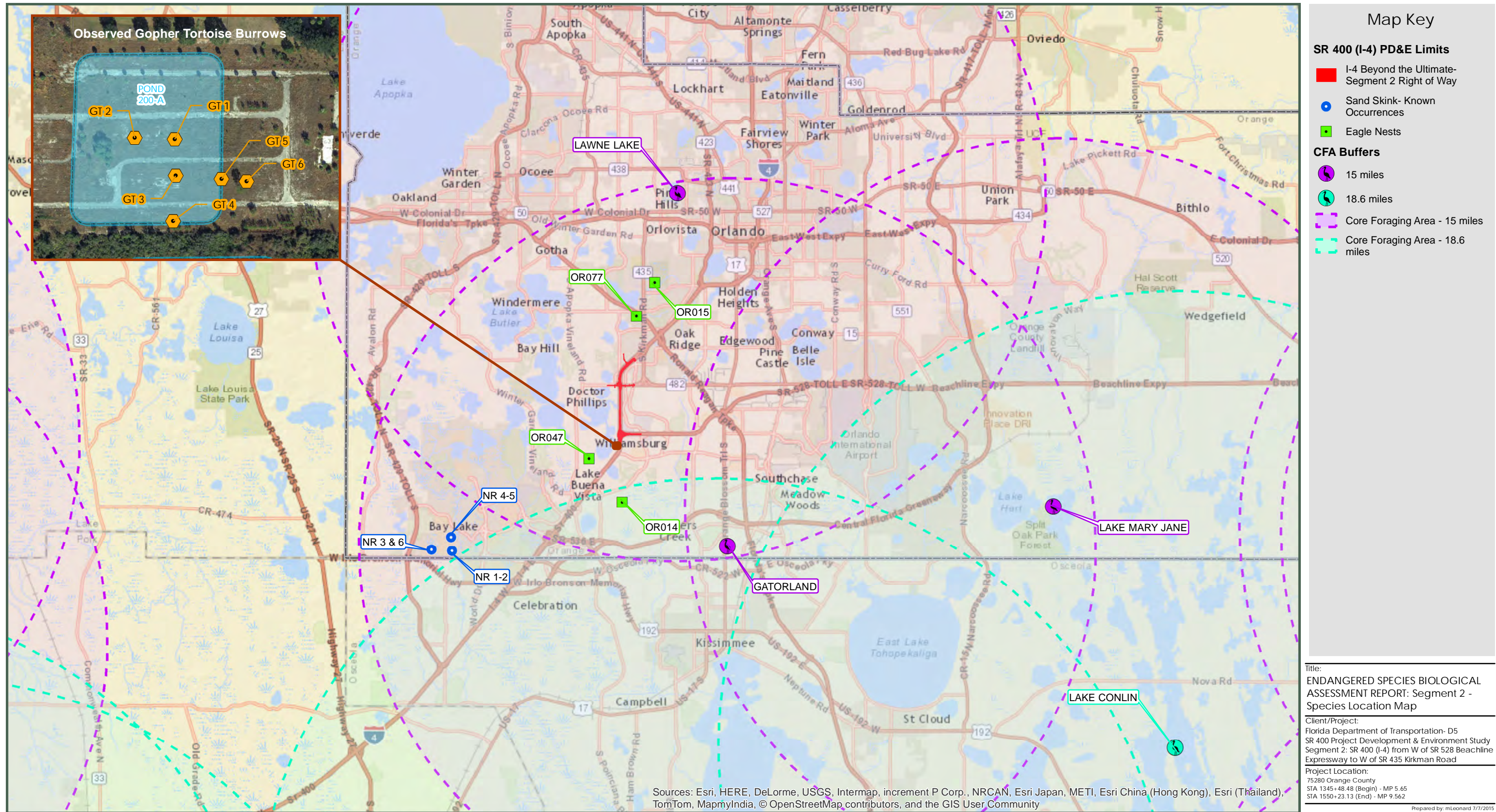


Figure D: Species Location Map

1" = 20,000'

SR 400 (I-4) Project Development and Environment (PD&E) Study | FM No. 432100-1-22-01

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APPENDIX B
LISTED SPECIES TABLES

Table 1: Protected wildlife species with the potential to occur in Orange County, Florida.

<u>Species Name</u>	<u>Common Name</u>	<u>FFWCC</u>	<u>USFWS</u>	<u>FNAI</u>	<u>FCREPA</u>	<u>Likelihood of Occurrence</u>	<u>Habitat</u>
<i>Ameiurus brunneus</i>	Snail bullhead			S3		low	In rivers and streams; benthic
<i>Alligator mississippiensis</i>	American alligator	T (S/A)	T(S/A)	S4		mod	Various aquatic habitats
<i>Aphelocoma coerulescens</i>	Florida scrub-jay	T	T	S3	T	low	Scrub and scrubby flatwoods
<i>Aramus guarana</i>	Limpkin	SSC		S3	SSC	mod	Swamps, forested floodplains, mangrove swamps & marshes
<i>Ardea alba</i>	Great egret			S4	SSC	obs	Marshes, swamps, lakes, ponds, ditches and estuaries
<i>Athene cuicularia floridana</i>	Florida burrowing owl	SSC		S3		low	Dry prairie, sandhill, ruderal areas
<i>Buteo brachyurus</i>	Short-tailed hawk			S1	R	low	Open country and forested areas; avoids dense forest
<i>Calidris canutus rufa</i>	Red knot		T			low	shorelines
<i>Corynorhinus rafinesquii</i>	Southeastern big-eared bat			S2		low	Floodplains, pine flatwoods, mixed oak/pine areas
<i>Crotalus adamanteus</i>	Eastern diamond back rattlesnake			S3		low	Sandhills, pine flatwoods, dry prairie, hammocks, & coastal
<i>Cyprinodon variegatus hubbsi</i>	Lake Eustis pupfish	SSC		S2	SSC	low	White, sandy beaches with sparse Panicum stands
<i>Drymarchon corais couperi</i>	Eastern indigo snake	T	T	S3	SSC	low	Wide variety of habitats
<i>Egretta caerulea</i>	Little blue heron	SSC		S4	SSC	obs	Marshes, ponds, lakes, meadows, streams & mangroves
<i>Egretta thula</i>	Snowy egret	SSC		S3	SSC	mod	Marshes, lakes, ponds and shallow, coastal habitats
<i>Egretta tricolor</i>	Tricolored heron	SSC		S4	SSC	mod	Marshes, ponds and rivers
<i>Elanoides forficatus</i>	American swallow-tailed kite			S2	T	mod	Lowland forests
<i>Eudocimus albus</i>	White ibis	SSC		S4	SSC	obs	Marshes, mangroves, lakes and estuaries
<i>Falco columbarius</i>	merlin			S2		low	herbaceous wetlands
<i>Falco peregrinus tundrius</i>	Arctic peregrine falcon			S2	E	low	Wide variety of open habitats
<i>Falco sparverius paulus</i>	Southeastern American kestrel	T		S3	T	low	Open, or partly open habitats with scattered trees
<i>Gopherus polyphemus</i>	Gopher tortoise	T	C	S3	T	obs	Sandhills, scrub, hammocks, dry prairies, flatwoods, & ruderal
<i>Grus canadensis pratensis</i>	Florida sandhill crane	T		S2S3	T	obs	Shallow wetlands, freshwater marshes and wet prairies
<i>Haliaeetus leucocephalus leucocephalus</i>	Southern bald eagle			S3	T	mod	Coasts, rivers and large lakes in open areas
<i>Ixobrychus exilis</i>	least bittern			S4		low	marshes, brackish, mangroves
<i>Lampropeltis extenuatum</i>	Short-tailed snake	T		S3	T	low	Longleaf pine-turkey oak, sand pine scrub and xeric hammocks
<i>Lampropeltis getula</i>	common kingsnake			S2S3		low	Wide variety of habitats
<i>Lasiurus cinereus</i>	Hoary bat			SU		low	Most forest types; typically roost in dense foliage or snags
<i>Laterallus jamaicensis</i>	black rail			S2		low	herbaceous wetlands, salt marshes
<i>Mustela frenata peninsulae</i>	Florida weasel			S3?	R	low	Scrub, sandhills, flatwoods, swamps and hammocks
<i>Mycteria americana</i>	Wood stork	T	T	S2	T	obs	Marshes, swamps, streams and mangroves
<i>Neofiber alleni</i>	Round-tailed muskrat			S3	SSC	low	Shallow freshwater and salt marshes
<i>Neoseps (=Plestidon) reynoldsi</i>	Sand skink	T	T	S2	T	mod	Scrub, sandhills, and scrubby flatwoods

<i>Notophthalmus perstriatus</i>	Striped newt			S2S3	R	low	Sinkhole ponds in sandhills, marsh & bay ponds in flatwoods
<i>Nyctanassa violacea</i>	Yellow-crowned night-heron			S3?	SSC	low	Marshes, swamps, lakes, lagoons, mudflats, & mangroves
<i>Nycticorax nycticorax</i>	Black-crowned night-heron			S3?	SSC	low	Marshes, swamps, ponds, lagoons, mangroves & wet prairies
<i>Peucaea aestivalis</i>	Bachman's sparrow			S3		low	Open pine woods, dry prairies and old fields
<i>Picoides borealis</i>	Red-cockaded woodpecker	T	E	S2	E	low	Open, mature pine woodlands
<i>Picoides villosus</i>	Hairy woodpecker			S3?	SSC	low	Deciduous and coniferous woods
<i>Pituophis melanoleucus mugitus</i>	Florida pine snake	SSC		S3	SU	low	Sandhills, scrubby flatwoods, xeric hammocks & ruderal habitats
<i>Platalea ajaja</i>	Roseate spoonbill	SSC		S2	R	low	Marshes, swamps, ponds, rivers and lagoons
<i>Plegadis falcinellus</i>	Glossy ibis			S2	SSC	obs	Marshes and swamps
<i>Podomys floridanus</i>	Florida mouse	SSC		S3	T	low	Scrub, flatwoods and longleaf pine-turkey oak sandhills
<i>Polyborus plancaudubini</i>	Crested caracara	T	T	S2		low	Open country, dry prairie, pasture lands
<i>Pteronotropis welaka</i>	bluenose shiner	SSC		S3S4	SSC	low	riverine; quiet pools
<i>Rana (=lithobates) capito</i>	Gopher frog	SSC		S3	T	low	Xeric uplands and pine flatwoods
<i>Rostrhamus sociabilis plumbeus</i>	Florida snail kite	E	E	S2	E	low	Subtropical freshwater marshes, lakes, ponds
<i>Rynchops niger</i>	Black skimmer	SSC		S3	SSC	low	Coastal beaches and salt marshes
<i>Sceloporus woodi</i>	Florida scrub lizard			S3	T	mod	Sandhills, scrub and sandy, forest edges
<i>Sciurus niger shermani</i>	Sherman's fox squirrel	SSC		S3	T	low	Longleaf pine-turkey oak sandhills, mesic flatwoods, & baygalls
<i>Sterna antillarum</i>	Least tern	T		S3	T	low	Open, flat beaches, river and lake margins
<i>Trichechus manatus latirostris</i>	Florida manatee	E	E	S2	E	low	Spring-runs, alluvial streams, and coastal estuaries
<i>Ursus americanus floridanus</i>	Florida black bear			S2	T	low	Variety of forested landscapes

Notes:

FFWCC = Florida Fish and Wildlife Conservation Commission

E= Endangered; T= Threatened; SSC= Species of Special Concern

USFWS = US Fish and Wildlife Service

E= Endangered; T= Threatened; (S/A)= Similarity of Appearance; (E/P)= Experimental Population; *CH = Critical Habitat; C= Candidate for Listing

FNAI = Florida Natural Areas Inventory

S1= Critically Imperiled Due to Extreme Rarity; S2= Imperiled Due to Rarity; S3= Very Rare and Local;

S4= Apparently Secure; SH= Historical Occurrence; ?= Tentative Ranking

FCREPA = Florida Committee on Rare and Endangered Plants and Animals

E= Endangered; T= Threatened; SSC= Species of Special Concern; R= Rare; SU= Status Undetermined

Likelihood of Occurrence

Low= Low likelihood; Mod= Moderate likelihood; High= High likelihood; Obs= Observed by Stantec;

Obs*= Observed by Others

Source: Stantec Endangered Species Database, 2014.

