NATURAL RESOURCES EVALUATION TECHNICAL MEMORANDUM

Florida Department of Transportation

District Five

SR 535 PD&E Study

Limits of Project: From US 192 to North of World Center Dr

Orange and Osceola Counties, Florida

Financial Management Number: 437174-2

ETDM Number: 14325

Date: August 2024

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

Florida Department of
TRANSPORTATION

SR 535 PD&E Study

Natural Resources Evaluation Technical Memorandum

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EXECUTIVE SUMMARY

This Project Development and Environment Study evaluates the potential roadway improvements along a 2.35 mile segment of State Road 535 (SR 535), a four-lane divided minor arterial facility located within unincorporated Osceola and Orange Counties in central Florida. SR 535 is known as Vineland Road in Osceola County and Kissimmee-Vineland Road in Orange County. The proposed improvements are needed to address serious existing and projected capacity and safety deficiencies prevalent within the study corridor. This document presents the existing natural resources in the project area and the potential impacts from the Preferred Alternative on protected species and wetlands.

This project was evaluated for impacts to protected plant and animal species and their habitats in accordance with the FDOT's *PD&E Manual, Part 2, Protected Species and Habitat,* which incorporates the requirements of the National Environmental Policy Act (NEPA) and related federal and state laws. Federal and state listed species with potential to occur in the project corridor were identified through research and coordination with US Fish and Wildlife Service, and the Florida Fish and Wildlife Conservation Commission. There is no Critical Habitat present within the project area. Field investigations of the project area were also conducted on multiple days and in different seasons to evaluate the potential presence of protected species and habitats. No adverse impacts are anticipated to any listed species from the Preferred Alternative, and protected species that may occur in the project area are shown in **Table ES-1** along with effect determinations.

This project was evaluated for impacts to wetlands and other surface waters in accordance with FDOT's *PD&E Manual, Part 2, Wetlands and Other Surface Waters,* which incorporates the requirements of the National Environmental Policy Act (NEPA) and related federal and state laws. There would be no direct impacts to wetlands or other surface waters under the Preferred Alternative.

Under operating agreement with the Florida Department of Environmental Protection, the SFWMD maintains state jurisdiction for Environmental Resource Permit reviews under 62-330 FAC for roadway and transportation projects. SFWMD will coordinate any required Sovereign Submerged Lands easement or lease from the Florida Department of Environmental Protection Bureau of State Lands as part of the ERP permitting process, if necessary. There are no Federally jurisdictional wetlands that will be impacted under the Preferred Alternative. Therefore, no Section 404 permit is anticipated.

Table ES-1 Species Effect Determinations Under Preferred Alternative

Common Name	Scientific Name	Federal Status	State Status	Occurrence Potential in Project Area	Effect Determination
Fauna Species					
Audubon's crested caracara	Polyborus plancus audubonii	FT	-	Low	No Effect
Blue-tail mole skink	Eumeces egregius lividus	FT	-	Moderate	No Effect
Eastern black rail	Laterallus jamaicensis ssp. jamaicensis	FT	-	Low	No Effect
Eastern indigo snake	Drymarchon corais couperi	FT	-	Low	NLAA
Everglade snail kite	Rostrhamus sociabilis plumbeus	FE	-	Low	No Effect
Florida burrowing owl	Athene cunicularia	-	ST	Low	NAEA
Florida grasshopper sparrow	Ammodramus savannarum floridanus	FE	-	Low	No Effect
Florida pine snake	Pituophis melanoleucus mugitus	-	ST	Low	NAEA
Florida sandhill crane	Grus canadensis pratensis	-	ST	Low	NAEA
Florida Blue-Tail Mole Skink and Sand Skink	Neoseps reynoldsi	FT	-	Moderate	No Effect
Florida scrub-jay	Aphelocoma coerulescens	FT	-	Low	No Effect
Gopher tortoise	Gopherus polyphemus	-	ST	Low	NAEA
Little blue heron	Egretta caerulea	-	ST	Low	NAEA
Red-cockaded woodpecker	Picoides borealis	FE	-	Low	No Effect
Roseate spoonbill	Platalea ajaja	-	ST	Low	No Effect Antcipated
Southeastern American kestrel	Falco sparverius paulus	-	ST	Low	NAEA
Tricolored heron	Egretta tricolor	-	ST	Low	No Effect Anticipated
Wood stork	Mycteria americana	FE	-	Low	No Effect
Flora Species					
Beautiful pawpaw	Deeringothamnus pulchellus	FE	-	Low	No Effect
Britton's beargrass	Nolina brittoniana	FE	-	Low	No Effect
Florida greeneyes	Berlandiera subacaulis	FT	-	Low	No Effect
Gray's beaksedge	Rhynchospora grayi	FT	-	Low	No Effect
Lewton's polygala	Polygala lewtonii	FE	-	Low	No Effect

Notes: FE = Federally Endangered, FT = Federally Threatened, ST = State Threatened, NLAA = Not Likely to Adversely Affect, MANLAA = May Affect, Not Likely to Adversely Affect, NAEA = No Adverse Effect Anticipated

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1.0 Introduction

In November 2017, the Florida Department of Transportation (FDOT) District Five (D-5) completed a Corridor Planning Study (CPS) to evaluate State Road 535 (SR 535) from US 192 in Osceola County to I-4 in Orange County. The purpose of the CPS was to identify specific problem areas along the corridor and evaluate multimodal alternatives that will be carried forward into future phases of project development in order to optimize the operations of the existing facility. Improvements identified as a result of the CPS included widening from four to six lanes, TSM&O and multimodal improvements, and intersection improvements (including innovative intersection designs).

This Natural Resources Evaluation (NRE) documents the project's purpose and need, the alternatives developed, the existing conditions within the project area, and the future conditions based on the preferred alternative.

1.1 Project Description

FDOT D-5 is conducting a Project Development and Environment (PD&E) Study to evaluate the widening of SR 535 from four to six lanes from US 192 in Osceola County to just north of World Center Drive (SR 536) in Orange County, approximately 2.35 miles as shown in **Figure 1-1**. SR 535 is known as Vineland Road in Osceola County and Kissimmee-Vineland Road in Orange County.

Within the study limits, SR 535 is a four-lane divided minor arterial facility that runs generally in a north south direction with an existing posted speed that varies from 45 to 50 mph. Bicycle and pedestrian facilities are provided intermittently throughout the study area. There are three bridges over SR 535 within the study limits. Two of the existing bridges serve eastbound and westbound SR 417 and one of the existing bridges serves both eastbound and westbound Osceola Parkway. The existing drainage system collects roadway runoff in ditches and conveys the roadway runoff to treatment ponds via roadside ditches. Existing typical sections are provided in Figure 2-2. The proposed improvements include widening SR 535 from four to six lanes, constructing signal improvements, providing drainage treatment and providing shared use paths along both sides of the roadway. The existing bridges will not be modified. The typical section for the preferred alternative is provided in **Figure 1-2.**

Figure 1-1 - Project Location

1.2 Purpose & Need

The purpose and need of the project is to accommodate future projected traffic demand and improve safety.

1.2.1 Transportation Demand

In the existing condition, the section of SR 535 from US 192 to Kyngs Heath Road operates at a Level of Service (LOS) D with an Annual Average Daily Traffic (AADT) of 28,300; the section from Kyngs Heath Road to Poinciana Boulevard operates at LOS D with an AADT of 26,900; the section from Poinciana Boulevard to Polynesian Isle Boulevard operates at LOS D with an AADT of 46,800; the section from Polynesian Isle Boulevard to World Center Drive operates at LOS D with an AADT of 44,300.

Based on the approved Orange County and Osceola County Comprehensive Plan's future land-uses that are included in the Central Florida Regional Planning Model (CFRPM) version 7.0, in the future year (2045) No-Build condition, the section of SR 535 from US 192 and Kyngs Heath Road is projected to operate at LOS F with an AADT of 42,000; the section from Kyngs Heath

Road to Poinciana Boulevard is projected to operate at LOS E with an AADT of 40,000; the section from Poinciana Boulevard to Polynesian Isle Boulevard is projected to operate at LOS F with an AADT of 69,000; the section from Polynesian Isle Boulevard to World Center Drive is projected to operate at LOS F with an AADT of 66,000.

1.2.2 Safety

A total of 981 crashes were reported on SR 535 from US 192 to Lake Bryan Beach Boulevard in the five-year period from 2014 through 2018. Of those reported crashes, 463 (47%) resulted in injury and four (4) resulted in a fatality. The most frequent crash type was rear end with 605 (62%) total crashes, indicating congestion. Sideswipe crashes were the second highest with 106 (11%), followed by left-turn with 93 (9%) total crashes. Of the 981 crashes, 602 (61%) crashes occurred during daylight conditions. The crash rates along this segment of SR 535 exceed the FDOT statewide averages for similar facilities.

1.3 Project Status

The project is within the jurisdiction of MetroPlan Orlando. The MetroPlan Orlando 2045 Cost Feasible Plan (CFP) includes widening of SR 535 from US 192 in Osceola County to SR 536 in Orange County in years 2031 to 2035 (construction). The SR 535 improvements are funded for design in the Florida Department of Transportation (FDOT) 2024-2029 Five-Year Work Program and MetroPlan Orlando 2023-2028 Transportation Improvement Program (TIP). This project was screened in the Efficient Transportation Decision Making (ETDM) system as ETDM #14325.

1.4 Commitments

FDOT has made a series of commitments and recommendations during this PD&E Study. The following sections summarize the commitments and recommendations that will be adhered to during the future transportation phases.

- The most recent version of the USFWS Standard Protection Measures for the Eastern Indigo Snake will be utilized during construction.
- FDOT will require contractors to remove garbage daily from the construction site or use bear proof containers for securing of food and other debris from the project work area to prevent these items from becoming an attractant for the Florida black bear (Ursus americanus floridanus). Any interaction with nuisance bears will be reported to the FWC Wildlife Alert hotline 888-404-FWCC (3922).

- If the tricolored bat (*Perimyotis subfalvus*) is listed by USFWS as Threatened or Endangered and the project may affect the species, FDOT commits to re-initiating consultation with USFWS to determine appropriate avoidance and minimization measures for protection of the newly listed species.
- If the Monarch butterfly (*Danaus plexippus*) is listed by USFWS as Threatened or Endangered and the project may affect the species, FDOT commits to re-initiating consultation with USFWS to determine appropriate avoidance and minimization measures for protection of the newly listed species.

1.5 Alternatives Analysis Summary

The following alternatives were evaluated during the study:

- 'No-Build' Alternative
- Construction ('Build') Alternatives

  The build alternative consists of widening SR 535 from four to six lanes. The study evaluated a range of typical section and intersection alternatives including inside widening and outside widening of the existing roadway. The build alternative analysis included the evaluation of open and closed stormwater drainage conveyance systems together with the evaluation of pond site locations. The study also evaluated Transportation System Management and Operations (TSMO) and multimodal improvements.

1.6 Description of Preferred Alternative

The Preferred Alternative consists of inside widening from four to six lanes with a shared use path along both sides and intersection improvements. The preferred alternative is shown on **Figure 1-2**.

The Preferred Alternative has a design speed of 45-miles per hour (mph) and consists of full reconstruction with the additional lanes constructed towards the median. The typical section consists of three (3) 11-foot travel lanes in each direction separated by a 32-foot to 47-foot median with a 14-foot shared use path on the west side and a 12-foot shared use path on the east side of the roadway. The Preferred Alternative will be constructed within the existing right-of-way width of 200-feet to 224-feet. Swales with ditch bottom inlets in conjunction with flume inlets at the curb line will be provided for drainage conveyance. Stormwater attenuation and floodplain compensation will be provided.

Figure 1-2 - Preferred Alternative Typical Section

Roadway improvements would not require extending or reconstructing the existing bridges over SR 535 (One (1) bridge carries Osceola Parkway traffic over SR 535 and two (2) bridges carry SR 417) as all improvements will fit under the existing structures (see **Figure 1-3** and **Figure 1-4**).

Figure 1-3 - Osceola Parkway over SR 535

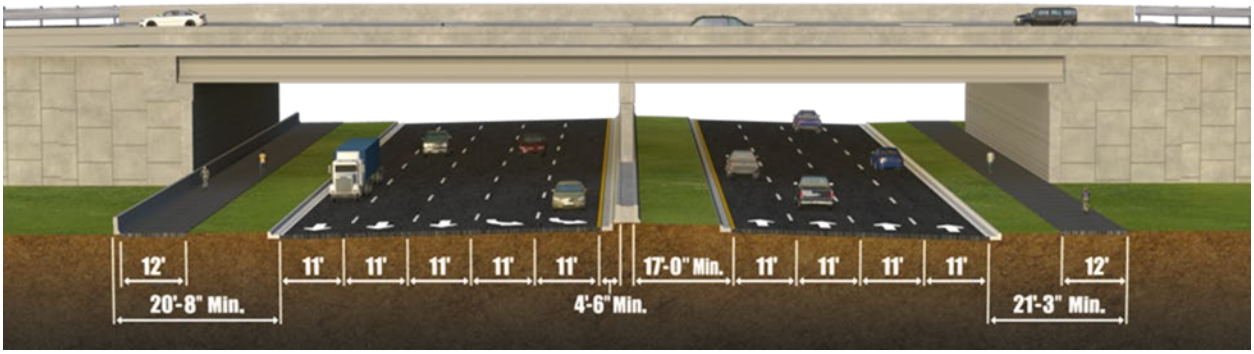
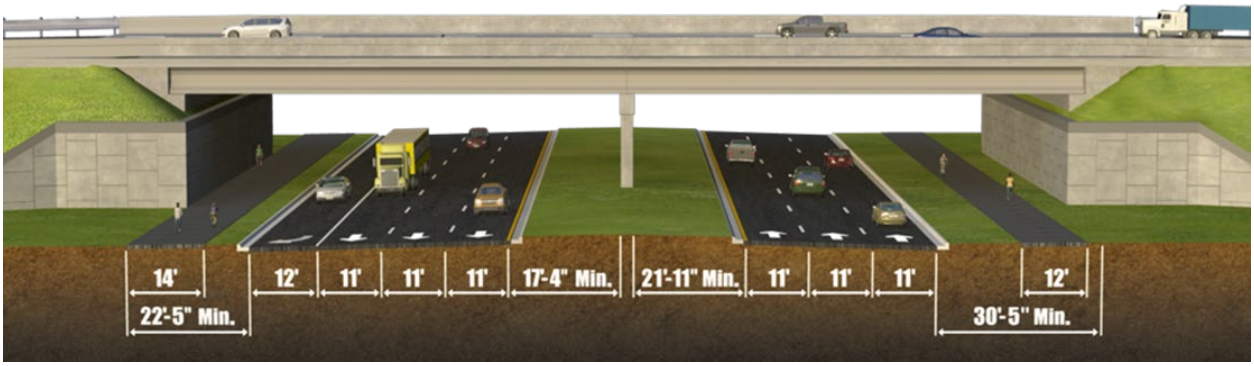


Figure 1-4 - SR 417 over SR 535



1.6.1 Intersection Improvements

The Preferred Alternative will also implement intersection improvements including the following innovative intersection concepts.

