Natural Resources Evaluation

Florida Department of Transportation

District Five

SR 524 PD&E Study

Limits of Project: Friday Road to Industry Road

Brevard County, Florida

Financial Management Number: 437983-1-22-01

ETDM Number: 14321

Date: March 2025

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

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1.0 EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT), District Five, is conducting a Project Development and Environment (PD&E) study on an approximately 3.15-mile segment of State Road (SR) 524 from west of Friday Road to Industry Road in Brevard County, Florida (see Figure 1). The existing SR 524 project corridor is a two-lane, urban minor arterial with 4-foot paved shoulders and open swale drainage within the right of way. Bicycle and pedestrian features are limited to a sidewalk located on the north side of the roadway from Cox Road to Industry Road. This project has been requested by the Space Coast Transportation Planning Organization (SCTPO) to coordinate the development of a future vision for the SR 524 corridor that establishes a multi-modal approach to providing for future transportation needs.

The PD&E study is analyzing design alternatives that widen SR 524 from two-lane to four-lane to provide additional capacity for future traffic growth. SR 524 is projected to carry between 16,000 to over 23,000 vehicles per day by 2040 and is projected to operate at a Level of Service (LOS) of E with the no-build condition.

A Natural Resource Evaluation (NRE) has been prepared in accordance with Part 2, Chapters 9, Wetlands and Other Surface Waters and Chapter 16 Protected Species and Habitats of the FDOT's PD&E Manual (FDOT, July 1, 2020). The purpose of this NRE is to identify wetlands, surface waters, protected species and habitats that exist within the study corridor and to address potential impacts to these protected species.

Wetland impacts that result from the construction of the proposed alternatives will be addressed by mitigation pursuant to Section 373.4137 Florida Statutes (F.S.) to satisfy all mitigation requirements of Part IV, Chapter 373, F.S. and 33 U.S.C. 1344. Under Section 373.4137 F.S., mitigation of FDOT wetland impacts will be implemented by the St. Johns River Water Management District (SJRWMD) for specific FDOT project impacts through a corresponding mitigation project within the overall approved regional mitigation plan. FDOT will provide funding to the SJRWMD for implementation of such mitigation projects. If the SJRWMD is unable to provide mitigation services, credits from an approved mitigation bank will be purchased by the FDOT to satisfy all mitigation needs for the project.

Field surveys were performed in April 2019 and February 2020 to evaluate proposed alternatives and address the occurrence, or potential occurrence, of wildlife and plant species listed as Threatened, Endangered, Imperiled Species, or otherwise protected (protected species). Field surveys were conducted in accordance with the methodologies outlined by the United States Fish and Wildlife Service (USFWS) and Florida Fish and Wildlife Conservation Commission (FWC). The Florida Natural Areas Inventory (FNAI), USFWS, and FWC databases were consulted

regarding current state and federally listed wildlife species, imperiled species and other protected species that are known or have the potential to occur within certain habitats found in the region. Based on the results of the database review and field surveys, an effects determination of "may affect, not likely to adversely affect" was made for the wood stork (*Mycteria americana*) and Eastern indigo snake (*Drymarchon corais couperi*). A "no effect" determination was made for the Audubon's crested caracara (*Caracara plancus audubonii*) and Florida scrub-jay (*Aphelocoma coerulescens*). The Eastern black rail (*Laterallus jamaicensis*) was added to the federally threatened species list in November 2020 and was listed by FWC as federally threatened in May 2021, after the initial database review and field surveys. A "may affect, but not likely to adversely affect" determination has been made for the Eastern black rail.

To date, coordination completed with the USFWS to comply with Section 7 of the Endangered Species Act (ESA) has occurred through the Efficient Transportation Decision Making (ETDM) process. Further coordination was initiated in early 2019 to determine whether Florida scrub-jay and Audubon's crested caracara surveys would be required in 2020. On December 11, 2019, USFWS concurred that these species would not require species-specific surveys because of a lack of suitable habitat in the project area. Coordination with the USFWS and regulatory agencies will continue throughout the project development process.

2.0 PROJECT OVERVIEW

The FDOT is conducting a PD&E study to evaluate improvement alternatives for a section of State Road 524 from South Friday Road to Industry Road (437983-1) in Brevard County, Florida (Figure 1). The study will evaluate alternatives to improve roadway capacity, add bicycle and pedestrian facilities, and address transit needs. In 2017, the FDOT completed the S.R. 524 long-range planning study to evaluate capacity and safety alternatives for the roadway. This PD&E study will evaluate and refine those alternatives and will compare their potential effects on the environment and the surrounding communities, as well as the traveling public. For the purposes of this evaluation, the project corridor is defined as a 500-foot buffer on either side of the existing right of way and includes all stormwater pond alternatives.

The existing SR 524 project corridor is approximately 3.15 miles long and consists of a two-lane, urban minor arterial with four-foot-wide paved shoulders and open swale drainage within the right of way. Bicycle and pedestrian features are limited to a sidewalk located on the north side of the roadway from Cox Road to Industry Road. This project has been requested by the SCTPO to coordinate the development of a future vision for the SR 524 corridor that establishes a multi-modal approach to providing for future transportation needs.

SR 524 is a critical traffic corridor in the Space Coast region, connecting I-95, SR 520, SR 528, US 1, and Cape Canaveral. There are seven major intersections along the SR 524 project corridor, including Friday Road South, I-95 Southbound Ramp, I-95 Northbound Ramp, Friday Road North, Cox Road, London Boulevard, and Industry Road.

The S.R. 524 Corridor varies in land uses along the 3.15-mile roadway section, each with a slightly distinct character. As a result, the corridor has been broken into four segments for analysis as follows:

- Segment 1 – SR 524 at I-95 (S. Friday Road to N. Friday Road)
- Segment 2 – SR 524: N. Friday Road to Cox Road
- Segment 3 – SR 524: Cox Road to London Boulevard.
- Segment 4 – SR 524: London Boulevard to Industry Road

The PD&E Study will produce the required engineering, environmental and NEPA documentation and clearances to proceed to the Design Phase. The potential alternatives to be evaluated include the No Build, Linear swales within existing right of way, Regional Stormwater Management Facility, and Offsite Ponds for Each Basin.

This NRE has been prepared as part of the PD&E Study and in accordance with Part 2, Chapter 9,

Wetlands and Other Surface Waters, Chapter 16, Protected Species and Habitats, and Chapter 17, Essential Fish Habitat (EFH) of the FDOT's PD&E Manual (FDOT, July 1, 2020). The purpose of this NRE is to identify protected species and their habitats, wetlands and surface waters, and EFH that exist within the study corridor and to address potential impacts to these protected resources. A preliminary list of natural resource concerns was generated based on agency comments received during the ETDM process and is included in **Appendix A**.

2.1 Purpose and Need

The purpose of this project is to accommodate year 2040 travel demand and improve traffic flow and improve vehicular and bicycle and pedestrian safety. The need for the project is based on transportation demand/capacity and safety. This project has been requested by the SCTPO to coordinate the development of a future vision for the SR 524 corridor that establishes a multimodal approach to providing for future transportation and safety needs. In the future year (2040) no-build condition, the majority of the SR 524 study corridor, including the interchange at I-95, is projected to operate at LOS E with Average Annual Daily Traffic (AADT) ranging from 16,000 vehicles/day to more than 23,000 vehicles/day.

Crash data for the study area was obtained from FDOT Crash Analysis Reporting System (CARS) for the 5-year period between 2011 and 2015. During this period, there were 124 crashes along SR 524, including 62 crashes with an injury and 2 fatalities. The associated crash rate was 3.08 along this corridor, higher than the statewide average of 2.99. Primary crash types include rear end (40) and angle (20). Clusters of crashes are evident near major intersections, particularly in and around the interchange with I-95 and between London Boulevard and SR 501/Clearlake Road.

2.2 Roadway Alternatives

This study includes three basic alternatives for the roadway, different interchange alternatives for the major interchanges along the roadway, and offsite pond alternatives. All of the alternatives are located within the same project corridor and within the existing SR 524 right of way. The existing habitat abutting right of way was classified using the SJRWMD Florida Land Use, Cover, and Forms Classification System (FLUCCS, FDOT, 1999) and modified as needed pursuant to field observations made during the April 2019 and February 2020 site visits. Each alternative is described below and the Preferred Alternative is depicted in **Figure 2**.

No-Build Alternative

The No-Build Alternative will leave the existing two-lane roadway and associated drainage system as is with no improvements. This alternative does not meet the purpose and need of the project due to projected traffic demands and safety concerns.

Alternative 1 – Curbed (Urban)

The curbed alternative is a four-lane roadway with a 22-foot median. It features curb and gutter on the median and outside shoulders, a 7-foot buffered bike lane, and sidewalks on either side. The inside lane will be 11 to 12-feet wide, depending on segment, and the outside lane will be 12-feet wide. This alternative's benefits are the reduction of speed through the residential segments and will reduce unwanted truck traffic heading through segments 3 and 4.

Alternative 2 – High Speed Curbed (Suburban)

The high-speed curbed alternative median will be 30-feet wide, and the lanes will be 12-feet wide. There will be a 4-foot inside shoulder, and a 7-foot buffered bike lane on the outside, with curb and gutter on both sides. This alternative will be able to increase pedestrian safety along the corridor by having the sidewalk further offset from the road, as well as reduce median crashes with an inside shoulder.

Alternative 3 – Flush Shoulder (Rural)

The flush shoulder alternative will have a 40-foot median, with a 2-foot inside shoulder and a 7-foot outside shoulder that will serve as an unmarked bicycle lane. There will be a sidewalk for which the offset varies from the road but will be a minimum of 15-feet from the road. Both travel lanes will be 12-feet wide. This alternative will accommodate the truck traffic in segments 1 and 2, coming and going from the Flying J and Walmart Distribution Center.

Within each of these roadway alternatives are interchange alternatives for I-95, South Friday Road, North Friday Road, Walmart Distribution Center, Cox Road, London Boulevard, Home Depot Shopping Plaza Entrance, and Industry Road. Each interchange alternative is briefly summarized below.

I-95 Interchange

The I-95 Interchange designs alternatives evaluated were selected for their ability to meet future traffic demand. The designs selected for evaluation were a double roundabout, a partial clover leaf, a diverging diamond, and a modified diamond interchange. Preliminary assessment eliminated the double roundabout and the partial cloverleaf. The diverging diamond and modified diamond interchange were moved forward for further evaluation. Each of these I-95 Interchange designs is briefly discussed below.

The existing interchange layout between SR 524 and I-95 is a typical diamond interchange. One of the alternatives is to improve and widen the existing interchange. Both signal lanes in either direction, on either side of I-95 would be widened to accommodate two through lanes. I-95 northbound connects to SR 524 through a four lane off ramp, two turning into either direction at SR 524, and one lane on ramp from SR 524 westbound. I-95 southbound connects to SR 524 through a three lane off ramp, one lane that turns westbound and two lanes that turn eastbound, as

well as a three lane on ramp, one lane from SR 524 eastbound and two from the westbound approach.

The double-roundabout interchange featured a two-lane roundabout on either side of the I-95 interchange, connected by a four-lane two-way connection. The northbound I-95 exit ramp is designed to connect as an entrance on the south portion of the eastern roundabout; and the southbound I-95 exit ramp is designed to connect directly to the north of the western roundabout. The northbound I-95 on-ramp is designed to be an exit from the north side of the eastern roundabout, and the southbound I-95 on-ramp is designed as an exit from the south side of the western roundabout. This layout is designed to benefit motorists, because it would allow free flow movement throughout the interchange. Its disadvantages would be to bicyclists and pedestrians who would need to cross many free flow sections, which reduces safety. The short distance and lack of extended queue lengths between the roundabouts and either Friday Road intersection is a concern as well. At peak traffic times, a red light at either Friday Road could cause traffic to back up into the roundabout.

Partial clover leaves were tested on the northwest and the southwest corners of the SR 524 and I-95 interchange. The northwest clover would allow westbound traffic on SR 524 free flow access to I-95 southbound. This alternative would require purchasing a large amount of right of way. The southwest clover would connect I-95 southbound to SR 524 eastbound. This option would also require the purchase of a large amount of right of way. The clover leaves feature two through lanes at both signalized stops on either side of the bridge and appear with the same layout as the modified diamond except for their respective on/off ramp on the western signal under I-95 being replaced with a clover. The clover leaves would increase the flow of traffic and help meet the new traffic demands for connecting I-95 southbound to the east of the interchange.

A diverging diamond designed to pass under the I-95 bridge was also designed and evaluated as part of the analysis. The diverging diamond features two crossovers at 45-degree angles on either side of the bridge. This design will feature two through lanes on the eastbound and westbound directions on the western crossover, and three through lanes on the eastbound and westbound directions on the eastern crossover. A diverging diamond design will greatly improve the efficiency for those entering SR 524 through I-95.

South Friday Road

West of I-95, the South Friday Road and SR 524 intersection is designed as a signalized intersection with two through lanes in either direction on SR 524. It is designed to have an additional right and left turn lane for both the eastbound and westbound movements. South Friday Road will have two lanes heading northbound, one of them is a straight and left turn lane, the other is a designated right turn lane heading eastbound on SR 524. Heading southbound into the intersection from S Friday Road will be two lanes, a through and left turn lane, as well as a right turn lane onto SR 524

westbound. All the proposed Friday Road improvements fall within the footprint of the proposed roadway alternatives.

North Friday Road

Separating segment 1 and segment 2 is the SR 524 and North Friday Road intersection. SR 524 will have two through lanes in both directions. Eastbound on SR 524 is designed to have a left turn onto northbound North Friday Road as well as a high radius turn southbound into the Flying J to accommodate heavy truck traffic. Westbound on 524 will have a left turn lane into the Flying J and a right turn lane northbound. North Friday Road will have two lanes southbound; one is a right and through movement, and the other is a left turn lane onto SR 524 eastbound. All the proposed Friday Road improvements fall within the footprint of the proposed roadway.

Walmart Distribution Center Entrance

A signalized intersection exists at the entrance of the Walmart Distribution center. This intersection will remain a three-way signalized intersection. There will be a right turn lane from SR 524 eastbound and a left turn lane from SR 524 westbound into the Walmart Distribution Center. Coming from the Walmart Distribution Center will be a right turn lane that connects to SR 524 eastbound, and a left turn that will connect to westbound. All the proposed entrance road improvements fall within the footprint of the proposed roadway alternatives.

Cox Road

The proposed designs for the Cox Road and SR 524 intersections are a typical signalized intersection, which is the design that currently exists, a Restricted Crossing U-Turn (RCUT), a Median U-Turn, and a roundabout. The signalized intersection design will maintain the existing intersection. It will have two through lanes on SR 524 heading either direction. Both directions will have right and left dedicated turn lanes. Cox Road southbound will have a through and right turn lane, as well as a dedicated left turn lane. Cox Road northbound will have the same lane design. The proposed RCUT design will maintain the two through lanes in either direction on SR 524. It features a restricted median opening, allowing only left turns from SR 524 onto Cox Road. SR 524 will have right turn lanes onto Cox Road coming from either direction. The through and left movements for Cox Road require drivers to take a right from onto SR 524, and then use the next median opening to make a U-Turn. Cox Road will have only one lane that leads into SR 524 in either direction, which will be a right turn lane.

The proposed MUT will maintain the two through lanes in either direction on SR 524. SR 524 will have a median that is restricted to Cox Road's through movements only. Left turn lanes from SR 524 onto Cox Road will require a U-Turn at the next available median opening, past the intersection. SR 524 will also maintain right turn lanes heading onto Cox Road in either direction. Another proposed design for Cox Road features a roundabout. The roundabout will have two lanes on the north and south sides to accommodate the two through lanes for SR 524 and have only one

lane on the east and west sides to accommodate the through lanes for Cox Road. There is a right by-pass turn from SR 524 onto Cox Road in both directions. It is geometrically required to meet minimum FDM standards for turn radius due to the skew of Cox Road.

All the proposed Cox Road improvements fall within the footprint of the proposed roadway alternatives except for the roundabout alternative.

London Boulevard

The proposed designs for the London Boulevard and SR 524 intersection are a typical signalized intersection, an RCUT, and a roundabout. There is a permitted development, Clearlake Cove, being built that is on SR 524 opposite London Boulevard. All the proposed designs take their preliminary designs into account. Clearlake Cove is expected to be a two lane, two-way access.

The signalized intersection design proposed is a widening of the currently existing intersection layout. It will have two through lanes on SR 524 heading either direction on SR 524. Both directions on SR 524 will have right and left dedicated turn lanes. London Boulevard southbound will have a through and right turn lane, as well as a dedicated left turn lane. London Boulevard northbound will have the same lane design as southbound. All the proposed London Boulevard improvements fall within the footprint of the proposed roadway alternatives except for the roundabout alternative.

Home Depot Shopping Plaza Entrance

The Shopping Plaza Intersection accommodates access to Publix, CVS, McDonald's, Cocoa Veterinary Hospital and others in the shopping plazas directly to the north and south of SR 524 and is currently a signalized intersection. This intersection is proposed to remain signalized. Other designs were considered, including removing this intersection, but these would not meet traffic demands or would reduce access to these landmarks. The proposed design will have two through lanes on SR 524, as well as dedicated left and right turn lanes. The southern shopping plaza exit will have two lanes, a through and left turn lane, and a dedicated right turn lane. All the proposed entrance road improvements fall within the footprint of the proposed roadway alternatives.

Industry Road

The Industry Road and SR 524 intersection currently exists as a signalized intersection. The first proposed design would be to widen the existing design to meet traffic demands. The proposed design on SR 524 will have two through lanes in either direction and dedicated left and right turn lanes. Industry Road southbound will have two dedicated left turn lanes, two dedicated right turn lanes, and one through lane. Industry Road northbound will have one dedicated right and left turn lane, and one through lane.

The other alternative for this intersection is a partial continuous left turn intersection. This Intersection will feature two through lanes in either direction on SR 524. Westbound, it will have a dedicated left turn lane, and a free flow right turn onto Industry Road. Eastbound it will have two

left turn lanes that diverge before the intersection. The left turn lanes will cross over the median, and SR 524 westbound through use of a signal, and continue to another light at Industry Road, where motorists will wait to crossover Industry Road southbound, to merge with Industry Road northbound. Industry Road southbound will feature one through lane, which will be separated by pavement markings from the two dedicated left turn lanes. It will also feature two free flow right turn lanes that will diverge before the intersection, to bypass, and not intersect with, the two SR 524 eastbound left turn lanes.

The Industry Road intersection will be designed to accommodate the high volume of traffic that will be coming from SR 528 to the north and connecting to SR 524 eastbound and westbound through Industry Road. The truck traffic coming from the Walmart Distribution Center and the Flying J in Segment 1 and 2 will be deterred, so that trucks do not travel eastbound through the residential and commercial sections of segments 3 and 4 to reach SR 524. Although, this intersection will still be designed to accommodate the truck traffic from SR 524 eastbound if necessary.

All the proposed Industry Road improvements fall within the footprint of the proposed roadway alternatives except for the continuous left turn alternative.

Preferred Alternative

The preferred alternative is a modified version of Alternative 1 – Curbed (Urban). Following the Alternatives Analysis meeting, the 7-ft. buffered bike lanes were removed from either side of the road and replaced with 14-ft. wide shared-use paths that will accommodate bicycle and pedestrian traffic. Typical section details by segment are as follows:

Segment 1

Segment 1 will be a four-lane divided section that runs between South and North Friday Roads with a Diverging Diamond Interchange (DDI) at I-95. The typical section outside the DDI has 12-ft. travel lanes, Type F outside curb and gutter, Type E inside curb and gutter, 14 ft. shared-use paths on either side of the roadway 4 ft. from the right of way, and a varying median (48 ft. south, 53 ft. north). The travel lanes widen to 14 ft. within the DDI limits and include an additional 14-ft. left-turn lane.

Segment 2

Segment 2 will be a four-lane divided section that runs from Friday Road (North) to Cox Road. This section has type F outside curb and gutter, 12-ft. outside lanes, 11-ft. inside lanes, type E inside curb and gutter, and a 22-ft. median (17.5-ft. sodded). 14-ft. shared-use paths are on each side of the corridor 4 ft. from the existing right of way. Wide drainage swales with 1:4 front and back slopes will be placed between the shared-use path and the outside curb and gutter.

Segment 3

Segment 3 will be a four-lane divided section that runs from Cox Road to London Boulevard. This section has type F outside curb and gutter, 11-ft. travel lanes, type E inside curb and gutter, and a 22-ft. median (17.5-ft. sodded). 14-ft. shared-use paths are on each side of the corridor 4 ft. from the existing right of way. Drainage swales with 1:4 front and back slopes will be placed between the shared-use path and the outside curb and gutter.

Segment 4

Segment 4 will be a four-lane divided section that runs from London Boulevard to Industry Road. This section has type F outside curb and gutter, 11-ft. travel lanes, type E inside curb and gutter, and a 22-ft. median (17.5-ft. sodded). 14-ft. shared-use paths are on each side of the corridor. The existing right of way widens on the north side, but the horizontal alignment will be at the same offset from the centerline as in segments 2 and 3 (50-ft.). Wide drainage swales with 1:4 front and back slopes will be placed between the shared-use path and the outside curb and gutter except where the shared-use path comes in closer to the road to tie back into the existing curb ramp configuration at Industry Road.

2.3 Pond Site Descriptions

During the field surveys, all 14 stormwater pond alternatives evaluated for the SR 524 PD&E study and depicted in **Figure 1** were assessed. The following pond site descriptions are limited to the four pond sites that were selected for the Preferred Alternative and are depicted in **Figures 2, 3, 4, 5, 7 and 8.** The existing habitat at each pond site was classified using the SJRWMD FLUCCS and modified as needed pursuant to field observations made during the April 2019 and February 2020 site visits.

Pond Site 1A

This pond site is located at the northwest end of the project corridor and consists of a Freshwater Marsh (FLUCCS 641) community. Trees within the interior of this wetland are limited to scattered red maple (*Acer rubrum*), slash pine (*Pinus elliottii*) and punktree (*Melaleuca quinquenervia*). Other trees and shrubs along the perimeter include Brazilian pepper (*Schinus terebinthifolia*), Carolina willow (*Salix caroliniana*), cabbage palm (*Sabal palmetto*) and wax myrtle (*Morella cerifera*). Herbaceous vegetation is dominated by sawgrass (*Cladium jamaicense*) with scattered giant leather fern (*Acrostichum danaeifolium*), royal fern (*Osmunda regalis*) and swamp fern (*Telmatoblechnum serrulatum*). The entire pond site consists of wetlands. No evidence of protected species was observed during the site visits.

Pond Site 2F

This pond site is located on the south side of the project corridor west of Cox Road and is mapped as a Mixed Wetland Hardwoods (FLUCCS 617) community. Trees in this community include bald

cypress (*Taxodium distichum*), red maple, swamp bay (*Persea palustris*), red bay (*Persea borbonia*) and cabbage palm. Other vegetation included royal fern, arrowhead (*Sagittaria lancifolia*), buttonbush (*Cephalanthus occidentalis)*, sawgrass and Virginia chain fern. The entire site consists of wetlands. No evidence of protected species was observed during the site visits.

Pond Sites 3A

This pond site is located on the northeast side of the project corridor west of Industry Road and is mapped as Commercial and Services (FLUCCS 140). This pond site is currently undeveloped open land that is maintained with periodic mowing. The habitat consists exclusively of uplands and herbaceous vegetation is dominated by pasture grasses including bahiagrass (*Paspalum notatum*), Bermudagrass (*Cynodon dactylon*), ragweed (*Ambrosia artemisiifolia*) and Mexican clover (*Richardia brasiliensis*). No wetlands occur within this proposed pond site. No evidence of protected species was observed during the site visits.

Pond Sites 3B

This pond site is located on the northeast side of the project corridor west of Industry Road and is mapped as Commercial and Services (FLUCCS 140). This pond site is currently undeveloped open land that is maintained with periodic mowing. The habitat consists exclusively of uplands and herbaceous vegetation is dominated by pasture grasses including bahiagrass, Bermudagrass, ragweed and Mexican clover. No wetlands occur within this proposed pond site. No evidence of protected species was observed during the site visits.

2.4 Construction Methods

Detailed construction and demolition plans have not been developed at this stage of the PD&E process. However, Best Management Practices (BMPs) will be implemented to avoid and minimize impacts to protected natural resources.

2.5 Soils

Table 1 contains the soils found within the SR 524 PD&E study corridor according to the Natural Resources Conservation Service (NRCS) Soil Survey of Brevard County. Soil characteristics listed in the table include depth to water table, soil permeability, hydric rating and hydrologic group. Hydric rating will be identified as "Yes" if any component or inclusion of the soil type is considered hydric and does not define the mapped area as being hydric. The Hydrologic Groups are based upon infiltration rates and runoff potential due to precipitation. Group A indicates a very high infiltration rate. Group B indicates a moderate infiltration rate. Group C indicates a slow infiltration rate. Group D indicates a very slow infiltration rate. Soils with two hydrologic group classifications reflect different runoff potential in a drained and undrained condition. **Figure 3**

depicts the area topography which is just above sea level and **Figures 4A-4D** depict the location of each soil type along the project study corridor.

Anclote Sand, depressional (2) is a nearly level, poorly drained sandy soil found in marshy depressions in the flatwoods. This soil type consists of a dark surface layer of black sand about 19 inches thick. Permeability is rapid in all layers and the available water capacity is moderate.

Basinger Sand, depressional (6) is a nearly level, poorly drained sandy soil found in sloughs of poorly defined drainageways and depressions in the flatwoods. This soil type consists of a surface layer of dark gray to brownish gray sand about 8 inches followed by a 12-inch layer of grayish sand. Permeability is very rapid in all layers and the available water capacity is very low.

Basinger Sand (7) is a nearly level, poorly drained sandy soil found in sloughs of poorly defined drainageways and depressions in the flatwoods. This soil type consists of a surface layer of dark gray to brownish gray sand about 8 inches thick followed by a 12-inch layer of grayish sand. Permeability is very rapid in all layers and the available water capacity is very low.

Immokalee Sand (28) is a nearly level, poorly drained sandy soil found in broad areas of the flatwoods, on low ridges between sloughs, and in low areas between sand ridges, lakes and ponds. This soil type consists of a surface layer of very dark gray to dark gray sand about 11 inches thick followed by a 22-inch layer of light gray sand. Permeability is moderately rapid in the weakly cemented layers and rapid in all other layers. Available water capacity is very low in the surface and subsurface layer.

Malabar Sand (30) is a nearly level, poorly drained sandy soil found in broad low areas, in sloughs and in poorly defined drainageways. This soil type consists of a surface layer of dark grayish brown to light brownish gray sand that is about 14 inches thick. Permeability is rapid in the sandy layers and moderate in the loamy layers. Available water capacity is very low in the sandy layers and moderate in the loamy layers.

Myakka Sand (36) is a nearly level, poorly drained sandy soil in broad areas of the flatwoods and in areas between sand ridges, sloughs and ponds. This soil type consists of surface layer of very dark gray to dark gray sand about 8 inches followed by a 14-inch layer of gray to light gray sand. Permeability is rapid in the sandy layers and available water capacity is low to very low.

Myakka Sand, depressional (38) is a nearly level, poorly drained sandy soil in shallow depressions of the flatwoods. This soil type consists of surface layer of very dark gray to dark gray sand about 8 inches followed by a 14-inch layer of gray to light gray sand. Permeability is rapid in the sandy layers and available water capacity is low to very low.

Paola Fine Sand, 0 to 5 percent slopes (43) is a nearly level to strongly sloping, excessively drained sandy soil found on the tops and sides of ridges. This soil type consists of a surface layer of dark gray fine sand about 5 inches thick followed by a 24-inch layer of light gray fine sand. Permeability is very rapid, and the available water capacity is very low.

Paola Urban Land Complex, 0 to 8 percent slopes (45) is a nearly level to gently sloping, excessively drained sandy soil found on urban lands or areas below buildings or asphalt. This soil type consists of a surface layer of dark gray fine sand about 5 inches thick followed by a 24-inch layer of light gray fine sand. Permeability is very rapid, and the available water capacity is very low.

Pomello Sand (49) is a nearly level, moderately well drained sandy soil on broad, low ridges and low knolls. This soil type consists of a 3-inch surface layer with a layer of 50-inch-thick layer of light gray fine sand below. Permeability is very rapid to a depth of about 50 inches and available water capacity is very low.

Pompano Sand (51) is a nearly level, moderately well drained sandy soil on broad flats, in shallow depressions and in sloughs. This soil type consists of a surface layer of very dark brown sand about 2 inches thick followed by a 5-inch layer of dark gray sand. Permeability is very rapid and available water capacity is low to very low in all layers.

St. Johns Sand (54) is a nearly level, poorly drained sandy soil found on broad low ridges of the flatwoods. This soil type consists of a surface layer of black sand about 11 inches thick followed by an 8-inch layer of gray sand. Permeability is moderately rapid in the weakly cemented layers and very rapid in all other layers. Available water capacity is moderate in the surface layer and very low to low in all other layers.

St. Johns Sand, depressional (55) is a nearly level, poorly drained sandy soil found in depressional sloughs, poorly defined drainageways and shallow intermittent ponds in the flatwoods. This soil type consists of a surface layer of black sand about 11 inches thick followed by an 8-inch layer of gray sand. Permeability is moderately rapid in the weakly cemented layers and very rapid in all other layers. Available water capacity is moderate in the surface layer and very low to low in all other layers.

St. Lucie Fine Sand, 0 to 5 percent slopes (56) is an excessively drained sandy soil found on high ridges and isolated knolls. This soil type consists of a surface layer of gray fine sand about 3 inches thick followed by a 120-inch layer of white fine sand. Permeability is very rapid in all layers and available water capacity is very low.

St. Lucie Fine Sand, 5 to 12 percent slopes (57) is an excessively drained sandy soil found on the sides of high ridges. This soil type consists of a surface layer of gray fine sand about 3 inches thick followed by a 120-inch layer of white fine sand. Permeability is very rapid in all layers and available water capacity is very low.

Terra Ceia Muck, frequently flooded (64) is a nearly level, very poorly drained, well-decomposed organic soil found in broad flat marshes and small depressions. This soil type consists

of a layer of black muck approximately 54 inches thick. Permeability is rapid and available water capacity is very high.

Tomoka Muck, undrained (67) is a nearly level, very poorly drained, muck soil found in broad flat marshes, small depressions and swamps. This soil type consists of an approximately 27-inch layer of black muck containing parts of undecomposed plant matter. Permeability is rapid and available water capacity is very high.

Anclote Sand (91) is a nearly level, poorly drained sandy soil found in marshy depressions in the flatwoods. This soil type consists of a dark surface layer of black sand about 19 inches thick. Permeability is rapid in all layers and the available water capacity is moderate.

Table 1 | SR 524 Soils					
Soil Number	**Soil Name**	**Depth to Water Table (inches)**	**Permeability**	**Hydric Rating**	**Hydrologic Group**
2	Anclote Sand, depressional	0	Rapid	Yes	A/D
6	Basinger Sand, depressional	0	Very Rapid	Yes	A/D
7	Basinger Sand	0-12	Very Rapid	Yes	A/D
28	Immokalee Sand	6-18	Rapid	No	B/D
30	Malabar Sand	3-18	Rapid	Yes	A/D
36	Myakka Sand	6-18	Rapid	No	A/D
38	Myakka Sand, depressional	0	Rapid	Yes	B/D
43	Paola Fine Sand, 0 to 5% slopes	>80	Very Rapid	No	A
45	Paola Urban Land Complex, 0 to 8% slopes	>80	Very Rapid	No	A
49	Pomello Sand	18-42	Very Rapid	No	A
51	Pompano Sand	3-18	Very Rapid	Yes	A/D
54	St. Johns Sand	0-6	Rapid	Yes	B/D
55	St. Johns Sand, depressional	0	Rapid	Yes	B/D
56	St. Lucie Fine Sand, 0 to 5% slopes	>80	Very Rapid	No	A
57	St. Lucie Fine Sand, 5 to 12% slopes	>80	Very Rapid	No	A
64	Terra Ceia Muck, frequently flooded	0	Rapid	Yes	A/D
67	Tomoka Muck, undrained	0	Rapid	Yes	A/D
91	Anclote Sand	0-6	Rapid	Yes	A/D

2.6 Land Use

Land use types/vegetative communities observed within the study area were classified using the SJRWMD FLUCCS. Land use and vegetative communities are depicted in **Figures 5A-5D** and described below. The land use types/vegetative communities in bold indicate the cover types documented in the preferred pond sites.

Residential (FLUCCS No. 100 – 139)

Residential land uses in the corridor range from low-density single-family homes to high density small lot subdivisions. Some of the low-density residential lots contain the native canopy of oaks and pine, while higher density developments under construction lack native vegetative structure. Wildlife utilization is low for all residential uses, limited to foraging opportunities.

Commercial and Services (FLUCCS No. 140)

These high intensity land uses are dedicated to the manufacturing and distribution of goods and services. Native vegetation has been replaced with large buildings, parking lots and storage areas. Natural landforms have been modified to facilitate development. This community type is located adjacent to the right of way in several areas throughout the project corridor and covers all of pond sites 3A and 3B.

Institutional (FLUCCS No. 170)

This land use cover type includes educational, religious, medical and military facilities. Native vegetation and natural landforms have been replaced by buildings, grounds and parking lots. Wildlife utilization is low for these land use types due to high human activity.

Dry Prairie (FLUCCS No. 310)

This herbaceous cover type includes upland prairie grasses which occur on non-hydric soils but may occasionally be inundated by water. This community type is located adjacent to the right of way in several areas throughout the project corridor and covers all of pond site 1E and a small portion of pond site 2B.

Shrub and Brushland (FLUCCS No. 320)

This category includes saw palmetto, gallberry, wax myrtles, and other shrubs and brush, but lacks a canopy of trees. Areas of shrub and brushland within the corridor include areas previously cleared for development and left unattended. This community type covers the portions of pond site 2C that do not have a pine canopy.

Pine Flatwoods (FLUCCS No. 411)

This category includes natural forest stands with at least 66 percent of the canopy being dominated by coniferous species. Trees in this community include slash pine, longleaf pine and sand pine with some areas having scattered oaks. Understory vegetation includes saw palmetto, gallberry, wax myrtle with scattered rusty lyonia, shiny blueberry and shiny lyonia. This community type is located adjacent to the right of way throughout the project corridor and covers all or portions of pond sites 1C, 1D, 2B, 2D and 2E.

Upland Hardwood Forest (FLUCCS No. 420)

This category includes natural forest stands with at least 66 percent of the canopy being dominated by hardwood species. Trees in this community typically include live oak, laurel oak and other hardwoods with cabbage palm found in the subcanopy. This cover type abuts the SR 524 right of way on the western end of the project corridor.

Hardwood – Conifer Mixed (FLUCCS No. 434)

This forested community includes areas where neither upland conifers nor hardwoods achieve a 66 percent dominance in the canopy. Trees in this cover type can include longleaf pine, slash pine, laurel oak and live oak. This cover type abuts the SR 524 right of way on the western end of the project corridor and covers all of pond site 1B.

Reservoirs (FLUCCS No. 530)

This cover type consists of artificial impoundments of water that can be used for irrigation, flood control, or water supply. Vegetation is typically limited to species using the banks of the impoundment but can include floating vegetation such as spatterdock (*Nuphar* spp.) and waterlily (*Nymphaea* spp.). This cover type is in several areas outside of the right of way within the project corridor and covers and is included as a portion of Regional Pond A.

Mixed Wetland Hardwoods (FLUCCS No. 617)

This cover type consists of wetland hardwood communities that exhibit an ill-defined mixture of hardwood species. Trees in this community include bald cypress, swamp bay, red bay, red maple and sweetgum. Other vegetation includes button bush, Virginia chainfern, swamp fern and royal fern. This community is located outside of the right of way along the south side of the project corridor and covers most pond sites 2A and 2F.

Wetland Forested Mixed (FLUCCS No. 630)

This category includes mixed wetlands forest communities in which neither hardwoods nor conifers achieve a 66 percent dominance of the crown canopy composition. Trees in this cover type consist a of a variety of wetland species including red maple, sweetgum, water oak, pond pine and sweetbay magnolia (*Magnolia virginiana*). This cover type abuts the SR 524 right of way on the western end of the project corridor.

Freshwater Marsh (FLUCCS No. 641)

This category includes vegetated non-forested wetlands typically comprised of non-woody species and includes marshes and seasonally flooded areas. Vegetation includes sawgrass, giant leather fern, royal fern and swamp fern. This community type is in several areas outside of the right of way within the project corridor and covers the majority of pond site 1A.

Wet Prairie (FLUCCS No. 643)

This category is composed of grassy vegetation on hydric soils and is usually distinguished from marshes by having less water and shorter herbage. Vegetation typically includes maidencane (*Panicum hemitomon*), spike rushes (*Eleocharis* spp.), beaksedges (*Rhynchospora* spp.) and yelloweyed grasses (*Xyris* spp.). This community type is in several areas outside of the right of way within the project corridor.

Emergent Aquatic Vegetation (FLUCCS No. 644)

This category of wetland plant species includes both floating vegetation and vegetation which is found either partially or completely above the surface of water. Areas of emergent aquatic vegetation are associated with lakes, lime rock pits, agricultural ponds and stormwater ponds. This community type is located outside of the right of way at the eastern end of the project corridor.

Disturbed Lands (FLUCCS No. 740)

This cover type includes areas which have been changed primarily due to human activities other than mining. Vegetation in these areas typically consists of ruderal species including ragweed and dogfennel (*Eupatorium capillifolium*). This community type is located outside of the right of way at the eastern end of the project corridor.

Roads and Highways (FLUCCS No. 814)

This category consists of the existing SR 524 travel lanes and maintained shoulder. Vegetation is limited to minimal groundcover species that are periodically mowed. Wildlife utilization within these areas is low.

3.0 STUDY METHODS

The jurisdictional extent of wetlands and other surface water systems within the study corridor was approximated through the review of aerial photography, National Wetlands Inventory (NWI) data, U.S. Geological Survey Topographic Maps (**Figure 3**), Soils Maps (**Figures 4A-4D**), Land Use Maps (**Figures 5A-5D**), and field observations made during the April 2019 and February 2020 site visits. The wetland limits were identified in general accordance with the USACE Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (November 2010) and the state of Florida's Delineation of the Landward Extent of Wetlands and Surface Waters found in Chapter 62-340, Florida Administrative Code (F.A.C.). In the event wetland boundaries differed between the two methods, the more landward extent was used to define that particular wetland system's boundary.

Each system observed was classified using the SJRWMD FLUCCS data and further categorized using the Classification of Wetlands and Deepwater Habitats of the United States, (Cowardin, et. al., 1979) as adopted by the USFWS and the NWI. Photographic documentation was used to capture the current condition of each wetland system and the Uniform Mitigation Assessment Method (UMAM, Chapter 62-345 F.A.C.) was used to quantify each system's condition.

Prior to the initiation of protected species fieldwork, a background records search was conducted to identify federal and state protected animal and plant species of known or potential occurrence in Brevard County. Resources reviewed included: the observation and distribution records maintained by the FNAI, the Florida Department of Agriculture and Consumer Services (FDACS), the FWC, and the USFWS Information, Planning and Conservation System (IPaC) web-based database.

Fieldwork in April 2019 and February 2020 was conducted according to methodology outlined by the USFWS and FWC to assess the potential occurrence of protected species within the study corridor. Wildlife observations were conducted by a team of two environmental scientists through recognition of tracts, scat, calls and other visual observations. The purpose of the fieldwork was to evaluate the existing lands in the project corridor for the presence of flora and fauna listed by USFWS as Endangered and/or Threatened, and those listed by the FWC as Endangered, Threatened, or Imperiled Species. The available habitat, habitat preferences, or critical habitat, if applicable, for these species, as well as others not expressly protected but managed through state or federal laws, were also evaluated throughout the project corridor. Representative photographs of the field findings are found in **Appendix B.**

Mitigation for the estimated wetland impacts was determined using the UMAM, which is a standard procedure for assessing the functions provided by wetlands and other surface waters, the amount that those functions are reduced by a proposed impact, and the amount of mitigation necessary to

offset that loss. The UMAM worksheets for the estimated wetland impacts can be found in **Appendix C**.

4.0 PROTECTED SPECIES AND HABITATS

The USFWS, through the ESA of 1973, as amended, and the FWC, through Chapter 68 of the F.A.C. and the Florida Endangered and Threatened Species Act, Section 379.2291, Florida Statutes (F.S.), regulate activities that may affect protected species. The term protected species is used as a general term for species that are protected by law, regulation, or rule. The term listed species specifically refers to the federal or state listing status of a protected species.

Section 7(a)(2) of the ESA (16 U.S.C. § 1536) requires federal agencies to consult with USFWS or the National Marine Fisheries Service (NMFS), as appropriate, to ensure that federally funded or authorized actions are not likely to jeopardize the continued existence of federally endangered or threatened species, or result in the destruction or adverse modification of designated critical habitat. The term "critical habitat" has a specific legal meaning and is a term defined and used in the ESA (16 U.S.C. § 1532). It pertains to specific geographic areas that contain features essential to the conservation of threatened or endangered species and may require special management and protection (USFWS, 2013).

The Secretary of the U.S. Department of Interior (DOI), acting through USFWS, and the Secretary of the U.S. Department of Commerce, acting through the NMFS are mandated to protect and conserve all forms of wildlife, plants, and marine life they find in serious jeopardy. In general, USFWS coordinates ESA activities for terrestrial and freshwater species and NMFS coordinates ESA activities for marine and anadromous species. Consultation responsibilities are shared for some species, (e.g., marine sea turtles and the anadromous Gulf sturgeon) which may be present in different habitats depending on the season or their life cycle stage. Amendments to the ESA in 1978, 1979 and 1982 changed the consultation requirements of Section 7 and established the implementing regulations (50 CFR Part 402). These procedures allow federal agencies to consolidate Section 7 requirements with interagency cooperation procedures required by other statutes, such as NEPA (42 U.S.C. 4321 et seq.). Section 7 requirements are met through the environmental review process, NEPA and environmental permitting. Impacts to wetlands and other surface waters provide a "nexus" for involvement of the USFWS and the NMFS as cooperating federal agencies, where they advise the USACE or other Lead Federal Agency on the potential for wetland impacts to affect federally listed species and their habitat.

Just as the federal agencies oversee the protection of certain species and resources, the Florida Constitution establishes the FWC, Article IV, Section 9, Fla. Const., entrusted to "exercise the regulatory and executive powers of the state with respect to wild animal life and freshwater aquatic life, and shall also exercise regulatory and executive powers of the state with respect to marine life." These powers and duties are further carried out through the legislative directives enacted in Chapter 379, F.S., and embodied in the implementing regulations adopted in Chapter 68, F.A.C.

To comply with these federal and state regulations, information regarding the occurrence, or likelihood of occurrence, for protected species was gathered for the project area. A literature review was conducted to identify those species classified by USFWS and FWC as being Endangered, Threatened or Imperiled Species within the project corridor. In addition to the literature review, the FNAI, USFWS, and FWC databases were consulted regarding current state and federally protected wildlife species that are known or have the potential to occur within certain habitats found in the project area.

Field reconnaissance to assess the potential occurrence of protected species within the study corridor were conducted in April 2019 and February 2020. Wildlife observations were conducted by a team of two environmental scientists through recognition of tracts, scat, calls and other visual observations. The purpose of the reconnaissance was to evaluate the project area for the presence of protected flora and fauna. The available habitat, habitat preferences, or critical habitat, if applicable, for these species, as well as others not expressly protected but managed through state or federal laws, such as Florida black bear (*Ursus americanus floridanus*) and bald eagle (*Haliaeetus leucocephalus*), were also evaluated throughout the project area. **Figure 8** depicts the documented protected species in the vicinity of the project corridor.

A summary of protected wildlife species and their potential for occurrence within the project corridor and surrounding area is provided in **Table 2**. The protected wildlife species and their effect determinations are provided in **Table 3**.

Table 2 | Protected Wildlife and their Potential for Occurrence				
Scientific Name	**Common Name**	**Potential for Occurrence**	**Federal or State Listing**	**Protection Status**
Reptiles				
Drymarchon corais couperi	Eastern Indigo Snake	Moderate	Both	Threatened
Gopherus polyphemus	Gopher Tortoise	Low	State	Threatened
Pituophis melanoleucus	Florida pine snake	Low	State	Threatened
Birds				
Aphelocoma coerulescens	Florida scrub-jay	None	Both	Threatened
Athene cunicularia floridana	Florida burrowing owl	Low	State	Threatened
Caracara plancus audubonii	Audubon's crested caracara	Low	Both	Threatened
Egretta caerulea	Little blue heron	Moderate	State	Threatened
Egretta tricolor	Tricolored heron	Moderate	State	Threatened
Falco sparverius paulus	Southeastern American kestrel	Low	State	Threatened
Grus canadensis	Florida sandhill crane	Low	State	Threatened
Haliaeetus leucocephalus	Bald eagle	Low	Federal	Managed*
Laterallus jamaicensis	Eastern Black Rail	Low	Both	Threatened
Mycteria americana	Wood stork	Low	Both	Threatened
Platalea ajaja	Roseate spoonbill	Moderate	State	Threatened
Mammals				
Ursus americanus floridanus	Florida black bear	Low	State	Managed**
Perimyotis subflavus	Tricolored bat	Low	Federal	Proposed Endangered
Insects				
Danus Plexippus	Monarch butterfly	Low	Federal	Candidate

*** Bald and Golden Eagle Protection Act, 16 U.S.C. 668-668c**

**** Florida's Endangered and Threatened Species Rule, 68A-27, F.A.C**

Table 3 | Protected Wildlife and their Effect Determinations				
Scientific Name	**Common Name**	**Federal or State Listing**	**Protection Status**	**Effect Determination**
Reptiles				
Drymarchon corais couperi	Eastern Indigo Snake	Both	Threatened	May affect, not likely to adversely affect
Gopherus polyphemus	Gopher Tortoise	State	Threatened	No adverse effect anticipated
Pituophis melanoleucus	Florida pine snake	State	Threatened	No adverse effect anticipated
Birds				
Aphelocoma coerulescens	Florida scrub-jay	Both	Threatened	No effect
Athene cunicularia floridana	Florida burrowing owl	State	Threatened	No adverse effect anticipated
Caracara plancus audubonii	Audubon's crested caracara	Both	Threatened	No effect
Egretta caerulea	Little blue heron	State	Threatened	No adverse effect anticipated
Egretta tricolor	Tricolored heron	State	Threatened	No adverse effect anticipated
Falco sparverius paulus	Southeastern American kestrel	State	Threatened	No adverse effect anticipated
Grus canadensis	Florida sandhill crane	State	Threatened	No adverse effect anticipated
Haliaeetus leucocephalus	Bald eagle	Federal	Managed	No adverse effect anticipated
Laterallus jamaicensis	Eastern black rail	Both	Threatened	May affect, not likely to adversely affect
Mycteria americana	Wood stork	Both	Threatened	May affect, not likely to adversely affect
Platalea ajaja	Roseate spoonbill	State	Threatened	No adverse effect anticipated
Mammals				
Ursus americanus floridanus	Florida black bear	State	Managed	No adverse effect anticipated
Perimyotis subflavus	Tricolored bat	Federal	Proposed Endangered	May affect, not likely to adversely affect
Insects				
Danaus plexippus	Monarch Butterfly	Federal	Candidate Species	No adverse effect anticipated

4.1 Federally Protected Wildlife Species

The following is a brief discussion for each federally listed species with the potential to occur along the project corridor. No critical habitat has been designated for any of the species with the potential to occur and there will be no destruction or adverse modification of critical habitat.

The **Eastern indigo snake** (*Drymarchon corais couperi*) is listed by both the USFWS and FWC as Threatened. This large, stout-bodied, shiny black snake can reach 8 feet in length and will utilize a wide range of habitats from scrub and sandhills to wetlands throughout Florida. They are known to winter in gopher tortoise burrows. Eastern indigo snakes require large tracts of natural land to survive, typically foraging in more hydric habitats. No Eastern indigo snakes were observed during the field review of the corridor. No gopher tortoise burrows were identified within the project area and less than 25 acres of xeric habitat will be impacted by the construction of the project. Prior to construction another survey will be conducted, and any tortoises identified in the construction area will be relocated. In addition, the site contractor will implement the Eastern Indigo Snake Protection Measures found in **Appendix D** prior to construction. Therefore, based on the USFWS' Eastern Indigo Snake Programmatic Effect Determination Key, the project " **may affect, not likely to adversely affect** " this species. The steps of the USFWS's Eastern Indigo Snake Programmatic Effect Determination Key that resulted in this effects determination have been highlighted in yellow and included as **Appendix E**.

Audubon's crested caracara (*Caracara plancus audubonii*) is a large species of raptor that is listed as Threatened by the USFWS. They have a dark brown to black belly, wings and back with a white lower belly, head and throat. Their bill is bluish gray to white, red facial skin and a white tail. This species inhabits wet prairies with cabbage palms but may also be found in wooded areas with saw palmetto, cypress, and scrub oaks. They will also inhabit pastures. The project area is located within the USFWS's Audubon's crested caracara Consultation Area. As a result, a desktop evaluation and onsite surveys were conducted to identify Audubon's crested caracara foraging or nesting habitat. During the protected species surveys, no Audubon's crested caracara were observed and no appropriate habitat was identified within the project area. Subsequently, correspondence with the USFWS reporting the results of the surveys was initiated on November 13, 2019, and the USFWS concurred that no additional Audubon's crested caracara surveys were needed on December 11, 2019 (see **Appendix A**). Subsequently, three additional pond sites were added to the Preferred Alternative that were not included in the November 13, 2019, report. However, these three new pond sites do not contain appropriate habitat for the Audubon's crested caracara and do not change the results of the Audubon's crested caracara evaluation. Accordingly, this project was determined to have "**no effect**" on this species.

The **Florida scrub-jay** (*Aphelocoma coerulescens*) is listed by both the USFWS and FWC as Threatened. This small, blue and gray bird is very gregarious in nature. They can be found in low-

growing, oak scrub habitat with well drained soils as well as fallow citrus groves. They are year-round residents in Florida but are most likely to be spotted between March and October. The project right of way is located within the USFWS Florida scrub-jay Consultation Area. As a result, a desktop evaluation and onsite surveys were conducted to identify Florida scrub-jay habitat (Types I, II and III). During the protected species surveys, no Florida scrub-jays were observed and no appropriate habitat was identified within the project area. Subsequently, correspondence with the USFWS reporting the results of the surveys was initiated on November 13, 2019, and the USFWS concurred that no additional Florida scrub-jays surveys were needed on December 11, 2019 (see **Appendix A**). Subsequently, two additional pond sites were added to the Preferred Alternative that were not included in the November 13, 2019, report. However, these two new pond sites are located in wetlands and do not contain appropriate habitat for the Florida scrub-jay and do not change the results of the Florida scrub-jay evaluation. Accordingly, this project was determined to have "**no effect**" on this species.

The **wood stork** (*Mycteria americana*) is a long-legged wader and a large bodied white bird with black in the wings and tail. Wood storks nest in colonies in a variety of inundated forested wetlands such as cypress swamps, sloughs or mangroves. Foraging habitat includes shallow freshwater marshes, ponds, ditches or pastures. The USFWS and the FWC both list the wood stork as Threatened. The project right of way is located within a USFWS designated wood stork Core Foraging Area (CFA). The nearest active wood stork nesting colony (SR 524/520) is located approximately 0.55 miles southwest of the project right of way. No wood storks were observed during survey days within the project area. However, minimal impacts to wood stork foraging habitat are anticipated. If applicable, replacement foraging habitat will be provided onsite as part of the stormwater management system or through the purchase of herbaceous wetland mitigation credits at a mitigation bank within the same core foraging area. Based on the USFWS's Wood Stork Programmatic Concurrence Key the project **"may affect, not likely to adversely affect"** the wood stork. The steps of the USFWS's Wood Stork Programmatic Concurrence Key that resulted in this effects determination have been highlighted in yellow and included as **Appendix F**.

The **Eastern black rail** (*Laterallus jamaicensis*) is listed by the USFWS as Threatened due to habitat loss, destruction, and modification; sea level rise and tidal flooding; and incompatible land management. They are wetland-dependent birds and are primarily associated with herbaceous, persistent emergent plant cover. They require dense overhead perennial herbaceous cover with underlying moist to saturated soils with or adjacent to very shallow water. Very little suitable Eastern black rail habitat is present within the proposed footprint for the project. No Eastern black rails were observed during the field reviews and according to FNAI, no individuals have been documented in the project area. Based on the best available information, there is a low probability of occurrence of the eastern black rail within the project area. However, because the project is located within the USFWS's consultation area for the Eastern black rail, an onsite survey to assess the suitability of potential Eastern black rail habitat within the project corridor and four preferred

pond site alternatives was conducted on September 19, 2024. Subsequently, correspondence with the USFWS reporting the results of the survey was initiated on October 25, 2024, and the USFWS concurred with the determination of "**may affect, not likely to adversely affect**" with no additional Eastern black rail surveys being required on December 5, 2024 (see **Appendix A**).

The **tricolored bat** (*Perimyotis subflavus*) was proposed for listing under the ESA by the USFWS on September 13, 2022. During the spring, summer, and fall tricolored bats primarily roost among live and dead leaf clusters of live or recently dead deciduous hardwood trees, Spanish moss (*Tillandsia usneoides*) and lichens. They will also roost within artificial roosts like barns, bridges, and concrete culverts. Female tricolored bats exhibit high site fidelity, returning year after year to the same summer roosting locations. If the listing status of the tricolored bat is elevated by the USFWS to Threatened or Endangered and the Preferred Alternative contains suitable habitat, FDOT commits to no tree clearing or bridge/culvert work when day-time high temperatures are below 45 degrees, nor during maternity season (May 1st through July 15th). With implementation of the commitments the project "**may affect, not likely to adversely affect**" the tricolored bat. FDOT is seeking a conference opinion for the tricolored bat as a proactive step to avoid delays to the project construction schedule once the bat becomes listed. If tree clearing is required during these months, consultation will be reinitiated.

4.2 State Protected Wildlife Species

The **gopher tortoise** (*Gopherus polyphemus*) is a medium sized turtle fully adapted for life on land. The forelimbs are greatly expanded for excavating deep burrows to escape predators, weather or fire. Gopher tortoises are found in dry habitats such as sandhills, xeric oak habitats, and dry pine flatwoods. More than 300 other species of animals have been recorded sharing gopher tortoise burrows. Gopher tortoises are listed by the FWC as threatened and are a candidate species for listing by the USFWS. No gopher tortoises or their burrows have been observed during the field survey, and little suitable habitat for this species occurs within the project study area. However, a gopher tortoise survey will also be performed during the permitting phase of the project. Based on this assessment, the potential for the gopher tortoise to occur within the project corridor is low with "**no adverse effect anticipated**" to the species due to the project.

The **Florida pine snake** (*Pituophis melanoleucus*) is a large, stocky tan or rust colored snake with an indistinct pattern of large blotches on a lighter background. This species is known to occur throughout Florida in habitats with relatively open canopies and dry sandy soils, preferring sandhills and pine scrub. Florida pine snakes often coexist with gopher tortoises and pocket gophers (*Geomys pinetis*). This species is listed by the FWC as Threatened. No pine snakes have been observed during field review and little suitable habitat exists within the project area. Therefore, the potential occurrence of the pine snake is low with "**no adverse effect anticipated"** to the species due to the project.

The **Florida burrowing owl** (*Athene cunicularia floridana*) is a pint-sized bird that resides in open, treeless areas where it spends most of its time on the ground. Its sandy brown plumage offers camouflage from predators from its ground-level perch. Throughout the state its distribution is considered localized and spotty. They often inhabit native prairies, golf courses, airports and vacant lots. Burrowing owls dig and use their own burrows year-round; however, they can also utilize gopher tortoise or armadillo burrows. They are listed as Threatened by the FWC. No burrowing owls were observed during the field surveys, and little suitable habitat for this species occurs within the project study area. Therefore, the potential for occurrence for the burrowing owl is low with "**no adverse effect anticipated**" to the species due to the project.

Wading birds as a group are common to wetlands where they forage for small fish and invertebrates. Species that could be found in wetlands within the corridor include species such as little blue heron (*Egretta caerulea*) and tricolored heron (*Egretta tricolor*) which are listed as Threatened by the FWC. Review of the FWC Waterbird Colony Locator indicated that there are no known active wading bird colonies near the project corridor. However, minimal temporary impacts to wading bird foraging habitat are anticipated. If applicable, replacement foraging habitat will be provided onsite as part of the stormwater management system or through the purchase of herbaceous wetland mitigation. Therefore, this project was determined to have "**no adverse effect anticipated**" on these species.

The **Southeastern American kestrel** (*Falco sparverius Paulus*), a resident subspecies of the kestrel listed as Threatened by the FWC, can be distinguished from its cousin, the American kestrel (*Falco sparverius 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 or within any pond sites and there is minimal habitat within the project area. Therefore, the potential occurrence of the Southeastern kestrel is low with "**no adverse effect anticipated"** to the species due to the project.

The **Florida sandhill crane** (*Grus canadensis*) is a tall, long-necked, long-legged bird ranging throughout the Florida peninsula from Okefenokee Swamp to the Everglades. These birds spend much of the year foraging within a variety of habitats including improved pasture, open pine forests, agricultural cropland, and freshwater marshes. In Central Florida, the Florida sandhill crane typically nests in shallow freshwater marshes and forages on agricultural lands. They are listed as Threatened by FWC. No sandhill cranes were observed during field surveys and little appropriate habitat exists within the project study area. Therefore, the potential occurrence of the sandhill crane is low with "**no adverse effect anticipated**" to the species due to the project.

The **roseate spoonbill** (*Platalea ajaja*) is primarily a coastal species listed by the FWC as Threatened but can also be seen far inland. Brevard County lies within the summer range of this

species. Prime nesting habitat is mangrove-dominated islands (and Brazilian pepper stands), but to a lesser extent, also in freshwater willow swamps. Feeding areas encompass most marine tidal systems, plus freshwater marshes, ponds and impoundments. The diet of the roseate spoonbill primarily consists of crayfish, shrimp, crabs, and small fish. No roseate spoonbills, their nests or roosting sites were observed during the survey. However, minimal temporary impacts to roseate spoonbill foraging habitat are anticipated. If applicable, replacement foraging habitat will be provided onsite as part of the stormwater management system or through the purchase of herbaceous wetland mitigation. Therefore, this project was determined to have "**no adverse effect anticipated**" on this species.

4.3 Other Protected Species

The **bald eagle** (*Haliaeetus leucocephalus*) has been delisted by the USFWS from the list of Threatened and Endangered species because the population has recovered in the lower 48 states, threats to the species have been reduced or eliminated, and reproductive success has significantly increased. However, the bald eagle will continue to be managed and protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act.

In addition, the bald eagle is protected in Florida through F.A.C. 68A-16.002. The Audubon Florida Eagle Watch bald eagle nest database identifies bald eagle nest (BE082) located approximately 600 feet south of the project corridor (Figure 8) and noted by the database to be active as recent as 2023. The location of the nest and the 660-foot buffer zone will be depicted on the project plans. During permitting, additional assessment and coordination will occur with the USFWS to determine the necessary actions during construction. Based on this assessment and provisions for additional coordination during permitting and construction, the project "**no adverse effect anticipated**" the bald eagle.

The **Florida black bear** (*Ursus americanus floridanus*) is protected in the State of Florida through Ch. 68-A-4.009 FAC. It can be found in heavily wooded terrain, particularly hardwood swamps, cypress swamps, and undisturbed upland forest. The FWC has identified six core and two remnant areas of Florida bear populations: Apalachicola, Big Cypress, Eglin, Ocala, Osceola, St. Johns, Chassahowitzka, and Glades/Highlands, respectively. The proposed project is located outside of the primary and secondary black bear ranges identified by FWC. Therefore, the probability of occurrence of black bear is Low to Moderate and impacts to this species are not anticipated.

Based on 2015 occurrence data from FWC, at least one species of bat, the Southeastern bat, is known to occur in the vicinity of the project (Figures 5A to 5I). Additionally, the tricolored bat is proposed for listing by the USFWS. Neither of these species are currently listed but are protected in Florida under FAC 68-4.001, FAC 68A-29.002 and FAC 68A-9.010. Bats occur in upland forested communities, but particularly those associated with floodplains, and most habitats in-

between that support large, hollow trees used for roosting. These species are also found in old buildings, roadway structures, and culverts. No evidence of roosting bats was observed during the field surveys, but available habitat makes the probability of occurrence of bat species Moderate. If the listing status of the tricolored bat is elevated by USFWS to Threatened or Endangered and the Preferred Alternative is located within the consultation area, during the design and permitting phase of the proposed project, FDOT commits to re-initiating consultation with the USFWS to determine the appropriate survey methodology and to address USFWS regulations regarding the protection of the newly listed species. Therefore, impacts to these species are not anticipated.

4.4 Protected Plant Species

Federally listed plant species identified in the ETDM Summary Report using the USFWS's IPaC tool and State of Florida listed (through FDACS) species identified by the FNAI Biodiversity Matrix as having the potential to occur along the project corridor are included in **Table 3.** During the April 2019 and February 2020 site visits, all project roadway alternatives and stormwater pond sites were surveyed for listed plants. Much of the proposed project right of way including ponds consist of maintained or disturbed habitat within or adjacent to SR 524 or other roadways/development. Exceptions to this are Ponds 2A and 2B, located within conservation lands, with relatively minor direct or indirect disturbance from development. During the field surveys, no listed plant species were observed within the project corridor. Additionally, no critical habitat has been designated for any of the species with the potential to occur and there will be no destruction or adverse modification of critical habitat. Areas to be impacted by the roadway and the proposed stormwater ponds will be re-evaluated for the presence of any federally listed plant species during permitting in the design phase of the project. A summary of protected plant species and their potential for occurrence within the project corridor and surrounding area is provided in **Table 4**. **Table 5** contains the effect determinations for the protected plant species and is followed by a brief discussion of each species.

