

# NATURAL RESOURCES EVALUATION

PROJECT DEVELOPMENT AND ENVIRONMENT  
STUDY

Lake / Orange County Connector (US 27 to SR 429)  
Lake and Orange Counties, Florida

CFX Project Number: 599-225

Prepared for

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**CENTRAL  
FLORIDA  
EXPRESSWAY  
AUTHORITY**

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Prepared by  
Metric Engineering, Inc.  
525 Technology Park, Suite 153  
Lake Mary, FL 32746



MAY 2019

## EXECUTIVE SUMMARY

The Central Florida Expressway Authority (CFX) is conducting a Project Development and Environment Study of the Lake/Orange County Connector, a strategic transportation investment aimed at supporting existing and future growth in south Lake and west Orange counties. The purpose of the Lake/Orange County Connector PD&E Study is to develop a proposed alternative that is technically sound, environmentally sensitive and publicly acceptable.

This Natural Resources Evaluation identifies and assesses potential protected species occurrences and habitats as well as wetlands and surface water locations. This NRE also identifies potential impacts from proposed alternatives and provides information on avoidance, minimization, and mitigation measures. This document has been prepared in accordance with FDOT's *PD&E Manual, Part 2, Chapter 9 (Wetlands and Other Surface Waters)*, updated January 14, 2019, and *Part 2, Chapter 15 (Protected Species and Habitats)*, updated January 14, 2019, which incorporates the requirements of the National Environmental Policy Act and related federal and state laws.

No adverse impacts to listed species are anticipated from the proposed project. Federally listed species that may be affected but would not be adversely affected by the proposed project are American alligator, Audubon's crested caracara, Britton's beargrass, bluetail mole skink, Carter's mustard, clasping warea, eastern diamondback rattlesnake, eastern indigo snake, Everglade snail kite, Lewton's polygala, papery whitlow-wort, pygmy fringe tree, sand skink, scrub blazingstar, scrub plum, striped newt, and wood stork. A determination of No Effect was made for Florida bonamia, Florida scrub-jay, red-cockaded woodpecker, scrub buckwheat, scrub lupine, and short-leaved rosemary.

No adverse effects are anticipated for the state listed burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, little blue heron, southeastern American kestrel, or tri-colored heron.

It is anticipated that the preferred alternative would result in 64 acres of wetland impacts, 71 acres of Other Surface Waters impacts, 49 acres of impacts to wood stork Suitable Foraging Habitat (SFH) ,and 332 acres of impacts to vegetated uplands. The wetland impacts from the project occur within the service areas of the Collany, Reedy Creek, Southport Ranch, Shingle Creek, Hammock Lakes and the Lake Louisa and Green Swamp Mitigation Banks.

This project spans the boundary of two water management districts, St. Johns River Water Management District and South Florida Water Management District , and will therefore require Environmental Resource Permits from both agencies or a permitting agreement between the two agencies to cover the entire project corridor. The project will also require a U.S. Army Corps of Engineers 404 Dredge and Fill Permit, mitigation for impacts to wetlands and wood stork SFH, as well as permitting and relocation of gopher tortoise.

Standard Best Management Practices for construction of roads will be implemented during all construction. Staging and stockpiling locations will be coordinated with the construction project manager. Best Management Practices and staging/stockpiling will follow Florida Department of Transportation's *Standard Specifications for Road and Bridge Construction*. To avoid and minimize impacts during construction, CFX will adhere to the U.S. Fish and Wildlife Service (USFWS) *Standard Protection Measures for the Eastern Indigo Snake*. CFX will mitigate for any unavoidable impacts to wood stork SFH at an approved mitigation bank and in accordance with the USFWS *Wood Stork Effect Determination Key* (U.S. Army Corps of Engineers and USFWS 2008). CFX will conduct a 100% gopher tortoise burrow survey of potential habitat in the impact area and associated relocations in compliance with Florida Fish and Wildlife Conservation Commission guidelines.

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## 1.0 INTRODUCTION

### PROJECT DESCRIPTION

The proposed Lake/Orange County Connector is a strategic transportation investment aimed at supporting existing and future growth in south Lake and west Orange counties. It has been identified as a system expansion project need in the last four consecutive Central Florida Expressway Authority (CFX) master plans, the most current being the 2040 CFX Master Plan. The Orlando-Orange County Expressway Authority (OOCEA), now CFX, completed the 2007 SR 429 to US 27 Connector Concept Development and Evaluation Study which developed various viable corridors/alternatives and identified an unmet need for an east-west connection between US 27 and SR 429. This study will confirm the feasibility of the connector and will conduct a Project Development and Environment (PD&E) Study on defined alignments. **Figure 1-1** illustrates the location of the project.

This Natural Resources Evaluation (NRE) identifies and assesses potential protected species occurrences and habitats as well as wetlands and surface water locations. This NRE also identifies potential impacts from proposed alternatives and provides information on avoidance, minimization, and mitigation measures. This document has been prepared in accordance with FDOT's *PD&E Manual, Part 2, Chapter 9 (Wetlands and Other Surface Waters)*, updated January 14, 2019, and *Part 2, Chapter 15 (Protected Species and Habitats)*, updated January 14, 2019, which incorporates the requirements of the National Environmental Policy Act (NEPA) and related federal and state laws.

### PROJECT OBJECTIVE

#### *Objective*

The primary objectives of this transportation improvement project are to: expand regional system linkage and connectivity in Lake and Orange counties; enhance mobility between US 27 and SR 429; and accommodate the expected increase in traffic due to population and employment growth within the study area, while being consistent

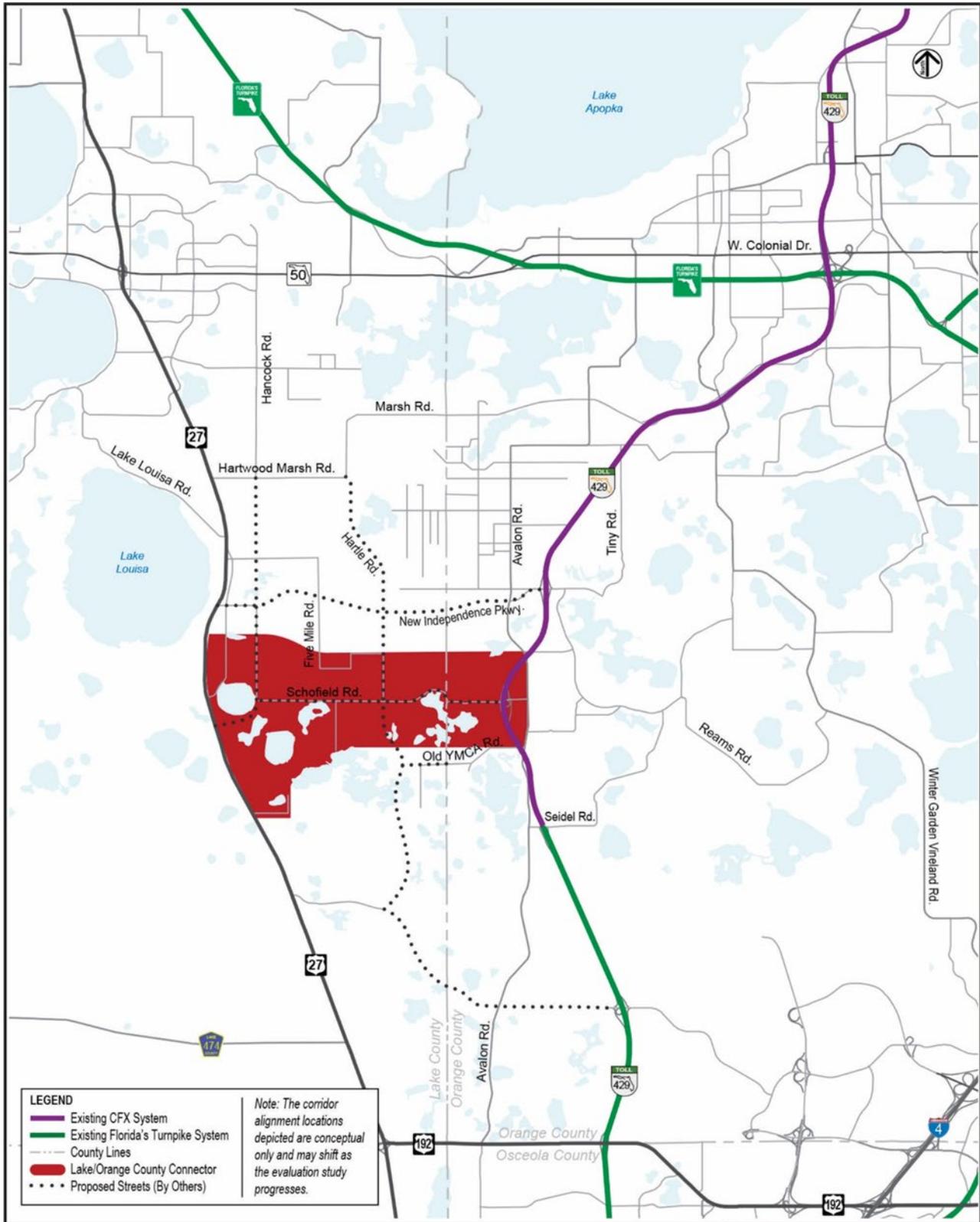


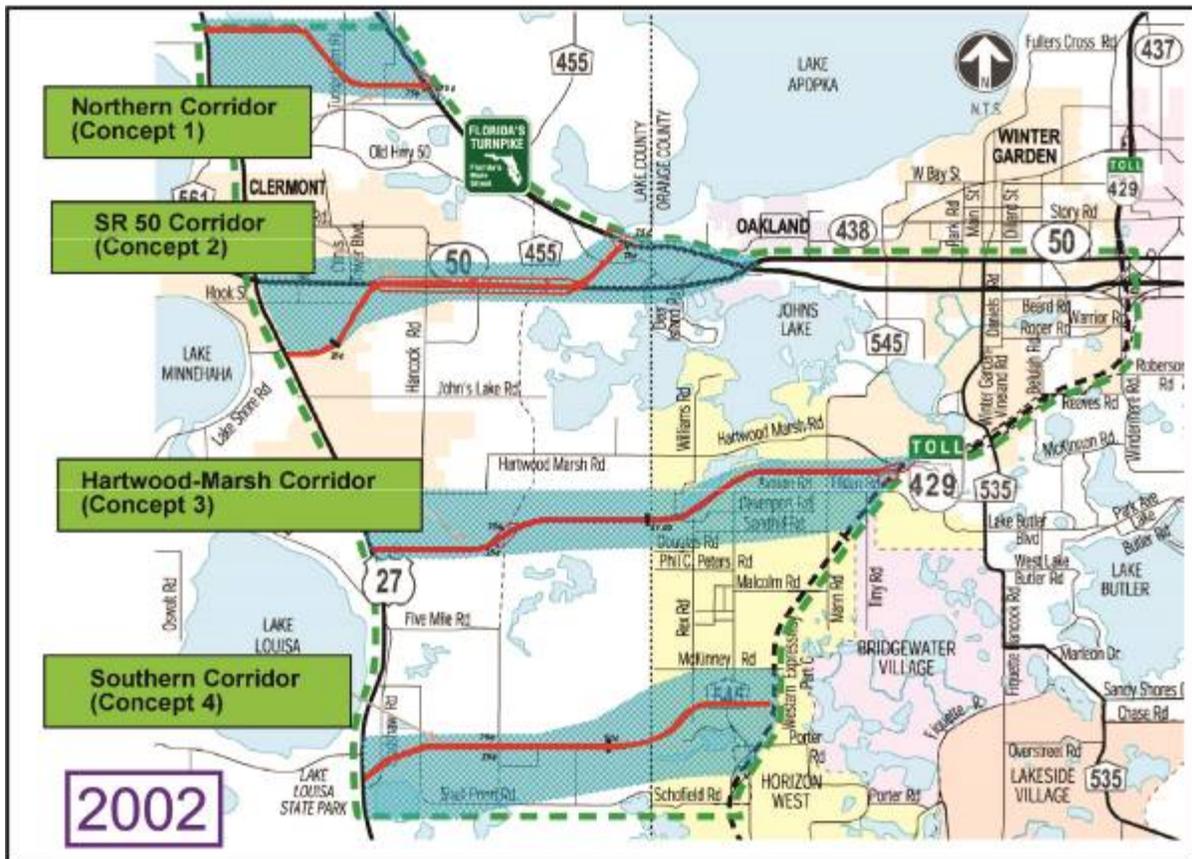
Figure 1-1 Project Location

with accepted local and regional plans. As such, the proposed improvements include the construction of a limited-access facility that provides a new east-west connection from US 27 in south Lake County to SR 429 in west Orange County.

## Project Background

The vision of this critical east-west corridor has been documented in prior concept studies. In 2002, the OOCEA first investigated the potential to extend SR 408 (East-West Expressway) to the west to address the transportation needs of west Orange and east Lake counties. A report titled "Western Extension Concept Development and Feasibility Study" was prepared which investigated the feasibility of a limited-access toll road. Four primary corridors were identified (see **Figure 1-2**): a "Northern Corridor", a "SR 50 Corridor", a "Hartwood-Marsh Corridor" and a "Southern Corridor". The study concluded that only the "Southern Corridor" connecting SR 429 with US 27 in the general area of Schofield Road offered any long-term opportunity for Expressway Authority participation.