- Polynesian Isle Boulevard Partial Median U-Turn (PMUT): Implementation of the PMUT involves the removal of northbound and southbound direct left turn movements from SR 535 to Polynesian Isle Boulevard and the addition of signalized U-turns at the existing median openings located just north and south of the intersection along SR 535 to accommodate vehicles wishing to travel east or west on Polynesian Isle Boulevard.
- International Drive Partial Displaced Left Turn (PDLT). Implementation of the PDLT involves the removal of direct eastbound and westbound left turns from Internation Drive at SR 535 with the displaced left turns installed on both legs International Drive. The northbound and southbound left turn movements for SR 535 continue to take place at the main intersection.
- SR 536 (World Center Drive) Partial Displaced Left Turn (PDLT). Implementation of the PDLT involves the removal and replacement of direct northbound and southbound left turns from SR 535 at SR 536 with the displaced left turns installed on both legs of SR 535. The eastbound and westbound left turn movements for the SR 536/World Center Drive continue to take place at the main intersection.

1.6.2 Drainage

There are 4 basins in the existing and proposed condition, and all basins drain to permitted stormwater systems in the existing condition (see **Table 1-1**). Where feasible, stormwater management facilities have been recommended within existing FDOT or County right-of-way (R/W). Below is a summary of the preferred pond alternatives (see **Figure 1-5**).

- Basin 1: Alternative 1A is the Preferred Alternative for Basin 1. Alternative 1A consists of an existing wet detention pond (identified as Exist. Pond 1-1) within FDOT R/W to provide the required water quality treatment and attenuation volumes.
- Basin 2: Alternative 2A is the Preferred Alternative for Basin 2. Alternative 2A consists of 2 ponds, one existing wet detention pond within existing FDOT R/W (identified as Exist. Pond 2-1) interconnected with a second wet detention pond (identified as Pond 2-2) to provide the required water quality treatment and attenuation volumes. Since there is insufficient area within the existing FDOT R/W to provide a stormwater management

alternative to meet water quality treatment and attenuation requirements, Pond Alternative 2A will require acquisition of R/W.

- Basin 3: Alternative 3A is the Preferred Alternative for Basin 3. Alternative 3A consists of 2 ponds, one existing wet detention pond within existing FDOT R/W (identified as Exist. Pond 3-1) interconnected with a second wet detention pond (identified as Pond 3-2) to provide the required water quality treatment and attenuation volumes. Since there is insufficient area within the existing FDOT R/W to provide a stormwater management alternative to meet water quality treatment and attenuation requirements, Pond Alternative 3A will require acquisition of R/W.
- Basin 4: Alternative 4A is the Preferred Alternative for Basin 4. Alternative 4A consists of an existing wet detention pond (identified as Exist. Pond 4-1) within existing R/W and easement to provide the required water quality treatment and attenuation volumes.

Table 1-1 - Preferred Pond Alternatives

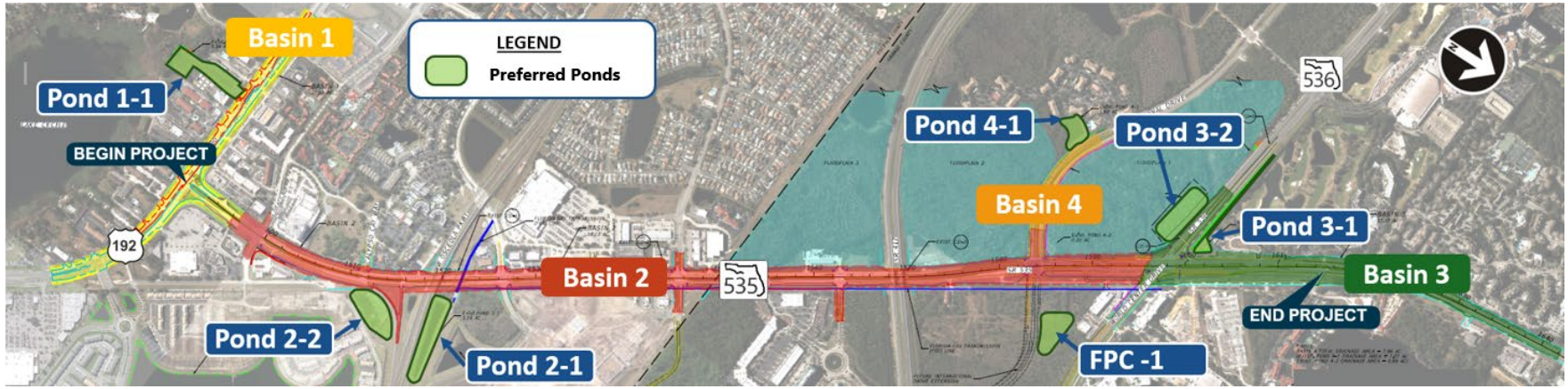
Basin	Preferred Alternative	Ponds	Type	R/W Req'd.	Remarks
1	1A	Exist. Pond 1-1	Wet	0.0	Exist. pond sufficient. Reduced drainage area (30.94 ac to 29.16 ac) from exist. to proposed conditions. Increased freeboard in exist. pond. Pond within exist. R/W
2	2A	Exist. Pond 2-1 and Pond 2-2	Wet	3.0	Interconnected ponds to provide required water quality treatment and attenuation. Utilize Exist. Pond 2-1 outfall to Shingle Creek. Exist. Pond 2-1 within exist. R/W. Estimated R/W needs for Pond 2-2 provided (excluding public R/W used for pond).
3	3A	Exist. Pond 3-1 and Pond 3-2	Wet	3.5	Interconnected ponds to provide required water quality treatment and attenuation. Utilize Exist. Pond 3-1 and Pond 3-2 outfalls to Shingle Creek. Exist. Pond 3-1 within exist. R/W. Estimated R/W needs for Pond 3-2 provided (excluding public R/W used for pond).
4	4A	Exist. Pond 4-1	Wet	0.0	Exist. pond sufficient. Reduced drainage area (8.70 ac to 7.63 ac) from exist. to proposed conditions. Increased freeboard in exist. pond. Pond within exist. R/W

An analysis of floodplain impacts and Floodplain Compensation (FPC) alternatives was performed. Project improvements will impact the 100-year floodplain as a result of longitudinal impacts and transverse impacts. The preferred FPC alternative and anticipated right of way needs associated with the preferred alternative are provided in **Table 1-2**.

Table 1-2 - Preferred FPC Site

Name	Floodplain Impacts (ac-ft)	Floodplain compensation Volume Provided (ac-ft)	Estimated Pond R/W Req'd. (including access) (ac)
FPC-1	8.89	14.45	4.3

Figure 1-5 - Preferred Alternative Ponds



1.6.3 Right of way and Construction Cost

SR 535 has an existing right-of-way of 224 feet which is ample right-of-way to accommodate the Preferred Alternative. Some right-of-way impacts will be required to accommodate intersection improvements at the International Drive and World Center Drive (SR 536) intersections and for offsite ponds. Approximately 11.5 acres of right-of-way impacts (excluding public R/W required) are anticipated as a result of the preferred alternative. Approximately 0.7 acres are associated with improvements at the SR 535/International Drive and SR 535/World Center Drive (SR 536) intersections. Additionally, approximately 10.8 acres are associated with the required stormwater and floodplain compensation ponds (excluding public R/W required). A total of 8 parcels are anticipated to be impacted from the preferred alternative. See **Table 1-2** for cost estimate.

Table 1-3 - Cost Estimate

	Cost
Construction	$76.5M
R/W	$38.1M
Utility Relocation	$7M
Sub Total	$121.6M
Design (15%)	$11.5M
CEI (10%)	$7.7M
Total Estimated Project Cost	$140.8M

1.7 Project Area Description

The project is located in both Osceola and Orange Counties, northeast of the community of Celebration, Florida. The term “project corridor” is used in this document to represent a smaller area that encompasses the existing S.R. 535 right-of-way and the footprint of the Build Alternative. The term “project area” represents a larger expanse that encompasses the project corridor as well as all land within 500 feet of the centerline of S.R. 535. The project corridor is 2.2 miles in length.

Within the Osceola County portion of the project area, the predominant land use is commercial and services including hotels and vacation rentals, retail strip malls and supermarkets, restaurants, and gas stations. Select areas within this southern half of the project remain undeveloped, including cleared land east of SR 535 immediately south of the county line and

vegetated parcels south of N Poinciana Blvd east of SR 535 and south of Calypso Cay Way west of SR 535.

The Orange County portion of the project is predominantly upland vegetated land uses, including pine flatwoods and mixed hardwood forests, and some forested wetland land uses. Commercial services, including shopping centers located just north of the county line east of SR 535, and a strip mall including a gas station and pharmacy at the southeast corner of the SR 535 and SR 536 intersection. The northern extent of the project area includes residential neighborhoods on both the east and west sides of SR 535 as well as a golf course located northwest of the SR 535 and SR 536 intersection.

Throughout the project area, there are stormwater swales located on either side of the SR 535. The southernmost 1/3 of the project contains mostly sodded swales which are within the maintained ROW. From south of the county line moving towards the northern limits of the project, the swales have canopy coverage and appear to be frequently inundated facilitating wildlife usage. At the county line and east of SR 535, there is a canal that runs perpendicular to SR 535 within the Osceola County portion of the project and parallel to SR 535 within Orange County. This canal appears to be connected to the west side of SR 535 via culverts.

1.8 Land Use

Land use cover descriptions provided for both uplands and wetlands are classified utilizing the *Florida Land Use Cover and Forms Classifications System* (FLUCCS) designations. Previous and existing land uses in the project area were initially determined utilizing US Geological Survey (USGS) maps, historical images, aerial photographs, and land use mapping from the South Florida Water Management District (SFWMD) (2017-2019). Land use categories in the project area reported by SFWMD were verified in the field. Field reviews generally confirmed the SFWMD land use mapping with very minor adjustments. Land use categories in the project area as mapped by SFWMD are shown in **Figures 1-6** and **1-7** and each land use category in the project area is described below.

Figure 1-6 - Land Use in Orange County Project Area

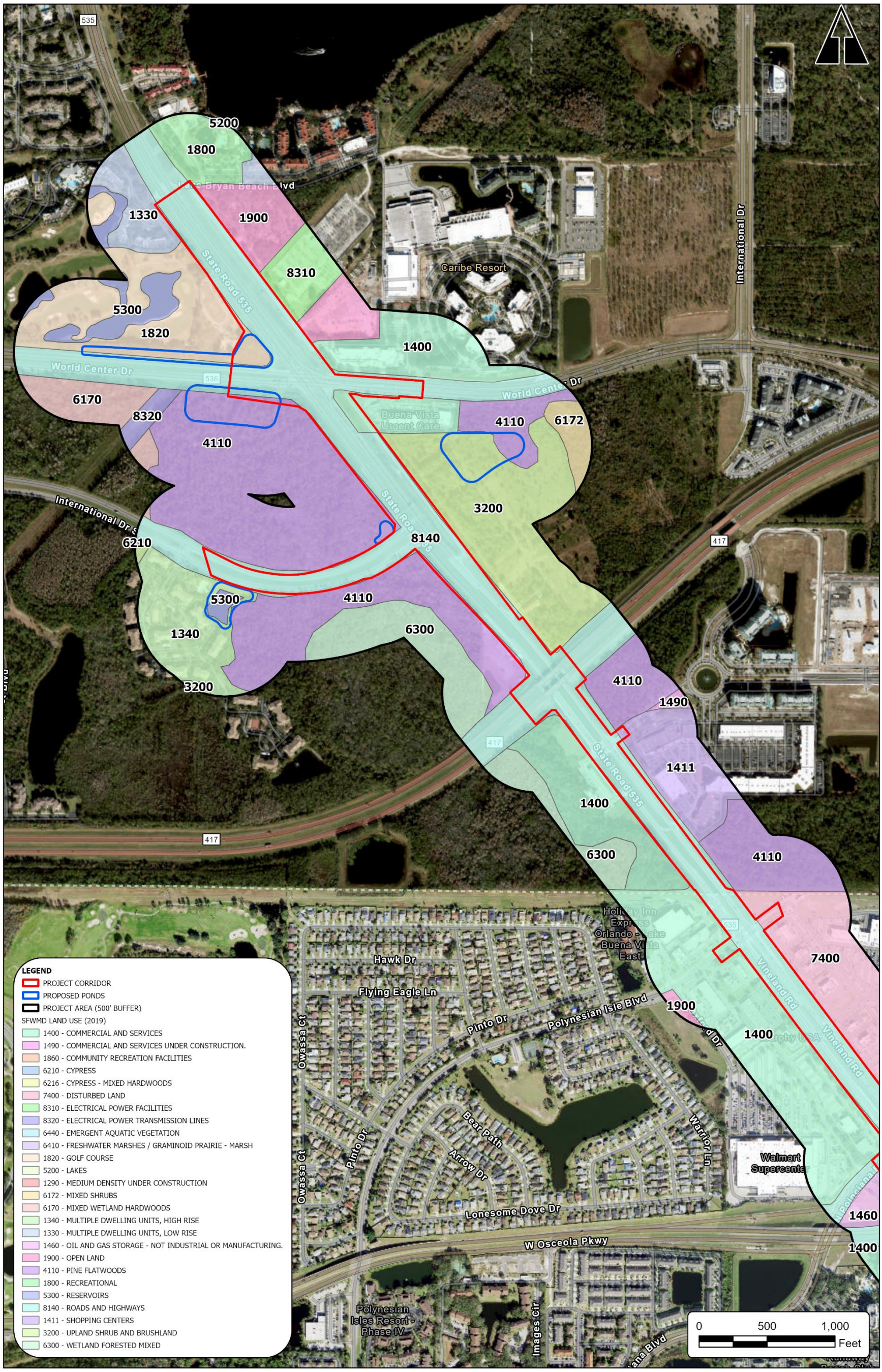
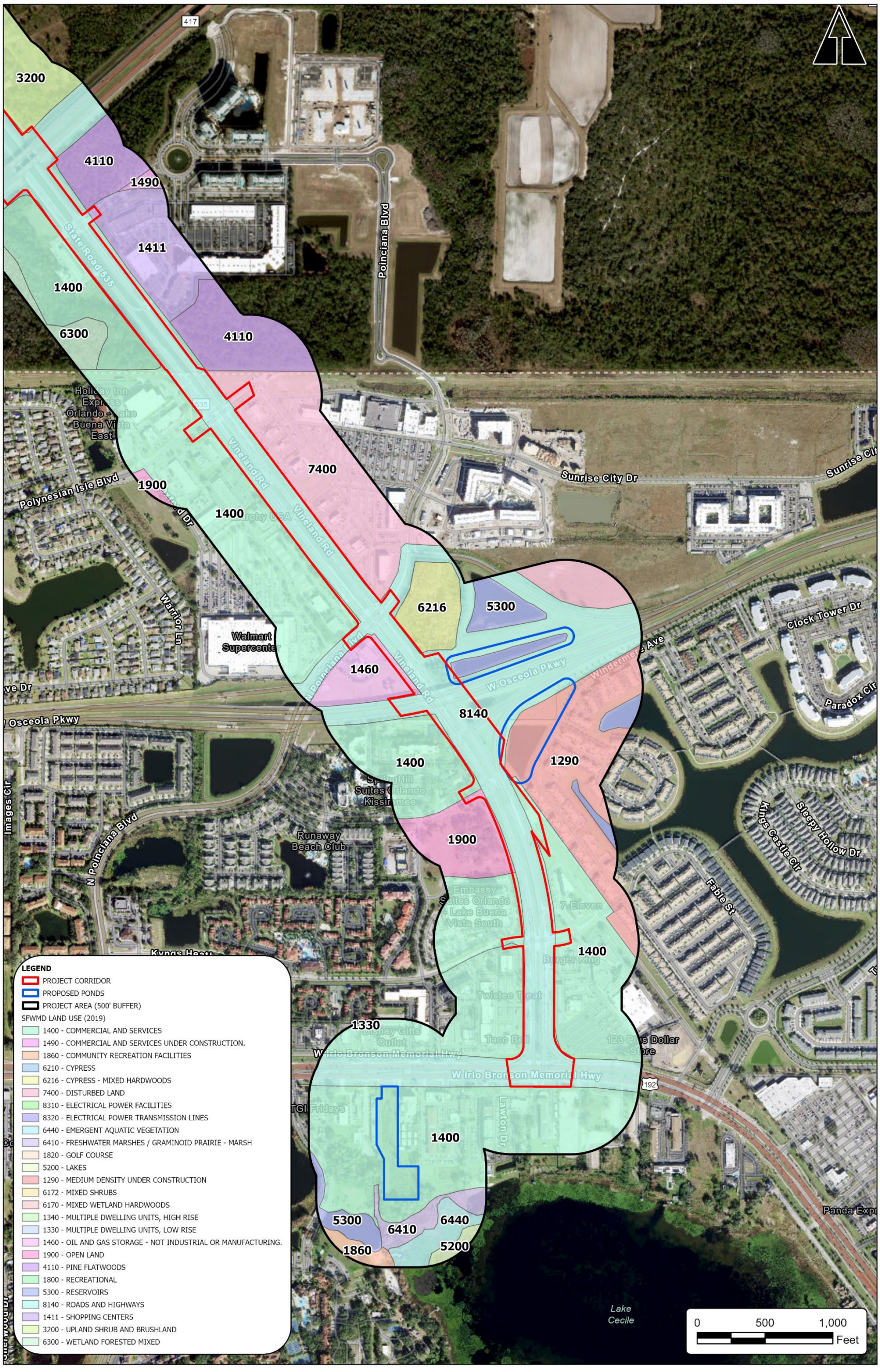