Table 4 | Listed Plants and their Potential for Occurrence				
Scientific Name	**Common Name**	**Potential for Occurrence**	**Federal or State Listing**	**Protection Status**
Sporobolus vaseyi	Curtiss' sandgrass	Low	State	Threatened
Calopogon multiflorus	Many-flowered grass-pink	Low	State	Threatened
Carex tenax	Chapman's sedge	Low	State	Threatened
Centrosema arenicola	Sand butterfly pea	Low	State	Endangered
Euphorbia cumulicola	Sand-dune spurge	Low	State	Endangered
Conradina brevifolia	Short-leaved rosemary	Low	Both	Endangered
Conradina grandiflora	Large-flowered rosemary	Low	State	Threatened
Asimina pulchella	Beautiful pawpaw	Low	Both	Endangered
Dicerandra thinicola	Titusville balm	Low	State	Endangered
Glandularia maritima	Coastal vervain	Low	State	Endangered
Glandularia tampensis	Tampa vervain	Low	State	Endangered
Lechea cernua	Nodding pinweed	Low	State	Threatened
Lechea divaricata	Pine pinweed	Low	State	Endangered
Linum carteri var. *smallii*	Small's flax	Low	State	Endangered
Nemastylis floridana	Celestial lily	Low	State	Endangered
Nolina atopocarpa	Florida beargrass	Low	State	Threatened
Coleataenia abscissa	Cutthroat grass	Low	State	Endangered
Polygala lewtonii	Lewton's Polygala	Low	Both	Endangered
Orthochilus ecristata	Giant orchid	Low	State	Threatened
Warea carteri	Carter's Mustard	Low	Both	Endangered
Cheiroglossa palmata	Handfern	Low	State	Endangered
Coelorachis tuberculosa	Piedmont Jointgrass	Low	State	Threatened
Lilium catesbyi	Pine Lily	Low	State	Threatened
Pinguicula caerulea	Blueflower butterwort	Low	State	Threatened
Pinguicula lutea	Yellow Flowered Butterwort	Low	State	Threatened
Sarracenia minor	Hooded Pitcherplant	Low	State	Threatened
Spiranthes laciniata	Lace-lip Ladies'-tresses	Low	State	Threatened

Table 5 | Listed Plants and their Effect Determinations				
Scientific Name	**Common Name**	**Federal or State Listing**	**Protection Status**	**Effect Determination**
Sporobolus vaseyi	Curtiss' sandgrass	State	Threatened	No effect anticipated
Calopogon multiflorus	Many-flowered grass-pink	State	Threatened	No adverse effect anticipated
Carex tenax	Chapman's sedge	State	Threatened	No effect anticipated
Centrosema arenicola	Sand butterfly pea	State	Endangered	No effect anticipated
Euphorbia cumulicola	Sand-dune spurge	State	Endangered	No effect anticipated
Conradina brevifolia	Short-leaved rosemary	Both	Endangered	No effect
Conradina grandiflora	Large-flowered rosemary	State	Threatened	No effect anticipated
Asimina pulchella	Beautiful pawpaw	Both	Endangered	No effect
Dicerandra thinicola	Titusville balm	State	Endangered	No effect anticipated
Glandularia maritima	Coastal vervain	State	Endangered	No effect anticipated
Glandularia tampensis	Tampa vervain	State	Endangered	No effect anticipated
Lechea cernua	Nodding pinweed	State	Threatened	No effect anticipated
Lechea divaricata	Pine pinweed	State	Endangered	No effect anticipated
Linum carteri var. *smallii*	Small's flax	State	Endangered	No adverse effect anticipated
Nemastylis floridana	Celestial lily	State	Endangered	No adverse effect anticipated
Nolina atopocarpa	Florida beargrass	State	Threatened	No effect anticipated
Coleataenia abscissa	Cutthroat grass	State	Endangered	No effect anticipated
Polygala lewtonii	Lewton's Polygala	Both	Endangered	No effect
Orthochilus ecristata	Giant orchid	State	Threatened	No effect anticipated
Warea carteri	Carter's Mustard	Both	Endangered	No effect
Cheiroglossa palmata	Handfern	State	Endangered	No effect anticipated
Coelorachis tuberculosa	Piedmont Jointgrass	State	Threatened	No adverse effect anticipated

Table 5 | Listed Plants and their Effect Determinations				
Scientific Name	**Common Name**	**Federal or State Listing**	**Protection Status**	**Effect Determination**
Lilium catesbyi	Pine Lily	State	Threatened	No adverse effect anticipated
Pinguicula caerulea	Blueflower Butterwort	State	Threatened	No adverse effect anticipated
Pinguicula lutea	Yellow Flowered Butterwort	State	Threatened	No adverse effect anticipated
Sarracenia minor	Hooded Pitcherplant	State	Threatened	No adverse effect anticipated
Spiranthes laciniata	Lace-lip Ladies'-tresses	State	Threatened	No adverse effect anticipated

Carter's mustard (*Warea carteri*) is a fire dependent annual herb that is listed as Endangered by the USFWS and the State of Florida. It is typically found in xeric-shrub dominated habitats in central Florida. It stands from 0.2 to 1.5 meters in height with erect green stems and slender branches forming an open, rounded crown. Inflorescences are dense racemes with many radially symmetrical flowers consisting of four white linear oblanceolate sepals. Carter's mustard is usually found on the Lake Wales Ridge. However, it is also known to occur in the coastal scrub of Brevard County. During the protected species survey, no Carter's mustard was observed and no suitable habitat occurs within the project area. Therefore, this project was determined to have "**no effect**" on this species.

Lewton's polygala (*Polygala lewtonii*) is a fire dependent perennial herb that is listed as Endangered by the USFWS and the State of Florida. It stands up to 20 centimeters in height with between one and several erect stems that are spreading and often branched. Flowers are bright pink or purplish-red and are formed in loose racemes. Typical habitat includes high pine, turkey oak barrens and the transitional areas between these two community types. During the protected species survey, no Lewton's polygala were observed and no suitable habitat occurs within the project area. Therefore, this project was determined to have "**no effect**" on this species.

Curtiss' sandgrass (*Sporobolus vaseyi*) is a wetland perennial herb that is listed as Threatened by the State of Florida. It can grow up to six feet in height with panicles reaching approximately 20 inches. Typical habitat includes moist flatwoods adjacent to wet cypress depressions. During the protected species survey, no Curtiss' sandgrass were observed and no suitable habitat occurs within the project area. Therefore, this project was determined to have "**no effect anticipated**" on this species.

Many-flowered grass-pink (*Calopogon multiflorus*) is a wetland orchid that is listed as Threatened by the State of Florida. It is characterized by 4-inch grass-like leaves and leafless flower stalks that reach 16-inches in height with up to 15 dark pink flowers crowded at the top. Typical habitat includes longleaf pine flatwoods with wiregrass and saw palmetto. Some pine flatwood habitat exists along the project corridor and within one of the preferred pond alternatives but no many-flowered grass pink was observed during the listed species surveys. Therefore, this project was determined to have "**no adverse effect anticipated**" on this species.

Chapman's sedge (*Carex tenax*) is a wetland perennial herb that is listed as Threatened by the State of Florida. It is characterized by green to yellow-green leaf blades that are flat and glabrous and yellowish-brown flowers that are arranged in small spikes. Typical habitat includes hydric hammocks and bottomland forests. During the protected species survey, no Chapman's sedge was observed and no suitable habitat occurs within the project area. Therefore, this project was determined to have "**no effect anticipated**" on this species.

Sand butterfly pea (*Centrosema Arenicola*) is a perennial vine that is listed as Endangered by the State of Florida. It is characterized by stems that reach 10-feet in length and by purplish blue flowers that are twirled so that the large, notched banner petal is lowest. Typical habitat includes sandhills and scrubby flatwoods. During the protected species survey, no sand butterfly pea was observed and no suitable habitat for the sand butterfly pea exists within the project area. Therefore, this project was determined to have "**no effect anticipated**" on this species.

Sand-dune spurge (*Euphorbia cumulicola*) is an annual upland herb that is listed as Endangered by the State of Florida. It is characterized by prostate glabrous stems and opposite leaves that are purplish tinted along the margins. This species flowers year round. Habitat includes sandy oak hammocks and open sandy areas. During the protected species survey, no sand-dune spurge was observed and no suitable habitat for the sand-dune spurge exists within the project area. Therefore, this project was determined to have "**no effect anticipated**" on this species.

Short-leaved rosemary (*Conradina brevifolia*) is a short-lived, woody mint that is listed as Endangered by the USFWS and the State of Florida. It is a perennial, erect shrub that reaches approximately one meter in height. It is characterized by short, alternate leaves and between 1 and 6 flowers per axil. Short-leaved rosemary is typically found on the Lake Wales Ridge in Polk and Highlands Counties. Habitat includes white sand scrub with a scattered overstory of sand pine interspersed with scrub oaks. During the protected species survey, no short-leaved rosemary was observed and no suitable habitat for the short-leaved rosemary exists within the project area. Therefore, this project was determined to have "**no effect**" on this species.

Large-flowered rosemary (*Conradina grandiflora*) is a long-lived, perennial mint that is listed as Threatened by the State of Florida. It is a small shrub ranging from two to three feet in height and

characterized by needle-like, opposite leaves and bluish to pale purple, spotted flowers. Typical habitat includes scrub and scrubby flatwoods communities. During the protected species survey, no large-flowered rosemary was observed and no suitable habitat for the large-flowered rosemary exists within the project area. Therefore, this project was determined to have "**no effect anticipated**" on this species.

Beautiful pawpaw (*Asimina pulchella*) is a low-lying deciduous shrub that is listed as Endangered by the USFWS and the State of Florida. It stands approximately eight to 12 inches in height with one to several erect or arching stems from a taproot. Flowers are solitary with 6 to 10 white petals. Beautiful pawpaw is typically found in open slash or longleaf pine flatwoods with wiregrass and dwarf live oak in the understory. Some pine flatwood habitat exists along the project corridor and within some of the pond site alternatives, but no habitat exists within the right of way or preferred pond sites. Therefore, this project was determined to have "**no effect**" on this species.

Titusville balm (*Dicerandra thinicola*) is an herbaceous mint species that is listed as Endangered by the State of Florida. It is characterized by small, white to fading pink flowers with purple spots. It is found along the Atlantic Coastal Ridge in Brevard County in scrub and sand pine scrub habitat. During the protected species survey, no Titusville balm were observed and no suitable habitat for the Titusville balm exists within the project area. Therefore, this project was determined to have "**no effect anticipated**" on this species.

Coastal vervain (*Glandularia maritima*) is an upland, perennial herb that is listed as Endangered by the State of Florida. It is characterized by succulent leaves that are irregularly lobed and toothed leaves and by lavender flowers with an orange throat. Typical habitat back dunes, dune swales and coastal hammocks. During the protected species survey, no coastal vervain was observed and no suitable habitat for the Coastal vervain exists within the project area. Therefore, this project was determined to have "**no effect anticipated**" on this species.

Tampa vervain (*Glandularia tampensis*) is an upland, perennial herb that is listed as Endangered by the State of Florida. It is characterized by 4-sided stems that are approximately two feet long and 5-lobed blue purple flowers. Typical habitat includes live oak – cabbage palm hammocks and pine – palmetto flatwoods. Some pine flatwood habitat exists along the project corridor and within some of the pond site alternatives, but no habitat exists within the right of way or preferred pond sites. Therefore, this project was determined to have "**no effect anticipated**" on this species.

Nodding pinweed (*Lechea cernua*) is an upland, low growing perennial herb that is listed as Threatened by the State of Florida. It is characterized by its narrow alternate leaves and many small flowers that resemble pinheads. Typical habitat includes sand-scrub and scrubby flatwoods. During the protected species survey, no nodding pinweed was observed and no suitable habitat for

the nodding pinweed exists within the project area. Therefore, this project was determined to have "**no effect anticipated**" on this species.

Pine pinweed (*Lechea divaricate*) is an upland, perennial herb that is listed as Endangered by the State of Florida. It is characterized by narrowly oval alternate leaves with pointed tips and flowers formed in tight clusters with three small purple or green petals. Spreading gray hairs cover the entire plant. Typical habitat includes scrubby flatwood communities. During the protected species survey, no pine pinweed was observed and no suitable habitat for the pine pinweed exists within the project area. Therefore, this project was determined to have "**no effect anticipated**" on this species.

Small's flax (*Linum carteri* var. *smallii*) is a wetland, annual herb that is listed as Endangered by the State of Florida. It ranges from four to 24 inches in height and is characterized by smooth wing-angled stems and yellow-orange flowers. Typical habitat consists of pine-rocklands, pine flatwoods and adjacent disturbed areas. Some pine flatwood habitat exists along the project corridor and within one of the preferred pond alternatives, but no Small's flax was observed during the listed species surveys. Therefore, this project was determined to have "**no adverse effect anticipated**" on this species.

Celestial lily (*Nemastylis floridana*) is a perennial herb typically found in wetlands that is listed as Endangered by the State of Florida. It is characterized by a single, slender stem that is approximately two feet in height and flowers with dark blue petals. Typical habitat includes wet flatwoods, wet prairies, marshes and cabbage palm hammocks. Some marsh habitat exists along the project corridor and one of the preferred pond alternatives, but no Celestial lily was observed during the listed species surveys. Therefore, this project was determined to have "**no adverse effect anticipated**" on this species.

Florida beargrass (*Nolina atopocarpa*) is a perennial herb that is listed as Threatened by the State of Florida. It is characterized by stiff, flattened leaf blades that grow as a rosette to form bulb like bases. Flowers are greenish-white in color. Typical habitat includes mesic and wet flatwoods. During the protected species survey, no Florida beargrass was observed and no suitable habitat for Florida beargrass exists within the project area. Therefore, this project was determined to have "**no effect anticipated**" on this species.

Cutthroat grass (*Coleataenia abscissa*) is a perennial bunchgrass typically found in wetlands that is listed as Endangered by the State of Florida. It is characterized by stems growing up to 2 feet, leaves up to 10 inches and small terminal axillary panicles bearing flowers. It is typically found in scrub-shrub and herbaceous wetlands along the Lake Wales Ridge and other ridges in Florida. During the protected species survey, no cutthroat grass was observed and no suitable habitat occurs

within the project area. Therefore, this project was determined to have "**no effect anticipated**" on this species.

Giant orchid (*Orthochilus ecristata*) is a perennial herb that is listed as Threatened by the State of Florida. It is characterized by a mostly leafless flower stalk that can reach up to five feet in height. The flowers are yellowish-maroon and twist toward the stalk. Typical habitat includes sandhill, scrub, pine flatwoods and pine rocklands. During the protected species survey, no giant orchids were observed and no suitable habitat for the Giant orchid exists within the project area. Therefore, this project was determined to have "**no effect anticipated**" on this species.

Hand fern (*Cheiroglossa palmata*) is a fern that is listed as Endangered by the State of Florida. It is characterized by flat, drooping, coarsely veined, evergreen leaves, with up to 7 lobes and long leaf stalks. The spores are produced on small erect spikes that rise from the leaf stalk. Hand ferns are found on "boots" or old leaf bases, of cabbage palms and sometimes saw palmetto in swamps and hammocks. During the protected species survey, no Hand ferns were observed and no suitable habitat for the Hand fern exists within the project area. Therefore, this project was determined to have "**no effect anticipated**" on this species.

Piedmont Jointgrass (*Coelorachis tuberculosa*) is a perennial grass that is listed as Threatened by the State of Florida. The culms have numerous green to pale purple internodes with a narrow, purple-banded collar. The narrow leaf blades are erect or ascending and grow to about 60 cm long. It is found in ephemeral ponds and margins of sandhill upland lakes or depression marshes. Some marsh habitat exists along the project corridor and one of the preferred pond alternatives, but no Piedmont Jointgrass was observed during the listed species surveys. Therefore, this project was determined to have "**no adverse effect anticipated**" on this species.

Pine Lily (*Lilium catesbyi*) is a perennial wildflower that is listed as Threatened by the State of Florida. The pine lily has large, reddish orange flowers with 6 spotted tepals and yellow stamen. It blooms in summer to late fall and is found in mesic to wet flatwoods, wet prairies, and savannas. Some wet prairie and pine flatwoods habitat exist along the project corridor and one of the preferred pond alternatives, but no Pine lily was observed during the listed species surveys. Therefore, this project was determined to have "**no adverse effect anticipated**" on this species.

Blueflower butterwort (*Pinguicula caerulea*) is an insectivorous wildflower that is listed as Threatened by the State of Florida. This is the only Florida butterwort with a large, purple, prominently veined flower. It grows up to one foot and is mostly found in pine flatwoods and wet prairies. Some wet prairie and pine flatwoods habitat exist along the project corridor and many of the pond sites, but no Blueflower butterwort was observed during the listed species surveys. Therefore, this project was determined to have "**no adverse effect anticipated**" on this species.

Yellow Flowered Butterwort (*Pinguicula lutea*) is a perennial carnivorous herb that is listed as Threatened by the State of Florida. This is the only Florida butterwort with a yellow flower, and it has five irregular notched petals. It grows up to one foot and is mostly found in pine flatwoods and wet prairies. Some wet prairie and pine flatwoods habitat exist along the project corridor and some of the pond sites, but no Yellow flowered butterwort was observed during the listed species surveys. Therefore, this project was determined to have "**no adverse effect anticipated**" on this species.

Hooded pitcherplant (*Sarracenia minor*) is a carnivorous clumping plant that is listed as Threatened by the State of Florida. It has leaves rolled into "pitchers" that trap insects; the top leaf is reddish and curved over the top of the pitcher. It is found in mesic and wet flatwoods, bogs, marsh ecotones, and wet ditches. Some pine flatwoods habitat exists along the project corridor and freshwater marsh covers most of pond site 1A, but no Hooded pitcherplant was observed during the listed species surveys. Therefore, this project was determined to have "**no adverse effect anticipated**" on this species.

Lace-lip Ladies'-tresses (*Spiranthes laciniata*) is a perennial herb in the orchid family that is listed as Threatened by the State of Florida. The small white flowers are arranged in a single, loose spiral that extends for approximately 14 cm at the top of the stem. It is often found in disturbed habitats, marshes, meadows, swamps, and woodlands. Freshwater marsh covers most of pond site 1A, but no Lace-lip ladies'-tresses were observed during the listed species surveys. Therefore, this project was determined to have "**no adverse effect anticipated**" on this species.

Further evaluation of suitable habitat will be necessary for specific species (identified in Section 4.0) during the project design phase. If protected species are identified within the construction area during design or construction phases, coordination will be initiated with the appropriate resource agencies to avoid or mitigate impacts.

4.5 Agency Coordination

During ETDM coordination with the USFWS and the FWC, The USFWS assigned a Minimal Degree of Effect and the FWC assigned a Moderate Degrees of Effect for protected species and habitat, citing concerns over the potential loss of natural habitats via expansion of the road right of way which could result in impacts to the Eastern indigo snake, Audubon's crested caracara, Florida scrub-jay, wood stork, Florida pine snake, gopher tortoise, burrowing owl, southeastern American kestrel, Florida sandhill crane, little blue heron, tricolored heron, roseate spoonbill, and Sherman's fox squirrel. Additionally, the FWC noted that the area contains 32.24 acres of FWC Strategic Habitat Conservation Areas for the scrub-jay and Cooper's hawk and is within a Wood Stork Core Foraging Area. The Everglades snail kite was not listed as a concern by either agency and there is no suitable habitat within the project corridor, therefore it was not addressed in this document.

After conducting protected species surveys in April 2019, preliminary consultation was initiated with USFWS to determine if any additional Florida scrub-jay or Audubon's crested caracara surveys would be required in 2020. A letter report dated November 13, 2019, documenting the survey results and recommendation that no additional surveys be required was submitted to USFWS. USFWS concurred with the recommendations in a letter dated December 11, 2019. Copies of all written correspondence and records of conversation with agency representatives to date are included in **Appendix A**.

5.0 WETLANDS AND OTHER SURFACE WATERS

Wetlands and other surface waters provide important and beneficial functions such as protecting and improving water quality, providing fish and wildlife habitat, and storing floodwaters. The USACE authority to regulate work in the Nations' waters comes from Section 10 of the Rivers and Harbors Act of 1899, which established permit requirements to prevent unauthorized obstruction or alteration of any navigable water of the United States, and Section 404 of the CWA, which authorizes the USACE to require permits for the discharge of dredged or fill material into waters of the United States. Section 404 of the CWA also established a state regulatory authority over wetlands as they relate to water quality impacts. In Florida, state authority over activities in wetlands and surface waters is administered by the Florida Department of Environmental Protection (FDEP) and the five Water Management Districts.

Presidential Executive Order (EO) 11990 entitled "Protection of Wetlands" established a National Policy to "avoid to the extent possible the long and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative". In implementing EO 11990, the U.S. Department of Transportation (USDOT) set forth its policy on wetlands in USDOT Order 5660.1A, Preservation of the Nation's Wetlands, which is "to assure the protection, preservation, and enhancement of the Nation's wetlands to the fullest extent practicable during the planning, construction and operation of transportation facilities and projects. The analysis in this chapter is consistent with Part 2, Chapter 9, Wetlands and Other Surface Waters of the PD&E Manual.

The jurisdictional extent of wetland and other surface water systems within the study corridor was approximated through the review of aerial photography, NWI data, U.S. Geological Survey Topographic Maps (**Figure 3**), Soils Maps (**Figures 4A-4D**), Land Use Maps (**Figures 5A-5D**), and field observations made during the April 2019 and February 2020 site visits. The wetland limits were identified in general accordance with federal and state regulations. In the event wetland boundaries differed between the two methods, the more landward extent was used to define that wetland system's boundary. Photographic documentation was used to capture the current condition of each wetland system and UMAM was used to quantify each system's condition.

Wetland community types found within the SR 524 study area consist of Mixed Wetland Hardwoods, Wetland Forested Mixed, Freshwater Marsh, Wet Prairie and Emergent Aquatic Vegetation. The ecosystem structure of the wetland communities and the corresponding wetlands identified within the project corridor are described below and presented in **Figure 6**. Photographs of identified wetland communities can be found in **Appendix B**.

Wetland 1 (FLUCCS No. 641 / NWI Code PEM1C)

Wetland 1 (W-1) is located at the northwest end of the project corridor within the limits of Pond Site 1A. Wetland 1 consists primarily of a Freshwater Marsh community. Trees within the interior of this wetland are limited to scattered red maple, slash pine and punktree. Other trees and shrubs along the perimeter include Brazilian pepper, Carolina willow, cabbage palm and wax myrtle. Herbaceous vegetation is dominated by sawgrass with scattered giant leather fern, royal fern and swamp fern. Soils are mucky with standing water in the interior of the wetland.

Surrounding land uses include Friday Road to the east, a gas station to the south, a powerline easement to the west and residential land to the north. Wetland functions include water storage, water conveyance, and vegetative cover for denning and foraging habitat for wetland dependent species.

Wetland 2 (FLUCCS No. 641 / NWI Code PEM1C)

Wetland 2 (W-2) is located on the northwest end of the project corridor and abuts Pond Site 2A to the west. Wetland 2 consists of a Freshwater Marsh community with vegetation consisting of bushy bluestem, spikerush, Virginia chainfern, shiny lyonia and St. John's wort. Soils are sandy and there is evidence of standing water (water-stained trees) during the wet season.

Surrounding land uses include Pine Flatwoods to the north, east and west and SR 524 travel lanes to the south. Wetland functions include water storage, and water conveyance.

Wetland 3 (FLUCCS No. 643 / NWI Code PEM1C)

Wetland 3 (W-3) is located on the north side of the project corridor and abuts the SR 524 right of way. Wetland 3 is part of a larger Wet Prairie community that extends. Herbaceous vegetation includes yelloweyed grass, beaksedge, cattail and bushy bluestem. Additional vegetation observed in this wetland as it abuts the SR 524 right of way includes Carolina willow, primrose willow (*Ludwigia peruviana*) and salt bush.

Surrounding land uses include Pine Flatwoods to the north, east and west and SR 524 travel lanes to the south. Wetland functions include water storage, water conveyance, and vegetative cover for denning and foraging habitat for wetland dependent species.

Wetland 4 (FLUCCS No. 643 / NWI Code PEM1C)

Wetland 4 (W-4) is located on the north side of the project corridor and is located to the west of Pond Site 2D. Wetland 4 consists of a small Wet Prairie community with vegetation including spike rush, sundew, yellloweyed grass and bushy bluestem. Shrubby vegetation along the perimeter of this wetland includes shiny lyonia, gallberry and wax myrtle.

Wetland 5 (FLUCCS No. 641 / NWI Code PEM1C)

Wetland 5 (W-5) is located on the north side of the project corridor, abutting the SR 524 right of way, and consists of a small Freshwater Marsh community. Vegetation on the perimeter of this wetland consists of Brazilian pepper. Herbaceous vegetation was limited to the interior of the wetland and consisted of cattail (*Typha latifolia*) and spatterdock. Soils are sandy along the edges of this community with most of the area having standing water.

Surrounding land uses consist of residential land to the north and west, commercial land to the east and SR 524 travel lanes to the south. Wetland functions include water storage, and vegetative cover for denning and foraging habitat for wetland dependent species.

Wetland 6 (FLUCCS No. 530 and 641 / NWI Code PUBHx)

Wetland 6 (W-6) is located on the north side of the project corridor and abuts the SR 524 right of way. Wetland 6 consists of a small Reservoir Freshwater Marsh community. Vegetation on the perimeter of this wetland consists of Brazilian pepper. Herbaceous vegetation was limited to the interior of the wetland and consisted of cattail and spatterdock. Soils are sandy along the edges of this community with most of the area having standing water.

Surrounding land uses include residential land to the north and west, commercial land to the east (Brevard Community College Golf Academy) and SR 524 travel lanes to the south. Wetland functions include water storage, water conveyance, and vegetative cover for denning and foraging habitat for wetland dependent species.

Wetland 7 (FLUCCS No. 641 / NWI Code PEM1C)

Wetland 7 (W-7) is located on the northeast side of the project corridor and abuts the SR 524 right of way. Wetland 7 consists of a small Freshwater Marsh community. Vegetation on the perimeter of this wetland consists of Brazilian pepper. Herbaceous vegetation was limited to the interior of the wetland and consisted of cattail and spatterdock. Soils are sandy along the edges of this community with most of the area having standing water.

Surrounding land uses include residential land to the north and west, commercial land to the east and SR 524 travel lanes to the south. Wetland functions include water storage, water conveyance, and vegetative cover for denning and foraging habitat for wetland dependent species.

Wetland 8 (FLUCCS No. 641 / NWI Code PEM1C)

Wetland 8 (W-8) is located on the northeast side of the project corridor within the limits of Regional Pond A. Vegetation includes bushy bluestem, Virginia chainfern and sawgrass with Cabbage palm, salt bush, wax myrtle, Carolina willow and Brazilian pepper on some of the drier areas. Soils are sandy with standing water in some of the lower areas.

Surrounding land uses include SR 528 exit ramp to the north, a stormwater pond to the east and south and residential land to the west. Wetland functions include water storage, water conveyance, and vegetative cover for denning and foraging habitat for wetland dependent species.

Wetland 9 (FLUCCS No. 617 / NWI Code PFO1/4C)

Wetland 9 (W-9) is located on the south side of the project corridor just south of Pond Sites 2B and 2C and covers all of Pond Site 2A. Wetland 9 is a Mixed Wetland Hardwoods community that is part of a larger forested, shrubby and herbaceous wetland system associated with Big Mud Lake that extends offsite. Trees in this community include water oak, swamp bay, sweet bay, Carolina willow, red maple, cabbage palm and sweetgum. Other vegetation includes Virginia chain fern, leather fern, swamp fern, royal fern, lizard's tail and muscadine grapevine. Soils are mucky with standing water in the interior of the wetland.

Surrounding land uses include undeveloped uplands to the north, herbaceous wetlands to the east and forested wetlands to the south and west. Wetland functions include water storage, water conveyance, and vegetative cover for denning and foraging habitat for wetland dependent species.

Wetland 10 (FLUCCS No. 617 / NWI Code PFO1/4C)

Wetland 10 (W-10) is located on the south side of the project corridor within the limits of Pond Site 2F. Wetland 10 consists of a Mixed Wetland Hardwoods community that is hydrologically connected to offsite wetlands by roadside ditches. Trees in this community include bald cypress, red maple, swamp bay, red bay and cabbage palm. Other vegetation included royal fern, arrowhead, buttonbush, sawgrass and Virginia chain fern. Soils are mucky with standing water in the interior of the wetland.

Surrounding land uses include SR 524 travel lanes and a gas station to the north, Cox Road to the east, commercial land to the south and undeveloped uplands to the west. Wetland functions include water storage, water conveyance, and vegetative cover for denning and foraging habitat for wetland dependent species.

Wetland 11 (FLUCCS No. 643 / NWI Code PEM1F)

Wetland 11 (W-11) is located on the south side of the project corridor and abuts the SR 524 right of way. Wetland 11 is part of a larger Wet Prairie community that extends offsite and is bisected by a powerline easement. Herbaceous vegetation includes yelloweyed grass, beaksedge, cattail and bushy bluestem. Vegetation that covers the fringe of this community as it abuts the SR 524 right of way includes Carolina willow, primrose willow (*Ludwigia peruviana*) and salt bush.

Surrounding land uses include SR 524 travel lanes to the north, Pine Flatwoods to the east and west and herbaceous wetlands to the south. Wetland functions include water storage, water conveyance, and vegetative cover for denning and foraging habitat for wetland dependent species.

Wetland 12 (FLUCCS No. 630 / NWI Code PFO1C)

Wetland 12 (W-12) is located on the southwest side of the project corridor and abuts the SR 524 right of way. Wetland 12 is part of a larger Wetland Forested Mixed community that extends offsite. Trees in this community include cabbage palm, Brazilian pepper, red maple, water oak, sweetgum and sweetbay. Other vegetation includes Virginia chainfern, grapevine and beggar's tick (*Bidens alba*). Soils are sandy and no standing water was observed.

Surrounding land uses include SR 524 travel lanes to the north, forested uplands to the east, a powerline easement to the south and herbaceous and forested wetlands to the west. Wetland functions include water storage, water conveyance, and vegetative cover for denning and foraging habitat for wetland dependent species.

Wetland 13 (FLUCCS No. 641 / NWI Code PEM1C)

Wetland 13 (W-13) is located on the south side of the project corridor and abuts the SR 524 right of way. Wetland 13 is part of a larger Freshwater Marsh community that extends offsite. Herbaceous vegetation includes bushy bluestem, sawgrass, Virginia chainfern, royal fern and swamp fern. Shrubby vegetation includes gallberry, wax myrtle and Brazilian pepper along the perimeter. Soils are sandy with muck and standing water in the interior of the wetland.

Surrounding land uses include SR 524 travel lanes to the north, Pine Flatwoods to the east and west and herbaceous wetlands to the south. Wetland functions include water storage, water conveyance, and vegetative cover for denning and foraging habitat for wetland dependent species.

5.1 Assessment of Potential Impacts

Wetland and other surface water impacts ranging between approximately 0.003 acres and 20.728 acres are associated with the proposed build alternatives and associated interchange and stormwater pond alternatives along the SR 524 corridor (Figure 6). All build alternatives will require impacts to the existing wetlands and surface waters within the project corridor. **Table 6 (**below) provides a summary of the forested and herbaceous wetland impacts for the different build alternatives. **Table 7** provides a summary of the wetland impacts including their FLUCCS code, NWI classification, size and UMAM functional loss for the Preferred Alternative. The potential wetland impacts are depicted in **Figures 6 and 7A-7C.**

Table 6 | Wetlands Impacts Summary for Alternatives

Roadway & Pond Site Alternatives	Forested Wetland Impacts	Herbaceous Wetland Impacts	Total Wetland Impacts
Alternative 1 - Curbed	0.17	1.43	1.60
Alternative 2 – High Speed Curbed	2.08	0.71	2.79
Alternative 3 – Flush Shoulder	1.763	0.29	2.053
Modified Diamond Interchange	0.55	0.52	1.07
Diverging Diamond Interchange	0.00	0.00	0.00
Cox Road Roundabout Interchange	0.00	0.00	0.00
London Boulevard	0.00	0.00	0.00
Industry Road Continuous Flow Left Interchange	0.00	0.00	0.00
Pond Site 1A	0.00	3.87	3.87
Pond Site 1B	0.00	0.00	0.00
Pond Site 1C	0.00	0.00	0.00
Pond Site 1D	0.00	0.00	0.00
Pond Site 1E	0.00	0.00	0.00
Pond Site 2A	9.30	0.00	9.30
Pond Site 2B	0.00	0.00	0.00
Pond Site 2C	0.32	0.00	0.00
Pond Site 2D	0.00	0.00	0.00
Pond Site 2E	0.00	0.00	0.00
Pond Site 2F	1.89	0.00	1.89
Pond Site 3A	0.00	0.00	0.00
Pond Site 3B	0.00	0.00	0.00
Regional Pond A	0.00	2.04	2.04

The Preferred Alternatives are highlighted in green.

Table 7 | Preferred Alternative Wetland Impacts and UMAM Summary

Preferred Roadway and Pond Sites	Wetland No.	FLUCCS	NWI Code	Impact (acres)	Functional Loss
Alternative 1 – Curbed	W-3	643	PEM1C	0.27	0.16
	W-10	617	PFO1/4C	0.17	0.12
	W-11	643	PEM1F	1.16	0.66
Diverging Diamond Interchange	W-1	641	PEM1C	0.00	0.00
	W-12	630	PFO1C	0.00	0.00
Cox Road Roundabout Interchange	N/A	N/A	N/A	0.00	0.00
London Boulevard	N/A	N/A	N/A	0.00	0.00
Industry Road Continuous Flow	N/A	N/A	N/A	0.00	0.00
Pond Site 1A	W-1	641	PEM1C	3.87	2.59
Pond Site 2F	W-10	617	PFO1/4C	1.89	1.38
Pond Site 3A	N/A	N/A	N/A	0.00	0.00
Pond Site 3B	N/A	N/A	N/A	0.00	0.00
Totals				**7.36**	**4.91**

Avoidance and Minimization Strategies (Quality Enhancement Strategies)

Strategies evaluated during the PD&E Study to avoid and minimize wetland impacts include alternatives for the widening of SR 524, intersection treatments and siting ponds to treat stormwater. Wetland impacts for the roadway widening was minimized by staying within the existing road right-of-way and evaluating three build alternatives within that footprint.

UMAM Assessment

The UMAM assessment was completed using data collected during the April 2019 and February 2020 field surveys. The field forms are included as **Appendix C**. Calculated wetland impacts and associated functional loss are shown in **Table 5**.

Secondary and Cumulative Wetland Impacts

Staying within the existing road right-of-way which has already been cleared eliminates many of the potential secondary impacts. Secondary wetland impacts that may result from the construction of the proposed pond sites will be addressed in the design phase by creating onsite upland buffers averaging 25 feet in width along the wetland boundary. In areas where buffers are not feasible, secondary impacts will be calculated and mitigation will be provided in accordance with Section 373.4137 F.S. Cumulative impacts are not anticipated as a result of this project due to the wetland mitigation occurring within the same drainage/mitigation basin as the proposed wetland impacts.

5.2 Mitigation

Options for impacts that will result from the construction of this project include mitigation provided pursuant to Section 373.4137 F.S. to satisfy all mitigation requirements of Part IV, Chapter 373, F.S. and 33 U.S.C.s. 1344. Under the provisions of Section 373.4137 F.S., the SJRWMD is funded to provide for specific FDOT project impacts through a corresponding mitigation project within the SJRWMD's overall approved regional mitigation plan.

If the SJRWMD is unable to provide appropriate mitigation, mitigation credits from a permitted wetland mitigation bank are available. The southern half of the SR 524 project falls within Mitigation Basin 18, St. Johns River (Canaveral Marshes to Wekiva) and the northern half of the project is in Mitigation Basin 20, Southern St. Johns River. Mitigation banks with available credits located within Mitigation Basin 18 include Lake Monroe, Tosohatchee, Farmton, Colbert-Cameron, and TM Econ. Mitigation banks with available credits located within Mitigation Basin 20 include Mary A, Farmton and Lake Washington.

Any surface water impacts which will result from the construction of this project will be mitigated through onsite in-kind replacement. The proposed stormwater treatment and conveyance system will maintain existing surface water function. Temporary functional loss will occur during construction, but no permanent direct, secondary or cumulative impact is anticipated.

A final mitigation plan for the project will be developed during the design and permitting phase with input from FDOT, SJRWMD and USACE.

This project complies with the provisions established in EO 11990 - Protection of Wetlands. The proposed project will have no significant short-term or long-term adverse impacts to wetlands. There is no practicable alternative to construction in wetlands and measures have been taken to minimize harm to wetlands.

6.0 ESSENTIAL FISH HABITAT

Coordination with the NMFS during the ETDM screening phase indicated that protected species under the purview of the NMFS will not be impacted with this project and that no further consultation related to the Magnuson-Stevens Fishery Conservation and Management Act is necessary.

7.0 ANTICIPATED PERMITS

Based on the estimated impacts of the preferred alternative, it appears that an Individual Permit will be required from the SJRWMD. Additionally, a 404 Individual Permit from the USACE will be required. A National Pollutant Discharge Elimination System permit will be required from the FDEP as well.

Adverse impacts to individual species or regional populations of protected species or their habitat are not anticipated as a result of the proposed widening improvements including pond sites. Therefore, no wildlife permits are anticipated for the project. However, further evaluation of suitable habitat will be necessary for specific species (identified in **Section 4.0**) during the project design phase. If protected species are identified within the construction area during design or construction phases, coordination will be initiated with the appropriate resource agencies to avoid or permit and mitigate impacts.

7.1 Agency Coordination

In February 2018, comments from the Environmental Technical Advisory Team (ETAT) were published on the ETDM website. Six ETAT members commented on proposed wetland impacts. The SJRWMD applied a substantial degree of effect, the US Environmental Protection Agency (EPA) and NMFS each applied a moderate degree of effect, and the FDEP, USFWS, and USACE applied a minimal degree of effect. Agency comments included the need for wetland delineation, implementation of avoidance and minimization, assessment of direct impacts and the assessment of secondary and cumulative impacts and the need to address the potential for an increase in runoff of stormwater and an increase of pollutants in surface waters and wetlands.

Through the PD&E process, the FDOT has addressed each of these agency issues as documented in this report. Wetland delineation was completed through the established criteria of the SJRWMD and USACE, wetland functional assessments were completed using UMAM, and potential secondary and cumulative impacts were addressed through mitigation within the same drainage basin. The potential for water quality impacts has been addressed through the proposed stormwater management system and will be carried through to construction by following erosion control measures according to FDOT standard methods.

8.0 CONCLUSIONS

Potential impacts for each SR 524 project alternative were evaluated. From an environmental standpoint, there is minimal difference between the build alternatives with the range of proposed impacts to wetlands varying from 1.60 acres for Alternative 1, 2.79 acres for Alternative 2 and 2.05 acres for Alternative 3. Proposed wetland impacts from pond sites include 3.87 acres for Pond Site 1A, 9.30 acres for Pond Site 2A, 0.32 acres for Pond Site 2C, 1.89 acres for Pond Site 2F and 2.04 acres for Regional Pond A. The Preferred Alternative will include the Diverging Diamond Interchange and Ponds 1A, 2F, 3A and 3B and will result in 7.36 acres of wetland impacts.

In general, project impacts were minimized by staying within the existing, cleared road right of way. Options for mitigation to offset wetland impacts which will result from the construction of this project include mitigation pursuant to Section 373.4137 F.S. to satisfy all mitigation requirements of Part IV, Chapter 373, F.S. and 33 U.S.C.s. 1344 and utilizing credits from a permitted wetland mitigation bank. These options will be further examined during the design phase of the project.

Adverse impacts to individual species or regional populations of federally protected species, proposed or candidate species, or managed species or their habitat are not anticipated as a result of the construction of this project. An effect determination has been made for each species and is as follows:

- "May affect, not likely to adversely affect" include:
    - Eastern indigo snake
    - Bald eagle
    - Eastern black rail
    - Wood stork
    - Tricolored bat (Proposed Endangered)
- "No adverse effect anticipated" include:
    - Monarch butterfly (Candidate Species)
- "No effect" include:
    - Florida scrub-jay
    - Audubon's crested caracara
    - Short-leaved rosemary
    - Beautiful pawpaw
    - Lewton's polygala
    - Carter's mustard

These determinations are based on results of the USFWS' determination keys, literature review, data research, field surveys and coordination with agency personnel.

Adverse impacts to individual species or regional populations of state protected or imperiled species or their habitat are not anticipated as a result of the construction of this project. An effect determination has been made for each species and is as follows:

- "No adverse effect anticipated" include:
    - Wading birds
    - Gopher tortoise
    - Florida pine snake
    - Florida burrowing owl
    - Florida sandhill crane
    - Southeastern American kestrel
    - Roseate spoonbill
    - Florida blackbear
    - Many-flowered grass-pink
    - Small's flax
    - Celestial lily
    - Piedmont Jointgrass
    - Pine Lily
    - Blueflower Butterwort
    - Yellow Flowered Butterwort
    - Hooded Pitcherplant
    - Lace-lip Ladies'-tresses
- "No effect anticipated" include:
    - Curtiss' sandgrass
    - Chapman's sedge
    - Sand butterfly pea
    - Sand-dune spurge
    - Large-flowered rosemary
    - Titusville-balm
    - Coastal vervain
    - Tampa vervain
    - Nodding pinweed
    - Pine pinweed
    - Florida beargrass
    - Cutthroat grass
    - Giant orchid
    - Handfern

Further evaluation of suitable habitat will be necessary for specific species (identified in Section 4.0) during the project design phase. If protected species are identified within the construction area during design or construction phases, coordination will be initiated with the appropriate resource

agencies to avoid or mitigate impacts. Furthermore, standard protection measures developed by the USFWS to address the protection of the eastern indigo snake will be implemented during the design and construction phase.

There is no EFH present in the project area, therefore there will be no EFH impacts associated with the proposed alternatives.

8.1 Implementation Measures/Design Considerations

FDOT will also implement the following actions during later phases of the project:

1. Use of Best Management Practices for erosion control during construction.

2. Conduct gopher tortoise surveys and permitting (if required) during the design phase.

3. Update other wildlife and plant surveys during the design phase.

8.2 Commitments

The following commitments will be added to the environmental document relative to wildlife:

- The most recent USFWS Standard Protection Measures for the Eastern Indigo Snake will be adhered to during the construction of the proposed project.
- Coordination with USFWS will be initiated if construction within the 660-foot protection buffer is proposed for nest BE082 during the nesting season (October 1 to May 15). If required FDOT or their representative will monitor the nest according to the USFWS' September 2007 Bald Eagle Monitoring Guidelines.
- FDOT commits to reinitiating consultation during design and permitting with USFWS for the eastern black rail and providing the information necessary to determine the type, degree, and extent of impacts to listed species potentially adversely impacted by the proposed project. FDOT will develop mitigation measures in consultation with the USFWS to offset unavoidable impacts. Completion of consultation and documentation of the project's compliance with the avoidance, minimization and mitigation requirements for the impacted resources will be provided by FDOT in a subsequent project re-evaluation prior to each segment.
- If the listing status of the tricolored bat is elevated by the USFWS to Threatened or Endangered and the Preferred Alternative contains suitable habitat, the FDOT commits to no tree clearing or bridge/culvert work when day-time high temperatures are below 45 degrees, nor during maternity season (May 1st through July 15th). If tree clearing or bridge/culvert work is required during these months, consultation will be reinitiated.

- If the listing status of the monarch butterfly is elevated by the USFWS to Threatened or Endangered prior to construction and the Preferred Alternative is located within the consultation area, FDOT commits to initiating consultation with the USFWS to determine the appropriate survey methodology and to address USFWS regulations regarding the protection of the monarch butterfly.

9.0 REFERENCES

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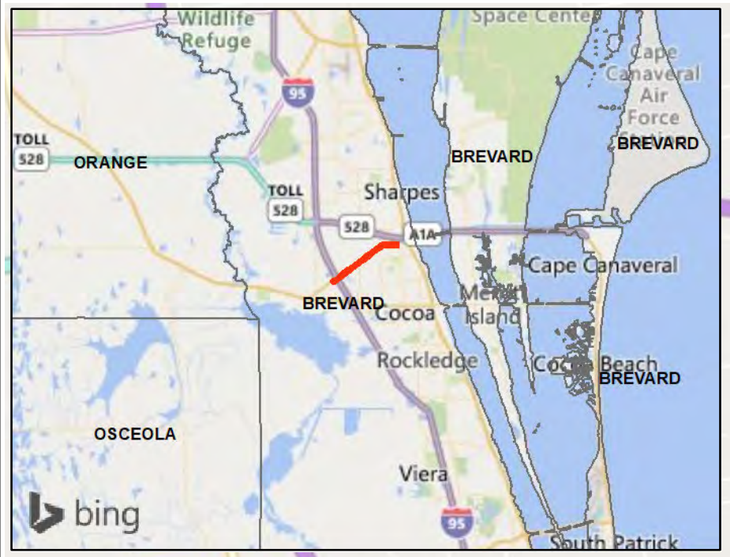
FIGURES



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FDOT

PROJECT NUMBER:
8-0258-001

SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1

Brevard County, Florida

Project Location Map

SCALE: 1 "=2,000 '

DATE: 5/5/2023

FIGURE
1

Begin Project

POND 1A

POND 2F

POND 3A

POND 3B

End Project

COCOA COMMONS

CLEARLAKE VILLAGE

CARLETON TERRACE

Starship Lake

Background Source: BING

Legend

- Project Limits
- Wetland Impact
- Right of Way

0 1,000 2,000 Feet

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FDOT

PROJECT NUMBER:
8-0258-001

SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1

Brevard County, Florida

Preferred Alternative Map

SCALE: 1 "=1,500 '

DATE: 5/3/2023

FIGURE 2

End Project

POND 3B

POND 3A

POND 2F

POND 1A

Begin Project

Legend

- Project Limits
- ROW
- Preferred Ponds

Background Source: BING

0 1,000 2,000 Feet

FDOT

PROJECT NUMBER:
8-0258-001

SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1

Brevard County, Florida

Topographic Map

SCALE: 1 "=2,000 '

DATE: 5/3/2023

FIGURE
3

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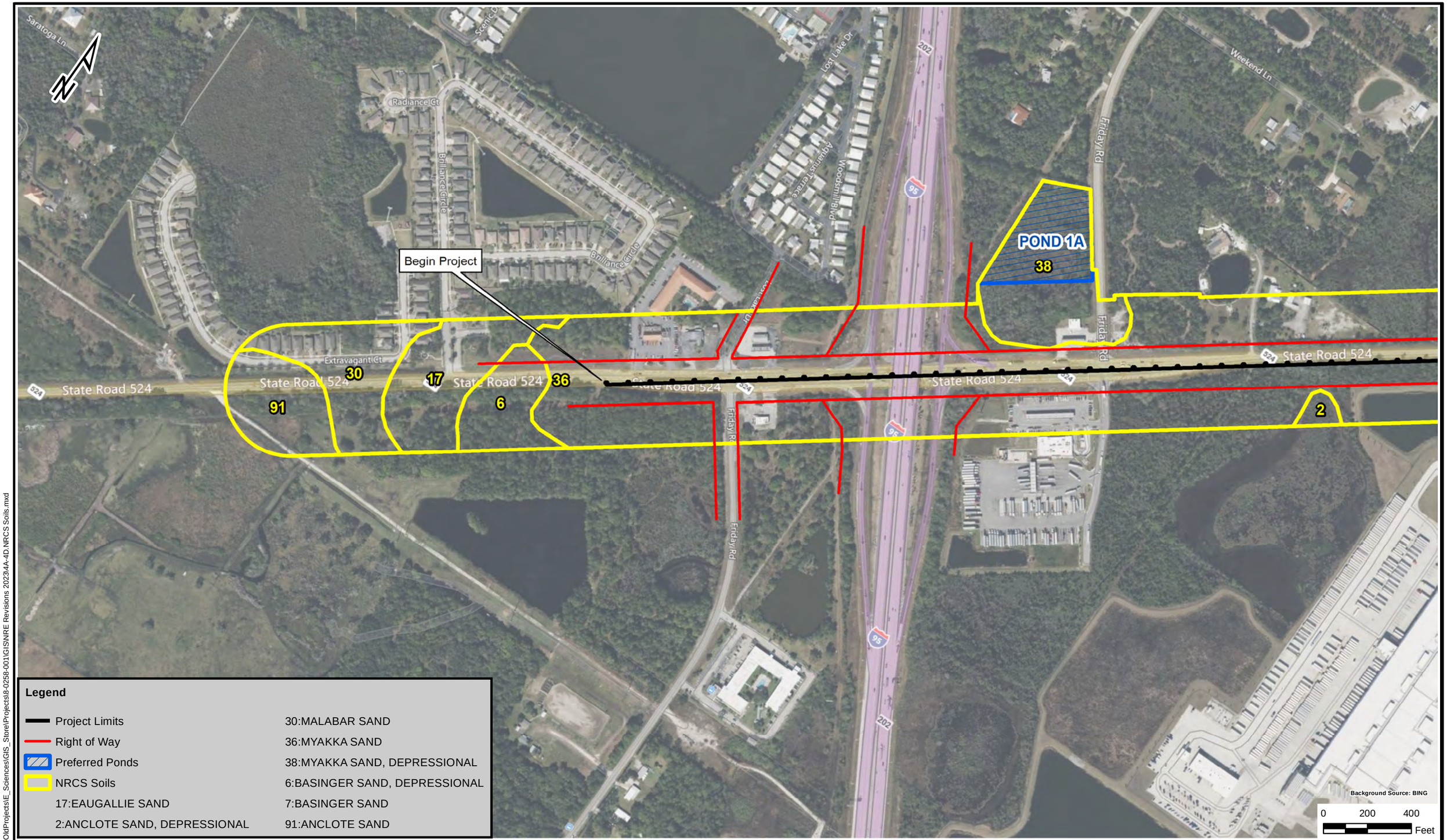

Legend

Project Limits	30:MALABAR SAND
Right of Way	36:MYAKKA SAND
Preferred Ponds	38:MYAKKA SAND, DEPRESSIONAL
NRCS Soils	6:BASINGER SAND, DEPRESSIONAL
17:EAUGALLIE SAND	7:BASINGER SAND
2:ANCLOTE SAND, DEPRESSIONAL	91:ANCLOTE SAND

FDOT

PROJECT NUMBER:
8-0258-001

SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1
Brevard County, Florida

NRCS Soils Map

SCALE: 1 "=400 '

DATE: 5/3/2023

FIGURE
4A

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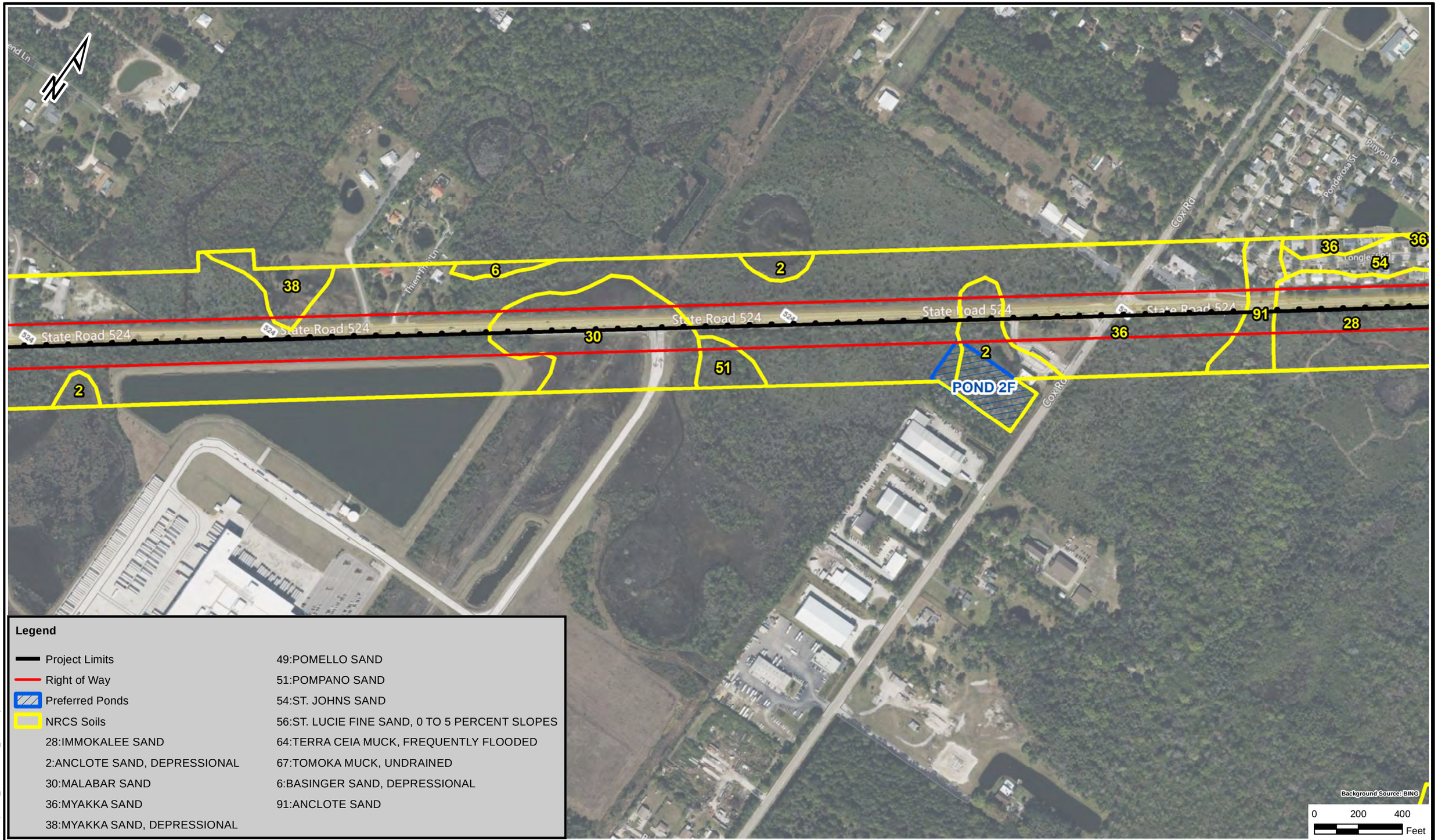

Legend

- Project Limits
- Right of Way
- Preferred Ponds
- NRCS Soils
- 28:IMMOKALEE SAND
- 2:ANCLOTE SAND, DEPRESSIONAL
- 30:MALABAR SAND
- 36:MYAKKA SAND
- 38:MYAKKA SAND, DEPRESSIONAL
- 49:POMELLO SAND
- 51:POMPANO SAND
- 54:ST. JOHNS SAND
- 56:ST. LUCIE FINE SAND, 0 TO 5 PERCENT SLOPES
- 64:TERRA CEIA MUCK, FREQUENTLY FLOODED
- 67:TOMOKA MUCK, UNDRAINED
- 6:BASINGER SAND, DEPRESSIONAL
- 91:ANCLOTE SAND

FDOT

PROJECT NUMBER:
8-0258-001

SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1
Brevard County, Florida

NRCS Soils Map

SCALE: 1 "=400 '

DATE: 5/3/2023

FIGURE
4B

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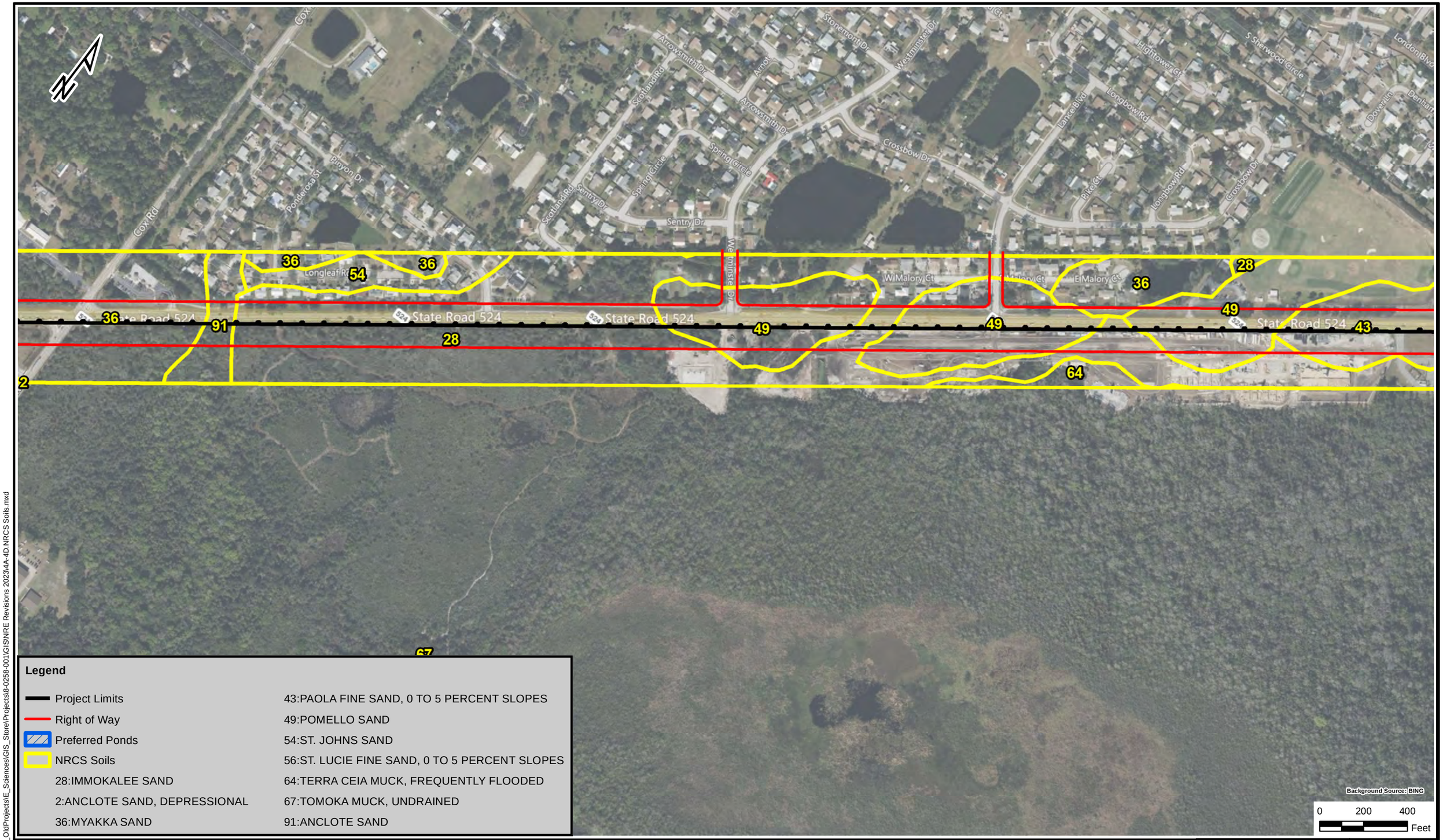

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FDOT

PROJECT NUMBER:
8-0258-001

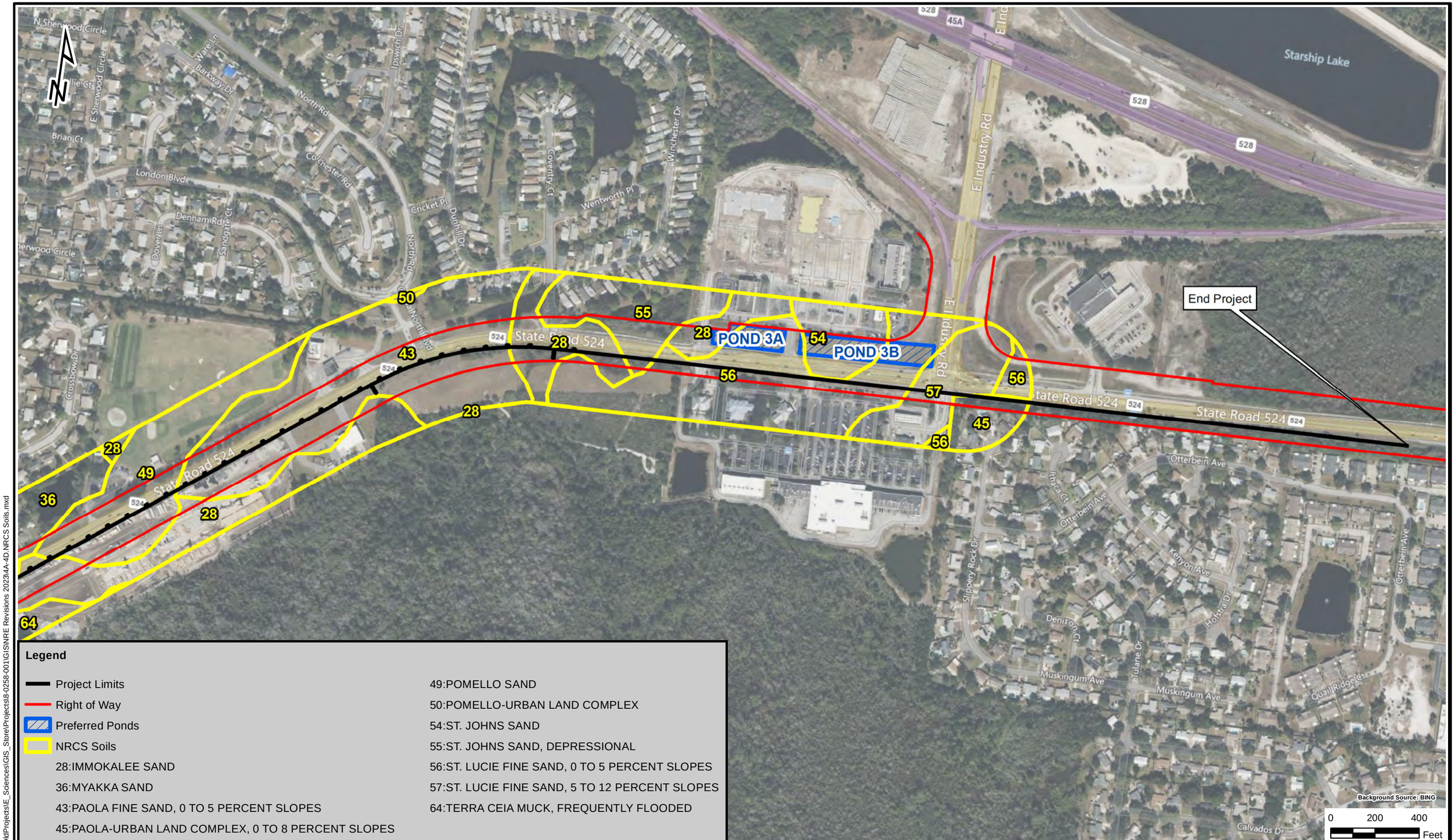
SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1
Brevard County, Florida