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**Figure 1-2 Western Extension Study Corridors**

In 2007, a Concept Development and Evaluation Study for a potential SR 429 to US 27 Connector was prepared by the OOCEA. The purpose of the study was to determine the feasibility and viability of a potential SR 429 to US 27 expressway connection within an area south of Hartwood Marsh Road and north of US 192. Four distinct corridors were investigated (see **Figure 1-3**). The study found that Corridor B was not viable due to significant wetland and surface water impacts and relatively low traffic attraction. Corridor A (the southernmost option) had the largest traffic attraction but extended through an environmentally sensitive area while Corridor D (the northernmost option) had the lowest traffic attraction. Corridor C, which generally traversed the area adjacent to Schofield Road within the central portion of the study area, offered a potential balance between traffic attraction and minimization of environmental impacts.

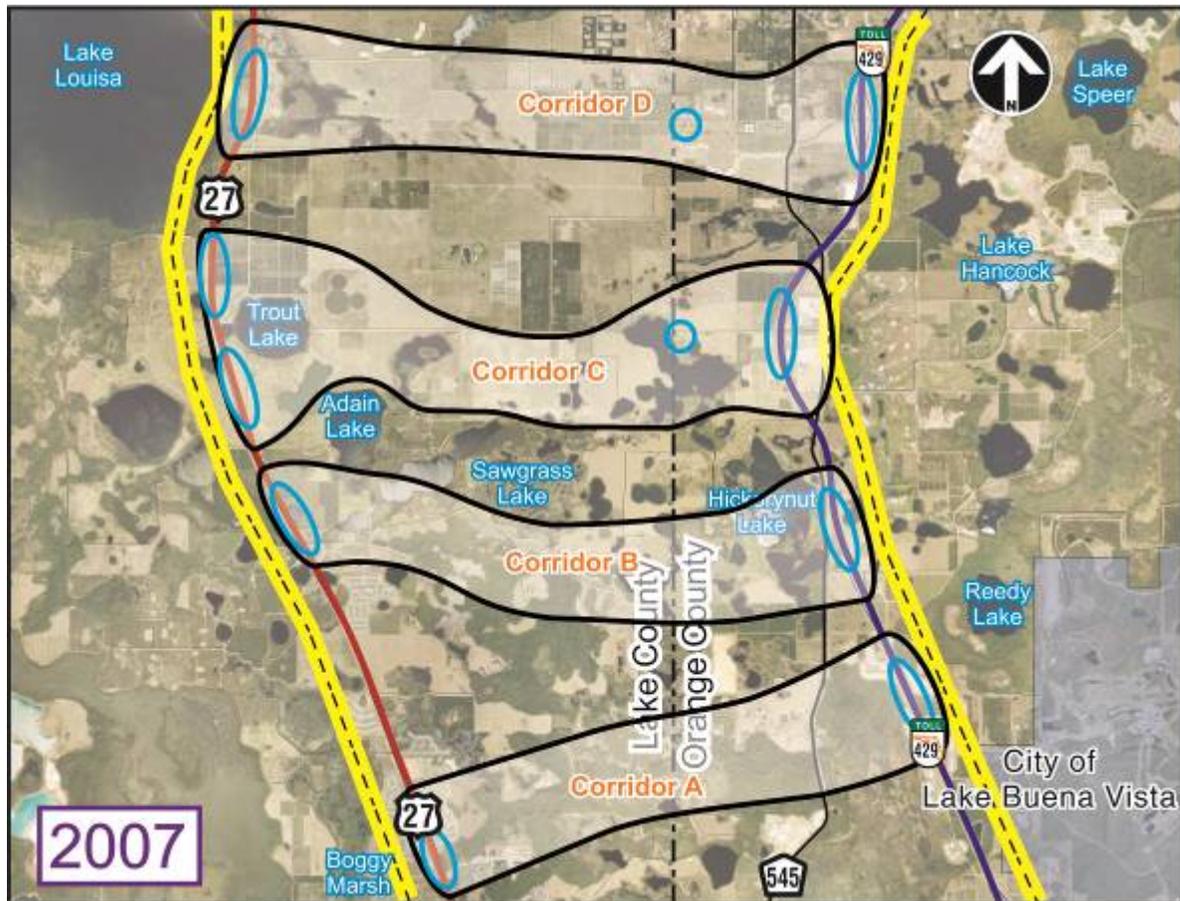


Figure 1-3 SR 429 to US 27 Connector Study Corridors

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## 2.0 PURPOSE AND NEED

### PURPOSE

The purpose of the Lake/Orange County Connector PD&E Study is to develop a proposed improvement strategy that is technically sound, environmentally sensitive and publicly acceptable. As with every PD&E Study, emphasis has been placed on the development, evaluation and documentation of detailed engineering and environmental studies including data collection, conceptual design, environmental analyses, project documentation and the preparation of a Preliminary Engineering Report (PER).

### NEED

There are six project needs that serve as justification for the proposed improvements. These needs are: 1) Provide improved system connectivity/linkage; 2) Accommodate anticipated transportation demand; 3) Provide consistency with local and regional plans; 4) Support economic viability and job creation; 5) Support intermodal opportunities; and 6) Enhance evacuation and emergency service. The following sections describe the needs in more detail.

#### ***System Connectivity/Linkage***

System linkage is defined as linking two or more existing transportation facilities or types of modal facilities between geographic areas or regional traffic generators.

**Figure 1-1** illustrates the existing roadway network within the vicinity of the proposed project. There are two major north-south facilities serving the project area, SR 429, a four-lane limited-access rural toll road at the eastern project terminus and US 27, a four-lane divided rural arterial at the western project terminus. In the east-west direction, SR 50, a six-lane urban arterial facility located approximately 7 miles to the north, and US 192, a six-lane urban divided arterial located approximately 7 miles south, connect Lake County to the Orlando urban core. These existing east-west facilities not only serve

through traffic but also provide significant local access, thus limiting their ability to provide effective overall mobility.

At the present time, the east-west connectivity within the study area is deficient with Schofield Road, an unpaved 20-foot wide rural facility, providing the only connection between US 27 on the west and SR 429 on the east. A new limited-access, direct connection expressway facility would not only provide the much-needed connectivity in the area but would also significantly improve regional mobility and travel time.

A PER was completed in 2016 for Wellness Way, a new four-lane divided arterial extending from US 27 and connecting to New Independence Parkway in the vicinity of SR 429. It should be noted that the 2007 SR 429 to US 27 Connector Concept Development and Evaluation Study prepared by the OOCEA stated that a network of east-west six-lane roadway arterials could also meet the capacity need of the study area. The proposed Wellness Way facility alone will not be sufficient to provide the necessary east-west linkage to meet the anticipated growth of the area when compared to a new limited-access, direct connection expressway facility.

Interchanges are proposed at US 27 in Lake County, SR 429 in Orange County, and the future extension of CR 455 in Lake County. Lake County's Visionary Map shows a southerly extension of CR 455 from its current terminus to the future extension of Sawgrass Bay Boulevard.

### ***Anticipated Transportation Demand***

According to the Central Florida Expressway Authority's 2040 Master Plan, Lake County's population is projected to increase by 56% (to 493,000 residents) and employment is projected to increase by 60% (to 212,700) by 2040. During the same time period, the population and employment growth within Orange County are expected to each increase by more than 50%. Two of the main areas of development generating additional population are the Wellness Way Area Plan (WWAP) in south Lake County

and the Horizon West Special Planning Area (HWSPA) in southwestern Orange County. The WWAP includes more than 16,000 acres. Horizon West is a growing community of several villages occupying more than 20,000 acres and projected to house over 60,000 residents when completed. Horizon West also features the future site of a Valencia College satellite campus.

The January 2018 Bureau of Economic and Business Research (BEBR) population projections show from 2017 to 2045 a 54% growth in population is anticipated for both Lake and Orange counties.

The study area traverses all five of the WWAP Future Land Use Categories (FLUC); Town Center and Wellness Way 1, 2, 3 and 4. The planning horizon for the WWAP is projected to be 2040 with a build-out of 16,500 dwelling units and a projected employment of 36,000. CEMEX, a multinational building materials supply company, submitted an updated permit for the proposed Four Corners Sand Mine in August 2017. They propose to operate on 1,200 acres within the WWAP, on property divided by Schofield Road. The permit allows mining approximately 525 acres over a 22-year period.

The study area also falls within the Town Center and Village H (Hickory Nut) of Horizon West. The Town Center will be a regional employment center with a projected employment force of over 27,000 and home to a host of new developments including a satellite campus of Valencia College and Orlando Health hospital. Overall, Horizon West has an anticipated build-out of 40,000 dwelling units and a projected commercial area of 9.5 million square feet.

An origin and destination (OD) study conducted by CDM Smith in 2017 for CFX revealed that much of the potential traffic for a new toll road would come from planned developments. In the year 2045, there is a potential for 34,000 daily trips traveling between US 27 and SR 429 in the vicinity of Schofield Road. With the proposed project

as a tolled expressway, approximately 19,000 daily trips would be diverted from local roadways.

The proposed connector is anticipated to help accommodate the expected increase in traffic due to population and employment growth within the study area by expanding the limited-access expressway system.

### ***Consistency with Local and Regional Plans***

Planning consistency of the proposed project is documented in various local comprehensive plans (see **Table 2-1**). A brief explanation of each follows.

CFX 2040 Master Plan and Five-Year Work Plan: The subject project is a major component of the Authority's plan to provide additional capacity to address the area's increasing projected population and employment growth. The Lake/Orange County Connector would support the economic vitality of the WWAP and the HWSPA developments and is widely supported among local landowners and community leaders. The project is listed in the five-year work plan (2019-2023) and funded for PD&E in years 2018/2019 and for potential design in years 2021/2022 and 2022/2023.

Lake-Sumter Metropolitan Planning Organization (MPO) – 2040 Long Range Transportation Plan (LRTP): The Lake-Sumter MPO provides a forum for cooperative decision making concerning transportation issues throughout the urbanized area of Lake and Sumter counties. The latest draft list of priority projects (May 2018) shows that a "New Road Alternative Corridor Evaluation" between US 27 and SR 429 is listed as priority #20 under the Preliminary Engineering projects. In addition, the portion of the Lake/Orange Parkway project extending from US 27 to the Lake/Orange County line is included in the Lake-Sumter 2040 LRTP as a cost feasible element and as an Emerging Regional Significant Corridor.

West Orange South Lake Transportation and Economic Development Task Force (WOSLTED): This task force was initiated in 2000 with the goal of promoting

transportation in the West Orange/South Lake (WOSL) region. In 2008, the task force started a planning process to ensure coordinated transportation and housing development which eventually resulted in a proposed system of new roadways and roadway improvements which included the provision of a proposed east-west connector from US 27 to SR 429. This connector has always been a main focus of this organization.

MetroPlan Orlando: MetroPlan Orlando is the metropolitan planning organization for the greater Orlando area. It coordinates and leads transportation planning efforts in Orange, Osceola and Seminole Counties. The subject project is listed on the 2040 LRTP Plan Development Cost Feasible projects (updated June 2017) as a funded project for both PD&E and design.

**Table 2-1 Local Planning Consistency**

Agency	Remarks
Central Florida Expressway Authority (CFX)	Included in the 2040 Master Plan and the Five-Year Work Plan (2019-2023)
Lake-Sumter MPO	Identified the proposed project in the 2040 LRTP Needs Plan
West Orange/South Lake Transportation and Economic Development Task Force	Identified a connection between US 27 to Orange County in its Transportation Plan
MetroPlan Orlando	Identified in its Technical Report 3: "Plan Development and Cost Feasible Projects"

***Economic Viability and Job Creation***

The proposed facility is needed to further support the economic viability of the WWAP. This 16,000-acre service area has been recognized for many years as having significant potential for economic development in southeast Lake County. It is projected to be an economic engine for job creation in the region and is envisioned to strengthen its connectivity with other regional economic hubs. With an anticipated buildout of over 16,000 residential units, this important planned development is expected to generate over 26,800 jobs in the future.

The proposed connector will also directly benefit the economic and job creation potential of the Horizon West development by expediting the efficient delivery of goods and services in this developing area of west Orange County.

### ***Support Intermodal Opportunities***

The Horizon West Town Center is proposed as an intermodal and freight staging facility potentially providing access to trucks, rails, airports and/or ports. Its presence enhances the integration and connectivity of the multimodal transportation system. The proposed connector would link this freight staging facility with two major Strategic Intermodal System (SIS) highways (US 27 and SR 429) and thus connect Lake County to a network of limited-access facilities that provide access to the Orlando International Airport and Port Canaveral. In addition, the MetroPlan Orlando's "Regional Freight and Goods Movement Facilities Profile" noted that there is "limited existing east-west highway and rail connectivity within the region – which provides logistical challenges for some shippers". The proposed project will add a valuable east-west mobility link to the area's transportation network.

### ***Evacuation and Emergency Services***

The East Central Florida Region has been identified by the National Oceanic and Atmospheric Administration (NOAA) as a high hurricane-vulnerable area within the United States and thus requires sufficient and efficient evacuation routes. There are no existing designated east-west evacuation routes within the immediate project area. Only SR 50, approximately 7 miles to the north, and US 192 (SR 530), approximately 7 miles to the south, provide effective east-west evacuation connection to important north-south SIS routes in the area (US 27 and SR 429). The provision of an additional high-speed, limited-access east-west facility will afford desirable redundancy of the highway network to accommodate diverted local and regional traffic during times of natural or man-made emergencies.

Another critical issue deals with potential delays of fire and emergency services. There are two fire stations just north and south of the study area along US 27 but their linkage to the east is ineffective due to the lack of a paved or limited-access facility connecting to SR 429, potentially resulting in additional delays. The proposed connector would facilitate prompt fire and emergency response.