Figure 1-7 - Land Use in Osceola County Project Area



Residential, Medium Density Under Construction (FLUCCS – 1290)

This category refers to a residential areas in the process of construction with a dwelling density of 2 to 5 per acre once completed. If more than 2/3 of the construction if completed, then the area should be coded by the 1200 FLUCCS for medium density residential. This land use type occurs immediately southeast of the on-ramp to eastbound Osceola Parkway from northbound SR 535.

Residential High Density, Multiple Dwelling Units (FLUCCS – 1330)

This category refers to a density of six or more dwelling units per acre. This land use category includes two-story town homes, duplexes, and other low-rise residential structures. Low-rise residential areas are newer developments which are commonly located on the urban fringe. This class is found in one location in the project area at the northwestern limits of the study area northwest of the SR 535 and World Center Drive intersection.

Commercial and Services (FLUCCS – 1400)

This is an active land use category that includes a broad range of uses and operations providing diverse products and services which often occur in complex mixtures. Subclasses include retail and wholesale, professional, cultural and entertainment, and tourist services, as well as others. The 1400 class includes shopping centers, commercial strip developments, warehouses, junk yards, campgrounds, and amusement parks. These areas are usually located along main transportation routes or at the intersections of secondary transportation corridors. This land use category accounts for a large portion of the study area and is found in several locations. This includes the southern portion of the project located south of SR 417 to south of US 192, aside from one area of 1900 Open Land and one area of 1290 Residential, Under Construction. This category is also located west of SR 535 from north of Osceola Parkway to SR 417 and east of SR 535 north and south of the World Center Drive intersection near the project's northern terminus.

Shopping Centers (FLUCCS – 1411)

This land use category includes varying sizes and shapes of buildings which share common parking facilities for customers. These include both connected and unconnected buildings commercial and retail facilities. This land use is found in one location of the project corridor at the outlet stores located south of LBV Factory Stores Drive north of the Osceola-Orange County Line and south of SR 417.

Oil and Gas Storage (FLUCCS – 1460)

This land use category includes storage facilities for petroleum, oil, and lubricant product retail and wholesale sales. This category can be identified by tanks, spill enclosures, internal roads/railroads, spurs, embankments, piers, and maintenance facilities. This land use is found in one location in the project area, west of SR 535 from north of W Osceola Parkway to south of Poinciana Blvd.

Recreational (FLUCCS – 1800)

This land use category is used for outdoor activities such as community sports, open-air performances, and fairgrounds. This includes well organized grounds with parking facilities, which are typically not paved. This land use is found in one location at the northeast limits of the study area in association with the adjacent resort complexes on Lake Bryan around Lake Bryan Beach Blvd.

Golf Course (FLUCCS – 1820)

Golf courses are easily recognizable by their distinctive well-maintained grass areas, fairways, and ponds. Golf courses are typically constructed in low-lying areas such as pine flatwoods and may be adjacent to, or displace wetlands. These wetlands would not be broken out of the 1820 Golf Course land use classification unless they meet the two acre minimum mapping unit criteria. This land use is associated with the Hawk's Landing Golf Club located northwest of the World Center Drive and SR 535 intersection.

Open Land (FLUCCS – 1900)

This land use category includes open, undeveloped land within urban areas which are typically interpreted as transitional or uncertain land uses. This land use does not include forests or wetlands, unless they occur as small areas which do not meet the mapping unit criteria within the 1900 land use. This open land category is found in one location within the study area, south of the Calypso Cay Way to the west of SR 535.

Upland Shrub and Brushland (FLUCCS – 3200)

This category is for upland non-agricultural, non-forested lands which exhibit no evidence of cattle grazing. This class includes areas where tree species are regenerating naturally after clear cutting

or fire but are less than 20 feet tall. This includes native hardwood and coniferous species but does not apply to plantations. This land use type occurs in one location in the study area to the east of SR 535 from SR 417 to the commercial land uses immediately south of World Center Drive.

Pine Flatwoods (FLUCCS – 4110)

This class is for naturally generated pine flatwoods. The canopy closure must be 25 percent or more and the trees must average over 20 feet tall. The pine flatwoods class is dominated by slash pine, longleaf pine, or both. Common understory species include saw palmetto, wax myrtle, gallberry, and a wide variety of herbs and brush. Pine flatwoods are the most prevalent community in natural areas. Most pine flatwoods occur on broad, low, flat areas with seasonal high-water tables but not on hydric soils. They transition into mesic flatwood and hardwood communities on higher ground and into hydric flatwoods, cypress, and other wetlands on the lower edges. Pine flatwoods are found in four places in the project area. One area is located to the east of SR 535 from the county line to south of the factory outlets at LBV Factory Stores Dr and another area is located north of the LBV Factory Stores Dr to south of SR 417. The other two areas are located to the west of SR 535 from SR 417 to World Center Drive and are separated by International Drive S.

Reservoirs (FLUCCS – 5300)

This class is for artificial impoundments of water, or water bodies that have been significantly modified from the natural state. They are used for irrigation, flood control, municipal and rural water supplies, stormwater treatment, recreation, and hydro-electric power generation. Reservoirs are found in multiple places throughout the project area. Reservoirs land use is found in one location in the study area, to the east of SR 535 immediately north of Osceola Parkway.

Cypress – Mixed Hardwoods (FLUCCS – 6216)

This class is used for forested wetland communities dominated by a mix of pond or bald cypress and hardwood swamps. This land use type is found in one location in the study area, immediately south of Poinciana Blvd to the east of SR 535.

Disturbed Land (FLUCCS – 7400)

This land use class is used for areas where soil or substrate has been altered or removed by human activity, whether or not the cause is known. The Level 1 Barren Land category, including this 7400 Disturbed Land sublevel, is only applied to upland areas. This land use type is found in one location in the study area, to the east of SR 535 from north of Poinciana Blvd to south of the county line.

Roads and Highways (FLUCCS – 8140)

This class includes those highways exceeding 100 feet in width, with 4 or more lanes and median strips. The intent of this data layer is to include only the major transportation corridors. This land use type is mapped for SR 535, US 192, Osceola Parkway, Poinciana Boulevard, SR 417, International Drive South, and World Center Drive.

Electrical Power Facilities (FLUCCS – 8310)

Electrical power facility land uses include fossil fuel and nuclear plants. Associated facilities include transformer yards, cooling ponds or towers, and fuel storage. One electrical power facility is found within the project area approximately 500 feet north of the World Center Drive and SR 535 intersection, to the east of SR 535.

Easements at International Drive

The northwest quadrant of the intersection of SR 535 and International Drive includes an Orange County drainage easement as well as a SFWMD conservation easement. Available mapping data shows overlaps between these easements and ROW for International Drive. Clarification of property lines and easement boundaries will be necessary during design so that impacts to the conservation easement can be avoided and minimized as much as possible. It is anticipated that the build alternative may impact up to approximately 0.09 acre of SFWMD Conservation Easement. For unavoidable impacts to the conservation easement, it is anticipated that following acquisition of right-of-way the SFWMD board may vote on a petition to release that portion of the conservation easement. The area that is under SFWMD conservation easement is privately owned (Parcel number 34-24-28-0000-00-018) and is not under public recreational use. There are no parking areas or public access points, and no Management Plan or other documents describing recreational use were identified.

1.9 Elevation, Hydrology, and Drainage

The study area is located on relatively flat land with a ground elevation ranging between approximately 81 and 101 feet. There is a rise in elevation from south to north along the project corridor, with the highest elevations found at the northern end of the project. The National Resources Conservation Service (NRCS) reports the depth to water table in the project area is between 0 and 42 inches. **Figure 1-8** shows an elevation map created with data collected by NOAA and the U.S. Department of Commerce in 2007 using Light Detection and Ranging (LIDAR) in North American Datum 1983 (NAD 83).

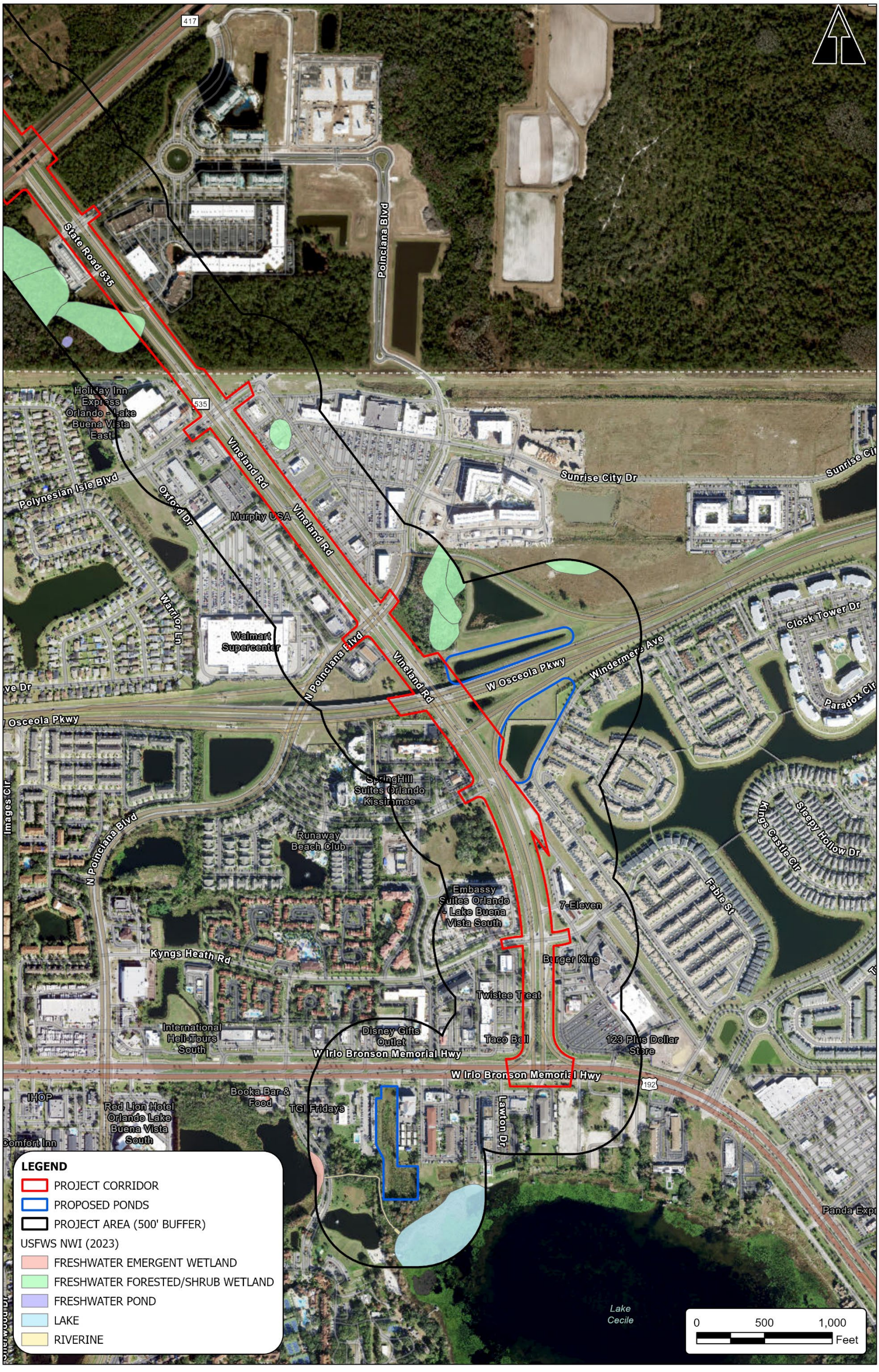
Major hydrologic features and wetlands mapped by the USFWS National Wetlands Inventory (NWI) in the project area are shown in **Figure 1-9** and **1-10**. A freshwater pond within a golf course is located north of S.R. 536 and west of S.R. 535 that intersects a small portion of the project area. There are also two patches of freshwater forested/shrub wetland that intersect the project area; one patch is located south of International Drive and stretches down south of S.R. 417 to the border of Orange and Osceola County. There is also a patch of wetlands mapped north of West Osceola Parkway and east of S.R. 535, but this area has already been developed and is no longer wetland.