NRCS Soils Map

SCALE: 1 "=400 '

DATE: 5/3/2023

FIGURE
4C



Legend

- Project Limits
- Right of Way
- Preferred Ponds
- NRCS Soils
- 28:IMMOKALEE SAND
- 36:MYAKKA SAND
- 43:PAOLA FINE SAND, 0 TO 5 PERCENT SLOPES
- 45:PAOLA-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES
- 49:POMELLO SAND
- 50:POMELLO-URBAN LAND COMPLEX
- 54:ST. JOHNS SAND
- 55:ST. JOHNS SAND, DEPRESSIONAL
- 56:ST. LUCIE FINE SAND, 0 TO 5 PERCENT SLOPES
- 57:ST. LUCIE FINE SAND, 5 TO 12 PERCENT SLOPES
- 64:TERRA CEIA MUCK, FREQUENTLY FLOODED

FDOT

PROJECT NUMBER:
8-0258-001

SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1
Brevard County, Florida

NRCS Soils Map

SCALE: 1 "=400 '

DATE: 5/3/2023

FIGURE
4D

R:\Resgis\entgis\Projects_OldProjects\E_Sciences\GIS_Store\Projects\8-0258-001\GIS\NRE Revisions 2023\4A-4D NRCS Soils.mxd

- Right of Way
- Pond Site
- Wetlands (Based on FGDL Land Use Codes)

Land Use

- 110 - RESIDENTIAL, LOW DENSITY
- 118 - RURAL RESIDENTIAL
- 130 - RESIDENTIAL, HIGH DENSITY
- 139 - RESIDENTIAL, HIGH DENSITY UNDER CONSTRUCTION
- 140 - COMMERCIAL AND SERVICES
- 162 - SAND AND GRAVEL PITS
- 170 - INSTITUTIONAL
- 190 - OPEN LAND
- 213 - WOODLAND PASTURES
- 243 - ORNAMENTALS
- 251 - HORSE FARMS
- 310 - HERBACEOUS (DRY PRAIRIE)
- 320 - SHRUB AND BRUSHLAND
- 411 - PINE FLATWOODS
- 420 - UPLAND HARDWOOD FORESTS
- 434 - HARDWOOD - CONIFEROUS MIXED
- 520 - LAKES
- 530 - RESERVOIRS
- 617 - MIXED WETLAND HARDWOODS
- 630 - WETLAND FORESTED MIXED
- 641 - FRESHWATER MARSHES
- 643 - WET PRAIRIES
- 646 - TREELESS HYDRIC SAVANNA
- 740 - DISTURBED LAND
- 743 - SPOIL AREAS
- 814 - ROADS AND HIGHWAYS
- 832 - ELECTRICAL POWER TRANSMISSION LINES
- 837 - SURFACE WATER COLLECTION PONDS

FDOT

PROJECT NUMBER:
8-0258-001

SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1
Brevard County, Florida

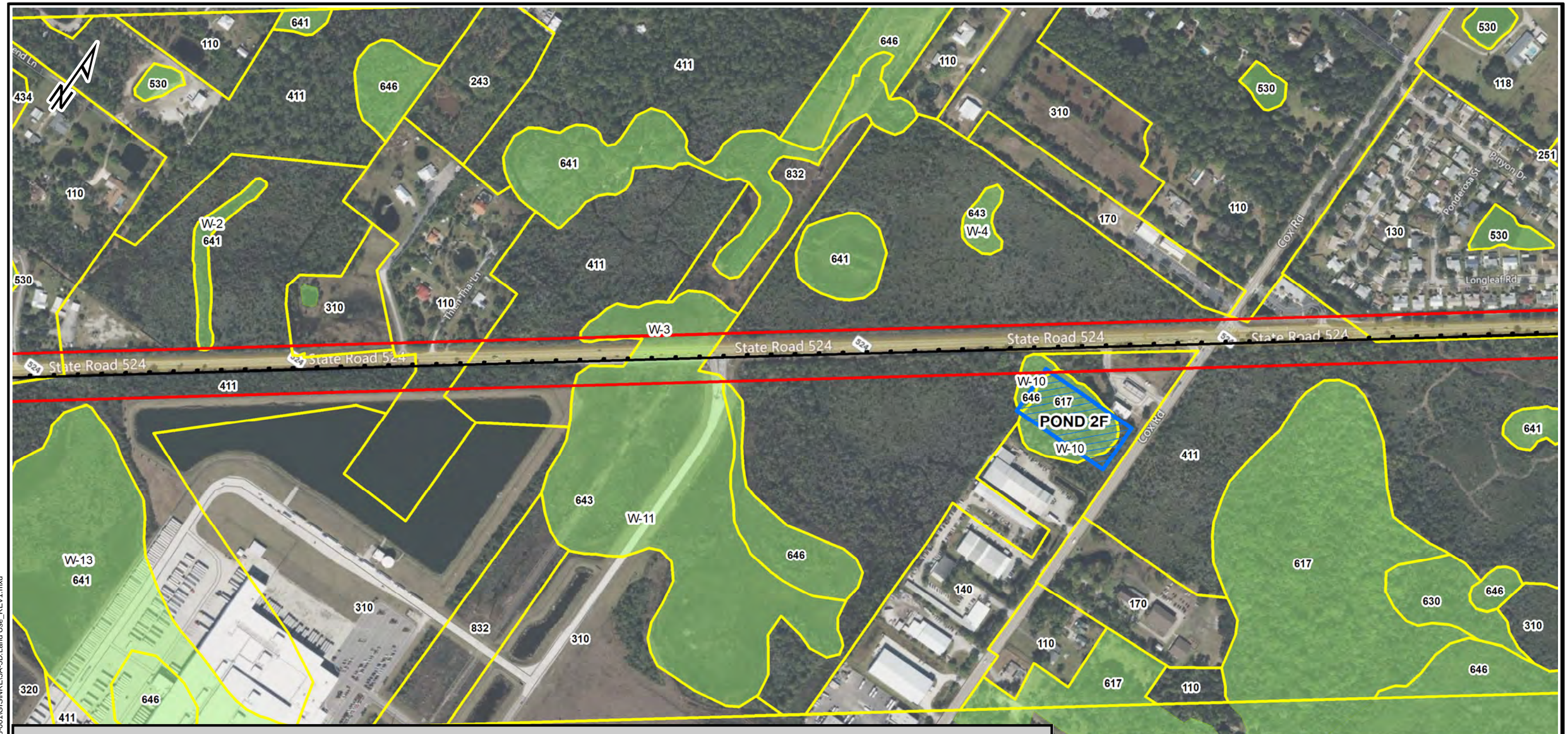
Land Use Map

SCALE: 1 "=400 '

DATE: 5/3/2023

FIGURE
5A

R:\Resgis\entgis\Projects_OldProjects\E_Sciences\GIS_Store\Projects\8-0258-001\GIS\NRE\5A-5D.Land Use_REV1.mxd



Right of Way
Pond Site
Wetlands (Based on FGDL Land Use Codes)

Land Use

110 - RESIDENTIAL, LOW DENSITY
118 - RURAL RESIDENTIAL
130 - RESIDENTIAL, HIGH DENSITY
139 - RESIDENTIAL, HIGH DENSITY UNDER CONSTRUCTION
140 - COMMERCIAL AND SERVICES
162 - SAND AND GRAVEL PITS
170 - INSTITUTIONAL
190 - OPEN LAND
213 - WOODLAND PASTURES
243 - ORNAMENTALS
251 - HORSE FARMS
310 - HERBACEOUS (DRY PRAIRIE)
320 - SHRUB AND BRUSHLAND
411 - PINE FLATWOODS
420 - UPLAND HARDWOOD FORESTS
434 - HARDWOOD - CONIFEROUS MIXED
520 - LAKES
530 - RESERVOIRS
617 - MIXED WETLAND HARDWOODS
630 - WETLAND FORESTED MIXED
641 - FRESHWATER MARSHES
643 - WET PRAIRIES
646 - TREELESS HYDRIC SAVANNA
740 - DISTURBED LAND
743 - SPOIL AREAS
814 - ROADS AND HIGHWAYS
832 - ELECTRICAL POWER TRANSMISSION LINES
837 - SURFACE WATER COLLECTION PONDS

FDOT

PROJECT NUMBER:
8-0258-001

SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1
Brevard County, Florida

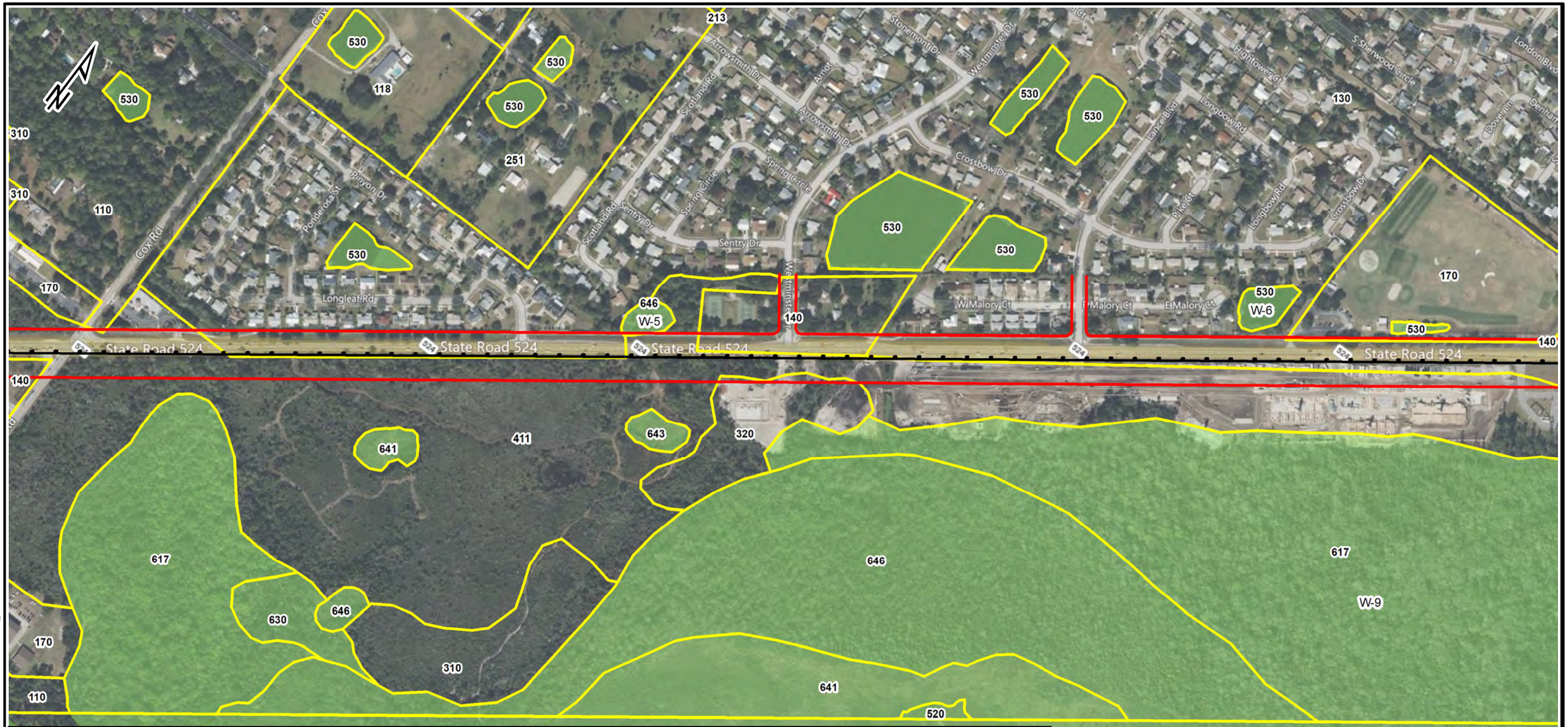
Land Use Map

SCALE: 1 "=400 '

DATE: 5/3/2023

FIGURE
5B

R:\Resgisientgis\Projects_Old\Projects\E_Sciences\GIS_Store\Projects\8-0258-001\GIS\NRE\5A-5D Land Use_REV1.mxd



Right of Way
Pond Site
Wetlands (Based on FGDL Land Use Codes)

Land Use

110 - RESIDENTIAL, LOW DENSITY
118 - RURAL RESIDENTIAL
130 - RESIDENTIAL, HIGH DENSITY
139 - RESIDENTIAL, HIGH DENSITY UNDER CONSTRUCTION
140 - COMMERCIAL AND SERVICES
162 - SAND AND GRAVEL PITS
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740 - DISTURBED LAND
743 - SPOIL AREAS
814 - ROADS AND HIGHWAYS
832 - ELECTRICAL POWER TRANSMISSION LINES
837 - SURFACE WATER COLLECTION PONDS

Background Source: BING

0 200 400 Feet

FDOT

PROJECT NUMBER:
8-0258-001

SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1
Brevard County, Florida

Land Use Map

SCALE: 1 "=400 '

DATE: 5/3/2023

FIGURE
5C

R:\Resgis\entgis\Projects_OldProjects\E_Sciences\GIS_Store\Projects\8-0258-001\GIS\NRE\5A-5D.Land Use_REV1.mxd

Right of Way
Pond Site
Wetlands (Based on FGDL Land Use Codes)

Land Use

110 - RESIDENTIAL, LOW DENSITY
118 - RURAL RESIDENTIAL
130 - RESIDENTIAL, HIGH DENSITY
139 - RESIDENTIAL, HIGH DENSITY UNDER CONSTRUCTION
140 - COMMERCIAL AND SERVICES
162 - SAND AND GRAVEL PITS
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434 - HARDWOOD - CONIFEROUS MIXED
520 - LAKES
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646 - TREELESS HYDRIC SAVANNA
740 - DISTURBED LAND
743 - SPOIL AREAS
814 - ROADS AND HIGHWAYS
832 - ELECTRICAL POWER TRANSMISSION LINES
837 - SURFACE WATER COLLECTION PONDS

Background Source: BING

0 200 400 Feet

FDOT

PROJECT NUMBER:
8-0258-001

SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1
Brevard County, Florida

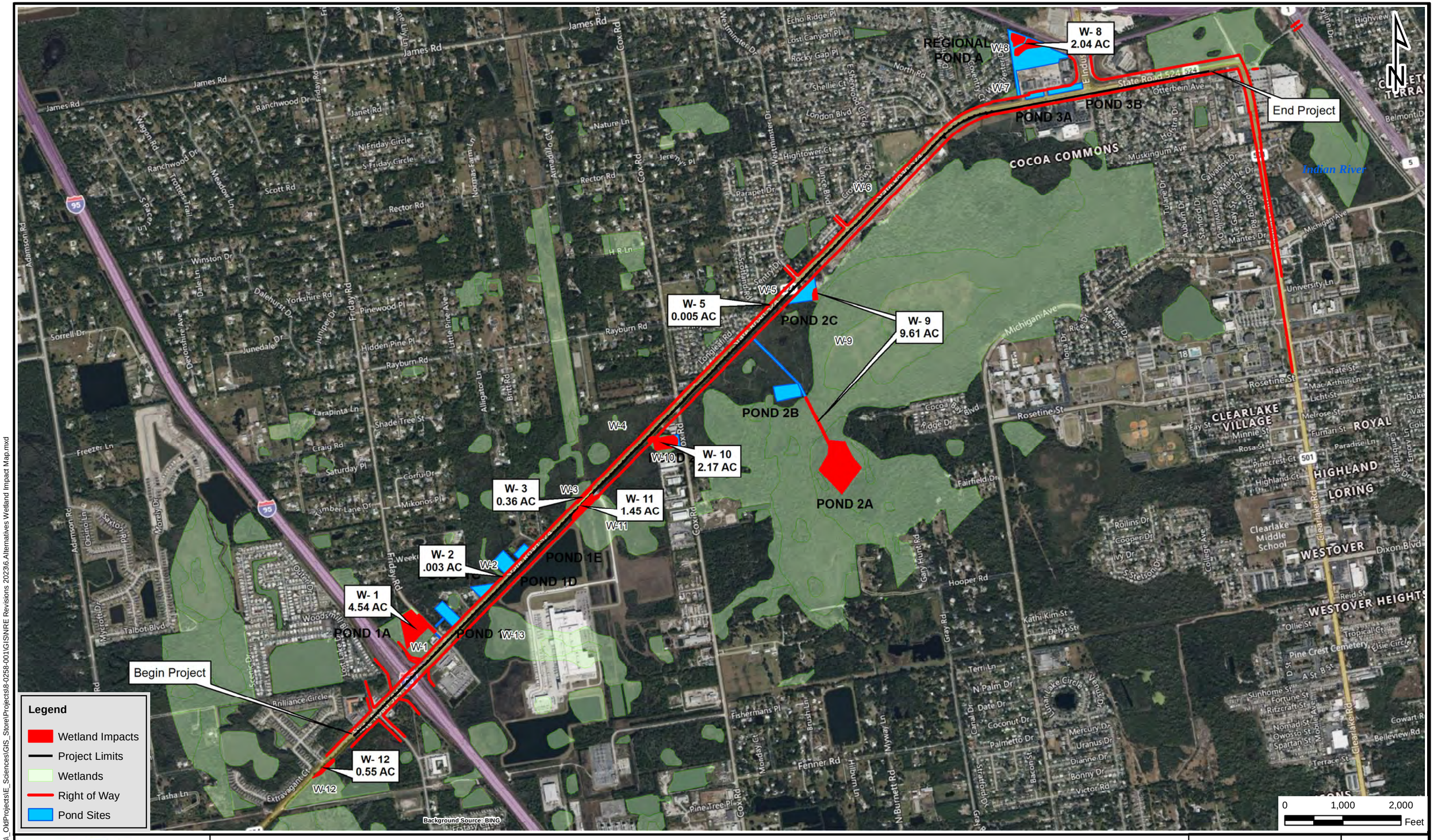
Land Use Map

SCALE: 1 "=400 '

DATE: 5/3/2023

FIGURE
5D

R:\Resgis\entgis\Projects_OldProjects\E_Sciences\GIS_Store\Projects\8-0258-001\GIS\NRE\5A-5D.Land Use_REV1.mxd



R:\Resgisientgis\Projects_Old\Projects\E_Sciences\GIS_Store\Projects\8-0258-001\GIS\NRE Revisions 2023\6.Alternatives Wetland Impact Map.mxd

FDOT

PROJECT NUMBER:
8-0258-001

SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1

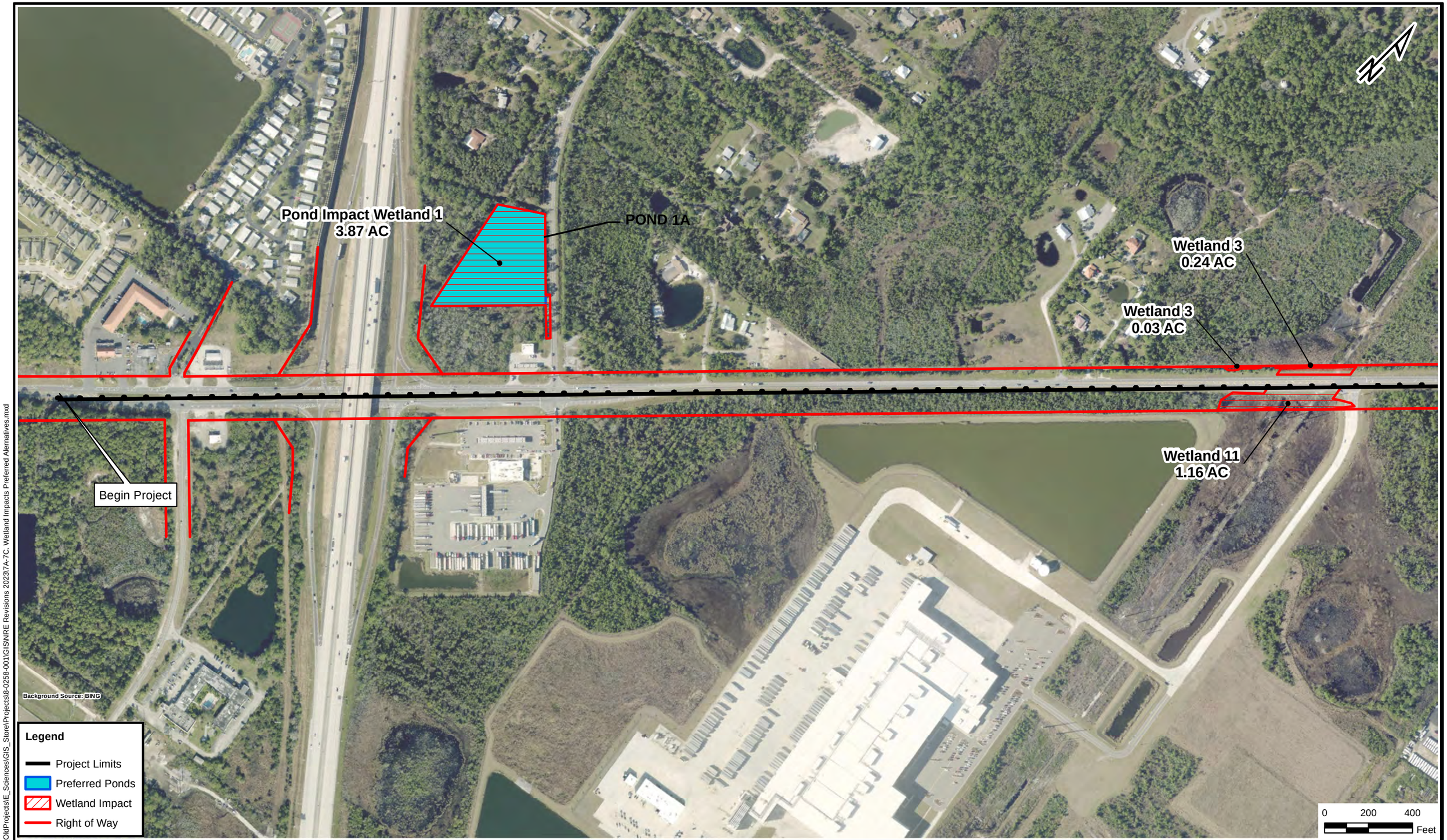
Brevard County, Florida

Alternatives
Wetland Imapact Map

SCALE: 1 "=1,500 '

DATE: 5/4/2023

FIGURE
6



R:\Resgis\entgis\Projects_Old\Projects\E_Sciences\GIS_Store\Projects\8-0258-001\GIS\NRE Revisions 2023\7A-7C. Wetland Impacts Preferred Alernatives.mxd

FDOT

PROJECT NUMBER:
8-0258-001

SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1

Brevard County, Florida

Preferred Alternatives
Wetland Impact Map

SCALE: 1 "=400 '

DATE: 5/4/2023

FIGURE
7A

POND 2D

Wetland 10
0.17 AC

Pond Impact Wetland 10
1.89 AC

POND 2F

Background Source: BING

Legend

- Project Limits
- Preferred Ponds
- Wetland Impact
- Right of Way

0 200 400 Feet

R:\Resgis\entgis\Projects_OldProjects\E_Sciences\GIS_Store\Projects\8-0258-001\GIS\NRE Revisions 2023\7A-7C. Wetland Impacts Preferred Alternatives.mxd

FDOT

PROJECT NUMBER:
8-0258-001

SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1

Brevard County, Florida

Preferred Alternatives
Wetland Impact Map

SCALE: 1 "=400 '

DATE: 5/4/2023

FIGURE
7B

POND 3A

POND 3B

End Project

0 200 400 Feet

Background Source: BING

Legend

- Project Limits
- Preferred Ponds
- Wetland Impact
- Right of Way

FDOT

PROJECT NUMBER:
8-0258-001

SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1

Brevard County, Florida

Preferred Alternatives
Wetland Impact Map

SCALE: 1 "=400 '

DATE: 5/4/2023

FIGURE
7C

R:\Resgis\entgis\Projects_Old\Projects\E_Sciences\GIS_Store\Projects\8-0258-001\GIS\NRE Revisions 2023\7A-7C. Wetland Impacts Preferred Alernatives.mxd

Legend

- Project Limits
- Preferred Ponds
- Cocoa Conservation Area
- Eagle Nest
- Active Wood Stork Nesting Colonies

Strategic Habitat Conservation Area

- PRIORITY 1: STATE RANK 1 AND GLOBAL RANK 1 - 3
- PRIORITY 2: STATE RANK 1 AND GLOBAL RANK 4 - 5 OR STATE RANK 2 AND GLOBAL RANK 2 - 3
- PRIORITY 3: STATE RANK 2 AND GLOBAL RANK 4 - 5 OR STATE RANK 3 AND GLOBAL RANK 3
- PRIORITY 4: STATE RANK 3 AND GLOBAL RANK 4
- PRIORITY 5: STATE RANK 3 AND GLOBAL RANK 5 OR STATE RANK 4 AND GLOBAL RANK 4

Notes:
1. The proposed project is located entirely within the USFWS Consultation Areas for the Florida scrub-jay, Audubon's crested caracara, and Everlades snail kite.

Begin Project

Hwys 524/520

BE082

Eagle Nest Protection Buffer - 660 feet

Wood Stork Nesting Colony Buffer - 2500 feet

Brevard County Maintenance Shop

End Project

0 750 1,500 Feet

R:\Resgisientgis\Projects_Old\Projects\E_Sciences\GIS_Store\Projects\8-0258-001\GIS\NRE Revisions 20230\8.Protected Species and SHCA.mxd

FDOT

PROJECT NUMBER:
8-0258-001

SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1

Brevard County, Florida

Protected Species and Strategic Habitat Conservation Areas

SCALE: 1 "=1,500 '

DATE: 5/4/2023

FIGURE
8

APPENDICES

Appendix A

Florida Department of Transportation

RON DESANTIS
GOVERNOR

719 S. W
DeLand,

KEVIN J. THIBAULT, P.E.

FWS Log No 2020-TA-0218

The Service concurs with your effect determination(s) for resources protected by the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.). This finding fulfills the requirements of the Act.

Jay B. Herrington
Field Supervisor

12/11/19
Date

November 13, 2019

Zakia Williams
U.S. Fish & Wildlife Service
North Florida Ecological Services Office
7615 Baymeadows Way, Suite 200
Jacksonville, FL 32256-7517

Re: Preliminary Florida Scrub-Jay & Caracara Survey and Evaluation
SR 524 Widening from Friday Rd to Industry Rd
Brevard County, Florida
FDOT FM 437983-1-22-01

Ms. Williams:

The Florida Department of Transportation (FDOT) District 5 is conducting a Project Development and Environmental Study (PD&E) to widen SR 524 from two lanes to four lanes in the City of Cocoa, Florida (Sections 13, 23 and 24; Township 24 South; Range 35 East and Section 18; Township 24 South; Range 36 East). The project length is approximately 3.22 miles, extending from west of Friday Road to Industry Road and includes nine (9) potential pond site alternatives (**Figures 1 - 5**).

The project is located within the United States Fish & Wildlife Service (USFWS) consultation areas (CA) for the Florida scrub-jay (*Aphelocoma coerulescens*) and the Audubon's crested caracara (*Polyborus plancus audubonii*). As a result, FDOT consultants conducted a desktop Geographic Information System (GIS) review and subsequent onsite surveys to assess the available habitat within the project right-of-way and 9 potential pond site alternatives.

Methods

Prior to conducting an onsite habitat assessment, the following GIS data was used to evaluate potential habitat for the Florida scrub-jay and the Audubon's crested caracara.

- USFWS Consultation Area GIS data layers;
- Florida Fish & Wildlife Conservation Commission (FWC) Wildlife Observations: FWC Wildlife Occurrence System, (2016) data;

Florida Department of Transportation

RON DESANTIS
GOVERNOR

719 S. Woodland Boulevard
DeLand, Florida 32720-6834

KEVIN J. THIBAULT, P.E.
SECRETARY

November 13, 2019

Zakia Williams
U.S. Fish & Wildlife Service
North Florida Ecological Services Office
7615 Baymeadows Way, Suite 200
Jacksonville, FL 32256-7517

Re: Preliminary Florida Scrub-Jay & Caracara Survey and Evaluation
SR 524 Widening from Friday Rd to Industry Rd
Brevard County, Florida
FDOT FM 437983-1-22-01

Ms. Williams:

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Methods

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- USFWS Consultation Area GIS data layers;
- Florida Fish & Wildlife Conservation Commission (FWC) Wildlife Observations: FWC Wildlife Occurrence System, (2016) data;

- FWC Fish and Wildlife Research Institute Florida Scrub-jay Locations (1992-1993, updated 2015) data
- Brevard County's Natural Resources Florida Scrub-jay GIS data
- St. Johns River Water Management District 2014 Florida Land Use, Cover and Forms Classification System (FLUCCS) data.

Following the GIS desktop review, an onsite survey of the project corridor including the 9 potential pond site alternatives (**Figure 5**) was conducted on April 12 and April 25, 2019. The onsite surveys were specifically focused on identifying potential Audubon's crested caracara foraging or nesting habitat (improved/unimproved pastures and/or wet/dry prairies with cabbage palms) and Florida scrub-jay habitat (Types I, II and III) The onsite surveys used pedestrian transects and a playback of high quality recordings of typical Florida scrub-jay territorial scold calls in an attempt to attract scrub-jays.

Site Descriptions and Results

The project right-of-way consists mainly of periodically mowed; open land adjacent to multiple land uses **(Figure 4)**. The areas of ROW adjacent to potential scrub-jay and caracara habitat were field reviewed and a tape of scrub-jay vocalizations was played. No scrub-jays, caracara or suitable habitat were observed.

Pond 1 is mapped as Hardwood Coniferous Mixed (FLUCCS 434). There was evidence of inundation due to water staining on trees. The site contains dense vegetation consisting of Brazilian pepper (*Schinus terebinthifolia*), punktree (*Melaleuca quinquenervia*), cabbage palm (*Sabal palmetto*), salt bush (*Baccharis halimifolia*), laurel oak (*Quercus laurifolia*), red maple (*Acer rubrum*), saw palmetto (*Serenoa repens*), gallberry (*Ilex glabra*), wax myrtle (*Morella cerifera*), and leather fern (*Acrostichum danaeifolium*). No appropriate Florida scrub-jay or Audubon's crested caracara habitat occurs within this potential pond site and neither of these species were observed during the onsite surveys. Representative photos of this pond site are identified as Photos 1 – 4 in the attached photolog.

Pond 2 is mapped as Pine Flatwoods (FLUCCS 411). During the site review the site was actively being cleared and likely recently burned. The remaining vegetation included slash pine (*Pinus elliottii*), cabbage palm and punktree in the adjacent off-site area. No appropriate Florida scrub-jay or Audubon's crested caracara habitat occurs within this potential pond site and neither of these species were observed during the onsite surveys. Representative photos of this pond site are identified as Photos 5 – 6 in the attached photolog.

Pond 3 is mapped as Pine Flatwoods (FLUCCS 411). The northern half of the site appears to be a wetland area containing gallberry, shiny lyonia (*Lyonia lucida*), Virginia chain fern (*Woodwardia virginica*), sphagnum moss (*Sphagnum* sp.), wiregrass (*Aristida stricta*), and red maple with a canopy of slash pine. Saw palmetto (*Serenoa repens*) was observed throughout the pond site with other vegetation including St. John's Wort (*Hypericum* sp.), wax myrtle, punktree, pond pine (*Pinus serotina*) and rusty lyonia (*Lyonia ferruginea*). Evidence of seasonal inundation was observed on some of the wetter portions of the pond

site. No appropriate Florida scrub-jay or Audubon's crested caracara habitat occurs within this potential pond site and neither of these species were observed during the onsite surveys. Representative photos of this pond site are identified as Photos 7 – 10 in the attached photolog.

Pond 4 is mapped as Herbaceous (Dry Prairie) (FLUCCS 310). The site is maintained with periodic mowing with scattered slash pine and contains an excavated surface water in the northwest corner. The pond is vegetated with white waterlily (*Nymphaea odorata*) and the banks are vegetated with cabbage palm, dog fennel (*Eupatorium capillifolium*), slash pine, and Virginia chain fern. The western border of the site contains wax myrtle, button bush (*Cephalanthus occidentalis*), red maple, and St. John's wort. No appropriate Florida scrub-jay or Audubon's crested caracara habitat occurs within this potential pond site and neither of these species were observed during the onsite surveys. Representative photos of this pond site are identified as Photos 11 – 14 in the attached photolog.

Pond 5 is mapped as shrub and brushland (FLUCCS 320). The site is dominated by a canopy of pines near SR 524 and they occur more sporadically at the south end of the site. There was evidence of clearing activities along the perimeter and center of the site. Dominant vegetation included gallberry, saw palmetto, wiregrass, muscadine grapevine (*Vitis rotundifolia*), shiny blueberry (*Vaccinium myrsinites*), cabbage palm, and live oak. The eastern portion of the site is mapped as having potential scrub-jay habitat by the FWC. However, a review of Brevard County's Natural Resources GIS data shows no known Florida scrub-jay areas near this pond site. In addition, no appropriate Florida scrub-jay habitat was observed within this potential pond site and this species was not observed during the onsite surveys. Additionally, no appropriate Audubon's crested caracara habitat occurs within this potential pond site and this species was not observed during the onsite surveys. Representative photos of this pond site are identified as Photos 15 – 18 in the attached photolog.

Pond 6 is mapped as commercial and services (FLUCCS 140). This pond site is currently undeveloped open land that is maintained with periodic mowing. The habitat consists exclusively of uplands and herbaceous vegetation is dominated by pasture grasses including bahiagrass (*Paspalum notatum*), Bermudagrass (*Cynodon dactylon*), ragweed (*Ambrosia artemisiifolia*) and Mexican clover (*Richardia brasiliensis*). There are no trees or shrubs within the limits of this potential pond site. No appropriate Florida scrub-jay or Audobon's crested caracara habitat occurs within this potential pond site and neither of these species were observed during the onsite surveys. Representative photos of this pond site are identified as Photos 19 – 20 in the attached photolog.

Pond 7 is mapped as commercial and services (FLUCCS 140). This pond site is currently undeveloped open land that is maintained with periodic mowing. The habitat consists exclusively of uplands and herbaceous vegetation that is dominated by pasture grasses including bahiagrass, Bermudagrass, ragweed and Mexican clover. There are no trees or shrubs within the limits of this potential pond site. No appropriate Florida scrub-jay or Audubon's crested caracara habitat occurs within this potential pond site and neither of these species were observed during the onsite surveys. Representative photos of this pond site are identified as Photos 21 – 22 in the attached photolog.

Pond 8 is mapped as Herbaceous (Dry Prairie) (FLUCCS 310) and Pine Flatwoods (FLUCCS 411). Most of this site is dominated by saw palmetto and rusty lyonia with live oak and scattered sand live oak (Quercus geminata). Other vegetation observed included muscadine grapevine, earleaf greenbrier (Smilax auriculata), pawpaw (Asimina sp.) and American beautyberry (Callicarpa americana). No canopy exists over most of this site and evidence of the historic pine canopy (circa 2010) is limited to scattered snags. Because of the lack of fire maintenance, the shrub component is very dense with minimal herbaceous ground cover species and no observed areas of open sand. This site is mapped as having potential scrub-jay habitat by the FWC and plant species typical of scrub habitat were observed. However, a review of Brevard County's Natural Resources GIS data shows no known Florida scrub-jay areas near this pond site. In addition, the lack of fire management and subsequent density of the shrub layer resulted in no appropriate Florida scrub-jay habitat being observed within this potential pond site and this species was not observed during the onsite surveys. Additionally, no appropriate Audubon's crested caracara habitat occurs within this potential pond site and this species was not observed during the onsite surveys**.** Representative photos of this pond site are identified as Photos 23 – 26 in the attached photolog.

Pond 9 is mapped as Mixed Wetland Hardwoods (FLUCCS 617) and Vegetated Non-forested wetland (FLUCCS 640). The only available uplands consist of the northern and eastern fringes of the ponds site that are vegetated with live oak, water oak (Quercus nigra) and slash pine. The majority of the site consists of wetlands with the central portion consisting of an inundated stand of Carolina willow (Salix caroliniana). Other vegetation found throughout this pond site includes red maple, sweetgum (Liquidambar styraciflua) Virginia chain fern, leather fern, swamp fern (Telmatoblechnum serrulatum), royal fern (Osmunda regalis), muscadine grapevine, and lizard's tail (Saururus cernuus). No appropriate Florida scrub-jay or Audubon's crested caracara habitat occurs within this potential pond site and neither of these species were observed during the onsite surveys. Representative photos of this pond site are identified as Photos 27 – 30 in the attached photolog.

Conclusions

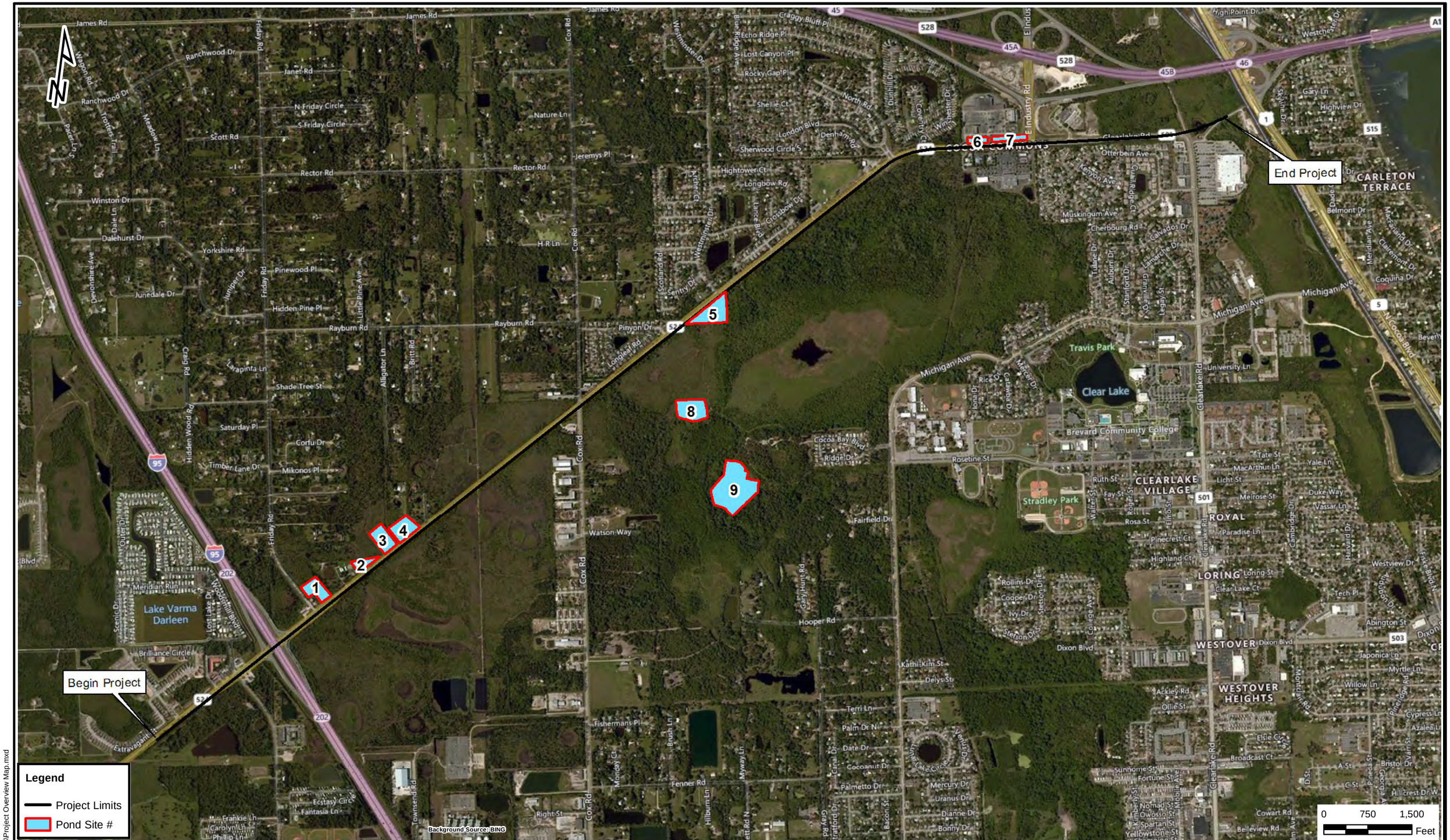
The FDOT respectfully requests your concurrence with the conclusions of our findings and that no other scrub-jay or Audubon's crested caracara survey effort will be required for this road widening project. If you have any questions or need any additional information, please do not hesitate to contact me at heather.chasez@dot.state.fl.us or via phone at (386) 943-5393

Sincerely,

Heather Chasez
Environmental Specialist IV
Project Compliance Coordinator

Attachments:

Figure 1. Project Overview Map

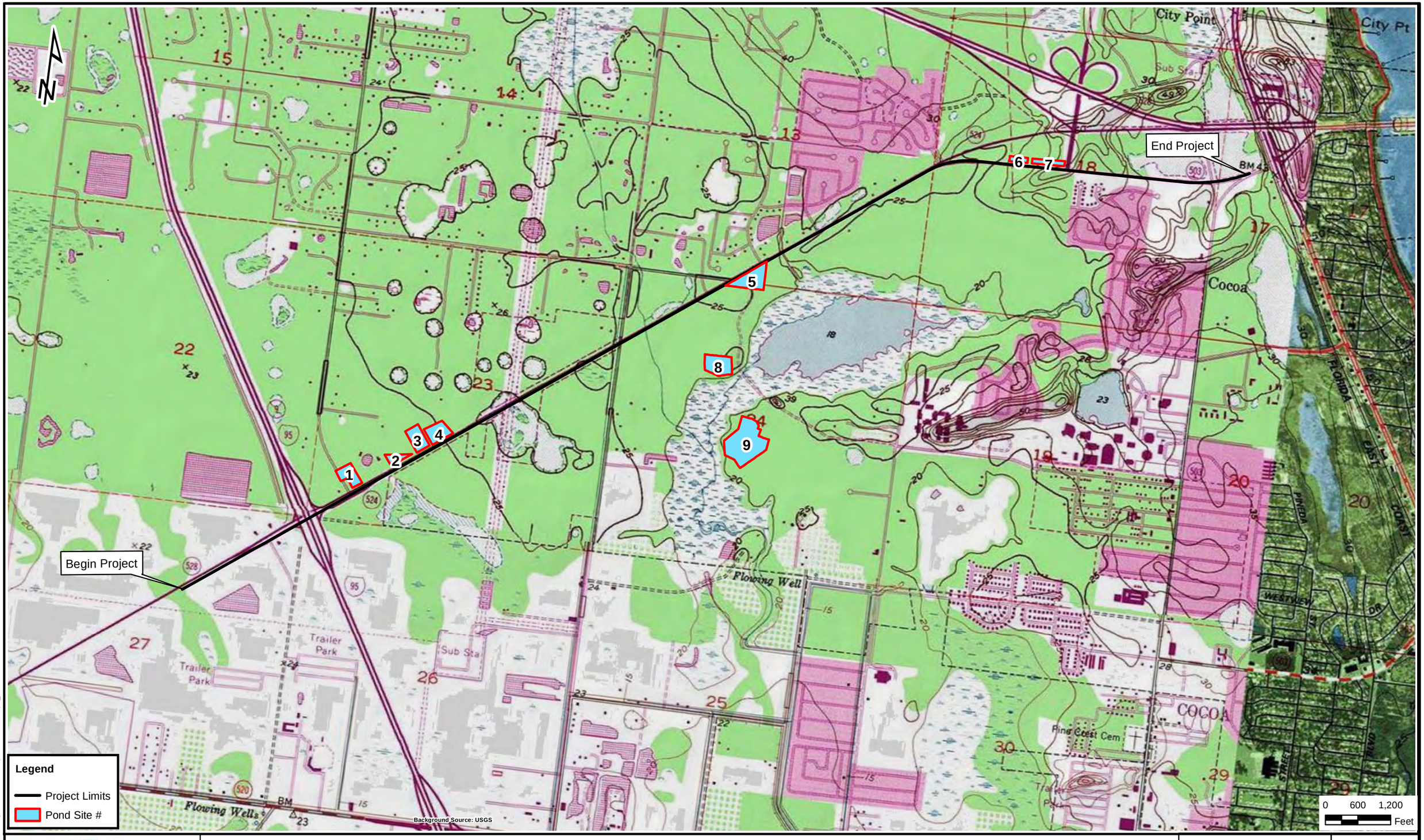


Legend

- Project Limits
- Pond Site #

FDOT	**SR 524 PD&E Study** **Pond Site Review** **Brevard County, Florida**	Project Overview Map
PROJECT NUMBER: 8-0258-001		SCALE: 1 "=1,500 '
		DATE: 7/16/2019
		FIGURE 1

G:\Projects\8-0258-001\GIS\Project Overview Map.mxd



FDOT

PROJECT NUMBER:
8-0258-001

SR 524 PD&E Study
Pond Site Review
Brevard County, FL

USGS
Topographic Map
Quad: 3607
Sharpes

SCALE: 1 "=1,600 '

DATE: 7/16/2019

FIGURE
2

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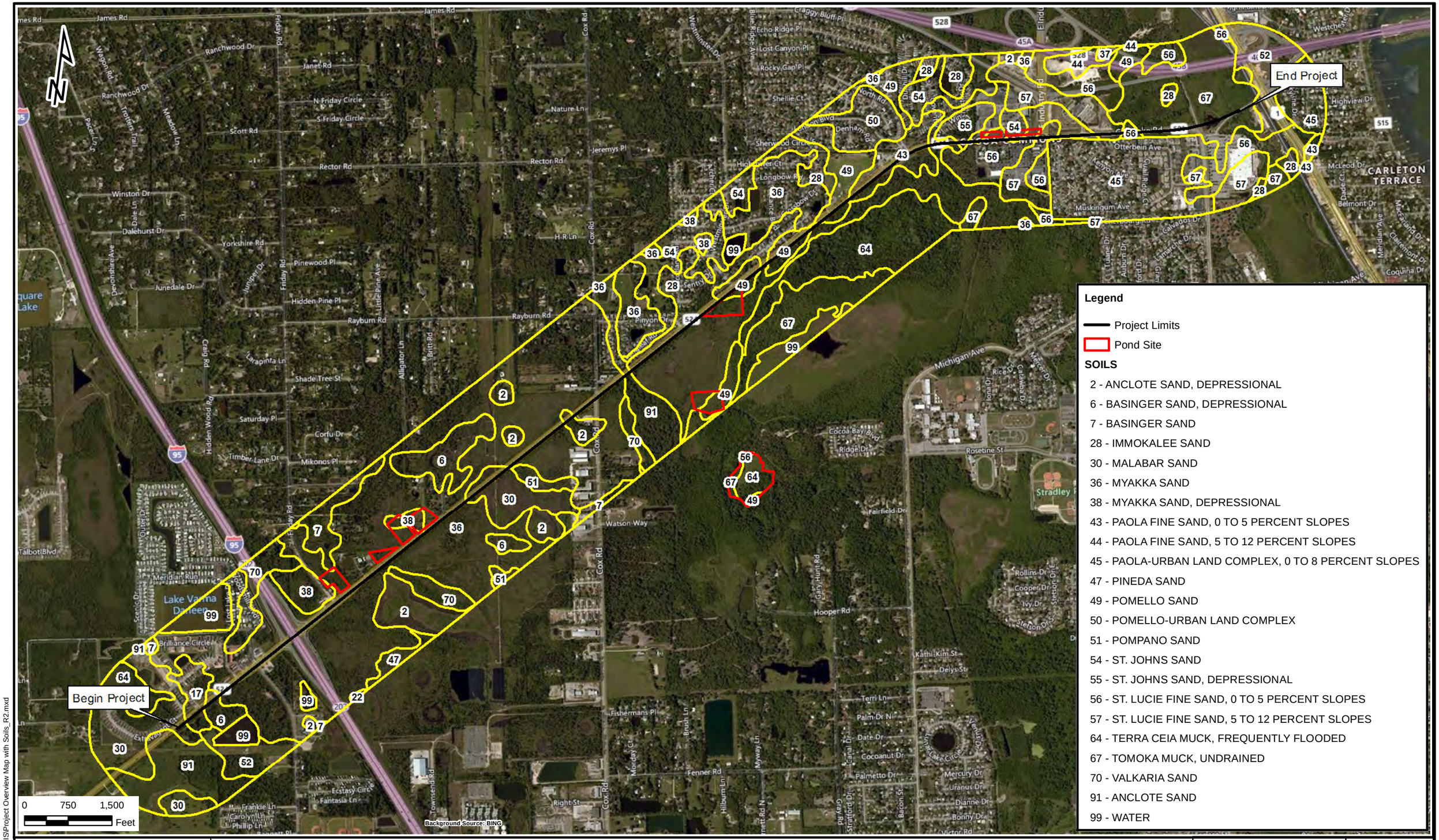


Legend

- Project Limits
- Pond Site

SOILS

- 2 - ANCLOTE SAND, DEPRESSIONAL
- 6 - BASINGER SAND, DEPRESSIONAL
- 7 - BASINGER SAND
- 28 - IMMOKALEE SAND
- 30 - MALABAR SAND
- 36 - MYAKKA SAND
- 38 - MYAKKA SAND, DEPRESSIONAL
- 43 - PAOLA FINE SAND, 0 TO 5 PERCENT SLOPES
- 44 - PAOLA FINE SAND, 5 TO 12 PERCENT SLOPES
- 45 - PAOLA-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES
- 47 - PINEDA SAND
- 49 - POMELLO SAND
- 50 - POMELLO-URBAN LAND COMPLEX
- 51 - POMPANO SAND
- 54 - ST. JOHNS SAND
- 55 - ST. JOHNS SAND, DEPRESSIONAL
- 56 - ST. LUCIE FINE SAND, 0 TO 5 PERCENT SLOPES
- 57 - ST. LUCIE FINE SAND, 5 TO 12 PERCENT SLOPES
- 64 - TERRA CEIA MUCK, FREQUENTLY FLOODED
- 67 - TOMOKA MUCK, UNDRAINED
- 70 - VALKARIA SAND
- 91 - ANCLOTE SAND
- 99 - WATER

FDOT

PROJECT NUMBER:
8-0258-001

SR 524 PD&E Study
Pond Site Review
Brevard County, Florida

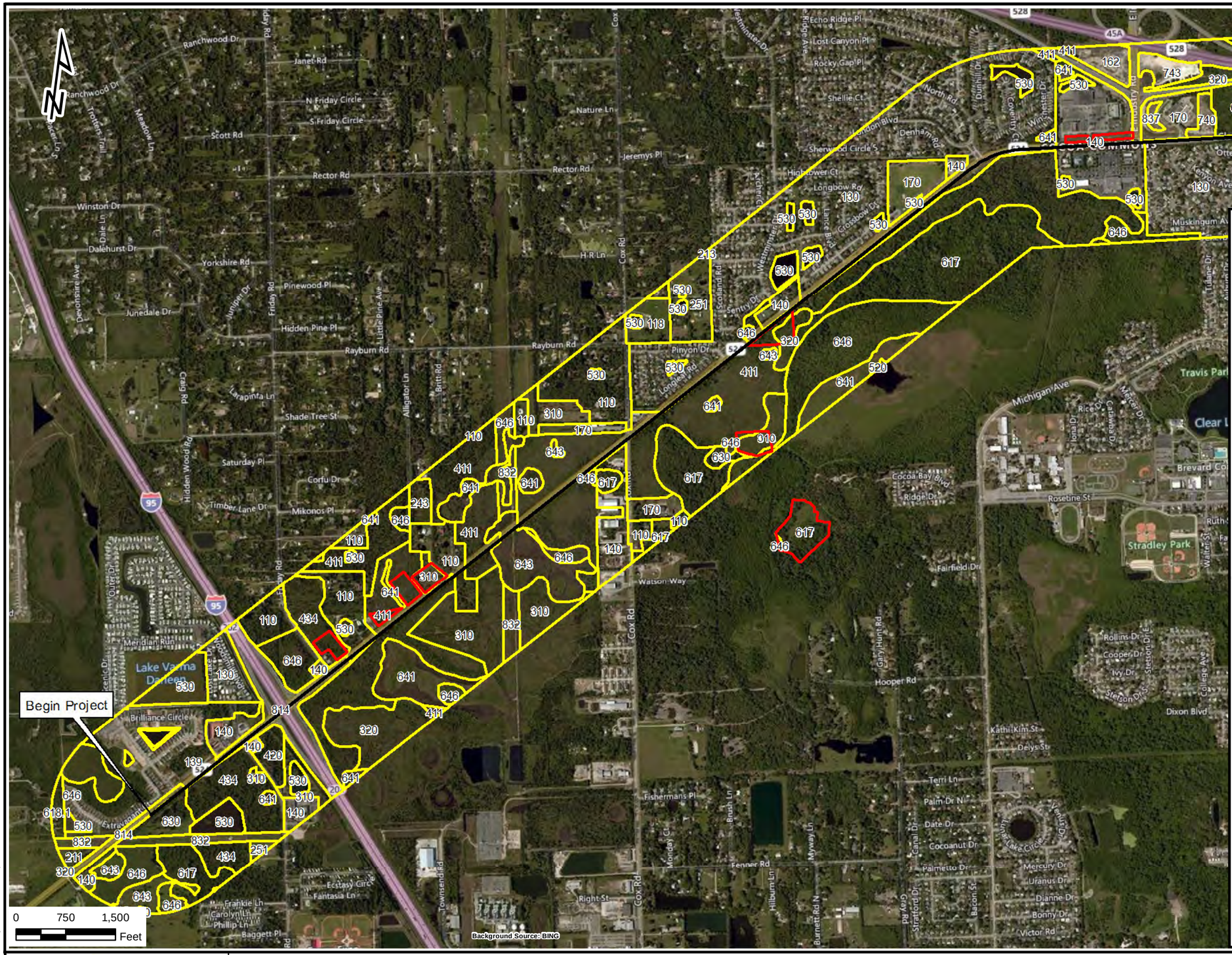
Soils Map

SCALE: 1 "=1,500 '

DATE: 7/16/2019

FIGURE
3

G:\Projects\8-0258-001\GIS\Project Overview Map with Soils_R2.mxd



Legend

- Project Limits
- Pond Site

LAND USE

- 110 - RESIDENTIAL, LOW DENSITY
- 118 - RURAL RESIDENTIAL
- 130 - RESIDENTIAL, HIGH DENSITY
- 139 - RESIDENTIAL, HIGH DENSITY UNDER CONSTRUCTION
- 140 - COMMERCIAL AND SERVICES
- 162 - SAND AND GRAVEL PITS
- 170 - INSTITUTIONAL
- 190 - OPEN LAND
- 213 - WOODLAND PASTURES
- 243 - ORNAMENTALS
- 251 - HORSE FARMS
- 310 - HERBACEOUS (DRY PRAIRIE)
- 320 - SHRUB AND BRUSHLAND
- 411 - PINE FLATWOODS
- 420 - UPLAND HARDWOOD FORESTS
- 434 - HARDWOOD - CONIFEROUS MIXED
- 520 - LAKES
- 530 - RESERVOIRS
- 617 - MIXED WETLAND HARDWOODS
- 630 - WETLAND FORESTED MIXED
- 641 - FRESHWATER MARSHES
- 643 - WET PRAIRIES
- 646 - TREELESS HYDRIC SAVANNA
- 740 - DISTURBED LAND
- 743 - SPOIL AREAS
- 814 - ROADS AND HIGHWAYS
- 832 - ELECTRICAL POWER TRANSMISSION LINES
- 837 - SURFACE WATER COLLECTION PONDS

G:\Projects\8-0258-001\GIS\Project Overview Map with Land Use.mxd

FDOT

PROJECT NUMBER:
8-0258-001

SR 524 PD&E Study
Pond Site Review
Brevard County, Florida

Land Use Map

SCALE: 1 "=1,500 '

DATE: 7/16/2019

FIGURE
4

G:\Projects\8-0258-001\GIS\Potential Scrub-jay Habitat & Playback Stations.mxd

FDOT

PROJECT NUMBER:
8-0258-001

SR 524 PD&E Study
Pond Site Review
Brevard County, Florida

Florida Scrub-Jay Habitat and Playback Station Map

SCALE: 1 "=200 '

DATE: 7/17/2019

FIGURE
5-1
of 7

G:\Projects\8-0258-001\GIS\Potential Scrub-jay Habitat & Playback Stations.mxd

FDOT

PROJECT NUMBER:
8-0258-001

SR 524 PD&E Study
Pond Site Review
Brevard County, Florida

Florida Scrub-Jay Habitat and Playback Station Map

SCALE: 1 "=200 '

DATE: 7/17/2019

FIGURE
5-2
of 7

G:\Projects\8-0258-001\GIS\Potential Scrub-jay Habitat & Playback Stations.mxd

FDOT

PROJECT NUMBER:
8-0258-001

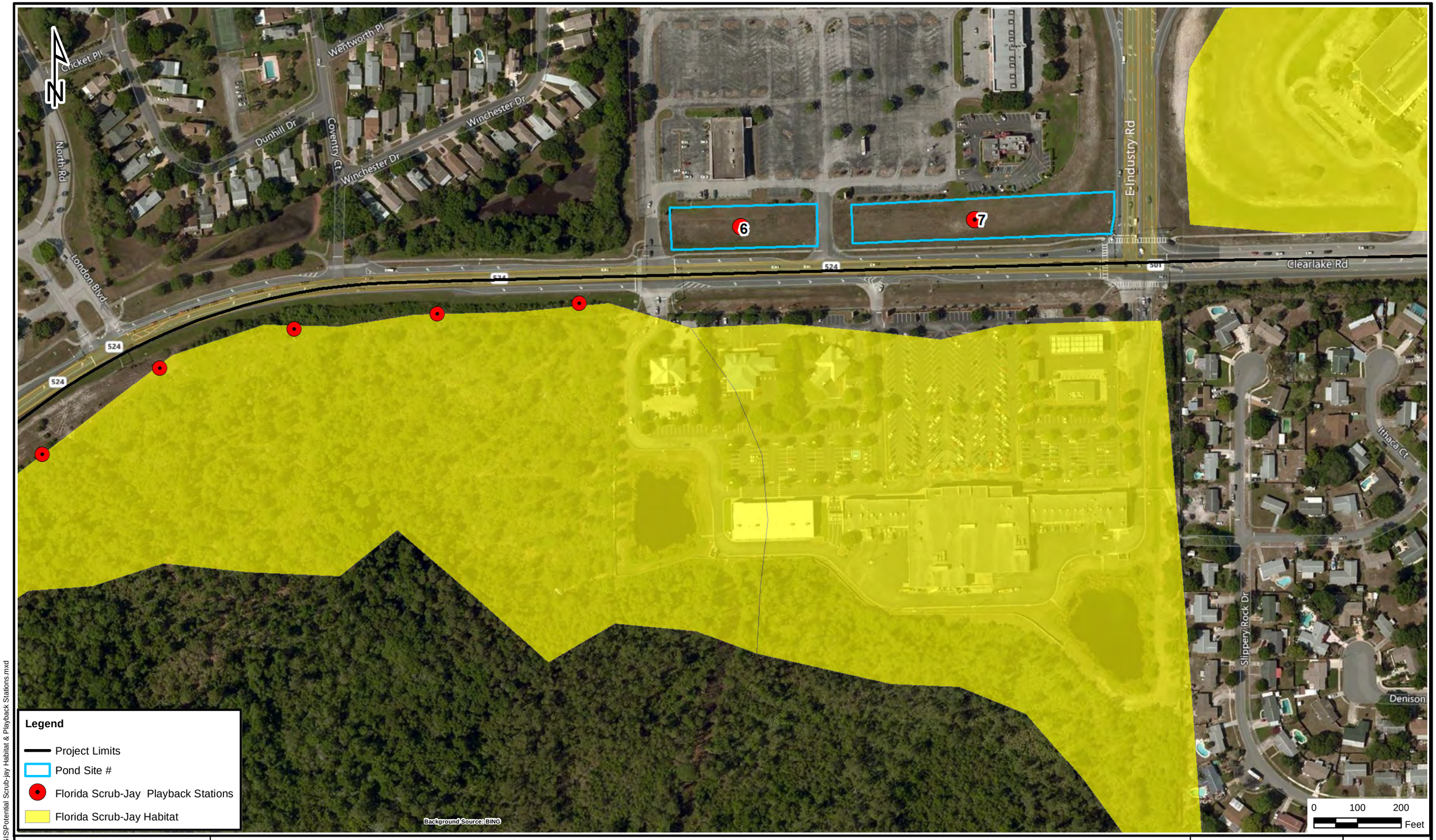
SR 524 PD&E Study
Pond Site Review
Brevard County, Florida

Florida Scrub-Jay Habitat and Playback Station Map

SCALE: 1 "=200 '

DATE: 7/17/2019

FIGURE
5-3
of 7



G:\Projects\8-0258-001\GIS\Potential Scrub-jay Habitat & Playback Stations.mxd

FDOT

PROJECT NUMBER:
8-0258-001

SR 524 PD&E Study
Pond Site Review
Brevard County, Florida

Florida Scrub-Jay Habitat and Playback Station Map

SCALE: 1 "=200 '

DATE: 7/17/2019

FIGURE
5-4
of 7

G:\Projects\8-0258-001\GIS\Potential Scrub-jay Habitat & Playback Stations.mxd

FDOT

PROJECT NUMBER:
8-0258-001

SR 524 PD&E Study
Pond Site Review
Brevard County, Florida

Florida Scrub-Jay Habitat and Playback Station Map

SCALE: 1 "=200 '

DATE: 7/17/2019

FIGURE
5-5
of 7

G:\Projects\8-0258-001\GIS\Potential Scrub-jay Habitat & Playback Stations.mxd

FDOT

PROJECT NUMBER:
8-0258-001

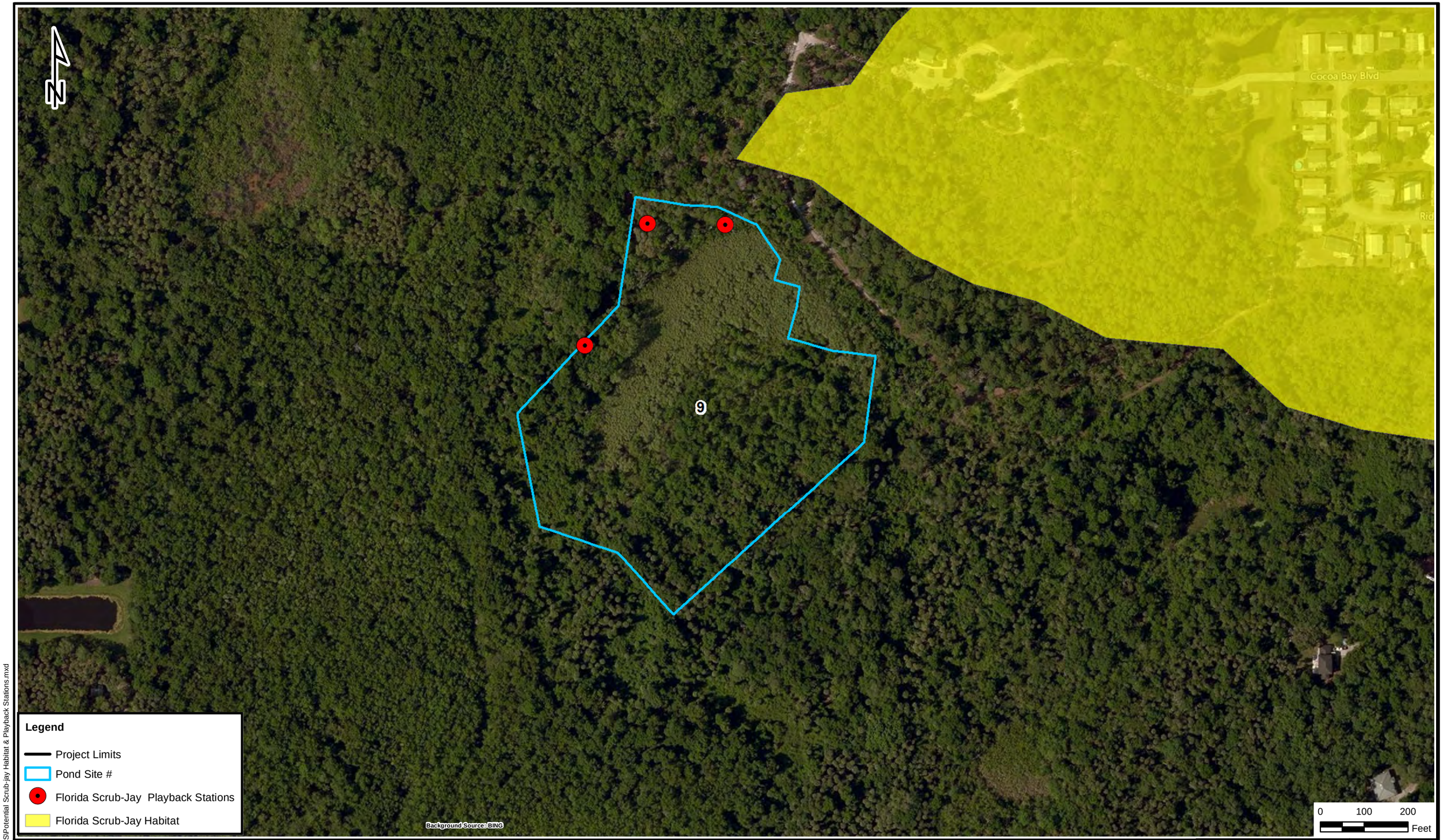
SR 524 PD&E Study
Pond Site Review
Brevard County, Florida

Florida Scrub-Jay Habitat and Playback Station Map

SCALE: 1 "=200 '

DATE: 7/17/2019

FIGURE
5-6
of 7



FDOT

PROJECT NUMBER:
8-0258-001

SR 524 PD&E Study
Pond Site Review
Brevard County, Florida

Florida Scrub-Jay Habitat and Playback Station Map

SCALE: 1 "=200 '

DATE: 7/17/2019

FIGURE 5-7 of 7

G:\Projects\8-0258-001\GIS\Potential Scrub-jay Habitat & Playback Stations.mxd

PHOTODOCUMENTATION LOG

Photo 1 – Overview of typical right-of-way

Photo 2 – Overview of typical right-of-way

PHOTODOCUMENTATION LOG

Photo 3 – Pond 1 facing North

Photo 4 – Pond 1 facing East

PHOTODOCUMENTATION LOG

Photo 5 – Pond 1 facing Southeast

Photo 6 – Pond 1 facing West

PHOTODOCUMENTATION LOG

Photo 7 – Pond 2 facing Southeast

Photo 8 – Pond 2 facing Southwest

PHOTODOCUMENTATION LOG

Photo 9 – Pond 3 facing North

Photo 10 – Pond 3 facing East

PHOTODOCUMENTATION LOG

Photo 11 – Pond 3 facing South

Photo 12 – Pond 3 facing West

PHOTODOCUMENTATION LOG

Photo 13 – Pond 4 facing Northeast

Photo 14 – Pond 4 facing East

PHOTODOCUMENTATION LOG

Photo 15 – Pond 4 facing Southeast

Photo 16 – Pond 4 facing West

PHOTODOCUMENTATION LOG

Photo 17 – Pond 5 facing North

Photo 18 – Pond 5 facing East

PHOTODOCUMENTATION LOG

Photo 19 – Pond 5 facing South

Photo 20 – Pond 5 facing West

PHOTODOCUMENTATION LOG

Photo 21 – Pond 6 facing East

Photo 22 – Pond 6 facing West

PHOTODOCUMENTATION LOG

Photo 23 – Pond 7 facing East

Photo 24 – Pond 7 facing West

PHOTODOCUMENTATION LOG

Photo 25 – Pond 8 facing North

Photo 26 – Pond 8 facing East

PHOTODOCUMENTATION LOG

Photo 27 – Pond 8 facing South

Photo 28 – Pond 8 facing West

PHOTODOCUMENTATION LOG

Photo 29 – Pond 9 facing North

Photo 30 – Pond 9 facing East

PHOTODOCUMENTATION LOG

Photo 31 – Pond 9 facing South

Photo 32 – Pond 9 facing West

Florida Department of Transportation

RON DESANTIS
GOVERNOR

719 S. W
DeLand,

Florida Ecological Services Field Office

Service Project Code No. 25-I-0021408

The U.S. Fish and Wildlife Service has reviewed the information provided and finds that the proposed action is not likely to adversely affect any federally listed species or designated critical habitat protected by the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 et. seq.). A record of this consultation is on file at the Florida Ecological Services Field Office.