Table 2: Protected plant species with the potential to occur in Orange County, Florida.

<u>Species Name</u>	<u>Common Name</u>	<u>FDA</u>	<u>USFWS</u>	<u>FNAI</u>	<u>Likelihood of Occurrence</u>	<u>Habitat</u>
<i>Asclepias curtissii</i>	Curtiss' milkweed	E		S3	low	Sandhills and scrub
<i>Bonamia grandiflora</i>	Florida bonamia, Scrub morning glory	E	T	S3	low	Sand pine scrub
<i>Calopogon multiflorus</i>	Many-flowered grass pink	T		S2S3	low	Pine flatwoods, esp. recently burned
<i>Centrosema arenicola</i>	Sand butterfly pea	E		S2	low	Sandhills and scrubby flatwoods
<i>Chionanthus pygmaeus</i>	Pygmy fringe tree	E	E	S3	low	scrub, sandhill, xeric hammock, primarily on Lake Wales Ridge
<i>Clitoria fragrans</i>	Scrub Pigeon-wing	E	T	S3	low	Dry sandhills and scrub
<i>Deeringothamnus pulchellus</i>	Beautiful pawpaw	E	E	S1	low	Pinelands
<i>Drosera intermedia</i>	Water sundew	T		S3	low	Pinelands, woods and bogs
<i>Encyclia tampensis</i>	Butterfly orchid	CE			low	Mangrove, cypress and hardwood swamps; hammocks
<i>Epidendrum conopseum</i>	Greenfly orchid	CE			low	Moist hammocks, cypress and hardwood swamps; epiphytic
<i>Eriogonum longifolium</i> var. <i>gnaphalifolium</i>	Scrub buckwheat	E	T	S3	low	Sandhill, oak-hickory scrub, pineland & turkey-oak areas
<i>Garberia heterophylla</i>	Garberia	T			low	Sand pine and oak scrub
<i>Harrisella filiformis</i>	Orchid	T			low	Cypress and hardwood swamps, old citrus groves; epiphytic
<i>Illicium parviflorum</i>	Yellow star anise	E		S2	low	Wet woods and swamps
<i>Lechea cernua</i>	Nodding Pinweed	T		S3	mod	deep sands with scrub oaks (historic dunes)
<i>Lilium catesbaei</i>	Catesby's lily	T		S3	low	Moist pine flatwoods and savannahs
<i>Lobelia cardinalis</i>	Cardinal flower	T			low	Streams, riverbanks and spring runs
<i>Lupinus aridorum</i>	Scrub lupine	E	E	S1	mod	Sand pine scrub
<i>Lycopodiella cernua</i>	Nodding clubmoss	CE			low	Wet pinelands
<i>Matelea floridana</i>	Florida milkweed; panhandle anglepod	E		S2	low	Upland hardwood and mixed forests
<i>Monotropa hypopithys</i>	Pinesap	E		S1	low	Deciduous woods; parasitic on tree roots
<i>Najas filifolia</i>	Narrowleaf Naiad	T		S1	low	
<i>Nemastylis floridana</i>	Fall-flowering ixia; celestial lily	E		S2	low	Swamps, marshes and wet pine flatwoods
<i>Nolina atopocarpa</i>	Florida beargrass	T		S3	low	Dry pinelands and shell middens
<i>Nolina brittoniana</i>	Britton's beargrass	E	E	S2	low	Dry pinelands and sand pine scrub
<i>Ophioglossum palmatum</i>	Hand adder's tongue fern	E		S2	low	Hammocks; epiphytic on Sabal palmetto
<i>Osmunda cinnamomea</i>	Cinnamon fern	CE			obs	Wet woods and swamps
<i>Osmunda regalis</i>	Royal fern	CE			mod	Wet woods and swamps
<i>Panicum abscissum</i>	Cutthroat grass	E		S3	low	
<i>Paronychia chartacea</i>	Crystal Lake nailwort	E	T	S1	low	Sand pine scrub
<i>Pecluma (=Polypodium) plumula</i>	Polypody fern	E		S2	low	Hammocks; epiphytic
<i>Pecluma (=Polypodium) ptilodon</i>	Swamp plume polypody	E		S2	low	Hammocks

<i>Pinguicula caerulea</i>	Blue butterwort	T			low	Wet, acid pinelands
<i>Platanthera blephariglottis</i>	Large white fringed orchid	T			low	Marshes, and wet, open, grassy areas
<i>Platanthera cristata</i>	Golden fringed orchid; crested fringed orchid	T			low	Marshes and wet, pine flatwoods
<i>Platanthera flava</i>	Southern tubercled orchid; gypsy-spikes	T			low	Cypress and hardwood swamps
<i>Platanthera integra</i>	Orange rain orchid	E		S3S4	low	Marshes and wet, pine flatwoods
<i>Platanthera nivea</i>	Snowy orchid; bog torch	T			low	Wet pine flatwoods
<i>Pogonia ophioglossoides</i>	Rose pogonia	T			low	Marshes and wet, pine flatwoods
<i>Polygala lewtonii</i>	Lewton's milkwort	E	E	S3	low	Dry, oak woods
<i>Polygonella myriophylla</i>	Small's jointweed; woody wireweed; sandlace	E	E	S3	low	Sand pine scrub
<i>Prunus geniculata</i>	Scrub plum	E	E	S3	low	Sand pine scrub
<i>Pteroglossaspis ecristata</i>	Wild coco; giant orchid	T		S2	low	Sand pine scrub and sandhills
<i>Rhapidophyllum hystrix</i>	Needle palm	CE			low	Wet to mesic woods and hammocks
<i>Salix floridana</i>	Florida willow	E		S2	low	Wet woods and stream banks
<i>Sarracenia minor</i>	Hooded pitcherplant	T			low	Wet, open, acid pinelands and bogs
<i>Scaevola plumieri</i>	Inkberry	T			low	Coastal strands
<i>Spiranthes brevilabris</i> var. <i>floridana</i>	Florida ladies' tresses	E			low	Pine flatwoods
<i>Spiranthes laciniata</i>	Lace-lip ladies' tresses; lace-lip spiral orchid	T			low	Marshes and cypress swamps
<i>Spiranthes longilabris</i>	Long-lip ladies' tresses	T			low	Marshes and wet pine flatwoods
<i>Spiranthes tuberosa</i>	Little ladies' tresses; little pearl twist	T			low	Pine flatwoods
<i>Stylisma abdita</i>	Scrub stylisma	E		S2S3	low	Dry pinelands and scrub
<i>Tillandsia utriculata</i>	Giant wild pine	E			low	Hammocks and cypress swamps; epiphytic
<i>Triphora trianthophora</i>	Nodding pogonia	T			low	Hammocks
<i>Warea amplexifolia</i>	Clasping warea	E	E	S1	low	Dry pinelands and sandhills
<i>Zamia pumila</i>	Florida coontie	CE			low	Hammocks, pinelands and Indian middens

Notes:

FDA = Florida Department of Agriculture

E= Endangered; T= Threatened; CE= Commercially Exploited

USFWS = US Fish and Wildlife Service

E= Endangered; T= Threatened

FNAI = Florida Natural Areas Inventory

S1= Critically Imperiled Due to Extreme Rarity; S2= Imperiled Due to Rarity; S3= Very Rare and Local;

S4= Apparently Secure; SH= Historical Occurrence; ?= Tentative Ranking

Likelihood of Occurrence

Low= Low likelihood; Mod= Moderate likelihood; High= High likelihood; Obs= Observed by Stantec;

Obs*= Observed by Others

Source: Stantec Endangered Species Database, 2014.

APPENDIX C
PHOTOS

I-4 PD&E Segment 2 Pond Site Photographs



Pond Site 200A



Pond Site 200B



Pond Site 201



Pond Site 202A



Pond Site 202B



Pond Sites 202C, 202D



Pond Site 203A



Pond Site 203B



Pond Site 204A



Pond Site 204B



Pond Site 205A



Pond Site 205B



Pond Site 205C



Pond Site 205D



Pond Site 206



Pond Site 206A



Pond Site 206B



Pond Site 207



Pond Site 208

APPENDIX D
AGENCY COORDINATION



United States Department of the Interior

U. S. FISH AND WILDLIFE SERVICE

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

IN REPLY REFER TO:

FWS Log No. 04EF1000-2016-I-0204

February 28, 2016

William G. Walsh
Environmental Manager
Florida Department of Transportation, District 5
719 S. Woodland Blvd.
Deland, FL 32720

RE: SR 400 (I-4) Beyond the Ultimate Project Development and Environment Study -
Segments 2, 3, and 4
Orange, Seminole and Volusia Counties, Florida
Financial Management No. 432100-1-22-01

Dear Mr. Walsh:

The U.S. Fish and Wildlife Service (Service) has completed its review of the update for the Project Development and Environment (PD&E) Studies for the extension of proposed express lanes for SR 400 (I-4). The current I-4 Beyond the Ultimate (BtU) PD&E Study update includes a total of 41 miles of roadway sections, both east and west of the 21 -mile, I-4 Ultimate project that extends from west of SR 435 to east of SR 434. Segment 2 extends from West of SR 528 (Beachline Expressway) to West of SR 435 (Kirkman Road) in Orange County. Segment 3 extends from 1 Mile East of SR 434 to East of SR 15/600 (US 17 /92) in Seminole County. Segment 4 extends from East of SR 15/600 (US 17/92) in the Seminole/Volusia County Line to ½ Mile East of SR 472 in Volusia County. Endangered Species Biological Assessments (ESBA) was prepared for each of the individual BtU segments and based on the results of the determinations both informal consultation and formal consultation will be needed. The Service provides the following comments, in accordance with section 7 of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq.*), for the informal portion of the consultation. A separate request for formal consultation for the Florida scrub-jay has been received for segment 4 and will be addressed separately.

Sand Skink (*Neoseps reynoldsi*)

FDOT conducted cover board surveys between April 10 and May 6, 2014 in segment 2 to determine the presence of sand skinks. A report was submitted to the Service where the area and results were described. There weren't any skinks or tracks observed during the surveys. The Service has reviewed the information provided, as well as available observations and species

presence data and **concurs with a ‘may affect, but not likely to adversely affect’ determination for this species.**

Eastern indigo snake (*Drymarchon couperi*)

Gopher tortoise burrows were found in all three segments of the proposed project area. Eastern indigo snakes were not observed but habitat for the species exists along the corridor. FDOT is committed to implementing the Standard Protection Measures for the Eastern Indigo Snake and will have all permits conditioned so that all burrows are excavated prior to site manipulation. Segment 2 and segment 3 will impact less than 25 acres of xeric habitat and doesn't have more than 25 active or inactive gopher tortoise burrows. Segment 4 will potentially impact more than 25 acres of xeric habitat and may contain more than 25 active or inactive gopher tortoise burrows, however there weren't any eastern indigo snakes observed during any of the field reviews. The closest documented sighting is approximately four miles to the northwest. FDOT will excavate all burrows prior to construction. The Service has reviewed the available information and **concurs with a ‘may affect, but not likely to adversely affect’ determination for this species.** The Service requests that in the event that an eastern indigo snake is observed in the project area that work is halted immediately and the Service is contacted.