The project sits atop the Biscayne Aquifer, a Sole Source Aquifer as identified by the U.S. Environmental Protection Agency (USEPA). This project is located within the SFWMD's Reedy Creek and Shingle Creek Basins. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (updated September 25, 2009), a portion of the project area in the northwest is located within the 500-year floodplain (Zone A). The remaining project area is categorized as Zone X, which is an area of minimal flood hazard.

Figure 1-8 - Elevation Map

Figure 1-9 - Surface Hydrology in Orange County Project Area

Figure 1-10 - Surface Hydrology in Osceola County Project Area



1.10 Soils

The Natural Resources Conservation Service (NRCS) (2017) indicates 12 soil types occur in the project area (**Figures 1-11** and **1-12**). The soil types in the project area are listed in **Table 1-2** along with descriptions and ratings from NRCS. Nine hydric soils are known to occur in the project area: Basinger fine sand, Hontoon muck, Immokalee fine sand, Myakka fine sand, Ona fine sand, Placid find sand, Sanibel muck, Smyrna, and Zolfo fine sand. Four soil types within the project area are classified as Farmlands of Unique Importance and include Myakka fine sand, Narcoossee fine sand, Tavares fine sand, and Zolfo fine sand. There are no Prime Farmland soil types within the project area.

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Figure 1-11 - Soil Types in the Orange County Project Area

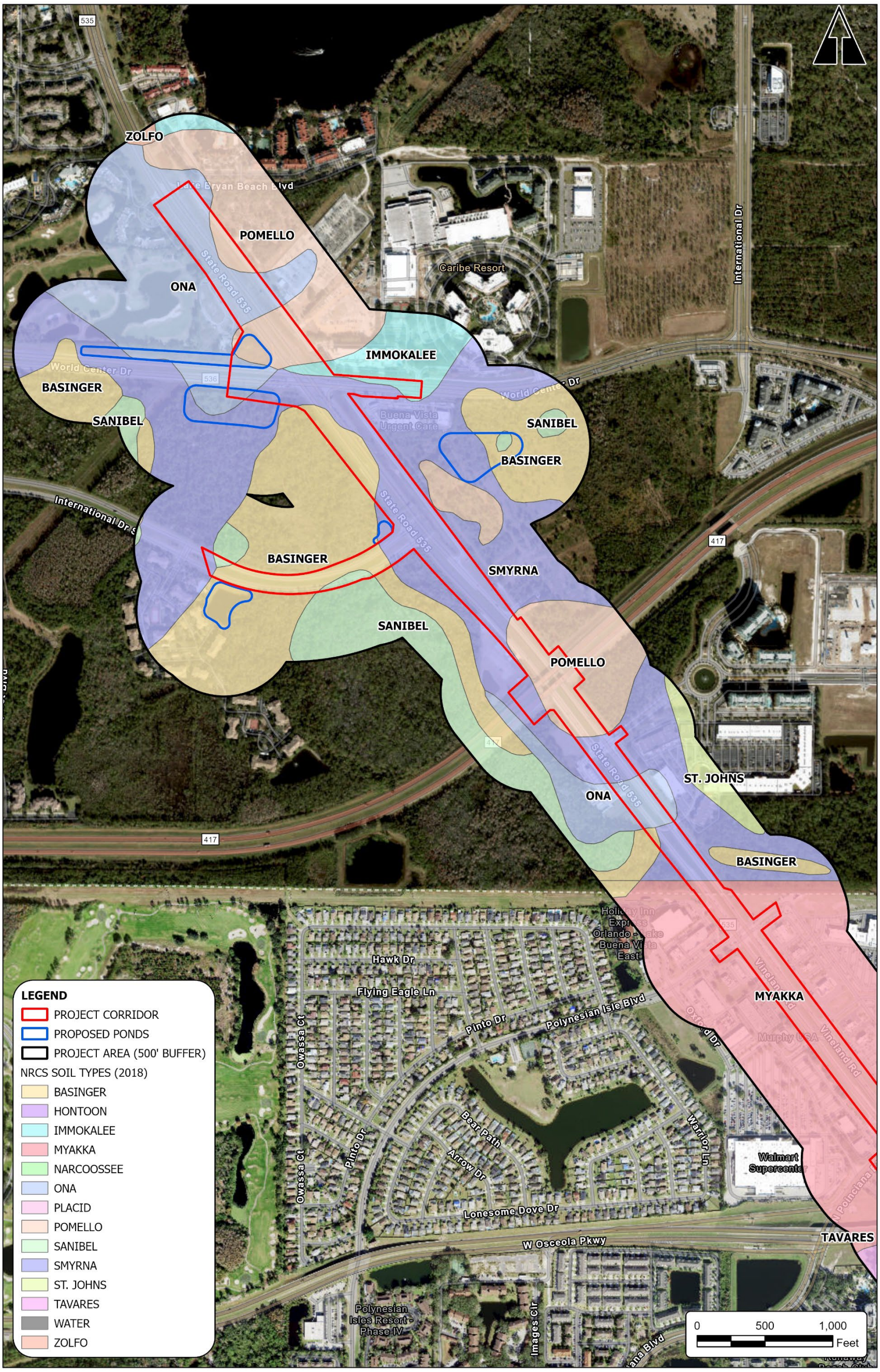


Figure 1-12 - Soil Types in Osceola County Project Area

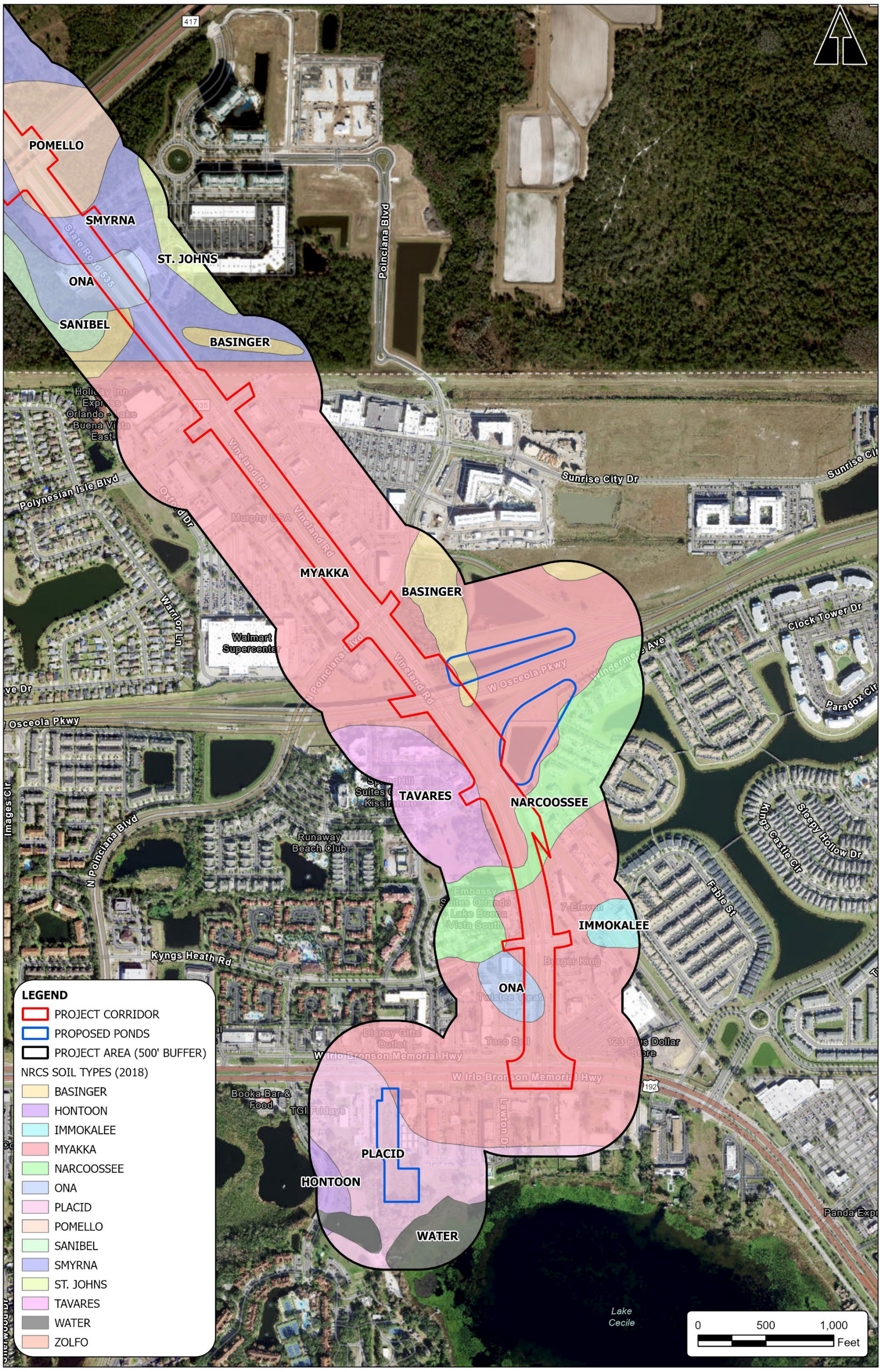


Table 1-4 Soils in Project Area

Soil Type	Environmental Association	Percent of Project Area
Basinger Fine Sand	This soil type consists of very deep, poorly drained, rapidly permeable soil in low flats, sloughs, depressions, and poorly defined drainageways that formed in sandy marine sediments. They are found in Peninsular Florida. **This is a hydric soil**.	11.50%
Hontoon Muck	This soil type consists of deep, very poorly drained, organic soils that formed in more than 130 centimeters (51 inches) of well decomposed, hydrophytic, herbaceous plant remains. They are found in depressions, freshwater marshes, swamps, and drainageways in Peninsular Florida. **This is a hydric soil.**	0.40%
Immokalee Fine Sand	This soil type consists of very deep, very poorly, and poorly drained soils that formed in sandy marine sediments. They are found on flatwoods and low broad flats on marine terraces. **This is a hydric soil.**	2.92%
Myakka Fine Sand*	This soil type consists of very deep, very poorly drained, moderately permeable soil that formed in sandy marine deposits. They are found primarily in mesic flatwoods of Peninsular Florida. **This is a hydric soil**.	33.92%
Narcoossee Fine Sand*	This soil type consists of very deep, somewhat poorly drained soils that formed in thick sandy sediments of marine origin. These soils are on low knolls and ridges in the flatwoods of central and southern Peninsular Florida. This is not a hydric soil.	3.18%
Ona Fine Sand	This soil type consists of poorly drained, moderately permeable soils that formed in thick sandy marine sediments. They are in the flatwood areas of central and southern Florida. **This is a hydric soil**.	10.09%
Placid Fine Sand	This soil type consists of very deep, very poorly drained, rapidly permeable soil in low broad flats, depressions, drainageways, and floodplains that formed in sandy marine sediments. They are found in the flatwoods of central and southern Peninsular Florida. **This is a hydric soil.**	0.29%
Pomello Fine Sand	This soil type consists of very deep, moderately well to somewhat poorly drained soils that formed in sandy marine sediments. Pomello soils are on ridges, hills, and knolls in the flatwoods on marine terraces. This is not a hydric soil.	10.02%
Sanibel Muck	This soil type consists of very poorly drained sandy soils with organic surfaces. They formed in rapidly permeable marine sediments. The soils occur on nearly level to depressional areas with slopes less than 2 percent. **This is a hydric soil.**	4.57%
Smyrna	This soil type consists of very deep, poorly to very poorly drained soils formed in thick deposits of sandy marine materials. Permeability is rapid in the A, E and C horizons and moderate or moderately rapid in the Bh horizons. **This is a hydric soil.**	18.66%
St Johns Fine Sand	This soil type consists of very deep, very poorly or poorly drained, moderately permeable soils on broad flats and depressional areas of the lower Coastal Plain. They formed in sandy marine sediments. This is not a hydric soil.	0.93%
Tavares Fine Sand*	This soil type consists of very deep, moderately well drained soils that formed in sandy marine or eolian deposits. Tavares soils are on hills, ridges and knolls of the lower Coastal Plain. This is not a hydric soil.	3.42%
Zolfo Fine Sand*	This soil type consists of very deep, somewhat poorly drained soils that formed in sandy marine sediments. Zolfo soils are on ridges, rises, and knolls on adjacent flatwoods on marine terraces. **This is a hydric soil.**	0.10%

Source: NRCS 2017; USDA 1998: 21,22,24,25,27,28,31,32,34-36,39,41,51,52; * indicates ‘Farmland of Unique Importance’ designation in NRCS 2018 Soil Data

2.0 Protected Species and Habitat

This project was evaluated for impacts to protected plant and animal species and their habitats in accordance with FDOT's *PD&E Manual, Part 2, Protected Species and Habitat,* which incorporates the requirements of the National Environmental Policy Act (NEPA) and related federal and state laws. The Endangered Species Act of 1973, as amended, and the Florida Endangered and Threatened Species Act, Section 379.2291, Florida Statues, grant the USFWS and FWC, respectively, authority to regulate certain wildlife species. Federal agencies are required to consult with USFWS and/or NMFS to ensure federal 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 Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act apply additional protections to many bird species. In Florida, all bat species are protected by FWC.

2.1 Prior Coordination and Methodology

Preliminary data collection utilized literature reviews, the ETDM system, database reviews, and agency coordination to identify federal and state listed species, wetlands, and EFH with potential to occur in or near the project corridor. Soil maps, land use maps, and aerial imagery were also used. Specific information sources and databases utilized for assessment of potential impacts include the following:

- ETDM Summary Report for S.R. 535 (Project # 14325)
- US Fish and Wildlife Service (USFWS) Environmental Conservation Online System
- Florida Fish and Wildlife Conservation Service (FWC) databases
- FWC Integrated Wildlife Habitat Ranking System
- USFWS National Wetland Inventory (NWI) maps
- FWC Water Bird Colony Location Data (http://atoll.floridamarine.org/waterBirds/)
- FWC Bald Eagle Nest Data
- USFWS wood stork (*Mycteria americana*) nesting colonies map tool
- USFWS Species Recovery Plans
- SFWMD land use GIS layers

- FNAI Land Use GIS Layers
- U.S. Department of Agriculture NRCS Web Soil Survey

The protected species addressed in this document are listed in **Tables 2-1** and **2-2**. Federal and state listed species with potential to occur in the project area were identified through research and coordination with USFWS and FWC, particularly through the ETDM process and using data from the FDOT Environmental Screening Tool and the USFWS IPaC tool. Known habitat associations of species with potential to occur in the vicinity of the project were compared to habitats present in the project area to further evaluate potential species involvement.

The probability of occurrence of a species in the project area is broadly categorized according to the following definitions. A probability of occurrence of No indicates that potential habitat within the range of the species does not occur in the project area. A Low probability of occurrence indicates that while the project area is in the species range (or within a USFWS Consultation Area for that species), potential habitat is so minimal or low quality that it is unlikely the species would be present. A Moderate probability of occurrence indicates that the project area contains suitable habitat within the species range and within reasonable proximity to source populations. A High probability of occurrence indicates the project area is near known populations or sightings and contains high quality potential habitat.