This fulfills the requirements of section 7 of the Act and further action is not required. If modifications are made to the project, if additional information involving potential effects to listed species becomes available, or if a new species is listed, reinitiation of consultation may be necessary.

CATRINA MARTIN Digitally signed by CATRINA MARTIN Date: 2024.12.02 14:47:47 -06'00'

Supervisor

October 25, 2024

Zakia Williams
U.S. Fish & Wildlife Service
North Florida Ecological Services Office
7615 Baymeadows Way, Suite 200
Jacksonville, FL 32256-7517

Re: Preliminary Eastern Black Rail Habitat Suitability Evaluation
SR 524 Widening from Friday Road to Industry Road
Brevard County, Florida
FDOT FM 437983-1-22-01

Ms. Williams:

The Florida Department of Transportation (FDOT) District 5 is conducting a Project Development and Environmental Study (PD&E) to widen SR 524 from two lanes to four lanes in the City of Cocoa, Florida (Sections 13, 23, and 24; Township 24 South; Range 35 East and Section 18; Township 24 South; Range 36 East). The project length is approximately 3.22 miles, extending from west of Friday Road to Industry Road and includes four preferred pond sites (**Figures 1 – 5**).

The project is located within the United States Fish & Wildlife Service (USFWS) consultation area (CA) for the Eastern black rail (*Laterallus jamaicensis*). As a result, FDOT consultants conducted a desktop Geographic Information System (GIS) review and subsequent onsite survey to assess the suitability of potential habitat within the four preferred pond sites and the project right of way.

Methods

Prior to conducting an onsite habitat assessment, the following GIS data was used to evaluate potential habitat for the Eastern black rail.

- USFWS Consultation Area GIS data layer;
- St. Johns River Water Management District 2020 Florida Land Use, Cover and Forms Classification System (FLUCCS) data;
- United States Geological Survey 1-Meter Digital Elevation Model.

Following the GIS desktop review, an onsite survey of the project corridor including the four preferred pond site alternatives (**Figure 1**) was conducted on September 19, 2024. A scientist with previous Eastern black rail survey experience led the survey (see **Surveyor Resume**). The onsite survey was specifically focused on identifying and assessing potential Eastern black rail foraging or nesting habitats, which includes a variety of salt, brackish, and freshwater marsh habitats as well as wet prairie habitats. The two major factors for consideration in suitable Eastern black rail habitat are vegetation structure and hydrology. According to the USFWS, plant structure is considered more important than plant species composition in predicting habitat suitability. Ideal vegetation height is around three to four feet above land surface, but if shrub densities are too high, the habitat becomes less suitable. The soils of suitable habitat are moist to saturated, occasionally dry, and adjacent to very shallow water of one to two inches.

Site Descriptions and Results

The project right of way consists mainly of periodically mowed; open land (see **Photolog**) adjacent to multiple land uses **(Figures 4A-D)**. The topography of the project area and the soil types within the project area are described in **Figure 2** and **Figures 3A-3D**. The areas of right of way adjacent to potential Eastern black rail habitat were field reviewed for suitability. Of the twelve wetlands identified, only wetlands 1, 3, 10 and 11 contain potential Eastern black rail habitat. No suitable habitat for the Eastern black rail was observed within the footprint of proposed impacts or within approximately 25 feet of proposed impacts.

Pond 1A is located within Wetland 1, that is mapped as a Freshwater Marsh (FLUCCS 641) community; however, the system appears to be transitioning to a mixed scrub-shrub wetland based on the current vegetative structure. Proposed impacts to Wetland 1 include 3.87 acres of impact (**Figure 5A**). Trees within the wetland consist of scattered red maple (*Acer rubrum*), slash pine (*Pinus elliottii*), and punktree (*Melaleuca quinquenervia*). Punktree is encroaching on the remaining areas dominated solely by herbaceous groundcover. Other trees and shrubs along the perimeter include Brazilian pepper (*Schinus terebinthifolia*), Carolina willow (*Salix caroliniana*), cabbage palm (*Sabal palmetto*), dahoon holly (*Ilex cassine*), and wax myrtle (*Morella cerifera*). Herbaceous vegetation is dominated by sawgrass (*Cladium jamaicense*), softrush (*Juncus effusus*), spikerush (*Eleocharis spp.*), and whitetop sedge (*Rhynchospera colorata*). Eastern black rail habitat of very low suitability occurs within this preferred pond site. This species was not observed during the assessment. Representative photos of this preferred pond site are identified as **Photos 1 – 20** in the attached photolog.

The low suitability of Eastern black rail habitat within Pond 1A was assessed based on the following onsite observations. The herbaceous groundcover as the sole vegetative stratum occupies approximately 200 square meters of the 3.5 acres of wetland. Herbaceous groundcover contains grasses, rushes, and sedges but this groundcover does not exhibit the stem density or interspersed vegetation structure preferred by the Eastern black rail. Observations assessing the height of herbaceous vegetation demonstrated that the preferred height of 1 meter is rarely met. At the time of inspection, standing water was approximately 4-5 inches above land surface, higher than the preferred water levels for this species,

although water levels may decrease to optimal levels during the dry season. The system is bordered by major highways and roads to the south, east, and west. A high berm and adjacent ditches to the north have likely impacted hydrology by reducing the wetland hydroperiod, which could be contributing to the encroachment of invasive exotic species.

Pond 2F is located within Wetland 10, that is mapped as a Mixed Wetland Hardwoods (FLUCCS 617) and Freshwater Marsh (FLUCCS 641). Proposed impacts to Wetland 10 include 1.89 acres of impact within the preferred pond site and 0.17 acres within the right of way (**Figure 5B**). Trees in this community include bald cypress (*Taxodium distichum*), red maple, swamp bay (*Persea palustris*), red bay (*Persea borbonia*), and cabbage palm. Other vegetation included royal fern (*Osmunda regalis*), arrowhead (*Sagittaria lancifolia*), buttonbush (*Cephalanthus occidentalis*), sawgrass, and Virginia chainfern (*Woodwardia virginica*). No appropriate Eastern black rail habitat occurs within or around this preferred pond site nor within approximately 25 feet waterward of the proposed impact to Wetland 10 within the right of way. This species was not observed during the onsite survey. Representative photos of this preferred pond site are identified as **Photos 21 – 27** in the attached photolog.

Pond 3A is mapped as Commercial and Services (FLUCCS 140). This pond site is currently undeveloped open land that is maintained with periodic mowing. The habitat consists exclusively of uplands and herbaceous vegetation dominated by ragweed (Ambrosia artemisiifolia), Mexican clover (*Richardia brasiliensis*), and pasture grasses including bahiagrass (*Paspalum notatum*) and Bermudagrass (*Cynodon dactylon*). There are no trees or shrubs within the limits of this preferred pond site. No appropriate Eastern black rail habitat occurs within or around the extent of this preferred pond site and this species was not observed during the onsite survey. Representative photos of this pond site are identified as **Photos 28 – 31** in the attached photolog.

Pond 3B is mapped as Commercial and Services (FLUCCS 140). This pond site is currently undeveloped open land that is maintained with periodic mowing. The habitat consists exclusively of uplands and herbaceous vegetation that is dominated by ragweed, Mexican clover, and pasture grasses including bahiagrass and Bermudagrass. No appropriate Eastern black rail habitat occurs within or around the extent of this preferred pond site and this species was not observed during the onsite survey. Representative photos of this pond site are identified as **Photos 32 – 35** in the attached photolog.

Wetland 3 is located on the north side of the project corridor and abuts the SR 524 right of way. Wetland 3 is part of a larger wet prairie (FLUCCS 643) community that extends offsite. Herbaceous vegetation includes yellow-eyed grass (*Xyris spp.*), beaksedge (*Rhynchospora spp.*), cattail (*Typha spp.*), and bushy bluestem (*Andropogon glomeratus*). Additional vegetation observed in this wetland as it abuts the SR 524 right of way includes Carolina willow, primrose willow (*Ludwigia peruviana*), and salt bush (*Baccharis halimifolia*). While Wetland 3 does include a small emergent wetland, this community type is much further offsite and would not be impacted by this project. The proposed road widening project would only impact 0.27 acres of roadside habitat consisting of mowed vegetation and the immediately adjacent

woody wetland fringe (**Figure 5A**). No appropriate Eastern black rail habitat occurs within this proposed impact area, nor within approximately 25 feet waterward of the proposed impact, where vegetation is dominated by arrowhead. The Eastern black rail was not observed during the onsite survey. Representative photos of this wetland site are identified as **Photos 36 – 37** in the attached photolog.

Wetland 11 is located on the south side of the project corridor and abuts the SR 524 right of way. Wetland 11 is part of a larger wet prairie community that extends offsite and is bisected by a powerline easement. Herbaceous vegetation includes yellow-eyed grass, beaksedge, cattail, and bushy bluestem. Vegetation that covers the fringe of this community as it abuts the SR 524 right of way includes Carolina willow, primrose willow, and salt bush. While Wetland 11 does support a wetland prairie community of approximately 4 acres in its interior, the proposed road widening project would only impact 1.16 acres of roadside habitat consisting of mowed vegetation and the immediately adjacent woody wetland fringe (**Figure 5A**). The impact area does not extend more than approximately 25 feet from the existing paved road surface. No appropriate Eastern black rail habitat occurs within this proposed impact area, nor within approximately 25 feet waterward of the proposed impact, where vegetation is dominated by maidencane (*Panicum hemitomon*) and the water level was over one foot above land surface. The hydrology of this wetland appears to be historically impacted by the construction of multiple roads, ditches, berms and the powerline corridor, likely increasing the hydroperiod of the wetland and decreasing the suitability of potentially available habitat. The Eastern black rail was not observed during the onsite survey. Representative photos of this wetland site are identified as **Photos 38 – 39** in the attached photolog.

Wetlands 2, 5, and 12 did not contain any suitable Eastern black rail habitat adjacent to the right of way due to the presence of trees and shrubs, and lack of emergent marsh vegetation. Representative photos of these sites are identified as **Photos 40 – 46** in the attached photolog.

Conclusions

Based on the above assessment, the proposed SR 524 project is not anticipated to result in adverse effects on the Eastern black rail or their habitat. Eastern black rail habitat was limited to Wetland 1 located near the western extent of the project area within Pond 1A. The suitability of this habitat is low, due to the absence of appropriate vegetation structure, density, and height. No appropriate Eastern black rail habitat was observed in any other wetlands within the project limits, nor within approximately 25 feet waterward of the proposed wetland impacts. Therefore, a "May Affect, Not Likely to Adversely Affect" determination has been made for the Eastern black rail for this project and no additional surveys will be required for this species during the design phase of the project.

The FDOT respectfully requests your concurrence with the conclusions of our findings and that no other Eastern black rail survey effort will be required for this road widening project. If you have any questions or need any additional information, please do not hesitate to contact me at casey.lyon@dot.state.fl.us or via phone at (386) 943-5436.

Sincerely,

DocuSigned by:
Casey Lyon
3B9B80E4828F45B...

Casey Lyon, M.S.
Environmental Manager
Florida Department of Transportation – District 5

Attachments:

Figure 1. Project Overview Map
Figure 2. USGS Topographic Map
Figures 3A-3D. Soils Map
Figures 4A-4D. Land Use Map
Figures 5A-C. Eastern black rail Habitat Assessment Map
Photolog
Surveyor Resume

Begin Project

POND 1A

POND 2F

POND 3A

POND 3B

End Project

COCOA COMMONS

CLEARLAKE VILLAGE

CARLETON TERRACE

Starship Lake

Background Source: BING

Legend

- Project Limits
- Wetland Impact
- Right of Way

0 1,000 2,000 Feet

FDOT

FDOT FM # 437983-1-22-01

SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1

Brevard County, Florida

Project Overview Map

SCALE: 1 "=1,500 '

DATE: 9/24/2024

FIGURE 1

R:\Resgis\entgis\Projects_OldProjects\E_Sciences\GIS_Store\Projects\8-0258-001\GIS\NRE Revisions 2023\2. Preferred Alernatives Map.mxd

End Project

POND 3B

POND 3A

POND 2F

POND 1A

Begin Project

Legend

- Project Limits
- ROW
- Preferred Ponds

Background Source: BING

0 1,000 2,000 Feet

FDOT

FDOT FM # 437983-1-22-01

SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1

Brevard County, Florida

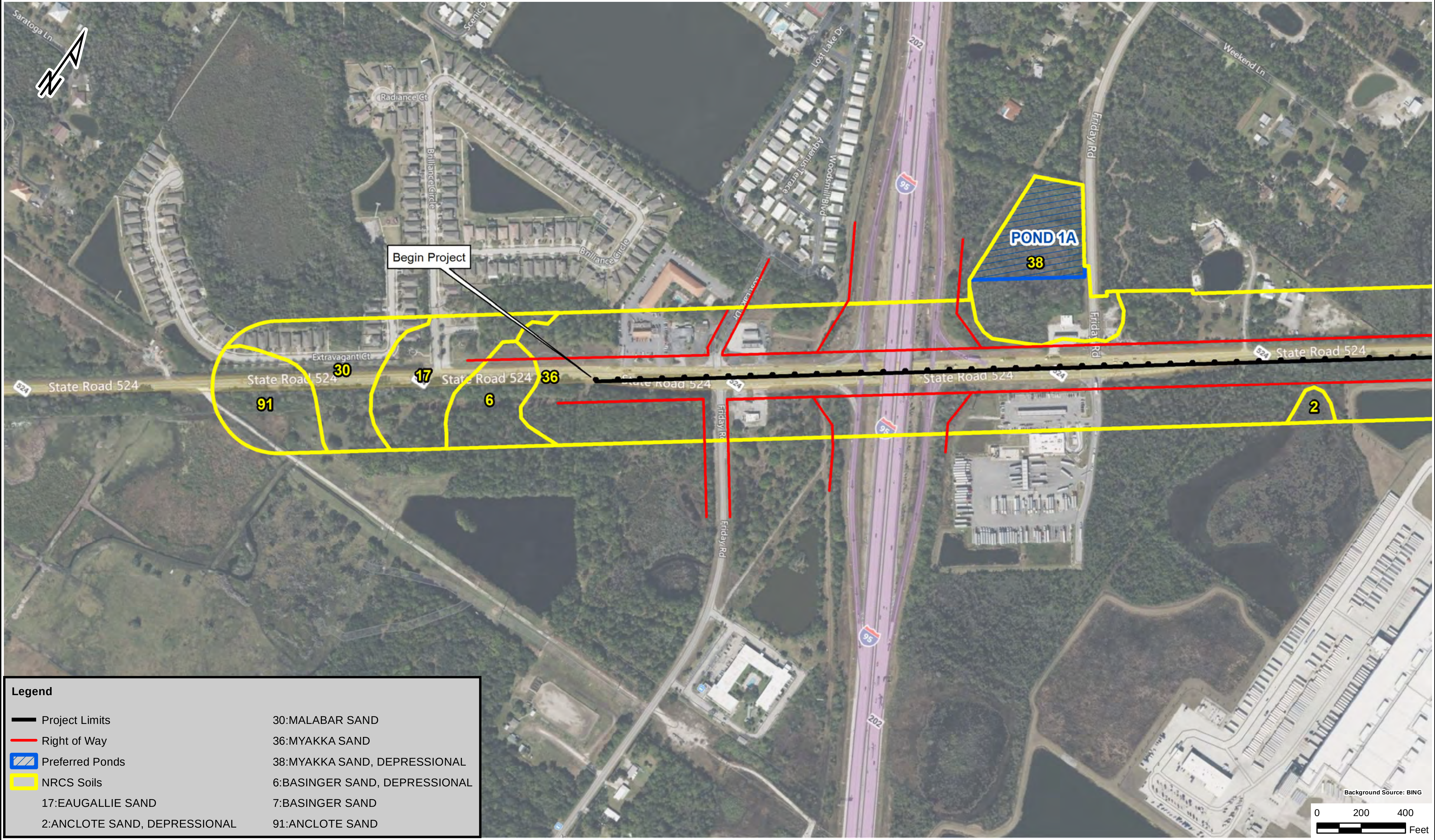
Topographic Map

SCALE: 1 "=2,000 '

DATE: 9/24/2024

FIGURE 2

R:\Resgis\entgis\Projects_Old\Projects\E_Sciences\GIS_Store\Projects\8-0258-001\GIS\NRE Revisions 2023\3.Topographic Map.mxd



Saratoga Ln
Radiance Ct
Scenic Dr
Brilliance Circle
Lost Lake Dr
Aquarius Terrace
Woodsmill Blvd
Weekend Ln
Friday Rd
202
95
POND 1A
38
Begin Project
Extravagant Ct
30
17
36
6
91
2
State Road 524
Legend
Project Limits
Right of Way
Preferred Ponds
NRCS Soils
17:EAUGALLIE SAND
2:ANCLOTE SAND, DEPRESSIONAL
30:MALABAR SAND
36:MYAKKA SAND
38:MYAKKA SAND, DEPRESSIONAL
6:BASINGER SAND, DEPRESSIONAL
7:BASINGER SAND
91:ANCLOTE SAND
Background Source: BING
0 200 400
Feet

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FDOT

FDOT FM # 437983-1-22-01

SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1
Brevard County, Florida

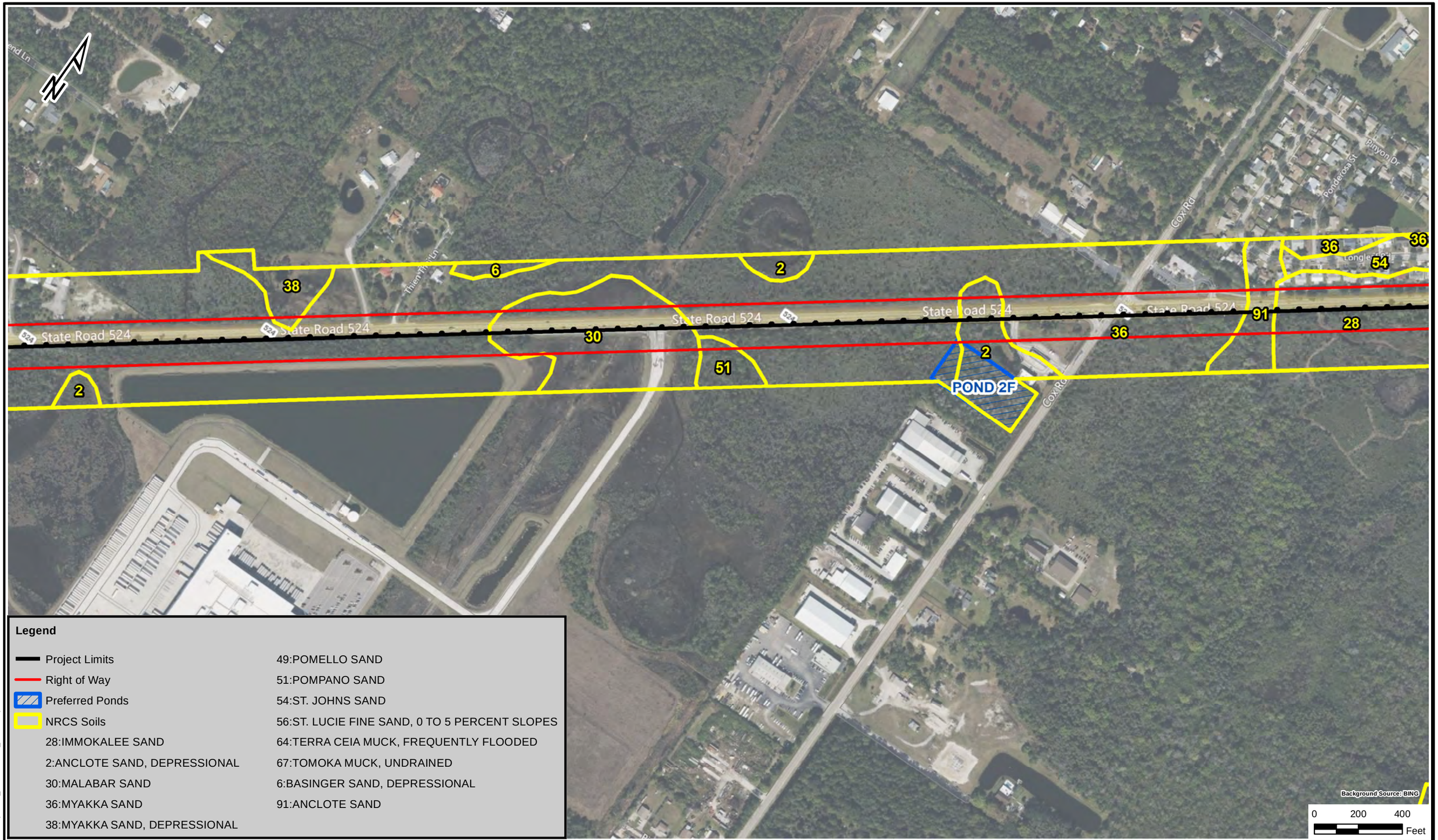
NRCS Soils Map

SCALE: 1 "=400 '

DATE: 9/24/2024

FIGURE

3A



Legend

- Project Limits
- Right of Way
- Preferred Ponds
- NRCS Soils
- 28:IMMOKALEE SAND
- 2:ANCLOTE SAND, DEPRESSIONAL
- 30:MALABAR SAND
- 36:MYAKKA SAND
- 38:MYAKKA SAND, DEPRESSIONAL
- 49:POMELLO SAND
- 51:POMPANO SAND
- 54:ST. JOHNS SAND
- 56:ST. LUCIE FINE SAND, 0 TO 5 PERCENT SLOPES
- 64:TERRA CEIA MUCK, FREQUENTLY FLOODED
- 67:TOMOKA MUCK, UNDRAINED
- 6:BASINGER SAND, DEPRESSIONAL
- 91:ANCLOTE SAND

FDOT

FDOT FM # 437983-1-22-01

SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1
Brevard County, Florida

NRCS Soils Map

SCALE: 1 "=400 '

DATE: 9/24/2024

FIGURE 3B

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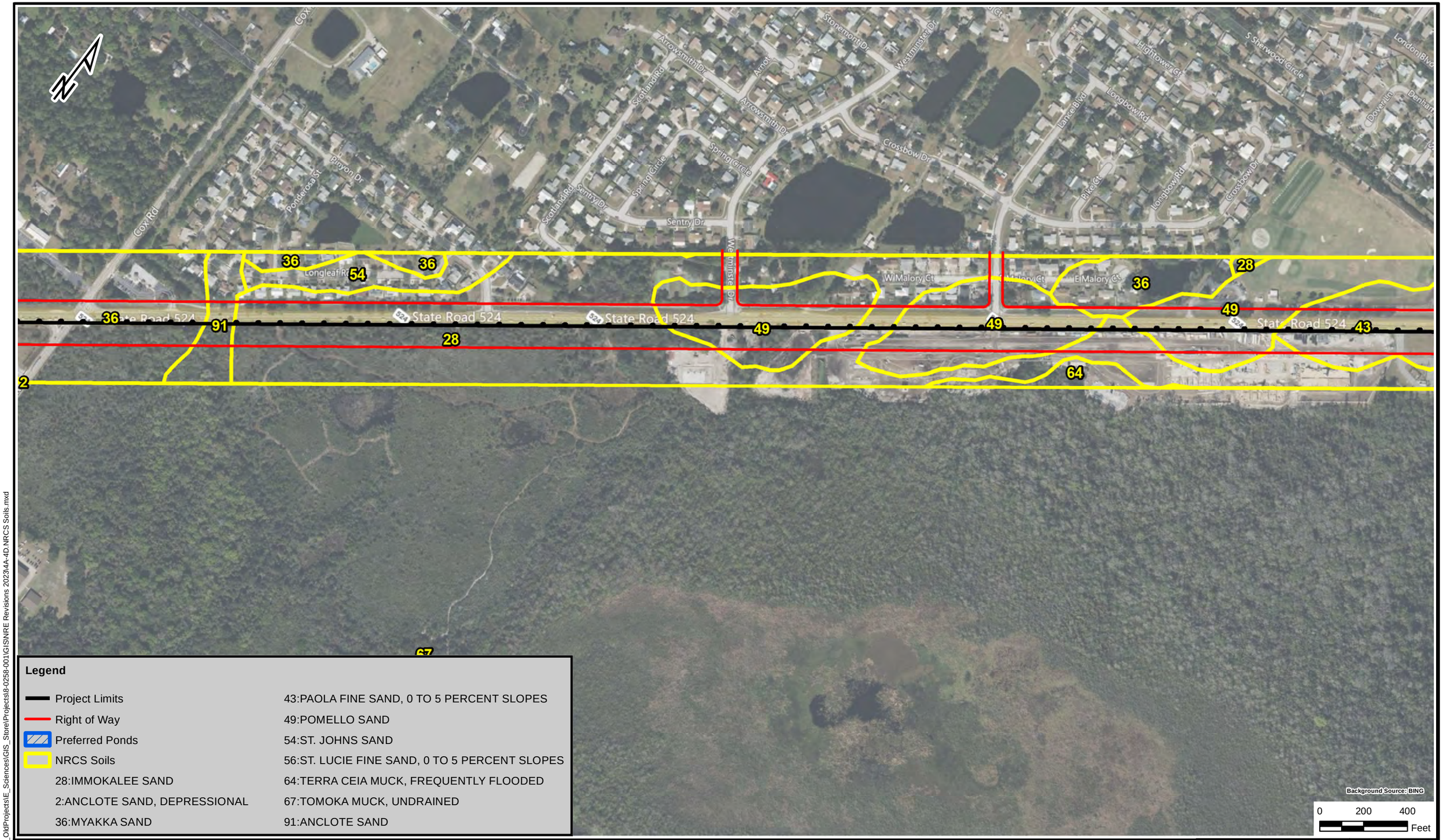

FDOT FM # 437983-1-22-01

SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1
Brevard County, Florida

NRCS Soils Map

SCALE: 1 "=400 '

DATE: 9/4/2024

FIGURE 3C

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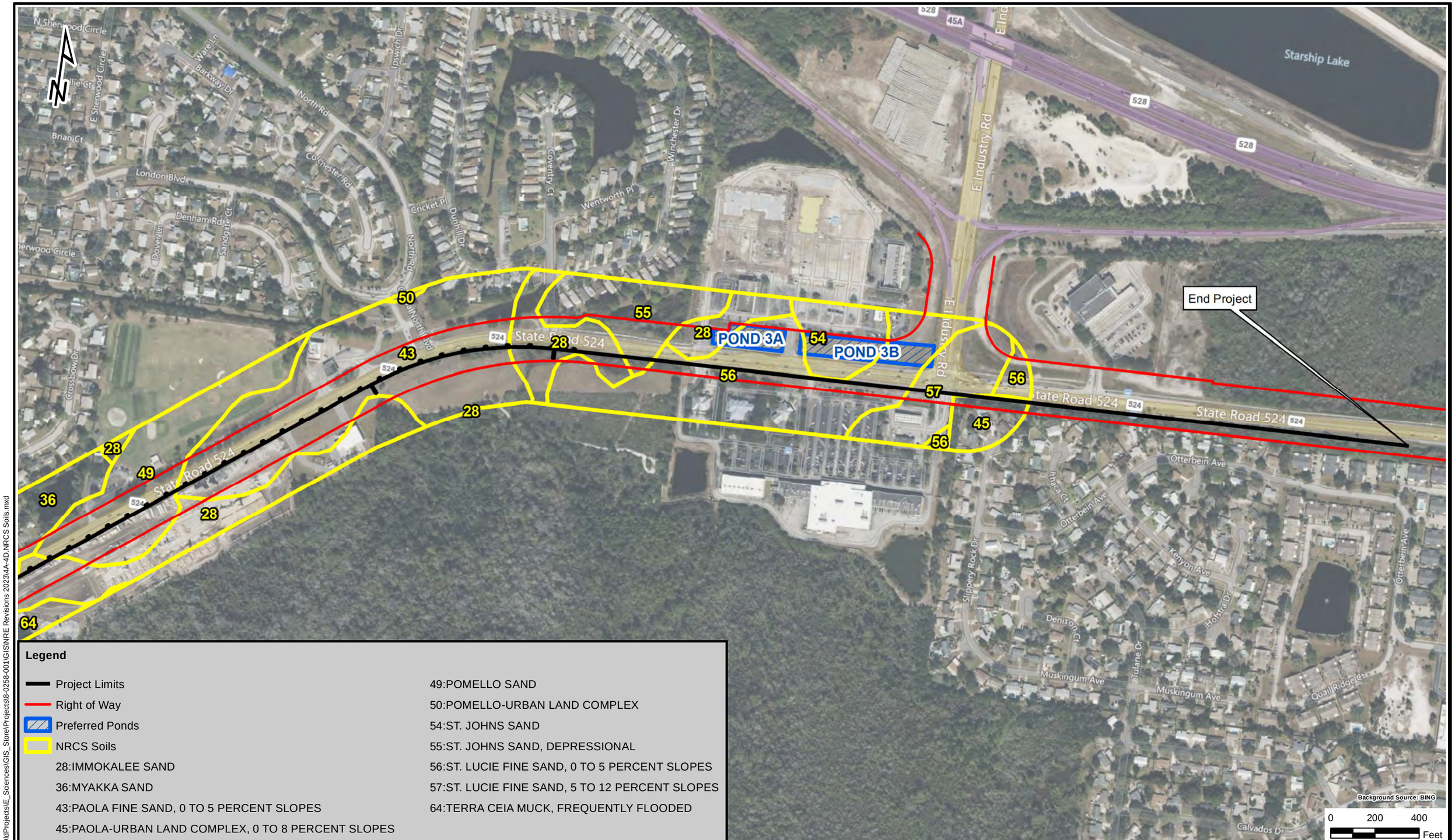

Legend

- Project Limits
- Right of Way
- Preferred Ponds
- NRCS Soils
- 28:IMMOKALEE SAND
- 36:MYAKKA SAND
- 43:PAOLA FINE SAND, 0 TO 5 PERCENT SLOPES
- 45:PAOLA-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES
- 49:POMELLO SAND
- 50:POMELLO-URBAN LAND COMPLEX
- 54:ST. JOHNS SAND
- 55:ST. JOHNS SAND, DEPRESSIONAL
- 56:ST. LUCIE FINE SAND, 0 TO 5 PERCENT SLOPES
- 57:ST. LUCIE FINE SAND, 5 TO 12 PERCENT SLOPES
- 64:TERRA CEIA MUCK, FREQUENTLY FLOODED

FDOT

FDOT FM # 437983-1-22-01

SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1
Brevard County, Florida

NRCS Soils Map

SCALE: 1 "=400 '

DATE: 9/24/2024

FIGURE 3D

R:\Resgis\entgis\Projects_OldProjects\E_Sciences\GIS_Store\Projects\8-0258-001\GIS\NRE Revisions 2023\4A-4D NRCS Soils.mxd

- Right of Way
- Pond Site
- Wetlands (Based on SJRWMD FLUCCS)

Land Use

- 110 - RESIDENTIAL, LOW DENSITY
- 118 - RURAL RESIDENTIAL
- 130 - RESIDENTIAL, HIGH DENSITY
- 139 - RESIDENTIAL, HIGH DENSITY UNDER CONSTRUCTION
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- 646 - TREELESS HYDRIC SAVANNA
- 740 - DISTURBED LAND
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- 832 - ELECTRICAL POWER TRANSMISSION LINES
- 837 - SURFACE WATER COLLECTION PONDS

FDOT

FDOT FM # 437983-1-22-01

SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1
Brevard County, Florida

Land Use Map

SCALE: 1 "=400 '

DATE: 9/24/2024

FIGURE 4A

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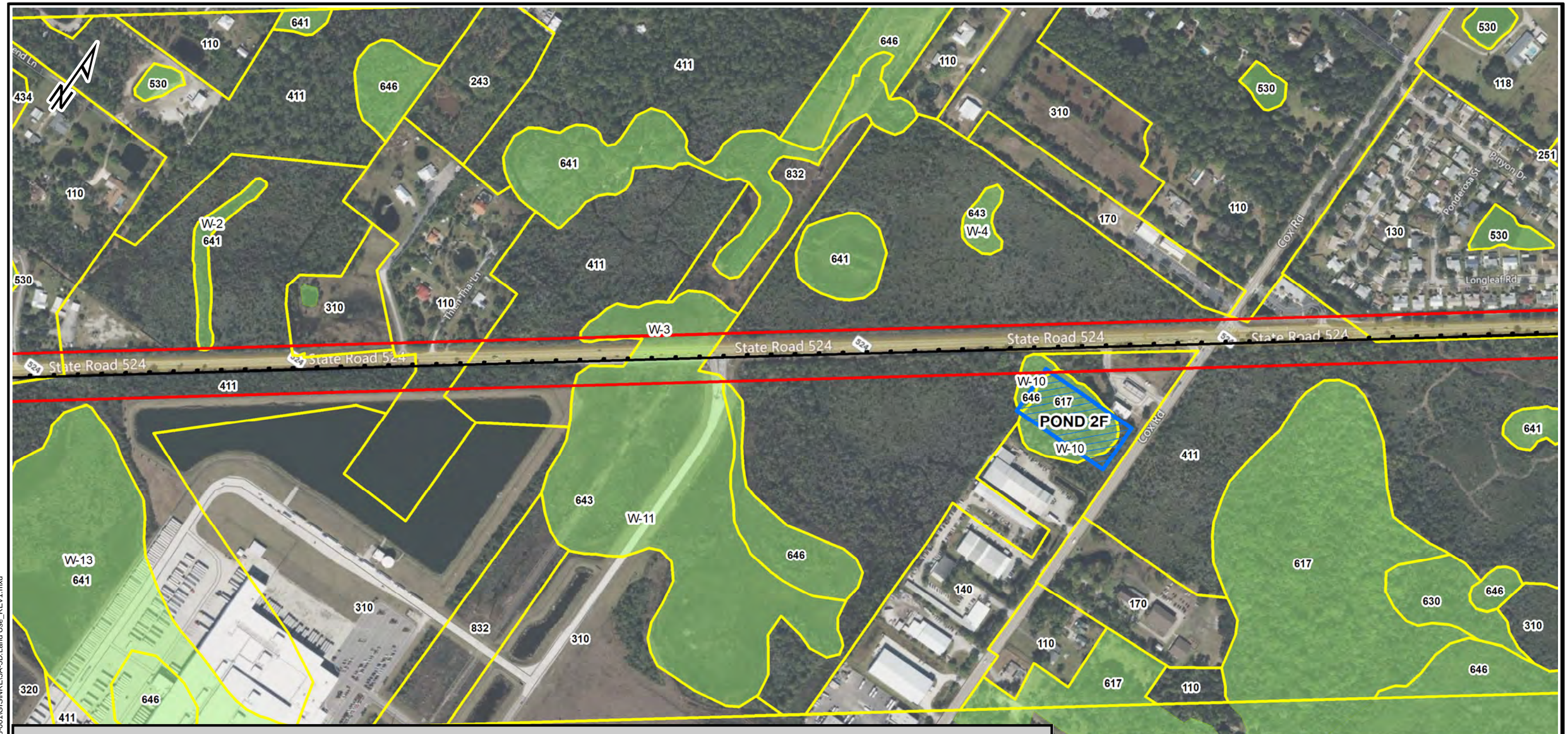

Right of Way
Pond Site
Wetlands (Based on SJRWMD FLUCCS)

Land Use

- 110 - RESIDENTIAL, LOW DENSITY
- 118 - RURAL RESIDENTIAL
- 130 - RESIDENTIAL, HIGH DENSITY
- 139 - RESIDENTIAL, HIGH DENSITY UNDER CONSTRUCTION
- 140 - COMMERCIAL AND SERVICES
- 162 - SAND AND GRAVEL PITS
- 170 - INSTITUTIONAL
- 190 - OPEN LAND
- 213 - WOODLAND PASTURES
- 243 - ORNAMENTALS
- 251 - HORSE FARMS
- 310 - HERBACEOUS (DRY PRAIRIE)
- 320 - SHRUB AND BRUSHLAND
- 411 - PINE FLATWOODS
- 420 - UPLAND HARDWOOD FORESTS
- 434 - HARDWOOD - CONIFEROUS MIXED
- 520 - LAKES
- 530 - RESERVOIRS
- 617 - MIXED WETLAND HARDWOODS
- 630 - WETLAND FORESTED MIXED
- 641 - FRESHWATER MARSHES
- 643 - WET PRAIRIES
- 646 - TREELESS HYDRIC SAVANNA
- 740 - DISTURBED LAND
- 743 - SPOIL AREAS
- 814 - ROADS AND HIGHWAYS
- 832 - ELECTRICAL POWER TRANSMISSION LINES
- 837 - SURFACE WATER COLLECTION PONDS

Background Source: BING

0 200 400 Feet

FDOT

FDOT FM # 437983-1-22-01

SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1
Brevard County, Florida

Land Use Map

SCALE: 1 "=400 '

DATE: 9/24/2024

FIGURE 4B

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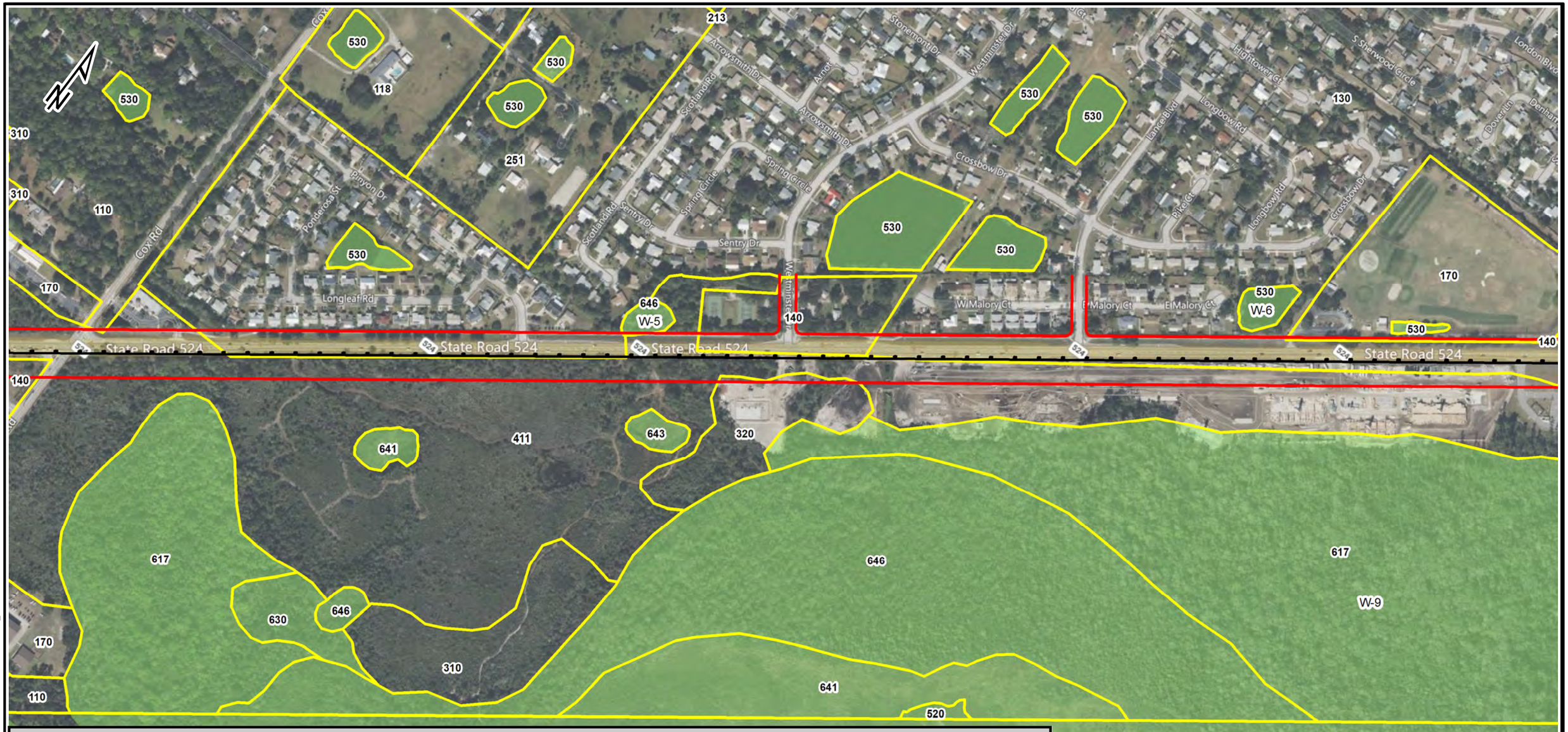

Right of Way
Pond Site
Wetlands (Based on SJRWMD FLUCCS)

Land Use

110 - RESIDENTIAL, LOW DENSITY
118 - RURAL RESIDENTIAL
130 - RESIDENTIAL, HIGH DENSITY
139 - RESIDENTIAL, HIGH DENSITY UNDER CONSTRUCTION
140 - COMMERCIAL AND SERVICES
162 - SAND AND GRAVEL PITS
170 - INSTITUTIONAL
190 - OPEN LAND
213 - WOODLAND PASTURES
243 - ORNAMENTALS
251 - HORSE FARMS
310 - HERBACEOUS (DRY PRAIRIE)
320 - SHRUB AND BRUSHLAND
411 - PINE FLATWOODS
420 - UPLAND HARDWOOD FORESTS
434 - HARDWOOD - CONIFEROUS MIXED
520 - LAKES
530 - RESERVOIRS
617 - MIXED WETLAND HARDWOODS
630 - WETLAND FORESTED MIXED
641 - FRESHWATER MARSHES
643 - WET PRAIRIES
646 - TREELESS HYDRIC SAVANNA
740 - DISTURBED LAND
743 - SPOIL AREAS
814 - ROADS AND HIGHWAYS
832 - ELECTRICAL POWER TRANSMISSION LINES
837 - SURFACE WATER COLLECTION PONDS

Background Source: BING

0 200 400 Feet

FDOT

FDOT FM # 437983-1-22-01

SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1
Brevard County, Florida

Land Use Map

SCALE: 1 "=400 '

DATE: 9/24/2024

FIGURE 4C

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POND 3A

POND 3B

End Project

State Road 524

Starship Lake

E Industry Rd

Right of Way

Pond Site

Wetlands (Based on SJRWMD FLUCCS)

Land Use

110 - RESIDENTIAL, LOW DENSITY
118 - RURAL RESIDENTIAL
130 - RESIDENTIAL, HIGH DENSITY
139 - RESIDENTIAL, HIGH DENSITY UNDER CONSTRUCTION
140 - COMMERCIAL AND SERVICES
162 - SAND AND GRAVEL PITS
170 - INSTITUTIONAL
190 - OPEN LAND
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740 - DISTURBED LAND
743 - SPOIL AREAS
814 - ROADS AND HIGHWAYS
832 - ELECTRICAL POWER TRANSMISSION LINES
837 - SURFACE WATER COLLECTION PONDS

Background Source: BING

0 200 400 Feet

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FDOT

FDOT FM # 437983-1-22-01

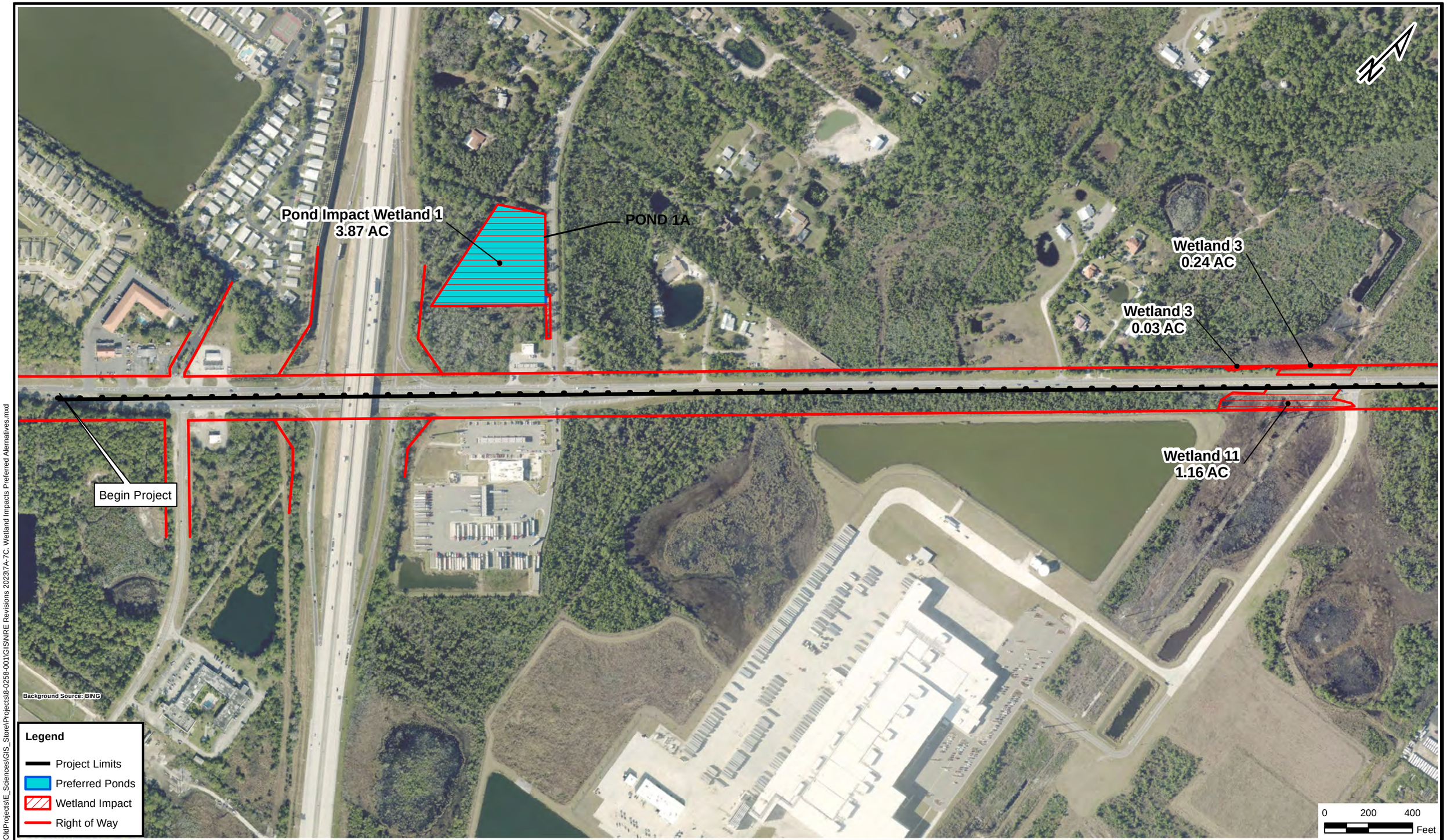
SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1
Brevard County, Florida

Land Use Map

FIGURE 4D

SCALE: 1 "=400 '

DATE: 9/24/2024



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FDOT

FDOT FM # 437983-1-22-01

SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1

Brevard County, Florida

Eastern Black Rail Habitat Assessment Map

SCALE: 1 "=400 '

DATE: 9/24/2024

FIGURE 5A

POND 2D

Wetland 10
0.17 AC

Pond Impact Wetland 10
1.89 AC

POND 2F

Background Source: BING

Legend

- Project Limits
- Preferred Ponds
- Wetland Impact
- Right of Way

0 200 400 Feet

R:\Resgis\entgis\Projects_OldProjects\E_Sciences\GIS_Store\Projects\8-0258-001\GIS\NRE Revisions 20237A-7C. Wetland Impacts Preferred Alternatives.mxd

FDOT

FDOT FM # 437983-1-22-01

SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1

Brevard County, Florida

Eastern Black Rail Habitat Assessment Map

SCALE: 1 "=400 '

DATE: 9/24/2024

FIGURE

5B

POND 3A

POND 3B

End Project

0 200 400 Feet

Background Source: BING

Legend

- Project Limits
- Preferred Ponds
- Wetland Impact
- Right of Way

FDOT

FDOT FM # 437983-1-22-01

SR 524 Widening from Friday Rd. to Industry Rd. PD&E Study
Natural Resource Evaluation FPID# 437983-1

Brevard County, Florida

Eastern Black Rail Habitat Assessment Map

SCALE: 1 "=400 '

DATE: 9/24/2024

FIGURE

5C

R:\Resgis\entgis\Projects_Old\Projects\E_Sciences\GIS_Store\Projects\8-0258-001\GIS\NRE Revisions 2023\7A-7C. Wetland Impacts Preferred Alernatives.mxd

Photo 01

Pond 1A, roadside edge, facing northwest from Friday Rd

Photo 02

Pond 1A, roadside edge, facing southwest from Friday Rd

Photo 03

Pond 1A, 3 meters into woody fringe, facing west

Photo 04

Pond 1A, 6 meters into woody fringe, facing west

Photo 05

Pond 1A, approaching interior emergent marsh and potential rail habitat, facing west

Photo 06

Pond 1A, site center, facing north

Photo 07

Pond 1A, site center, facing east

Photo 08

Pond 1A, site center, facing south

Photo 09

Pond 1A, site center, facing west

Photo 10

Pond 1A, center of potential habitat, facing west

Photo 11

Pond 1A, eastern sawgrass edge, facing south

Photo 12

Pond 1A, eastern sawgrass edge, facing north

Photo 13

Pond 1A, potential habitat spike rush representative density

Photo 14

Pond 1A, potential habitat sawgrass representative density

Photo 15

Pond 1A, potential habitat representative vegetation height

Photo 16

Pond 1A, potential habitat representative vegetation height

Photo 17

Pond 1A, woody encroachment into potential habitat (Punk tree and mixed shrubs)

Photo 18

Pond 1A, woody encroachment into potential habitat (Punk tree and mixed shrubs)

Photo 19

Pond 1A, spike rush inundation

Photo 20

Pond 1A, sawgrass inundation

Photo 21

Pond 2F, roadside edge of SR 524, facing northeast

Photo 22

Pond 2F, roadside edge of SR 524, facing southwest

Photo 23

Pond 2F, representative interior woody vegetation

Photo 24

Pond 2F, interior, facing north

Photo 25

Pond 2F, interior, facing east

Photo 26

Pond 2F, interior, facing south

Photo 27

Pond 2F, interior, facing west

Photo 28

Pond 3A, facing north

Photo 29

Pond 3A, facing east

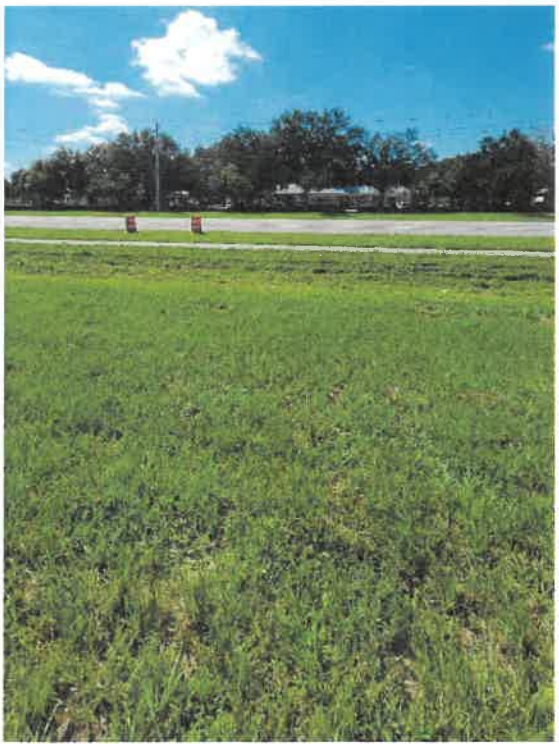

Photo 30

Pond 3A, facing south

Photo 31

Pond 3A, facing west

Photo 32

Pond 3B, facing north

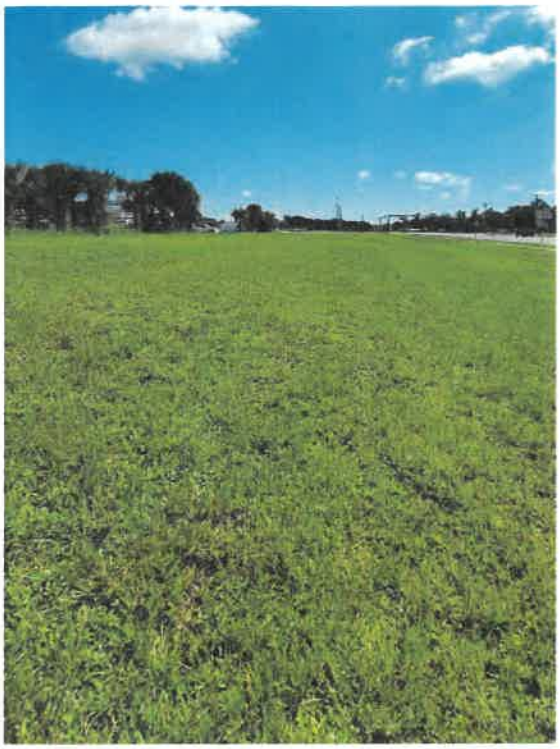

Photo 33

Pond 3B, facing east

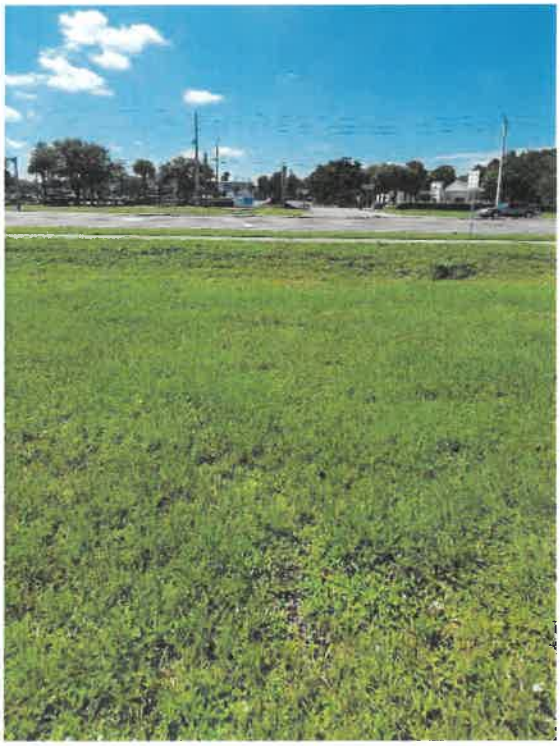

Photo 34

Pond 3B, facing south

Photo 35

Pond 3B, facing west

Photo 36

Wetland 3, roadside mowed area and adjacent woody fringe, facing southwest

Photo 37

Wetland 3, roadside mowed area and adjacent woody fringe, facing northeast

Photo 38

Wetland 11, roadside mowed area and adjacent woody wetland fringe, facing northeast

Photo 39

Wetland 11, roadside mowed area and adjacent woody wetland fringe, facing southwest

Photo 40

Wetland 2, facing northeast

Photo 41

Wetland 2, facing northwest

Photo 42

Wetland 5, facing southwest

Photo 43

Wetland 5, facing northeast

Photo 44

Wetland 12, facing northeast

Photo 45

Wetland 12, facing southwest

Photo 46

Wetland 12, facing southeast

Andrew Townsend, MS

Mid-Level Scientist II

Mr. Townsend is a scientist with experience in the ecological and environmental sciences, including wildlife biology, habitat management, and spatial analysis. He has a strong background in coordinating complex field projects and working directly with various stakeholders to achieve project goals and ensure timely delivery of deliverables. His ecological experience spans wildlife and visitor management, invasive species monitoring and control, endangered species surveys, and wetland restoration and delineation. Additionally, he has expertise in prescribed fire management, remote monitoring using trail cameras and other devices, and conducting extensive fieldwork in challenging environments. He has experience working with multiple imperiled and protected species including: the eastern black rail, northern spotted owl, Florida key deer, gopher tortoise, Anegada iguana, piping plover, and American oystercatcher.