Wood Stork (*Mycteria americana*)

Segment 2 is located within the Core Foraging Areas (CFA) of two wood stork colonies (Lawne Lake, Gatorland); Segment 3 is located within the CFA of two wood stork colonies (Lawne Lake, Hontoon Island); and Segment 4 is located within the Hontoon Island CFA. The project is not within 2,500 feet of an active colony site, will likely impact Suitable Foraging Habitat (SFH) of greater than 0.5 acres, and is located within the CFA of three wood stork colonies (Lawne Lake, Gatorland, and Hontoon Island). FDOT commits to provide SFH compensation within the Service Area of a Service-approved wetland mitigation bank(s) within the CFA and will coordinate with the permitting agencies during the permitting phase of the project on compensatory mitigation and minimization of impacts to suitable foraging habitat. Details of the mitigation bank commitment will be included in the ESBA and EIS Update. The Service has reviewed the available information and FDOT's commitments for minimizing and mitigating impacts to the wood stork and **concurs with a ‘may affect, but not likely to adversely affect’ determination for this species.**

Florida Manatee (*Trichechus manatus latirostris*)

The Florida manatee has Critical habitat designated along the St. Johns River and within the western and northern shores of Lake Monroe (Segment 4). Impacts proposed along the roadway at Lake Monroe (Segment 4) are not expected to impact the lake directly but rather the adjacent wetlands which are largely inaccessible to the Florida manatee. After following the *Effect Determination Key for the Manatee in Florida* (April 2013), FDOT determined that this project may affect, but is not likely to adversely affect the Florida manatee. However, FDOT commits to placing grates on any culvert added to I-4 in this area and to following the *Standard Manatee Conditions for In-Water Work*. The Service has reviewed the available information and **concurs with a ‘may affect, but not likely to adversely affect’ determination for this species.**

Federally listed plant species

Federally listed plants were not observed in any of the three segments, Segments 2, 3 and 4, during any of the field reviews. In addition, habitat for the Rugel's pawpaw (*Deeringothamnus rugelii*) and the pigeon wings (*Clitoria fragrans*) was not identified in Segment 3. The scrub lupine (*Lupinus aridorum*) was observed in May of 2000 west of Turkey Lake Road but follow up surveys did not identify the plant in the proposed right-of-way impact zone. FDOT concludes that the proposed project will not have any direct or indirect impacts to federally listed plant species and has determined that the proposed project may affect, but will likely to adversely affect any of the federally listed plant species described in the ESBA. The Service has reviewed the available information and **concurs with a 'may affect, but not likely to adversely affect' determination for these species.**

Thank you for considering the effects of your proposed project on fish and wildlife, and the ecosystems upon which they depend. Although this does not represent a biological opinion as described in Section 7 of the Act, it does fulfill the requirements of the Act. Should changes to the proposed project occur or new information regarding fish and wildlife resources become available, further consultation with the Service should be initiated to assess any or further potential impacts. If you have any questions, please contact Lourdes Mena at (904)731-3119.

Sincerely,



Jay B. Herrington
Field Supervisor

cc: Cathy Kendall, FHWA
Casey Lyon, FDOT District 5



Florida Department of Transportation

RICK SCOTT
GOVERNOR

719 S. Woodland Blvd.
DeLand, FL 32720

JIM BOXOLD
SECRETARY

January 20, 2016

Dr. Heath Rauschenberger, Deputy Field Supervisor
U.S. Fish and Wildlife Service
North Florida Ecological Services Office
7915 Baymeadows Way, Suite 200
Jacksonville, FL 32256-7517

Attention: Ms. Lourdes Mena, Fish and Wildlife Biologist

RE: **Request for Section 7 Informal Consultation**

SR 400 (I-4) Beyond the Ultimate Project Development and Environment Study -
Segments 2, 3, and 4 (Orange, Seminole and Volusia Counties)
Financial Management No. 432100-1-22-01

Dear Dr. Rauschenberger,

The FDOT is conducting an update of the Project Development and Environment (PD&E) Studies for the extension of proposed express lanes for SR 400 (I-4). The project limits in the original I-4 PD&E Studies, along with the corresponding environmental documents associated with these PD&E Studies, were:

- West of Memorial Boulevard (SR 546) to the Polk/Osceola County Line, (29.5 miles) – *Environmental Assessment/Finding of No Significant Impact (EA/FONSI) [FPN 201210, (1998)]*
- CR 532 (Polk/Osceola County Line) to West of SR 528 (Beachline Expressway) (13.7 miles) – *EA/FONSI [FPN 242526 and 242483, (1999)]*
- West of SR 528 (Beachline Expressway) to SR 472 (43 miles) - *Final Environmental Impact Statement (FEIS) [FPN 242486, 242592 and 242703, (2002)]*.

The I-4 Ultimate project consists of reconstruction to include new express lanes for the 21-mile section of I-4 that extends from west of SR 435 (Kirkman Road) to east of SR 434. It was approved under FPNs 242486, 242592 and 242703 (FEIS 09/03/2002, ROD 12/08/2005), and is currently under construction.

The current I-4 Beyond the Ultimate (BtU) PD&E Study update includes a total of approximately 41 miles of roadway sections, located both east and west of the 21-mile, I-4 Ultimate project. It has been divided into the following five segments (**see attached figure**):

- Segment 1: SR 400 (I-4) from West of CR 532 (Polk/Osceola County Line) to West of SR 528 (Beachline Expressway) - Osceola County and Orange County
- **Segment 2: SR 400 (I-4) from West of SR 528 (Beachline Expressway) to West of SR 435 (Kirkman Road) - Orange County**
- **Segment 3: SR 400 (I-4) from 1 Mile East of SR 434 to East of SR 15/600 (US 17/92) (Seminole/Volusia County Line) - Seminole County**
- **Segment 4: SR 400 (I-4) from East of SR 15/600 (US 17/92) (Seminole/Volusia County Line) to ½ Mile East of SR 472 - Volusia County**
- Segment 5: SR 400 (I-4) from West of SR 25/US 27 to West of CR 532 (Polk/Osceola County Line) - Polk County

As part of the PD&E Study update, Endangered Species Biological Assessments (ESBA) were prepared for each of the individual BtU segments. Because Segments 2, 3, and 4 are all part of the I-4 FEIS from West of SR 528 (Beachline Expressway) to SR 472, the results of these ESBA reports are being combined for FHWA's purposes of assessing the potential impacts from the FEIS project as a whole. (Note that ESBA's for Segments 1 and 5 will be submitted under separate cover.) Based upon the results of the individual species effects determinations described below, both informal and formal consultation with the U.S. Fish and Wildlife Service (USFWS) for potential impacts will be required.

*On December 17, 2015 a coordination meeting occurred with the USFWS, Federal Highway Administration (FHWA), FDOT District Five and project consultants to review the I-4 BtU segments and discuss the potential for project effects to the species described below. The ESBA's for **Segments 2, 3 and 4** along with an initial request for informal consultation letter were provided to USFWS. As a result of this meeting, it was agreed that this letter would be revised based on input provided by USFWS (Lourdes Mena) and FHWA (Cathy Kendall) and resubmitted by FDOT to USFWS for informal consultation. It was also determined that a subsequent submittal for formal consultation from FHWA to USFWS would occur for the Florida scrub-jay (Segment 4).*

The following is a description of the species that have the potential to be affected by one or more of the BtU **Segments 2, 3, and 4**, as well as the proposed Section 7 effects determinations discussed during the coordination meeting:

Reptiles

Sand Skink (*Neoseps reynoldsi*) – The sand skink is listed as Threatened by both the USFWS and Florida Fish and Wildlife Conservation Commission (FFWCC). 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, including Orange County, typically at

elevations of 82 feet above sea level and higher. They occur in excessively drained, well-drained, and moderately well-drained sandy soils, with suitable soil types. These soil types typically support scrub, sandhill, or xeric hammock natural communities, though these may be degraded by impacts to overgrown scrub, pine plantation, citrus grove, old field, or pasture. Skinks have been documented to occur in all these degraded conditions where soil types are suitable, regardless of vegetative cover. This makes habitat condition of secondary importance in determining if skinks are present. 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.

Because Segment 2 occurs within the USFWS Consultation Area for sand skink, both a pedestrian survey and full cover board survey were conducted between April 10 and May 6, 2014. No skinks or signs of skinks were observed within any of the survey areas. A memorandum documenting the survey results was submitted to the USFWS to determine if project impacts to the sand skink would occur. The USFWS advised (email from Jane Monaghan dated October 22, 2014) that due to the fact that no direct or indirect observations of sand skinks were made during the survey, a finding of **may affect, not likely to adversely affect** for the sand skink would be appropriate.

December 17, 2015 coordination meeting: FDOT confirmed with USFWS that no additional sand skink survey would be required for Segment 2, thus no commitment to resurvey will be included in the ESBA or EIS Update.

Eastern Indigo Snake (*Drymarchon corais couperi*) – The eastern indigo snake, listed by both the FFWCC and the USFWS as Threatened, is a habitat generalist, using a variety of habitats from mangrove swamps to xeric uplands. These snakes are cold-sensitive and require gopher tortoise burrows, other animal holes, or stumps for protection during winter months. They require large tracts of natural, undisturbed habitat, and prefer to forage in and around wetlands for their preferred prey – other snakes.

Numerous gopher tortoise burrows were located throughout the general project area (**all three segments**), and the potential for indigo snakes is moderate, though no indigo snakes were observed during field studies. During the construction phase of the project, FDOT will implement the USFWS Standard Protection Measures for the Eastern Indigo Snake, which contain specific provisions requiring the construction contractor to develop and implement an education plan concerning avoidance of eastern indigo snakes, as well as conduct post-construction reporting.

An effects determination was made by utilizing the USFWS Programmatic Key for the Eastern Indigo Snake (January 2010, updated August 2013). In accordance with this key, all three

segments will implement the Standard Protection Measures for the Eastern Indigo Snake (USFWS, 2013) and will have all permits conditioned such that all active and inactive gopher tortoise burrows will be excavated prior to site manipulation in the vicinity of the burrow.

Segment 2 will not impact more than 25 acres of xeric habitat (scrub, sandhill, or scrubby flatwoods), nor does it contain more than 25 active or inactive gopher tortoise burrows, yielding a **may affect, not likely to adversely affect** determination for this segment individually. Segment 3 will not impact more than 25 acres of xeric habitat, but does have more than 25 active and inactive gopher tortoise burrows. Segment 3 is located in a highly urbanized area with little contiguous habitat that would support the eastern indigo snake, and the closest documented sighting is located approximately six miles to the northwest. In previous coordination with the USFWS (email from Jane Monaghan dated December 11, 2013), they advised that they would support a finding of **may affect, not likely to adversely affect** for this segment. Segment 4 may impact more than 25 acres of xeric habitat and may contain more than 25 active or inactive gopher tortoise burrows. Although this segment does receive a **may effect** determination using the key, there have been no eastern indigo snakes observed during any of the field reviews, the closest documented sighting is approximately four miles to the northwest, and all active and inactive gopher tortoise burrows will be excavated prior to construction. For these reasons, Segment 4 may qualify for a **may affect, not likely to adversely affect** determination.

When all the segments are combined (though they may be constructed at separate times), the project may impact more than 25 acres of xeric habitat and contains more than 25 active and inactive gopher tortoise burrows. However, since the segments individually may qualify for **may affect, not likely to adversely affect** determinations, a **may affect, not likely to adversely affect** determination may be appropriate for the project as a whole.

December 17, 2015 coordination meeting: USFWS indicated that FDOT's proposed mitigation for impacts to Florida scrub-jay (e.g., TNC contribution), as well as utilization of Standard Protection Measures for the Eastern Indigo Snake during construction and survey/relocation of Gopher Tortoises prior to construction should support the effects finding. FDOT confirmed with FHWA that these commitments will be included in the ESBA and EIS Update. FHWA indicated that the USFWS finding should not constitute a significant determination under NEPA.

Avians

Crested caracara (*Polyborus plancus audubonii* = *Caracara cheriway*) – The crested caracara is listed by both the USFWS and the FFWCC as Threatened. These large raptors inhabit Florida's prairies and rangelands, and forage on many kinds of insects, fish, reptiles, birds, and mammals. They will feed on live captured prey, but also on carrion. Nests are usually constructed within cabbage palms. Sensitivity to human disturbance varies in this species, with

many tolerating human activities, especially when human influence is already present within their home range. If a caracara nest is found to be within the project area, management practices outlined within the *Habitat Management Guidelines for Audubon's Crested Caracara in Central and Southern Florida* should be employed.

Segment 2 occurs at the northernmost edge of the USFWS Consultation Area for this species in Central Florida, though no nesting or foraging habitat has been documented within the project corridor. No caracara or their nests have been observed or were documented within the project corridor either during the current study or during the previous PD&E Study (May 2000). Therefore, this project will have **no effect** on this species.