Multiple field investigations were conducted to evaluate wildlife presence and habitat potential, to identify wetlands and other surface waters, and to document existing conditions in the project area. Preliminary field investigations occurred on January 16, 2020, and again on June 29, 2020. In depth field surveys were conducted on September 21, 2022, and November 4, 2022. During field surveys, maps showing land use by FLUCCS code and USFWS NWI wetlands maps were verified with existing conditions. Biologists recorded visual observations of protected plant and animal species and their potential habitats, as well as other indicators of presence such as vocalizations, tracks, scat, staining, and burrows. They also noted natural vegetative communities in multiple locations and recorded dominant plant species in each stratum in wetlands.

Table 2-1 Listed Wildlife Species Potentially Occurring in Project Area

Common Name	Scientific Name	Federal Status	State Status	Occurrence Potential in Project Area	Effect Determination
Audubon's crested caracara	Polyborus plancus audubonii	FT	-	No	No Effect
Blue-tail mole skink	Eumeces egregius lividus	FT	-	No	No Effect
Eastern black rail	Laterallus jamaicensis ssp. jamaicensis	FT	-	NO	No Effect
Eastern indigo snake	Drymarchon corais couperi	FT	-	Low	NLAA
Everglade snail kite	Rostrhamus sociabilis plumbeus	FE	-	No	No Effect
Florida burrowing owl	Athene cunicularia	-	ST	Low	NAEA
Florida grasshopper sparrow	Ammodramus savannarum floridanus	FE	-	Low	No Effect
Florida pine snake	Pituophis melanoleucus mugitus	-	ST	Low	NAEA
Florida sandhill crane	Grus canadensis pratensis	-	ST	Low	NAEA
Florida Blue-Tail Mole Skink and Sand Skink	Neoseps reynoldsi	FT	-	Moderate	No Effect
Florida scrub-jay	Aphelocoma coerulescens	FT	-	Low	No Effect
Gopher tortoise	Gopherus polyphemus	-	ST	Low	NAEA
Little blue heron	Egretta caerulea	-	ST	Low	NAEA
Red-cockaded woodpecker	Picoides borealis	FE	-	Low	No Effect
Roseate spoonbill	Platalea ajaja	-	ST	Low	No Effect Anticipated
Southeastern American kestrel	Falco sparverius paulus	-	ST	Low	NAEA
Tricolored heron	Egretta tricolor	-	ST	Low	No Effect Anticipated
Wood stork	Mycteria americana	FE	-	Low	No Effect

Notes: FE = Federally Endangered, FT = Federally Threatened, ST = State Threatened, NLAA = Not Likely to Adversely Affect, MANLAA = May Affect, Not Likely to Adversely Affect, NAEA = No Adverse Effect Anticipated

Table 2-2 Listed Plant Species Potentially Occurring in Project Area

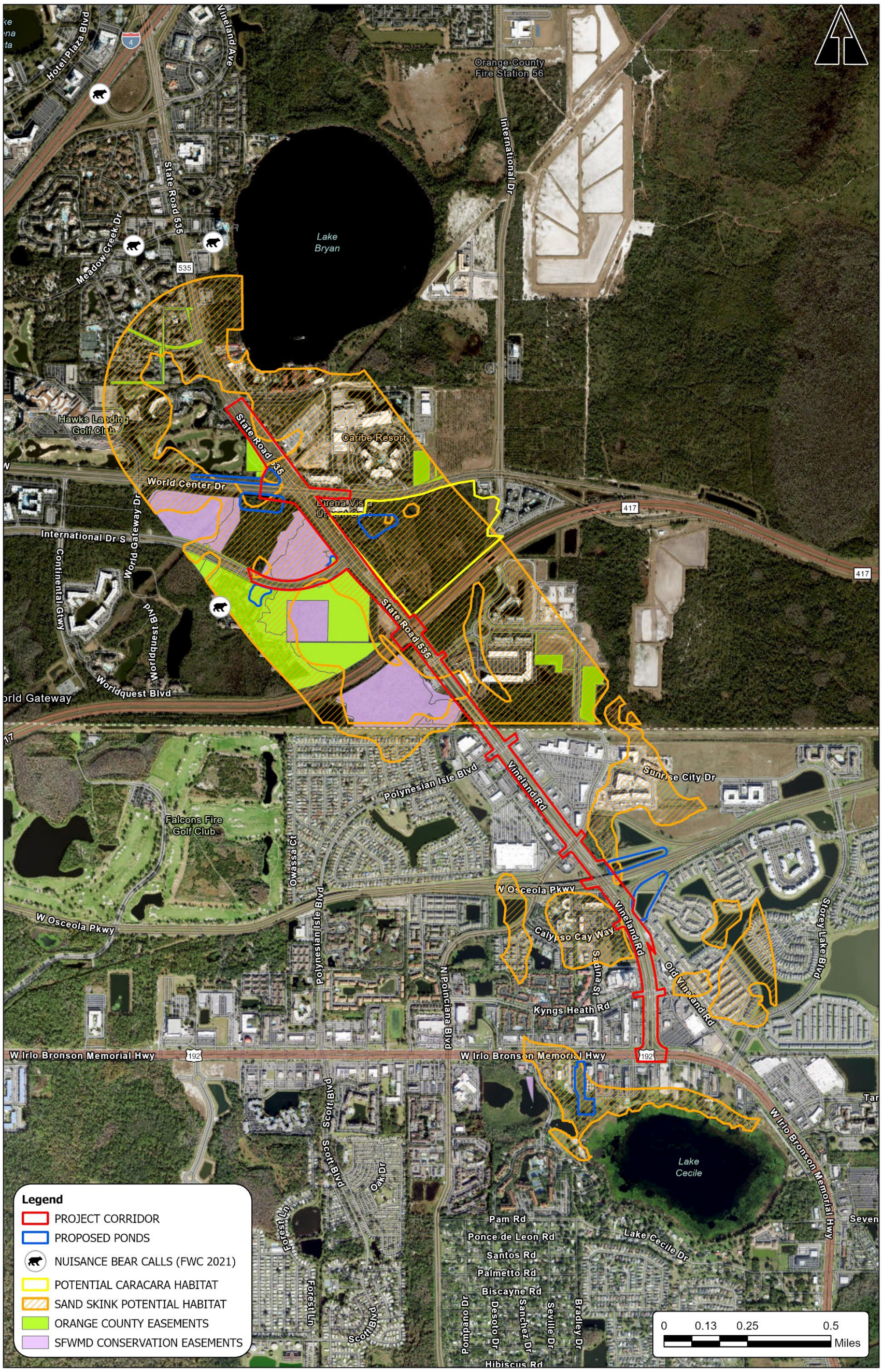
Common Name	Scientific Name	Federal Status	State Status	Occurrence Potential in Project Area	Effect Determination
Beautiful pawpaw	Deeringothamnus pulchellus	FE	-	Low	No Effect
Britton's beargrass	Nolina brittoniana	FE	-	Low	No Effect
Florida greeneyes	Berlandiera subacaulis	FT	-	Low	No Effect
Gray's beaksedge	Rhynchospora grayi	FT	-	Low	No Effect
Lewton's polygala	Polygala lewtonii	FE	-	Low	No Effect
Papery Whitlow-wort	Paronychia chartacea	FT	-	No	No Effect
Scrub plum	Prunus geniculata	FT	-	Low	No Effect

The project is within the USFWS consultation areas for Audubon's crested caracara (*Polyborus plancus audubonii*), Florida grasshopper sparrow (*Ammodramus savannarum floridanus*), Florida sand skink (*Neoseps reynoldsi*), red-cockaded woodpecker (*Leuconotopicus borealis*), Florida scrub-jay (*Aphelocoma coerulescens*), Everglade snail kite (*Rostrhamus sociabilis plumbeus*), and Lake Wales Ridge plants. The project is also within the core foraging areas of four wood stork colonies (Lawne Lake, Eagle Nest Park, Gatorland, and Lake Russell) and within the Central Florida Black Bear Management Unit. Ranges and known localities of protected species were identified using USFWS and FWC databases. No designated Critical Habitat occurs in or adjacent to the project area, so no destruction or adverse modification of Critical Habitat is anticipated.

Through the ETDM system, FWC noted the potential loss of wildlife habitat and water quality degradation from the project. USFWS noted the potential presence of several Federally listed species and noted Best Management Practices (BMPs) should be used to prevent impacts to wetlands.

Habitats are mapped by FLUCCS code in **Figures 1-4** and **1-5** and were confirmed in the field with minor revisions. There were no sightings or indications of protected species during field investigation. Sensitive environmental feature are shown in **Figure 2-1**. The nearest bald eagle (*Haliaeetus leucocephalus*) nest reported by the FWC online bald eagle nest locator tool is approximately 1.81 miles from the project corridor. USFWS and FWC generally do not require any special protective measures or monitoring if a bald eagle nest is further than 660 feet from a project. Below is a description of each species in **Tables 2-1** and **2-2** along with pertinent aspects of their ecology, conservation, and potential habitat in the project area. Federally listed species are also considered to be state listed.

Figure 2-1 - Sensitive Environmental Features



2.2 Federally Protected Species in the Project Area

2.2.1 Audubon's Crested Caracara (Threatened- Federal)

Audubon's crested caracara is a non-migratory subspecies that occurs in Florida and is isolated from other crested caracara populations in the southwestern U.S., Mexico, and Central America. The project occurs within the USFWS consultation area for caracara. Audubon's crested caracara range throughout central Florida and typically inhabited dry and wet prairies with scattered cabbage palms (*Sabal palmetto*). They are also known to inhabit lightly wooded areas as well as improved and unimproved pastures (USFWS 2014a).

Audubon's crested caracara nest in the winter and early spring, with peak nesting in January and February. They often feed on carrion and will forage on the ground for insects, turtles, snakes, frogs, or fish. Audubon's crested caracara are primarily threatened by habitat loss through urbanization and conversion to agriculture.

The project occurs within the USFWS consultation area for this species correspondence with USFWS is provided in **Appendix A**. Potential caracara nesting habitat was initially evaluated in accordance with the methods described in *Survey Protocol for Finding Caracara Nests (USFWS 2004), Recommended Management Practices and Survey Protocols for Audubon's Crested Caracara (Caracara cheriway audubonii) in Florida* (Morrison 2001), and *USFWS Crested Caracara Survey Protocol – Additional Guidance* (USFWS 2015). Additional field inspections to evaluate habitat suitability for Audubon's crested caracara are documented in the attached Technical Memorandum (**Appendix A**), which was submitted to both the North Florida and South Florida USFWS Ecological Services Field Offices. Those USFWS offices each returned letters, provided in **Appendix A**, stating that no suitable nesting habitat for Audubon's crested caracara would be impacted by the proposed project. For this reason, no nesting surveys were performed for caracara and a determination of **No Effect** is made for this species due to a lack of suitable habitat.

2.2.2 Blue-Tail Mole Skink and Sand Skink (Threatened- Federal)

Blue-tail mole skinks and sand skinks occur in scrub and sandhill habitats along the Lake Wales Ridge region of central Florida. They are typically found above 82 feet elevation and association with certain soil types (USFWS 2021). Blue-tail mole skink and sand skink populations are primarily threatened by habitat loss from development and agriculture, and habitat degradation due to lack of appropriate habitat management (USFWS 2021).

The project area contains areas mapped as potentially suitable habitat for blue-tail mole skinks following guidance by USFWS. Those areas occur within the range of blue tailed mole skinks, at appropriate elevations, and in appropriate soil types. A map showing those potentially suitable skink habitat areas is provided as **Figure 2-1**. There were no documented occurrences of blue-tail mole skink or sand skink in the project study area, and none were detected during field investigations.

Field inspections to evaluate habitat suitability for sand and blue-tail mole skinks are documented in the attached Technical Memorandum (**Appendix A**), which was submitted to both the North Florida and South Florida USFWS Ecological Services Field Offices. Those USFWS offices each returned letters, provided in **Appendix A**, stating that no suitable habitat for sand or blue-tailed mole skinks would be impacted by the proposed project. For this reason, no cover-board surveys were performed and a determination of **No Effect** is made for these species due to a lack of suitable habitat.

2.2.3 Eastern Black Rail (Threatened- Federal)

The eastern black rail is a secretive marsh bird species, and the smallest rail in North America. It inhabits salt, brackish, and freshwater wetlands in the eastern United States. Black rails are wetland dependent and marsh and emergent vegetation on moist to saturated soils interspersed with or adjacent to shallow water. Dense vegetative cover that conceals but allows movement is required; however, when shrub or densities become too high habitat quality is reduced. Black rails forage on a variety of small aquatic and terrestrial invertebrates and seeds.

Wetlands that may form potential habitat for eastern black rail in the project area are mapped by SFWMD as Mixed Wetland Hardwoods (FLUCCS 6170), Cypress (FLUCCS 6210), Cypress – Mixed Hardwoods (FLUCCS 6216), and Wetland Forested Mixed (FLUCCS 6300). However, shrub densities within these areas is so high that the habitat is unsuitable for black rails. There are no documented occurrences of black rails in the project study area, and none were detected during field investigations. The proposed project would not directly impact any wetlands. For these reasons, a determination of **No Effect** is made for this species.

2.2.4 Eastern Indigo Snake (Threatened- Federal)

Habitat loss is the primary threat to eastern indigo snakes. In central, south central, and coastal Florida, the eastern indigo snake inhabits hammocks, coastal scrub, dry glades, palmetto flats, prairie, brushy riparian areas, canal corridors, and wet fields.

Vegetated lands in the project area contain potential habitat for eastern indigo snakes including those mapped by SFWMD as Cypress Mixed Hardwoods (FLUCCS 6216), Pine Flatwoods (FLUCCS 4140), Upland Shrub and Brushland (FLUCCS 3200), and Wetland Forested Mixed (FLUCCS 6300). No gopher tortoise burrows or other refugia that are occasionally inhabited by eastern indigo snakes were found in the project corridor. Because the project area lies within the North Florida and South Florida Ecological Services Offices (ESOs), both the North and South *Eastern Indigo Snake Programmatic Effect Determination Key* (USFWS 2013, 2017) were followed in evaluating potential impacts from the proposed project and are provided below.

North Florida ESO Eastern Indigo Snake Programmatic Effect Determination Key

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

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

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

South Florida ESO Eastern Indigo Snake Programmatic Effect Determination Key

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

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

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*

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*

No gopher tortoise burrows were detected during field surveys by an FWC authorized gopher tortoise agent. However, transect surveys of the entire project corridor were not performed. The most recent version of the USFWS Standard Protection Measures for the Eastern Indigo Snake (**Appendix B**) will be utilized during construction. For these reasons, a determination of **Not Likely to Adversely Affect** is made for eastern indigo snake.