Mr. Townsend is proficient in geospatial technologies and data analysis, including the use of ArcGIS software, geospatial analysis and modeling, web-based mapping, and spatial data management. He has also contributed to environmental efforts involving habitat restoration, wildlife conservation planning, and ecological risk assessments. His skill set is complemented by advanced knowledge in scripting with R and Python, as well as statistical analysis and spatial modeling, making him a valuable asset in environmental and conservation projects.

AT A GLANCE.

Email
atownsend@res.us | (689) 698-5728

Years of Experience
10 years

Education

- BA, Geography (Biogeography), University of Texas at Austin
- MS, Geography (Spatial Ecology), Pennsylvania State University

Certificates | Licenses

- FWC Authorized Gopher Tortoise Agent – Application Pending
- FWS Certified Motorboat Operator (MOCC)
- FWC Certified Airboat Operator
- FWC Certified Safe Boater

SELECTED WORK EXPERIENCE

Florida Gas Transmission Hydrotest Support and Pipeline Management, Multiple Counties, Florida

Mr. Townsend performs ecological and contaminated site evaluations for proposed pipeline anomaly dig areas. Site evaluations include desktop GIS analysis, field evaluation of wetlands and listed species within the proposed construction areas, GPS data collection, and reporting.

West Florida Aggregates Engineering Support, Hernando County, Florida

Mr. Townsend assisted with multiple wetland delineations for onsite reference and target wetlands in accordance with the SWFWMD Wetland Assessment Procedure (WAP). Support included soil assessment, review of historical and modern aerial photographs, vegetative monitoring, data collection, and reporting.

Valkaria Airport Scrub-Jay Potential Mitigation Site, Brevard County, Florida

Mr. Townsend assisted in providing ecological support for the Valkaria Airport project, including conducting a potential mitigation site assessment, a gopher tortoise survey, and performing GIS analysis and mapping.

SR 524 Widening from Friday to Industry Rd, FDOT District Five, City of Cocoa, Brevard County, Florida

Mr. Townsend is providing ecological assessment and permitting support for the SR 524 widening project. He performed protected species habitat assessments, as well as assisted with data collection and reporting.

Lake Saunders ERP, Atlantic Housing Partners LLLC, City of Ormond Beach, Volusia County, Florida

Mr. Townsend provided ecological assessment/permitting and environmental due diligence support for the Lake Saunders development project. Additional support included GIS mapping and reporting.

Mid Coast Aggregates Mazak Limerock Mine, Sumter County, Florida

Mr. Townsend assisted with wetland monitoring for onsite reference wetlands in accordance with the SWFWMD Wetland Assessment Procedure (WAP). Support included soil assessment, review of historical and modern aerial photographs, vegetative monitoring, data collection, and reporting.

PROFESSIONAL LICENSES / CERTIFICATIONS

- FWC Authorized Gopher Tortoise Agent Training
- FWS Motorboat Operator (MOCC) Training
- FWC Airboat Operator Training
- FWC Safe Boater Training
- Defensive Driving Awareness Training
- CPR and First-Aid

PUBLICATIONS / PRESENTATIONS / AWARDS

Townsend, A. T., Bishop, J. A., Serfass, T. L., Brooks, R. P. 2020. Mesopredator Community Dynamics along a Gradient of Landscape Disturbance in Riparian Corridors of Central Pennsylvania, USA. Canadian Wildlife Biology and Management (Volume 9, Issue 2).

PREVIOUS WORK HISTORY

Fish and Wildlife Technician, Florida Fish and Wildlife Conservation Commission, Titusville, FL (04/2024 – 07/2024)

Surveyed for threatened Black Rails using call point surveys and by deploying passive remote monitoring units (ARUs) throughout the upper St. Johns River basin. Conducted over fifty call-back survey (discrete routes) for this elusive species in a variety of emergent marsh habitats. Assisted with the deployment of ARUs at forty-eight locations throughout a single study location, in addition to deploying ten additional ARUs across the study region. Evaluated black rail habitat variables and preferences based on available detections. This was a seasonal/term position, which ended in late July of 2024.

Lead Visitor Use Monitoring Technician, National Park Service, Estes Park, CO (04/2023 – 10/2023)

Served as the field lead for the Continental Divide Research Learning Center's Visitor Use Monitoring Program at Rocky Mountain National Park. Responsible for monitoring and analyzing traffic volumes and patterns, assessing the frequency of trail use, mapping human use groundcover impacts, documenting viewpoint and trail capacity levels, and evaluating wilderness character compliance. Supervised 2 program interns and 12 regular volunteers. This was a seasonal/term position, which ended in October of 2023.

Biological Science Technician, Bureau of Land Management, Medford, OR (04/2022 – 10/2022)

Responsible for conducting auditory and visual surveys for nesting Northern Spotted Owls, throughout south-central Oregon, using a variety of methods (e.g., night road-side surveys, passive auditory monitoring, nest site walking surveys), assessing and mapping timber stands slotted for commercial logging, and ensuring Endangered Species Act compliance for this threatened species. This was a seasonal/term position, which ended in April of 2022.

Biological Data Scientist, Florida Fish and Wildlife Conservation Commission, Gainesville, FL (01/2021 – 04/2022)

Collected, compiled, and processed nesting colony data from across the state, launched and maintained a new central Wading Bird Colony Geodatabase for these data, and used this database to conduct a prioritization analysis tasked with identifying the highest priority wading bird colonies in need of conservation action. This was a seasonal/term position, which ended in April of 2022.

Interim Biologist, US Fish and Wildlife Service, Big Pine Key, FL (03/2019 – 12/2019)

Charged with managing wildlife populations in the Florida Keys by managing existing contracts and research grants, coordinating and implementing prescribed fire rotations, maintaining refuge geospatial databases, meeting with local stakeholders and other agencies, and ensuring effective species and habitat conservation plan implementation. Supervised 6 regular volunteers. This was a seasonal/term position, which ended in December of 2019.

Fish and Wildlife Biological Scientist, Florida Fish and Wildlife Conservation Commission, Sunrise, FL (08/2017 – 03/2019)

Charged with managing wildlife populations and their habitats in the Florida Everglades via prescribed fires, invasive species management, water level/quality monitoring, and wildlife surveys, and interacted regularly with the general public and hunting stakeholders.

Fish and Wildlife Technician, Florida Fish and Wildlife Conservation Commission, Gainesville, FL (03/2017 – 08/2017)

Responsible for locating and monitoring local wildlife species along Florida's Nature Coast, specifically nesting shorebird populations (American Oystercatchers) and predatory animal occurrences at nesting sites, using camera traps and nest

mapping. Identified target shorebird species and their predators by sight and sound and recorded predation events. This was a seasonal/term position, which ended in August of 2017.

Biological Science Technician, National Park Service, Brooklyn, NY (05/2016 – 10/2016)

Responsible for identifying and monitoring local wildlife species and nesting shorebird populations (e.g., Piping Plovers), interacting with park patrons, and ensuring park visitors followed the park rules and regulations. This was a seasonal/term position, which ended in October of 2016.

Biological Data Scientist, Florida Fish and Wildlife Conservation Commission, Tallahassee, FL (11/2014 – 02/2016)

Provided GIS and spatial science support for the Peninsular Florida Landscape Conservation Cooperative. Designed and launched a GIS conservation planning atlas to help disseminate environmental data to managers. Limited term position (2 years). This was a seasonal/term position, which ended in February of 2016.

Florida Department of Transportation

RICK SCOTT
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

MIKE DEW
SECRETARY

ETDM Summary Report

Project #14321 - SR 524 (Friday Rd to Industry Rd)

Preliminary Programming Screen - Published on 02/09/2018

Generated by Kathaleen Linger (on behalf of FDOT District 5)

Printed on: 2/09/2018

Table of Contents

Introduction to Programming Screen Summary Report

The Programming Screen Summary Report shown below is a read-only version of information contained in the Programming Screen Summary Report generated by the ETDM Coordinator for the selected project after completion of the ETAT Programming Screen review. The purpose of the Programming Screen Summary Report is to summarize the results of the ETAT Programming Screen review of the project; provide details concerning agency comments about potential effects to natural, cultural, and community resources; and provide additional documentation of activities related to the Programming Phase for the project. Available information for a Programming Screen Summary Report includes:

- Screening Summary Report chart
- Project Description information (including a summary description of the project, a summary of public comments on the project, and community-desired features identified during public involvement activities)
- Purpose and Need information (including the Purpose and Need Statement and the results of agency reviews of the project Purpose and Need)
- Alternative-specific information, consisting of descriptions of each alternative and associated road segments; an overview of ETAT Programming Screen reviews for each alternative; and agency comments concerning potential effects and degree of effect, by issue, to natural, cultural, and community resources.
- Project Scope information, consisting of general project recommendations resulting from the ETAT Programming Screen review, permits, and technical studies required (if any)
- Class of Action determined for the project
- Dispute Resolution Activity Log (if any)

The legend for the Degree of Effect chart is provided in an appendix to the report.

For complete documentation of the project record, also see the GIS Analysis Results Report published on the same date as the Programming Screen Summary Report.

#14321 SR 524 (Friday Rd to Industry Rd)

District: District 5
County: Brevard
Planning Organization: FDOT District 5
Plan ID: Not Available
Federal Involvement: FHWA Funding Other Federal Permit

Phase: Programming Screen
From: Friday Rd.
To: Industry Rd.
Financial Management No.: 437983-1-22-01

Contact Information: Heather Grubert 386-943-5540 Heather.Grubert@dot.state.fl.us
Project Web Site: http://www.cflroads.com/project/437983-1/SR_524_Corridor_Planning_Study
Snapshot Data From: Programming Screen Summary Report Published on 02/09/2018 by Kathaleen Linger
Issues and Categories are reflective of what was in place at the time of the screening event.

	Social and Economic							Cultural			Natural					Physical					
	Land Use Changes	Social	Relocation Potential	Farmlands	Aesthetic Effects	Economic	Mobility	Section 4(f) Potential	Historic and Archaeological Sites	Recreation Areas	Wetlands and Surface Waters	Water Quality and Quantity	Floodplains	Wildlife and Habitat	Coastal and Marine	Noise	Air Quality	Contamination	Infrastructure	Navigation	Special Designations
Alternative #1 - SR 524 From: Friday Rd To: Industry Rd *Published: 02/09/2018 Reviewed from 12/08/2017 to 02/06/2018)*	0	2	2	2	2	1	1	2	3	0	4	4	2	3	3	3	2	3	2	0	N/A

Purpose and Need

Purpose and Need

PROJECT STATUS

The project is located within the jurisdiction of Space Coast Transportation Planning Organization (TPO), the Metropolitan Planning Organization (MPO) for Brevard County. The Project Development and Environment (PD&E) Study, is documented in Space Coast TPO's Fiscal Year (FY) 2018 - FY 2022 Transportation Improvement Program (TIP) for FY 2019 with an anticipated cost of $1.7 million dollars - funded with a combination of state and federal funds. The Space Coast TPO 2040 LRTP identifies funding for SR 524 widening between I-95 and Industry Road, with $3.2 million identified for Design, $4.5 million identified for the Right of Way phase, and $22.5 million identified for Construction.

PURPOSE

The purpose of this project is to accommodate year 2040 travel demand and improve traffic flow and improve vehicular and bicycle and pedestrian safety.

NEED

The need for the project is based on transportation demand/capacity and safety.

TRANSPORTATION DEMAND/CAPACITY

In the future year (2040) no-build condition, the majority of the SR 524 study corridor, including the interchange at I-95, is projected to operate at Level of Service (LOS) E with Average Annual Daily Traffic (AADT) ranging from 16,000 vehicles/day to more than 23,000 vehicles/day.

SAFETY

Crash data for the study area was obtained from FDOT Crash Analysis Reporting System (CARS) for the 5-year period between 2011 and 2015. During this period, there were 124 crashes along SR 524, including 62 crashes with an injury and 2 fatalities. The associated crash rate was 3.08 along this corridor, higher than the statewide average of 2.99. Primary crash types include rear end (40) and angle (20). Clusters of crashes are evident near major intersections, particularly in and around the interchange with I-95 and between London Boulevard and SR 501/Clearlake Road.

Project Description

This project involves the two-lane to four-lane widening of the approximately 3.15 mile segment of State Road (SR) 524 from west of Friday Road South to Industry Road in addition to the potential modification of the existing interchange at I-95 and SR 524.

Summary of Public Comments

Two public meetings took place during the SR 524 Corridor Planning Study: one on October 20, 2016 and one at the conclusion of the study on June 12, 2017. For materials from the meeting and the study in general, please follow the provided link:

http://www.cflroads.com/project/437983-1/SR_524_Corridor_Planning_Study

Concerns from citizens included: impacts of new development on traffic volumes, corridor character, and property values; need to provide additional roadway capacity (widening); safety issues for all users (including pedestrian & bicyclists); minimize right-of-way impacts; ensure driveways are accessible and safe; improve I-95 interchange ramp terminal intersections; mitigate traffic noise/noise barriers; drainage/flooding concerns for nearby homes; concerns about possible roundabouts; and issues with truck traffic.

Planning Consistency Status

Are the limits consistent with the plans?	Yes
Currently Adopted CFP-LRTP?	Yes

Attachments

LRTP Pages - https://www.fla-etat.org/est/servlet/blobViewer?blobID=23333

TIP Pages - https://www.fla-etat.org/est/servlet/blobViewer?blobID=23334

STIP Pages - https://www.fla-etat.org/est/servlet/blobViewer?blobID=23335

Phase	Currently Approved TIP	Currently Approved STIP	TIP / STIP $	TIP / STIP Fiscal Year	Comments
PE (Final Design)	No	Unknown	Unknown	Unknown	Funding for subsequent phases will be coordinated through the Work Program planning process.
ROW	No	Unknown	Unknown	Unknown	Funding for subsequent phases will be coordinated through the Work Program planning process.
Construction	No	Unknown	Unknown	Unknown	Funding for subsequent phases will be coordinated through the Work Program planning process.

Federal Consistency Determination

No federal consistency determination found.

Potential Lead Agencies

- FDOT Office of Environmental Management

Exempted Agencies

Agency Name	Justification	Date
US Forest Service	There are no National Forests within the vicinity of this project.	02/21/2017
Federal Rail Administration	There is no railways within the vicinity of this project.	02/21/2017
National Park Service	There are no National Parks within the vicinity of this project.	02/21/2017
Federal Transit Administration	FTA has requested to be exempt from reviewing any non-transit projects.	06/02/2017

Community Desired Features

No desired features have been entered into the database. This does not necessarily imply that none have been identified.

User Defined Communities Within 500 Feet

No user defined communities were found within a 500 ft. buffer distance for this project.

Census Places Within 500 Feet

- Cocoa

Purpose and Need Reviews

FDOT Office of Environmental Management

Acknowledgment	Date Reviewed	Reviewer	Comments
Accepted	01/23/2018	Thu-Huong Clark (thu-huong.clark@dot.state.fl.us)	No Purpose and Need comments found.

FL Department of Agriculture and Consumer Services

Acknowledgment	Date Reviewed	Reviewer	Comments
Understood	12/20/2017	Steve Bohl (Steve.Bohl@freshfromflorida.com)	No Purpose and Need comments found.

FL Department of Economic Opportunity

Acknowledgment	Date Reviewed	Reviewer	Comments
Understood	01/22/2018	Matt Preston (matt.preston@deo.myflorida.com)	No Purpose and Need comments found.

FL Department of Environmental Protection

Acknowledgment	Date Reviewed	Reviewer	Comments
Understood	01/23/2018	Suzanne Ray (plan.review@dep.state.fl.us)	No Purpose and Need comments found.

FL Department of State

Acknowledgment	Date Reviewed	Reviewer	Comments
Understood	12/27/2017	Ginny Jones (ginny.jones@dos.myflorida.com)	no comments

FL Fish and Wildlife Conservation Commission

Acknowledgment	Date Reviewed	Reviewer	Comments
Understood	01/22/2018	Jennifer Goff (jennifer.goff@MyFWC.com)	No Purpose and Need comments found.

National Marine Fisheries Service

Acknowledgment	Date Reviewed	Reviewer	Comments
Understood	01/05/2018	Jennifer Schull (Jennifer.Schull@noaa.gov)	No Purpose and Need comments found.

National Park Service

Acknowledgment	Date Reviewed	Reviewer	Comments
Understood	01/12/2018	Anita Barnett (anita_barnett@nps.gov)	No Purpose and Need comments found.

Natural Resources Conservation Service

Acknowledgment	Date Reviewed	Reviewer	Comments
Understood	12/12/2017	Rick Robbins (rick.a.robbins@fl.usda.gov)	No Purpose and Need comments found.

Saint Johns River Water Management District

Acknowledgment	Date Reviewed	Reviewer	Comments
Understood	01/17/2018	Gary Haddle (Ghaddle@sjrwmd.com)	No Purpose and Need comments found.

US Army Corps of Engineers

Acknowledgment	Date Reviewed	Reviewer	Comments
Understood	01/16/2018	Randy Turner (Randy.L.Turner@usace.army.mil)	No Purpose and Need comments found.

US Coast Guard

Acknowledgment	Date Reviewed	Reviewer	Comments
Understood	12/29/2017	Randall Overton (randall.d.overton@uscg.mil)	No Coast Guard involvement

US Environmental Protection Agency

Acknowledgment	Date Reviewed	Reviewer	Comments
Understood	01/22/2018	Roshanna White (White.Roshanna@epa	No Purpose and Need comments found.

		.gov)	

US Fish and Wildlife Service

Acknowledgment	Date Reviewed	Reviewer	Comments
Understood	01/11/2018	Zakia Williams (zakia_williams@fws.gov)	No Purpose and Need comments found.

The following organizations were notified but did not submit a review of the Purpose and Need:

- Seminole Tribe of Florida

Alternative #1 - SR 524

Alternative Description

Name	From	To	Type	Status	Total Length	Cost	Modes	SIS
SR 524	Friday Rd	Industry Rd	Widening	ETAT Review Complete	? mi.		Roadway Bicycle Pedestrian	N

Segment Description(s)

Location and Length

Segment Record	Segment Name	Facility Name	Beginning Location	Ending Location	Length (mi.)	Roadway Id	BMP	EMP
S-001	70070000 (MP 1.514 to 4.759)	70070000 (MP 1.514 to 4.759)			3.247	70070000		

Jurisdiction and Class

Segment Record	Segment Name	Jurisdiction	Urban Service Area	Functional Class
S-001	70070000 (MP 1.514 to 4.759)			URBAN: Minor Arterial

Base Conditions

Segment Record	Segment Name	Year	AADT	Lanes	Config
S-001	70070000 (MP 1.514 to 4.759)		15000	2	

Interim Plan

Segment Record	Segment Name	Year	AADT	Lanes	Config
S-001	70070000 (MP 1.514 to 4.759)				

Needs Plan

Segment Record	Segment Name	Year	AADT	Lanes	Config
S-001	70070000 (MP 1.514 to 4.759)				

Cost Feasible Plan

Segment Record	Segment Name	Year	AADT	Lanes	Config
S-001	70070000 (MP 1.514 to 4.759)				

Funding Sources

No funding sources found.

Project Effects Overview for Alternative #1 - SR 524

Issue	Degree of Effect	Organization	Date Reviewed
Social and Economic			
Land Use Changes	0 None	FL Department of Economic Opportunity	01/22/2018
Social	2 Minimal	US Environmental Protection Agency	01/22/2018
Farmlands	2 Minimal	Natural Resources Conservation Service	12/12/2017
Economic	1 Enhanced	FL Department of Economic Opportunity	01/22/2018
Cultural			
Historic and Archaeological Sites	3 Moderate	FL Department of State	12/27/2017
Recreation Areas	0 None	FL Department of Environmental Protection	01/23/2018
Recreation Areas	0 None	Saint Johns River Water Management District	01/17/2018
Recreation Areas	N/A N/A / No Involvement	National Park Service	01/12/2018

Natural			
Wetlands and Surface Waters	2 Minimal	FL Department of Environmental Protection	01/23/2018
Wetlands and Surface Waters	3 Moderate	US Environmental Protection Agency	01/22/2018
Wetlands and Surface Waters	4 Substantial	Saint Johns River Water Management District	01/17/2018
Wetlands and Surface Waters	2 Minimal	US Fish and Wildlife Service	01/17/2018
Wetlands and Surface Waters	2 Minimal	US Army Corps of Engineers	01/16/2018
Wetlands and Surface Waters	3 Moderate	National Marine Fisheries Service	01/05/2018
Water Quality and Quantity	2 Minimal	FL Department of Environmental Protection	01/23/2018
Water Quality and Quantity	4 Substantial	US Environmental Protection Agency	01/22/2018
Water Quality and Quantity	2 Minimal	Saint Johns River Water Management District	01/19/2018
Floodplains	N/A N/A / No Involvement	Saint Johns River Water Management District	02/05/2018
Wildlife and Habitat	3 Moderate	FL Fish and Wildlife Conservation Commission	01/22/2018
Wildlife and Habitat	2 Minimal	US Fish and Wildlife Service	01/17/2018
Wildlife and Habitat	2 Minimal	FL Department of Agriculture and Consumer Services	12/20/2017
Coastal and Marine	0 None	Saint Johns River Water Management District	01/17/2018
Coastal and Marine	3 Moderate	National Marine Fisheries Service	01/05/2018
Physical			
Air Quality	2 Minimal	US Environmental Protection Agency	01/22/2018
Contamination	2 Minimal	FL Department of Environmental Protection	01/23/2018
Contamination	3 Moderate	US Environmental Protection Agency	01/22/2018
Navigation	0 None	US Army Corps of Engineers	01/16/2018
Navigation	N/A N/A / No Involvement	US Coast Guard	12/29/2017
Special Designations			
Special Designations	0 None	Saint Johns River Water Management District	02/05/2018
Special Designations	N/A N/A / No Involvement	US Environmental Protection Agency	01/22/2018

ETAT Reviews and Coordinator Summary: Social and Economic

Land Use Changes

Project Effects

Coordinator Summary Degree of Effect: 0 *None* assigned 02/09/2018 by FDOT District 5

Comments:
The Department of Economic Opportunity (DEO) assigned a Degree of Effect of None, since the proposed project is compatible with the local government comprehensive plan and is included in the City of Cocoa's Comprehensive Plans and depicted on the City of Cocoa's Future Transportation map.

Degree of Effect: 0 *None* assigned 01/22/2018 by Matt Preston, FL Department of Economic Opportunity

Coordination Document: No Involvement

Direct Effects

Identified Resources and Level of Importance:

Comprehensive Plan(s) Reviewed:

City of Cocoa Comprehensive Plan 2010-2020.

Comments on Effects to Resources:

Compatibility with Community Development Goals and Comprehensive Plan:

The project is compatible with City development goals and consistent with its Comprehensive Plan.

Portions of this corridor have already been amended from "vacant" to "neighborhood commercial" and "commercial" on the Future Land Use Map.

Policies TRN 2.1.8 and 2.1.10 specifically support FDOT's five year plan.

Future Transportation Map:

The proposed project is included on the City of Cocoa Future Transportation Map.

Land Uses:

Future land uses that surround the project area include: Commercial, Neighborhood Commercial, Institutional, Low Density Residential, High Density Residential, and Recreation/Open Space.

Parks:

The proposed project is located within a quarter mile of Junni Rios Park. FDOT should analyze any potential impacts to this 4(f) resource.

Area of Critical State Concern (ACSC), Coastal High Hazard Area (CHHA), and Military Bases:

The project is not located within an Area of Critical State Concern, or the CHHA; nor does it encroach on any military installations.

Other Planning-Related Items:

The project provides a rare opportunity for creation of a multiway boulevard along the corridor, which will allow for a continuation of a variety of functions that might otherwise conflict. A greenway is already in use along portions of the corridor.

Contact Information:

Karen Hamilton - Phone Number: (351) 433-8522. Cynthia Thurman - Phone Number: (351) 433-8522.

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Additional Comments (optional):

CLC Recommendations:

Indirect Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

FDOT District 5 Feedback to FL Department of Economic Opportunity's Review (02/09/2018): Thank you for your review and comments. During the PD&E Study, we will analyze impacts to the Junny Rios park. A Section 4(f) Determination of Applicability may be prepared, although no right-of-way acquisition is anticipated.

Social

Project Effects

Coordinator Summary Degree of Effect: 2 *Minimal* assigned 02/09/2018 by FDOT District 5

Comments:

USEPA reviewed this issue and assigned a Degree of Effect of Minimal. There are four 2010 Census Blocks with a minority population

greater than 40%, and three within the 500-ft. buffer of the project. While there is limited potential for disproportionately high and adverse effects on minority and low-income populations, proactive measures will be taken to involve the affected community in the decisions related to alternative selection, impact analysis, and mitigation.

Degree of Effect: 2 *Minimal* assigned 01/22/2018 by Roshanna White, US Environmental Protection Agency

Coordination Document: To Be Determined: Further Coordination Required

Direct Effects

Identified Resources and Level of Importance:

Within a 1,320-ft buffer of the widening of SR-524 from west of Friday Road to Industry Road project, the Social GIS Analysis Report identified four 2010 Census Blocks with a minority population greater than 40%, and three (*) of those blocks are within 500-ft. buffer of the project. Environmental features and community elements help individuals maintain health and well-being. Therefore, the EPA is assigning a Minimal degree of effect to Social impacts.

Census Blocks

*120090621035015
*120090621033036
*120090621033035
120090625001013

Comments on Effects to Resources:

SR-524 Widening may cause construction detours, traffic pattern disruptions, which increases traffic and means that noise levels will be elevated due to vehicular traffic in combination with the present construction noise. Also, ETDM #14292, the widening of SR 528 from SR-520 to Industry Road may cause inconveniences if both projects are done simultaneously.
The Preliminary Environmental Discussion documented that proactive measures will used in identifying and addressing a disproportionate burden of effects on minorities and/or low-income populations for all federal actions in accordance with Executive Order (EO) 12898.
Consider meaningful public involvement that enables transportation professionals to develop systems, services, and solutions that meet the needs of the community and the vulnerable populations that will be impacted by the project.

Recommended Avoidance, Minimization, and Mitigation Opportunities:

The following recommendations for direct social impacts should be included in the environmental evaluation of SR-524 Widening:
--Identify the impacts of the project that appear to fall disproportionately on minority and low income populations, and other vulnerable populations. Include how community resources in relation to these populations will effect quality of living temporarily, permanently, and in the future.

--Evaluate the potential environmental and human health effects, such as air, noise, environmental feature changes, and changes to other community resources.

--Public involvement is important, please coordinate with local community leaders, groups, residents, and businesses in an effort to engage the communities in the project area.

Additional Comments (optional):

CLC Recommendations:

Indirect Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

FDOT District 5 Feedback to US Environmental Protection Agency's Review (02/09/2018): Thank you for your review and comments. Executive Orders 13045 and 12898 will be considered during the public outreach and alternative analysis phases of the Project Development and Environment (PD&E) Study.
This project will be developed without regard to race, color, national origin, age, sex, religion, disability, or family status. A proactive public involvement approach, consistent with the PD&E Manual, will be implemented for these projects to ensure that opportunity is

given to all residents and businesses along the corridor to provide input into this project. The FDOT will further analyze sociocultural effects during the PD&E study consistent with the Sociocultural Effects Evaluation Handbook.

Relocation Potential

Project Effects

Coordinator Summary Degree of Effect: 2 *Minimal* assigned 02/09/2018 by FDOT District 5

Comments:

No ETAT Reviews were submitted for this issue. Given the available right of way, the proposed project is not anticipated to result in significant, if any, residential relocations or business displacements.

While additional right-of-way may be required for ponds, the project will be designed to avoid/minimize potential relocation impacts to the greatest extent practicable. Any relocation will be evaluated so that there are no disproportionate adverse impacts to any distinct minority, ethnic, elderly, or handicapped groups and/or low-income households.

A Conceptual Stage Relocation Plan will be prepared for this project provided that any potential ROW acquisition outcome results in relocation needs.

None found

Farmlands

Project Effects

Coordinator Summary Degree of Effect: 2 *Minimal* assigned 02/09/2018 by FDOT District 5

Comments:

Comments from the NRCS state that since this project is strictly a widening project and is located within the Palm Bay-Melbourne Urbanized Area, a Minimal Degree of Effect to Important Farmland soils is appropriate. They also state that although this project is within the Palm Bay-Melbourne urbanized area, the GIS analysis data indicates that between 41 and 42 percent of the total project area is classified as Farmland of Unique Importance and that some of this land is undeveloped and therefore, may be subject to the FPPA process. The FDOT concurs, and will coordinate with NRCS to help determine the potential impacts and whether a Farmland Protection Policy Act (AD-1006) environmental assessment is required.

Degree of Effect: 2 *Minimal* assigned 12/12/2017 by Rick Allen Robbins, Natural Resources Conservation Service

Coordination Document: To Be Determined: Further Coordination Required

Coordination Document Comments:

Although this project is within the Palm Bay-Melbourne urbanized area, the GIS analysis data indicates that between 41 and 42 percent of the total project area is classified as Farmland of Unique Importance. Some of this land is undeveloped and therefore, may be subject to the FPPA process.

The Farmland Protection Policy Act (FPPA) (PL 97-98; 7 U.S.C. 4201 et seq.) was enacted to protect the amount of open farmland which has substantially decreased as a result of land use changes. It states that Federal programs which contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses will be minimized. Agencies are also to consider alternative actions and ensure that their programs are compatible with state and local government programs.

Environmental assessments must be prepared for actions which may adversely affect such unique geographic characteristics as prime farmlands. The regulations apply to construction activities, development grants and loans, and certain Federal land management decisions that contribute either directly or indirectly to loss of farmland**.**

A Farmland Protection Policy Act form (AD-1006) may be required for this project. Please refer to the link below for more information:

https://www.nrcs.usda.gov/wps/portal/nrcs/detail/fl/soils/?cid=stelprdb1101661

Direct Effects

Identified Resources and Level of Importance:

The USDA-NRCS considers soil map units with important soil properties for agricultural uses to be Prime Farmland (Important Farmland soils). Prime Farmland (as defined in ETDM) is classified in several different categories based on specific criteria. **Prime Farmland** must meet specific soil-related criteria, as defined by the USDA-Natural Resources Conservation Service. **Farmland of**

Unique Importance is based on the ability of the soil to grow very specific crops, such as citrus, vegetables, sugar cane, and other high-value specialty crops. It is also based on the extent that a soil is used for these crops within a specific county. Therefore, a soil in one county may be Unique Farmland, but not in an adjacent county. **Farmland of Local Importance** is classified as being important to the local entities (counties) and worthy of special consideration. Locally Important Farmland soils were designated by local governance (Soil and Water Conservation Districts).

Nationally, there has been a reduction in the overall amount of Prime, Locally Important, and Unique Farmlands through conversion to non-farm uses. This trend has the possibility of impacting the nation's food supply and exporting capabilities.

Comments on Effects to Resources:
Conducting GIS analysis of Prime Farmland (using USDA-NRCS data) and Important Farmland Analysis (using 2009 SJRWMD data and 2016 SSURGO data) has resulted in the determination that there are soils designated as Farmland of Unique Importance at all buffer widths within the Project footprint. In addition, there are areas currently used for agricultural production at all buffer widths.

At the 100 foot buffer width, there are 32.5 acres of Farmland of Unique Importance. At the 200 foot buffer width, there are 66.0 acres of Farmland of Unique Importance. At the 500 foot buffer width, there are 166.8 acres of Farmland of Unique Importance.

There is no agricultural production at any buffer width associated with this project.

Since this project is strictly a widening project (2 lane to 4 lane) and is located within the Palm Bay-Melbourne Urbanized Area, we are assigning a Minimal Degree of Effect to Important Farmland soils

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Additional Comments (optional):
Although this project is within the Palm Bay-Melbourne urbanized area, the GIS analysis data indicates that between 41 and 42 percent of the total project area is classified as Farmland of Unique Importance. Some of this land is undeveloped and therefore, may be subject to the FPPA process.

The Farmland Protection Policy Act (FPPA) (PL 97-98; 7 U.S.C. 4201 et seq.) was enacted to protect the amount of open farmland which has substantially decreased as a result of land use changes. It states that Federal programs which contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses will be minimized. Agencies are also to consider alternative actions and ensure that their programs are compatible with state and local government programs.

Environmental assessments must be prepared for actions which may adversely affect such unique geographic characteristics as prime farmlands. The regulations apply to construction activities, development grants and loans, and certain Federal land management decisions that contribute either directly or indirectly to loss of farmland**.**
A Farmland Protection Policy Act form (AD-1006) may be required for this project. Please refer to the link below for more information:
https://www.nrcs.usda.gov/wps/portal/nrcs/detail/fl/soils/?cid=stelprdb1101661

CLC Recommendations:

Indirect Effects
Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

FDOT District 5 Feedback to Natural Resources Conservation Service's Review (02/09/2018): Thank you for your thorough review and preliminary assessment of this project. We will coordinate with your agency during the PD&E process.

Aesthetic Effects

Project Effects

Coordinator Summary Degree of Effect: 2 *Minimal* assigned 02/09/2018 by FDOT District 5

Comments:
No ETAT Reviews were submitted for this issue. The project isn't likely to lead to or cause any significant effects to aesthetics, viewsheds, etc.; therefore, a Degree of Effect of Minimal is being assigned to this issue. Various context zones (residential, commercial, etc.) along the corridor will be considered and potential landscaping and other options will be identified during the development of alternatives. The FDOT will conduct public outreach to solicit opinions and preferences from residents and businesses on potential project effects and general design concepts related to aesthetics.

None found

Economic

Project Effects

Coordinator Summary Degree of Effect: 1 *Enhanced* assigned 02/09/2018 by FDOT District 5

Comments:
The FDOT agrees with the Department of Economic opportunity that it is likely that improvements to the corridor will attract continued commercial development. Therefore, a Degree of Effect of Enhanced is being assigned.

Degree of Effect: 1 *Enhanced* assigned 01/22/2018 by Matt Preston, FL Department of Economic Opportunity

Coordination Document: No Involvement

Direct Effects

Identified Resources and Level of Importance:
Comprehensive Plan(s) Reviewed:
City of Cocoa Comprehensive Plan 2010-2020.

Comments on Effects to Resources:
The project *is not* located within a Rural Area of Opportunity.

It is likely that improvements to the corridor will attract commercial development. The project is located in a corridor between SR 524 and SR 520. The area has been designated as Commercial and Neighborhood Commercial along parts of the corridor. The Walmart Distribution Center is located at SR 524 and Clearlake Road.

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Additional Comments (optional):

CLC Recommendations:

Indirect Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

FDOT District 5 Feedback to FL Department of Economic Opportunity's Review (02/09/2018): Thank you for your review and comments.

Mobility

Project Effects

Coordinator Summary Degree of Effect: 1 *Enhanced* assigned 02/09/2018 by FDOT District 5

Comments:
No ETAT Reviews were submitted for this issue. A Degree of Effect of enhanced is being assigned to this issue based on the additional roadway capacity and the potential to enhance bicycle and pedestrian features along sections of the corridor that aren't

present in the existing condition.

None found

ETAT Reviews and Coordinator Summary: Cultural

Section 4(f) Potential

Project Effects

Coordinator Summary Degree of Effect: 2 *Minimal* assigned 02/09/2018 by FDOT District 5

Comments:

No ETAT reviews were submitted for this issue, although the Department of Economic Opportunity (DEO) commented under the Land Use Issue that FDOT should analyze potential impacts to the Section 4(f) resource of the Junny Rios Park. The Fred Gay Golf Academy may also qualify as a resource protected under Section 4(f). Additionally, the Cocoa Conservation Area will be looked at, although it should be outside of the project area. During the PD&E Study, a Section 4(f) Determination of Applicability may be prepared, although no right-of-way acquisition is anticipated.

None found

Historic and Archaeological Sites

Project Effects

Coordinator Summary Degree of Effect: 3 *Moderate* assigned 02/09/2018 by FDOT District 5

Comments:

The FDOT is in agreement with the Department of State's review; therefore, a Degree of Effect of Moderate is being issued due to potential unrecorded resources in the proposed project area. Parts of the project area have not been subjected to a prior Cultural Resource Assessment Survey, and there are unrecorded structures that are over 50 years old adjacent to the project corridor. As noted in the comments, based on historic aerials and typical development patterns, it is likely that the oldest resources will be on the eastern end of the project corridor.

Degree of Effect: 3 *Moderate* assigned 12/27/2017 by Ginny Leigh Jones, FL Department of State

Coordination Document: PD&E Support Document As Per PD&E Manual

Coordination Document Comments:

Since the project area has not been comprehensively surveyed, a survey should be conducted for this project. All cultural resources, including potential historic districts, within the area of potential effect should be documented and assessed for NRHP eligibility. The resultant survey report shall conform to the specifications set forth in Chapter 1A-46 Florida Administrative Code, FDOT PD&E Manual Part 2, Chapter 12 and will need to be forwarded to this agency (or the appropriate Federal Agency) for review and comment.

Direct Effects

Identified Resources and Level of Importance:

As reported in the PED, there are unrecorded structures that are over 50 years old adjacent to the project corridor. Based on historic aerials and typical development patterns, it is likely that the oldest resources will be on the eastern end of the project corridor.

It is unknown if there are any significant unrecorded resources in the area of the project corridor.

Comments on Effects to Resources:

The proposed project has the potential to impact unrecorded resources.

Recommended Avoidance, Minimization, and Mitigation Opportunities:

This office will consult with the project sponsors to avoid, minimize, or mitigate any adverse effects to significant cultural resources.

Additional Comments (optional):

Since the project area has not been comprehensively surveyed, a survey should be conducted for this project. All cultural resources, including potential historic districts, within the area of potential effect should be documented and assessed for NRHP eligibility. The resultant survey report shall conform to the specifications set forth in Chapter 1A-46 Florida Administrative Code, FDOT PD&E Manual Part 2, Chapter 12 and will need to be forwarded to this agency (or the appropriate Federal Agency) for review and comment.

CLC Recommendations:

Indirect Effects
Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

FDOT District 5 Feedback to FL Department of State's Review (02/09/2018): Thank you for your review and comments. Further coordination with your agency will take place during the PD&E study, and a Cultural Resource Assessment Survey will be conducted.

The following organization(s) were expected to but did not submit a review of the Historic and Archaeological Sites issue for this alternative: Seminole Tribe of Florida

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Recreation Areas

Project Effects

Coordinator Summary Degree of Effect: 0 *None* assigned 02/09/2018 by FDOT District 5

Comments:
The FL Department of Environmental Protection and Saint Johns River Water Management District assigned a Degree of Effect of None, and the National Park Service assigned a Degree of Effect of N/A / No Involvement for this project. Given the available right of way, the proposed project is not anticipated to result in any impacts to recreation areas.

Degree of Effect: 0 *None* assigned 01/23/2018 by Suzanne E. Ray, FL Department of Environmental Protection

Coordination Document: PD&E Support Document As Per PD&E Manual

Direct Effects
Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Additional Comments (optional):

CLC Recommendations:

Indirect Effects
Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

FDOT District 5 Feedback to FL Department of Environmental Protection's Review (02/09/2018): Thank you for your review.

Degree of Effect: 0 *None* assigned 01/17/2018 by Gary Haddle, Saint Johns River Water Management District

Coordination Document: No Involvement

Direct Effects
Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Additional Comments (optional):

CLC Recommendations:

Indirect Effects
Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

FDOT District 5 Feedback to Saint Johns River Water Management District's Review (02/09/2018): Thank you for your review.

Degree of Effect: N/A *N/A / No Involvement* assigned 01/12/2018 by Anita Barnett, National Park Service

Coordination Document: No Involvement

Direct Effects
Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Additional Comments (optional):

CLC Recommendations:

Indirect Effects
Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

FDOT District 5 Feedback to National Park Service's Review (02/09/2018): Thank you for your review.

ETAT Reviews and Coordinator Summary: Natural

Wetlands and Surface Waters

Project Effects

Coordinator Summary Degree of Effect: 4 *Substantial* assigned 02/09/2018 by FDOT District 5

Comments:
The Wetlands and Surface Water issue was given a Substantial Degree of Effect by Saint Johns River Water Management District (SJRWMD); the US Environmental Protection Agency (USEPA) and National Marine Fisheries Service (NMFS) assigned a Degree of Effect of Moderate; and the US Army Corps of Engineers (USACE), Florida Department of Environmental Protection (FDEP), and US Fish and Wildlife Service (FWS) assigned a Degree of Effect of Minimal. As mentioned by SJRWMD, approximately 43 acres of palustrine wetlands are located within the 500-foot buffer area; however, due to the existing right of way, which is approximately 200 feet in width between I-95 and Industry Road, the majority of these improvements will be conducted within the existing right of way with the exception of stormwater ponds. The FDOT recognizes the extent of potential wetland impacts given the conditions in the area, including to the hardwood hammock wetland on the south side of the project, and multiple small wet prairie and shallow marsh wetlands. Therefore, given the uncertainty of the impacts, and the response from the SJRWMD, the FDOT will assign a Degree of Effect of Substantial to this issue fully expecting impacts to wetlands to be reduced via avoidance, minimization, and mitigation opportunities.

Degree of Effect: 2 *Minimal* assigned 01/23/2018 by Suzanne E. Ray, FL Department of Environmental Protection

Coordination Document: PD&E Support Document As Per PD&E Manual

Direct Effects
Identified Resources and Level of Importance:

The EST identifies 43 acres of palustrine wetlands within the 500-foot buffer of the proposed project.

Comments on Effects to Resources:
The proposed project may require an environmental resource permit (ERP) from theSt. Johns River Water Management District for stormwater management. If any wetlands are affected, the ERP applicant will be required to eliminate or reduce the proposed wetland resource impacts of construction to the greatest extent practicable.

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Additional Comments (optional):

CLC Recommendations:

Indirect Effects
Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

FDOT District 5 Feedback to FL Department of Environmental Protection's Review (02/09/2018): Thank you for your review and comments. Stormwater treatment will be provided for the entire corridor, and we will investigate multiple pond site locations for each basin. We will attempt to locate these facilities in previously disturbed upland areas. Measures to avoid or minimize impacts to wetlands will be documented.

Degree of Effect: 3 *Moderate* assigned 01/22/2018 by Roshanna White, US Environmental Protection Agency

Coordination Document: To Be Determined: Further Coordination Required

Direct Effects
Identified Resources and Level of Importance:
Wetlands are important because they are a critical natural resource and serve several functions including filtration and treatment of surface water runoff, store flood waters, provide erosion control, groundwater recharge and discharge, and protect and provide fish and wildlife habitats. The Preliminary Environmental Discussion (PED) documents the acres of wetlands located within a 500-ft buffer of the project area. SR-524 Widening will require the placement of fill in wetlands. The placement of fill in wetlands impacts federally listed threatened and endangered species, fish, and wildlife resources near or within the project area. The number of acres to be filled and specifically the classification of those filled wetlands will further determine the impact of wetlands assessment. Therefore, EPA assigns a Moderate Degree of effect to Wetlands and Surface waters.

Comments on Effects to Resources:
The loss of wetlands function, loss of wildlife habitat, degradation of water quality in wetlands, degradation of water quality in surface waters, and reduction in flood storage and capacity will be impacted by SR-524 Widening. Consistent with Section 404 of the Clean Water Act, the selected site should avoid and minimize to the maximum extent practicable, placement of fill into jurisdictional waters of the U.S., which include wetlands and streams.

Impervious or semi-impervious surfaces will contribute to surface drainage and non-point sources that will impact surface and groundwater quality. Moreover, road noise and debris from construction can cause wetland habitat disruption, and increase sunlight reaching a wetland from tree removal or the bridge can shade an area of the wetland that receives sunlight.

Recommended Avoidance, Minimization, and Mitigation Opportunities:
For the environmental evaluation of SR-524 Widening, the EPA recommends the following practices for direct wetland and surface water impacts :
--Avoid and minimize to the maximum extent practicable the placement of fill in wetlands.

--Stormwater runoff should be diverted from water bodies.

--Maximize the collection and treatment of stormwater.

--Stormwater collection and treatment mechanisms should be designed to protect the function of surrounding wetlands and surface water that have already experienced secondary impacts from roadway runoff.

--Implement best management practices to prevent or reduce soil erosion into surface waters and minimize adverse soil impacts.

--Evaluate Low-Impact Development (LID) stormwater management practices during PD&E.

--Demonstrate what increases, if any, in flood plain elevation will result from this project.

Additional Comments (optional):

CLC Recommendations:

Indirect Effects
Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

FDOT District 5 Feedback to US Environmental Protection Agency's Review (02/09/2018): Thank you for your review and comments. Stormwater treatment will be provided for the entire corridor and we will investigate multiple pond site locations for each basin. We will attempt to locate these facilities in previously disturbed upland areas. Measures to avoid or minimize impacts to wetlands will be documented.

Degree of Effect: 4 *Substantial* assigned 01/17/2018 by Gary Haddle, Saint Johns River Water Management District

Coordination Document: Permit Required
Coordination Document Comments:
An Environmental Resource Permit will be required.

Direct Effects
Identified Resources and Level of Importance:
The GIS tool identifies 42.74 acres of palustrine wetlands within the 500-foot buffer area. It appears secondary impacts will occur. These generally include a hardwood hammock wetland on the south side of the project, and multiple small wet prairie and shallow marsh wetlands along each side of the project. The project lies within two SJRWMD mitigation basins, Basin 18 St. Johns River (Canaveral Marshes to Wekiva), and Basin 20 Southern St. Johns. An Environmental Resource Permit and compensatory mitigation will be required.

Comments on Effects to Resources:
The GIS tool identifies 42.74 acres of palustrine wetlands within the 500-foot buffer area. It appears secondary impacts will occur. These generally include a hardwood hammock wetland on the south side of the project, and multiple small wet prairie and shallow marsh wetlands along each side of the project. An Environmental Resource Permit and compensatory mitigation will be required.

Recommended Avoidance, Minimization, and Mitigation Opportunities:
Elimination and Reduction of adverse impacts will be required. Compensatory mitigation will be required for adverse impacts to wetlands and surface waters. Regulatory Mitigation Basin 18 has multiple mitigation banks with available credits including Tosohatchee M.B., Colbert Cameron M.B., and Farmton West and South M.B. Basin 20 has a lack of federal forested credits, but there are available credits as follows: Lucky L Ranch Mitigation Bank has state-only forested and herbaceous credits, Mary A has herbaceous freshwater credits, and Lake Washington Mitigation Bank has herbaceous freshwater credits.

Additional Comments (optional):
An Environmental Resource Permit will be required.

CLC Recommendations:

Indirect Effects
Identified Resources and Level of Importance:
The GIS tool identifies 42.74 acres of palustrine wetlands within the 500-foot buffer area. It appears secondary impacts will occur. These generally include a hardwood hammock wetland on the south side of the project, and multiple small wet prairie and shallow marsh wetlands along each side of the project. The project lies within two SJRWMD mitigation basins, Basin 18 St. Johns River

(Canaveral Marshes to Wekiva), and Basin 20 Southern St. Johns. An Environmental Resource Permit and compensatory mitigation will be required.

Comments on Effects to Resources:
The GIS tool identifies 42.74 acres of palustrine wetlands within the 500-foot buffer area. It appears secondary impacts will occur. These generally include a hardwood hammock wetland on the south side of the project, and multiple small wet prairie and shallow marsh wetlands along each side of the project. An Environmental Resource Permit and compensatory mitigation will be required.

Recommended Avoidance, Minimization, and Mitigation Opportunities:
Elimination and Reduction of adverse impacts will be required. Compensatory mitigation will be required for adverse impacts to wetlands and surface waters. Regulatory Mitigation Basin 18 has multiple mitigation banks with available credits including Tosohatchee M.B., Colbert Cameron M.B., and Farmton West and South M.B. Basin 20 has a lack of federal forested credits, but there are available credits as follows: Lucky L Ranch Mitigation Bank has state-only forested and herbaceous credits, Mary A has herbaceous freshwater credits, and Lake Washington Mitigation Bank has herbaceous freshwater credits.

FDOT District 5 Feedback to Saint Johns River Water Management District's Review (02/09/2018): Thank you for your review and comments. Stormwater treatment will be provided for the entire corridor and we will investigate multiple pond site locations for each basin. We will attempt to locate these facilities in previously disturbed upland areas. Measures to avoid or minimize impacts to wetlands will be documented.

Degree of Effect: 2 *Minimal* assigned 01/17/2018 by Zakia Williams, US Fish and Wildlife Service

Coordination Document: PD&E Support Document As Per PD&E Manual

Direct Effects
Identified Resources and Level of Importance:
Florida scrub-jay (*Aphelocoma coerulescens)*
The EST tool identified that over 60% of the project area is within the Florida scrub-jay service area.

Wood Stork *(Mycteria americana)*
The surrounding area is roadways, residential developments and mostly palustrine wetlands. The action area 500- foot buffer falls within the Core Foraging Area (CFA). The project area is located less than a mile away from a wood stork nesting colony (Lake Poinsett) this colony was last known to be active in 2015 and mile away from another wood colony known as the (Brevard County Maintenance Shop). .

Comments on Effects to Resources:
Florida scrub-jay (*Aphelocoma coerulescens)*
The potential for the Florida scrub-jay within this proposed corridor is not likely. There is no habitat in the area or the surrounding areas to provide suitable habitat for the species. The USFWS has no documented occurrences of scrub-jay in the area.
Wood Stork *(Mycteria americana)*
Because, the project area falls within the CFA and wood stork colony it is likely that wood storks are utilizing this area for foraging. Dependent upon the design of the project direct impacts should be avoided. To minimize adverse effects to the wood stork and other wetland dependent species, we recommend that impacts to suitable foraging habitat be avoided. If avoidance is not possible, minimization measure should be employed and best management practices to avoid further degradation of the site. Mitigation for wetland impacts should be discussed with USFWS and will require further coordination. Please refer to the North Florida Field Office website for WOST colony locations. http://www.fws.gov/northflorida
Coordination with the Office of Migratory birds will be needed for an eagle nest located within 200 feet of corridor.

Surveys for all federally listed plants found in Brevard County (the list can be found on our website northflorida.fws.gov) should be conducted by a trained botanist during the appropriate time of year.

Wetlands
Wetlands provide important habitat for fish and wildlife. Best Management Practices (BMPs) should be used to prevent degradation of wetland and other aquatic resources from erosion, siltation, and nutrient discharges associated with the project site. We recommend that the project be designed to avoid these valuable resources to the greatest extent practicable. If impacts to wetlands are unavoidable, we recommend that the FDOT provides mitigation that fully compensates for the loss of wetland resources. Dependent upon the alternative(s) selected, the proposed project is expected to result in minimal to moderate involvement with wildlife and habitat resources. If it is determined the project will affect and federally listed species and/or their habitat, the

Department will initiate consultation with FWS during the Project Development process.

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Additional Comments (optional):

CLC Recommendations:

Indirect Effects
Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

FDOT District 5 Feedback to US Fish and Wildlife Service's Review (02/09/2018): Thank you for your review and comments. The project will be designed to avoid wetland resources to the greatest extent practicable. We will investigate mitigation options during the study phase should we have unavoidable wetland impacts.

Degree of Effect: 2 *Minimal* assigned 01/16/2018 by Randy Turner, US Army Corps of Engineers

Coordination Document: Permit Required
Coordination Document Comments:
The project as proposed, may qualify for the Department of the Army's Regional General Permit (RGP) - 92 for impacts to any proposed impacts to waters of the U.S. (wetlands or surface waters). If the wetland impacts are 0.5 acre or below, the Corps recommends using the Nationwide Permit 14 (NWP-14) for any proposed impacts to waters of the U.S. (wetlands or surface waters). If the project does not qualify for a general permit then it would need to be permitted using a Standard Individual Permit which includes the need to publish a Public Notice to other federally and State resource agencies as well as all adjacent property owners.

Direct Effects
Identified Resources and Level of Importance:
A review of the EST revealed the presence of approximately 42.74 acres of palustrine wetlands within a 500 foot buffer; 6.98 acres of palustrine wetlands within a 200 foot buffer; and, 1.05 acre of palustrine wetlands within a 100 foot buffer. Any palustrine wetland impacts would most likely be a majority of palustrine emergent wetlands with a small amount of palustrine scrub-schrub and forested wetlands. The level of importance would be minimal.

Comments on Effects to Resources:
Any palustrine wetlands in the project area deemed to be jurisdictional along the roadway corridor already have been secondarily impacted so a functional assessment should reveal a lower quality of wetlands.

Recommended Avoidance, Minimization, and Mitigation Opportunities:
The Corps recommends a continued emphasis on wetland avoidance and minimization opportunities throughout the planning process. A wetland survey should be conducted within the study area to identify the wetlands and a jurisdictional determination should be completed. A review of the Corps RIBITS indicates that the proposed project corridor would traverse the geographical service areas of seven (7) federally approved mitigation banks:

Colbert/Cameron Mitigation Bank (M-WRAP Credits)
Palustrine: 325.52

East Central Florida Mitigation Bank (M-WRAP Credits)
Palustrine: 0.95

Farmton Mitigation Bank (WRAP Credits)
Palustrine: 3,882.63

Lake Washington Mitigation Bank (UMAM Credits)
Palustrine Emergent: 49.94

Mary A Mitigation Bank (UMAM Credits)

Palustrine Emergent: 324.08
Palustrine Forested: 4.41
Palustrine Scrub/shrub: 38.45

TM Econ Mitigation Bank (WRAP Credits)
Palustrine: 769.73

TM Econ Orange County Phase IV Mitigation Bank (WRAP Credits)
Palustrine: 397.14

All banks are assessed in either Wetland Rapid Assessment Procedure (WRAP); Modified WRAP (M-WRAP) or Uniform Mitigation Assessment Method (UMAM). Any unavoidable wetland impacts should be assessed using WRAP; M-WRAP, or UMAM dependent on the functional assessment of the bank that is proposed. The project as proposed, may qualify for the Department of the Army's Regional General Permit (RGP) - 92 for impacts to any proposed impacts to waters of the U.S. (wetlands or surface waters). If the wetland impacts are 0.5 acre or below, the Corps recommends using the Nationwide Permit 14 (NWP-14) for any proposed impacts to waters of the U.S. (Wetlands or surface waters). If the project does not qualify for a general permit then it would need to be permitted using a Standard Individual Permit which includes the need to publish a Public Notice to other federally and State resource agencies as well as all adjacent property owners.

Additional Comments (optional):
The project as proposed, may qualify for the Department of the Army's Regional General Permit (RGP) - 92 for impacts to any proposed impacts to waters of the U.S. (wetlands or surface waters). If the wetland impacts are 0.5 acre or below, the Corps recommends using the Nationwide Permit 14 (NWP-14) for any proposed impacts to waters of the U.S. (wetlands or surface waters). If the project does not qualify for a general permit then it would need to be permitted using a Standard Individual Permit which includes the need to publish a Public Notice to other federally and State resource agencies as well as all adjacent property owners.

CLC Recommendations:

Indirect Effects
Identified Resources and Level of Importance:
See direct effects.

Comments on Effects to Resources:
New, previously non-disturbed, adjacent wetlands would incur secondary effects along the new expanded roadway corridor footprint.

Recommended Avoidance, Minimization, and Mitigation Opportunities:
See direct impacts.

FDOT District 5 Feedback to US Army Corps of Engineers's Review (02/09/2018): Thank you for your comments and identifying the permits and mitigation bank opportunities available.

Degree of Effect: 3 *Moderate* assigned 01/05/2018 by Jennifer Schull, National Marine Fisheries Service

Coordination Document: No Involvement

Direct Effects
Identified Resources and Level of Importance:
Based on our review of the information provided on the EST website, GIS-based effects analysis of wetlands, and interpretation of aerial photographs, NOAA's National Marine Fisheries Service (NMFS) has determined that freshwater marshes, mixed scrub-shrub wetlands, mixed wetland hardwoods and wet prairies are located within the project corridor. These wetlands range from low to high in quality.

Comments on Effects to Resources:
The wetlands along the proposed roadway expansion provide water quality functions, such as removal of sediments, excess nutrients, and contaminants, which benefit and support these aquatic ecosystems. Through hydrological connections, these wetlands also contribute plant material and other useable nutrients (both dissolved and particulate organic matter) into aquatic food webs that include recreationally, commercially, and ecologically important species within downstream estuaries. If wetland impacts are unavoidable, sequential minimization and mitigation should take place.

In addition to the direct impacts from filling wetlands, construction activities may impact adjacent wetlands through sedimentation and runoff.

Recommended Avoidance, Minimization, and Mitigation Opportunities:
Magnuson-Stevens Act: Based on the project location, information provided in the ETDM website, and GIS-based analysis of impacts, NOAA's National Marine Fisheries Service (NMFS) concludes that essential fish habitat (EFH) would not be impacted by the proposed road modifications; accordingly, we offer no comments pursuant to the EFH provisions of the Magnuson-Stevens Act (P.L. 104-297); and this project will not require an EFH Assessment. Further consultation on this matter is not necessary unless future modifications are proposed and you believe that the proposed action may result in adverse impacts to EFH.

Endangered Species Act: We are not aware of any threatened or endangered species or critical habitat under the purview of NMFS that occur within the project area. However, it should be noted that a "no effect" determination must be made by the action agency and the reasoning underlying the determination should be documented in a project file. Please coordinate closely with the U.S. Fish and Wildlife Service for other species listed under the Endangered Species Act that may require consultation.

Fish and Wildlife Coordination Act: The comments NMFS provided regarding sequential mitigation are in accordance with the Fish and Wildlife Coordination Act.

Additional Comments (optional):

CLC Recommendations:

Indirect Effects
Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

FDOT District 5 Feedback to National Marine Fisheries Service's Review (02/09/2018): Thank you for your review and comments. We will attempt to avoid impacts to wetland systems and minimize through design consideration impacts to those systems we cannot avoid. We will investigate mitigation options during the study phase should we have unavoidable wetland impacts. Best management practices will be implemented during construction to prevent sedimentation of these habitats. It is noted that for the currently proposed project an Essential Fish Habitat (EFH) Assessment will not be required, but in the event that future modifications are proposed that may then result in adverse effects to EFH, further coordination with NMFS will need to occur.

Water Quality and Quantity

Project Effects

Coordinator Summary Degree of Effect: 4 *Substantial* assigned 02/09/2018 by FDOT District 5

Comments:
The Water Quality issue was given a Substantial Degree of Effect by the US Environmental Protection Agency (USEPA), while the Florida Department of Environmental Protection (FDEP) and the Saint Johns River Water Management District (SJRWMD) assigned a Degree of Effect of Minimal. A Degree of Effect of Substantial will be issued to this resource, based on comments from USEPA stating that St. Johns River above Puzzle Lake as a verified impaired body of water for fecal coliform, mercury in fish tissue, and low dissolved oxygen levels..

Degree of Effect: 2 *Minimal* assigned 01/23/2018 by Suzanne E. Ray, FL Department of Environmental Protection

Coordination Document: PD&E Support Document As Per PD&E Manual

Direct Effects
Identified Resources and Level of Importance:
Within the 500-foot project buffer area, the EST analysis identified the St Johns River above Puzzle Lake (South Segment) as a Verified Impaired Florida Water for dissolved oxygen, fecal coliform, and mercury in fish tissue.

Comments on Effects to Resources:

Stormwater treatment should be designed to maintain the natural predevelopment hydroperiod and water quality, as well as to protect the natural functions of adjacent wetlands. We recommend that the PD&E study include a review of water quality standards in the above listed water bodies, sources of water quality impairments, and any associated TDML requirements and how these regulations and/or requirements may affect the proposed project and environmental resource permits.

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Additional Comments (optional):

CLC Recommendations:

Indirect Effects
Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

FDOT District 5 Feedback to FL Department of Environmental Protection's Review (02/09/2018): Thank you for your review and comments.

Degree of Effect: 4 *Substantial* assigned 01/22/2018 by Roshanna White, US Environmental Protection Agency

Coordination Document: To Be Determined: Further Coordination Required

Direct Effects
Identified Resources and Level of Importance:
Human activities degrade ground water and 90% of Florida's water comes from ground water (2005 FAVA https://pdfs.semanticscholar.org/ff9a/a8dd825f3dc91c9b1b34cd0d35df8f05ad76.pdf). It is important to maintain and protect the quality of water because it provides drinking water for human health. SR-524 Widening is within the Florida's Surficial Aquifer System and Recharge Area. This is a FAVA Theme response area that is more vulnerable to contamination. Also, within a 500-ft buffer of the project, GIS Analysis Report for Water Quality identified St. Johns River above Puzzle Lake as a verified impaired body of water for fecal coliform, mercury in fish tissue, and low dissolved oxygen levels. Therefore, EPA assigns water quality as Substantial because effect for the safety of human health.