Snail Kite (*Rostrhamus sociabilis plumbeus*) – The snail kite is listed as Endangered by both the USFWS and the FFWCC. This non-migratory, medium-sized raptor utilizes large open freshwater marsh habitats and lakes with shallow water. Nests are usually located in a low tree or shrub at the water's edge, and the main staple of their diet is the apple snail.

All three segments occur within the USFWS Consultation Area for the snail kite, though no observations have been documented within or near these segments. Nesting snail kites have been documented well to the east of Segment 2 in Kissimmee at both Lake Tohopekaliga and East Lake Toho. No adequate nesting or foraging habitat is located adjacent to the project area, within the proposed right-of-way or pond sites of Segments 2, 3, or 4. Therefore, this project will have **no effect** on this species.

Red-Cockaded Woodpecker (*Picoides borealis*) – This species is listed as Endangered by the USFWS and FFWCC. The colonial red-cockaded woodpecker (RCW) is a habitat specialist, requiring stands of over-mature pine that have contracted the red-heart disease. RCW's require diseased trees for cavity building, which they use for nest and roost cavities. Preferred pine stands need to have a fairly open canopy, with a sparse subcanopy to allow easy flight. RCWs must also have ample foraging habitat consisting of younger pines surrounding the cavity trees.

No suitable nesting habitat was observed in the impact area within the project limits. Segment 2 occurs near to (within 3.5 miles of) an area designated by USFWS as "Occurrence Area"; though the original PD&E Study indicated no suitable habitat or any documented RCW sightings within the proposed right-of-way or pond sites. No suitable habitat or any documented sightings were noted for Segments 3 or 4 during the current field studies. Therefore, this project will have **no effect** on this species.

Wood Stork (*Mycteria americana*) – The wood stork, now listed as Threatened by the USFWS, is the only true species of stork nesting in the United States. Feeding areas for wood storks include marshes, pools or ditches in which fish congregate. This species typically nests in mixed

woodlands comprised of such overstory species as cypress, gum, and southern willow; pond apple and mangrove swamps may also be utilized for nesting.

Based upon the updated colony map prepared by the USFWS in June 2014, Segment 2 is located within the Core Foraging Areas (CFA - 15 miles from an active nesting colony in Central Florida) of two wood stork colonies (Lawne Lake, Gatorland); Segment 3 is located within the CFA of two wood stork colonies (Lawne Lake, Hontoon Island); and Segment 4 is located within one CFA (Hontoon Island). A wood stork was observed within the Segment 2 project area during field surveys, though foraging areas are available throughout the study area, which include drainage features, small water bodies, stormwater ponds, and the wetlands and shoreline associated with Lake Monroe and the St. John's River.

Utilizing the *Corps of Engineers and U. S. Fish and Wildlife Service Effect Determination Key for the Wood Stork in Central and North Peninsular Florida* (2008), the project is not within 2,500 feet of an active colony site, will likely impact Suitable Foraging Habitat (SFH) of greater than 0.5 acres, and is located within the CFA of three wood stork colonies (Lawne Lake, Gatorland, and Hontoon Island). Additionally, FDOT commits to provide SFH compensation within the Service Area of a Service-approved wetland mitigation bank(s) within the CFA, and the Project is not contrary to the Service's *Habitat Management Guidelines for the Wood Stork in the Southeast Region* and in accordance with the Clean Water Act section 404(b)(1) guidelines. There are numerous currently permitted mitigation banks that include the project corridor within the bank service area that have credits available to offset impacts to SFH (nine banks covering Segment 2, five banks covering Segment 3, and six banks covering Segment 4). The FDOT will coordinate with the permitting agencies during the permitting phase of the project on compensatory mitigation and minimization of impacts to suitable foraging habitat. These actions should result in no net loss of foraging habitat; therefore, the project **may affect, but is not likely to adversely affect** the wood stork.

December 17, 2015 coordination meeting: USFWS indicated that FDOT's proposed mitigation for impacts to wood stork SFH should support this finding. FDOT was asked to provide details on the amount and type of wetland impacts (summarized from the Segments 2, 3, and 4 Wetland Evaluation Reports), as well as more specific details on proposed mitigation banks to be utilized for SFH impacts (see Attachment). FDOT confirmed with FHWA that the details of the mitigation bank commitment will be included in the ESBA and EIS Update.

Florida Scrub-Jay (*Aphelocoma coerulescens coerulescens*) – The Florida scrub-jay, listed as Threatened by both the FFWCC and USFWS, is an endemic species found in Florida scrub habitats. This gregarious jay is a habitat specialist and typically lives in scrub and scrubby flatwoods habitats.

During the original PD&E Study, surveys were conducted for scrub-jays in Segment 2 in two areas near Sand Lake Road and I-4. Since then, both of these areas have been developed and no longer contain any scrub or scrub-like habitat. Regardless, cursory surveys for scrub-jays were conducted in April and May of 2013 and April and May of 2014 to evaluate the presence of this species. No scrub-jays were observed within any proposed right-of-way or pond site areas of Segment 2.

Several stations were sampled for the presence of scrub-jays within Segment 3 during the original PD&E Study at the Lake Mary Boulevard interchange: four stations along the I-4 westbound right-of-way south of Lake Mary Boulevard, and two stations along the off-ramp from I-4 eastbound to Lake Mary Boulevard. Field investigations conducted during the present study indicated that these areas no longer contained any suitable habitat. The areas along I-4 westbound have been developed into multi-family residential units with no natural vegetation remaining, and the area along the eastbound off-ramp has been developed (into a Gander Mountain store), with planted pines as a buffer from the road. Regardless, cursory surveys for scrub-jays were conducted in September 2013 to evaluate the presence of this species. No scrub-jays were observed within any proposed right-of-way or pond site areas of Segment 3.

Within Segment 4, numerous stations were sampled for the presence of scrub-jays at the Saxon Boulevard and SR 472 interchanges, and along both sides of I-4 between the interchanges. cursory surveys for scrub-jays were conducted in September 2013 to evaluate the presence of this species. During these surveys, at least four scrub-jays were observed responding to a call-back recording north of Saxon Boulevard adjacent to I-4 eastbound, and two more responded when the call was played in the northeastern quadrant of the interchange at SR 472. Two scrub-jays were observed at Pond Site 409 A1/A2 as well. A full five-day scrub-jay survey was conducted in October 2014, to ascertain the population size and potential territory size of the scrub-jays within this segment; a supplemental survey of four additional pond sites was conducted in April 2015.

Based on the results of these formal surveys (Segment 4), scrub-jays were observed at 15 of the 119 stations. These scrub-jays comprise five separate families, of which four intersect with the existing or proposed FDOT right-of-way, including pond sites. Impacts to occupied habitat would occur at three of the locations: Family 1 at the westbound I-4 off-ramp to Saxon Boulevard would impact 0.90 acres of occupied territory; Family 2 along eastbound I-4 at Pond Site 409 A1/A2 would impact 1.22 acres of occupied territory; and Family 3 along I-4 eastbound at Pond Site 409 A1/A2 would impact 2.56 acres of occupied territory. The remaining scrub-jays either occur at a pond site that is not going to have any physical changes (Family 5), occur outside the right-of-way (Family 4), or were single incidental observations. Detailed analysis is provided in the Florida Scrub-jay Survey Technical Memorandum prepared for FDOT

(Appendix E, Segment 4 ESBA). The proposed widening and stormwater ponds may have a direct impact on scrub-jays or scrub-jay habitat. Therefore, based on these survey results (Segment 4), this project **may affect** the Florida scrub-jay.

December 17, 2015 coordination meeting: USFWS will coordinate with the Scrub-Jay recovery lead (Todd Mecklenborg) to verify that FDOT's proposed mitigation for direct/indirect impacts (e.g., TNC contribution for the southwest Volusia metapopulation) is still the preferred mitigation strategy. FDOT (Casey Lyon) suggested the use of construction commitments (e.g., no clearing/grubbing during the nesting season) to prevent actual take of scrub-jays. FDOT (Casey Lyon) confirmed with USFWS that resurvey for Segment 4 would be required, and then noted that because this is marginal habitat, in a few years scrub-jays may no longer be present, thus mitigation would no longer be applicable. Based on USFWS' mitigation input, FDOT will prepare a submittal for FHWA's formal consultation with USFWS on this species. FHWA indicated that the USFWS finding should not constitute a significant determination under NEPA.

Southern Bald Eagle (*Haliaeetus leucocephalus*) – The southern bald eagle was delisted by both the USFWS and FFWCC, though it is still protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. The USFWS issued the National Bald Eagle Management Guidelines in May 2007 while Florida adopted a Bald Eagle Management Plan (BEMP) in April 2008, written closely to follow the federal guidelines. The BEMP provides guidelines and recommendations to help people avoid violating state and federal eagle laws, and also outlines strategies to maintain the Florida population of bald eagles at or above current levels. Bald eagles almost always nest in the tops of living or dead tall trees along or very near lakes and rivers; these water bodies provide fish, typically their preferred food. Bald eagles generally avoid areas with extensive human activity, so management guidelines must be considered before any construction can be initiated within 660 feet of an active bald eagle nest.

Eleven bald eagle nests are recorded to be in the general vicinity (within one mile) of the project corridor: four within Segment 2 (OR014, OR015, OR047 and OR077), three within Segment 3 (SE 029, SE 030, and SE 069), and four within Segment 4 (SE061, VO014, VO073, and VO012). However, none of these nests is located within 660 feet of the proposed right-of-way or any of the proposed pond sites. For that reason, the project will have **no effect** on the southern bald eagle.

Mammals

Florida Manatee (*Trichechus manatus latirostris*) - This species is listed as Endangered by both the USFWS and the FFWCC and has designated critical habitat along the St. Johns River and within the western and northern shores of Lake Monroe (Segment 4). These herbivores are found in various types of freshwater, brackish, and marine environments, feeding on the wide

range of aquatic vegetation that these habitats provide. Shallow seagrass beds, with ready access to deep channels, are generally preferred feeding areas. Manatees use springs and freshwater runoff sites for drinking water; secluded canals, creeks, embayments, and lagoons for resting, cavorting, mating, calving and nurturing their young; and open waterways and channels as travel corridors. They occupy different habitats during various times of the year, with a focus on warm water sites during winter. Industrial warm water discharges and deep-dredged areas are used as wintering sites, and stormwater/freshwater discharges provide manatees with drinking water.

The impacts proposed along the roadway at Lake Monroe (Segment 4) will not directly impact the lake but rather the adjacent wetlands which are largely inaccessible to the manatee. Therefore, according to the Corps of Engineers, Jacksonville District, and the State of Florida Effect Determination Key for the Manatee in Florida (April 2013), this project **may affect, but is not likely to adversely affect** the Florida manatee.

December 17, 2015 coordination meeting: FDOT noted that, although inaccessible to manatees, grates will be placed on any culverts being added to I-4 in this area (the culverts are proposed mitigation for white shrimp Essential Fish Habitat). FDOT confirmed with FHWA that the Standard Manatee Conditions for In-Water Work will be included as a commitment in the ESBA and EIS Update.

Federally listed plant species

Within Segment 2, a review of agency databases and field review of the project area indicate that there have been few reported occurrences of federally listed plant species. Twelve federally listed species have the potential to occur within Orange County, though not all habitat types are represented within the project area. Information from the previous PD&E Study (May 2000) indicated that one listed plant was observed, the scrub lupine (*Lupinus aridorum*). The observation was made west of Turkey Lake Road, to the west of the SR 528 Interchange at westbound I-4. Follow up protected plant field surveys covering the area of proposed right-of-way widening and pond sites were conducted in May 2013 and April 2014 (and in January 2015) by project botanists and other biologists. No federally listed plant species were identified within the proposed widening impact area or pond sites during the field investigations.

Within Segment 3, a review of agency databases and field review of the project area indicate that there have been few reported occurrences of federally listed plant species. USFWS currently shows that one federally listed species has been demonstrated to have the potential to occur within Seminole County, the pygmy fringe tree (*Chionanthus pygmaeus*), though other sources have listed the potential for the Okeechobee gourd (*Cucurbita okeechobeensis*) to occur. Information from the previous PD&E Study (May 2000) indicated that no listed plants were observed in this segment. Follow up protected plant field surveys covering the area of proposed

right-of-way widening and pond sites were conducted in May 2013 and April 2015 by project botanists and other biologists. No federally listed plant species were identified within the proposed widening impact area or pond sites during the field investigations; though a potential sighting of the Okeechobee gourd was reported in the floodplain between I-4 and the Wayside Park boat ramp, outside of the proposed project area near the St. Johns River. Confirmation was not definitively made as the observation was not made during flowering season; however, there is no appropriate habitat for this species within the project right-of-way or proposed pond sites.