2.2.5 Everglade Snail Kite (Endangered- Federal)

The Everglade snail kite is a medium-sized raptor with a distinguishing slender, curved bill used to prey on apple snails (*Pomacea paludosa*). The range of the species is restricted to watersheds in the central and southern part of Florida. Snail kite nesting and foraging habitat consists of freshwater marshes and shallow edges of natural and manmade lakes. Survival of the species is closely linked to the abundance of apple snails. Water quality and hydrology has experienced degradation as a result of urban development and agricultural activities, thus leading to a decline in snail abundance. Regulation of water stages in lakes and canals is particularly important to maintain vegetative communities that support their preferred food source.

The project occurs in the USFWS consultation area for this species. No marsh habitats or lake edges with emergent vegetation occur in the project area, no suitable habitat for Everglade snail kites is present. No Everglade snail kites were detected during field surveys and none are known to nest in the project area. Due to a lack of suitable habitat, a determination of **No Effect** is made for this species.

2.2.6 Florida Grasshopper Sparrow (Endangered- Federal)

Florida grasshopper sparrows inhabit dry open prairies that consist of bunch grasses, low shrubs, and saw palmetto. These habitat types are found in south-central Florida where there are poorly drained grasslands that have a history of frequent fires (USFWS 2008). Declines in Florida grasshopper sparrow populations are mainly attributed to habitat loss through conversion to agriculture and habitat degradation through fire suppression (USFWS 2008).

This project occurs in the USFWS consultation area for Florida grasshopper sparrow. The project area contain a habitat type mapped by SFWMD (Upland Shrub and Brushland, FLUCCS 3200) that can form potential habitat for grasshopper sparrows. However, this habitat in the project area lacks the disturbance or fire needed to maintain habitat suitability and is becoming filled with woody vegetation in excess of 20 feet tall. No grasshopper sparrows were detected during field

surveys and none are known to occur in the vicinity of the project. Due to a lack of suitable habitat, a determination of **No Effect** is made for this species.

2.2.7 Florida Scrub-Jay (Threatened- Federal)

Florida scrub-jays generally inhabit sandpine scrub, scrubby flatwoods, oak scrub, and coastal scrub habitats of peninsular Florida where the canopy is less than ten feet tall. These habitat types require well-drained sandy soils and occur along the coastlines, ridges, and dry portions of the central Florida peninsula (USFWS 2014d). Florida scrub-jay populations continue to show decreasing trends, predominantly due to habitat loss from development and habitat degradation through fire suppression (USFWS 2014d).

This project occurs in the USFWS consultation area for Florida scrub-jays but the project area lacks vegetation typical of suitable scrub-jay habitat. The project area contains areas mapped as Upland Shrub and Brushland (FLUCCS 3200), but these areas lack the regular disturbance regime of fire and do not have shrub/scrub vegetative structural characteristics of suitable Florida scrub-jay habitat. No Florida scrub-jays were identified during field surveys. The closest observed scrub-jay occurrence is approximately 9.5 miles west of the project corridor and was observed on May 28, 2017. For these reasons, a determination of **No Effect** is made for Florida scrub-jay.

2.2.8 Red-Cockaded Woodpecker (Endangered- Federal)

The red-cockaded woodpecker is a small woodpecker approximately 7 inches long. They were once common throughout longleaf pine ecosystems, but populations began to decline due to habitat loss caused by tree farming, urbanization, and conversion to agriculture. They live in mature pine forests and are the only woodpecker species to excavate cavities exclusively in living pine trees, generally those over 80 years old (USFWS 2016).

This project occurs in the USFWS consultation area for the red-cockaded woodpecker. Habitat loss remains the main threat to this species. No old growth, mature forests occur in the project area and no indications of red-cockaded woodpeckers or nest trees were detected during field investigations. There are no records or red-cockaded woodpeckers in the vicinity of the project.

The project is within the USFWS consultation area for red-cockaded woodpecker, but the project corridor does not contain suitable habitat. For this reason, and because none were detected during field investigations, a determination of **No Effect** is made for this species.

2.2.9 Wood Stork (Endangered- Federal)

The main threat to wood storks stems from the loss, fragmentation, and modification of habitat, typically through urban encroachment and alterations of hydrology (USFWS 2014c). Wood stork have experienced a decline in the area and quality of breeding and foraging habitats range wide.

Wood storks can occur in a variety of wetland habitats, including freshwater marshes, stock ponds, shallow, seasonally flooded roadside and agricultural ditches, narrow tidal creeks, managed impoundments, and depressions in cypress heads and swamp sloughs. Wood storks require shallow water 5 to 15 inches deep for foraging. Because of their foraging method of wading and feeling for prey with their open bill, wood storks forage most effectively in areas of open shallow water lacking dense vegetation. Wood storks form nesting colonies in medium to tall trees that are isolated and protected by open water.

For this region of Florida, the USFWS has defined a wood stork Core Foraging Area (CFA) as being within 18.6 miles of a wood stork nesting colony. The project occurs within the CFA of the Lake Russell, Gatorland, Eagle Nest Park, and Lawne Lake wood stork nesting colonies. The Lake Russell colony is located approximately 14.81 miles south of the project corridor. The Gatorland colony is approximately 4.84 miles east of the project corridor. The Eagle Nest Park colony is approximately 11.26 miles north of the project corridor. The Lawne Lake colony is approximately 14.52 miles north of the project corridor.

Determinations of wood stork Suitable Foraging Habitat (SFH) follow the definitions described in the USFWS *Habitat Management Guidelines for the Wood Stork in the Southeast Region* (USFWS 1990) and the USFWS Wood Stork Effect Determination Keys from USFWS (**Appendix C**).

No wetlands exist in the project corridor, where direct impacts would occur under the Preferred Alternative. Direct impacts are anticipated to OSWs including roadside swales and ditches as well as to two areas mapped by SFWMD as Reservoirs (FLUCCS 5300). One of those areas is south of International Drive and west of SR 535 and the other area is east of SR 535 and north of Osceola Parkway. Those areas are both manmade stormwater ponds and do not support the foraging depths and prey concentrations typical of SFH. Roadside swales and ditches are manmade areas that capture stormwater but do not support prey, are not seasonally flooded, and are not considered SFH. No isolated, open water areas are present that could form potential nesting habitat.

Because the project area lies within the North Florida and South Florida Ecological Services Offices (ESOs), both the South and North and Central Peninsular Florida *Wood Stork Programmatic Effect Determination Key* (USFWS 2010, 2008) were followed in evaluating potential impacts from the proposed project and are provided below.

South Florida ESO Wood Stork Programmatic Effect Determination Key

A. Project does not affect SFH……*No Effect*

Central and North Florida ESO Wood Stork Programmatic Effect Determination Key

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

B. Project does not affect suitable foraging habitat (SFH)……...*No Effect*

Because SFH is not present and therefore will not be impacted by the project, a determination of **No Effect** is made for the wood stork.

2.2.10 Beautiful Pawpaw (Endangered-Federal)

Beautiful pawpaw is a long-lived diminutive shrub species found in central and southern Florida. It occurs naturally in mesic flatwoods with an open canopy of slash or longleaf pine. However, beautiful pawpaw requires prescribed fire in order to maintain open ground cover.

Potential habitat for beautiful pawpaw in the project area includes areas mapped by SFWMD as Pine Flatwoods (FLUCCS 4110). However, since this area does experience a regular fire or disturbance regime, it is extremely low quality potential habitat. Historic records indicate this species has been documented in Orange County, but the most recent observation was August 8, 1988. No beautiful pawpaw were detected during field surveys and none are known to have occurred in the project corridor. For these reasons, a determination of **No Effect** is made for beautiful pawpaw.

2.2.11 Britton's Beargrass (Endangered- Federal)

Britton's beargrass is a perennial herbaceous plant species with a moderate to long life span. It occurs principally on five of the central peninsular ridges (Mount Dora, Orlando, Lake Wales, Lake Henry, and Winter Haven) from Marion County south through Highlands County. Britton's beargrass is a habitat generalist and occurs in multiple xeric upland communities, including scrub and sandhill.

Potential habitat for Britton's beargrass in the project area includes areas mapped by SFWMD as Open Land (FLUCCS 1900), Upland Shrub and Brushland (FLUCCS 3200), and Pine Flatwoods (FLUCCS 4110). However, since these areas do not experience fire or a regular disturbance regime, they are extremely low quality potential habitat. Historic records indicate this species has been documented on private land in Orange and Osceola Counties. The most recent observation was in the mid-1990s. No signs of Britton's beargrass was detected during field surveys and none are known to have occurred in the project area. For these reasons, a determination of **No Effect** is made for Britton's beargrass.

2.2.12 Florida Greeneyes (Threatened- Federal)

Florida greeneyes is a perennial herbaceous wildflower endemic to Florida. They are solitary and terminal with flowers consisting of vibrant yellow ray florets. Their native range includes the eastern panhandle of Florida, and north and central peninsular Florida. It occurs naturally in sandhills, dry pine flatwoods, and mixed upland forests, as well as along dry roadsides and in ruderal areas.

Potential habitat for Florida greeneyes in the project area includes areas mapped by SFWMD as Pine Flatwoods (FLUCCS 4110), Upland Shrub and Brushland (FLUCCS 3200), Disturbed Land (FLUCCS 7400), and along Roads and Highways (FLUCCS 8140). Historic records indicate this species has been found in Orange and Osceola Counties, and the most recent observation was May 5, 2013 when a voucher was collected at the edge of flatwoods in the Econlockhatchee Sandhills Conservation Area, which is approximately 26 miles northeast of the project corridor. No Florida greeneyes were detected during field surveys and none are known to have occurred in the project area. For these reasons, a determination of **No Effect** is made for Florida greeneyes.

2.2.13 Gray's Beaksedge (Threatened- Federal)

Gray's beaksedge is a perennial graminoid endemic to the Southeast US and West Indies. It is grass-like in appearance with inflorescences consisting of spiked clusters. It occurs naturally in sandy pinelands and sandhills.

Potential habitat for Gray's beaksedge in the project area includes areas mapped by SFWMD as Pine Flatwoods (FLUCCS 4110). Historic records indicate this species has been recorded in Orange and Osceola Counties, and the most recent observation was May 11, 2001 when a voucher was collected in longleaf pine sandhills approximately 21.6 miles north of the project. No

Gray's beaksedge were detected during field surveys and none are known to have occurred in the project area. For these reasons, a determination of **No Effect** is made for Gray's beaksedge.

2.2.14 Lewton's Polygala (Endangered- Federal)

Lewton's polygala is a federally-endangered plant species that inhabits sandhills, scrub, scrubby flatwoods, and their transition zones. Potential suitable habitat for Lewton's polygala occurs within the project area mapped by SFWMD as Pine Flatwoods (FLUCCS 4110). This habitat is relatively low quality because it is lacks sandhill or scrubby vegetation and is becoming dominated by mature pine trees. Historic records indicate this species has been recorded in Orange and Osceola Counties, but few remaining populations are known to persist. Lewton's polygala was not detected during field surveys and none are known to have occurred in the project area. For these reasons, a determination of **No Effect** is made for Lewton's polygala.

2.2.15 Papery Whitlow-Wort (Threatened- Federal)

The papery whitlow-wort is a short-lived, dioecious herbaceous plant species that forms mats with its branches radiating horizontally from a central taproot. Papery whitlow-wort is endemic to central Florida and primarily inhabits sand pine scrub and rosemary scrub.

Potential suitable habitat for papery whitlow-wort is not present within the project area. Historic records indicate this species has been recorded in Orange and Osceola Counties but few known populations persist. Papery whitlow-wort was not detected during field surveys and none are known to have occurred in the project area. Because of a lack of potential habitat and sightings, a determination of **No Effect** is made for papery whitlow-wort.

2.2.16 Scrub Plum (Endangered- Federal)

Scrub plum is a long-lived, heavily branched shrub species native to ancient ridges in central Florida. Suitable habitat for scrub plum includes fire-maintained rosemary and oak scrub, xeric scrubby flatwoods, longleaf pine sandhills, and turkey oak sandhills mainly on the Lake Wales Ridge.

Potential habitat for scrub plum includes areas mapped by SFWMD as Pine Flatwoods (FLUCCS 4110) and Upland Shrub and Brushland (FLUCCS 3200). These habitats are relatively low quality because they are not truly scrub or sandhill typical of scrub plum habitat and they lack fire. No scrub plum were detected during field surveys and there are no records of scrub plum occurring in the project area. For these reasons, a determination of **No Effect** is made for scrub plum.

2.3 State Protected Species in the Project Area

2.3.1 Florida Black Bear

Florida black bears are large, omnivorous mammals that occur throughout Florida. They were removed from the state list of threatened species in 2012 but continue to be protected under Florida Administrative Code (FAC) 68A-4.001(4), -4.004, -4.009, -9010, and -12.004.

The project is located with the "common" range of the black bear as mapped by FWC. The nearest documented occurrence of a Florida black bear reported by FWC was in 2019, approximately 600 feet west of the project at the southern project terminus. In 2010 a juvenile black bear was captured in the residential area west of SR 535 and south of International Drive. Potential habitat occurs in vegetated portions of the project area, and Florida black bears are also known to visit residential neighborhoods near more natural habitats. FDOT will require contractors to remove garbage daily from the construction site or use bear proof containers for securing of food and other debris from the project work area to prevent these items from becoming an attractant for the Florida black bear (*Ursus americanus floridanus*). Any interaction with nuisance bears will be reported to the FWC Wildlife Alert hotline 888-404-FWCC (3922).

2.3.2 Florida Burrowing Owl (Threatened- Florida)

The Florida burrowing owl occurs throughout the state, although it is patchily distributed. Some human activities, such as land clearing and draining of wetlands, have increased their range in Florida but have exposed owls to additional threats. They traditionally inhabited native prairies and now can be found in pastures, agricultural fields, golf courses, airports, and vacant lots.

Potential habitat for Florida burrowing owl includes areas mapped by SFWMD as Golf Course (FLUCCS 1820), Open Land (FLUCCS 1900), and Upland Shrub and Brushland (FLUCCS 3200). Any open land within the project area could be potential habitat; however, burrowing owl colonies are typically conspicuous and well documented. No burrowing owls were identified in the project area during records research or field surveys. For these reasons, a determination of **No Adverse Effect Anticipated** is made for Florida burrowing owl.

2.3.3 Florida Pine Snake (Threatened- Florida)

Florida pine snakes are one of the largest snakes in Eastern North America reaching lengths up to 84 inches. Their range includes southwest South Carolina, west to Mobile Bay in Alabama, and south Florida, excluding the Everglades. The primary threats to Florida pine snakes are habitat loss due to conversion of pine communities to agriculture, pine plantations, and urban

development. They inhabit areas that feature well-drained sandy soils with a moderate to open canopy.

Potential habitat occurs throughout the project area in areas mapped by SFWMD as Pine Flatwoods (FLUCCS 4110), Upland Shrub and Brushland (FLUCCS 3200), and Open Land (FLUCCS 1900). No pine snakes were identified in the project area during records research or field surveys. For these reasons, a determination of **No Adverse Effect Anticipated** is made for Florida pine snake.