Comments on Effects to Resources:
Soil erosion and disturbance of vegetation due to the use of heavy equipment and vehicular passing lead to the detachment of soils. Construction runoff and storm water increase the turbidity of a water body. Turbid waters heat more rapidly when exposed to sunlight. Turbidity decreases primary production and dissolved oxygen levels. Therefore, there is a potential for an increase in water degradation. Effective erosion control systems can decrease sediments reaching water bodies and prevent the enrichment of water bodies with nutrients. Also, construction activities may produce the release of hazardous pollutants through spills and improper storage of materials. Hazardous pollutants can infiltrate the aquifer to an area of discharge. Therefore, there is a potential for an increase in water degradation.

Recommended Avoidance, Minimization, and Mitigation Opportunities:
For the environmental evaluation of SR-524 Widening, the EPA recommends the following practices for direct water quality and quantity impacts :
--Explain how adequate sediment and erosion control measures will be used to prevent the discharge of pollutants into the water body.

--Reduce the impact of pollution runoff from construction activities.

--Use best management practices to control erosion, sediment release, and stormwater surface runoff to minimize adverse impacts on water resources.

--Stabilize soils to reduce the effects of erosion, sedimentation, and runoff to maintain or improve water quality.

--Identify and quantify incremental and cumulative impacts on water quality as a result of the past, present, and reasonably foreseeable actions, including the proposed project and other land use actions.

--The drainage design should be a major part of planning for the project.

Additional Comments (optional):

CLC Recommendations:

Indirect Effects
Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

FDOT District 5 Feedback to US Environmental Protection Agency's Review (02/09/2018): Thank you for your review and comments. Stormwater treatment will be provided for the entire corridor and we will investigate multiple pond site locations for each basin. We will attempt to locate these facilities in previously disturbed upland areas.
The potential impact the proposed project will have on water quality will be examined and documented according to Part 2, Chapter 11 of the FDOT Project Development and Environment (PD&E) Manual. The FDOT will include an evaluation of existing area stormwater treatment adequacy and details on the future stormwater treatment facilities. The project will be designed to meet state water quality and quantity requirements and the FDOT will implement proper best management practices during construction to ensure there are no violations to water quality standards.
A Location Hydraulics Report will be prepared for the project along with a Water Quality Impact Evaluation.

Degree of Effect: 2 *Minimal* assigned 01/19/2018 by Perry Jennings, Saint Johns River Water Management District

Coordination Document: Permit Required
Coordination Document Comments:
Chapter 62-330, "Joint Application for Individual And Conceptual Environmental Resource Permit".

Direct Effects
Identified Resources and Level of Importance:
This road project will have minimal impact on the resources of this region if the system(s) are designed to provide the attenuation of the mean annual and 25 year design storm events and treatment of the runoff to the level required dependent on the method proposed.

Comments on Effects to Resources:
The storm water quality and quantity will be protected if the system is consistent with 62-330.

Recommended Avoidance, Minimization, and Mitigation Opportunities:
Currently, the runoff from portions of SR 524 comingles with the adjacent storm water systems. For example permit #16068.

Additional Comments (optional):
Chapter 62-330, "Joint Application for Individual And Conceptual Environmental Resource Permit".

CLC Recommendations:

Indirect Effects
Identified Resources and Level of Importance:
n/a

Comments on Effects to Resources:
Effects to resources will be minimal if requirements for treatment/attenuation are provided.

Recommended Avoidance, Minimization, and Mitigation Opportunities:
Currently, the runoff from portions of SR 524 comingles with the adjacent storm water systems. For example permit #16068.

FDOT District 5 Feedback to Saint Johns River Water Management District's Review (02/09/2018): Thank you for your review and comments regarding permit information.

Floodplains

Project Effects

Coordinator Summary Degree of Effect: 2 *Minimal* assigned 02/09/2018 by FDOT District 5

Comments:
Saint Johns River Water Management District assigned a Degree of Effect of N/A / No Involvement for this issue. Given the conditions in the area, an overall Degree of Effect of Minimal is being assigned for floodplains.
A Location Hydraulics Report will be prepared as part of the Project Development and Environment (PD&E) study. An evaluation of floodplain impacts and alternatives to avoid adverse effects and incompatible development in the floodplains will be undertaken. Efforts will be made to avoid or minimize impacts to floodplain resources and functions. Engineering design features and hydrological drainage structures will be designed such that stormwater transport, flow, and discharge meet or exceed flood control requirements.

Degree of Effect: N/A *N/A / No Involvement* assigned 02/05/2018 by Perry Jennings, Saint Johns River Water Management District

Coordination Document: Permit Required
Coordination Document Comments:
Individual Environmental Resource Permit, Chapter 62-330 FAC

Direct Effects

Identified Resources and Level of Importance:
not applicable for district rule

Comments on Effects to Resources:
na

Recommended Avoidance, Minimization, and Mitigation Opportunities:
na

Additional Comments (optional):
Individual Environmental Resource Permit, Chapter 62-330 FAC

CLC Recommendations:

Indirect Effects

Identified Resources and Level of Importance:
na

Comments on Effects to Resources:
na

Recommended Avoidance, Minimization, and Mitigation Opportunities:
na

FDOT District 5 Feedback to Saint Johns River Water Management District's Review (02/09/2018): Thank you for your review.

Wildlife and Habitat

Project Effects

Coordinator Summary Degree of Effect: 3 *Moderate* assigned 02/09/2018 by FDOT District 5

Comments:
US Fish and Wildlife Service (FWS) and FL Department of Agriculture and Consumer Services (FDACS) both gave Degrees of Effect of Minimal for this issue, while Florida Fish and Wildlife Conservation commission (FWC) assigned a Moderate Degree of Effect. These agencies provided comments on Wildlife and Habitat issues citing the presence of Wood Stork Core Foraging Areas, the likely presence of gopher tortoises, and the potential for several other listed species. The FDOT will conduct wildlife surveys during the Project Development and Environment (PD&E) study phase and coordinate with the FWS and FWC.

A Natural Resource Evaluation (NRE) will be conducted during the PD&E Study to assess potential impacts to listed species, develop avoidance and minimization efforts as part of the project coordination, and to document any involvement with wildlife and habitat resources. The NRE will assess potential floral and faunal species within the corridor, as well as potential habitat for these species. The results of the NRE will be coordinated with federal and/or state resource/regulatory agencies as applicable.

Degree of Effect: 3 *Moderate* assigned 01/22/2018 by Jennifer Goff, FL Fish and Wildlife Conservation Commission

Coordination Document: To Be Determined: Further Coordination Required

Direct Effects

Identified Resources and Level of Importance:
Florida Fish and Wildlife Conservation Commission (FWC) staff has reviewed ETDM #14321, Brevard County, and provides the following comments related to potential effects to fish and wildlife resources of this Programming Phase project.

The Project Description Summary states that this project involves the widening of SR 524 from west of Friday Road to Industry Road from a two-lane to a four-lane facility. The project length is approximately 3.15 miles. The potential modification of the existing SR 524 interchange at I-95 will also be examined. The Project Description did not address the possible need for new drainage retention areas (DRAs) to handle the stormwater runoff from the expanded roadway.

An assessment of the project area was performed on lands within 500 feet of the proposed alignment to determine potential impacts to habitat which supports listed species and other fish and wildlife resources. Our inventory included a review of aerial and ground-level photography, various wildlife observation and landcover data bases, along with coordination with FWC biologists and other State and Federal agencies. A GIS analysis was performed using the Florida Department of Transportation's (FDOT) Environmental Screening Tool to determine the potential quality and extent of upland and wetland habitat, and other wildlife and fisheries resource information. We have reviewed the Preliminary Environmental Discussion Comments Report provided by the FDOT, and offer the following comments and recommendations.

Our assessment reveals that land use north of SR 524 is mostly suburban residential, while south of the road is an undeveloped mosaic of various uplands and wetlands. Developed areas include High and Low Intensity Urban (45.95%, 230.11 acres), Rural (15.04%, 59.88 acres), Cultural Lacustrine (1.58%, 6.3 acres) and Other Agriculture (0.16%, 0.62 acres). Natural communities include Scrubby Flatwoods (11.32%, 45.08 acres), Mesic Flatwoods (10.81%, 43.06 acres), Wet Prairies (4.45%, 17.71 acres), Freshwater Forested Wetlands (4.35%, 17.34 acres), Mixed Hardwood-Coniferous (1.89%, 7.51 acres), Marshes (1.76%, 7.02 acres), Upland Hardwood Forest (1.06%, 4.22 acres), Wet Flatwoods (0.94%, 3.75 acres), and Shrub and Brushland (0.09%, 0.37 acres). The most valuable wildlife habitats within the project area are the undeveloped lands south of SR 524.

Based on range and preferred habitat type, the following species listed by the Federal Endangered Species Act and the State of Florida as Federally Endangered (FE), Federally Threatened (FT), State-Threatened (ST), or State Species of Special Concern (SSC) have the potential to occur in the project area: Eastern indigo snake (FT), crested caracara (FT), Florida scrub jay (FT), wood stork (FT), Florida pine snake (ST), gopher tortoise (ST), burrowing owl (ST), southeastern American kestrel (ST), Florida sandhill crane (ST), little blue heron (ST), tricolored heron (ST), roseate spoonbill (ST), and Sherman's fox squirrel (SSC). All of these species either likely or could potentially utilize appropriate habitats in the project vicinity.

The GIS analysis revealed several specific characteristics associated with lands along the project alignment that provide an indication of potential habitat quality or sensitivity that will require field studies to verify the presence or absence of listed wildlife species and the quality of wildlife habitat resources. In the FWC's Integrated Wildlife Habitat Ranking System, 25.35% of the assessment area is ranked Medium and 0.06% is ranked Moderately High. In the Florida Natural Areas Inventory Critical Lands and Waters Identification Project (CLIP), 23.20% is ranked Priority 1 or 2 (high) for Biodiversity Resources. The assessment area contains 32.24 acres of FWC Strategic Habitat Conservation Areas for the scrub jay and Cooper's hawk. The project is also within a Wood Stork Core Foraging Area.

Comments on Effects to Resources:
Primary wildlife issues associated with this project include: potential loss of natural habitats via expansion of the road right-of-way; potential adverse effects to a moderate number of species listed by the Federal Endangered Species Act as Endangered or Threatened, or by the State of Florida as Threatened or Species of Special Concern; potential for water quality impacts; and potential for increased wildlife roadkill.

Based on the project information provided, we believe that direct and indirect effects of this project could be moderate, provided that road construction is confined to the existing cleared right-of-way as much as possible, any required DRAs are constructed on disturbed sites, and Best Management Practices are followed for treatment of stormwater runoff.

Recommended Avoidance, Minimization, and Mitigation Opportunities:
We recommend that the Project Development and Environment Study address natural resources by including the following measures for conserving fish and wildlife and habitat resources that may occur within and adjacent to the project area.

1. Plant community mapping and wildlife surveys for the occurrence of wildlife species listed by the Federal Endangered Species Act as Endangered or Threatened, or by the State of Florida as Threatened or Species of Special Concern should be performed. Basic guidance for conducting wildlife surveys may be found in the FWC's Florida Wildlife Conservation Guide at: http://myfwc.com/conservation/value/fwcg/.

2. Based on the survey results, a plan should be developed to address direct, indirect, and cumulative effects of the project on wildlife and habitat resources, including listed species. Avoidance, minimization, and mitigation measures should also be formulated and implemented. Equipment staging areas should be located in previously disturbed sites to avoid habitat destruction or degradation. The plan should address specific habitat needs which are biologically compatible with the recovery of the target species. For guidance in this effort, FWC's Species Action Plans should be consulted at: http://myfwc.com/wildlifehabitats/imperiled/species-action-plans/.

3. Due to the likely presence of gopher tortoises in the project area, we recommend that the applicant refer to the FWC's Gopher Tortoise Permitting Guidelines (Revised January 2017) (http://www.myfwc.com/license/wildlife/gopher-tortoise-permits/) for survey methodology and permitting guidance. Survey methodologies require a burrow survey covering a minimum of 15 percent of potential gopher tortoise habitat to be impacted by development activities including staging areas (refer to Appendix 4 in the Gopher Tortoise Permitting Guidelines for additional information). Specifically, the permitting guidelines include methods for avoiding impacts (such as preservation of occupied habitat) as well as options and state requirements for minimizing, mitigating, and permitting potential impacts of the proposed activities. Any commensal species observed during burrow excavation should be handled in accordance to Appendix 9 of the Gopher Tortoise Permitting Guidelines.

4. A compensatory mitigation plan should include the replacement of any wetland, upland, or aquatic habitat functional values for listed species which are lost as a result of the project. Replacement habitat for mitigation should be type for type, as productive, and equal to or of higher functional value. Please notify us immediately if the design, extent, or footprint of the current project is modified, as we may choose to provide additional comments and/or recommendations.

We appreciate the opportunity to provide input on highway design and the conservation of fish and wildlife resources. Please contact Brian Barnett at (772) 579-9746 or email
brian.barnett@MyFWC.com
to initiate the process for further overall coordination on this project.

Additional Comments (optional):

CLC Recommendations:

Indirect Effects
Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

FDOT District 5 Feedback to FL Fish and Wildlife Conservation Commission's Review (02/09/2018): Thank you for your review and comments. We will coordinate with the Florida Fish and Wildlife Conservation Commission (FWC) during the Project Development and Environment (PD&E) Study phase regarding listed species. We will work to minimize any unavoidable wetland impacts or impacts to the scrub jay, Cooper's hawk FWC Strategic Habitat Conservation Areas and Wood Stork Core Foraging Area.

Stormwater treatment will be provided for the entire corridor and we will investigate multiple pond site locations for each basin. We will attempt to locate these facilities in previously disturbed upland areas.

Degree of Effect: 2 *Minimal* assigned 01/17/2018 by Zakia Williams, US Fish and Wildlife Service

Coordination Document: PD&E Support Document As Per PD&E Manual

Direct Effects

Identified Resources and Level of Importance:

Florida scrub-jay (*Aphelocoma coerulescens)*

The EST tool identified that over 60% of the project area is within the Florida scrub-jay service area.

Wood Stork *(Mycteria americana)*

The surrounding area is roadways, residential developments and mostly palustrine wetlands. The action area 500- foot buffer falls within the Core Foraging Area (CFA). The project area is located less than a mile away from a wood stork nesting colony (Lake Poinsett) this colony was last known to be active in 2015 and mile away from another wood colony known as the (Brevard County Maintenance Shop). .

Comments on Effects to Resources:

Florida scrub-jay (*Aphelocoma coerulescens)*

The potential for the Florida scrub-jay within this proposed corridor is not likely. There is no habitat in the area or the surrounding areas to provide suitable habitat for the species. The USFWS has no documented occurrences of scrub-jay in the area.

Wood Stork *(Mycteria americana)*

Because, the project area falls within the CFA and wood stork colony it is likely that wood storks are utilizing this area for foraging. Dependent upon the design of the project direct impacts should be avoided. To minimize adverse effects to the wood stork and other wetland dependent species, we recommend that impacts to suitable foraging habitat be avoided. If avoidance is not possible, minimization measure should be employed and best management practices to avoid further degradation of the site. Mitigation for wetland impacts should be discussed with USFWS and will require further coordination. Please refer to the North Florida Field Office website for WOST colony locations. http://www.fws.gov/northflorida

Coordination with the Office of Migratory birds will be needed for an eagle nest located within 200 feet of corridor.

Surveys for all federally listed plants found in Brevard County (the list can be found on our website northflorida.fws.gov) should be conducted by a trained botanist during the appropriate time of year.

Wetlands

Wetlands provide important habitat for fish and wildlife. Best Management Practices (BMPs) should be used to prevent degradation of wetland and other aquatic resources from erosion, siltation, and nutrient discharges associated with the project site. We recommend that the project be designed to avoid these valuable resources to the greatest extent practicable. If impacts to wetlands are unavoidable, we recommend that the FDOT provides mitigation that fully compensates for the loss of wetland resources. Dependent upon the alternative(s) selected, the proposed project is expected to result in minimal to moderate involvement with wildlife and habitat resources. If it is determined the project will affect and federally listed species and/or their habitat, the Department will initiate consultation with FWS during the Project Development process.

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Additional Comments (optional):

CLC Recommendations:

Indirect Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

FDOT District 5 Feedback to US Fish and Wildlife Service's Review (02/09/2018): Thank you for your review and comments. We will attempt to avoid and minimize impacts to Wood Stork foraging habitat and will utilize the effect determination key should the project impact suitable foraging habitat. Surveys for listed plants will be conducted when appropriate. According to the GIS data, an active eagle's nest is identified within 660 feet of the project (BE082). The FDOT will coordinate with FWS regarding any impacts.

Degree of Effect: 2 *Minimal* assigned 12/20/2017 by Steve Bohl, FL Department of Agriculture and Consumer Services

Coordination Document: No Involvement

Direct Effects

Identified Resources and Level of Importance:
Do not impact the Cocoa Forestry Station operations with this project.

Comments on Effects to Resources:
Do not impact the Cocoa Forestry Station operations with this project.

Recommended Avoidance, Minimization, and Mitigation Opportunities:
Just do not impact the Cocoa Forestry Station operations with this project.

Additional Comments (optional):

CLC Recommendations:

Indirect Effects

Identified Resources and Level of Importance:
The Cocoa Forestry Station operations.

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:
Do not impact the Cocoa Forestry Station operations with this project.

FDOT District 5 Feedback to FL Department of Agriculture and Consumer Services's Review (02/09/2018): Thank you for your comments and identifying that the project would not impact the Cocoa Forestry Station operations.

Coastal and Marine

Project Effects

Coordinator Summary Degree of Effect: 3 *Moderate* assigned 02/09/2018 by FDOT District 5

Comments:
National Marine Fisheries Services assigned a Degree of Effect of Moderate for wetland impacts on downstream estuaries, although they also noted that for the currently proposed project an Essential Fish Habitat (EFH) Assessment will not be required. The Saint Johns River Water Management District assigned aDegree of Effect of None since the project is not within the CCCL boundary limits.

Degree of Effect: 0 *None* assigned 01/17/2018 by Gary Haddle, Saint Johns River Water Management District

Coordination Document: No Involvement

Direct Effects

Identified Resources and Level of Importance:
The project does not appear to be within the CCCL boundary limits.

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Additional Comments (optional):

CLC Recommendations:

Indirect Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

FDOT District 5 Feedback to Saint Johns River Water Management District's Review (02/09/2018): Thank you for your review.

Degree of Effect: 3 *Moderate* assigned 01/05/2018 by Jennifer Schull, National Marine Fisheries Service

Coordination Document: No Involvement

Direct Effects

Identified Resources and Level of Importance:

Based on our review of the information provided on the EST website, GIS-based effects analysis of wetlands, and interpretation of aerial photographs, NOAA's National Marine Fisheries Service (NMFS) has determined that freshwater marshes, mixed scrub-shrub wetlands, mixed wetland hardwoods and wet prairies are located within the project corridor. These wetlands range from low to high in quality.

Comments on Effects to Resources:

The wetlands along the proposed roadway expansion provide water quality functions, such as removal of sediments, excess nutrients, and contaminants, which benefit and support these aquatic ecosystems. Through hydrological connections, these wetlands also contribute plant material and other useable nutrients (both dissolved and particulate organic matter) into aquatic food webs that include recreationally, commercially, and ecologically important species within downstream estuaries. If wetland impacts are unavoidable, sequential minimization and mitigation should take place.

In addition to the direct impacts from filling wetlands, construction activities may impact adjacent wetlands through sedimentation and runoff.

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Magnuson-Stevens Act: Based on the project location, information provided in the ETDM website, and GIS-based analysis of impacts, NOAA's National Marine Fisheries Service (NMFS) concludes that essential fish habitat (EFH) would not be impacted by the proposed road modifications; accordingly, we offer no comments pursuant to the EFH provisions of the Magnuson-Stevens Act (P.L. 104-297); and this project will not require an EFH Assessment. Further consultation on this matter is not necessary unless future modifications are proposed and you believe that the proposed action may result in adverse impacts to EFH.

Endangered Species Act: We are not aware of any threatened or endangered species or critical habitat under the purview of NMFS that occur within the project area. However, it should be noted that a "no effect" determination must be made by the action agency and the reasoning underlying the determination should be documented in a project file. Please coordinate closely with the U.S. Fish and Wildlife Service for other species listed under the Endangered Species Act that may require consultation.

Fish and Wildlife Coordination Act: The comments NMFS provided regarding sequential mitigation are in accordance with the Fish and Wildlife Coordination Act.

Additional Comments (optional):

CLC Recommendations:

Indirect Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

FDOT District 5 Feedback to National Marine Fisheries Service's Review (02/09/2018): Thank you for your review and comments. We will attempt to avoid impacts to wetland systems and minimize through design consideration impacts to those systems we cannot avoid.

ETAT Reviews and Coordinator Summary: Physical

Noise

Project Effects

Coordinator Summary Degree of Effect: 3 *Moderate* assigned 02/09/2018 by FDOT District 5

Comments:
No ETAT Reviews were submitted for this issue. A Degree of Effect of Moderate is being assigned to this resource based on the noise sensitive sites present, generally in the form of residential dwelling units located throughout the corridor. Noise will be analyzed during Project Development for these projects and documented in the Noise Study Report as part of the Project Development and Environment (PD&E) study in accordance with Part 2, Chapter 18 of the FDOT PD&E Manual.

None found

Air Quality

Project Effects

Coordinator Summary Degree of Effect: 2 *Minimal* assigned 02/09/2018 by FDOT District 5

Comments:
USEPA reviewed this issue and assigned a Degree of Effect of Minimal since this project falls in an attainment area and therefore impacts to air quality are not anticipated.

Degree of Effect: 2 *Minimal* assigned 01/22/2018 by Roshanna White, US Environmental Protection Agency

Coordination Document: To Be Determined: Further Coordination Required

Direct Effects

Identified Resources and Level of Importance:
A wide variety of air pollutants can be emitted from stationary and mobile sources. The EPA establishes the National Ambient Air Quality Standards (NAAQS) to protect public health and public welfare and regulates emissions of hazardous air pollutants. The SR-524 Widening project is in an attainment area, so criteria pollutants under NAAQS are considered to be an acceptable level. Therefore, EPA expects the project to have Minimal impact on air quality.

Comments on Effects to Resources:
SR-524 Widening project area air quality can possibly be effected by airborne dust, and other ambient air pollutants from project construction.

Recommended Avoidance, Minimization, and Mitigation Opportunities:
EPA recommends that SR-524 Widening project follow the Florida State Implementation Plan to ensure consistency with the state's emissions levels and consider the use of diesel controls, cleaner fuel, and cleaner construction practices for on-road and off-road equipment used for transportation, soil movement, or other project activities, including:
--Strategies and technologies that reduce unnecessary idling, including auxiliary power units, the use of electric equipment, and strict enforcement of idling limits; and

--Use of clean diesel through add-on control technologies like diesel particulate filters and diesel oxidation catalysts, repowers, or newer, cleaner equipment.

Additional Comments (optional):

CLC Recommendations:

Indirect Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

FDOT District 5 Feedback to US Environmental Protection Agency's Review (02/09/2018): Thank you for your review and comments.

Contamination

Project Effects

Coordinator Summary Degree of Effect: 3 *Moderate* assigned 02/09/2018 by FDOT District 5

Comments:
The US Environmental Protection Agency assigned a Degree of Effect of Moderate, and the Florida Department of Environmental Protection assigned a Degree of Effect of Minimal to this issue. The Moderate Degree of Effect is based on the potentially contaminated sites in the area, including a dental facility, two active and six closed Onsite Sewage Sites, 10 Petroleum Contamination Monitoring Sites, 11 Storage Tank Contamination Monitoring Sites, six Super Act Risk Sources, three US Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES), and four USEPA Resource Conservation and Recovery Act (RCRA) Regulated Facilities.

Degree of Effect: 2 *Minimal* assigned 01/23/2018 by Suzanne E. Ray, FL Department of Environmental Protection

Coordination Document: PD&E Support Document As Per PD&E Manual

Direct Effects

Identified Resources and Level of Importance:
The EST identifies 10 petroleum contamination monitoring sites and 11 storage tank contamination monitoring sites within the 500-foot buffer of the project.

Comments on Effects to Resources:
A Contamination Screening Evaluation similar to Phase I and Phase II Audits may need to be performed along the project right-of-way considering the proximity to petroleum handling facilities. In the event contamination is detected during construction, the Department needs to be notified and the FDOT may need to address the problem through additional assessment and remediation activities.

The Contamination Screening Evaluations should outline specific procedures that would be followed by the applicant in the event that drums, wastes, tanks or potentially contaminated soils are encountered during construction. In the event contamination is detected during construction, the Department and the County should be notified, and the FDOT may need to address the problem through additional assessment and remediation activities.

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Additional Comments (optional):

CLC Recommendations:

Indirect Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

FDOT District 5 Feedback to FL Department of Environmental Protection's Review (02/09/2018): Thank you for your review; a level one contamination screening evaluation report will be conducted during the PD&E Study phase. Future phases will incorporate the measures outlined in your comment.

Degree of Effect: 3 *Moderate* assigned 01/22/2018 by Roshanna White, US Environmental Protection Agency

Coordination Document: To Be Determined: Further Coordination Required

Direct Effects

Identified Resources and Level of Importance:
Contaminants may reach ground water from activities on land surface, pollution of surface water bodies, or by infiltration through soils. Contamination of ground water can result in poor drinking water quality and loss of water supply. A 500-foot buffer of SR-524 Widening is more vulnerable contaminate area for the Surficial Aquifer System. Soils, groundwater and surface waters have the

potential to be negatively affected by contaminated site features such as underground petroleum storage tanks, industrial or commercial facilities with onsite storage of hazardous materials, solid waste facilities, and hazardous waste facilities. Therefore, the EPA assigns a Moderate degree of Effect to Contamination.

Comments on Effects to Resources:
Underground and/or above ground storage tanks have the potential for environmental impacts to soils and/or groundwater from petroleum hydrocarbons. Petroleum hydrocarbons are the primary constituents in oil, gasoline, diesel, as well as solvents. Petroleum hydrocarbons are the primary focus of many site and risk assessments. The petroleum constituents of primary interest to human health are aromatic hydrocarbons (benzene ethylbenzene, toluene, and xylenes), polycyclic aromatic hydrocarbons (PAHs), gasoline additives (MTBE, TBA) and combustion emissions from fuels. Other contaminated site features, such as Hazardous Waste Sites, Solid Waste Sites, and USEPA RCRA Sites, involve other types of hazardous and solid wastes. Releases of hazardous wastes into the ground can contaminate groundwater and degrade land use. Furthermore, owners or operators have corrective obligations under RCRA. Owners and operators are to properly install storage systems and protect their storage systems from spills, overfills, and corrosion. It is also required that correct filling practices to be followed. In addition, owners and operators must report the existence of new storage systems, suspected releases, storage system closures, and keep records of operation and maintenance.

If wastes are not cleaned-up the property may become a brownfield site. Blighted and potentially contaminated sites negatively affect the aesthetics, criminality, and economic value of a community.

Recommended Avoidance, Minimization, and Mitigation Opportunities:
Potential issues relating to contaminated sites include leaking underground petroleum storage tanks, leaking above ground storage tanks, improper storage and/or disposal of hazardous materials, spills and/or leaks from transportation vehicles (trucks, trains, etc.). Direct and indirect impacts resulting from these issues include contamination of soils, groundwater, and surface water. If any petroleum storage tanks are to be impacted or removed during the construction phase of the project, sampling and analysis of soils and groundwater should be conducted to determine if petroleum and hydrocarbon pollutants are present above regulatory levels. If any contamination effects SR-524 Widening, EPA recommends corrective action is completed before commencement of project activities.

Additional Comments (optional):

CLC Recommendations:

Indirect Effects
Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

FDOT District 5 Feedback to US Environmental Protection Agency's Review (02/09/2018): Thank you for your comments. A contamination screening evaluation will be conducted during the Project Development and Environment (PD&E) study, and a CSER will be prepared. Future phases will incorporate the measures outlined in your comment.

Infrastructure

Project Effects

Coordinator Summary Degree of Effect: 2 *Minimal* assigned 02/09/2018 by FDOT District 5

Comments:
No ETAT Reviews were submitted for this issue. A Degree of Effect of Minimal is being assigned. Overhead and underground utilities and other features may be impacted, but only on a temporary basis, mostly related to short-term construction-related activities.

None found

Navigation

Project Effects

Coordinator Summary Degree of Effect: 0 *None* assigned 02/09/2018 by FDOT District 5

Comments:
A Degree of Effect of N/A is being assigned to this issue since the GIS analysis showed that there were no potential navigable waterway crossings found intersecting the alternative; the US Coast assigned a Degree of Effect of N/A / No Involvement Guard and the US Army Corps of Engineers (USACE) assigned a Degree of Effect of None.

Degree of Effect: 0 *None* assigned 01/16/2018 by Randy Turner, US Army Corps of Engineers

Coordination Document: No Involvement

Direct Effects

Identified Resources and Level of Importance:
No resources present.

Comments on Effects to Resources:
N/A

Recommended Avoidance, Minimization, and Mitigation Opportunities:
N/A

Additional Comments (optional):

CLC Recommendations:

Indirect Effects

Identified Resources and Level of Importance:
N/A

Comments on Effects to Resources:
N/A

Recommended Avoidance, Minimization, and Mitigation Opportunities:
N/A

FDOT District 5 Feedback to US Army Corps of Engineers's Review (02/09/2018): Thank you for your review.

Degree of Effect: N/A *N/A / No Involvement* assigned 12/29/2017 by Randall D Overton, US Coast Guard

Coordination Document: No Involvement

Direct Effects

Identified Resources and Level of Importance:
Navigable Waters of the United States as defined in 33 CFR 2.36

Comments on Effects to Resources:
No Coast Guard involvement

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Additional Comments (optional):

CLC Recommendations:

Indirect Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

FDOT District 5 Feedback to US Coast Guard's Review (02/09/2018): Thank you for your review.

ETAT Reviews and Coordinator Summary: Special Designations

Special Designations

Project Effects

Coordinator Summary Degree of Effect: N/A *N/A / No Involvement* assigned 02/09/2018 by FDOT District 5

Comments:
USEPA assigned a Degree of Effect (DOE) of N/A and SJRWMD assigned a DOE of none for this issue. The GIS analysis showed that there are no outstanding waters, aquatic preserves, or wild and scenic rivers within a mile buffer of the project area.

Degree of Effect: 0 *None* assigned 02/05/2018 by Perry Jennings, Saint Johns River Water Management District

Coordination Document: Permit Required
Coordination Document Comments:
Individual Environmental Resource permit, Chapter 62-330 FAC

Direct Effects
Identified Resources and Level of Importance:
No district special designations for this project area

Comments on Effects to Resources:
na

Recommended Avoidance, Minimization, and Mitigation Opportunities:
na

Additional Comments (optional):
Individual Environmental Resource permit, Chapter 62-330 FAC

CLC Recommendations:

Indirect Effects
Identified Resources and Level of Importance:
na

Comments on Effects to Resources:
na

Recommended Avoidance, Minimization, and Mitigation Opportunities:
na

FDOT District 5 Feedback to Saint Johns River Water Management District's Review (02/09/2018): Thank you for your review.

Degree of Effect: N/A *N/A / No Involvement* assigned 01/22/2018 by Roshanna White, US Environmental Protection Agency

Coordination Document: No Involvement

Direct Effects
Identified Resources and Level of Importance:
The Preliminary Environmental Discussion did not identify any Special Designations

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Additional Comments (optional):

CLC Recommendations:

Indirect Effects
Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

FDOT District 5 Feedback to US Environmental Protection Agency's Review (02/09/2018): Thank you for your review.

Eliminated Alternatives

There are no eliminated alternatives for this project.

Project Scope

General Project Recommendations

There are no general project recommendations identified for this project in the EST.

Anticipated Permits

Permit	Type	Conditions	Assigned By	Date
Section 404 Individual Permit	USACE		FDOT District 5	02/09/18
Right-Of-Way Permit	FDOT		FDOT District 5	02/09/18
NPDES General Permit	FDEP		FDOT District 5	02/09/18
Environmental Resource Permit	FDEP		FDOT District 5	02/09/18
Dredge and Fill Permit	FDEP		FDOT District 5	02/09/18
Gopher Tortoise Permit	FFWCC		FDOT District 5	02/09/18

Anticipated Technical Studies

Technical Study Name	Type	Conditions	Assigned By	Date
Design Traffic Technical Memorandum	ENGINEERING		FDOT District 5	02/09/2018
Location Hydraulics Report	ENGINEERING		FDOT District 5	02/09/2018
Drainage/Pond Siting Report	ENGINEERING		FDOT District 5	02/09/2018
Geotechnical Report	ENGINEERING		FDOT District 5	02/09/2018
Typical Section Package	ENGINEERING		FDOT District 5	02/09/2018
Value Engineering Information Report	ENGINEERING		FDOT District 5	02/09/2018
Public Involvement Plan	ENVIRONMENTAL		FDOT District 5	02/09/2018
Class of Action Determination	ENVIRONMENTAL		FDOT District 5	02/09/2018
Noise Study Report	ENVIRONMENTAL		FDOT District 5	02/09/2018
Air Quality Report	ENVIRONMENTAL		FDOT District 5	02/09/2018
Contamination Screening Evaluation Report	ENVIRONMENTAL		FDOT District 5	02/09/2018
Conceptual Stage Relocation Plan	ENVIRONMENTAL		FDOT District 5	02/09/2018
Traffic Analysis	ENGINEERING		FDOT District 5	02/09/2018
Type 2 CE	ENVIRONMENTAL		FDOT District 5	02/09/2018
Sociocultural Effects Evaluation	Other		FDOT District 5	02/09/2018
Preliminary Engineering Report	ENGINEERING		FDOT District 5	02/09/2018
Water Quality Impact Evaluation (WQIE)	ENVIRONMENTAL		FDOT District 5	02/09/2018
Cultural Resource Assessment Survey	ENVIRONMENTAL		FDOT District 5	02/09/2018
Location Hydraulics Technical Memorandum	ENGINEERING		FDOT District 5	02/09/2018
Utility Assessment Package	ENGINEERING		FDOT District 5	02/09/2018
Lighting Justification Report	ENGINEERING		FDOT District 5	02/09/2018
Section 4(f) Determination of Applicability	ENVIRONMENTAL		FDOT District 5	02/09/2018
Bridge Analysis Report	ENGINEERING		FDOT District 5	02/09/2018
Farmland Conversion Impact Rating Form	ENVIRONMENTAL		FDOT District 5	02/09/2018

Natural Resources Evaluation (NRE)	ENVIRONMENTAL		FDOT District 5	02/09/2018

Dispute Resolution Activity Log

There are no dispute actions identified for this project in the EST.

Appendices

Preliminary Environmental Discussion Comments

Social and Economic

Land Use Changes

Project Level

Comments:

The City of Cocoa and Brevard County's Future Land Use maps were reviewed, in addition to data from the Environmental Screening Tool (EST).

This project is identified in the Florida Department of Transportation's (FDOT) Statewide Transportation Improvement Program (STIP), the Space Coast TPO's 2017-2021 Transportation Improvement Plan (TIP), and the Space Coast TPO's 2040 Long Range Transportation Plan (LRTP).

The proposed project is expected to maintain the future land uses and may result in minimal involvement with land use resources.

Social

Project Level

Comments:

The Environmental Screening Tool (EST) Sociocultural Data Report (SDR) was used for demographic data (the SDR can be found within the Community Coordination section of the EST). The SDR uses the Census 2015 American Community Survey (ACS) data and reflects the approximation of the population based on a 500-foot project buffer area intersecting the Census Block Groups along the project corridor. Using the 500-foot project buffer area, the SDR identified the following demographics:

Population and Income

The SDR identified 221 households with a population of 555 people. The median household income is $58,802. Several households are below poverty level (6.33%) and 1.36% households receive public assistance.

Race and Ethnicity

The minority population makes up 19.64% of the total population comprising of "Black or African American Alone" with a population of 42 people (7.57%), "Claimed 2 or More Races" with 18 people (3.24%), "Asian Alone" with 18 people (3.24%), and "American Indian or Alaskan Native Alone" with a population of 3 people (0.54%) within the 500-foot project buffer area. There are 31 people (5.59%) that have a "Hispanic or Latino of Any Race" ethnicity.

Ageand Disability

The median age is 46, and persons age 65 and over comprise 18.74% of the population. There are 33 people (9.54%) between the ages of 20 and 64 that have a disability.

Housing

There are 258 housing units. The housing consists of single family units (90%), multi-family units (8%), and mobile home units (3%). These units are owner occupied (74%), renter occupied (12%), and vacant units (14%).

Language

According to the US Census Data, one person (0.19%) within the 500 foot buffer of the project is noted as speaking English "not well"; however, refinement of the Limited English Proficiency (LEP) population totals and requirements will be further evaluated in Project Development as part of the public involvement efforts to determine if LEP services may be required.

The EST Geographic Information System (GIS) analysis identified within the 500-foot project buffer area:
- Junny Rios Martinez Park
- Northwest Baptist Church

This project will be developed in accordance with the Civil Rights Act of 1964, the Civil Rights Act of 1968, along with Title VI of the Civil Rights Act, Executive Order 12898 (Environmental Justice), which requires Federal agencies to take the appropriate steps to identify and address any disproportionately high and adverse human health or environmental effects of Federal programs, policies, and activities on minority and low-income populations. Where there is potential for disproportionately high and adverse effects on minority and low-income populations, proactive measures will be taken to involve the affected community in the decisions related to alternative selection, impact analysis, and mitigation.

Relocation Potential

Project Level
Comments:
The existing right-of-way along S.R. 524 range from approximately 200 feet from Friday Road South to the I-95 Bridge; approximately 105 feet under the I-95 Bridge; approximately 200 feet from the I-95 Bridge to London Boulevard; approximately 218 feet from London Boulevard to the Shopping Center intersection; and, approximately 253 feet from the Shopping Center intersection to Industry Road. Given the available right of way, the proposed project is not anticipated to result in any residential relocations or business displacements.

Farmlands

Project Level
Comments:
Although no "Agricultural" land shows up in the EST's Generalized Agricultural Land Use data within a 500 foot buffer of the project, the analysis identified there were 166.82 acres (41.89% of the land) identified as prime farmland, "Farmland of Unique Importance" within the same project buffer area, which appears to be linked to the types of soil. In addition, the SJRWMD Agricultural Lands 2009 identify that within the 500-foot project buffer area there are .62 acres (0.16%) of horse farms. The project is located in the Palm Bay - Melbourne Urbanized Area.

Aesthetic Effects

Project Level
Comments:
This project will consider potential locations where aesthetics may be effected and identify potential landscaping in future phases of project development.

Economic

Project Level

Comments:

Economic development plans, including the Wal-Mart Distribution Center and the Flying J Travel Center on the west side of the corridor, will be supported given the 2 to 4 lane widening. Additional planned development includes a combination of retail and residential: London Cove, The Preserve, Cocoa Landings, Adamson Creek and Emerald Lakes.

Mobility

Project Level

Comments:

At present, there are sidewalks on the north side of SR 524 from Cox Road to the eastern terminus; however, sidewalks are not present on the south side of the roadway and bicycle lanes and other pedestrian facilities are not present along the corridor. Additionally, as documented in the purpose and need, in the future year (2040) no-build condition, the majority of the SR 524 study corridor, including the interchange at I-95, is projected to operate at Level of Service (LOS) E with Average Annual Daily Traffic (AADT) ranging from 16,000 vehicles/day to more than 23,000 vehicles/day.

Cultural

Section 4(f) Potential

Project Level

Comments:

The Fred Gay Golf Academy, part of Brevard Community College, may be protected under Section 4(f) of the Department of Transportation Act of 1966. The Cocoa Conservation Area, a Florida Communities Trust Project used for hiking, biking, and nature study, and owned and managed by the City of Cocoa, will be looked at, although it should be outside of the project area. And although not identified in the data layers located under this issue in the EST, the county owned Junny Rios Martinez Park is adjacent to the project. During the PD&E Study, a Section 4(f) Determination of Applicability will be prepared, although no right-of-way acquisition is anticipated.

Historic and Archaeological Sites

Project Level

Comments:

The Environmental Screening Tool (EST) Geographic Information System (GIS) analysis identified one previously recorded archaeological site (BR02319) within the 500-foot project buffer area: a prehistoric shell midden, which was determined not eligible for listing in the National Register of Historic Places (NRHP) by the State Historic Preservation Officer (SHPO). Two historic structures identified, (BR03330 & BR03331) east of Industry Road, are personal residences constructed ca. 1968, but both have also been determined not eligible for listing in the NRHP by the SHPO.

According to the EST GIS, there are 28 parcels with pre-1970 construction dates located within the 500-foot project buffer area that have not been recorded, but only four of these are within

100 feet (or adjacent to the project). There are 22 structures built in the 1970s between a 200 and 500 foot buffer.

There have been eleven cultural resource assessment surveys (CRAS) conducted within the 500-foot project buffer area, but over half (60.4%) of the area has not been surveyed. A CRAS will be prepared for this project during the PD&E Study.

Recreation Areas

Project Level
Comments:
Within the 500-foot project buffer area, the Environmental Screening Tool (EST) Geographic Information System (GIS) data identified the Junny Rios Martinez Park and the Fred Gay Golf Academy as the primary recreation areas in the study area. The Cocoa Conservation Area, a Florida Communities Trust Project used for hiking, biking, and nature study, and owned and managed by the City of Cocoa, is just outside of the project area.

Natural

Wetlands and Surface Waters

Project Level
Comments:
The National Wetlands Inventory (NWI) dataset of the Environmental Screening Tool (EST) Geographic Information System (GIS) analysis identified 42.74 acres (10.7%) of palustrine wetlands within the 500-foot project buffer area. The St. Johns River Water Management District (SJRWMD) Wetlands 2009 dataset identifies the wetlands in their jurisdiction to be freshwater marshes, mixed scrub-shrub wetlands, mixed wetland hardwoods and wet prairies. A Natural Resources Evaluation (NRE) will be conducted during the PD&E Study.

Water Quality and Quantity

Project Level
Comments:
Within the 500-foot project buffer area, the Environmental Screening Tool (EST) Geographic Information System (GIS) analysis did not identified the St Johns River above Puzzle Lake as a Verified Impaired Florida Water for dissolved oxygen, fecal coliform, and mercury in fish tissue. The 500-foot project buffer area of this project is within the jurisdiction of the St. Johns River Water Management District (SJRWMD). Principal Aquifers of the State of Florida described the Surficial Aquifer System as 398.24 acres (100%) within a 500-foot project buffer area. The Recharge Areas of the Floridan Aquifer shows a "Discharge/Less than 1" as 100%. The project will be designed to meet state water quality and quantity requirements, and best management practices will be utilized during construction.

Floodplains

Project Level
Comments:

The Environmental Screening Tool (EST) Geographic Information System (GIS) analysis identified Special Flood Hazard Areas in Zone A with 38.68 acres (9.71%) and Zone AE with 8.94 acres (2.25%) within the 500-foot project buffer area. The D-FIRM 100-year Flood Plain identifies Zone A with 39.14 acres (9.83%) and Zone AE with 15.93 acres (4%) within the 500-foot project buffer area. During the PD&E Study, engineering design features and hydrological drainage structures will be designed such that stormwater transport, flow, and discharge meet or exceed flood control requirements.

Wildlife and Habitat

Project Level

Comments:

The Environmental Screening Tool (EST) Geographic Information System (GIS) analysis identified over 60% of the project area (within a 500 foot buffer) is within the Florida Scrub-jay Service Area. Also, the project's 500-foot buffer area is located within Woodstork Core Foraging Areas, although no nest or occurrence data is present until the mile buffer from the project.

Within the 500-foot project buffer area, the EST's GIS analysis identified the following additional species as possibly occurring in the area: Audubon's Crested Caracara, Red-cockaded Woodpecker, Eastern Indigo Snake, and Carter's Mustard. From a USFWS IPaC report (attached in the EST), Everglade Snail Kite and Lewton's Polygala are also identified as possibly occurring in the project area.

A Natural Resources Evaluation (NRE) will be conducted in Project Development.

Coastal and Marine

Project Level

Comments:

The Environmental Screening Tool (EST) Geographic Information System (GIS) analysis did not identify any Environmentally Sensitive Shorelines or Coastal Barrier Resources within the 500-foot project buffer area. The project is located in the St. Johns River Estuarine Drainage Area (EDA).

Physical

Noise

Project Level

Comments:

Noise sensitive sites are present along the corridor, generally in the form of residential dwelling units located throughout the corridor. A noise analysis will be conducted and a Noise Study Report will be completed during the PD&E Study.

Air Quality

Project Level

Comments:
This portion of Brevard County has not been designated as nonattainment or maintenance for ozone, carbon monoxide (CO), particulate matter (PM), or any of the National Ambient Air Quality Standards (NAAQS) in accordance with the Clean Air Act. An Air Quality Screening will occur during the PD&E Study.

Contamination
Project Level
Comments:
The Environmental Screening Tool (EST) Geographic Information System (GIS) analysis identified a dental facility, two active and six closed Onsite Sewage Sites, 10 Petroleum Contamination Monitoring Sites, 11 Storage Tank Contamination Monitoring Sites, six Super Act Risk Sources, three US Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES), and four USEPA Resource Conservation and Recovery Act (RCRA) Regulated Facilities located within the 500-foot project buffer area. A Contamination Screening Evaluation Report (CSER) will be prepared during the PD&E Study.

Infrastructure
Project Level
Comments:
The Environmental Screening Tool (EST) Geographic Information System (GIS) analysis and map review identified minimal resources along the corridor. Primary infrastructure includes utilities such as Brevard County water resources, Brighthouse Networks, AT&T, MCI, Fibernet Direct, Florida Power and Light, Florida Gas Transmission, Florida City Gas and utilities associated with the City of Cocoa.

Navigation
Project Level
Comments:
The Environmental Screening Tool (EST) Geographic Information System (GIS) analysis did not identify any potential navigable waterways along this corridor.

Special Designations

Special Designations: Outstanding Florida Waters
Project Level
Comments:
The Environmental Screening Tool (EST) Geographic Information System (GIS) analysis did not identify any Outstanding Florida Waters within the 500-foot project buffer area.

Special Designations: Aquatic Preserves
Project Level
Comments:
The EST GIS analysis did not identify any Aquatic Preserves within the 500-foot project buffer area.

Special Designations: Scenic Highways

Project Level

Comments:

The EST GIS analysis did not identify any Scenic Byways within the 500-foot project buffer area.

Special Designations: Wild and Scenic Rivers

Project Level

Comments:

The EST GIS analysis did not identify any Wild and Scenic Rivers within the 500-foot project buffer area.

Advance Notification Comments

FL Department of State Comment --
no additional comments

--Ginny Leigh Jones, 12/27/2017

No response

US Army Corps of Engineers Comment --
The Corps has no issues with the Advance Notification Package and concurs with the initial assessment of Wetlands and Surface Water and Navigation issues. Further comments on project effects are provided in the Review Project tool.

--Randy Turner, 1/16/2018

No response

GIS Analyses

Since there are so many GIS Analyses available for Project #14321 - SR 524 (Friday Rd to Industry Rd), they have not been included in this ETDM Summary Report. GIS Analyses, however, are always available for this project on the Public ETDM Website. Please click on the link below (or copy this link into your Web Browser) in order to view detailed GIS tabular information for this project:

http://etdmpub.fla-etat.org/est/index.jsp?tpID=14321&startPageName=GIS%20Analysis%20Results

Special Note: Please be sure that when the GIS Analysis Results page loads, the **Programming Screen Summary Report Published on 02/09/2018 by Kathaleen Linger Milestone** is selected. GIS Analyses snapshots have been taken for Project #14321 at various points throughout the project's life-cycle, so it is important that you view the correct snapshot.

Project Attachments

There are no attachments for this project.

Degree of Effect Legend

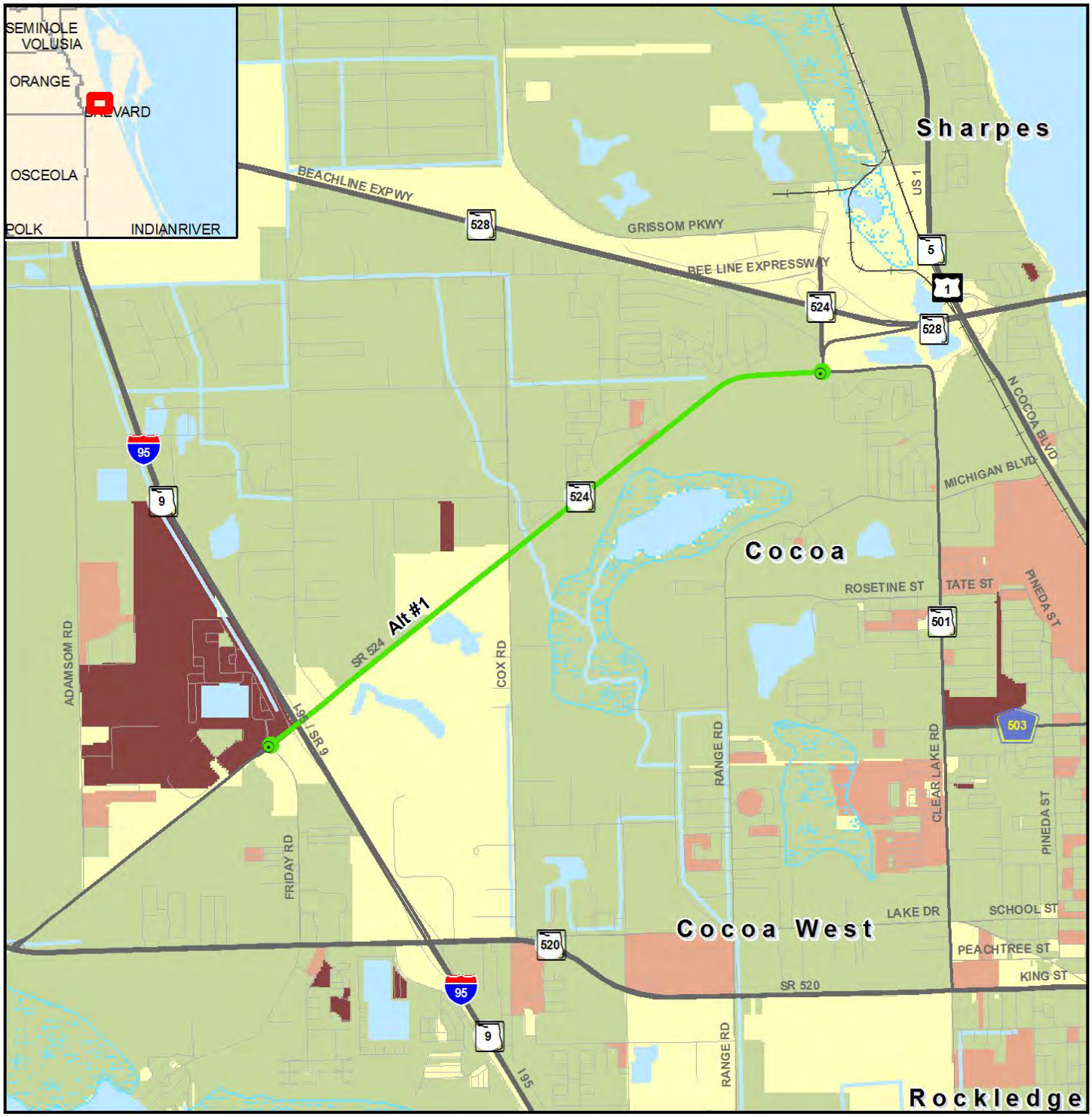
Color Code	Meaning	ETAT	Public Involvement

N/A	Not Applicable / No Involvement	There is no presence of the issue in relationship to the project, or the issue is irrelevant in relationship to the proposed transportation action.	
0	None (after 12/5/2005)	The issue is present, but the project will have no impact on the issue; project has no adverse effect on ETAT resources; permit issuance or consultation involves routine interaction with the agency. The *None* degree of effect is new as of 12/5/2005.	No community opposition to the planned project. No adverse effect on the community.
1	Enhanced	Project has positive effect on the ETAT resource or can reverse a previous adverse effect leading to environmental improvement.	Affected community supports the proposed project. Project has positive effect.
2	Minimal	Project has little adverse effect on ETAT resources. Permit issuance or consultation involves routine interaction with the agency. Low cost options are available to address concerns.	Minimum community opposition to the planned project. Minimum adverse effect on the community.
2	Minimal to None (assigned prior to 12/5/2005)	Project has little adverse effect on ETAT resources. Permit issuance or consultation involves routine interaction with the agency. Low cost options are available to address concerns.	Minimum community opposition to the planned project. Minimum adverse effect on the community.
3	Moderate	Agency resources are affected by the proposed project, but avoidance and minimization options are available and can be addressed during development with a moderated amount of agency involvement and moderate cost impact.	Project has adverse effect on elements of the affected community. Public Involvement is needed to seek alternatives more acceptable to the community. Moderate community interaction will be required during project development.
4	Substantial	The project has substantial adverse effects but ETAT understands the project need and will be able to seek avoidance and minimization or mitigation options during project development. Substantial interaction will be required during project development and permitting.	Project has substantial adverse effects on the community and faces substantial community opposition. Intensive community interaction with focused Public Involvement will be required during project development to address community concerns.
5	Potential Dispute (Planning Screen)	Project may not conform to agency statutory requirements and may not be permitted. Project modification or evaluation of alternatives is required before advancing to the LRTP Programming Screen.	Community strongly opposes the project. Project is not in conformity with local comprehensive plan and has severe negative impact on the affected community.
5	Dispute Resolution (Programming Screen)	Project does not conform to agency statutory requirements and will not be permitted. Dispute resolution is required before the project proceeds to programming.	Community strongly opposes the project. Project is not in conformity with local comprehensive plan and has severe negative impact on the affected community.
	No ETAT Consensus	ETAT members from different agencies assigned a different degree of effect to this project, and the ETDM coordinator has not assigned a summary degree of effect.	
	No ETAT Reviews	No ETAT members have reviewed the corresponding issue for this project, and the ETDM coordinator has not assigned a summary degree of effect.	

Project-Level Hardcopy Maps

14321 SR 524 (Friday Rd to Industry Rd)

Friday Rd. to Industry Rd.



Age Distribution Map

ETDM Alternative
ETDM Alternative Terminus
Major Road
Local Road or Trail

Median Age
0 - 18
18 - 30
30 - 65
> 65

Data Sources:
US Geological Survey
FL Department of Transportation
NAVTEQ
US Census Bureau (2010)

0 0.15 0.3 0.6 Miles

N

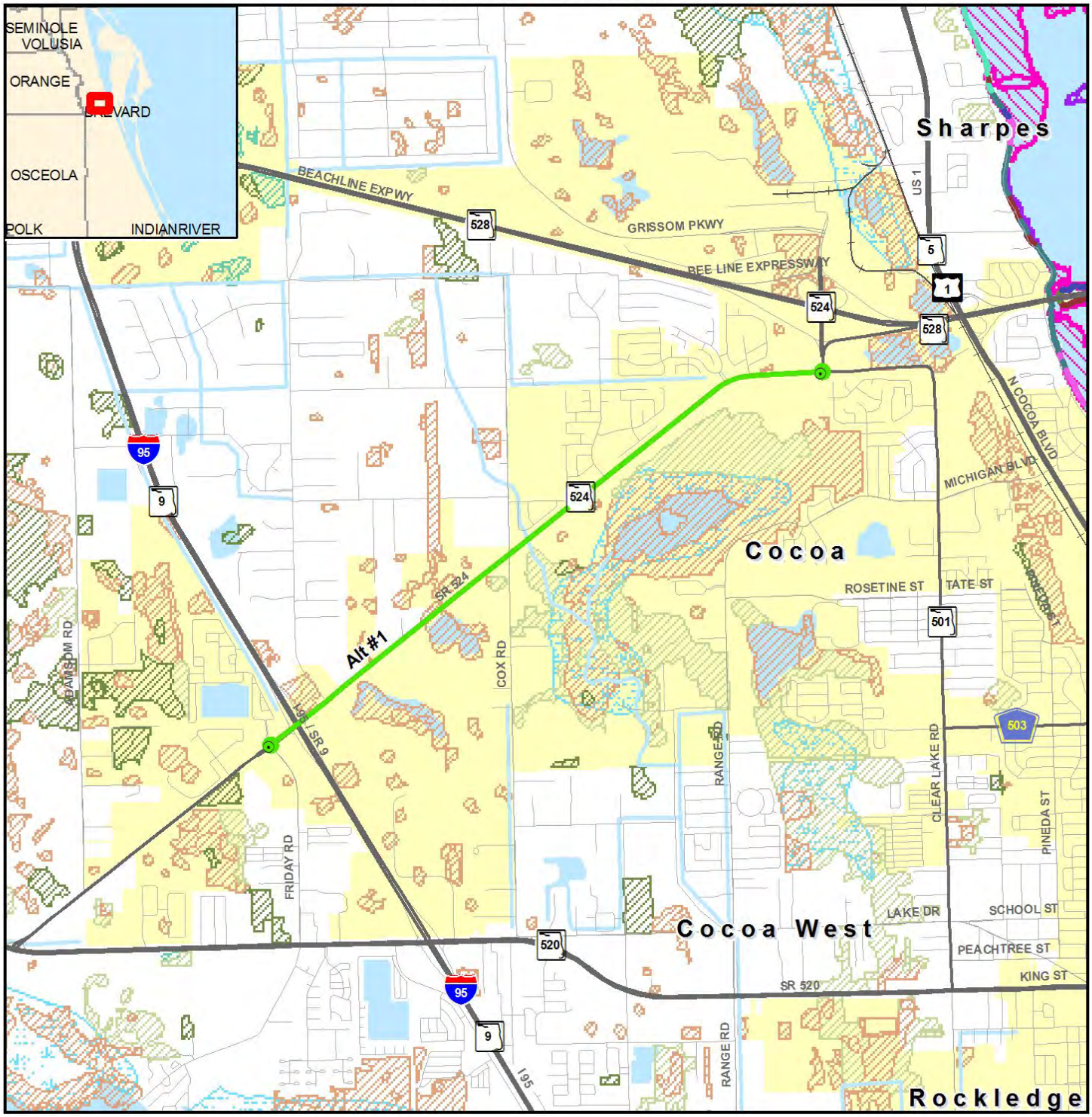
11/30/2017

etdm Environmental Screening Tool

FDOT

14321 SR 524 (Friday Rd to Industry Rd)

Friday Rd. to Industry Rd.



Coastal and Marine Map

- ETDM Alternative
- ETDM Alternative Terminus
- City Limits
- Navigable Water Way
- Swamp or Marsh
- Exposed Rocky Platform
- Sand Beach
- Gravel Beach/Riprap
- Exposed Tidal Flat
- Sheltered Tidal Flat
- Mixed Sand And Gravel Beach
- Sheltered Rock/Seawall/Vegetated
- Exposed Vertical Rocky Shore/Seawall
- Coastal Barrier Resource Area
- Continuous Seagrass
- Discontinuous Seagrass
- Aquatic Preserve
- Non-vegetated Wetland
- Vegetated Non-forested Wetland
- Wetland Forested Mixed
- Wetland Coniferous Forest
- Wetland Hardwood Forest

0 0.2 0.4 0.8 Miles

N

11/30/2017

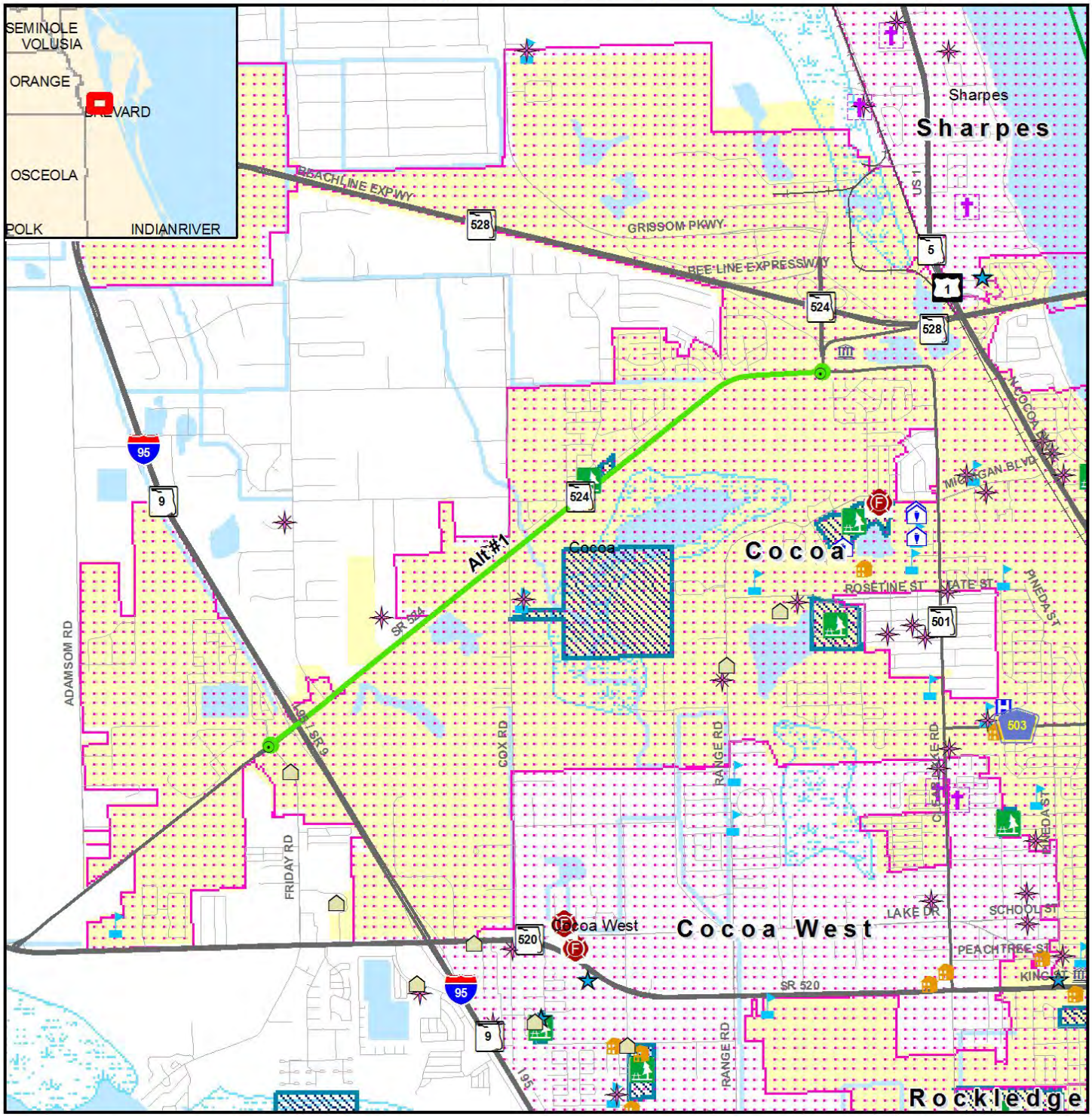
Data Sources: NAVTEQ; US Geological Survey; Florida Marine Research Institute; Florida Department of Transportation; Florida Department of Environmental Protection; National Oceanic and Atmospheric Association; Florida Water Management Districts

etdm Environmental Screening Tool

FDOT

14321 SR 524 (Friday Rd to Industry Rd)

Friday Rd. to Industry Rd.