Within Segment 4, a review of agency databases and field review of the project area indicate that there have been few reported occurrences of federally listed plant species. USFWS currently shows that two federally listed species have been demonstrated to have the potential to occur within Volusia County, the Okeechobee gourd and Rugel's pawpaw (*Deeringothamnus rugelii*). Information from the previous PD&E Study (May 2000) indicated that one listed plant was observed in this segment. Vegetation surveys conducted in 1997 by project scientists identified pigeon wings (*Clitoria fragrans*) in some scrubby areas outside of the right-of-way at the Saxon Boulevard and SR 472 interchanges. This plant is not listed as occurring within Volusia County according to current information provided on the USFWS website. A follow up protected plant field survey covering the area of proposed right-of-way widening and pond sites was conducted in May 2013 by project botanists and other biologists. Habitat for both pigeon wings and Rugel's pawpaw does exist along the project corridor, though considerable changes to the land uses where previous sightings were made have occurred since 1997. No federally listed plant species were identified within the proposed widening impact area or pond sites during the field investigations.

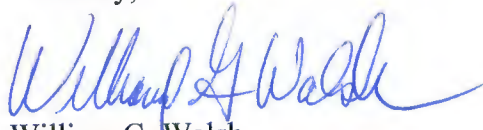
For Segments 2, 3 and 4, no federally listed plants were observed during any of the field reviews; therefore, no direct or indirect impacts to federally listed plant species are likely to occur. Thus, a finding of **may affect, not likely to adversely affect** is applicable for any of the federally listed plant species described above.

December 17, 2015 coordination meeting: FDOT noted that although the Federally-listed scrub lupine was not identified within Segment 2, it was identified within the adjacent Segment 1 (the ESBA for that segment will be transmitted to USFWS as a separate consultation).

Dr. Rauschenberger
January 20, 2016
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We ask that USFWS review the ESBA's for **Segments 2, 3 and 4** and provide concurrence with FDOT's determinations for these species. Note that for the Florida scrub-jay, a separate FHWA submittal for initiation of formal consultation will be provided. We appreciate the coordination effort and input already provided and look forward to continued consultation on this project. If you have any questions, feel free to contact either Catherine Owen at (386) 943-5383, catherine.owen@dot.state.fl.us or me at (386) 943-5411, william.walsh@dot.state.fl.us at your convenience. Thank you for your assistance with this project.

Sincerely,



William G. Walsh
Environmental Manager
FDOT, District Five

wgw/cbo

Cc: Cathy Kendall, FHWA
Casey Lyon, FDOT
Beata Stys-Palasz, FDOT
Mike Drauer, Stantec

Attachment (4 pages): Wetland Impact Breakdown and Available Wetland Mitigation

Wetland Impact Breakdown

Segment 2			
Summary of Proposed Jurisdictional Wetlands/Other Surface Water Impacts (Type and Hydrologic Basin)			
Hydrological Basin	Forested Wetlands (acres)	Herbaceous Wetlands (acres)	Other Surface Waters (acres)
Shingle Creek	4.43	0.00	9.32
Totals	4.43	0.00	9.32

Segment 3			
Summary of Proposed Jurisdictional Wetlands/Other Surface Water Impacts (Type and Hydrologic Basin)			
Hydrological Basin	Forested Wetlands (acres)	Herbaceous Wetlands (acres)	Other Surface Waters (acres)
Lake Jesup Basin	--	0.91	1.65
Wekiva River Basin	0.07	--	--
St. Johns River (Canaveral Marshes to Wekiva)	11.29	--	5.01
Totals	11.36	0.91	6.66

Segment 4			
Summary of Proposed Jurisdictional Wetlands/Other Surface Water Impacts (Type and Hydrologic Basin)			
Hydrological Basin	Forested Wetlands (acres)	Herbaceous Wetlands (acres)	Other Surface Waters (acres)
St. Johns River (Canaveral Marshes to Wekiva)	20.49	50.11	23.57
St. Johns River (Wekiva to Walaka)	0.00	2.06	17.62
Totals	20.49	52.17	41.19

Available Wetland Mitigation

SEGMENT 2		
AVAILABLE MITIGATION SERVICE AREAS & CREDITS WITHIN THE SHINGLE CREEK BASIN		
MITIGATION BANK (MB)	MITIGATION SERVICE AREA	CREDIT AVAILABILITY/TYPE
HATCHINEHA RANCH MITIGATION BANK	SHINGLE CREEK	50 FORESTED UMAM CREDITS
SOUTHPORT MITIGATION BANK	SHINGLE CREEK	170 FORESTED AND HERBACEOUS UMAM CREDITS
REEDY CREEK MITIGATION BANK	SHINGLE CREEK	60 FORESTED UMAM CREDITS
BULLFROG BAY MITIGATION BANK	SHINGLE CREEK	14 FORESTED AND HERBACEOUS UMAM CREDITS

SEGMENT 3		
AVAILABLE MITIGATION SERVICE AREAS & CREDITS WITHIN THE ST. JOHNS RIVER (CANAVERAL MARSHES TO WEKIVA), LAKE JESUP, WEKIVA RIVER BASINS		
MITIGATION BANK (MB)	MITIGATION SERVICE AREAS	CREDIT AVAILABILITY/TYPE
LAKE MONROE MITIGATION BANK	ST. JOHNS RIVER (CANAVERAL MARSHES TO WEKIVA)	46.55 FORESTED UMAM CREDITS
BARBERVILLE MITIGATION BANK	ST. JOHNS RIVER (CANAVERAL MARSHES TO WEKIVA)	3.98 FORESTED UMAM CREDITS
COLBERT CAMERON MITIGATION BANK	ST. JOHNS RIVER (CANAVERAL MARSHES TO WEKIVA) & LAKE JESUP	147.09 FORESTED AND HERBACEOUS UMAM CREDITS
FARMTON NORTH MITIGATION BANK	ST. JOHNS RIVER (CANAVERAL MARSHES TO WEKIVA) & LAKE JESUP	822.69 FORESTED AND HERBACEOUS UMAM CREDITS
FARMTON SOUTH MITIGATION BANK	ST. JOHNS RIVER (CANAVERAL MARSHES TO WEKIVA) & LAKE JESUP	433.61 FORESTED AND HERBACEOUS UMAM CREDITS

SEGMENT 3		
AVAILABLE MITIGATION SERVICE AREAS & CREDITS WITHIN THE ST. JOHNS RIVER (CANAVERAL MARSHES TO WEKIVA), LAKE JESUP, WEKIVA RIVER BASINS		
MITIGATION BANK (MB)	MITIGATION SERVICE AREAS	CREDIT AVAILABILITY/TYPE
FARMTON WEST MITIGATION BANK	ST. JOHNS RIVER (CANAVERAL MARSHES TO WEKIVA) & LAKE JESUP	348.63 FORESTED AND HERBACEOUS UMAM CREDITS
TM ECON MITIGATION BANK(PHASE I, II, III)	ST. JOHNS RIVER (CANAVERAL MARSHES TO WEKIVA) & LAKE JESUP	388.14 FORESTED AND HERBACEOUS UMAM CREDITS
TM ECON MITIGATION BANK (PHASE IV)	ST. JOHNS RIVER (CANAVERAL MARSHES TO WEKIVA) & LAKE JESUP	164.83 FORESTED AND HERBACEOUS UMAM CREDITS
BLACKWATER CREEK MITIGATION BANK	ST. JOHNS RIVER (CANAVERAL MARSHES TO WEKIVA) & WEKIVA RIVER	15.75 FORESTED AND HERBACEOUS UMAM CREDITS
WEKIVA RIVER MITIGATION BANK	WEKIVA RIVER & A PORTION OF ST. JOHNS RIVER (CANAVERAL MARSHES TO WEKIVA)	30.0 FORESTED AND HERBACEOUS UMAM CREDITS

SEGMENT 4		
AVAILABLE MITIGATION SERVICE AREAS & CREDITS WITHIN THE ST. JOHNS RIVER (CANAVERAL MARSHES TO WEKIVA) AND ST. JOHNS RIVER (WEKIVA TO WALAKA) HYDROLOIC BASINS		
MITIGATION BANK (MB)	MITIGATION SERVICE AREAS	CREDIT AVAILABILITY/TYPE
TOSOHATCHEE STATE RESERVE	ST. JOHNS RIVER (CANAVERAL MARSHES TO WEKIVA)	32.54 FORESTED UMAM Credits
LAKE MONROE MITIGATION BANK	ST. JOHNS RIVER (CANAVERAL MARSHES TO WEKIVA)	46.55 FORESTED UMAM Credits

SEGMENT 4		
AVAILABLE MITIGATION SERVICE AREAS & CREDITS WITHIN THE ST. JOHNS RIVER (CANAVERAL MARSHES TO WEKIVA) AND ST. JOHNS RIVER (WEKIVA TO WALAKA) HYDROLOGIC BASINS		
MITIGATION BANK (MB)	MITIGATION SERVICE AREAS	CREDIT AVAILABILITY/TYPE
BARBERVILLE MITIGATION BANK	ST. JOHNS RIVER (CANAVERAL MARSHES TO WEKIVA) & ST. JOHNS RIVER (WEKIVA TO WALAKA)	3.98 FORESTED UMAM Credits
COLBERT CAMERON MITIGATION BANK	ST. JOHNS RIVER (CANAVERAL MARSHES TO WEKIVA)	147.09 FORESTED AND HERBACEOUS UMAM CREDITS UMAM Credits
FARMTON NORTH MITIGATION BANK	ST. JOHNS RIVER (CANAVERAL MARSHES TO WEKIVA) & ST. JOHNS RIVER (WEKIVA TO WALAKA)	822.69 FORESTED AND HERBACEOUS UMAM CREDITS UMAM Credits
FARMTON SOUTH MITIGATION BANK	ST. JOHNS RIVER (CANAVERAL MARSHES TO WEKIVA) & ST. JOHNS RIVER (WEKIVA TO WALAKA)	433.61 FORESTED AND HERBACEOUS UMAM CREDITS UMAM Credits
FARMTON WEST MITIGATION BANK	ST. JOHNS RIVER (CANAVERAL MARSHES TO WEKIVA) & ST. JOHNS RIVER (WEKIVA TO WALAKA)	248.63 FORESTED AND HERBACEOUS UMAM CREDITS UMAM Credits
TMECON MITIGATION BANK PHASES 1, 2 & 3	ST. JOHNS RIVER (CANAVERAL MARSHES TO WEKIVA)	388.14 FORESTED AND HERBACEOUS UMAM CREDITS UMAM Credits
TMECON MITIGATION BANK PHASE IV	ST. JOHNS RIVER (CANAVERAL MARSHES TO WEKIVA)	164.83 FORESTED AND HERBACEOUS UMAM CREDITS UMAM Credits
BLACKWATER CREEK MITIGATION BANK	ST. JOHNS RIVER (WEKIVA TO WALAKA)	15.75 FORESTED AND HERBACEOUS UMAM CREDITS UMAM Credits



Stantec

615 Crescent Executive Ct. Suite 248
Lake Mary, FL 32746

August 21, 2013
File: 2024.230168

Attention: Jane Monaghan
U. S. Fish & Wildlife Service
North Florida Ecological Services Office
7915 Baymeadows Way, Suite 200
Jacksonville, FL 32256-7517

**Reference: SR 400 (I-4) Project Development and Environment (PD&E) Study
Segment 2: SR 528 to Kirkman Road
Orange County, FL**

Dear Ms. Monaghan:

The Florida Department of Transportation (FDOT) District 5 is conducting a PD&E Study on SR 400 (I-4) as part of the overall corridor project for the I-4 Ultimate design. This segment of the study in southern Orange County occurs within the highly developed corridor of the roadway, and includes the intersections at Sand Lake Road and Universal Boulevard, and the parallel roadways of International Drive and Turkey Lake Road. A previous study was conducted in 1998, though a Record of Decision was not reached with the Federal Highway Administration. This segment along with two additional segments to the south and two segments north of Orlando are included in the larger PD&E study to enable FDOT to have completed Records of Decision or Findings of No Significant Impacts on all potential segments of the I-4 Ultimate design. The project consists of the widening of the roadway from the current configuration of a nominal 4-lane divided interstate highway to a nominal 6-lane divided interstate highway with an additional two managed lanes in each direction.