2.3.4 Florida Sandhill Crane (Threatened- Florida)

Florida sandhill cranes, a subspecies of sandhill crane, have a range that includes Florida and as far north as the Okefenokee Swamp in Georgia. Florida sandhill cranes are non-migratory and usually nest over freshwater ponds and marshes, where they typically lay two eggs. Young Florida sandhill cranes are able to leave the nest within 24 hours of hatching and become independent after ten months (Nesbitt 1996). Florida sandhill cranes inhabit freshwater marshes, prairies, and pastures throughout the state. The drainage of wetlands and conversion of prairies to agriculture are the primary threats to Florida sandhill cranes. Their former range included parts of coastal Texas, Alabama, and Louisiana, but habitat loss and overhunting greatly diminished the populations in the 20th century and their range shrank to its current area (FWC 2022c). The most recent Biological Status Review of Florida Sandhill Cranes, from 2011, indicates continuing population declines from 1974 to 2003.

Potential foraging habitat for Florida sandhill cranes occurs throughout the project area in areas mapped by SFWMD as Reservoirs (FLUCCS 5300), Lakes (FLUCCS 5200), Mixed Wetlands Hardwoods (FLUCCS 6170), Cypress (FLUCCS 6210), Cypress – Mixed Hardwoods (FLUCCS 6216), and Wetland Forested Mixed (FLUCCS 6300). No sandhill cranes were identified in the project area during records research or field surveys. Sandhill cranes are highly mobile and likely to relocate a short distance away if disturbed by construction. For these reasons, a determination of **No Adverse Effect Anticipated** is made for Florida sandhill crane.

2.3.5 Little Blue Heron (Threatened- Florida)

Little blue herons occur along the entire eastern and Gulf coasts of the U.S. as well as throughout the Mississippi River Valley, southern California, and into central and South America. The threats to little blue heron are poorly understood (FWC 2022f) but likely include coastal development, disturbance at foraging and breeding sites, environmental issues, degradation of feeding habitat,

reduced prey availability, and predators. Other threats may include exposure to pesticides, toxins, and infection by parasites (FWC 2022f, Rodgers et al. 1995). According to the Biological Status Report published in 2011, little blue heron populations increased gradually throughout the 20th Century until the 1990's, when a slow but steady decline was observed.

Little blue herons inhabit a variety of aquatic environments including fresh, salt, and brackish water systems like swamps, estuaries, ponds, lakes, and rivers (Rodgers et al. 1995). Their nests are typically built in trees and shrubs on islands, emergent vegetation, or in dense thickets near water. Potential foraging habitat in the project area occurs in areas mapped by SFWMD as Wetland Forested Mixed (FLUCCS 6300), Cypress (FLUCCS 6210), and Cypress Mixed Hardwoods (FLUCCS 6216). It is unlikely potential nesting occurs in the project area due to lack of water bodies within the project area. No little blue herons were identified in the project area during records research or field surveys, and no wetlands would be impacted by the project. For these reasons, a determination of **No Adverse Effect Anticipated** is made for little blue heron.

2.3.6 Roseate Spoonbill (Threatened- Florida)

Roseate spoonbills can be found in coastal areas of Central America, the Caribbean, and the Gulf of Mexico as well as South America east of the Andes Mountains. Nesting habitats include coastal mangroves and dredge spoil islands and they often nest near other wading bird species (FNAI 2001). The primary historical threat to roseate spoonbills was hunting for their feathers; however, this practice was prohibited, allowing populations to rebound (FWC 2022g). Current threats include reduced prey availability and general habitat degradation or loss, pesticide exposure, and illegal shooting.

The project corridor does not contain flats, tidal areas, or large expanses of shallow water typical of potential foraging habitat. Because of a lack of suitable habitat, a determination of **No Adverse Effect Anticipated** is made for roseate spoonbill.

2.3.7 Southeastern American Kestrel (Threatened- Florida)

Southeastern American kestrels inhabit open woodlands, sandhill, and fire-maintained savannah pine habitats; however, they will also use alternative habitats such as pastures and open fields. The Southeastern subspecies is non-migratory and found throughout peninsular Florida. They nest in cavities excavated by woodpeckers and other natural processes that create holes in dead, standing longleaf pine trees. Primary threats to Southeastern American kestrel populations are

the loss of feeding and nesting habitat through development of residential areas, removal of trees in agriculture fields, and suppression of fire (FWC 2022b).

Potential habitat occurs through the project area in locations mapped by SFWMD as Open Land (FLUCCS 1900), Pine Flatwoods (FLUCCS 4110), and Disturbed Land (FLUCCS 7400). Nesting surveys were not performed, but no kestrels were detected during general field surveys and no potential nesting cavities were observed. The project is not anticipated to impact any mature forest or areas with abundant standing dead trees. For these reasons, a determination of **No Adverse Effect Anticipated** is made for southeastern American kestrel.

2.3.8 Tricolored Heron (Threatened- Florida)

Tricolored herons range from Massachusetts south throughout the Gulf coast, and as far south as northern Brazil. They also inhabit the Pacific coast from Baja California to Ecuador. Nests are typically found on protected islands or in trees overhanging water. Tricolored herons are permanent residents in Florida and are most common in south and central Florida regions. They inhabit fresh and saltwater marshes, estuaries, mangrove swamps, lagoons, and river deltas (Frederick 1997). According to the Biological Status Review published in 2011, tricolored heron population trends are difficult to detect because of high variability between survey years, though a significant decline was documented across the 1970's and 1980's.

The major threat facing tricolored heron populations is loss of habitat through development and draining of wetlands. Other threats include pesticides and pollutants (Rodgers, 1997), Spalding et al. 1997), alterations to the hydrology of foraging areas, reduced prey abundance, and oil spill impacts to critical breeding, foraging, and roosting sites (FWC 2022i). No marsh or similar open, aquatic habitat that might be suitable for foraging occur in the project area. The forested wetlands are generally too overgrown to be suitable for tricolor heron. No potential nesting habitat occurs in the project area. For these reasons, a determination of **No Adverse Effect Anticipated** is made for tricolored heron.

2.3.9 Gopher Tortoise (Threatened- Florida)

The gopher tortoise is a state-threatened species that inhabits xeric and mesic forests, fields, and disturbed areas. The project area was preliminarily surveyed for gopher tortoise burrows during field inspections. No gopher tortoise burrows were found. Suitable habitat for gopher tortoises within the project area occurs in areas mapped as pine flatwoods. However, the probability of occurrence is low due to the quality and amount of available suitable habitat. The construction of

the project is not anticipated to impact any potentially occupied gopher tortoise burrows. If any are observed during the design and permitting phases of this project, a formal survey and relocation will be carried out in accordance with FWC guidelines. Therefore, a determination of **No Adverse Effect Anticipated** is made for gopher tortoise.

2.4 Non-Listed Species

2.3.10 Monarch Butterly (Federal Candidate Species)

The monarch butterfly is a candidate species for federal listing under the ESA throughout the United States. The Service found that listing the monarch butterfly as an endangered or threatened species is warranted but precluded by higher priority actions. Candidate species are plants and animals whose status is being currently reviewed to determine whether it warrants listing under the ESA. Candidate species receive no statutory protection under the ESA. USFWS encourages cooperative conservation efforts for these species because they are species that may warrant future protection under the ESA. Monarchs can be found throughout Florida (and the United States) with a preferred habitat that includes wildflowers and specifically milkweeds.

There are no known designated wildflower areas within the project area. However there is potential for wildflowers and the monarch butterfly to occupy the open pastures within the project limits along SR 535.

If the Monarch butterfly (*Danaus plexippus*) is listed by USFWS as Threatened or Endangered and the project may affect the species, FDOT commits to re-initiating consultation with USFWS to determine appropriate avoidance and minimization measures for protection of the newly listed species.

2.3.11 Tricolored Bat (Proposed for Federal Listing)

The tricolored bat is a proposed species for federal listing. Suitable roosting and foraging habitat was observed in the project corridor in areas mapped as Pine Flatwoods and Upland Shrub and Brushland. The proposed project will impact suitable roosting and foraging habitat through the removal of approximately 7.27 acres of areas mapped as Pine Flatwoods and Upland Shrub and Brushland. Tricolored Bat has a "moderate" likelihood of presence. If the Tricolored bat is listed by USFWS as Threatened or Endangered and the project may affect the species, FDOT commits to re-initiating consultation with USFWS to determine appropriate avoidance and minimization measures for protection of the newly listed species.

2.5 Potential Impacts to Protected Species and Habitats

A No Build Alternative is used to evaluate the existing conditions and provide a comparison for the potential impacts of the Preferred Alternative. The No Build Alternative involves taking no action and so would have no impacts on listed species or habitats; however, the No Build Alternative would not address the needs of the proposed project.

The extent of potential direct impacts from the Preferred Alternative were assessed by overlaying habitat types (as mapped by SFWMD and compared with USFWS NWI maps and field investigations) onto the project corridor, which represents the footprint of direct impacts.

2.5.1 Direct Impacts to Protected Species and Habitats

The extent of anticipated direct impacts to habitats from the Build Alternative by FLUCCS Code are summarized in **Table 2-3** and direct impacts to habitats from the proposed ponds are summarized in **Table 2-4**. The project would expand FDOT right-of-way in the southeast corner of the intersection between S.R. 535 and World Center Drive, and along the northwest corner of the intersection between S.R. 535 and International Drive South. Impacts to wetlands and other surface waters are addressed in greater detail in the Wetlands Evaluation section of this document.

Table 2-3 Build Alternative Direct Impacts by FLUCCS Code

Land Use/Land Cover	FLUCCS CODE	Impacts Under Recommended Alternative (Acres)
Commercial and Services	1400	0.12
Pine Flatwoods	4110	0.11
Roads and Highways	8140	0.48
	TOTAL	0.71

Table 2-4 Direct Impacts from Ponds by FLUCCS Code

Land Use/Land Cover	FLUCCS Code	Acres of Impact
Medium Density Under Construction	1290	3.81
Multiple Dwelling Units, High Rise	1340	0.73
Commercial and Services	1400	3.38
Golf Course	1820	2.38
Upland Shrub and Brushland	3200	2.72
Pine Flatwoods	4110	4.44
Reservoirs	5300	2.59
Roads and Highways	8140	4.34
	TOTAL	24.39

2.5.2 Indirect Impacts to Protected Species and Habitats

Indirect impacts are those impacts that are linked and causally related to the proposed project and may be temporary or permanent. For transportation projects, indirect impacts typically include disturbance to areas adjacent to the project. These impacts include the short-term impacts associated with road construction activities as well as other long-term impacts due to the proximity of the roadway to wildlife habitat.

Potential short-term indirect impacts for the recommended alternative could result from the use of heavy equipment, the staging or stockpiling of equipment and materials, and increased erosion associated with soil disturbance. Avoidance of a construction area by wildlife and downstream sedimentation from erosion are examples of short-term indirect effects facing this project. Most protected species that may occur in the project corridor, such as wood stork or southeastern American kestrel, are highly mobile and are anticipated to readily relocate to adjacent habitats; therefore, the potential for short-term indirect impacts to protected species from construction is anticipated to be minimal. Best Management Practices (BMPs) typically associated with road construction projects will be implemented and maintained throughout all construction activities to minimize indirect impacts from erosion and other sources.

2.5.3 Cumulative Impacts to Protected Species and Habitats

A “cumulative impact”, according to the definition in the Council of Environmental Quality Regulations (40 CFR 1508.7), is “the impact on the environment, which results from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.” The Preferred Alternative for the project would impact approximately 0.11 acres of pine flatwoods. No designated Critical Habitats would be affected, and no adverse impacts to any listed species would occur under the Preferred Alternative. FDOT will follow the *Standard Specifications for Road and Bridge Construction*, which contains Best Management Practices to avoid and minimize impacts to wildlife and their habitat during construction. For these reasons, no cumulative impacts are anticipated as a result of the Preferred Alternative.

2.5.4 Avoidance, Minimization, and Mitigation

Impacts to protected species and habitats were sequentially avoided and then minimized during alternatives development, first by utilizing an existing transportation corridor and then by reducing the project footprint to minimize the area impacted. The area of expanded right-of-way was the minimum required to meet current FDOT standards.

FDOT Standards Specifications for Road and Bridge Construction will be implemented to further minimize impacts. USFWS Standard Protection Measures For The Eastern Indigo Snake (**Appendix B**) will also be implemented. FDOT will also avoid making food waste available to bears and will report nuisance black bears during construction. There will be no impacts to wetlands under the Preferred Alternative, so no wetland mitigation will be required.

3.0 Wetland Evaluation

No wetland impacts are anticipated under the Preferred Alternative. Wetlands are protected under Section 404 of the Clean Water Act. Guidance is provided in Executive Order 11990, Protection of Wetlands, which establishes 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”. The USACE has the authority to regulate work in Waters of the US under Section 10 of the Rivers and Harbors Act of 1899 and the USFWS acts as a commenting body where permitted actions may affect listed species. In Florida, state authority over activities in state surface waters and wetlands is administered by FDEP and the five Water Management Districts.

Wetlands, as stated in Section 373.019(27) F.S. and in 33 CFR 328.3(b) and as used by the USACE in administering Section 404 of the Clean Water Act, are defined as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions."

Surface waters are considered by Section 373.019(21) F.S. to be waters on the surface of the earth, contained in bounds created naturally or artificially, including the Atlantic Ocean, the Gulf of Mexico, bays, bayous, sounds, estuaries, lagoons, lakes, ponds, impoundments, rivers, streams, springs, creeks, branches, sloughs, tributaries, and other watercourses. Regulatory agencies do not typically require mitigation for impacts to surface waters other than wetlands.

Surface waters are considered by Section 373.019(21) F.S. to be waters on the surface of the earth, contained in bounds created naturally or artificially, including, the Atlantic Ocean, the Gulf of Mexico, bays, bayous, sounds, estuaries, lagoons, lakes, ponds, impoundments, rivers, streams, springs, creeks, branches, sloughs, tributaries, and other watercourses. Regulatory agencies do not typically require mitigation for impacts to surface waters other than wetlands.

3.1 Methodology

Wetlands and Other Surface Waters (OSWs) were inspected and their locations in the project corridor were field verified. Wetlands are typically mapped in the field using three parameters as indicators of wetlands: presence of hydrophytic vegetation, hydric soils, and hydrology, utilizing methodologies consistent with the USACE *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (1987), the *Regional Supplement to the Corps of Engineers Wetland*

Delineation Manual: Atlantic and Gulf Coastal Plain Region (2010), Chapter 62-340, Florida Administrative Code, and the *Florida Wetlands Delineation Manual* (Gilbert et. al. 2011).

Through the ETDM system, SFWMD noted the potential presence of wetlands and OSWs associated with SFWMD conservation easements along the west side of S.R. 535 at the Orange/Osceola County line. USFWS noted the need to avoid and minimize impacts to wetlands and to provide compensatory mitigation for unavoidable impacts.