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### 3.0 PROJECT AREA DESCRIPTION

The project spans Lake and Orange Counties, southwest of the City of Orlando. The project area is mostly undeveloped and consists mainly of agricultural land uses. Lake Louisa State Park is adjacent to SR 27 at the western project terminus. Large scale development, including a community college and extensive residential and commercial areas are anticipated along Schofield Road in the vicinity of US 27. The CEMEX Four Corners Sand Mine is planned for 600 acres that include part of the project area.

In this document, the term “project corridor” describes the footprint of the preferred alternative. The term “project area” describes a larger expanse that encompasses the project corridor and includes all land within 500 feet of the project corridor centerline. There are four recommended stormwater ponds that are located outside the project corridor. They are ponds 1A6, 2A, 3A3, and 4A3. Land use in the project corridor is shown on **Figure 3-1**. Additional details on the alternatives considered in this PD&E study are provided in Section 4.0.

#### LAND USE

Land use cover descriptions provided for both uplands and wetlands are classified using the *Florida Land Use Cover and Forms Classifications System* (FLUCCS) designation. Existing land use in the project area was initially determined utilizing United States Geological Survey (USGS) maps, historical images, aerial photographs, and land use mapping from the SJRWMD (2012). Land use categories reported by SFWMD and SJRWMD were verified in the field. Field reviews generally confirmed the land use mapping, with minor updates.

Land use categories mapped by SJRWMD are shown in **Figure 3-1** and land use categories in the project corridor are described below. Descriptions of FLUCCS codes are taken primarily from FDOT (1999) and SFWMD (2009). Land uses in the project area include large areas of Improved Pastures (FLUCCS 2110) and Citrus Groves (FLUCCS 2210) with Lakes (FLUCCS 5200), Freshwater Marshes (FLUCCS 6410), and

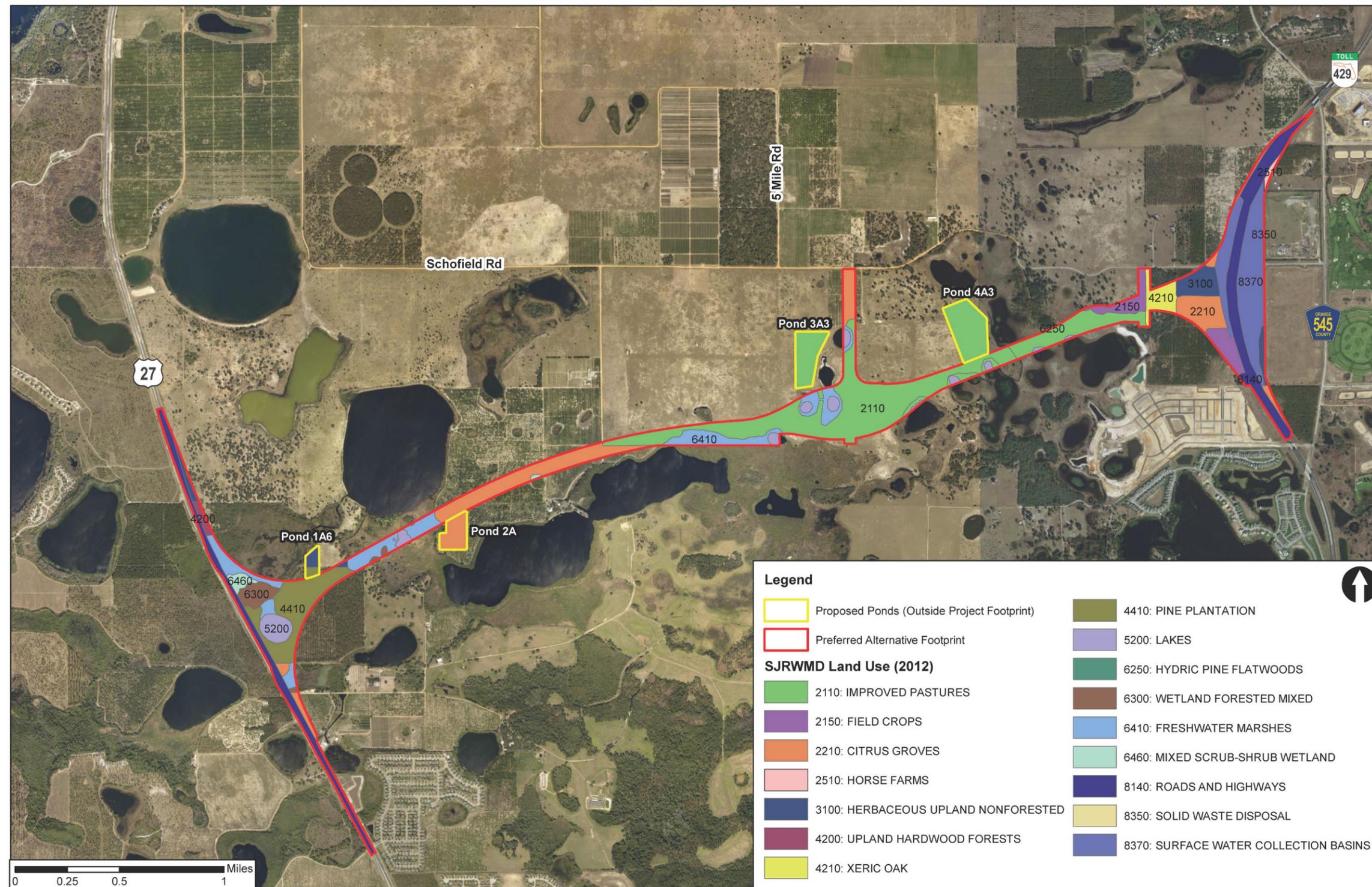


Figure 3-1 Land Use by FLUCCS Code in the Project Area

Wetlands (FLUCCS 6300 and 6460) scattered throughout. The western side of the project area has a large area of Pine Plantation (FLUCCS 4410), while the eastern side includes areas of Xeric Oak (FLUCCS 4210), Herbaceous Upland Nonforested (FLUCCS 3100), and Surface Water Collection Basins (FLUCCS 8370).

### ***Improved Pastures (FLUCCS 2110)***

Improved pastures are the most intensively managed of the pastureland classes. They are usually cleared, tilled, reseeded with specific grass types and periodically improved with brush control and fertilizer application. In most cases, they show some direct evidence of cattle, such as watering ponds, feed bunkers, fencing, corrals, barns, or cow trails. Large improved pastures cover the majority of the project corridor between Cook Road and the intersection of Meadow Bend Circle with Schofield Road. Areas that are mapped as Improved Pasture north of Lake Needham, in the eastern portion of the project area, appear to actually be wet prairie. This area maps as flood zone AE and recent historic images show the lakes periodically expand and cover much larger areas than during drier periods, which are expressed on **Figure 3-1**.

### ***Field Crops (FLUCCS 2150)***

Wheat, oats, hay and grasses are the primary types identified as field crops. Field Crops are mapped in two areas at the eastern end of the project corridor, however, the western area mapped as field crops was determined to be Improved Pastures during field investigations.

### ***Citrus Groves (FLUCCS 2210)***

This class is for active tree cropping operations that produce fruit, nuts, or other resources not including wood products. It is mapped in patches throughout the project corridor, with large areas just west of Cook Road and at the northern end of the proposed central intersection with Schofield road. There is also a small area mapped just east of SR 429 that was determined to be Pine Plantation during field investigations.

***Horse Farms (FLUCCS 2510)***

This category defines farms which stable, breed and train horses for a variety of uses such as hunting, exhibition, racing, riding and harness racing. One small area of Horse Farms is mapped at the northern end just east of SR 429.

***Herbaceous Upland Nonforested (FLUCCS 3100)***

This is one of three land cover classes used for upland nonagricultural, non-forested lands which contain no evidence of cattle grazing. FLUCCS 3100 is used for areas that have over 67% herbaceous cover, not counting any forested inclusions, which may be up to 25% of the area. This land use type is found in small areas on both ends of the project corridor.

***Upland Hardwood Forests (FLUCCS 4200)***

The Uplands hardwoods class may include forest communities such as oak-pine-hickory, Brazilian pepper, live oak, wax myrtle-willow (not hydric), mixed temperate or tropical hardwoods, and beech-magnolia. The canopy closure must be 25 percent or more, with at least a 66 percent dominance by hardwood tree species and trees must average over 20 feet tall. There is one area of Upland Hardwood Forests on the north end of the western edge of the project corridor, just east of US 27.

***Xeric Oak (FLUCCS 4210)***

This class is for forest communities dominated by xeric oaks. The canopy closure must be 25 percent or more, with at least a 66 percent dominance by xeric oak species, which include bluejack oak, turkey oak and sand post oak. The trees must average over 20 feet in height. Xeric Oak is found on the eastern side of the project corridor, just south of the intersection of Meadow Bend Circle with Schofield Road.

***Pine Plantation (FLUCCS 4410)***

Pine plantations are artificially generated by planting seedling stock or seeds. The stands are characterized by high numbers of trees per acre and uniform appearance. Row patterns are almost always apparent. A large area of Pine Plantation is mapped on the western end of the project corridor where it intersects with US 27.

***Lakes (FLUCCS 5200)***

This class includes freshwater and saltwater bodies of water greater than 1/2 acre in size, that are predominantly natural in origin. It does not include water bodies that are man-made or extensively modified. Lakes are found throughout the project corridor, primarily in the western and central portions.

***Hydric Pine Flatwoods (FLUCCS 6250)***

This class is for wetland forests with a canopy dominated by Slash pine. It may be naturally generated, or the result of pine plantations that are planted in rows through flatwoods depressions. The understory is grasses, wiregrass, forbs, and sometimes sparse saw palmetto. There is one small area of Hydric Pine Flatwoods on the eastern side of the corridor between the proposed central intersection with Schofield Road and SR 429.

***Wetland Forested Mixed (FLUCCS 6300)***

This classification is designated by forested systems composed of hardwood and coniferous tree mixtures. Species adapted to wet environments such as water oak, cabbage palm, red maple, bay trees, and conifers grow well in these habitats. Wetland Forested Mixed areas exist in a variety of moist soil conditions, from permanently wet to seasonally or infrequently wet. This land use type is located in patches at the western end of the project corridor.

***Freshwater Marshes (FLUCCS 6410)***

This classification is used for wetland communities having a representative suite of plant species such as sawgrass, cattail, arrowhead, maidencane, buttonbush, cordgrass, switchgrass, needlerush, common reed, arrowroot, and bulrush. Freshwater marshes tend to be open expanses of grasses, sedges, rushes and other types of herbaceous plants. Periods of inundation are intermediate between deep marshes (emergent aquatic FLUCCS 6440) and wet prairies (FLUCCS 6430) and these sites are usually covered with water at least two months of the year, undergoing prolonged periods of soil saturation. Freshwater Marsh is mapped in patches throughout the project corridor.

***Mixed Scrub-Shrub Wetland (FLUCCS 6460)***

This class is used for wetlands that are dominated by woody vegetation less than 20 feet in height. It is most common in disturbed communities on drier sites. There is one area of Mixed Scrub-Shrub Wetland at the western edge of the project corridor along US 27.

***Roads and Highways (FLUCCS 8140)***

This category includes roads and highways that exceed 100 feet in width over long segments and have four or more lanes and median strips. There are two major areas of Roads and Highways, one at each end of the project corridor, SR 429 to the east and US 27 to the west.

***Solid Waste Disposal (FLUCCS 8350)***

This class includes sanitary landfills, dumps and other waste disposal areas. The sites may be publicly or privately operated and may or may not be permitted. It includes dumps and landfills that are found at private operations, such as farms, institutions, industrial and commercial sites, if they meet size criteria. One area of Solid Waste Disposal is mapped on the very eastern edge of the project corridor.

***Surface Water Collection Basins (FLUCCS 8370)***

This code was created by the SJRWMD to classify excavated open spaces, situated within residential sub-divisions or communities and along freeway corridors, for temporary collection and holding of surface water runoff. It is not used for treatment ponds and other "reservoirs" that generally function as permanent water bodies. Surface Water Collection Basins are found on both sides of SR 429 at the eastern end of the project corridor.

## ELEVATION AND HYDROLOGIC FEATURES

**Figure 3-2** shows an elevation map created with data collected using LIDAR in North American Datum 1983 (NAD 83). The project area has a ground elevation ranging between approximately 90 and 190 feet, with areas of lower elevation where water is found. Areas of low elevation are found throughout the project corridor while the highest elevations are found on the eastern end of the corridor.

Hydrologic features and wetland areas mapped by the USFWS National Wetlands Inventory are shown in **Figure 3-3**. The nearest major water body is Lake Louisa, however, the nearest flowable water feature is the Kissimmee River, with headwaters starting approximately 18 miles southeast of the project corridor.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (updated December 4, 2012), a large portion of the project corridor is located within Flood Zone X, which is a flood zone that has a 0.2% annual flood chance. Small portions of the project area are located within flood zones A and AE, which are flood zones that are inundated by the 100-year flood (**Figure 3-4**).

## SOILS

The Natural Resources Conservation Service (NRCS) (2017) indicates that 11 soil types occur in the project area (**Table 3-1**, and **Figure 3-5**). Three hydric soil types, including Oklawaha Muck, Organic Soil, and Placid Sand, are mapped in the project area.