At this time, we are seeking your concurrence with a species list for potential species and habitat along the project corridor that should be included in the ongoing investigation for this project. Stantec Consulting Services Inc. conducted a background literature search to determine the legally protected species that have the potential to occur in Orange County as listed by the Florida Fish and Wildlife Conservation Commission (FFWCC) and the United States Fish and Wildlife Service (USFWS). Protected Species lists were compiled using Stantec's computer database containing species occurrence by county and habitat type. These species lists were then customized to include only the species that have the potential to occur within the habitats that occur on this Project site. The database was developed by reviewing current scientific literature and consulting the most current observation and distribution records maintained by the Florida Natural Areas Inventory (FNAI).

Federally Listed animal species with the potential to occur within the corridor include the following:

Aphelocoma coerulescens – Florida Scrub-Jay
Drymarchon corais couperi – Eastern Indigo Snake
Haliaeetus leucocephalus leucocephalus – Southern Bald Eagle
Mycteria americana – Wood Stork

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August 21, 2013
Page 2 of 2

Neoseps reynoldsi – Sand Skink
Picoides borealis – Red-cockaded Woodpecker
Polyborus plancas audubinii – Crested Caracara
Rostrhamus sociabilis plumbeus – Florida Snail Kite

Federally Listed plant species with the potential to occur within the corridor include the following:

Bonamia grandiflora – Florida Bonamia
Deeringothamnus pulchellus – Beautiful Pawpaw
Eriogonum longifolium var. *gnaphalifolium* – Scrub Buckwheat
Lupinus aridorum – Scrub Lupine
Nolina brittoniana – Britton's Beargrass
Paronychia chartacea – Papery Whitlow-wort
Polygonella myriophylla – Sandlace

This project is also being coordinated with the Florida Fish and Wildlife Conservation Commission.

If you have any questions, please contact Mike Drauer at (407)765-1661.

Thank you for taking the time to provide assistance with this project.

Regards,



Mike Drauer
Senior Project Manager
Tel: 407-585-0157
Fax: 407-585-0158
Mike.Drauer@stantec.com

Attachment: Figures



Stantec

615 Crescent Executive Ct. Suite 248
Lake Mary, FL 32746

August 21, 2013
File: 2024.230168

Attention: Jane Chabre
Florida Fish and Wildlife Conservation Commission
Office of Conservation Planning Services
620 South Meridian Street, Mail Station 5B5
Tallahassee, FL 32399-1600

Via Email: FWCConservationPlanningServices@myfwc.com

Reference: **SR 400 (I-4) Project Development and Environment (PD&E) Study**
Segment 2: SR 528 to Kirkman Road
Orange County, FL

Dear Ms. Chabre

The Florida Department of Transportation (FDOT) District 5 is conducting a PD&E Study on SR 400 (I-4) as part of the overall corridor project for the I-4 Ultimate design. This segment of the study in southern Orange County occurs within the highly developed corridor of the roadway, and includes the intersections at Sand Lake Road and Universal Boulevard, and the parallel roadways of International Drive and Turkey Lake Road. A previous study was conducted in 1998, though a Record of Decision was not reached with the Federal Highway Administration. This segment along with two additional segments to the south and two segments north of Orlando are included in the larger PD&E study to enable FDOT to have completed Records of Decision or Findings of No Significant Impact on all potential segments of the I-4 Ultimate design. The project consists of the widening of the roadway from the current configuration of a nominal 4-lane divided interstate highway to a nominal 6-lane divided interstate highway with an additional two managed lanes in each direction.

At this time, we are seeking your concurrence with a species list for potential species and habitat along the project corridor that should be included in the ongoing investigation for this project. Stantec Consulting Services Inc. conducted a background literature search to determine the legally protected species that have the potential to occur in Orange County as listed by the Florida Fish and Wildlife Conservation Commission (FFWCC) and the United States Fish and Wildlife Service (USFWS). Protected Species lists were compiled using Stantec's computer database containing species occurrence by county and habitat type. These species lists were then customized to include only the species that have the potential to occur within the habitats that occur on this Project site. The database was developed by reviewing current scientific literature and consulting the most current observation and distribution records maintained by the Florida Natural Areas Inventory (FNAI).

Federally Listed animal species with the potential to occur within the corridor include the following:

Aphelocoma coerulescens – Florida Scrub-Jay

August 21, 2013

Page 2 of 3

Drymarchon corais couperi – Eastern Indigo Snake
Haliaeetus leucocephalus leucocephalus – Southern Bald Eagle
Mycteria americana – Wood Stork
Neoseps reynoldsi – Sand Skink
Picoides borealis – Red-cockaded Woodpecker
Polyborus plancais audubinii – Crested Caracara
Rostrhamus sociabilis plumbeus – Florida Snail Kite

Federally Listed plant species with the potential to occur within the corridor include the following:

Bonamia grandiflora – Florida Bonamia
Deeringothamnus pulchellus – Beautiful Pawpaw
Eriogonum longifolium var. *gnaphalifolium* – Scrub Buckwheat
Lupinus aridorum – Scrub Lupine
Nolina brittoniana – Britton's Beargrass
Paronychia chartacea – Papery Whitlow-wort
Polygonella myriophylla – Sandlace

State Listed animal species with the potential to occur within the project corridor include:

Aramus guarana – Limpkin
Athene cuicularia floridana – Florida Burrowing Owl
Egretta caerulea – Little Blue Heron
Egretta thula – Snowy Egret
Egretta tricolor – Tricolored Heron
Eudocimus albus – White Ibis
Gopherus polyphemus – Gopher Tortoise
Grus canadensis pratensis – Florida Sandhill Crane
Lampropeltis extenuatum – Short-tailed Snake
Pituophis melanoleucus mugitus – Florida Pine Snake
Platalea ajaja – Roseate Spoonbill
Podomys floridanus – Florida Mouse
Rana capito – Gopher Frog
Sciurus niger shermani – Sherman's Fox Squirrel
Ursus americanus floridanus – Florida Black Bear

This project is also being coordinated with the US Fish and Wildlife Service.

If you have any questions, please contact Mike Drauer at (407)765-1661.

Thank you for taking the time to provide assistance with this project.

Regards,

Mike Drauer
Senior Project Manager



Stantec

August 21, 2013
Page 3 of 3

Tel: 407-585-0157
Fax: 407-585-0158
Mike.Drauer@stantec.com

Attachment: Figures

dm document3

From: Monaghan, Jane <jane_monaghan@fws.gov>
Sent: Tuesday, August 27, 2013 1:19 PM
To: Drauer, Mike; Hannah Hernandez
Subject: Re: I-4 Ultimate PD&E Orange County

Hi Mike

Our office does not need to concur with species lists...we simply send folks to our website and to the official list for each county.

Based on the habitat, the surrounding development and previous disturbance I imagine the only species you may need to address are the wood stork and the eastern indigo snake and you can use the Effect Determination keys that we use with the Army COE.(also on our website).

For skinks-if you are > or = to 82ft in elevation and have suitable soils (check out survey protocols on our website) you may need to survey if there is suitable habitat...rather doubtful, but they can hold on in small pockets of suitable habitat, surrounded by development. If the area is managed ROW, planted in sod...you won't need to survey. I can review site pictures or come down there if you need me to.

For plants- some of the plants do survive and even thrive on roadsides and disturbed habitats so you may need surveys by a qualified botanist at the right time of year.

Bald eagles are addressed by the Office of Migratory birds. Your contact is Ulgonda_Kirkpatrick@fws.gov

I would concur with a No Effect determination for caracara, snail kite, Fl scrub-jay and RCW...no habitat left for these species within the project corridor.

Thanks for coordinating with us! Please let me know if I can be of further assistance.

Jane Monaghan
USFWS

On Wed, Aug 21, 2013 at 11:54 AM, Drauer, Mike <mike.drauer@stantec.com> wrote:

Jane – FDOT has initiated the PD&E and re-evaluation of the I-4 Ultimate sections north and south of the approved section through downtown Orlando. Field work in the first segment (Segment 2 in Orange County) is under way, and the draft reports are due in September. I have attached a species list and request for initial review with this email to initiate coordination, as the project will not be going out over ETDM.

Thanks for your help,

Mike Drauer

Senior Project Manager

Stantec

Ph: (407) 585-0157

mike.drauer@stantec.com

stantec.com

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--

Jane Monaghan

Fish and Wildlife Biologist

USFWS

7915 Baymeadows Way, Suite 200

Jacksonville, FL 32256-7517
904-731-3119
904-731-3116 (main office)

From: Ulgonda Kirkpatrick <ulgonda_kirkpatrick@fws.gov>
Sent: Friday, September 06, 2013 1:50 PM
To: Drauer, Mike
Cc: Michelle Vandeventer; Resee Collins
Subject: RE: I-4 PD&E Segment 2
Attachments: Smith Matthew C 2.vcf

Hello Mike,

Thanks for contacting me about this project. There are quite a few acronyms that I am unfamiliar with in your request so I'm not sure I fully understand what you're requesting.

I do however have some basic recommendations regarding a project like this. First, please make sure your nest information is current by first visiting the [state database](#). Second, you can verify nesting information with the state by emailing baldeagle@myfwc.com, and Audubon Eagle Watch of FL is an excellent resource for local eagle information. Matt Smith is the Coordinator for the program, contact attached. Third, Michelle van Deventer Eagle Plan Coordinator w/ the FWC should also be notified to ensure that you have state concurrence, prior to seeking federal concurrence because our office first requires a state permit, if necessary. Typically if you can follow the state guidelines a permit is not necessary, and we generally concur with that assessment. Final consideration is to make sure that on the ground surveys take place because the state database does not have all nests documented, however all nests receive equal protection under state and federal law.

Any further questions please let me know.

Thanks,
Ulgonda

Ulgonda Kirkpatrick
USFWS Migratory Bird Division
Southeast Region
321-972-9089 office (new #)
352-406-6780 cell

For more information about eagles in the southeastern region visit:

<http://www.fws.gov/southeast/birds/eagle.html>

Envision a World Where Birds Thrive



From: Drauer, Mike [mailto:mike.drauer@stantec.com]
Sent: Wednesday, September 04, 2013 3:25 PM
To: Ulgonda_Kirkpatrick@fws.gov
Subject: I-4 PD&E Segment 2

Ulgonda – FDOT has initiated the PD&E and re-evaluation of the I-4 Ultimate sections north and south of the approved section through downtown Orlando. Field work in the first segment (Segment 2 in Orange County – see map attached) is under way, and the draft reports are due in September. As the project will not be going out over ETDM, we wish to get your comments as it pertains to the bald eagle. We have identified 4 bald eagle nests, though none should be impacted by the project. Please let us know if you can concur with this assessment, or if there is anything else we can do to ensure that the project will not have any impact on migratory birds.

Thanks,

Mike Drauer
Senior Project Manager
Stantec
Ph: (407) 585-0157
mike.drauer@stantec.com
stantec.com

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September 16, 2013

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MyFWC.com

Mr. Mike Drauer, Senior Project Manager
Stantec Consulting Services, Inc.
615 Crescent Executive Court, Suite 248
Lake Mary, FL 32746

RE: SR 400 (I-4) Project Development and Environment (PD&E) Study
Segment 2: SR 528 to Kirkman Road, Orange County, Request for Concurrence
with Protected Species List

Dear Mr. Drauer:

Florida Fish and Wildlife Conservation Commission staff has reviewed the request for concurrence with the proposed list of protected species to be included in the above-referenced PD&E Study, and offers the following comments.