Comments Regarding Wetlands

The USACE stated that the project would have minimal level of importance. The USEPA does not expect significant impacts on wetlands and surface waters. USFWS expects the proposed project will result in minimal to moderate involvement with wetlands. The FLDEP stated the project would have minimal effects to wetlands; however, impacts must be reduced to the greatest extent practicable, with mitigation measures in place if minimization and avoidance of impacts are exhausted. The SFWMD noted that wetlands resources would be affected. Specifically, there is a conservation easement on the west side of S.R. 535 from World Center Drive to the Orange/Osceola County line and suggest impacts could be reduced by eliminating roadway widening on the west side of the road. NMFS stated the project would have moderate direct impacts and impacts to adjacent wetlands.

Responses to Comments Regarding Wetlands

Impacts to wetlands were avoided and minimized by following the existing SR 535 corridor as much as possible with limited new right-of-way as well as through pond site selection in uplands wherever possible. No impacts to wetlands are anticipated, and further analysis of potential impacts to wetlands and surface waters is anticipated during the Environmental Resource Permit (ERP) and state Section 404 permitting processes. The SFWMD conservation easement is likely mapped incorrectly as it extends into existing FDOT right-of-way. During the design phase, the precise right-of-way and conservation easement limits will be determined, and further avoidance and minimization can be incorporated as needed.

3.2 Wetlands and Other Surface Waters in the Project Area

No wetlands are located in the project corridor, where direct impacts would occur under the Preferred Alternative. Wetlands do occur in the larger Project Area, including a particularly large patch of forested wetlands west of SR 535, extending both north and south of SR 417.

Field investigations generally confirmed the wetland mapping by SFWMD (**Figures 1-4** and **1-5**). Four wetland types are mapped by SFWMD in the project area. They Mixed Wetland Hardwoods (FLUCCS 6170), Cypress (FLUCCS 6210), Cypress – Mixed Hardwoods (FLUCCS 6216), and Wetland Forested Mixed (FLUCCS 6300). OSWs mapped by SFWMD in the Project Area include Reservoirs (FLUCCS 5300) and Lakes (FLUCCS 5200). Roadside ditches and swales are also considered OSWs. There is no Essential Fish Habitat in the project area.

3.3 Impact Assessment

No wetlands exist in the project corridor, where direct impacts would occur under the Preferred Alternative, so no impacts to wetland are anticipated. Direct impacts are anticipated to OSWs including roadside swales and ditches as well as to two areas mapped by SFWMD as Reservoirs (FLUCCS 5300). One of those areas is south of International Drive and west of SR 535 and the other area is east of SR 535 and north of Osceola Parkway. Both of those areas are manmade stormwater ponds.

3.4 Avoidance, Minimization, and Mitigation

Impacts to wetlands were sequentially avoided and then minimized by following the existing S.R. 535 right-of-way as much as possible. Minimization measures, which may include reductions in the typical section, use of retaining walls to minimize roadway embankments, and similar measures, will be considered during the project design phase. FDOT *Standard Specifications for Road and Bridge Construction* will be implemented to further minimize impacts.

4.0 Anticipated Permits

Under operating agreement with the Florida Department of Environmental Protection, the SFWMD maintains state jurisdiction for Environmental Resource Permit reviews under 62-330 FAC for roadway and transportation projects. A SFWMD Environmental Resource Permit is anticipated for modifications to an existing drainage system and for increases in permeable cover. There are no Federally jurisdictional wetlands that will be impacted under the Preferred Alternative. Therefore, no Section 404 permit is anticipated. An FDEP National Pollution Discharge Elimination System Permit will also be required.

5.0 Conclusion

5.1 Protected Species and Habitats

This project was evaluated for impacts to protected plant and animal species and their habitats in accordance with the FDOT's *PD&E Manual, Part 2, Protected Species and Habitat,* which incorporates the requirements of the National Environmental Policy Act (NEPA) and related federal and state laws. Federal and state listed species with potential to occur in the project corridor were identified through research and coordination with US Fish and Wildlife Service, and the Florida Fish and Wildlife Conservation Commission.

There is no Critical Habitat present within the project area. Field investigations of the project area were conducted on multiple days and in different seasons to evaluate the potential presence of protected species and habitats. No adverse impacts are anticipated to any listed species from the Preferred Alternative. Effect determinations for listed species are provided in **Table 5-1**.

5.2 Wetlands and Other Surface Waters

This project was evaluated for impacts to wetlands and other surface waters in accordance with FDOT's *PD&E Manual, Part 2, Wetlands and Other Surface,* which incorporates the requirements of the National Environmental Policy Act (NEPA) and related federal and state laws. There would be no direct impacts to wetlands or other surface waters under the Preferred Alternative.

A SFWMD Environmental Resource Permit is anticipated for modifications to an existing drainage system and for increases in permeable cover. There are no Federally jurisdictional wetlands that will be impacted under the Preferred Alternative. Therefore, no Section 404 permit is anticipated. An FDEP National Pollution Discharge Elimination System Permit will also be required.

5.3 Commitments

In order to assure that the proposed project will not adversely impact protected species with the potential to occur within the project area, the FDOT will adhere to the following commitments:

- The most recent version of the USFWS Standard Protection Measures for the Eastern Indigo Snake will be utilized during construction.
- FDOT will require contractors to remove garbage daily from the construction site or use bear proof containers for securing of food and other debris from the project work area to prevent these items from becoming an attractant for the Florida black bear (*Ursus americanus floridanus*). Any interaction with nuisance bears will be reported to the FWC Wildlife Alert hotline 888-404-FWCC (3922).

- If the tricolored bat (*Perimyotis subfalvus*) is listed by USFWS as Threatened or Endangered and the project may affect the species, FDOT commits to re-initiating consultation with USFWS to determine appropriate avoidance and minimization measures for protection of the newly listed species.
- If the Monarch butterfly (*Danaus plexippus*) is listed by USFWS as Threatened or Endangered and the project may affect the species, FDOT commits to re-initiating consultation with USFWS to determine appropriate avoidance and minimization measures for protection of the newly listed species.

Table 5-1-1 Species Effect Determinations Under Preferred Alternative

Common Name	Scientific Name	Federal Status	State Status	Occurrence Potential in Project Area	Effect Determination
Fauna Species					
Audubon's crested caracara	Polyborus plancus audubonii	FT	-	Low	No Effect
Blue-tail mole skink	Eumeces egregius lividus	FT	-	Moderate	No Effect
Eastern black rail	Laterallus jamaicensis ssp. jamaicensis	FT	-	Low	No Effect
Eastern indigo snake	Drymarchon corais couperi	FT	-	Low	NLAA
Everglade snail kite	Rostrhamus sociabilis plumbeus	FE	-	Low	No Effect
Florida burrowing owl	Athene cunicularia	-	ST	Low	NAEA
Florida grasshopper sparrow	Ammodramus savannarum floridanus	FE	-	Low	No Effect
Florida pine snake	Pituophis melanoleucus mugitus	-	ST	Low	NAEA
Florida sandhill crane	Grus canadensis pratensis	-	ST	Low	NAEA
Florida sand skink	Neoseps reynoldsi	FT	-	Moderate	No Effect
Florida scrub-jay	Aphelocoma coerulescens	FT	-	Low	No Effect
Gopher tortoise	Gopherus polyphemus	-	ST	Low	NAEA
Little blue heron	Egretta caerulea	-	ST	Low	NAEA
Red-cockaded woodpecker	Picoides borealis	FE	-	Low	No Effect
Roseate spoonbill	Platalea ajaja	-	ST	Low	No Effect Antcipated
Southeastern American kestrel	Falco sparverius paulus	-	ST	Low	NAEA
Tricolored heron	Egretta tricolor	-	ST	Low	No Effect Anticipated
Wood stork	Mycteria americana	FE	-	Low	No Effect
Flora Species					
Beautiful pawpaw	Deeringothamnus pulchellus	FE	-	Low	No Effect
Britton's beargrass	Nolina brittoniana	FE	-	Low	No Effect
Florida greeneyes	Berlandiera subacaulis	FT	-	Low	No Effect
Gray's beaksedge	Rhynchospora grayi	FT	-	Low	No Effect
Lewton's polygala	Polygala lewtonii	FE	-	Low	No Effect

Notes: FE = Federally Endangered, FT = Federally Threatened, ST = State Threatened, NLAA = Not Likely to Adversely Affect, MANLAA = May Affect, Not Likely to Adversely Affect, NAEA = No Adverse Effect Anticipated

6.0 References

Christman, S.P.,1992. Sand skink, Neoseps reynoldsi (Stejneger). Pages 135-140 in P. E. Moler, editor. Rare and Endangered Biota of Florida. Volume III. Amphibians and reptiles. University Press of Florida, Gainesville, Florida, USA.

Efficient Transportation Decision Making (ETDM). 2020. Summary Report for Project #14325 – SR 535 from US 192 to N. of SR 536/World Center Dr.

Ernst, C. H., and E. M. Ernst. 2003. Snakes of the United States and Canada. Smithsonian Books, Washington, D.C., USA. 668pp.

FWC. 2014e. FWC Eagle Nest Locator data. Available at: https://ca.dep.state.fl.us/mapdirect/

FWC. 2022b. American kestrel. Available at: https://myfwc.com/wildlifehabitats/profiles/birds/raptors-and-vultures/american-kestrel/. Last accessed April 21, 2022.

FWC. 2022a. Audubons crested caracara. Available at: http://myfwc.com/wildlifehabitats/imperiled/profiles/birds/audubons-crested-caracara/. Last accessed April 21, 2022.

FWC. 2022c. Florida Sandhill Crane. Available at: http://myfwc.com/wildlifehabitats/imperiled/profiles/birds/florida-sandhill-crane/. Last accessed April 21, 2022.

FWC. 2022f. Little Blue Heron. Available at: http://myfwc.com/wildlifehabitats/imperiled/profiles/birds/little-blue-heron/. Last accessed April 21, 2022.

FWC. 2022g. Roseate Spoonbill. Available at: http://myfwc.com/wildlifehabitats/imperiled/profiles/birds/roseate-spoonbill/. Last accessed April 22, 2022.

FWC. 2022i. Tri-colored Heron *Egretta tricolor*. Available at: http://myfwc.com/media/2211502/Tricolored-Heron.pdf. Last accessed April 22, 2022.

Florida Natural Areas Inventory (FNAI). 2001. Field guide to the rare animals of Florida. http://www.fnai.org/FieldGuide/pdf/Podomys_floridanus.PDF.

Franz, R. 1992. Florida pine snake, Pituophis melanoleucus mugitus Barbour. Pages 254–258 in P. E. Moler, editor. Rare and endangered biota of Florida. Volume III. Amphibians and reptiles. University Press of Florida, Gainesville, Florida, USA.

Frederick, Peter C. 1997. Tricolored Heron (Egretta tricolor), The Birds of North America Online (A.Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online.

Gilbert, K.M., J.D. Tobe, R.W. Cantrell, M.E. Sweeley, and J.R. Cooper. 2011. The Florida Wetlands Delineation Manual. Florida Department of Environmental Protection. Tallahassee, Fl.

Natural Resources Conservation Service. 2024. Web Soil Survey. Online tool provided by U.S. Department of Agriculture. Available at: http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm.

Nesbitt S.A., 1996. Florida Sandhill Crane. Pages 219 – 229 in J.A. Rodgers, Jr., H.W. Kale II, and H.T. Smith (Eds.). Rare and endangered biota of Florida, Vol. V: Birds. University Press of Florida, Gainesville, FL.

Morrison, Joan, L. 2001. Recommended Management Practices and Survey Protocols for Audubon's Crested Caracara (*Caracara cheriway audubonii*) in Florida. Technical Report No. 18. Florida Fish and Wildlife Conservation Commission, Tallahassee, Florida.

Rodgers, J. A., Jr. 1997. Pesticide and heavy metal levels of waterbirds in the Everglades agricultural area of south Florida. Florida Field Naturalist 25: 33-41.

Rodgers, J. A., Jr., H. W. Kale, III, and H. T. Smith. 1996. Rare and endangered biota of Florida. Volume V. Birds. University Press of Florida. 736pp.

Rodgers, Jr., James A. and Henry T. Smith. 1995. Little Blue Heron (Egretta caerulea), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online.

Spalding, M. G., C. K. Steible, S. F. Sundlof, and D. J. Forrester. 1997. Metal and organochlorine contaminants in tissues of nestling wading birds (Ciconiiformes) from southern Florida. Florida Field Naturalist 25: 42 50.

U.S. Army Corps of Engineers (USACE). 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. USACE Environmental Laboratory, Vicksburg, MS.

USACE. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0). USACE Engineer Research and Development Center. Vicksburg, MS.

USACE. 2015. Southwest Florida Comprehensive Watershed Plan. Available at: https://usace.contentdm.oclc.org/digital/collection/p16021coll7/id/2515/. Last accessed July 26, 2019.

U.S. Fish and Wildlife Service (USFWS). 1990. Habitat management guidelines for the wood stork in the southeast region. Prepared by John C. Ogden for the Southeast Region U.S. Fish and Wildlife Service; Atlanta, Georgia.

USFWS. 2004. Survey Protocol for Finding Caracara Nests. South Florida Ecological Services Field Office. 2pp.

USFWS. 2007. 5-Year Review for Sand skink (*Neoseps reynoldsi*). Available at: https://ecos.fws.gov/docs/tess/species_nonpublish/1055.pdf. Last accessed April 20, 2022.

USFWS. 2008. 5-Year Review for Florida grasshopper sparrow (*Ammodramus savannarum floridanus*). Available at: https://ecos.fws.gov/docs/tess/species_nonpublish/1288.pdf. Last accessed April 20, 2022.

USFWS. 2013. Eastern indigo Snake Programmatic Effect Determination Key. U.S. Fish and Wildlife Service. Available at: https://www.fws.gov/northflorida/IndigoSnakes/indigo-snakes.htm. Last accessed April 20, 2022.

USFWS. 2014a. Audubon's Crested Caracara *Polyborus plancus audbonii.* U.S. Fish and Wildlife Service. Available at: http://www.fws.gov/southeast/vbpdfs/species/birds/acca.pdf.

USFWS. 2014d. Florida Scrub-Jay. U.S. Fish and Wildlife Service information sheet. Available at: http://www.fws.gov/verobeach/mS.R.ppdfs/floridascrubjay.pdf. Last accessed April 20, 2022.

USFWS. 2014c. Wood Stork. U.S. Fish and Wildlife Service Information Sheet Available at: http://www.fws.gov/verobeach/mS.R.ppdfs/woodstork.pdf. Last accessed April 21, 2022.

USFWS. 2015. Crested Caracara Survey Protocol – Additional Guidance Available at: https://www.fws.gov/verobeach/BirdsPDFs/20161209_CCsurveyprotocol.pdf. Last accessed April 21,2022.

USFWS. 2016. Red-cockaded Woodpecker (*picoides borealis*). Available at: https://www.fws.gov/rcwrecovery/rcw.html. Last accessed April 21, 2022.

USFWS. 2021. 5-Year Review for Blue-Tailed Mole Skink (*Eumeces egregius lividus*). Available at: https://ecos.fws.gov/docs/tess/species_nonpublish/3310.pdf. Last accessed April 20, 2022.