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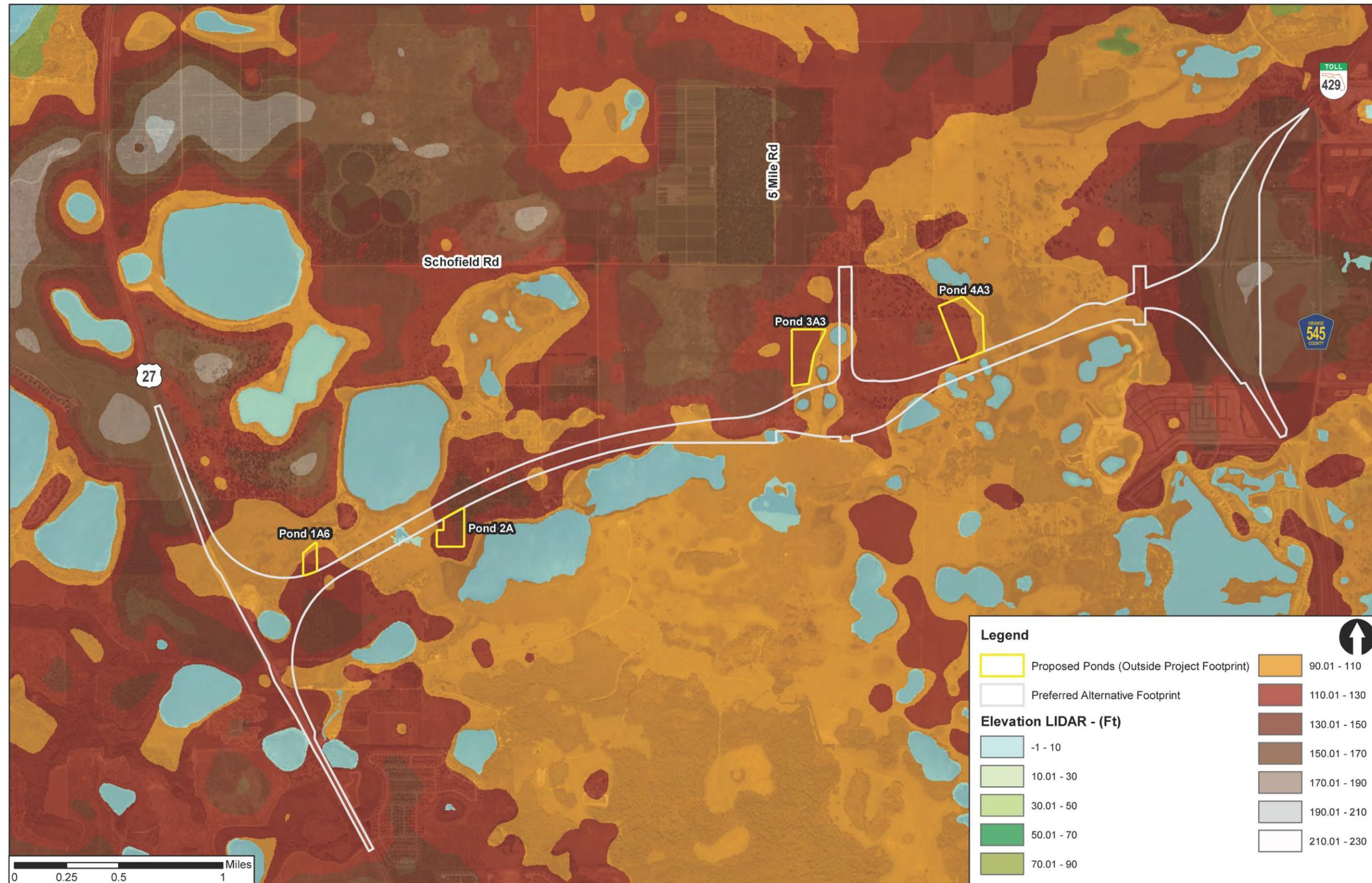


Figure 3-2 Elevation Map

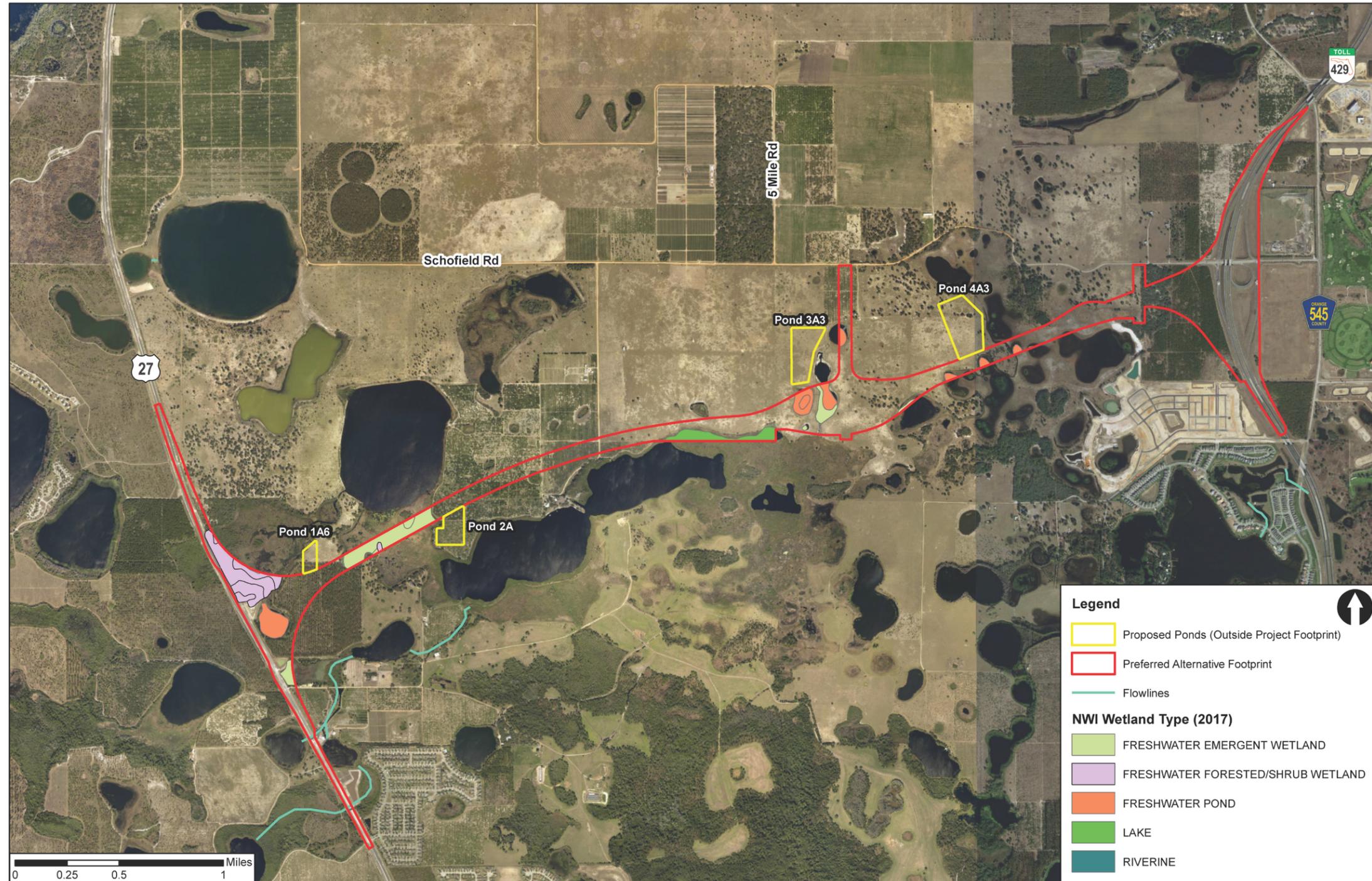


Figure 3-3 Hydrological Features and NWI Wetland Areas

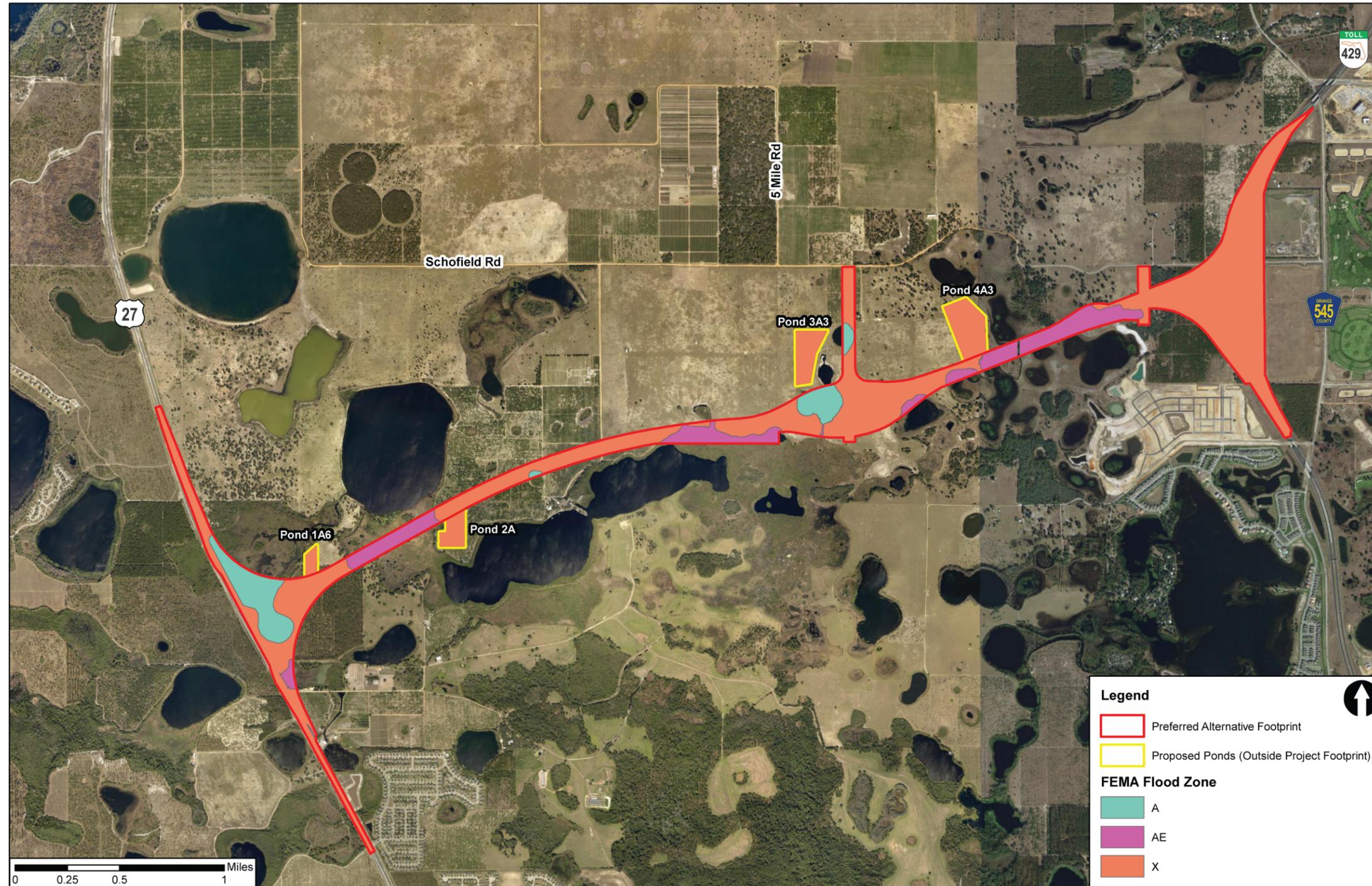


Figure 3-4 Flood Zones

**Table 3-1 Soils**

Soil Type	Slope	Characteristics
Apopka Sand	5 to 12 Percent	This soil type consists of very deep, well drained, moderately slowly permeable soils on upland ridges, side slopes and knolls. They formed in thick beds of sandy and loamy marine or eolian deposits. This is not a hydric soil.
Arents	-	Soils that have been deeply mixed by plowing, spading, or other methods of moving by humans. These soils are used mostly as cropland, urban land, or pasture.
Basigner fine sand	0 to 2 Percent	This type consists of very deep, very poorly and poorly drained, rapidly permeable soil in low flats, sloughs, depressions and poorly defined drainage ways. They formed in sandy marine sediments. Permeability is rapid. This is not a hydric soil.
Candler Sand	12 to 40 Percent	This soil type consists of very deep, excessively drained, very rapidly to rapidly permeable soils on uplands. They formed in thick beds of eolian or sandy marine deposits. This is not a hydric soil.
Immokalee fine sand	0 to 5 Percent	This soil type consists of very deep, very poorly and poorly drained soils on flatwoods and in depressions primarily in the southern Florida flatwoods, but also occurs in the south-central Florida ridge, Florida Everglades and associated areas and the southern Florida lowlands of peninsular Florida. They formed in sandy marine sediments. Permeability is very rapid to moderate. This is not a hydric soil.
Myakka Sands	0 to 2 Percent	This soil type consists of very deep, very poorly or poorly drained, moderately rapid or moderately permeable soils that occur primarily in mesic flatwoods of peninsular Florida. They formed in sandy marine deposits. This is not a hydric soil.
Oklawaha Muck	0 to 2 Percent	This soil type consists of deep, very poorly drained soils that formed in herbaceous organic material and loamy and clayey mineral material. These soils are on floodplain, freshwater marshes, and depressions. This is a hydric soil.
Ona fine sand	0 to 2 Percent	This 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. Permeability is moderate. This is not a hydric soil.
Organic Soil	-	Soils rich in nutrients and minerals, often found in wet, swampy areas. This is a hydric soil.
Placid Sand	0 to 2 Percent	This soil type consists of very deep, very poorly drained, rapidly permeable soils on low flats, depressions, poorly defined drainageways on uplands, and flood plains on the Lower Coastal Plain. They formed in sandy marine sediments. This is a hydric soil.
Tavares Sand	0 to 5 Percent	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.