The list appears to be all-inclusive for western Orange County based on the historic range of the various species. Within the highly urbanized corridor addressed in this PD&E Study, the likelihood of occurrence for many of the species on the list is very minimal. We agree with the proposed list with a few suggested changes.

The bald eagle is not federally designated as Endangered or Threatened, but it is protected by the federal Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d). The Florida black bear is no longer listed by the State, so any impact analysis for this species should be separated from the listed species discussions. Two bird species that are found in the Orlando area and should be added to your list are the least tern and the Southeastern American kestrel, both State-listed as Threatened.

Thank you for the opportunity to review the proposed list of protected species to be included in the I-4 Segment 2 PD&E Study. If you need further assistance, please do not hesitate to contact Jane Chabre either by phone at (850) 410-5367 or at FWCConservationPlanningServices@MyFWC.com. If you have specific technical questions regarding the content of this letter, please contact Brian Barnett at (772) 579-9746 or email at brian.barnett@myfwc.com.

Sincerely,

Jennifer D. Goff
Land Use Planning Program Administrator
Office of Conservation Planning Services

jdg/bb
ENV 1-13-2
I-4 (SR 400)-SR 528 to Kirkman Road_18001_091613

From: [Monaghan, Jane](#)
To: [Lyon, Casey](#); [Drauer, Mike](#)
Subject: I-4 Ultimate_Orange county
Date: Wednesday, October 22, 2014 1:52:38 PM

Hi Casey

I just reviewed the results of the sand skink survey performed by Mike Drauer along this corridor.

We appreciate the survey effort and the quality of the report. When DOT submits a letter for our concurrence on their determination of effect...we would concur with a MANLAA for sand skinks.

However, we have to respond to a DOT request and we would like to see all the federal species listed and the determination of effect made by DOT and why.

Thanks very much!

Jane Monaghan
Fish and Wildlife Biologist
USFWS
7915 Baymeadows Way, Suite 200
Jacksonville, FL 32256-7517
904-731-3119
904-731-3116 (main office)

From: [Monaghan, Jane](#)
To: [Drauer, Mike](#)
Subject: Re: FW: I-4 PD&E Study
Date: Friday, January 24, 2014 9:50:49 AM
Attachments: [image014.jpg](#)
[image010.jpg](#)
[image011.jpg](#)
[image013.jpg](#)
[image001.gif](#)
[image007.gif](#)
[image006.gif](#)
[image002.gif](#)
[image003.gif](#)
[image004.gif](#)
[image012.jpg](#)
[image009.jpg](#)
[image008.png](#)
[image005.gif](#)

Sounds good.

On Fri, Jan 24, 2014 at 9:11 AM, Drauer, Mike <mike.drauer@stantec.com> wrote:

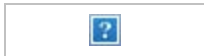
Jane – thanks for the call yesterday and offering the guidance for us on the sand skink survey. We are going to revisit all of the areas in the field in order to inspect for the “swimmable soils” and revise our maps for the survey accordingly. We will get those worked up next week and get them up to you.

Thanks again,

Mike

Mike Drauer

Senior Project Manager
Stantec
Phone: (407) 585-0157
mike.drauer@stantec.com



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From: Monaghan, Jane [mailto:jane_monaghan@fws.gov]
Sent: Thursday, January 23, 2014 7:53 AM
To: Drauer, Mike
Subject: Re: FW: I-4 PD&E Study

sorry Mike

I had a medical emergency and I asked Annie to give you a call and let you know...I am back today and will give you a call.

On Wed, Jan 22, 2014 at 11:34 AM, Drauer, Mike <mike.drauer@stantec.com> wrote:

Are we still planning on talking today?

From: Monaghan, Jane [mailto:jane_monaghan@fws.gov]
Sent: Tuesday, January 21, 2014 01:58 PM
To: Drauer, Mike
Subject: Re: FW: I-4 PD&E Study

Thanks Mike. I will give you a call in the morning around 10am.

On Tue, Jan 21, 2014 at 1:54 PM, Drauer, Mike <mike.drauer@stantec.com> wrote:

Sure – pretty much anytime. I will be on the road heading up to Pensacola for some field work but can talk at any time. I will have the maps and photos with me.

You can get me on my cell at 407-765-1661.

Mike Drauer

Senior Project Manager
Stantec
Phone: (407) 585-0157
mike.drauer@stantec.com



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From: Monaghan, Jane [mailto:jane_monaghan@fws.gov]
Sent: Tuesday, January 21, 2014 1:48 PM
To: Drauer, Mike; Stephen Tonjes
Subject: Re: FW: I-4 PD&E Study

Thanks for the additional information Mike. Is there a good time to call you tomorrow to discuss?

I think there are still quite a few areas that do not need to be surveyed.

On Tue, Jan 21, 2014 at 12:53 PM, Drauer, Mike <mike.drauer@stantec.com> wrote:

I did – so here is a new link with the new photos. Let me know if you have any questions.

Automatic Login

FTP site link: <ftp://s0204103909:8586026@ftptmp.stantec.com>

By clicking on the link above (or pasting the link into Windows Explorer) you will be automatically logged into your FTP site.

Manual Login

FTP link: <ftp://ftptmp.stantec.com>

Login name: s0204103909

Password: 8586026

Disk Quota: 2GB

Expiry Date: 2/4/2014

Mike Drauer

Senior Project Manager

Stantec

615 Crescent Executive Court, Suite 248

Lake Mary, FL 32746

Phone: (407) 585-0157

Cell: (407) 765-1661

mike.drauer@stantec.com

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From: Monaghan, Jane [mailto:jane_monaghan@fws.gov]
Sent: Tuesday, January 21, 2014 12:34 PM
To: Drauer, Mike
Subject: Re: FW: I-4 PD&E Study

Hey Mike, sorry I am just getting back to this one again...did you put those additional photos etc in the document on the ftp site?

because that link has expired...

thanks for your help

On Fri, Jan 10, 2014 at 3:54 PM, Drauer, Mike <mike.drauer@stantec.com> wrote:

Steve / Jane - I have added additional photographs from areas that we have as "included" in the survey to the FTP site. There is also a map set that indicates the areas that the photos were taken.

Please let me know if you need further clarification or would like to discuss the approach in general.

Thanks.

Mike Drauer

Senior Project Manager

Stantec

615 Crescent Executive Court, Suite 248

Lake Mary, FL 32746

Phone: (407) 585-0157

Cell: (407) 765-1661

mike.drauer@stantec.com



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Please consider the environment before printing this email.

From: Tonjes, Stephen [<mailto:Stephen.Tonjes@dot.state.fl.us>]

Sent: Friday, January 10, 2014 8:51 AM

To: Drauer, Mike

Cc: Moore, John (Orlando); Jane Monaghan

Subject: FW: FW: I-4 PD&E Study

Please call Jane to discuss.

Stephen Tonjes

[Senior Environmental Scientist](#)

[Florida Department of Transportation District Five](#)

[719 S. Woodland Blvd.](#)

[DeLand, FL 32720](#)

stephen.tonjes@dot.state.fl.us

[Office telephone: 386-943-5394](#)

[Office hours 8:30 - 5:30 M - F](#)

From: Monaghan, Jane [mailto:jane_monaghan@fws.gov]

Sent: Friday, January 10, 2014 8:42 AM

To: Tonjes, Stephen

Subject: Re: FW: I-4 PD&E Study

[Hey Steve, I have all the docs downloaded and I am reviewing right now.](#)

[Have you had a chance to review this? Can you look at photo point #10?](#)

[Why would this area be kept in the survey?](#)

[I am okay with the areas they have excluded from the survey based on the photos. I am questioning why they are surveying in some of the medians and sodded areas such as photo 10 and photo 11.](#)

[I would like to see more representative photo points for areas that are included in the survey, if they have them. Otherwise I will just try to view on google earth. I tired to turn the colors off for the survey layers but could not manipulate the map in that way. My first impression is that we can eliminate more of these survey areas.](#)

[What do you think?](#)

[On Thu, Jan 9, 2014 at 2:46 PM, Tonjes, Stephen <\[Stephen.Tonjes@dot.state.fl.us\]\(mailto:Stephen.Tonjes@dot.state.fl.us\)> wrote:](#)

[Squeaking the wheel ... this project goes ahead of the scrub jays at I-95/Ellis Road.](#)

[I think you've received paper copies of the exhibits by now, but all the documents are on John's FTP site:](#)

Automatic Login

FTP site link: <ftp://s0102070849:5741666@ftptmp.stantec.com>

By clicking on the link above (or pasting the link into Windows Explorer) you will be automatically logged into your FTP site.

Manual Login

FTP link: <ftp://ftptmp.stantec.com>

Login name: s0102070849

Password: 5741666

Disk Quota: 2GB

NEW Expiry Date: 1/16/2014

[Stephen Tonjes](#)

[Senior Environmental Scientist](#)

[Florida Department of Transportation District Five](#)

[719 S. Woodland Blvd.](#)

[DeLand, FL 32720](#)

stephen.tonjes@dot.state.fl.us

[Office telephone: 386-943-5394](#)

[Office hours 8:30 - 5:30 M - F](#)

From: Moore, John (Orlando) [<mailto:john.moorejr@stantec.com>]

Sent: Thursday, January 09, 2014 2:27 PM

To: Tonjes, Stephen

Cc: Diaz, Luis

Subject: I-4 PD&E Study

[Steve.](#)

[Good afternoon and hope your Holidays were great. I wanted to check with you to see if you'd heard anything from Jane relative to the sand skink plan we had proposed. I'm getting nervous that if we don't get her approval soon, we won't be in a good position to complete the survey this year and I know how important that is to District 5. Even with the proposed reduction in the scale of the survey, there is a substantial amount of effort that has to take place prior to. Fabricating the cover boards, delivery, setup, and labeling will](#)

take about three weeks by our estimation. In addition to that, we still have to process the contractual paperwork. I plan on getting labor support from our other offices; however, putting too many people out there can become counter-productive.

That being said, if you hear anything from her, or have a chance to send her an e-mail, I'd greatly appreciate it if she could take a look at the package we submitted. I understand everyone is busy but if it would help, we would be happy to meet with her at her office or in the field to address any questions she had. I appreciate your help with this matter.

Thanks, JCM.

[John Moore Jr, PE](#)

Senior Associate

Stantec

615 Crescent Executive Court, Suite 248 Lake Mary FL 32746-2129

Phone: (407) 585-0157

Cell: (407) 716-5193

john.moorejr@stantec.com



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Jane Monaghan
Fish and Wildlife Biologist
USFWS
7915 Baymeadows Way, Suite 200
Jacksonville, FL 32256-7517
904-731-3119
904-731-3116 (main office)

APPENDIX E
SAND SKINK SURVEY MEMO
REPORT

I-4 BtU PD&E Segment 1 and 2 2014 Orange County Sand Skink Survey Memo

Report Project Description and Background

The Florida Department of Transportation (FDOT) is conducting an update of the PD&E studies for the extension of express lanes for SR 400 (I-4). The project limits in the original PD&E studies were:

- CR 532 (Polk/Osceola County Line) to West of SR 528 Beachline Expressway (13.7 miles), and
- West of SR 528 Beachline Expressway to SR 472 (43 miles).

The corresponding environmental documents include: Environmental Assessment/Finding of No Significant Impact (EA/FONSI) for SR 400 (I-4) from West of Memorial Boulevard (SR 546) to the Polk/Osceola County Line (FPN 201210, 1998) and from CR 532 (Polk/Osceola County Line to West of SR 528 Beachline Expressway (FPN 242526 and 242483, 1999) and Final Environmental Impact Statement (FEIS) for I-4 from SR 528 Beachline Expressway to SR 472 (FPN 242486, 242592 and 242703, 2002).

The re-evaluation study is being conducted to document changes to SR 400 (I-4) from CR 532 (Polk/Osceola County Line) to West of SR 528 Beachline Expressway, including environmental and engineering analysis of the original design concept which showed two high occupancy vehicle (HOV) lanes, to the current proposed design, which includes four managed lanes operating under a variable price toll plan.