Community Services Map

- ETDM Alternative
- ETDM Alternative Terminus
- Major Road
- Local Road or Trail
- City Limits
- Government
- Civic Center
- Cemetery
- Social Service
- Community Center
- Law Enforcement
- Place of Worship
- Cultural Center
- Fire Station
- Health Care
- School
- Park
- Recreational Trail
- Community Boundary
- Conservation or Recreation Area

Data Sources:
US Geological Survey; FL Department of Transportation; NAVTEQ; FL Property Appraisers; FL Natural Areas Inventory

0 0.15 0.3 0.6 Miles

N

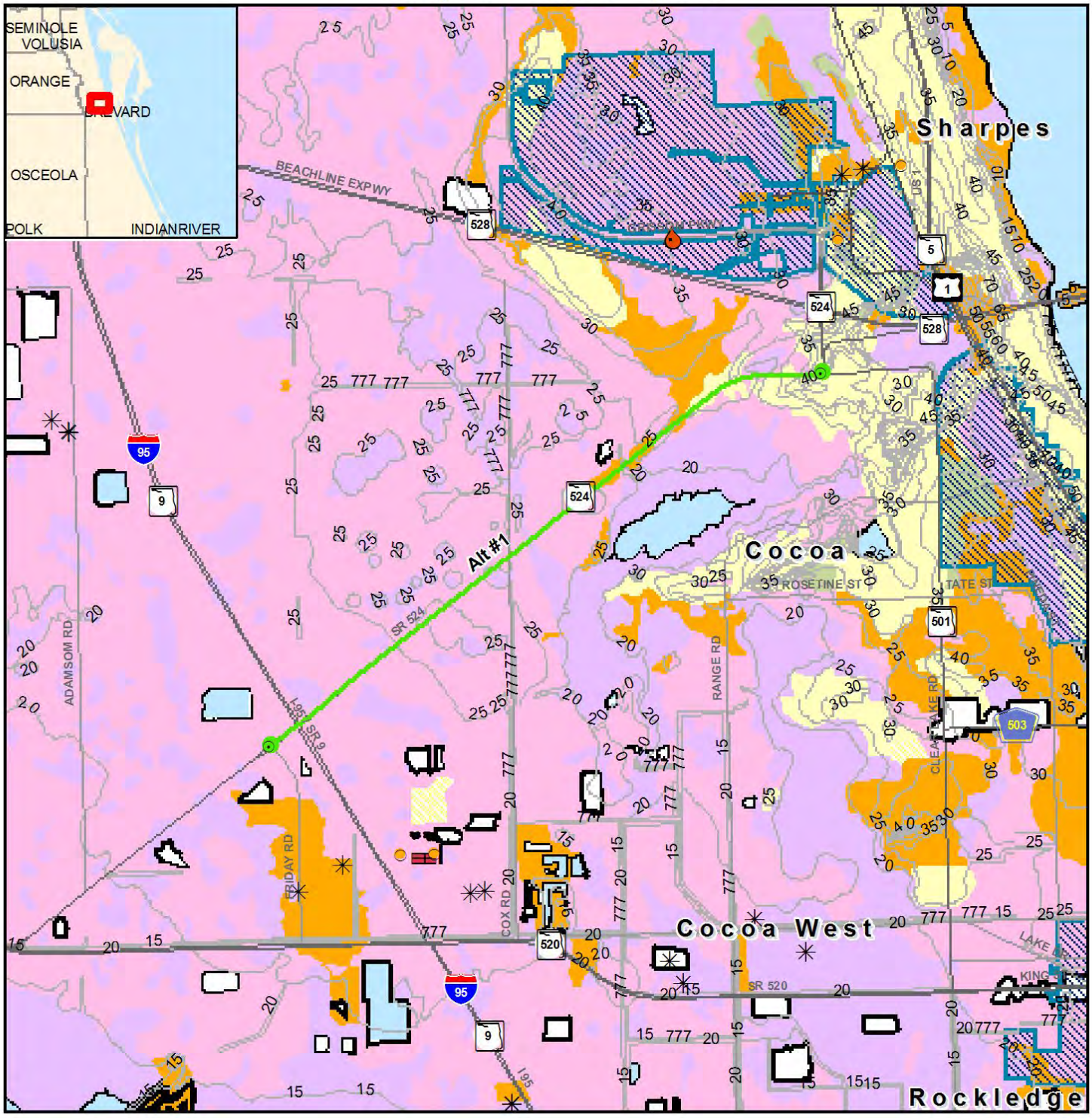
11/30/2017

etdm Environmental Screening Tool

FDOT

14321 SR 524 (Friday Rd to Industry Rd)

Friday Rd. to Industry Rd.



Contamination Map

- ETDM Alternative
- ETDM Alternative Terminus
- Major Road
- Local Road or Trail
- Toxic Release Inventory
- Dry Cleaning Facility
- Solid Waste Facility
- Hazardous Material Site
- Power Plant
- Superfund Site
- Nuclear Site
- FDEP Tanks
- 5 FT Contour
- NPL Remediation Site
- Brownfield Area

Soil Drainage

- Excessively Drained
- Well Drained
- Somewhat Excessively Drained
- Moderately Well Drained
- Somewhat Poorly Drained
- Poorly Drained
- Very Poorly Drained
- Unclassified

Data Sources:NAVTEQ; US Geological Survey; FL Department of Transportation; FL Department of Environmental Protection; FL Water Management Districts; US Environmental Protection Agency; Natural Resource Conservation Service

0 0.2 0.4 0.8 Miles

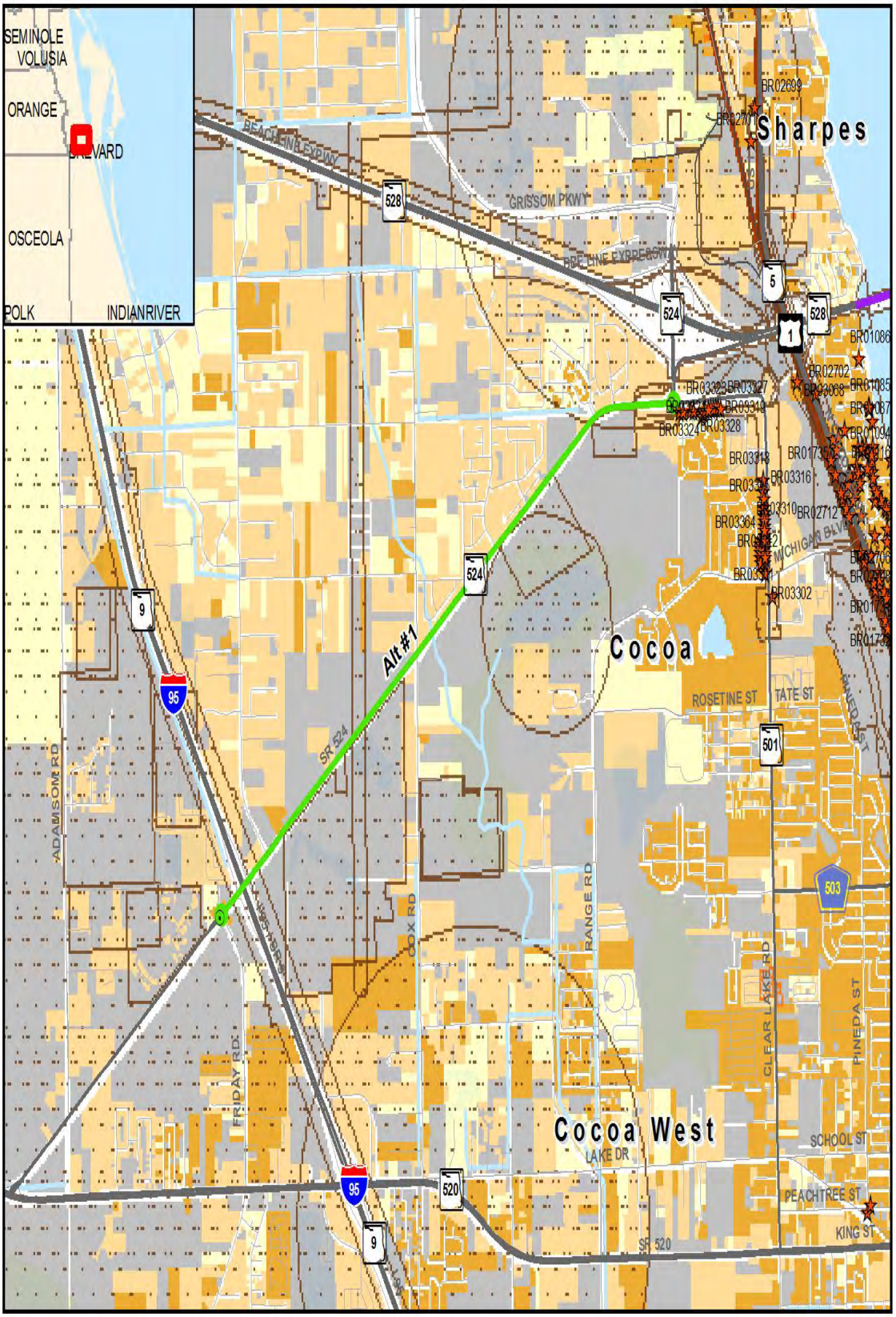
N

11/30/2017

etdm Environmental Screening Tool

FDOT

Cultural Resources Data Map



- ETDM Alternative
- Major Road
- Local Road or Trail
- Historic Structure
- Historic Bridge
- State Historic Highway
- Historic Cemetery
- Historic Resource Group
- Cultural Resource Field Survey Area
- ETDM Alternative

Year Built

- Pre 1970
- Post 1980
- 1970 - 1979
- Parcels w/ no values

N

0 0.1 0.2 0.4 Miles

etdm Environmental Screening Tool

FDOT

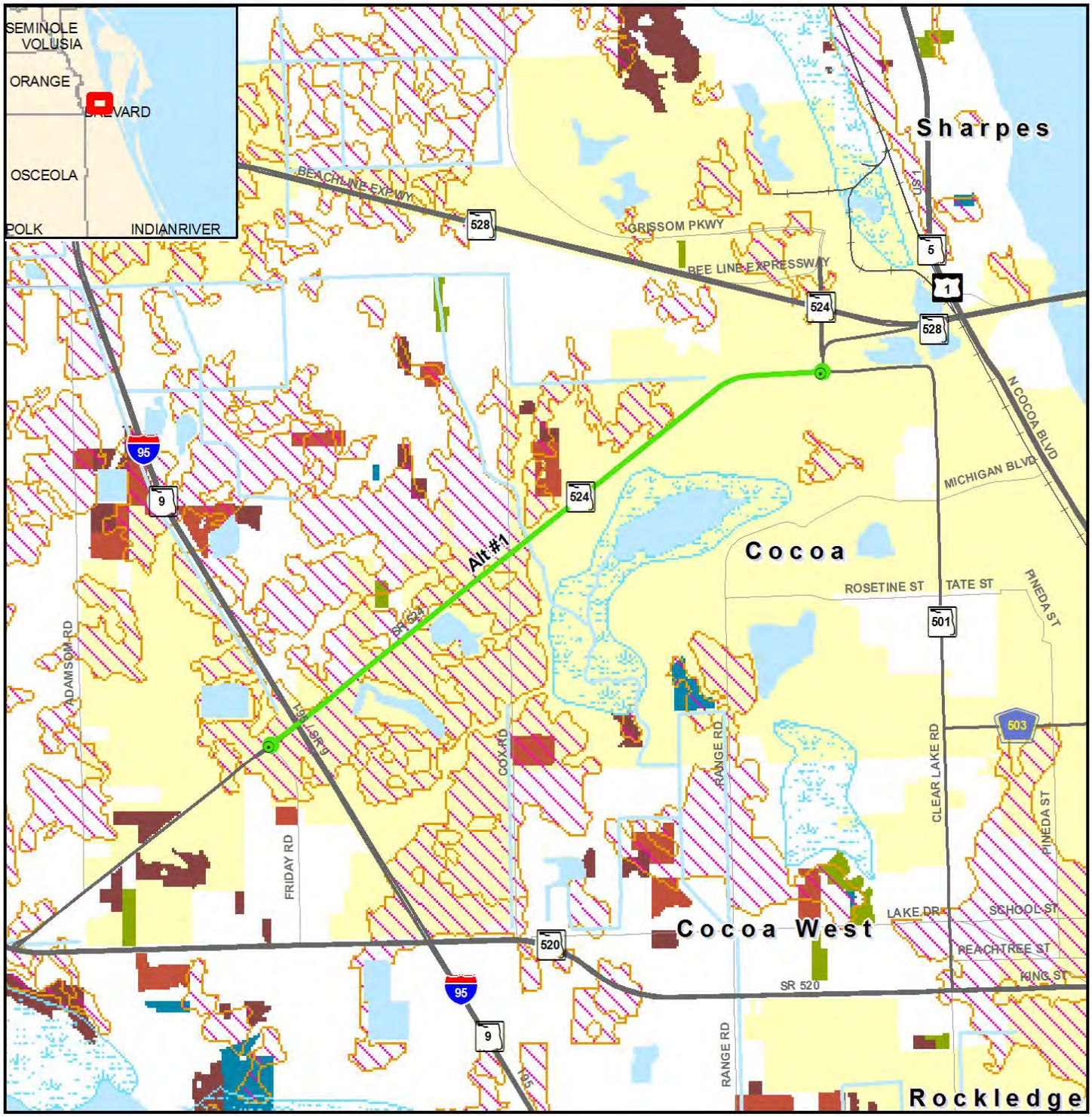
Data Sources:
NAVTEQ
US Geological Survey
Florida Department of Transportation
Florida Department of State,
Bureau of Archaeological Research

Note: Historic properties depicted on this map represent resources listed in the Florida Master Site File excluding archeological site locations, which, pursuant to Chapter 267.135, Florida Statutes, may be exempt from public record (Chapter 119.07, Florida Statutes). Absence of features on the map does not necessarily indicate an absence of resources in the project vicinity.

12/8/2017

14321 SR 524 (Friday Rd to Industry Rd)

Friday Rd. to Industry Rd.



Farmlands Map

- ETDM Alternative
- ETDM Alternative Terminus
- Major Road
- Local Road or Trail
- City Limits
- Cropland/Pastureland
- Nurseries/Vineyards
- Specialty Farms
- Tree Crops
- Rural Open Lands
- Prime Farmland Soils

Data Sources:
NAVTEQ
Florida Water Management Districts
US Geological Survey
Natural Resources Conseration Services

0 0.2 0.4 0.8 Miles

N

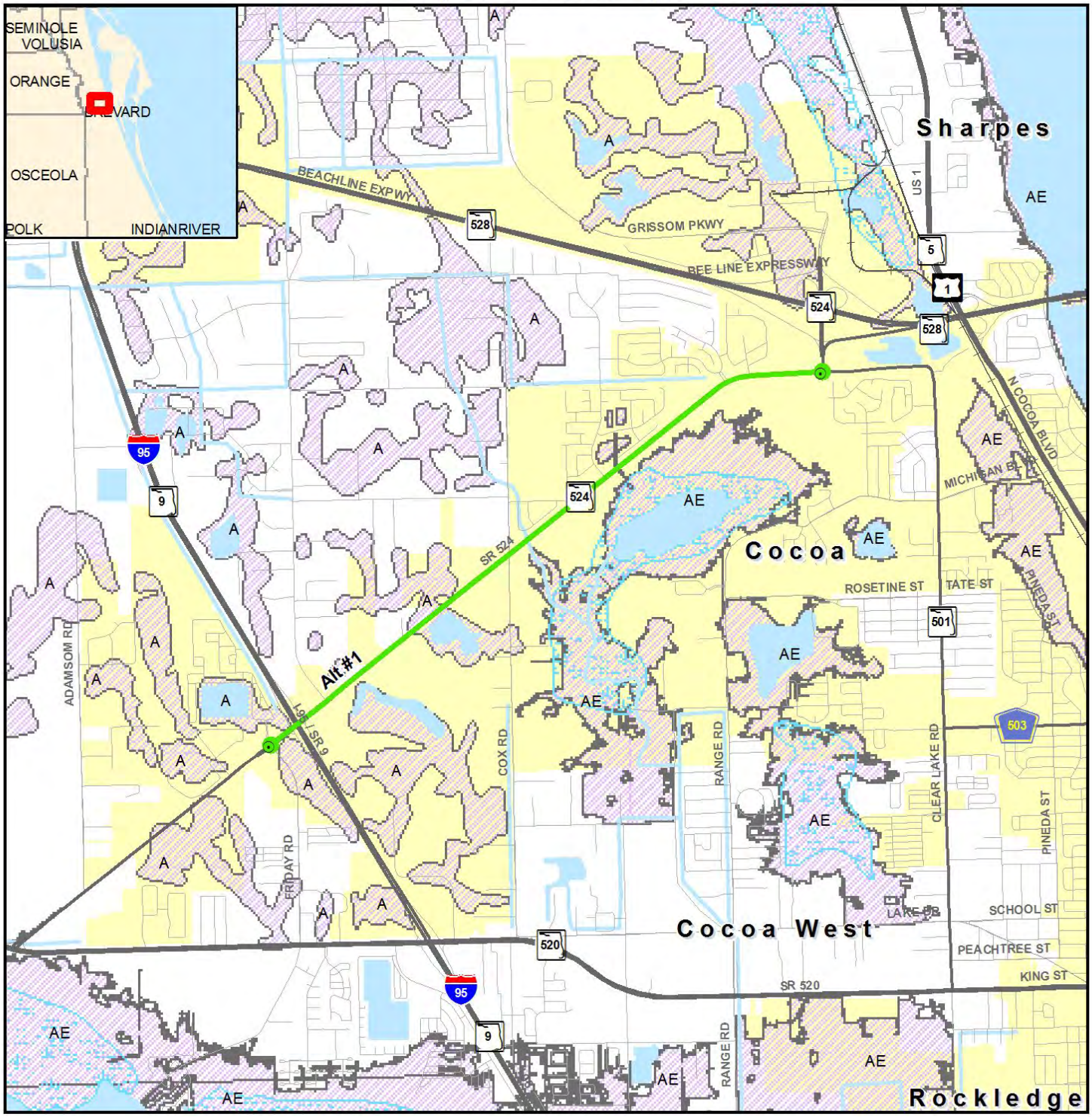
11/30/2017

etdm Environmental Screening Tool

FDOT

14321 SR 524 (Friday Rd to Industry Rd)

Friday Rd. to Industry Rd.



Floodplains Map

- ETDM Alternative
- ETDM Alternative Terminus
- Major Road
- Local Road or Trail
- City Limits
- Special Flood Hazard Area

Data Sources:
NAVTEQ
US Geological Survey
Federal Emergency Management Agency

0 0.25 0.5 1 Miles

N

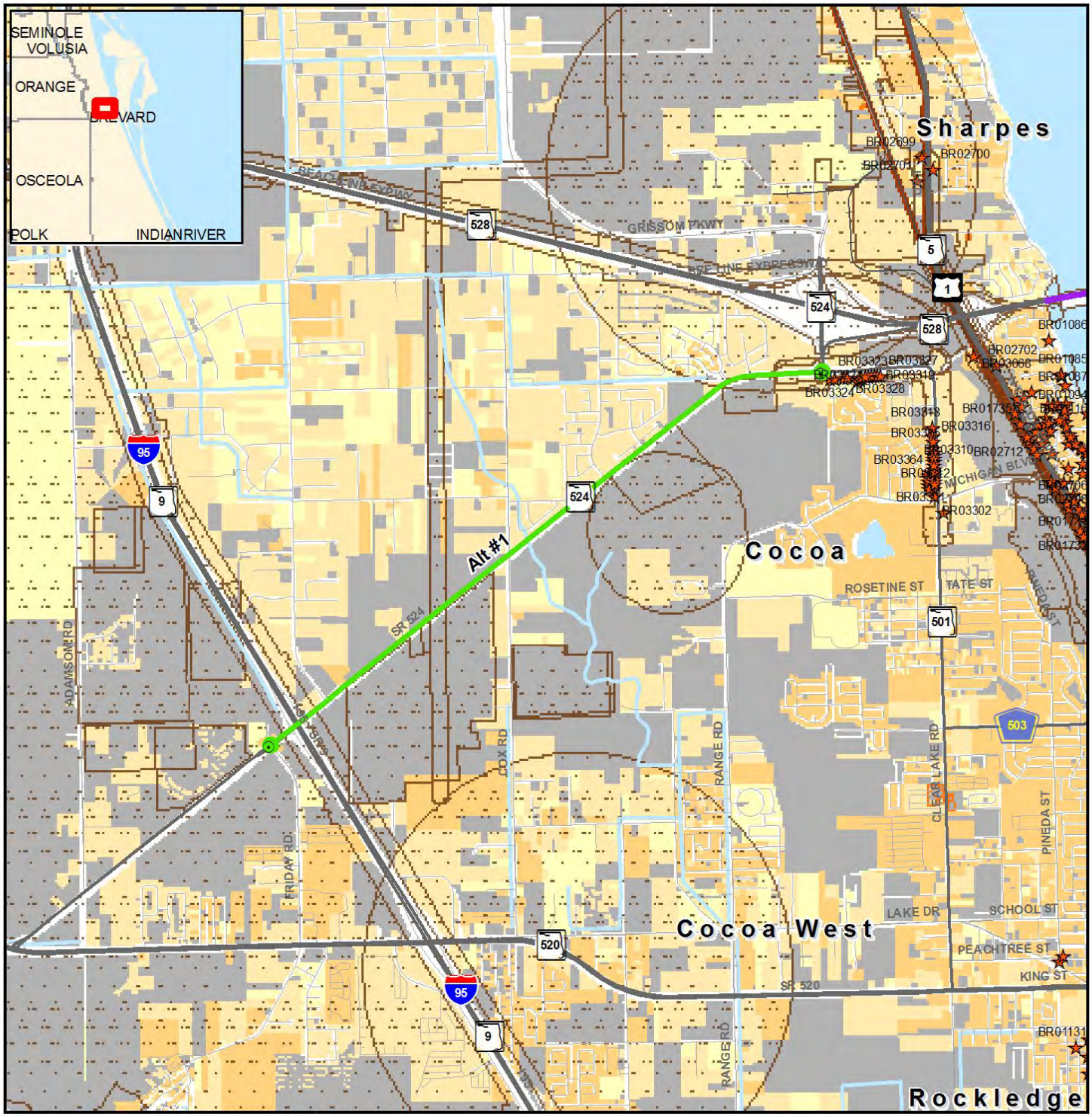
11/30/2017

etdm Environmental Screening Tool

FDOT

14321 SR 524 (Friday Rd to Industry Rd)

Friday Rd. to Industry Rd.



Historic Resource Map

- ETDM Alternative
- ETDM Alternative Terminus
- Major Road
- Local Road or Trail

Year Built
- Pre 1970
- Post 1980
- 1970 - 1979
- Parcels w/ no values

- Historic Structure
- Historic Bridge
- State Historic Highway
- Historic Cemetery
- Historic Resource Group
- Cultural Resource Field Survey Area

Data Sources:
NAVTEQ
US Geological Survey
Florida Department of Transportation
Florida Department of State,
Bureau of Archaeological Research

Note: Historic properties depicted on this map represent resources listed in the Florida Master Site File excluding archeological site locations, which, pursuant to Chapter 267.135, Florida Statutes, may be exempt from public record (Chapter 119.07, Florida Statutes). Absence of features on the map does not necessarily indicate an absence of resources in the project vicinity.

0 0.2 0.4 0.8 Miles

N

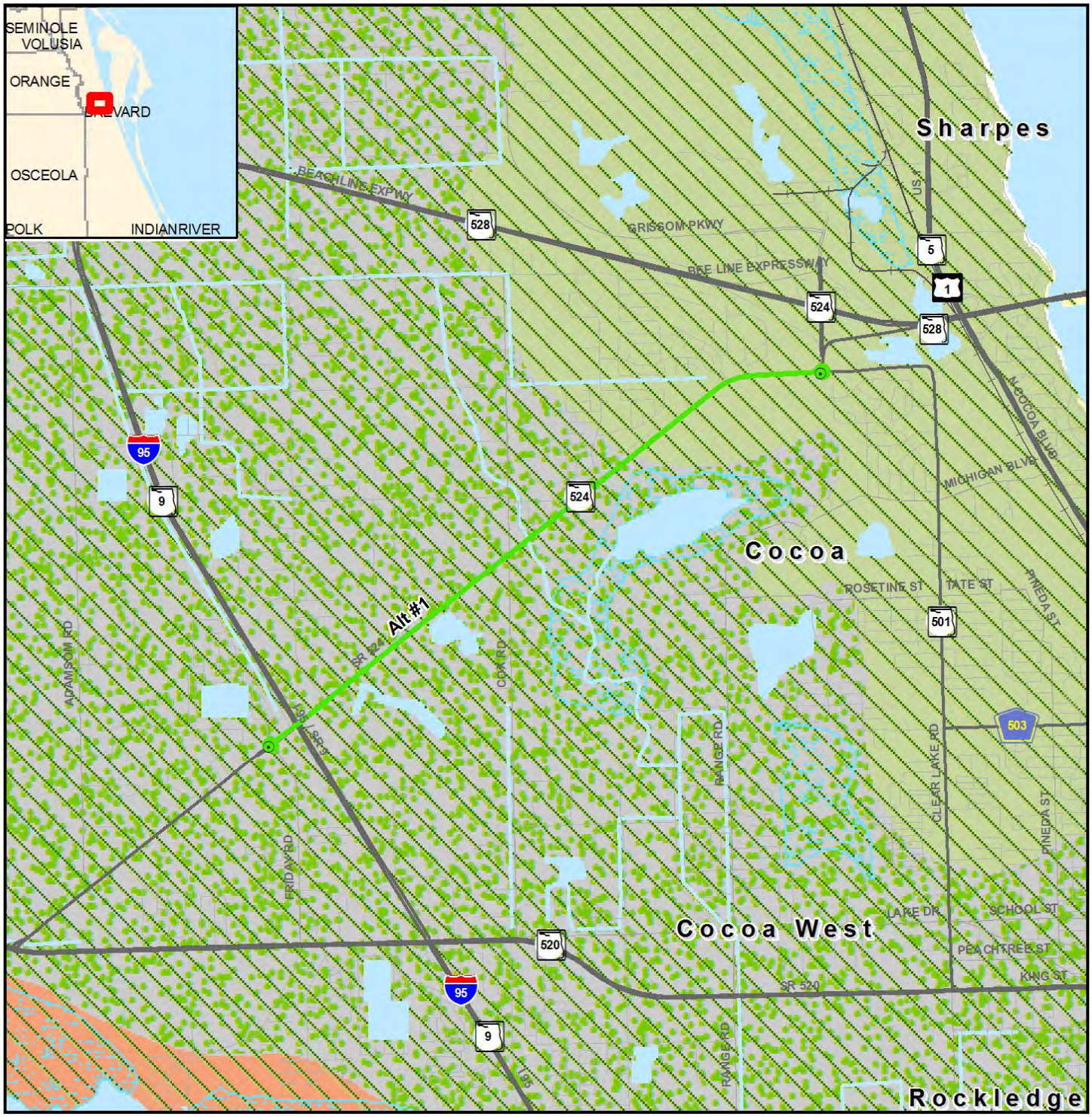
11/30/2017

etdm Environmental Screening Tool

FDOT

14321 SR 524 (Friday Rd to Industry Rd)

Friday Rd. to Industry Rd.



Hydrogeology Map

ETDM Alternative
ETDM Alternative Terminus
Major Road
Local Road or Trail
City Limits

Recharge Areas of the Floridan Aquifer
Discharge 1 to 5
Discharge > 5
Disharge < 1
Recharge 1 to 10
Recharge > 10
Recharge < 1

Surface Geology
Eocene
Miocene
Miocene/Pliocene
Oligocene
Oligocene/Miocene
Pleistocene
Holocene
Pleistocene/Holocene
Pliocene
Pliocene/Pleistocene

N

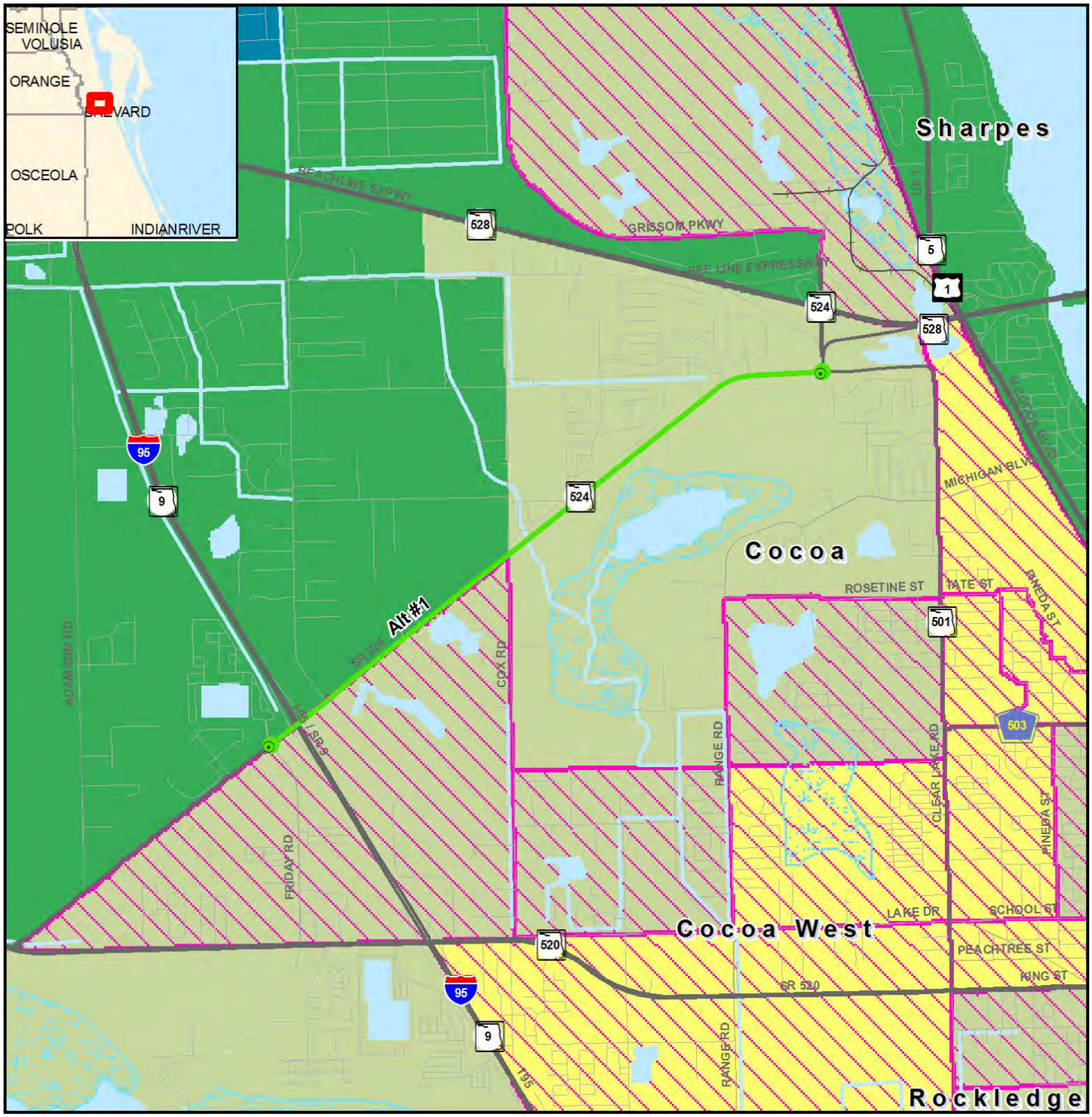
0 0.25 0.5 1 Miles

Data Sources: NAVTEQ; US Geological Survey
Florida Department of Transportation
South West Florida Water Management District
Florida Geological Survey

11/30/2017

14321 SR 524 (Friday Rd to Industry Rd)

Friday Rd. to Industry Rd.



Income Map

- ETDM Alternative
- ETDM Alternative Terminus
- Major Road
- Local Road or Trail
- > 20% Below Poverty

Median Household Income

- 0 - 10,000
- 10,001 - 29,999
- 30,000 - 49,999
- 50,000 - 79,999
- 80,000 - 125,000
- > 125,000

0 0.25 0.5 1 Miles

N

11/30/2017

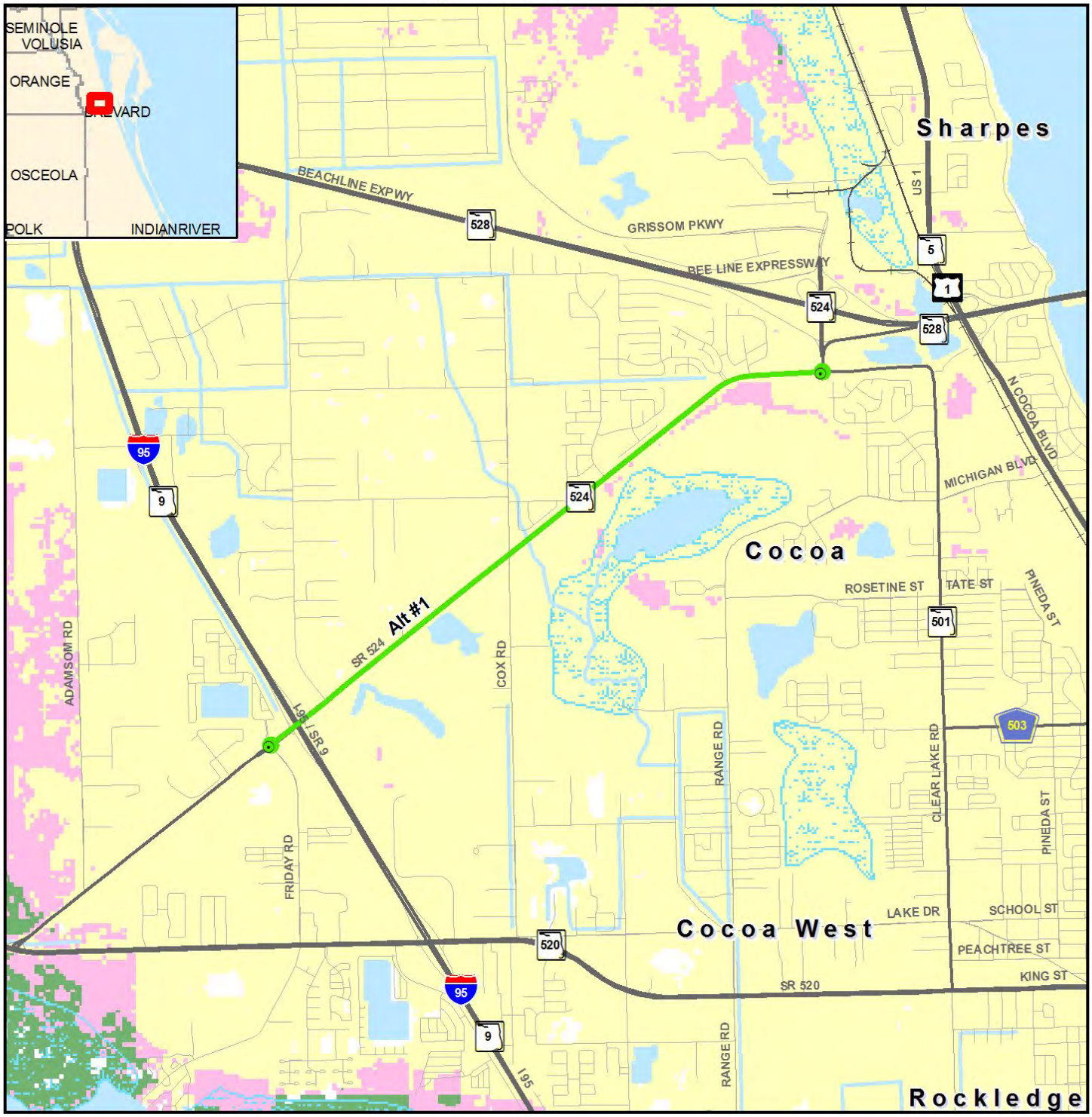
Data Sources:
US Geological Survey
FL Department of Transportation
NAVTEQ
US Census Bureau (2010)

etdm Environmental Screening Tool

FDOT

14321 SR 524 (Friday Rd to Industry Rd)

Friday Rd. to Industry Rd.



Integrated Wildlife Model Map

- ETDM Alternative
- ETDM Alternative Terminus
- Major Road
- Local Road or Trail
- Low Habitat Quality
- Medium Habitat Quality
- High Habitat Quality

Data Sources:
NAVTEQ
US Geological Survey
Florida Department of Transportation
Florida Fish & Wildlife Conservation Commission

0 0.25 0.5 1 Miles

N

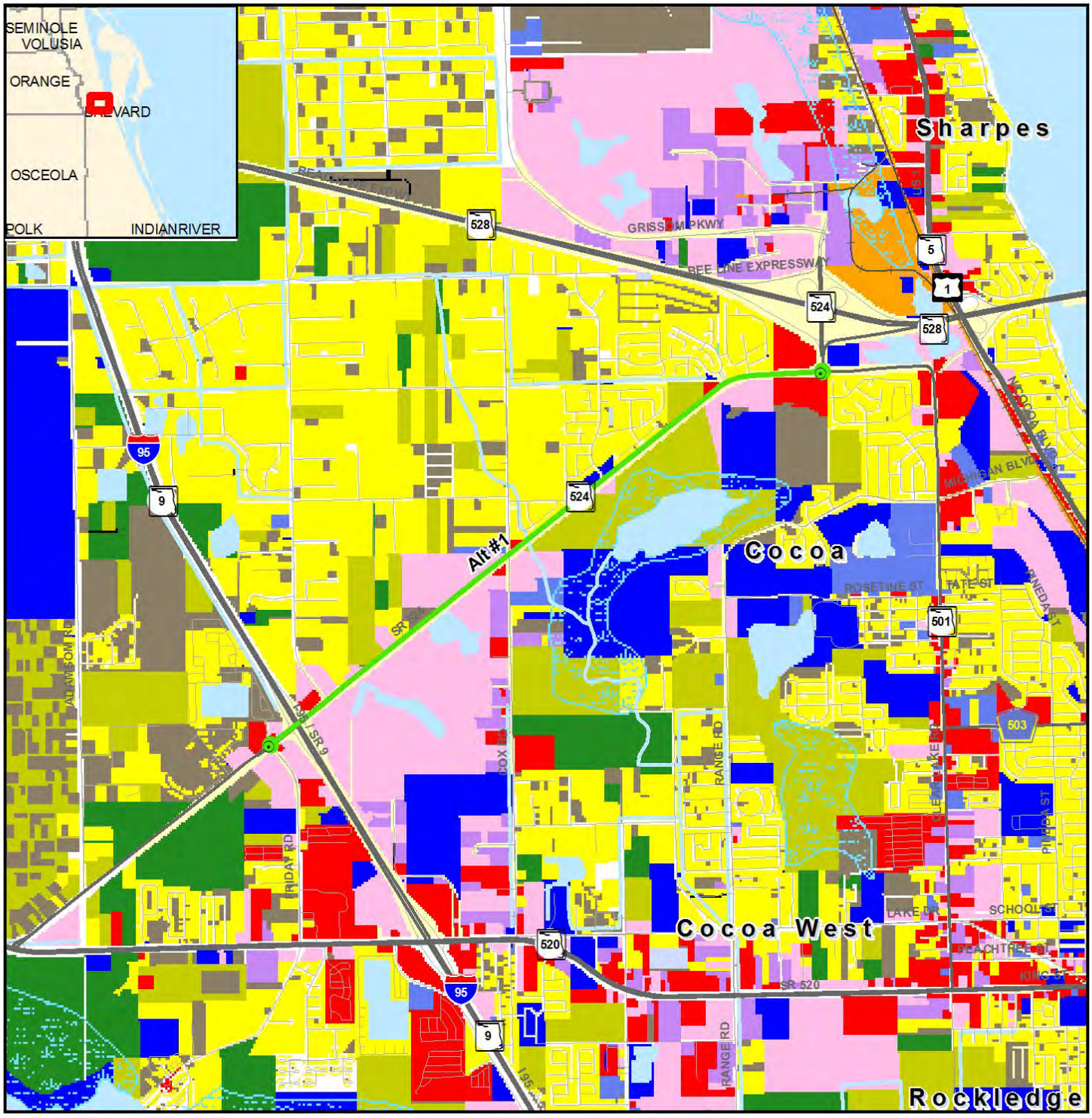
11/30/2017

etdm Environmental Screening Tool

FDOT

14321 SR 524 (Friday Rd to Industry Rd)

Friday Rd. to Industry Rd.



Land Use Map

- ETDM Alternative
- ETDM Alternative Terminus
- Major Road
- Local Road or Trail
- Agricultural
- Industrial
- Institutional
- Mining
- Open (Not Agricultural)
- Other
- Public
- Right-of-Way
- Recreational
- Residential
- Retail/Office
- Vacant (Residential)
- Vacant (Nonresidential)
- Water
- No Data

Data Sources:
NAVTEQ
US Geological Survey
Florida Department of Revenue
Florida Department of Transportation
Florida County Property Appraiser Offices

0 0.25 0.5 1 Miles

N

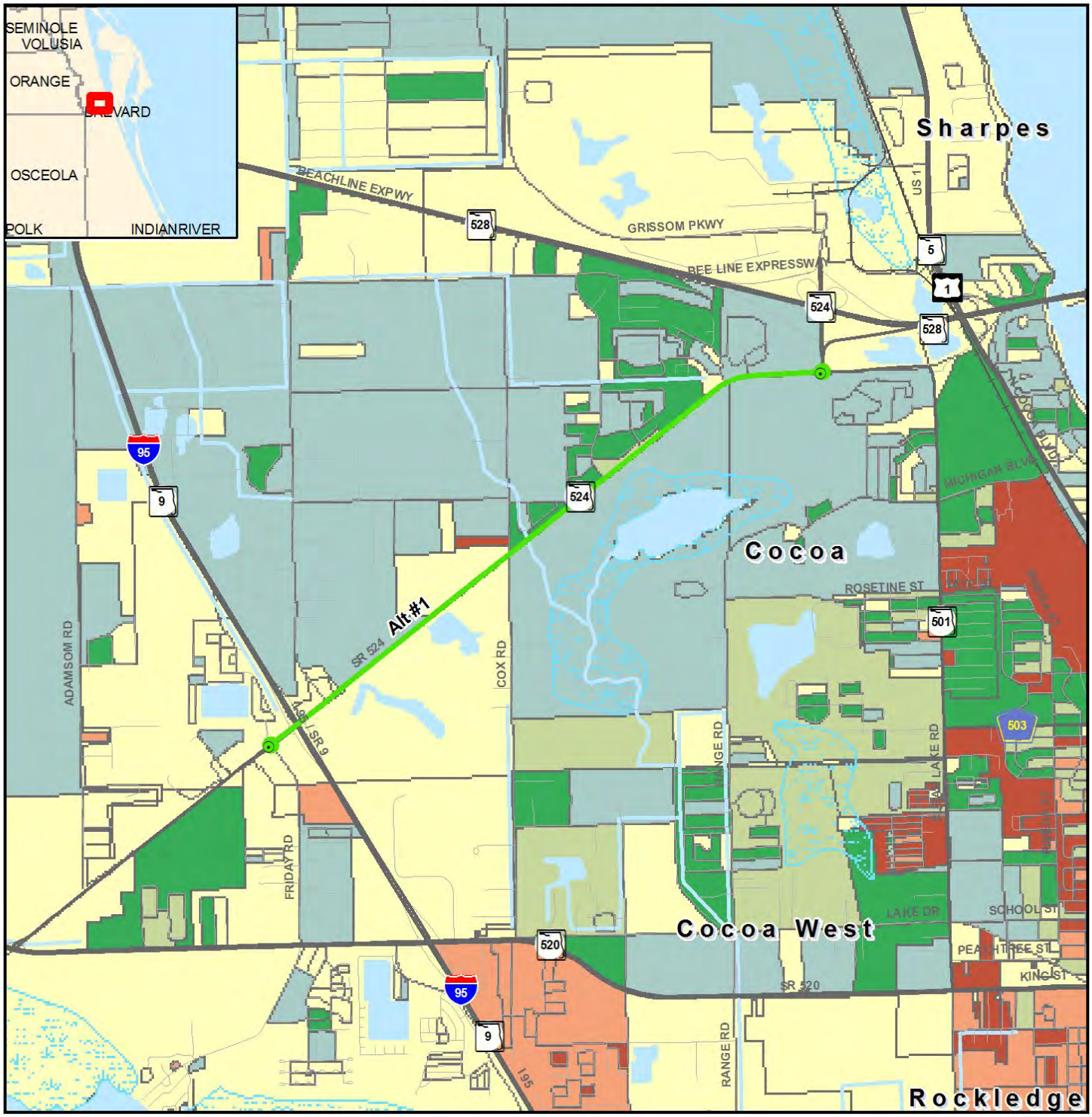
11/30/2017

etdm Environmental Screening Tool

FDOT

14321 SR 524 (Friday Rd to Industry Rd)

Friday Rd. to Industry Rd.



Minority Population Map

ETDM Alternative
ETDM Alternative Terminus
Major Road
Local Road or Trail

Percent Minority Population (2010)

0 - 6 | 7 - 20 | 21 - 40 | 41 - 60 | 61 - 85 | 86 - 100

Data Sources:
US Geological Survey
FL Department of Transportation
NAVTEQ
US Census Bureau (2010)

0 0.25 0.5 1 Miles

N

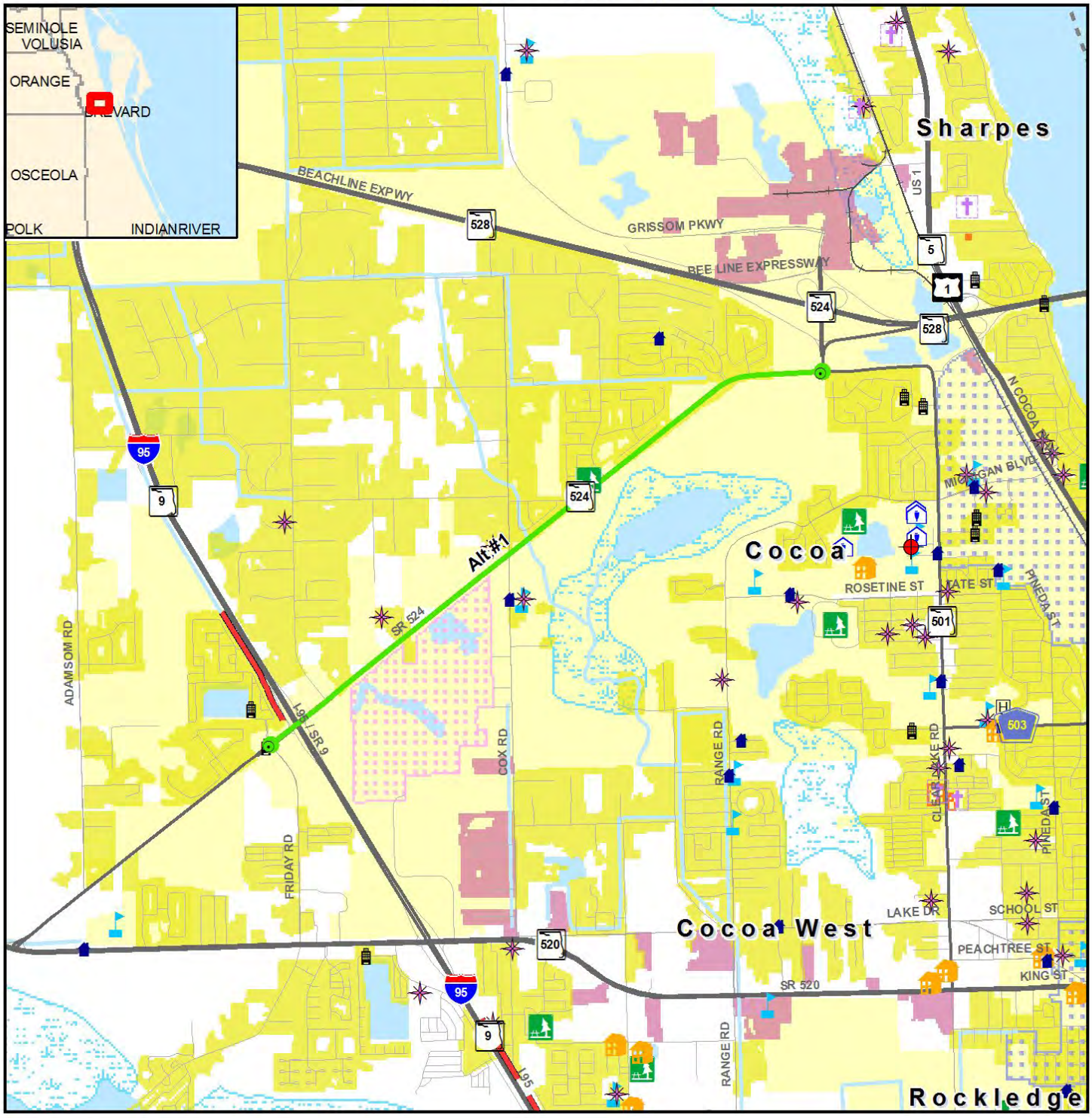
11/30/2017

etdm Environmental Screening Tool

FDOT

14321 SR 524 (Friday Rd to Industry Rd)

Friday Rd. to Industry Rd.



Noise Map

- ETDM Alternative
- ETDM Alternative Terminus
- City Limits
- Noise Barriers
- Existing Trails
- Condo Owners Associations
- Hospitals
- Laser On-site
- Group Care Facilities
- Cemetery
- Community Center
- Cultural Center
- Health Care
- Park
- Place of Worship
- School
- Historic Cemetery
- Planned Unit Developments
- Wildlife Refuges
- National Parks
- National Park Projects
- Marine Sanctuaries
- Military Installations
- ETAT.LU_NW_INDUSTRIAL_13
- ETAT.LU_NW_RESIDENT_13
- HUD Renewal
- Nat'l Estuarine Reserves
- Enterprise Zones
- DRI

0 0.2 0.4 0.8 Miles

N

12/8/2017

Data Sources:
GeoPlan Center, US Geological Survey, US Census Bureau, HUD, Florida DOT, US Fish and Wildlife, National Park Service, NOAA, National Estuarine Research, Enterprise Florida

etdm Environmental Screening Tool

FDOT

14321 SR 524 (Friday Rd to Industry Rd)

Friday Rd. to Industry Rd.

Population Density Map

- ETDM Alternative
- ETDM Alternative Terminus
- Major Road
- Local Road or Trail

Population Per Acre (2010)

0 - 4.9	5 - 29.9	30 - 99.9	100 - 349.9	350 - 800	> 800

Data Sources:
US Geological Survey
FL Department of Transportation
NAVTEQ
US Census Bureau (2010)

0 0.2 0.4 0.8 Miles

N

11/30/2017

etdm Environmental Screening Tool

FDOT

14321 SR 524 (Friday Rd to Industry Rd)

Friday Rd. to Industry Rd.

Project Aerial Map

- ETDM Alternative
- ETDM Alternative Terminus
- Major Road
- Local Road or Trail

Data Sources:
Highways - NAVTEQ
Digital Orthophotograph - ArcGIS Online

0 0.25 0.5 1 Miles

N

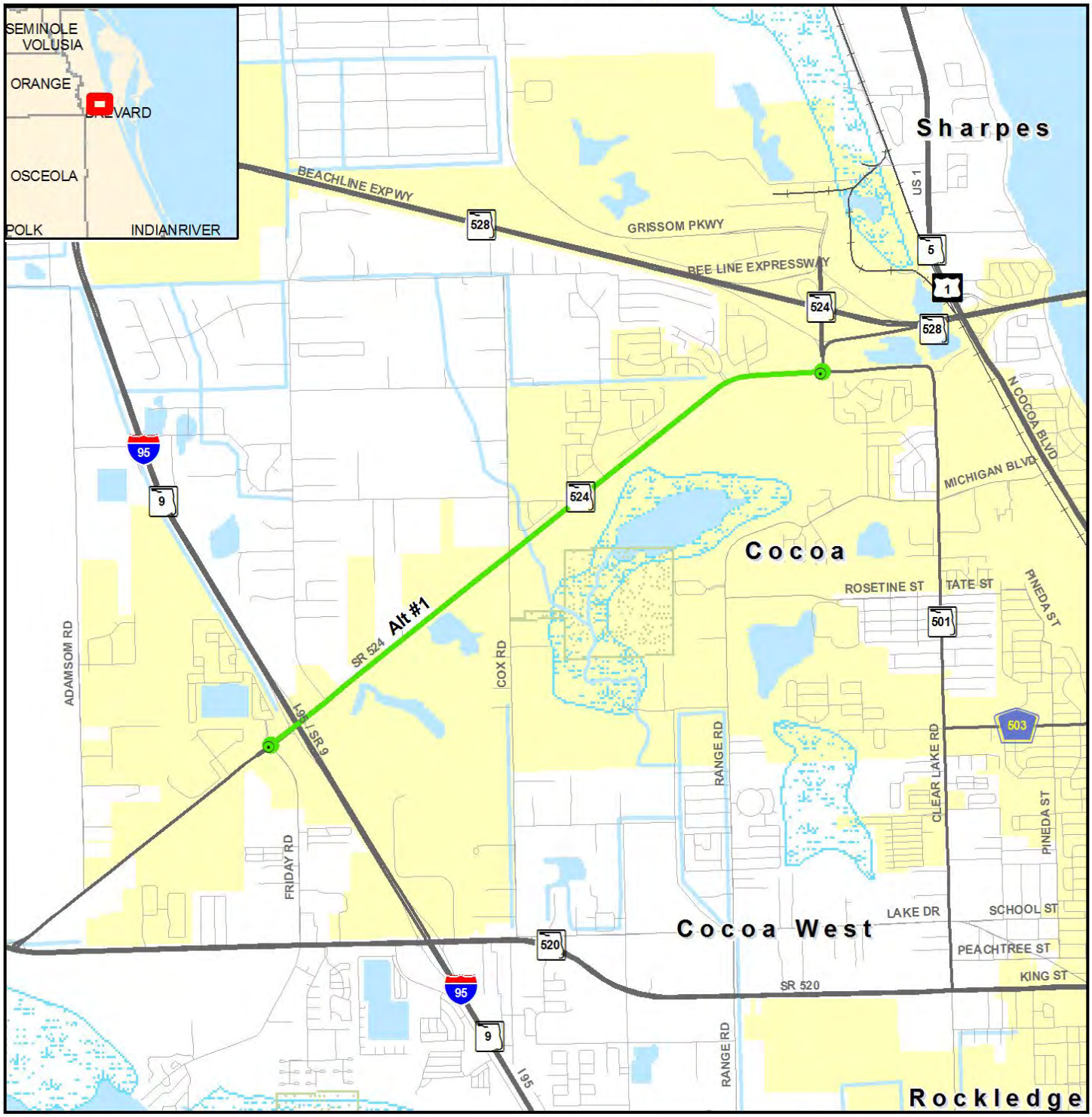
11/30/2017

etdm Environmental Screening Tool

FDOT

14321 SR 524 (Friday Rd to Industry Rd)

Friday Rd. to Industry Rd.



Project Base Map

ETDM Alternative Terminus
Local Road or Trail
Major Road
City Limits
Managed Conservation Lands
Alt #1

Data Sources:
NAVTEQ
US Geological Survey
US Census Bureau
County Property Appraisers
Florida Natural Areas Inventory

0 0.2 0.4 0.8 Miles

N

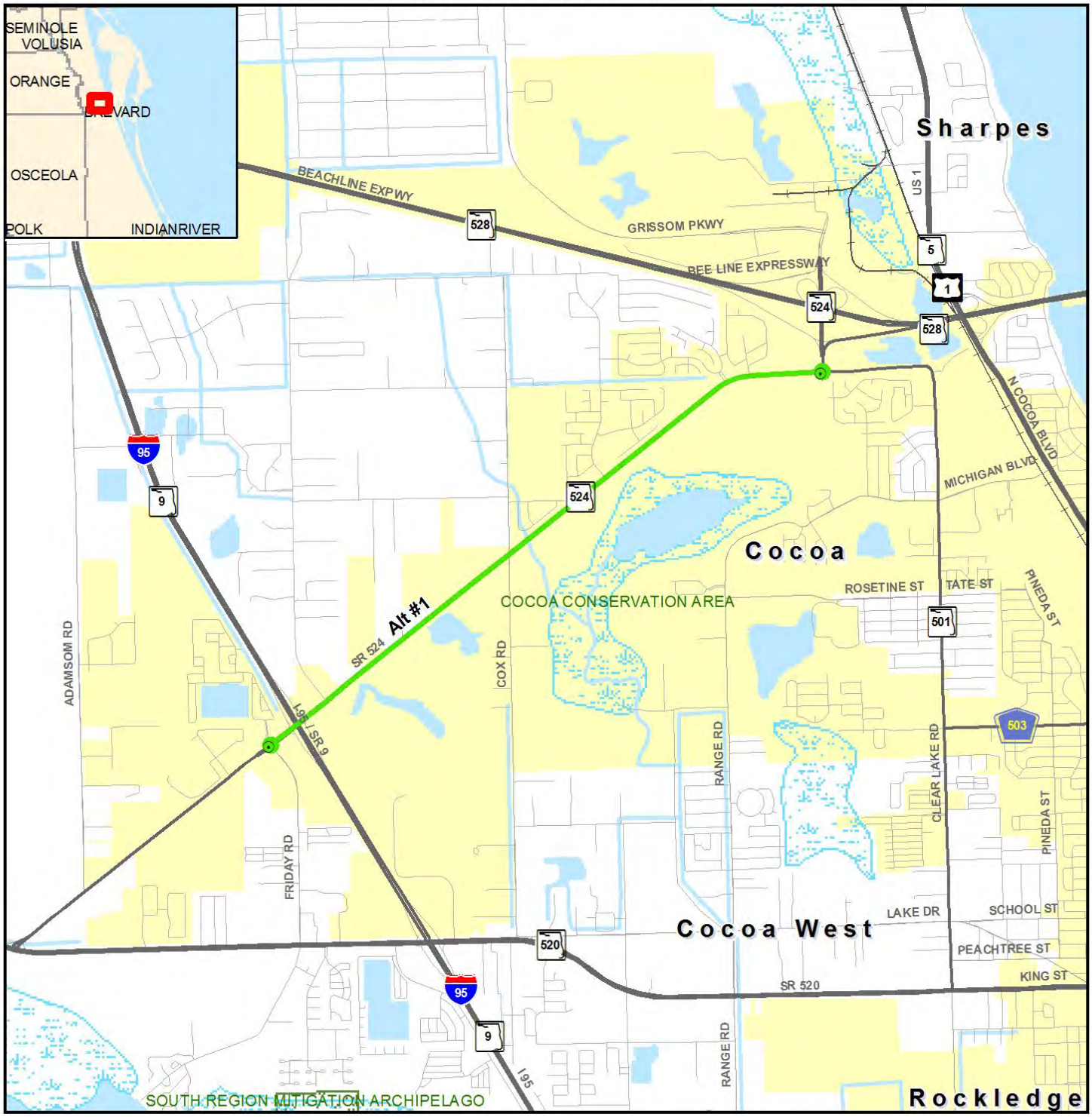
11/30/2017

etdm Environmental Screening Tool

FDOT

14321 SR 524 (Friday Rd to Industry Rd)

Friday Rd. to Industry Rd.