\*Source NRCS 2017

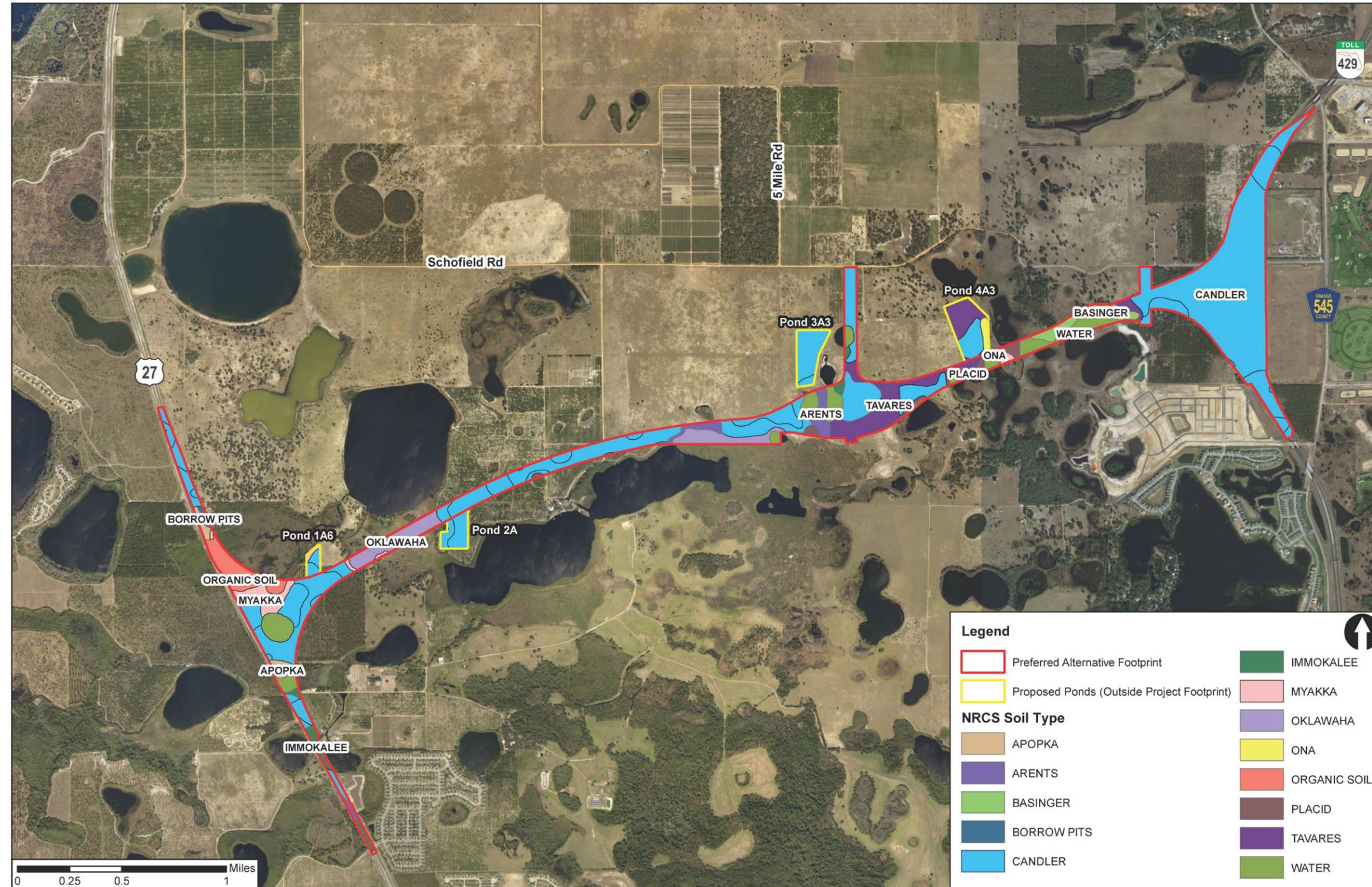


Figure 3-5 Soil Types

## 4.0 ALTERNATIVES

A multiphase alternative development evaluation and selection process was employed to properly assess all alternatives considered for the proposed Lake / Orange County Connector. The “No Build” alternative assumes the retainment of existing conditions. It is mostly used as a benchmark condition in order to compare the costs and benefits of implementing the proposed improvements to those incurred by continuing to use the existing facilities. In this case, the only existing east-west transportation facility (Schofield Road) within the project confines is inadequate not only in terms of future projected capacity needs but, more importantly, it would not provide the desirable redundancy in evacuation and emergency response potential nor the required additional freeway regional connectivity between US 27 and SR 429 on the east. It is evident that, because of the reasons previously discussed in this document, adoption of this alternative would not solve many of the existing needs associated with the goals of this project. However, the "No Build" alternative will be maintained as a viable option providing an effective baseline condition by which other project alternatives will be compared throughout the project alternative selection process.

### PROJECT SEGMENTATION

Initially, the study area was divided into three segments that reflect predominant land uses, natural resources, etc. to facilitate the analysis. The segmental breakdown approach ensures that the generated corridor alternatives are more responsive to the needs of each segment rather than only to the generalized project needs.

**Figure 4-1** illustrates the study segments and provides a description of each. Each segment has unique characteristics as well as differences in environmental, engineering and socio-economic features.

Segment 1 comprises the project’s western two miles and generally extends from US 27, a rural six-lane north-south facility, to Cook Road, a minor unpaved north-south rural road just east of Lake Island. Some of the main features within this first segment include

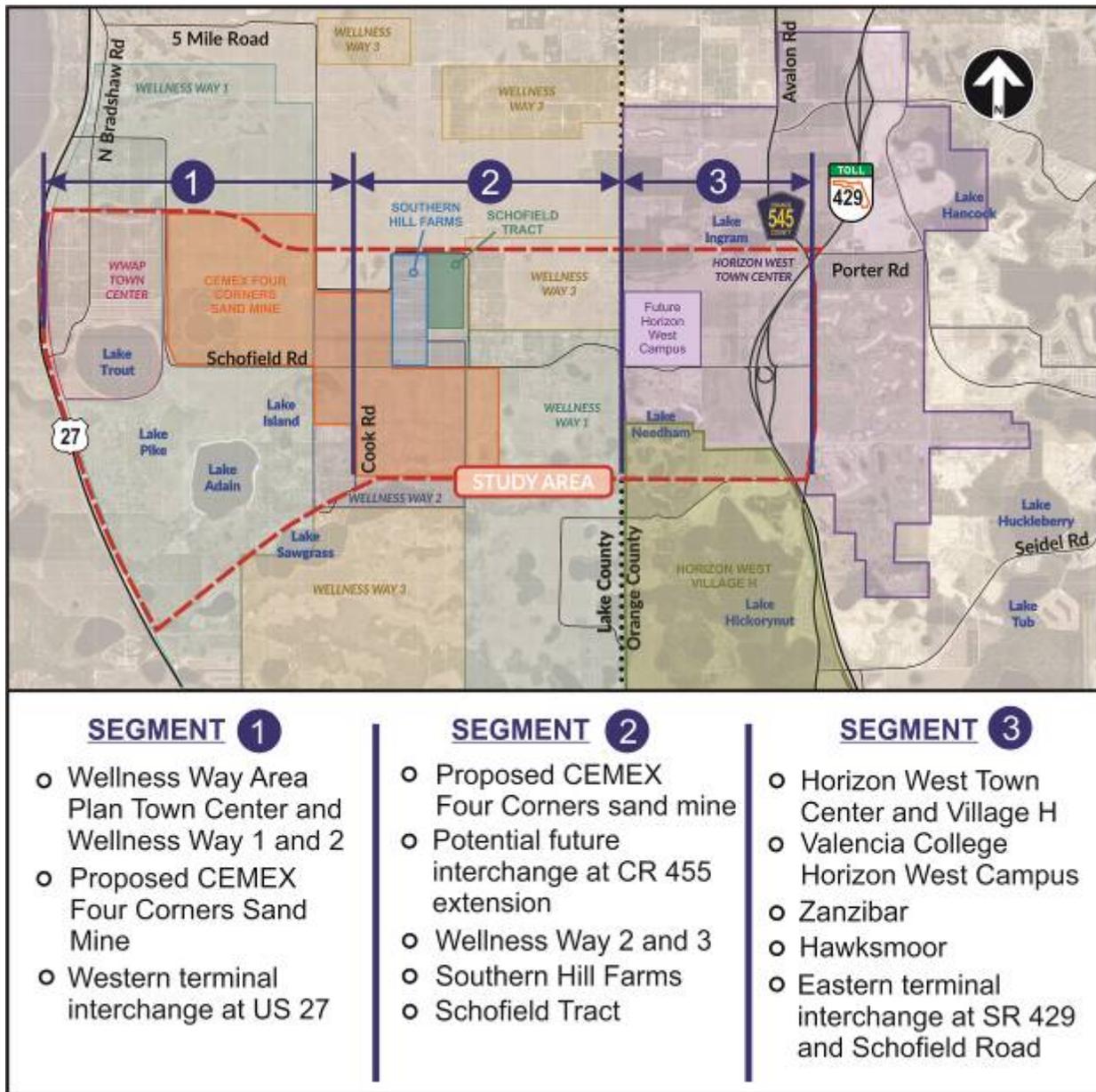


Figure 4-1 Segmental Breakdown

various lakes (e.g., Trout, Pike, Adain, Island), the Wellness Way Area Plan (WWAP) Town Center, Wellness Way 1, the proposed CEMEX Four Corners Sand Mine and portions of Wellness Way 2.

Segment 2 comprises the central portion of the study area and extends from Cook Road to the Lake/Orange county line for a total length of approximately 1.8 miles. Some of the main features within this segment include portions of Wellness Way 2 and 3, the Schofield Tract, CEMEX Four Corners Sand Mine, and the Southern Hill Farms north of Schofield Road, a rural two-lane east-west facility projected to be widened to 4 lanes in the future.

Segment 3 extends for approximately one mile from the Lake/Orange county line to the study's eastern terminus at the SR 429 and with Schofield Road interchange, where Schofield Road heads west and connects to US 27. Some of the principal features within Segment 3 include the Horizon West Town Center, the proposed Valencia College Horizon West Campus, Zanzibar, Hawkmoor, Horizon West Village H and Lake Needham.

## DESCRIPTION OF THE PREFERRED ALTERNATIVE

In general, all alternatives were the result of combinations of the three project segments as well as various interchange configurations at each access point. After a comprehensive evaluation process, one alternative was selected as being the most effective option. This alternative is illustrated on **Figure 4-2**. The typical section for the preferred alternative is depicted on **Figure 4-3**.

A brief description of the preferred alternative follows:

Segment 1 (from US 27 (Begin Project) to Cook Road): Within Segment 1, the preferred alternative features a four-lane rural expressway typical section, with 330 feet of right-of-way, 12-foot travel lanes, 12-foot outside shoulders, an 88-foot divided median and a 94-foot border width. The section will feature grade separations in order to provide access to local facilities. The western interchange at US 27 provides direct connect ramps with free flow access to/from US 27. In order to avoid impacts to the abutting