The proposed improvements to I-4 include widening the existing six lane divided urban interstate to a ten lane divided highway. Generally speaking, the typical section will be consistent throughout Segments 1 and 2 and will have three 12-foot general use travel lanes with 12-foot inside and 10-foot outside shoulders and two 12-foot express lanes with 4-foot inside and 10-foot outside shoulders, in each direction. A barrier wall in between the shoulders will separate the express lanes from the general use lanes. Three 12-foot auxiliary lanes will be provided in some areas in the eastbound direction and up to two auxiliary lanes will be provided in some locations in the westbound direction. Stormwater ponds will be included to provide treatment throughout the corridor.

The project area for this survey included the portions of Segment 1 and Segment 2 occurring within Orange County, from I-4 at Osceola Parkway to the SR 528 interchange, and the potential right-of-way areas for pond sites and other improvements adjacent to the I-4 corridor. Survey areas are depicted on the attached maps.

Survey Scope

Because the project area occurs within the US Fish and Wildlife Service (USFWS) Consultation Area for sand skinks (*Neoseps reynoldsi*), there is a higher likelihood of skink occupancy within suitable habitats. No previous evidence of skinks was noted in the original PD&E report from May 2000, nor was a species-

specific survey performed. However, the revised 2012 guidance from USFWS on the skink now classifies areas with skink soils above 82 feet elevation as potential skink habitat, whether or not natural xeric scrub habitat occurs over the soils. Skink soils are found in excessively drained, well drained, and moderately well drained soils. Suitable soil types typically support scrub, sandhill, or xeric hammock natural communities. Areas over skink soils but altered for human uses include but are not limited to pine plantations, active or inactive citrus groves, pastures, residential developments, and neglected vegetative cover like old fields and overgrown scrub, all present potential opportunities for skink habitat. For this project, the right-of-way and potential pond sites were surveyed for all potential listed wildlife species including skinks. A pedestrian survey was conducted to identify suitable habitat and included searching for skink trails in areas of open sand. Skink soils were also mapped for the project corridor to identify the areas of coverage that overlap with proposed roadway and pond site improvements. Coordination with USFWS staff indicated that a skink cover board survey would need to be performed over any areas of soil coverage within the project footprint that contained suitable soils (“swimmable soils”). Areas that contained thick vegetation and/or a dense root mass and did not contain loose open soils could be eliminated from the survey. Based upon the results of this study, the mapped soils were amended, and cover board surveys were subsequently conducted over any remaining areas that were determined to still contain suitable mapped skink soils. The cover board survey was conducted according to the USFWS Survey Protocol for Peninsular Florida for the Sand Skink and Blue-tailed Mole Skink (USFWS 2012).

Survey Methodology

Per the USFWS Survey Protocol, the coverboard survey was conducted during the survey window of March 1st through May 15th. Plywood coverboards measuring 2' x 2' and 0.5" thick were placed in areas of bare sand or sparse vegetation to meet a minimum coverage of 40 boards per acre (**See Table 1**) within the areas of suitable soils previously mapped out. A grid system was set up to pre-determine the board placement within each area, and the boards were placed in the field in the most suitable areas within the grids. Final positions of the boards were recorded with a Trimble GPS Unit, and each board was marked with a unique designation. Raking, grading, and manipulation of the soils and vegetation were conducted to ensure full contact of the coverboard with the soil surface. Areas with heavy coverage of grasses within the survey areas necessitated removal of vegetation to place the coverboards. Coverboards were placed beginning on March 24, 2014 and completed by April 8, 2014 and all boards were allowed to acclimate for a minimum of 7 days prior to the first sampling event. The first sampling event began on April 10, 2014 and was completed on April 16, 2014. Subsequent events occurred April 21-23, April 28-29, and May 5-6. The boards were collected from the field on May 21-22 and were checked informally for any signs of sand skinks.

Survey Area Descriptions

Each survey area was given a unique designation and is described as follows.

Unit A – St. Lucie fine sand 0 – 5%

Unit A consists of sand pines with some open sandy areas spread throughout. The coverage of sand pines is heaviest in the central portion of the site with more open sand along the eastern side and in the northwest corner.



Unit B – St. Lucie fine sand 0 – 5%

Unit B is a sand pine / scrubby area that has evidence of vegetative clearing within the last year. Most of the trees have been removed, and saw palmetto growth and ground cover are emerging. Open sandy areas are evident in patches throughout the site.



Unit C – St. Lucie fine sand 0 – 5%

Unit C is adjacent to Unit B, though it contains more sand pines, and does not appear to have been altered like Unit B. The northern portion of the site contains a heavy layer of duff and other vegetative material from past activities on the site. Open sandy areas are sparse; though do occur sporadically on the site. A portion of Unit C is on the adjacent property and occurs over sandy areas with pasture grasses and low herbaceous vegetation.



Unit D – St. Lucie fine sand 0 – 5%

Unit D is the site of a partially completed development that was abandoned. Asphalt paved roadways and a buried sewer system is in place, and the remaining areas are open sandy soils with pasture grasses and low herbaceous vegetation. Gopher tortoise burrows were observed in several places, and several larger pines are present. Planted sabal palms occur on the northern side of the site, and a small area of pines, oaks, and palmetto is in the center of the site.



Unit F – Tavares-Millhopper fine sand 0 – 5 %

Unit F occurs adjacent to the southeast corner of Unit A, outside of the right-of-way from the on-ramp to I-4 westbound at Central Florida Parkway. The area is primarily open sand with low herbaceous vegetation and scattered saw palmetto.



Unit G- St. Lucie fine sand 0 – 5%

Unit G occurs outside of the right-of-way to the south of Unit F north of the Fenton Street overpass. The area is open sandy soils with pasture grasses and scattered scrubby vegetation. Numerous scraps of old bill boards were on the ground at the base of the current bill board.



Unit H – St. Lucie fine sand 0 – 5%

Unit H is adjacent to Area G and extends outside of the right-of-way towards Palm Parkway. It contains primarily open sandy soils and scrubby vegetation. Areas of pasture grasses were found nearer to the right-of-way fence line. Several scrub lupines were observed on this site.



Unit I – Pomello fine sand 0 – 5%

Unit I is adjacent to the Fenton Street overpass on the north side outside of the right-of-way and consists of a dense canopy of sand pines, with several areas of open white sand. Scattered saw palmetto was present but little additional ground cover was observed.



Unit J – Pomello fine sand 0 – 5%

Unit J is outside of the right-of-way adjacent to the Fenton Street overpass on the south side and consists of scattered sand pines with areas of open sand and some low scrubby vegetation. A dense area of mixed pine and oak occurs at the eastern side of the site near the right-of-way fence line.



Unit K – Pomello fine sand 0 – 5%

Unit K is located outside of the right-of-way adjacent to the hotel complex on Palm Parkway south of Fenton Street and consists of a mix of sand pine scrub and open sandy areas. One scrub lupine was observed near the hotel.



Unit L – St. Lucie fine sand 0 – 5%

Unit L is located north of the Fenton Street overpass east of I-4 outside of the right-of-way that is currently used as a pasture for cattle grazing. The site is primarily grasses with open patches of sand and some low scrubby vegetation. Several scrub lupines were observed on this site.



Unit M – Pomello fine sand 0 -5%

Unit M is located to the southeast of Unit L and is part of the same pasture and contains patches of open sand and some low scrubby vegetation. Several gopher tortoise burrows were observed, as was a patch of scrub lupine.



Unit N – Pomello fine sand 0 – 5%

Unit N is to the south of Fenton Street outside of the right-of-way in another pasture used for cattle grazing. Several large live oaks were present, along with small patches of open sand and pasture grasses. The grasses had been compacted and contained a dense root mass throughout.



Unit O – St. Lucie fine sand 0 -5%

Unit O is a pasture to the south of Unit N outside of the right-of-way, containing pasture grasses and small areas of open sand. Much of the area was compacted soils. Several scrub lupines were observed in the pasture.



Unit P – Tavares-Millhopper fine sand 0 -5%

Unit P is located within the right-of-way and median of I-4 eastbound at the on-ramp from SR 536. It consists primarily of sand pine with a fairly dense canopy, and some open sandy areas mixed in with saw palmetto, wire grass, and low scrubby herbaceous vegetation. The maintained right-of-way is Bahia grass.



Unit Q – St. Lucie fine sand 0 -5%

Unit Q is located along the right-of-way of I-4 eastbound just north of Central Florida Parkway and consists of some low scrubby areas with mixed sand pine and saw palmetto with maintained Bahia grass near the roadway. Vegetation was dense with little open ground.



Unit R – St. Lucie fine sand 0 – 5%

Unit R is located along the right-of-way of the SR 528 off-ramp from I-4 eastbound to SR 528 eastbound. It consists of open sandy areas, Bahia grass, and some scrubby vegetation with sand pines.



Unit S- St. Lucie fine sand 0 -5%

Unit S is located along the right-of-way of I-4 westbound at the on-ramp from SR 528 westbound. It consists primarily of open sand and Bahia grass, with some sand pine and low scrubby vegetation.



Unit T – St. Lucie fine sand 0 – 5%

Unit T is located along the right-of-way of I-4 westbound south of the on-ramp from SR 528 westbound and consists primarily of open sand and Bahia grass.



Unit O-24 – Tavares-Millhopper fine sand 0 - 5%

Unit O-24 is located in the median between the off-ramp from I-4 westbound to SR 536 westbound, and the off-ramp from I-4 westbound to SR 536 eastbound and consists of Bahia grass adjacent to a heavily canopied pine forest.



Table 1 - Sand Skink Cover Board Survey

Project Segment	Unit	Acreage	Number of Boards	Boards per Acre
1	A	6.26*	275	44
2	B	2.05	105	51
2	C	2.78	140	50
2	D	2.2	92	42
1	F	1.0*	13 (27 damaged)	40
1	G	1.1	63	57
1	H	0.74	40	54
1	I	1.09	58	53
1	J	1.41	58	41
1	K	1.32	68	51
1	L	0.5	20	40
1	M	0.37	15	40
1	N	0.11	6	54
1	O	0.55	22	40
1	P	0.37	15	40
2	Q	0.21	11	52
2	R	0.42	25	59
2	S	0.24	10	41
2	T	0.19	10	52
1	0-24	0.02	1	50

*Survey note: While conducting the survey, it was observed that development had begun within all of Unit A and a portion of Unit F. This development was a residential project (apartments) with approved permits from Orange County. After the boards were checked during week 1, clearing and grubbing activities began to take place and the site was prepared with silt fencing. By the time of the week 3 survey, these areas were completely cleared of all vegetation and were no longer accessible.

Survey Results

Cover boards were inspected for signs of sand skinks by lifting each board and visually inspecting the area beneath. After each inspection, the area under the board was smoothed out, and the boards were placed back down in the original position. During the first survey event, any boards with vegetation or debris still under them were raked, re-graded, and smoothed out. Any boards that were moved, damaged, or removed were noted on the data sheets

Survey Event 1 – April 10, 11, 14 and 16, 2014

Numerous 6-lined race runners were observed and several different types of curves and lines were observed under boards, but no sand skink tracks or other signs of sand skinks were identified. Southern toads, 5-lined skinks, eastern narrow-mouthed toads, and brown anoles were also observed. The tracks found under boards and in the surrounding sand were later identified as belonging to ant lions, crickets, race runners, and beetles, and were ruled out as being sand skink as they did not represent continuous sinusoidal movement.



Survey Event 2 – April 21, 22, and 23, 2014

Tracks from species identified above were observed under several boards, but no signs or tracks of sand skinks were observed. Eastern narrow-mouthed toads and 6-lined race runners were observed under numerous boards throughout the survey corridor.



Survey Event 3 – April 28 and 29, 2914

No signs of sand skinks were observed under any of the cover boards. Many 6-lined race runners and eastern narrow-mouthed toads were observed, as were several pine bark scorpions.



Survey Event 4 – May 5 and 6, 2014

No signs of sand skinks were observed under any of the cover boards. 6-lined race runners and eastern narrow-mouthed toads were common under the boards throughout the survey area.



Survey Summary

No sand skinks or evidence of sand skinks was observed during the survey. Many different types of species were encountered, but no continuous sinusoidal tracks were found either under the cover boards or at any other place within the survey area.

References:

US Fish and Wildlife Service, Peninsular Florida Species Conservation and Consultation Guide, Sand Skink and Blue-Tailed Mole Skink, 2012