Recreational Areas Map

- ETDM Alternative
- ETDM Alternative Terminus
- Major Road
- Local Road or Trail
- City Limits
- Conservation or Recreation Area

Data Sources:
NAVTEQ
US Geological Survey
Florida Natural Areas Inventory

0 0.25 0.5 1 Miles

N

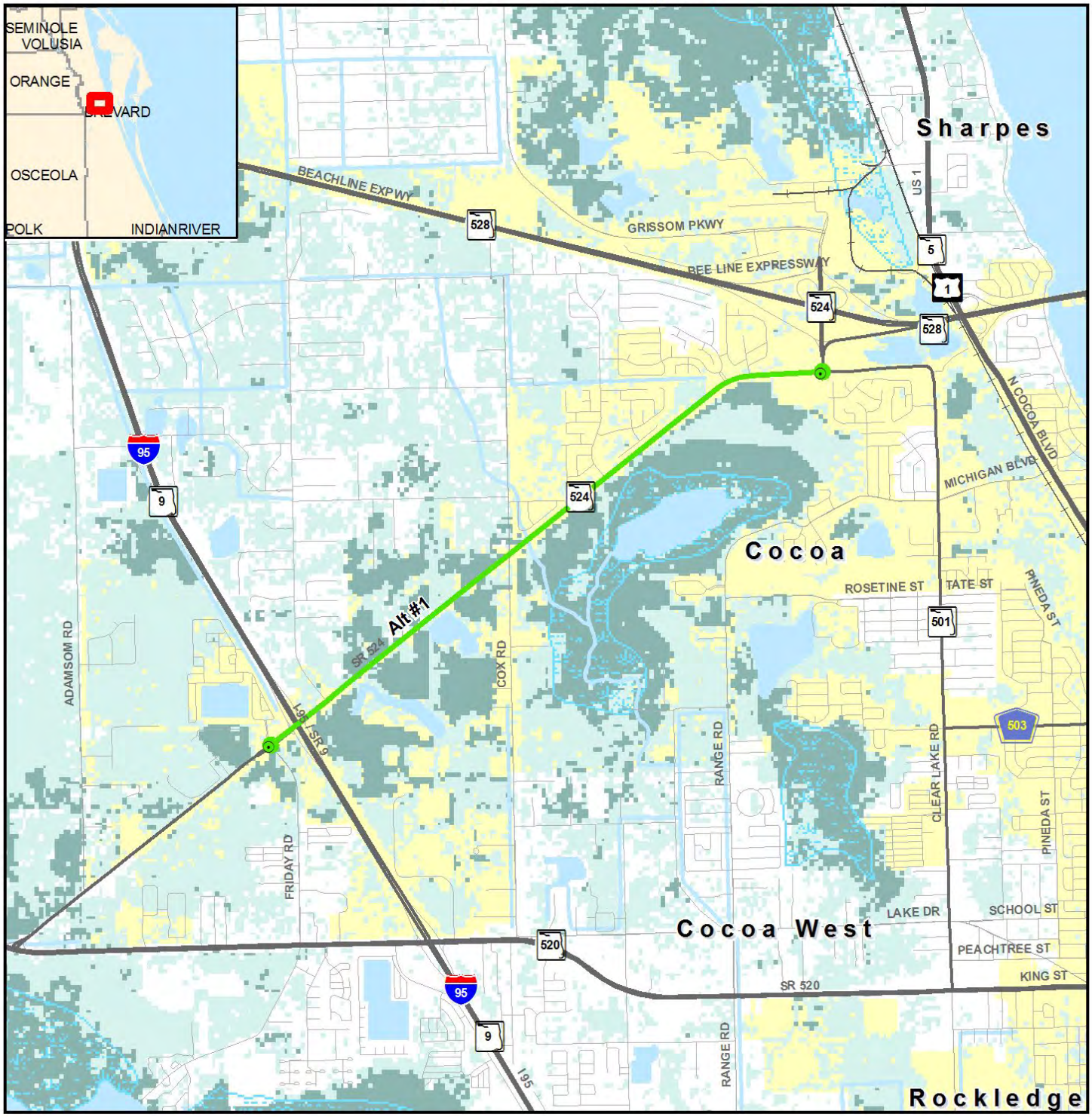
11/30/2017

etdm Environmental Screening Tool

FDOT

14321 SR 524 (Friday Rd to Industry Rd)

Friday Rd. to Industry Rd.



Species Potential Map

- ETDM Alternative
- ETDM Alternative Terminus
- Major Road
- Local Road or Trail
- City Limits

Potential Habitat Richness

1 - 2 Species | 3 - 5 Species | 6 - 8 Species | 9 - 10 Species | 11 - 13 Species

0 0.25 0.5 1 Miles

N

11/30/2017

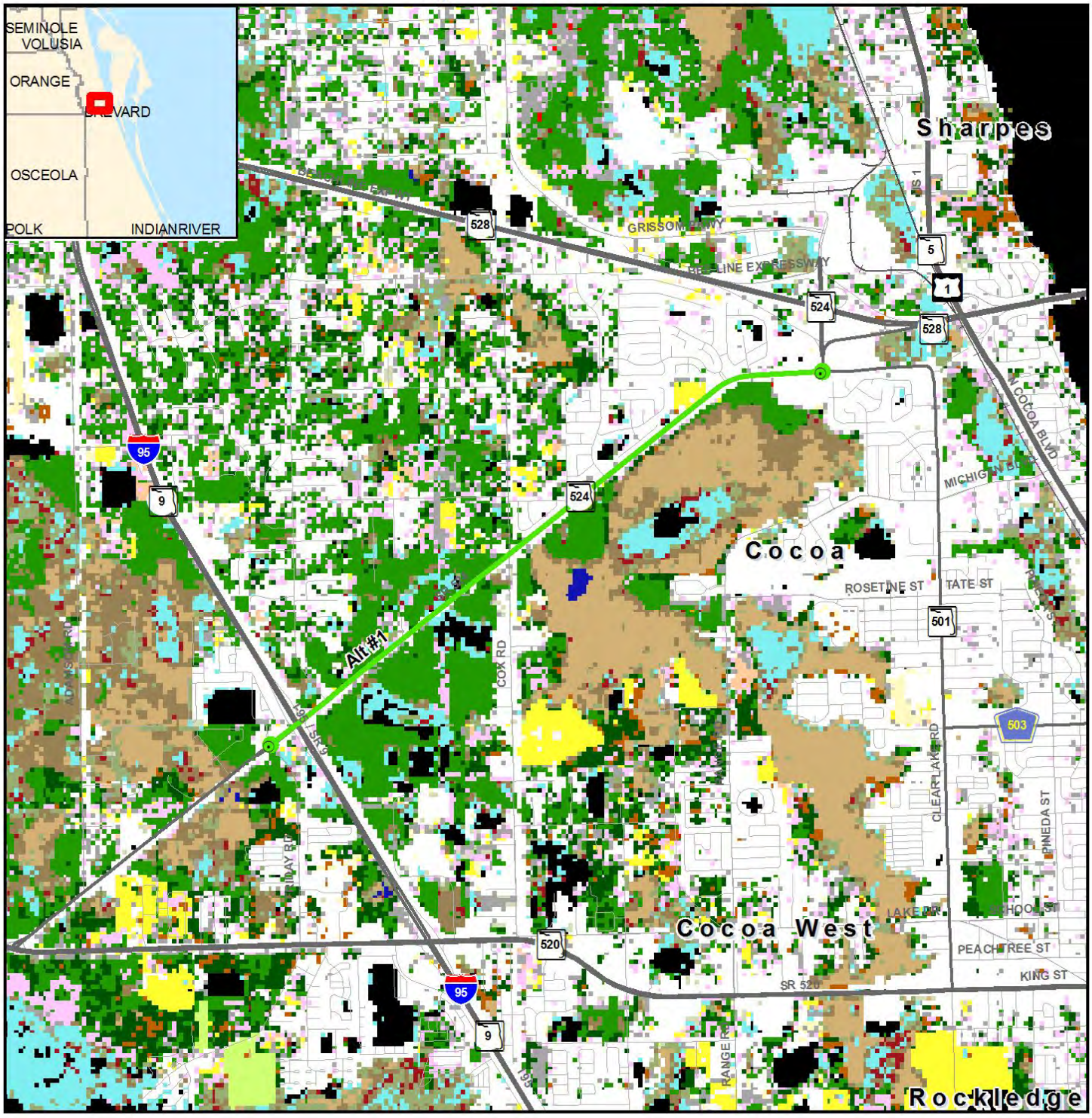
Data Sources:
NAVTEQ
US Geological Survey
Florida Department of Transportation
Florida Fish & Wildlife Conservation Commission

etdm Environmental Screening Tool

FDOT

14321 SR 524 (Friday Rd to Industry Rd)

Friday Rd. to Industry Rd.



Vegetation Map

ETDM Alternative	Dry Prairie	Cattail Marsh	Bottomland Hardwood Forest	Bare Soil/Clearcut	Australian Pine
ETDM Alternative Terminus	Mixed Hardwood-pine Forest	Shrub Swamp	Salt Marsh	Improved Pasture	Melaleuca
Not Classified	Hardwood Hammocks and Forests	Bay Swamp	Mangrove Swamp	Unimproved Pasture	Brazilian Pepper
Coastal Strand	Pinelands	Cypress Swamp	Scrub Mangrove	Sugarcane	High Impact Urban
Sand/Beach	Cabbage Palm-live Oak Hammock	Cypress/Pine/Cabbage Palm	Tidal Flats	Citrus	Low Impact Urban
Xeric Oak Scrub	Tropical Hardwood Hammock	Mixed Wetland Forest	Open Water	Row and Field Crops	Extractive
Sand Pine Scrub	Freshwater Marsh and Wet Prairie	Hardwood Swamp	Shrub and Brushland	Other Agriculture	
Sandhill	Sawgrass Marsh	Hydric Hammock	Grassland	Exotic Plants	

0 0.25 0.5 1 Miles

N

Data Sources: NAVTEQ; Florida Department of Transportation; Florida Fish and Wildlife Conservation Commission

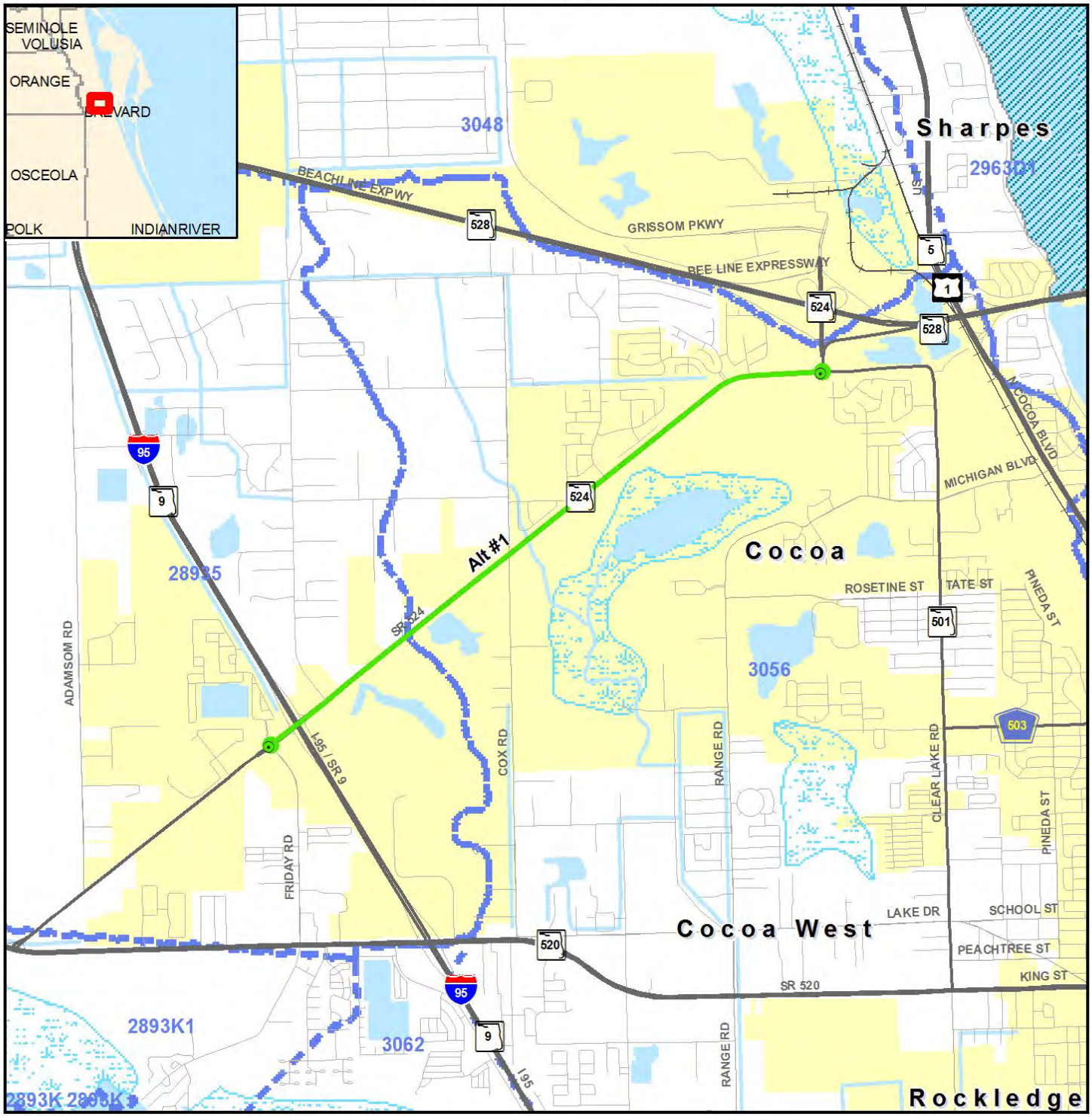
11/30/2017

etdm Environmental Screening Tool

FDOT

14321 SR 524 (Friday Rd to Industry Rd)

Friday Rd. to Industry Rd.



Water Resource Map

- ETDM Alternative
- ETDM Alternative Terminus
- Major Road
- Local Road or Trail
- City Limits
- 1st Magnitude Spring
- River, Stream or Canal
- Navigable Water Way
- SFWMD Canals
- Drainage Basin
- Outstanding Florida Water
- Surface Water Class I
- Surface Water Class II
- Water Body
- Swamp/Marsh

Data Sources:
NAVTEQ
US Geological Survey
Florida Department of Transportation
Florida Department of Environmental Protection
Florida Geological Survey
US Bureau of Transportation Statistics

0 0.2 0.4 0.8 Miles

N

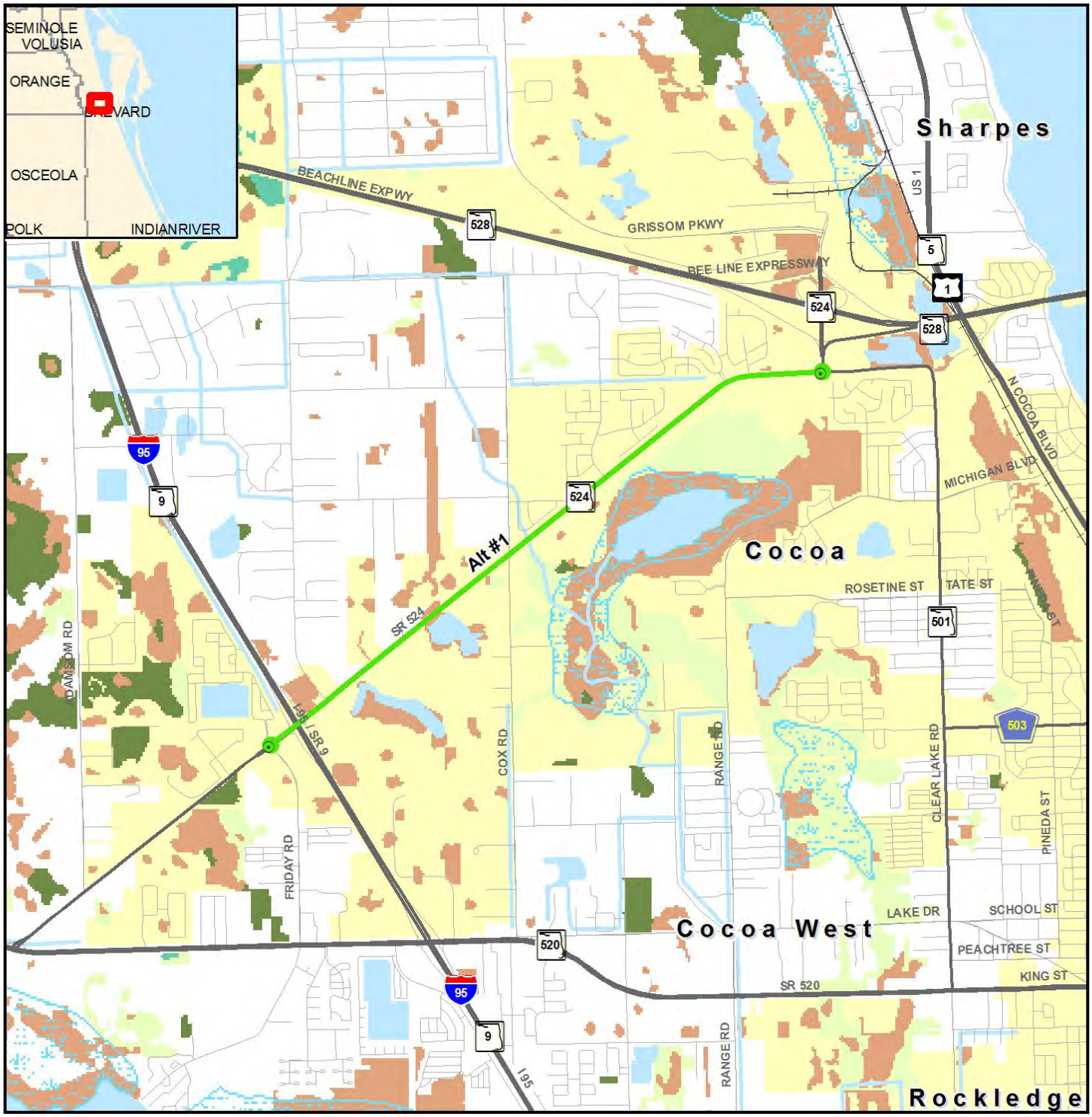
11/30/2017

etdm Environmental Screening Tool

FDOT

14321 SR 524 (Friday Rd to Industry Rd)

Friday Rd. to Industry Rd.



Wetlands and Surface Waters Map

- ETDM Alternative
- ETDM Alternative Terminus
- Major Road
- Local Road or Trail
- City Limits
- River, Stream or Canal
- Water Body
- Swamp/Marsh
- Non-vegetated Wetland
- Vegetated Non-forested Wetland
- Wetland Forested Mixed
- Wetland Coniferous Forest
- Wetland Hardwood Forest

Data Sources:
NAVTEQ
Florida Water Management Districts
US Geological Survey

0 0.25 0.5 1 Miles

N

11/30/2017

etdm Environmental Screening Tool

FDOT

Appendix B

PHOTODOCUMENTATION LOG

Photo 1 – View of proposed pond site 1A.

Direction: Northwest

Photo 2 – View of proposed Pond Site 1A.

Direction: Southwest

PHOTODOCUMENTATION LOG

Photo 3 – View of proposed Pond Site 1B.

Direction: Northwest

Photo 4 – View of proposed Pond Site 1B

Direction: Southeast

PHOTODOCUMENTATION LOG

Photo 5 – View of proposed pond site 1C.

Direction: South

Photo 6 – View of proposed Pond Site 1C.

Direction: Southwest

PHOTODOCUMENTATION LOG

Photo 7 – View of proposed pond site 1D.

Direction: Northeast

Photo 8 - View of proposed Pond Site 1D

Direction: Southeast

PHOTODOCUMENTATION LOG

Photo 9 – View of proposed Pond Site 1E

Direction Northeast

Photo 10 – View of proposed Pond Site 1E.

Direction: Southeast

PHOTODOCUMENTATION LOG

Photo 11– View of proposed Pond Site 2A

Direction: Southeast

Photo 12 – View of proposed Pond Site 2A

Direction: Northwest

PHOTODOCUMENTATION LOG

Photo 13– View of proposed Pond Site 2B

Direction: Northwest

Photo 14 – View of proposed Pond Site 2B

Direction: East

PHOTODOCUMENTATION LOG

Photo 15 – View of proposed Pond Site 2C

Direction: Northwest

Photo 16 – View of proposed Pond Site 2C

Direction: Southwest

PHOTODOCUMENTATION LOG

Photo 17– View of proposed Pond Site 2D

Direction: Southwest

Photo 18 – View of proposed Pond Site 2D

Direction: East

PHOTODOCUMENTATION LOG

Photo 19– View of proposed Pond Site 2E

Direction: Southeast

Photo 20 – View of proposed Pond Site 2E

Direction: Northeast

PHOTODOCUMENTATION LOG

Photo 21– View of proposed Pond Site 2F

Direction: Northwest

Photo 22 – View of proposed Pond Site 2F

Direction: Southeast

PHOTODOCUMENTATION LOG

Photo 23– View of proposed Pond Site 3A

Direction: East

Photo 24 – View of proposed Pond Site 3A

Direction: West

PHOTODOCUMENTATION LOG

Photo 25– View of proposed Pond Site 3B

Direction: East

Photo 26 – View of proposed Pond Site 3B

Direction: West

PHOTODOCUMENTATION LOG

Photo 27 – View of proposed Regional Pond Site A

Direction: West

Photo 28 – View of proposed Regional Pond Site A

Direction: North

Appendix C

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

Site/Project Name	Application Number	Assessment Area Name or Number
SR 524 Widening from Friday Road to Industry Road		**W1 (Preferred Alternative)**

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
641		**Impact**	**3.87** Acres

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

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

The Assessment Area is part of a larger wetland system that was previously fragmented by a powerline easement.

Assessment area description

Majority of the AA is dominated by swamp sawgrass. Perimeter areas vegetated with punktree, Brazilian pepper, carolina willow, salt bush, chalky bluestem, wax myrtle.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Indian River is approximately 4 miles east of AA; Lake Poinsett is approximately 2 miles southwest	

Functions	Mitigation for previous permit/other historic use
water quality; water conveyance; wildlife foraging and nesting habitat	**n/a**

Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)
Osprey, limpkin, little blue heron, snowy egret, tricolor heron, white ibis, wood stork	**Eastern Indigo Snake (T); foraging habitat; low use ; Wood stork (T) foraging habitat; moderate use**

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

Osprey

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
DH	**02/04/20**

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

Site/Project Name:	Application Number:	Assessment Area Name or Number:
SR 524 Widening from Friday Road to Industry Road	**-**	**W1 (Preferred Alternative)**
Impact or Mitigation:	Assessment Conducted by:	Assessment Date:
Impact	**DH**	**02/04/20**

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

	Current	With Impact	
.500(6)(a) Location and Landscape Support	**6**	**0**	Adjacent land uses include residential housing, commercial uses (gas station) and vehicular travel lanes (Friday Road). Existing powerline easment has fragmented what was once a larger wetland system. Uplands provide minimal protection to wetland function. Minimal presence of invasive species. High risk of adverse impacts to wildlife from land use outside of assessment area (wildlife/vehicle interactions on Friday Road). Adjacent development road results in in impediments and flow restrictions decreasing downstream benefits.
.500(6)(b) Water Environment (n/a for uplands)	**7**	**0**	Portion of AA is seasonally inundated. Water levels and flows and water level indicators likely affected by ditching. Most vegetation appropriate for community (sawgrass) with the exception exotics (Brazilian pepper) and significant presence of opportunistic species at wetland edge. Wildlife usage likely affected by adjacent land uses (abutting roadway and commercial business) resulting in presence of more generalized species. Water qualityis appropriate for community type.
.500(6)(c) Community Structure x Vegetation _____ Benthic _____ Both	**7**	**0**	Appropriate community with dominance of swamp sawgrass and other appropriate herbaceous species. Invasive species including punktree and Brazilian pepper are prevalent along perimeter. Plant condition is good at all strata. Land uses outside of AA (I-95, SR 524, adjacent gas station) introduce invasives and anthropogenic pollution that are not optimal for long-term viability.

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	Current	With Impact
	0.67	0.00

Impact Acres =	3.87

Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	2.59

Impact Delta (ID)	
Current - w/Impact	0.67

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

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

Site/Project Name	Application Number	Assessment Area Name or Number
SR 524 Widening from Friday Road to Industry Road		**W3 (Preferred Alternative)**

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
643		**Impact**	**0.27** Acres

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
20/Southern St. Johns River	**III**	

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

The Assessment Area is contigous to other herbaceous wetlands that extend outside of the right-of-way to the north. The Assessment Area is also hydrologically connected via culverts under SR 524 to herbaceous wetlands that extend beyond the right-of-way to the south.

Assessment area description

Assessment Area as iit abuts right-of-way is vegetated with Carolina willow, salt bush, primrose willow and Brazilian pepper. Other vegetation includes yelloweyed grass, beaksedge, cattail and bushy bluestem.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Indian River is approximately 4 miles east of AA; Lake Poinsett is approximately 2 miles southwest	**AA is not unique as it is a road side herbaceous wetland that has been fragmented by SR 524 and impacted by a powerline easement.**
Functions	Mitigation for previous permit/other historic use
water quality; water conveyance; wildlife foraging and nesting habitat	**n/a**
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)
Osprey, limpkin, little blue heron, snowy egret, tricolor heron, white ibis, wood stork	**Eastern Indigo Snake (T); foraging habitat; low use ; Wood stork (T) foraging habitat; moderate use**

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

Osprey

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
DH	**02/04/20**

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

Site/Project Name:	Application Number:	Assessment Area Name or Number:
SR 524 Widening from Friday Road to Industry Road	**-**	**W3 (Preferred Alternative)**
Impact or Mitigation:	Assessment Conducted by:	Assessment Date:
Impact	**DH**	**02/04/20**

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

.500(6)(a) Location and Landscape Support	**Current**	**With Impact**	Quality and quantity of habitat outside of AA (north of SR 524) is suitable for many species. Invasive species (Peruvian primrose willow) are present but do not dominate land cover. Wildlife access is limited by SR 524 travel lanes. Adverse impacts to wildlife in AA include vehicular/wildlife interactions to the south with natural habitat available to the north. Downstream benefits are limited by SR 524 with hydrologic connectivity limited by culvert locations.
	6	**0**	
.500(6)(b) Water Environment (n/a for uplands)	**Current**	**With Impact**	Water levels at AA are slightly higher than typical prairie community from runoff from adjacent SR 524 travel lanes. Fire frequency has been severely suppressed. Some ground cover vegetation is appropriate for community type but other vegetation in shrub layer is not appropriate. Minimal evidence of wildlife usage. Plant community includes species tolerant of poor water quality. Observed water quality is low with AA being a recieving body from adjacent impervious surfaces.
	6	**0**	
.500(6)(c) Community Structure x Vegetation _____ Benthic _____ Both	**Current**	**With Impact**	Majority of herbaceous vegetation is appropriate with some opportunistic shrub species at right-of-way line. Invasive species are limited to some species along perimeter of AA. Plant condition is generally good. Land uses outside of AA (SR 524) introduce anthropogenic pollution that are not optimal for long-term viability.
	6	**0**	

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	**With Impact**
0.60	0.00

Impact Acres =	0.27

Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.16

Impact Delta (ID)	
Current - w/Impact	0.60

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

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

Site/Project Name	Application Number	Assessment Area Name or Number
SR 524 Widening from Friday Road to Industry Road		**W10 (Preferred Alternative)**

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
617		**Impact**	**0.17** Acres

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
20/Southern St. Johns River	**III**	

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

The Assessment Area is hydrologically connected to offsite wetlands by roadside ditches.

Assessment area description

Assessment Area is a mixed hardwoods community with trees includint bald cypress, red maple, swamp bay, red bay and cabbage palm. Other vegetation includes royal fern, arrowhead, buttonbush, sawgrass and Virginia chain fern.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Indian River is approximately 4 miles east of AA; Lake Poinsett is approximately 2 miles southwest	

Functions	Mitigation for previous permit/other historic use
water quality; water conveyance; wildlife foraging and nesting habitat	**n/a**

Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)
Osprey, limpkin, little blue heron, snowy egret, tricolor heron, white ibis, wood stork	**Eastern Indigo Snake (T); foraging habitat; low use ; Wood stork (T) foraging habitat; moderate use**

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

Osprey

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
DH	**02/04/20**

Form 62-345.900(1), F.A.C. [effective date]

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

Site/Project Name:	Application Number:	Assessment Area Name or Number:
SR 524 Widening from Friday Road to Industry Road	**-**	**W10 (Preferred Alternative)**
Impact or Mitigation:	Assessment Conducted by:	Assessment Date:
Impact	**DH**	**02/04/20**

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

	Current	With Impact	
.500(6)(a) Location and Landscape Support	**7**	**0**	Adjacent land uses include travel lanes (SR 524 and Cox Road) and commercial property with undeveloped land bordering only the west side of AA resulting in minimal support for many species. Limited invasive species present. Wildlife access is limited to AA is limited on 3 sides from adjacent land uses. Downstream benefits are reduced as hydrologic connectivity to offsite wetlands occurs through roadside ditches. High risk of adverse impacts to wildlife from land use outside of assessment area (wildlife/vehicle interactions on SR 524 and Cox Road).
.500(6)(b) Water Environment (n/a for uplands)	**7**	**0**	Water levels at AA are affected by adjacent land uses and ditching. Fire frequency has been severely suppressed. Some ground cover vegetation is appropriate for community type but other vegetation in shrub layer is not appropriate. Minimal evidence of wildlife usage. Plant community includes species tolerant of poor water quality. Observed water quality is low with AA being a recieving body from adjacent impervious surfaces.
.500(6)(c) Community Structure x Vegetation _____ Benthic _____ Both	**8**	**0**	Appropriate community structure in all stratum. Invasive/exotic species coverage limited to edge of AA as it abuts SR 524 right-of-way. Plant condition is generally good in all stratum. Land uses outside of AA (SR 524, adjacent gas station) introduce anthropogenic pollution that are not optimal for long-term viability.

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	Current	With Impact
	0.73	0.00

Impact Acres =	0.17

Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.12

Impact Delta (ID)	
Current - w/Impact	0.73

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

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

Site/Project Name	Application Number	Assessment Area Name or Number
SR 524 Widening from Friday Road to Industry Road		**W10 (Preferred Alternative)**

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
617		**Impact**	**1.89** Acres

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
20/Southern St. Johns River	**III**	

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

The Assessment Area is hydrologically connected to offsite wetlands by roadside ditches.

Assessment area description

Assessment Area is a mixed hardwoods community with trees includint bald cypress, red maple, swamp bay, red bay and cabbage palm. Other vegetation includes royal fern, arrowhead, buttonbush, sawgrass and Virginia chain fern.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Indian River is approximately 4 miles east of AA; Lake Poinsett is approximately 2 miles southwest	

Functions	Mitigation for previous permit/other historic use
water quality; water conveyance; wildlife foraging and nesting habitat	**n/a**

Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)
Osprey, limpkin, little blue heron, snowy egret, tricolor heron, white ibis, wood stork	**Eastern Indigo Snake (T); foraging habitat; low use ; Wood stork (T) foraging habitat; moderate use**

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

Osprey

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
DH	**02/04/20**

Form 62-345.900(1), F.A.C. [effective date]

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

Site/Project Name:	Application Number:	Assessment Area Name or Number:
SR 524 Widening from Friday Road to Industry Road	**-**	**W10 (Preferred Alternative)**
Impact or Mitigation:	Assessment Conducted by:	Assessment Date:
Impact	**DH**	**02/04/20**

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

	Current	With Impact	
.500(6)(a) Location and Landscape Support	**7**	**0**	Adjacent land uses include travel lanes (SR 524 and Cox Road) and commercial property with undeveloped land bordering only the west side of AA resulting in minimal support for many species. Limited invasive species present. Wildlife access is limited to AA is limited on 3 sides from adjacent land uses. Downstream benefits are reduced as hydrologic connectivity to offsite wetlands occurs through roadside ditches. High risk of adverse impacts to wildlife from land use outside of assessment area (wildlife/vehicle interactions on SR 524 and Cox Road).
.500(6)(b) Water Environment (n/a for uplands)	**7**	**0**	Water levels at AA are affected by adjacent land uses and ditching. Fire frequency has been severely suppressed. Some ground cover vegetation is appropriate for community type but other vegetation in shrub layer is not appropriate. Minimal evidence of wildlife usage. Plant community includes species tolerant of poor water quality. Observed water quality is low with AA being a recieving body from adjacent impervious surfaces.
.500(6)(c) Community Structure x Vegetation _____ Benthic _____ Both	**8**	**0**	Appropriate community structure in all stratum. Invasive/exotic species coverage limited to edge of AA as it abuts SR 524 right-of-way. Plant condition is generally good in all stratum. Land uses outside of AA (SR 524, adjacent gas station) introduce anthropogenic pollution that are not optimal for long-term viability.

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	Current	With Impact
	0.73	0.00

Impact Acres =	1.89

Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	1.38

Impact Delta (ID)	
Current - w/Impact	0.73

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

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

Site/Project Name	Application Number	Assessment Area Name or Number
SR 524 Widening from Friday Road to Industry Road		**W11 (Preferred Alternative)**

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
643		**Impact**	**1.16** Acres

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
20/Southern St. Johns River	**III**	

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

The Assessment Area is contigous to other herbaceous wetlands that extend outside of the right-of-way to thesouth. The Assessment Area is also hydrologically connected via culverts under SR 524 to herbaceous wetlands that extend beyond the right-of-way to the north.

Assessment area description

Assessment Area as iit abuts right-of-way is vegetated with Carolina willow, salt bush, primrose willow and Brazilian pepper. Other vegetation includes yelloweyed grass, beaksedge, cattail and bushy bluestem.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Indian River is approximately 4 miles east of AA; Lake Poinsett is approximately 2 miles southwest	**AA is not unique as it is a road side herbaceous wetland that has been fragmented by SR 524 and impacted by a powerline easement.**
Functions	Mitigation for previous permit/other historic use
water quality; water conveyance; wildlife foraging and nesting habitat	**n/a**
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)
Osprey, limpkin, little blue heron, snowy egret, tricolor heron, white ibis, wood stork	**Eastern Indigo Snake (T); foraging habitat; low use ; Wood stork (T) foraging habitat; moderate use**

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

Osprey

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
DH	**02/04/20**

Form 62-345.900(1), F.A.C. [effective date]

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

Site/Project Name:	Application Number:	Assessment Area Name or Number:
SR 524 Widening from Friday Road to Industry Road	**-**	**W11 (Preferred Alternative)**
Impact or Mitigation:	Assessment Conducted by:	Assessment Date:
Impact	**DH**	**02/04/20**

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

	Current	With Impact	
.500(6)(a) Location and Landscape Support	**6**	**0**	Quality and quantity of habitat outside of AA (south of SR 524) is suitable for many species. Invasive species (Peruvian primrose willow and Brazilian pepper) are present but do not dominate land cover. Wildlife access is limited by SR 524 travel lanes. Adverse impacts to wildlife in AA include vehicular/wildlife interactions to the north with natural habitat available to the south. Downstream benefits are slightly limited by presence of features assocated with powerline easement.
.500(6)(b) Water Environment (n/a for uplands)	**5**	**0**	Water levels at AA are slightly higher than typical prairie community from runoff from adjacent SR 524 travel lanes. Fire frequency has been severely suppressed. Some ground cover vegetation is appropriate for community type but other vegetation in shrub layer is not appropriate. Minimal evidence of wildlife usage. Plant community includes species tolerant of poor water quality. Observed water quality is low with AA being a recieving body from adjacent impervious surfaces.
.500(6)(c) Community Structure x Vegetation _____ Benthic _____ Both	**6**	**0**	Majority of herbaceous vegetation is appropriate with some opportunistic shrub species at right-of-way line. Invasive species are limited to some species along perimeter of AA. Plant condition is generally good. Land uses outside of AA (SR 524) introduce anthropogenic pollution that are not optimal for long-term viability.

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	**With Impact**
0.57	0.00

Impact Acres =	1.16

Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.66

Impact Delta (ID)	
Current - w/Impact	0.57

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

Appendix D

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

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

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

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

POSTER INFORMATION

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

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

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

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

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

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

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

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

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

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

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

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

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

PRE-CONSTRUCTION ACTIVITIES

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

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

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

DURING CONSTRUCTION ACTIVITIES

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

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

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

POST CONSTRUCTION ACTIVITIES

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

ATTENTION:

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

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

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

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

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

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

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

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

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

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

LIFE HISTORY: The eastern indigo snake occurs in a wide variety of terrestrial habitat types throughout Florida. Although they have a preference for uplands, they also utilize some wetlands and agricultural areas. Eastern indigo snakes will often seek shelter inside gopher tortoise burrows and other below- and above-ground refugia, such as other animal burrows, stumps, roots, and debris piles. Females may lay from 4 - 12 white eggs as early as April through June, with young hatching in late July through October.

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

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

Appendix E

United States Department of the Interior

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

August 1, 2017

Donnie Kinard
U.S. Army Corps of Engineers
Post Office Box 4970
Jacksonville, Florida 32232-0019

Subject: Consultation Key for the Eastern Indigo Snake – Revised

Dear Mr. Kinard:

This letter revises and replaces the January 25, 2010, and August 13, 2013, letters to the U.S. Army Corps of Engineers (Corps) regarding the use of the eastern indigo snake programmatic effect determination key (Key) for projects occurring within the South Florida Ecological Service's Office (SFESO) jurisdiction. This revision supersedes all prior versions of the Key in the SFESO area. The purpose of this revision is to clarify portions of the previous keys based on questions we have been asked, specifically related to habitat and refugia used by eastern indigo snakes (*Drymarchon corais couperi*), in the southern portion of their range and within the jurisdiction of the SFESO. This Key is provided pursuant to the Service's authorities under the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C.1531 *et seq.*). This Key revision has been assigned Service Consultation Code: 41420-2009-I-0467-R001.

The purpose of this Key is to assist the Corps (or other Federal action agency) in making appropriate effects determinations for the eastern indigo snake under section 7 of the Act, and streamline informal consultation with the SFESO for the eastern indigo snake when the proposed action can be walked through the Key. The Key is a tool available to the Corps (or other Federal action agency) for the purposes of expediting section 7 consultations. There is no requirement to use the Key. There will be cases when the use of the Key is not appropriate. These include, but are not limited to: where project specific information is outside of the scope of the Key or instances where there is new biological information about the species. In these cases, we recommend the Corps (or other Federal action agency) initiates traditional consultation pursuant to section 7 of the Act, and identify that consultation is being requested outside of the Key.

This Key uses project size and home ranges of eastern indigo snakes as the basis for making determinations of "may affect, but is not likely to adversely affect" (NLAA) and "may affect. and is likely to adversely affect" (may affect). Suitable habitat for the eastern indigo snake consists of a mosaic of habitats types, most of which occur throughout South Florida. Information on home ranges for individuals is not available in specific habitats in South Florida. Therefore, the SFESO uses the information from a 26-year study conducted by Layne and Steiner (1996) at Archbold Biological Station, Lake Placid, Florida, as the best available

information. Layne and Steiner (1996) determined the average home range size for a female eastern indigo snake was 46 acres and 184 acres for a male.

Projects that would remove/destroy less than 25 acres of eastern indigo snake habitat are expected to result in the loss of a portion of an eastern indigo snakes home range that would not impair the ability of the individual to feed, breed, and shelter. Therefore, the Service finds that take would not be reasonably certain to occur due to habitat loss. However, these projects have the potential to injure or kill an eastern indigo snake if the individual is crushed by equipment during site preparation or other project aspects. The Service's *Standard Protection Measures for the Eastern Indigo Snake* (Service 2013 or most current version) and the excavation of underground refugia (where a snake could be buried, trapped and/or injured), when implemented, are designed to avoid these forms of take. Consequently, projects less than 25 acres that include the Service's *Standard Protection Measures for the Eastern Indigo Snake* (Service 2013 or most current version) and a commitment to excavate underground refugia as part of the proposed action would be expected to avoid take and thus, may affect, but are not likely to adversely affect the species.

If a proposed project would impact less than 25 acres of vegetated eastern indigo snake habitat (not urban/ human-altered) completely surrounded by urban development, and an eastern indigo snake has been observed on site, the Key should not be used. The Service recommends formal consultation for this situation because of the expected increased value of the vegetated habitat within the individual's home range.

Projects that would remove 25 acres or more of eastern indigo snake habitat could remove more than half of a female eastern indigo snakes home range. This loss of habitat within a home range would be expected to significantly impair the ability of that individual to feed, breed, and shelter. Therefore, the Service finds take through habitat loss would be reasonably certain to occur and formal consultation is appropriate. Furthermore, these projects have the potential to injure or kill an eastern indigo snake if the individual is crushed by equipment during site preparation or other project aspects. The Service's *Standard Protection Measures* for the *Eastern Indigo Snake* (Service 2013 or most current version) and the excavation of underground refugia (where a snake could be buried, trapped and/or injured), when implemented, are designed to avoid these forms of take.

Eastern indigo snakes use a variety of habitat and are difficult to detect. Therefore, site specific information on the land use, observations of eastern indigo snakes within the vicinity, as well as other factors, as appropriate, will all be considered by the Service when making a final recommendation on the appropriate effects determination and whether it is appropriate to conclude consultation with the Corps (or other Federal action agency) formally or informally for projects that will impact 25 acres or more of habitat. Accordingly, when the use of the Key results in a determination of "may affect," the Corps (or other Federal action agency) is advised that consultation may be concluded informally or formally, depending on the project specific effects to eastern indigo snakes. Technical assistance from the Service can assist you in making a determination prior to submitting a request for consultation. In circumstances where the Corps (or other Federal action agency) desires to proceed with a consultation request prior to receiving

additional technical assistance from the Service, we recommend the agency documents the biological rationale for their determination and proceed with a request accordingly.

If the use of the Key results in a determination of "no effect," no further consultation is necessary with the SFESO. If the use of the Key results in a determination of "NLAA," the SFESO concurs with this determination based on the rationale provide above, and no further consultation is necessary for the effects of the proposed action on the eastern indigo snake. For "no effect" or "NLAA" determinations, the Service recommends that the Corps (or other Federal action agency) documents the pathway used to reach your no effect or NLAA determination in the project record and proceed with other species analysis as warranted.

Eastern Indigo Snake Programmatic Effect Determination Key
Revised July 2017
South Florida Ecological Service Office

Scope of the Key

This Key should be used only in the review of permit applications for effects determinations for the eastern indigo snake (*Drymarchon corais couperi*) within the South Florida Ecological Service's Office (SFESO) area (Broward, Charlotte, Collier, De Soto, Glades, Hardee, Hendry, Highlands, Lee, Indian River, Martin, Miami-Dade, Monroe, Okeechobee, Osceola, Palm Beach, Polk, Sarasota, and St. Lucie Counties). There is no designated critical habitat for the eastern indigo snake.

This Key is subject to revision as the Corps (or other Federal action agency) and Service deem necessary and in particular whenever there is new information on eastern indigo snake biology and effects of proposed projects.

The Key is a tool available to the Corps (or other Federal action agency) for the purposes of expediting section 7 consultations. There is no requirement to use the Key. There will be cases when the use of the Key is not appropriate. These include, but are not limited to: where project specific information is outside of the scope of the Key or instances where there is new biological information about the species. In these cases, we recommend the Corps (or other Federal action agency) initiates traditional consultation pursuant to section 7 of the Act, and identify that consultation is being requested outside of the Key.

Habitat

Habitat use varies seasonally between upland and wetland areas, especially in the more northern parts of the species' range. In southern parts of their range eastern indigo snakes are habitat generalists which use most available habitat types. Movements between habitat types in northern areas of their range may relate to the need for thermal refugia (protection from cold and/or heat).

In northern areas of their range eastern indigo snakes prefer an interspersion of tortoise-inhabited sandhills and wetlands (Landers and Speake 1980). In these northern regions eastern indigo

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

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

In south Florida, agricultural sites (*e.g.*, sugar cane fields and citrus groves) are occupied by eastern indigo snakes. The use of sugarcane fields by eastern indigo snakes was first documented by Layne and Steiner in 1996. In these areas there is typically an abundance of wetland and upland ecotones (due to the presence of many ditches and canals), which support a diverse prey base for foraging. In fact, some speculate agricultural areas may actually have a higher density of eastern indigo snakes than natural communities due to the increased availability of prey. Gopher tortoise burrows are absent at these locations but there is an abundance of both natural and artificial refugia. Enge and Endries (2009) reporting on the status of the eastern indigo snake included sugarcane fields and citrus groves in a Global Information Systems (GIS)-base map of potential eastern indigo snake habitat. Numerous sightings of eastern indigo snakes within sugarcane fields have been reported within south Florida (Florida Fish and Wildlife Conservation Commission Indigo Snake Database [Enge 2017]). A recent study associated with the Comprehensive Everglades Restoration Plan (CERP) (A-1 FEB Project formerly A-1 Reservoir; Service code: 41420-2006-F-0477) documented eastern indigo snakes within sugarcane fields. The snakes used artificial habitats such as piles of limerock, construction debris, and pump stations. Recent studies also associated with the CERP at the C-44 Project (Service code: 41420-2009-FA-0314), and C-43 Project (Service code: 41420-2007-F-0589) documented eastern indigo snakes within citrus groves. The snakes used artificial habitats such as boards, sheets of tin, construction debris, pipes, drain pipes in abandoned buildings and septic tanks.

In extreme south Florida (*i.e.*, the Everglades and Florida Keys), eastern indigo snakes also utilize tropical hardwood hammocks, pine rocklands, freshwater marshes, abandoned agricultural land, coastal prairie, mangrove swamps, and human-altered habitats. Though eastern indigo snakes have been found in all available habitats of south Florida it is thought they prefer hammocks and pine forests since most observations occur there and use of these areas is disproportionate compared to the relatively small total area of these habitats (Steiner *et al.* 1983).

Even though thermal stress may not be a limiting factor throughout the year in south Florida, eastern indigo snakes still seek and use underground refugia. On the sandy central ridge of central Florida, eastern indigo snakes use gopher tortoise burrows more (62 percent) than other underground refugia (Layne and Steiner 1996). Other underground refugia used include armadillo (*Dasypus novemcinctus*) burrows near citrus groves, cotton rat (*Sigmodon hispidus*) burrows, and land crab (*Cardisoma guanhumi*) burrows in coastal areas (Layne and Steiner 1996; Wilson and Porras 1983). Natural ground holes, hollows at the base of trees or shrubs, ground litter, trash piles, and crevices of rock-lined ditch walls are also used (Layne and Steiner 1996). These refugia are used most frequently where tortoise burrows are not available, principally in low-lying areas off the central and coastal ridges.

Minimization Measures

The Service developed protection measures for the eastern indigo snake "Standard Protection Measures for the Eastern Indigo Snake" (Service 2013) located at: https://www.fws.gov/verobeach/ReptilesPDFs/20130812_EIS%20Standard%20Protection%20Measures_final.pdf. These protections measures (or the most updated version) are considered a minimization measure for projects proposed within eastern indigo snake habitat.

Determinations

If the use of this Key results in a determination of "**no effect**," no further consultation is necessary with the SFESO.

If the use of this Key results in a determination of "**NLAA**," the SFESO concurs with this determination and no further consultation is necessary for the effects of the proposed action on the eastern indigo snake.

For no effect or NLAA determinations, the Corps (or other Federal action agency) should make a note in the project file indicating the pathway used to reach your no effect or NLAA determination.

If a proposed project would impact less than 25 acres of vegetated eastern indigo snake habitat (not urban/ human-altered) completely surrounded by urban development, and an eastern indigo snake has been observed on site, the subsequent Key should not be used. The Service recommends formal consultation for this situation because of the expected increased value of the vegetated habitat within the individual's home range.

If the use of this Key results in a determination of "**may affect**," consultation may be concluded informally or formally depending on project effects to eastern indigo snakes. Technical assistance from the Service can assist you in making a determination prior to submitting a request for consultation. In circumstances where the Corps desires to proceed with a consultation request prior to receiving additional technical assistance from the Service, we recommend the Corps document the biological rationale for their determination and proceed with a request accordingly.

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

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

B. Permit will be conditioned for use of the Service's most current guidance for Standard Protection Measures For The Eastern Indigo Snake (currently 2013) during site preparation and project construction.....go to C

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

C. The project will impact less than 25 acres of eastern indigo snake habitat (*e.g.*, sandhill, scrub, pine flatwoods, pine rocklands, scrubby flatwoods, high pine, dry prairie, coastal prairie, mangrove swamps, tropical hardwood hammocks, hydric hammocks, edges of freshwater marshes, agricultural fields [including sugar cane fields and active, inactive, or abandoned citrus groves], and coastal dunes).....go to D

The project will impact 25 acres or more of eastern indigo snake habitat (*e.g.*, sandhill, scrub, pine flatwoods, pine rocklands, scrubby flatwoods, high pine, dry prairie, coastal prairie, mangrove swamps, tropical hardwood hammocks, hydric hammocks, edges of freshwater marshes, agricultural fields [including sugar cane fields and active, inactive, or abandoned citrus groves], and coastal dunes).....**may affect**

D. The project has no known holes, cavities, active or inactive gopher tortoise burrows, or other underground refugia where a snake could be buried, trapped and/or injured during project activities.....**NLAA**

The project has known holes, cavities, active or inactive gopher tortoise burrows, or other underground refugia where a snake could be buried, trapped and /or injured.....go to E

E. Any permit will be conditioned such that all gopher tortoise burrows, active or inactive, will be excavated prior to site manipulation in the vicinity of the burrow[1]. If an eastern indigo snake is encountered, the snake must be allowed to vacate the area prior to additional site manipulation in the vicinity. Any permit will also be conditioned such that holes, cavities, and snake refugia other than gopher tortoise burrows will be inspected each morning before planned site manipulation of a particular area, and, if occupied by an eastern indigo snake, no work will commence until the snake has vacated the vicinity of proposed work.....**NLAA**[2]

Permit will not be conditioned as outlined above.....**may affect**

End Key

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

[2] Please note, if the proposed project will impact less than 25 acres of vegetated eastern indigo snake habitat (not urban/ human-altered) completely surrounded by urban development, and an eastern indigo snake has been observed on site, NLAA is not the appropriate conclusion. The Service recommends formal consultation for this situation because of the expected increased value of the vegetated habitat within the individual's home range

Working with the Fish and Wildlife Foundation of Florida, the Service has established a fund to support conservation and recovery for the eastern indigo snake. Any project that has the potential to affect the eastern indigo snake and/or its habitat is encouraged to make a voluntary contribution to this fund. If you would like additional information about how to make a contribution and how these monies are used to support eastern indigo snake recovery please contact Ashleigh Blackford, Connie Cassler, or José Rivera at 772-562-3559.

This revised Key is effective immediately upon receipt by the Corps. Should circumstances change or new information become available regarding the eastern indigo snake and/or implementation of the Key, the determinations herein may be reconsidered and this Key further revised or amended.

Thank you for your continued cooperation in the effort to conserve fish and wildlife resources. If you have any questions or comments regarding this Key, please contact the SFESO at 772-562-3909.

Sincerely,

Roxanna Hinzman
Field Supervisor
South Florida Ecological Services

Cc:
Corps, Jacksonville, Florida (Dale Beter, Muriel Blaisdell, Ingrid Gilbert, Angela Ryan, Irene Sadowski, Victoria White, Alisa Zarbo)
Service, Athens, Georgia (Michelle Elmore)
Service, Jacksonville, Florida (Annie Dziergowski)
Service, Panama City, Florida (Sean Blomquist)

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Appendix F

United States Department of the Interior

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

May 18, 2010

Donnie Kinard
Chief, Regulatory Division
Jacksonville District Corps of Engineers
Post Office Box 4970
Jacksonville, Florida 32232-0019

Service Federal Activity Code: 41420-2007-FA-1494
Service Consultation Code: 41420-2007-I-0964
Subject: South Florida Programmatic Concurrence
Species: Wood Stork

Dear Mr. Kinard:

This letter addresses minor errors identified in our January 25, 2010, wood stork key and as such, supplants the previous key. The key criteria and wood stork biomass foraging assessment methodology have not been affected by these minor revisions.

The Fish and Wildlife Service's (Service) South Florida Ecological Services Office (SFESO) and the U.S. Army Corps of Engineers Jacksonville District (Corps) have been working together to streamline the consultation process for federally listed species associated with the Corps' wetland permitting program. The Service provided letters to the Corps dated March 23, 2007, and October 18, 2007, in response to a request for a multi-county programmatic concurrence with a criteria-based determination of "may affect, not likely to adversely affect" (NLAA) for the threatened eastern indigo snake (*Drymarchon corais couperi*) and the endangered wood stork (*Mycteria americana*) for projects involving freshwater wetland impacts within specified Florida counties. In our letters, we provided effect determination keys for these two federally listed species, with specific criteria for the Service to concur with a determination of NLAA.

The Service has revisited these keys recently and believes new information provides cause to revise these keys. Specifically, the new information relates to foraging efficiencies and prey base assessments for the wood stork and permitting requirements for the eastern indigo snake. This letter addresses the wood stork key and is submitted in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C. 1531 *et seq.*). The eastern indigo snake key will be provided in a separate letter.

Wood stork

Habitat

The wood stork is primarily associated with freshwater and estuarine habitats that are used for nesting, roosting, and foraging. Wood storks typically construct their nests in medium to tall

trees that occur in stands located either in swamps or on islands surrounded by relatively broad expanses of open water (Ogden 1991, 1996; Rodgers et al. 1996). Successful colonies are those that have limited human disturbance and low exposure to land-based predators. Nesting colonies protected from land-based predators are characterized as those surrounded by large expanses of open water or where the nest trees are inundated at the onset of nesting and remain inundated throughout most of the breeding cycle. These colonies have water depths between 0.9 and 1.5 meters (3 and 5 feet) during the breeding season.

Successful nesting generally involves combinations of average or above-average rainfall during the summer rainy season and an absence of unusually rainy or cold weather during the winter-spring breeding season (Kahl 1964; Rodgers et al. 1987). This pattern produces widespread and prolonged flooding of summer marshes, which maximize production of freshwater fishes, followed by steady drying that concentrate fish during the season when storks nest (Kahl 1964). Successful nesting colonies are those that have a large number of foraging sites. To maintain a wide range of foraging sites, a variety of wetland types should be present, with both short and long hydroperiods. The Service (1999) describes a short hydroperiod as a 1 to 5-month wet/dry cycle, and a long hydroperiod as greater than 5 months. During the wet season, wood storks generally feed in the shallow water of the short-hydroperiod wetlands and in coastal habitats during low tide. During the dry season, foraging shifts to longer hydroperiod interior wetlands as they progressively dry-down (though usually retaining some surface water throughout the dry season).

Wood storks occur in a wide variety of wetland habitats. Typical foraging sites for the wood stork include freshwater marshes and stock ponds, shallow, seasonally flooded roadside and agricultural ditches, narrow tidal creeks and shallow tidal pools, managed impoundments, and depressions in cypress heads and swamp sloughs. Because of their specialized feeding behavior, wood storks forage most effectively in shallow-water areas with highly concentrated prey. Through tactolocation, or grope feeding, wood storks in south Florida feed almost exclusively on fish between 2 and 25 centimeters [cm] (1 and 10 inches) in length (Ogden et al. 1976). Good foraging conditions are characterized by water that is relatively calm, uncluttered by dense thickets of aquatic vegetation, and having a water depth between 5 and 38 cm (5 and 15 inches) deep, although wood storks may forage in other wetlands. Ideally, preferred foraging wetlands would include a mosaic of emergent and shallow open-water areas. The emergent component provides nursery habitat for small fish, frogs, and other aquatic prey and the shallow, open-water areas provide sites for concentration of the prey during seasonal dry-down of the wetland.

Conservation Measures

The Service routinely concurs with the Corps' "may affect, not likely to adversely affect" determination for individual project effects to the wood stork when project effects are insignificant due to scope or location, or if assurances are given that wetland impacts have been avoided, minimized, and adequately compensated such that there is no net loss in foraging potential. We utilize our *Habitat Management Guidelines for the Wood Stork in the Southeast Region* (Service 1990) (Enclosure 1) (HMG) in project evaluation. The HMG is currently under review and once final will replace the enclosed HMG. There is no designated critical habitat for the wood stork.

The SFESO recognizes a 29.9 kilometer [km] (18.6-mile) core foraging area (CFA) around all known wood stork colonies in south Florida. Enclosure 2 (to be updated as necessary) provides locations of colonies and their CFAs in south Florida that have been documented as active within the last 10 years. The Service believes loss of suitable wetlands within these CFAs may reduce foraging opportunities for the wood stork. To minimize adverse effects to the wood stork, we recommend compensation be provided for impacts to foraging habitat. The compensation should consider wetland type, location, function, and value (hydrology, vegetation, prey utilization) to ensure that wetland functions lost due to the project are adequately offset. Wetlands offered as compensation should be of the same hydroperiod and located within the CFAs of the affected wood stork colonies. The Service may accept, under special circumstances, wetland compensation located outside the CFAs of the affected wood stork nesting colonies. On occasion, wetland credits purchased from a "Service Approved" mitigation bank located outside the CFAs could be acceptable to the Service, depending on location of impacted wetlands relative to the permitted service area of the bank, and whether or not the bank has wetlands having the same hydroperiod as the impacted wetland.

In an effort to reduce correspondence in effect determinations and responses, the Service is providing the Wood Stork Effect Determination Key below. If the use of this key results in a Corps determination of "no effect" for a particular project, the Service supports this determination. If the use of this Key results in a determination of NLAA, the Service concurs with this determination[1]. This Key is subject to revisitation as the Corps and Service deem necessary.

The Key is as follows:

A. Project within 0.76 km (0.47 mile)[2] of an active colony site[3] ..... *"may affect[4]"*

Project impacts Suitable Foraging Habitat (SFH)[5] at a location greater than 0.76 km (0.47 mile) from a colony site..... ..... *"go to* B"

[1] With an outcome of "no effect" or "NLAA" as outlined in this key, and the project has less than 20.2 hectares (50 acres) of wetland impacts, the requirements of section 7 of the Act are fulfilled for the wood stork and no further action is required. For projects with greater than 20.2 hectares (50 acres) of wetland impacts, written concurrence of NLAA from the Service is necessary.

[2] Within the secondary zone (the average distance from the border of a colony to the limits of the secondary zone is 0.76 km (2,500 feet, or 0.47 mi).

[3] An active colony is defined as a colony that is currently being used for nesting by wood storks or has historically over the last 10 years been used for nesting by wood storks.

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

[5] Suitable foraging habitat (SFH) includes wetlands that typically have shallow-open water areas that are relatively calm and have a permanent or seasonal water depth between 5 to 38 cm (2 to 15 inches) deep. Other shallow non-wetland water bodies are also SFH. SFH supports and concentrates, or is capable of supporting and concentrating small fish, frogs, and other aquatic prey. Examples of SFH include, but are not limited to freshwater marshes, small ponds, shallow, seasonally flooded roadside or agricultural ditches, seasonally flooded pastures, narrow tidal creeks or shallow tidal pools, managed impoundments, and depressions in cypress heads and swamp sloughs.

Project does not affect SFH……..…..*"no effect*[1]*"*.

B. Project impact to SFH is less than 0.20 hectare (one-half acre)[6]……..……*NLAA*[1]*"*

Project impact to SFH is greater in scope than 0.20 hectare (one-half acre)....……*go to* C

C. Project impacts to SFH not within the CFA (29.9 km, 18.6 miles) of a colony site ……..…….…….…..……*go to* D

Project impacts to SFH within the CFA of a colony site …….…..…...…….*go to* E

D. Project impacts to SFH have been avoided and minimized to the extent practicable; compensation (Service approved mitigation bank or as provided in accordance with Mitigation Rule 33 CFR Part 332) for unavoidable impacts is proposed in accordance with the CWA section 404(b)(1) guidelines; and habitat compensation replaces the foraging value matching the hydroperiod[7] of the wetlands affected and provides foraging value similar to, or higher than, that of impacted wetlands. See Enclosure 3 for a detailed discussion of the hydroperiod foraging values, an example, and further guidance[8]…….. *NLAA*[1]*"*

Project not as above.……... *"may affect*[4]*"*

E. Project provides SFH compensation in accordance with the CWA section 404(b)(1) guidelines and is not contrary to the HMG; habitat compensation is within the appropriate CFA or within the service area of a Service-approved mitigation bank; and habitat compensation replaces foraging value, consisting of wetland enhancement or restoration matching the hydroperiod[7] of the wetlands affected, and provides foraging value similar

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[6] On an individual basis, SFH impacts to wetlands less than 0.20 hectare (one-half acre) generally will not have a measurable effect on wood storks, although we request that the Corps require mitigation for these losses when appropriate. Wood storks are a wide ranging species, and individually, habitat change from impacts to SFH less than one-half acre are not likely to adversely affect wood storks. However, collectively they may have an effect and therefore regular monitoring and reporting of these effects are important.

[7] Several researchers (Flemming et al. 1994; Ceilley and Bortone 2000) believe that the short hydroperiod wetlands provide a more important pre-nesting foraging food source and a greater early nestling survivor value for wood storks than the foraging base (grams of fish per square meter) than long hydroperiod wetlands provide. Although the short hydroperiod wetlands may provide less fish, these prey bases historically were more extensive and met the foraging needs of the pre-nesting storks and the early-age nestlings. Nest productivity may suffer as a result of the loss of short hydroperiod wetlands. We believe that most wetland fill and excavation impacts permitted in south Florida are in short hydroperiod wetlands. Therefore, we believe that it is especially important that impacts to these short hydroperiod wetlands within CFAs are avoided, minimized, and compensated for by enhancement/restoration of short hydroperiod wetlands.

[8] For this Key, the Service requires an analysis of foraging prey base losses and enhancements from the proposed action as shown in the examples in Enclosure 3 for projects with greater than 2.02 hectares (5 acres) of wetland impacts. For projects with less than 2.02 hectares (5 acres) of wetland impacts, an individual foraging prey base analysis is not necessary although type for type wetland compensation is still a requirement of the Key.

to, or higher than, that of impacted wetlands. See Enclosure 3 for a detailed discussion of the hydroperiod foraging values, an example, and further guidance[8]..... *"NLAA[1]"*

Project does not satisfy these elements ..... *"may affect[4]"*

This Key does not apply to Comprehensive Everglades Restoration Plan projects, as they will require project-specific consultations with the Service.

Monitoring and Reporting Effects

For the Service to monitor cumulative effects, it is important for the Corps to monitor the number of permits and provide information to the Service regarding the number of permits issued where the effect determination was: "may affect, not likely to adversely affect." We request that the Corps send us an annual summary consisting of: project dates, Corps identification numbers, project acreages, project wetland acreages, and project locations in latitude and longitude in decimal degrees.

Thank you for your cooperation and effort in protecting federally listed species. If you have any questions, please contact Allen Webb at extension 246.

Sincerely yours,

Paul Souza
Field Supervisor
South Florida Ecological Services Office

Enclosures

cc: w/enclosures (electronic only)
Corps, Jacksonville, Florida (Stu Santos)
EPA, West Palm Beach, Florida (Richard Harvey)
FWC, Vero Beach, Florida (Joe Walsh)
Service, Jacksonville, Florida (Billy Brooks)

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