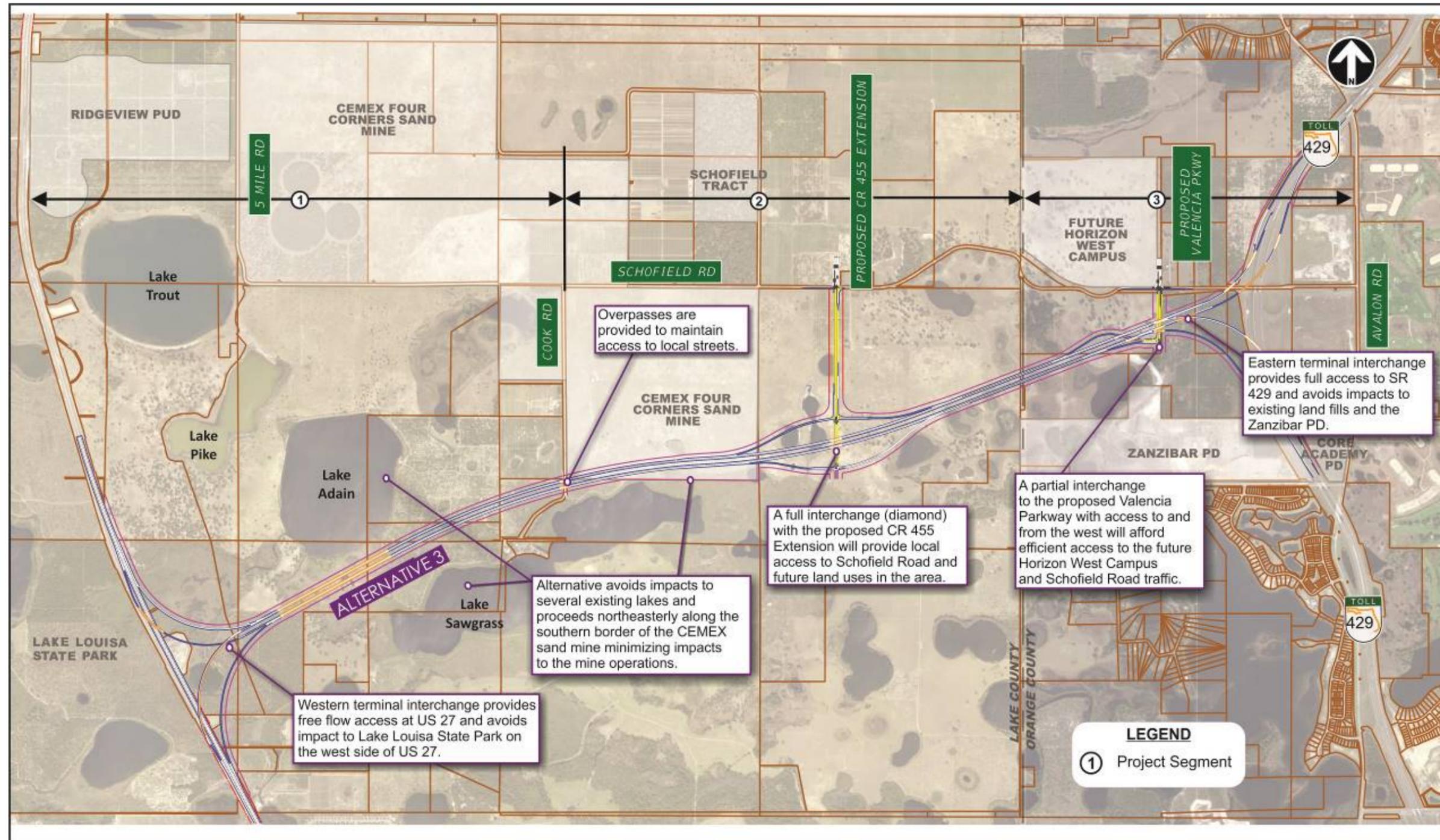
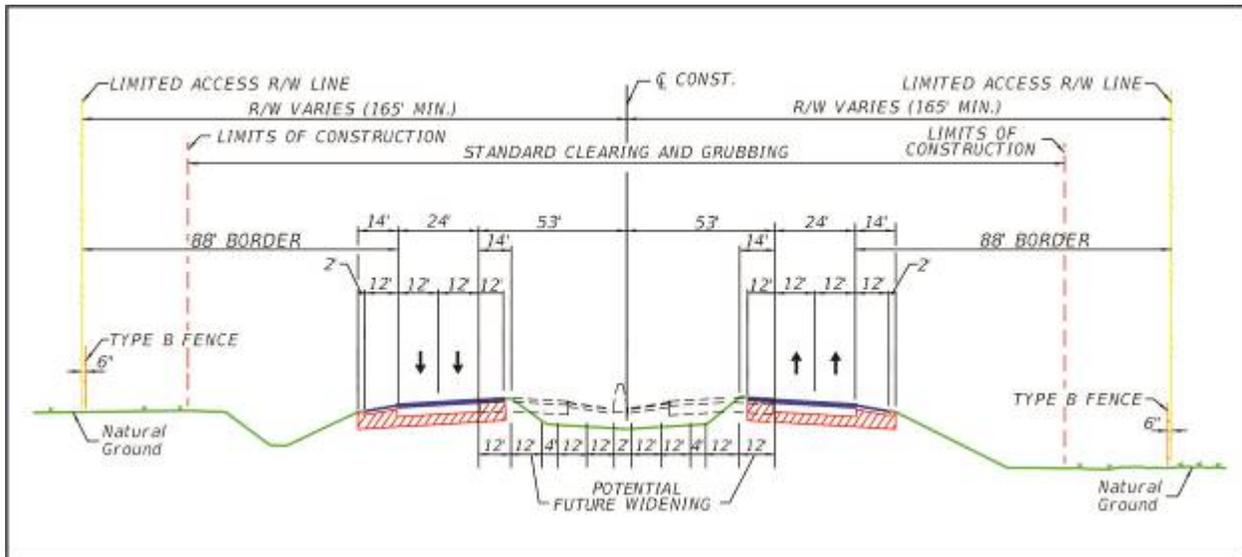


Figure 4-2 Preferred Alternative



**Figure 4-3 Preferred Alternative Typical Section**

Lake Louisa State Park, a portion of US 27 will be slightly shifted to the east. Within this segment, the preferred alternative generally follows a northeast direction, thus avoiding impacts to Lakes Adain and Sawgrass.

Segment 2 (from Cook Road to the Lake/Orange County Line): Within this segment, the preferred alternative continues with the same typical section previously described under Segment 1. The alignment generally shifts slightly southward just east of Cook Road in order to minimize impacts to the CEMEX Four Corners Sand Mine property. A full diamond interchange will be provided at the proposed CR 455 Extension facility to provide local access.

Segment 3 (from the Lake/Orange County Line to the SR 429 and Schofield Road interchange [End Project]): Within Segment 3, the preferred alternative continues the same typical section described under Segment 1. A partial interchange at the proposed Valencia Parkway will provide access to and from the west. At the SR 429 with Schofield Road interchange, direct connect ramps will provide access to/from both Northbound and Southbound SR 429.

## 5.0 METHODOLOGY

This project was evaluated for impacts to wildlife, habitat resources, protected species, and wetlands in accordance with 50 Code of Federal Regulations (CFR) Part 402 of the Endangered Species Act (ESA) of 1973, as amended. This document follows the guidance in *Chapter 16: Protected Species and Habitat* and *Chapter 9: Wetlands and Surface Waters* in Part 2 of the FDOT PD&E Manual. The following definitions, data sources, and methods were used to evaluate wildlife species, habitats, wetlands, surface waters, and EFH in the project area. No notable data gaps were identified. Pertinent responses to the Advance Notification are presented along with responses in Section 8.0.

### LISTED SPECIES AND HABITATS

Preliminary data collection utilized literature reviews, agency coordination and database searches to identify federal and state protected species from Orange and Lake Counties with potential to occur in or near the project corridor. Federal and state listed species with potential to occur in the project corridor were identified through coordination with USFWS and FWC as well as additional research and field investigations. Known localities of protected species were identified using the FNAI databases as well as information from USFWS and FWC. Habitats were mapped primarily using SJRWMD land use data as well as USFWS National Wetlands Inventory (NWI) maps, then verified in the field. Determinations of wood stork SFH follow the definitions described in the USFWS *Habitat Management Guidelines for the Wood Stork in the Southeast Region* (USFWS 1990) (**Appendix A**).

### WETLANDS

Wetlands, as stated in Section 373.019(27) Florida Statute (F.S.) and 33 CFR 328.3(b) and as used by the U.S. Army Corps of Engineers (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.

Wetlands, Other Surface Waters (OSW), and EFH were sought in the project area during field surveys. Wetlands and OSW were evaluated using three parameters as indicators of wetlands: presence of hydrophytic vegetation, hydric soils, and hydrology. Methods were 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* (FDEP 1995). Wetland map data is provided by FLUCCS code by the SJRWMD and also by the USFWS NWI. Areas mapped as wetlands by the NWI were confirmed to generally be included in the wetland areas mapped by SJRWMD.

## DATA COLLECTION

Information sources and databases utilized for assessment of potential impacts to wildlife and wetlands include the following:

- U.S. Fish and Wildlife Service (USFWS) Environmental Conservation Online System
- Florida Natural Areas Inventory (FNAI) biodiversity matrix
- Florida Fish and Wildlife Conservation Commission (FWC) databases
- USFWS NWI maps
- FWC Water Bird Locator (<http://atoll.floridamarine.org/waterBirds/>)
- FDEP Map Direct database
- FWC's Strategic Habitat Conservation Areas
- USFWS wood stork (*Mycteria americana*) nesting colonies map tool
- SJRWMD databases

- NRCS Soil Map Data tool
- GIS data layer for Orange County Green PLACES (Park Land Acquisition for Conservation and Environmental Protection)
- CEMEX Four Corners Sand Mine Environmental Report (2007 and 2013)

## **FIELD INVESTIGATIONS**

Field investigations were conducted to evaluate habitat potential and species occurrences. Field investigations for wildlife and wetlands were conducted on October 5 and December 6, 2018 as well as February 5, 6 and 7, 2019. Field maps showing land use/land cover types, wetlands, and wildlife occurrences from preliminary data sources were available during field investigations. Field personnel compared the land cover/land use types reported by SJRWMD to field observations in order to highlight any recent changes in land use/land cover.

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## 6.0 NATURAL RESOURCES INVENTORY

### LISTED SPECIES AND WILDLIFE HABITATS

Species addressed in this NRE are listed in **Table 5-1** and discussed below. Federally listed species with potential to occur in the project area include American alligator (*Alligator mississippiensis*), Audubon's crested caracara (*Polyborus plancus audubonii*), Florida scrub-jay (*Aphelocoma coerulescens*), wood stork (*Mycteria americana*), red-cockaded woodpecker (*Picoides borealis*), sand skink (*Neoseps reynoldsi*), bluetail mole skink (*Eumeces egregius lividus*), eastern indigo snake (*Drymarchon corais couperi*), striped newt (*Notophthalmus perstriatus*, candidate for listing), Britton's beargrass (*Nolina brittoniana*), Florida bonamia (*Bonamia grandiflora*), Scrub blazingstar (*Liatris ohlingerae*), scrub lupine (*Lupinus aridorum*), papery whitlow-wort (*Paronychia chartacea* spp. *chartacea*), pygmy fringe tree (*Chionanthus pygmaeus*), Lewton's polygala (*Polygala lewtonii*), scrub plum (*Prunus geniculate*), short-leaved rosemary (*Conradina brevifolia*), Everglade snail kite (*Rostrhamus sociabilis plumbeus*), Clasping warea (*Warea amplexifolia*), Carter's mustard (*Warea carteri*), and scrub wild buckwheat (*Eriogonum longifolium* var. *gnalphalifolium*). The project occurs within the northern limits of the US Fish and Wildlife Service consultation area for Audubon's crested caracara. Carter's mustard is known to occur on the Schofield Tract, which was purchased using Florida Forever Funds and is managed to protect rare habitats. The Schofield Tract is located approximately one-half mile east of Cook Road and 1,300 feet north of Schofield Road.

State listed species with potential to occur in the project area include the burrowing owl (*Athene cunicularia*), Florida pine snake (*Pituophis melanoleucus mugitus*), Florida sandhill crane (*Grus Canadensis pratensis*), gopher tortoise (*Gopherus polyphemus*, candidate for Federal listing), little blue heron (*Egretta caerulea*), southeastern American kestrel (*Falco sparverius paulus*), and tricolored heron (*Egretta tricolor*). Bald eagles (*Haliaeetus luecocephalus*) are protected by the Bald and Golden Eagle Protection Act and may also occur in the study area.

**Table 6-1 Listed Species Potentially Occurring in or Near Project Corridor**

Common Name	Scientific Name	Federal Status	State Status	Documented Occurrence in Project Area
American alligator	<i>Alligator mississippiensis</i>	T	-	Y
Audubon's crested caracara	<i>Polyborus plancus audubonii</i>	T	-	N
Bluetail mole skink	<i>Eumeces egregius lividus</i>	T	-	N
Britton's beargrass	<i>Nolina brittoniana</i>	E	-	N
Burrowing owl	<i>Athene cunicularia</i>	-	T	N
Carter's mustard	<i>Warea carteri</i>	E	-	N
Clasping warea	<i>Warea amplexifolia</i>	E	-	N
Eastern diamondback rattlesnake	<i>Crotalus adamanteus</i>	PFL	-	N
Eastern indigo snake	<i>Drymarchon corais couperi</i>	T	-	N
Everglade snail kite	<i>Rostrhamus sociabilis plumbeus</i>	E	-	N
Florida bonamia	<i>Bonamia grandiflora</i>	T	E	N
Florida pine snake	<i>Pituophis melanoleucus mugitus</i>	-	T	N
Florida sandhill crane	<i>Grus canadensis pratensis</i>	-	T	Y
Florida scrub-Jay	<i>Aphelocoma coerulescens</i>	T	-	N
Gopher tortoise	<i>Gopherus polyphemus</i>	C	T	Y
Lewton's polygala	<i>Polygala lewtonii</i>	E	-	N
Little blue heron	<i>Egretta caerulea</i>	-	T	N
Papery whitlow-wort	<i>Paronychia chartacea</i>	T	E	N
Pygmy fringe tree	<i>Chionanthus pygmaeus</i>	E	-	N
Red-cockaded woodpecker	<i>Picoides borealis</i>	E	-	N
Sand skink	<i>Neoseps reynoldsi</i>	T	-	N
Scrub blazingstar	<i>Liatris ohlingerae</i>	E	-	N
Scrub buckwheat	<i>Eriogonum longifolium var. gnaphalifolium</i>	T	-	N
Scrub lupine	<i>Lupinus aridorum</i>	E	-	N
Scrub plum	<i>Prunus geniculata</i>	E	-	Y
Short-leaved rosemary	<i>Conradina brevifolia</i>	E	-	N

Common Name	Scientific Name	Federal Status	State Status	Documented Occurrence in Project Area
Southeastern American kestrel	<i>Falco sparverius paulus</i>	-	T	Y
Striped Newt	<i>Notophthalmus perstriatus</i>	C	-	N
Tri-colored heron	<i>Egretta tricolor</i>	-	T	N
Wood stork	<i>Mycteria americana</i>	E	-	N

Notes: PFL= Petitioned for Federal Listing, E = Endangered, T = Threatened, TSA= Federally Threatened due to Similarity of Appearance, C= Federal Candidate, SSC = State Species of Special Concern, \*All federally listed species are also considered state listed

There is high potential for gopher tortoise (and commensal species) to be located within the impact area of the project. A survey following FWC guidelines will be required to identify burrows for exclusion or relocation.

Listed species identified on the CEMEX mine site during previous surveys include gopher tortoise, burrowing owl, Florida sandhill crane, little blue heron and scrub plum. During field surveys for this PD&E study, biologist identified bald eagles, gopher tortoise, American alligator, southeastern American kestrels and sandhill cranes in the vicinity of the project (**Figure 6-1**).

The eastern diamondback rattlesnake (*Crotalus adamanteus*) was included in this NRE because in 2012 the USFWS announced a 90-day finding in response to a petition to list the eastern diamondback rattlesnake. The USFWS has initiated a status review to determine if the species warrants listing under the Endangered Species Act. The striped newt (*Notophthalmus perstriatus*) is a candidate for Federal listing. The bald eagle (*Haliaeetus leucocephalus*) is protected under the Bald and Golden Eagle Protection Act of 1940 and was documented within the project corridor. Three bald eagle nests are located in the vicinity of this project. Nest LA197 is located approximately 3.5 miles northwest of the project, nest LA182 is located approximately 1.6 miles south of the project, and nest OR007 is located approximately 2.8 miles northeast of the project.

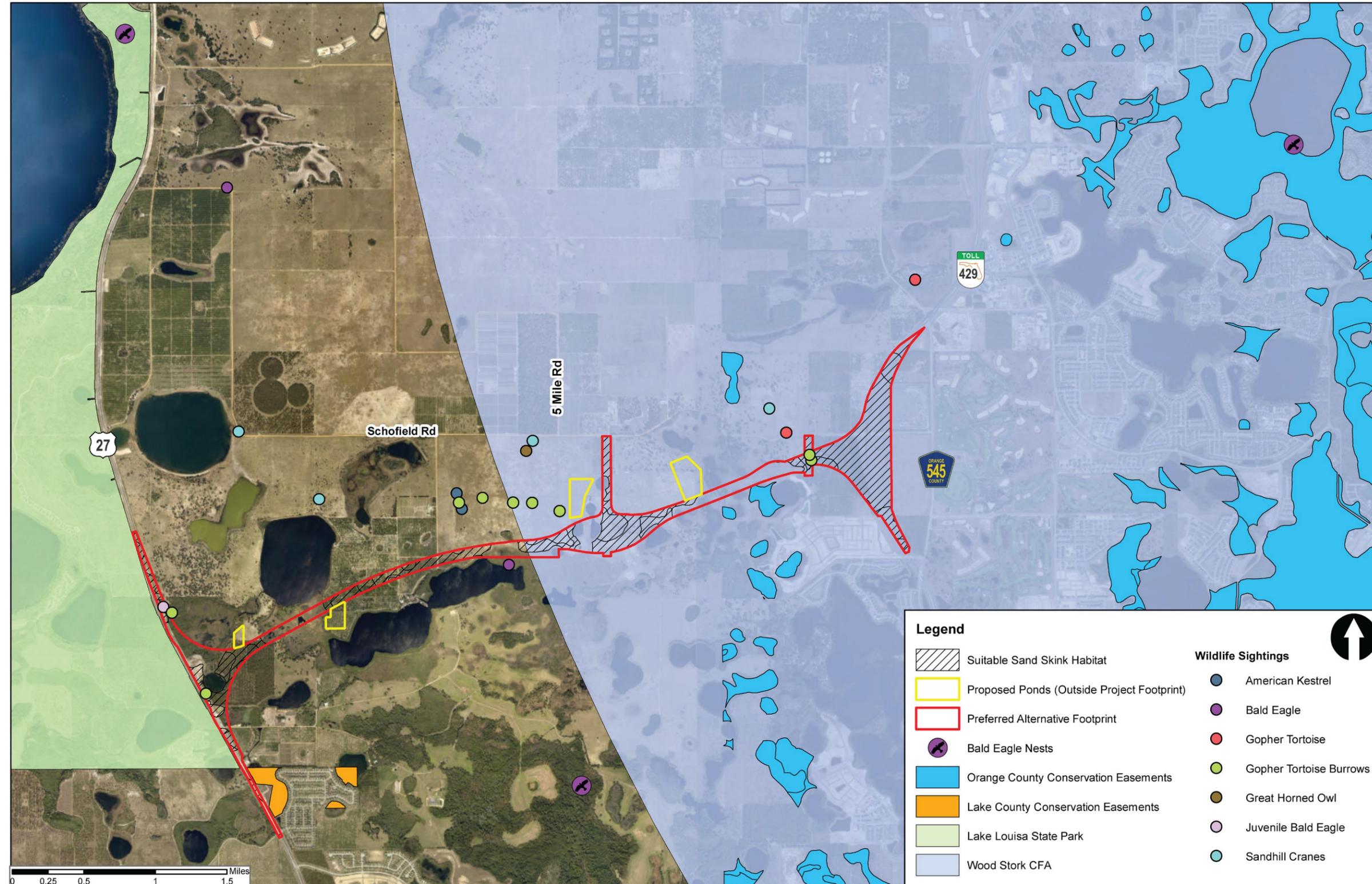


Figure 6-1 Special Designations in Project Area

A description of each species in **Table 5-1** is provided below along with pertinent aspects of their ecology and conservation. The following sections also note any detections of listed species during field surveys and discuss presence and quality of potential habitat.

### ***Federally Listed Animal Species***

#### ***American Alligator (Threatened Due to Similarity of Appearance-Federal)***

The American alligator is listed as threatened due to similarity of appearance to the American crocodile. American crocodiles do not occur in Lake or Orange Counties. The American alligator is a semi-aquatic, armored reptile, ranging from 6 to 14 feet long. Its body is very dark in color and is covered in coarse scales. It has a long head with visible upper teeth along the jaw and prominent eyes and nostrils. American alligators range from coastal North Carolina to the Florida Keys, as far west as southern Texas, and north to southeastern Oklahoma and Arkansas (Florida Museum of Natural History, 2011).

The project area contains potential habitat for American alligators in surface waters including Lakes (FLUCCS 5200), Wetland Forested Mixed (FLUCCS 6300), Freshwater Marshes (FLUCCS 6410), and Mixed Scrub-Shrub Wetland (FLUCCS 6460). Alligators were observed during field surveys in 2019. Because American alligators are common in Florida and are mobile and able to leave areas of construction, and because American crocodiles do not occur in Lake or Orange Counties, a determination of ***May Affect, Not Likely to Adversely Affect*** is recommended for the American alligator.

#### ***Audubon's crested caracara (Threatened-Federal)***

Audubon's crested caracara is a large raptor with a black body, buffy-white neck with black stripes, a grey bill, and exposed orange skin on its face. It bears a black "cap" with a prominent dark crest and has a long neck and legs. Audubon's crested caracara is a non-migratory subspecies that occurs in Florida and is isolated from other crested

caracara populations (USFWS 2014a) in the southwestern United States (U.S.), Mexico, and Central America.

Audubon's crested caracara is most abundant in a five-county region (Glades, DeSoto, Highlands, Okeechobee, and Osceola counties) in central Florida. (USFWS 1989, USFWS 2017). The *USFWS Multi-Species Recovery Plan for South Florida* (USFWS 2017) notes the contraction in the species range and states that caracara are now rarely found as far north as Orlando in Orange County. The project occurs within but on the very edge of the caracara range as defined by the USFWS consultation area map for caracara.

Caracara inhabit dry and wet prairies with scattered cabbage palms (*Sabal palmetto*), lightly wooded areas, and pasturelands (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. They occasionally eat larger animals like rabbits and cattle egrets and may perch on tall structures and scan for prey.

Caracara foraging habitat includes pastures and open fields in the project area. The project area also contains potential nesting habitat for caracaras in pastures; however, these pastures generally have few cabbage palms, the typical nesting tree of Audubon's crested caracara. There are no occurrences of caracaras in Orange County reported by FNAI or through interviews with Audubon Society members and other local bird enthusiasts and the project is on the edge of their primary range (as identified by the USFWS caracara consultation area). No caracaras were detected during field investigations. Breeding season nest surveys following USFWS protocols were not conducted. For these reasons, a determination of **May Affect, Not Likely to Adversely Affect** was made for this species.

### ***Bluetail mole skink (Threatened-Federal)***

The bluetail mole skink is a small, slender, shiny, pinkish brown lizard that can grow up to 13cm. The juvenile bluetail mole skink usually has a blue tail, while tails of older

individuals are pink in color. Prime habitat for this species is in the central ridge of Florida under leaves, logs, and other ground debris. Suitable bluetail mole skink habitat is restricted to xeric uplands within the Lake Wales Ridge in Highlands, Osceola, and Polk counties (USFWS 2014e). No cover-board surveys were performed for this species, so a determination of **May Affect, Not Likely to Adversely Affect** was made.

#### ***Eastern diamondback rattlesnake (Petitioned for Federal Listing as Threatened)***

The eastern diamondback rattlesnake has a diamond pattern on its dorsal side and a yellowish underbelly with a dark tail tipped with a rattle (Federal Register [FR] 2012). They inhabit pine flatwoods, longleaf pine and turkey oak, sand pine scrub, and coastal barrier islands. Displaced eastern diamondback rattlesnakes may occur in backyards and other developed areas. Historically the range of the eastern diamondback rattlesnake closely matched the extent of the longleaf pine savanna ecosystem and extended across the coastal plain of the southeastern U.S., from North Carolina to Florida and as far west as Mississippi and Louisiana (FR 2012). Populations of the eastern diamondback have been declining, predominantly due to habitat loss through conversion to agriculture, silviculture, urbanization, and from alterations to habitat resulting from fire suppression (FR 2012).

There are no known occurrences of eastern diamondback rattlesnakes in the project area and none were detected during field surveys. Eastern diamondback rattlesnakes are known to inhabit gopher tortoise burrows. Within the project corridor, vegetated uplands and gopher tortoise burrows form potential habitat for eastern diamondback rattlesnakes. This species is highly mobile and would likely relocate if near construction activities. If the eastern diamondback rattlesnake were to be listed, a determination of **May Affect, Not Likely to Adversely Affect** would be anticipated.

#### ***Eastern indigo snake (Threatened- Federal)***

The eastern indigo snake is a long, thick-bodied snake with glossy black, smooth scales that have iridescent blue highlights (USFWS 2014b). The eastern indigo snake preys on small mammals, birds, frogs, snakes, and lizards. It is not venomous but is also not a

constrictor. Instead it overpowers its prey with its muscular jaws and often larger size, consuming the prey head-first.

The eastern indigo snake can be found in upland, sandhill, and flatland habitats dominated by mature longleaf pines, turkey oaks, and wiregrass in southern Georgia and in northern/northwestern Florida. 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. Occupied sites in northern Florida are often near wetlands and frequently associated with gopher tortoise burrows, which were encountered during field surveys in open pastures and fields. Potential habitat for eastern indigo snakes is found throughout the entire project area. Habitat loss is the primary threat to eastern indigo snakes and the most recent five-year status review of the species reported that the population is declining. There is a documented occurrence of an eastern indigo snake in Lake Louisa State Park, immediately to the west of the project.

Following the effect determination key (USFWS 2013), because the project will be conditioned on the most current USFWS *Standard Protection Measures for Eastern Indigo Snake*, fewer than 25 active and inactive gopher tortoise burrows were found in the project corridor, and the project will impact less than 25 acres of xeric habitat, a determination of **May Affect, Not Likely to Adversely Affect** is made for this species. This determination and any permit would be conditioned on the evacuation of all gopher tortoise burrows. Concurrence from the USFWS will be necessary for any USACE wetland permitting and will likely require implementation of the USFWS Standard Protection Measures for the Eastern Indigo Snake.

### ***Everglade snail kite (Endangered- Federal)***

The Everglade snail kite (*Rostrhamus sociabilis*) is a raptor ranging throughout tropical and subtropical America. The subspecies that occurs in Florida and Cuba (*Rostrhamus sociabilis plumbeus*) is federally listed as endangered and is the subject of all references to “Everglade snail kite” in this document. The Everglade snail kite is a medium-sized raptor with a strongly decurved bill for extracting their primary prey, apple

snails. Snail kite habitat consists of freshwater marshes and the shallow vegetated edges of lakes where apple snails occur. These habitats are characterized as palustrine-emergent, long hydroperiod wetlands with water depths of 0.2 to 1.3 meters. (USFWS 2017). The Everglade snail kite is threatened by loss or degradation of wetland habitats, including conversion to urban development or agriculture and impacts to water quality and disruption of natural flow regimes.

The original range of the Everglade snail kite included wetland and marsh areas across south Florida, extending as far north as Crescent Lake and Lake Panasoffkee in north-central Florida (USFWS 2017). The current range is limited to central and southern Florida and has contracted substantially. The USFWS consultation area for Everglade snail kite extends into Orange County. However, the USFWS Multi-Species Recovery Plan for South Florida (USFWS 2017) does not show Orange County within the distribution range of Everglade snail kite, though it does include Osceola County to the south and Brevard and Volusia counties to the east.

Wetlands and marshes throughout the project area are potential habitat for Everglade snail kite, though none were encountered during field surveys. Because there are no documented sightings of Everglade snail kite in the project area and the potential habitat is relatively low quality and distant from occupied habitat, a determination of **May Affect, Not Likely to Adversely Affect** is made for this species.

#### ***Florida scrub-jay (Threatened- Federal)***

Florida scrub-jays inhabit sandpine scrub, scrubby flatwoods, oak scrub, and coastal scrub habitats of peninsular Florida where the canopy is less than 10 feet tall. These habitat types require well-drained sandy soils and occur along the coastlines, ridges, and dry portions of the central Florida peninsula (FWC 2016b).

Florida scrub-jay populations continue to show decreasing trends. The two major threats to the Florida scrub-jay are habitat loss and habitat degradation through fire suppression (FWC 2016b). No indications of Florida scrub-jays were detected during field investigations and surveys following USFWS protocols were not conducted

because suitable habitat is lacking. Due to the lack of suitable quality habitat and no sightings during field surveys a determination of **No Effect** is made for the Florida scrub-jay.

### ***Red-cockaded woodpecker (Threatened- Federal)***

Red-cockaded woodpeckers are medium-sized birds approximately 7 inches long with a wingspan of 15 inches (FWC 2016b). They have a barred, black and white back and a black cap and nape that encircle large white cheek patches. Males also have small red streaks on the sides of their head.

The red-cockaded woodpecker lives in mature pine forest, predominantly longleaf pine, and excavates nest cavities in live trees. The primary threat to red-cockaded woodpeckers is loss of habitat. Logging of old growth forest followed by planting of more commercially desirable species of pine trees destroyed much of the historic red-cockaded woodpecker habitat. Today timber management practices, fire suppression, and conversion of forest to agricultural or urban uses threaten red-cockaded woodpecker habitat.

No suitable habitat for red-cockaded woodpeckers occurs in the project corridor. Due to the lack of suitable habitat and the distance to known occurrences, a determination of **No Effect** is made for this species.

### ***Sand Skink (Threatened-Federal)***

The sand skink is a small, slender, grey to light brown lizard with shiny scales that can reach up to five inches in length. The sand skink swims in the sand and feeds on ant-lions, spiders, beetle larvae, and termites. Skink habitat is defined as skink soils, those that support scrub, sandhill, or xeric hammock communities, at and above 82 feet above sea level. It is endemic to xeric habitats. Lake and Orange Counties are two of seven counties in Florida where the sand skink can be found (USFWS 2014e). USFWS cover board surveys for sand skinks were not performed during field investigations. In the project corridor, potential habitat occurs within xeric oak (FLUCCS 4210) towards the

eastern terminus of the project. Due to the lack of documented sightings in the area and relatively small area of potential habitat, a determination of **May Affect, Not Likely to Adversely Affect** is made for this species.

#### ***Striped Newt (Threatened Candidate- Federal)***

The striped newt is a salamander found only in southern coastal plain of Georgia and northern Florida. It is less than five inches long and is found in longleaf pine-dominated savanna, scrub, or sandhill habitats. They require unpolluted waters and breed in shallow, isolated, temporary ponds. The striped newt is threatened by habitat loss, disease, and drought.

Potential habitat in the project area includes wetlands and OSW, though many waters in the project corridor are adjacent to agricultural lands and would likely be too polluted. Due to the lack of documented sightings and low quality of potential habitat, a determination of **May Affect, Not Likely to Adversely Affect** is made for this species.

#### ***Wood stork (Threatened- Federal)***

The wood stork is a long-legged wading bird with a dark-gray, bare head with a long, thick, and down-curved bill. They occur from South America north into Florida, Georgia, and southeastern South Carolina (Rogers et. al, 1996, USFWS 2014c). Wood storks appear to be experiencing human population pressure throughout their range. Though specific data on population trends range-wide is not available, information suggests a decline in the area and quality of breeding and foraging habitats range-wide. However, data from 1991 to 1995 suggest an increasing number of nests within the U.S. breeding range (USFWS 2014c). 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 storks are found mostly in freshwater environments such as marshes, swamps, lagoons, ponds, flooded fields, depressions in marshes during droughts, and in brackish wetlands. Wood storks form nesting colonies, usually in isolated areas by open water.

According to the USFWS *Wood Stork Effect Determination Key for Central and North Peninsular Florida* (U.S. Army Corps of Engineers and USFWS 2008) (Wood Stork Key), in central Florida the core foraging area (CFA) of a wood stork colony includes all suitable foraging habitat (SFH) within a 15-mile radius of the nest colony. Approximately half of the project corridor occurs within wood stork CFA, including 49 acres of wetlands. The USACE and USFWS Wood Stork Effect Determination Key (2008) was used to evaluate potential impacts to wood storks from the proposed project. SFH for wood storks in the project area occurs in Lakes (FLUCCS 5200), Wetland Forested Mixed (FLUCCS 6300), Freshwater Marshes (FLUCCS 6410), Mixed Scrub-Shrub Wetlands (FLUCCS 6460), and Surface Water Collection Basins (FLUCCS 8370) as well as in open stormwater management systems like roadside ditches and swales.

Unavoidable impacts to wood stork SFH will be mitigated during the permitting phase of this project. Mitigation can likely be achieved through the purchase of Federal wetland credits. Anticipating mitigation for impacts to wood stork SFH in accordance with the *USFWS Wood Stork Key* (U.S. Army Corps of Engineers and USFWS 2008), a determination of **May Affect, Not Likely to Adversely Affect** is made for this species.

### ***Federally Listed Plant Species***

#### ***Britton's beargrass (Endangered- Federal)***

Britton's beargrass is an agave (Agavaceae) that is perennial and grows leaves approximately three to six feet long. A similar species, Florida beargrass (*Nolina atopocarpa*), may occur in the same areas as Britton's beargrass but is distinguishable by shorter leaves, greenish flowers and asymmetric fruits (USFWS 2015). Britton's beargrass occurs from the south end of the Lake Wales Ridge north to Orange County and records indicate its historic range extended north to Marion County. It may be found in a wide range of habitats, from open scrub to closed canopy hammocks, though only where the soil is drought prone and infertile. These are typically upland sites and occur in fire dependent ecosystems that become replaced by hardwoods in the absence of fire. Conversion of land for agriculture and development threatens Britton's beargrass

and it is reported that two-thirds to three-quarters of the original scrub habitat in its range was destroyed (USFWS 2015).

No scrub habitat occurs in the project area and most undeveloped portions of the project area not used for agriculture occur on wetlands or heavily forested tracts. The project area contains some habitat characteristics required of Britton's beargrass; however, these areas lack the fire or disturbance regime and xeric conditions of typical Britton's beargrass habitat. No Britton's beargrass was detected during field surveys. Due to a lack of suitable habitat and no records or detections of this species in the project area, a determination of ***May Affect, Not Likely to Adversely Affect*** is made for this species.

#### ***Carter's Mustard (Endangered- Federal)***

Carter's mustard is a fire-dependent annual herb that is found in xeric and shrub dominated habitats of the Lake Wales Ridge of central Florida, with a historic range including Highlands, Polk, and Lake counties. The plants range from 0.2 to 1.5 m tall, with many slender ascending branches, erect green stems, and leaves with rounded tips. Carter's mustard is found in scrubby flatwoods and turkey oak or hickory dominated sandhills (USFWS 1996) and is known to occur on the Schofield Tract near the project area. The Schofield Tract is protected and managed for species conservation and surrounding lands are less suitable for Carter's mustard. Due to a lack of high-quality suitable habitat in the project area, but because this species occurs on nearby conservation lands, a determination of ***May Affect, Not Likely to Adversely Affect*** is made for this species.

#### ***Clasping Warea (Endangered- Federal)***

The clasping warea is an erect annual herb in the mustard family that ranges between 30 and 100 cm tall. It is found along the northern portion of the Lake Wales Ridge. It is endemic to high pine (sandhill) habitat, though much of its suitable habitat has been lost by conversion to citrus groves or sand mining. Its habitat is currently limited to sunny openings with exposed sand in longleaf pine, turkey oak, or wiregrass dominated

sandhills (FNAI 2018). Lake and Orange counties are two of the four counties where clasping warea is known or believed to occur.

The major threats to clasping warea include habitat loss and fragmentation, fire suppression, and competition with invasive species (FNAI 2018). Clasping warea was observed in one area just north of the project corridor multiple times between 1990 and 2015 with a fluctuating population number. Due to these previous sightings but a lack of recent records or detections of this species within the project area, a determination of **May Affect, Not Likely to Adversely Affect** is made for this species.

#### ***Florida bonamia (Threatened- Federal)***

Florida bonamia is a member of the morning glory family (Convolvulaceae) and the only native species in its genus. It grows as a perennial vine and has deep blue or bluish-purple flowers with white throats that open in the morning and wilt by the afternoon. It is a scrub endemic of central Florida and is found within, near, or on the edge of scrub habitat in white sands associated with the dune systems of the central ridge.

Loss of scrub habitat to residential and agricultural expansion is the chief cause of decline of the Florida bonamia (USFWS 2014d). There is no suitable scrub habitat in the project area. In rarer instances, Florida bonamia has been documented on mowed roadsides in some locations in Florida. No Florida bonamia was detected during field investigations and the project area does not contain habitat typical of Florida bonamia. Due to a lack of traditional potential habitat combined with no records or detections of this species in the project area, a determination of **No Effect** is anticipated for this species.

#### ***Scrub blazingstar (Endangered- Federal)***

The scrub blazingstar can be found in central Florida's open fire-maintained habitats with upland vegetation. It is a long-lived perennial herb that can grow up to 1 m tall with a thick cylindrical root and erect stems. The flower heads are separated on the stem and the corollas are bright purplish pink. No scrub blazingstar were detected during surveys

and it is not known to occur in the project area. However, because some remnant natural upland habitats and associated species persist in the project area, a determination of **May Affect, Not Likely to Adversely Affect** is made for this species.

***Lewton's polygala (Endangered- Federal)***

Lewton's polygala is a short-lived perennial herb found in oak scrub and high pine habitat of the Lake Wales and Mount Dora ridges of central Florida. It produces one to several annual stems, has small sessile leaves, and bright pink or purplish-red flowers with five sepals. No Lewton's polygala were detected during surveys and it is not known to occur in the project area. However, because some remnant natural upland habitats and associated species persist in the project area, a determination of **May Affect, Not Likely to Adversely Affect** is made for this species.

***Papery whitlow-wort (Threatened- Federal)***

Papery whitlow-wort is a short-lived herb that forms small mats. There are two geographically distinct subspecies and both are federally listed as threatened. *P. chartacea* ssp. *chartacea* occurs in Orange County and central Florida and *P. chartacea* ssp. *minima* occurs in northwest Florida. *P. chartacea* ssp. *chartacea* is endemic to scrub communities of the Lake Wales Ridge, particularly rosemary scrub. Development has destroyed much of the former habitat of papery whitlow-wort; however, it may persist in fire lanes and along roadsides (USFWS 2015). Suitable dry scrub habitat does not occur in the project corridor. Due to a lack of potential habitat, and no records or detections of this species in the project area, but because this species may persist on roadsides, a determination of **May Affect, Not Likely to Adversely Affect** is anticipated for this species.

***Pygmy fringe-tree (Endangered- Federal)***

The pygmy fringe-tree is a large shrub that grows up to 4 m tall found in scrub, high pineland, dry hammocks, and transitional habitats in central Florida. Much of the suitable habitat has been lost due to land conversion for citrus production and

residential development. This species is known to occur in Lake County and potential habitat does occur in the dry, upland areas toward the eastern terminus of the project area, however due to the lack of records or detections of this species in the project corridor, a determination of ***May Affect, Not Likely to Adversely Affect*** is made for this species.

#### ***Scrub buckwheat (Threatened- Federal)***

Scrub buckwheat is a perennial herb growing up to one meter tall with leaves that are 15 to 20 centimeters long. The leaves are green or bronze-green above and densely wooly and white underneath. Scrub buckwheat lives in intermediate habitats between dry scrub and sandhills or high pine and in turkey oak barrens in central Florida. Habitat loss through conversion of land to agriculture and for residential development, combined with habitat changes resulting from a lack of fire, continue to threaten scrub buckwheat. No scrub buckwheat was detected during field investigations and the project corridor does not contain habitat typical of scrub buckwheat. Due to a lack of potential habitat, and no records or detections of this species in the project area, a determination of ***No Effect*** is anticipated for this species.

#### ***Scrub lupine (Endangered- Federal)***

The scrub lupine is a biennial or perennial herb with a soft woody base and shrubby appearance. Its stems are silvery and upright up to 3 ft tall with 1 to 3-inch-long oval leaves that have pointed tips and silver hairs. It produces pink flowers and a wooly legume. It is found in sand pine and rosemary scrub habitats in central Florida. Due to a lack of potential habitat, and no records or detections of this species in the project area, a determination of ***No Effect*** is anticipated for this species.

#### ***Scrub plum (Endangered- Federal)***

The scrub plum is a small, heavily branched shrub with a gray stem, up to 2m tall that spreads by sucker shoots. It is endemic to the oak scrub and high pine communities of the Lake Wales Ridge. Scrub plum was previously documented to occur in woodlands

in the western portion of the project corridor. This parcel of woodland is not protected or managed for conservation and is in an area anticipated for development. For these reasons, a determination of **May Affect, Not Likely to Adversely Affect** is made for this species.

#### ***Short-leaved rosemary (Endangered- Federal)***

The short-leaved rosemary is an erect, woody, perennial shrub that reaches about 1m in height. It is a shrubby mint found in central Florida and inhabits the white sand scrub on the Lake Wales Ridge. Due to a lack of potential habitat, and no records or detections of this species in the project area, a determination of **No Effect** is anticipated for this species.

#### ***State Listed Species***

#### ***Burrowing owl (Threatened- Florida)***

The burrowing owl is a small bird that lives in burrows in open, treeless areas and spends the majority of its time on the ground. They traditionally inhabited native prairies and now can be found in a variety of cleared areas such as pastures, agricultural fields, golf courses and airports. They are active both day and night and are present throughout the year. Recently, populations in central Florida have declined while populations in south Florida coastal areas have increased (FWC 2015b). The Improved Pastures (FLUCCS 2110) in the central portion of the project corridor are potential habitat. Burrowing owls were detected during previous surveys of the CEMEX mine site, but were not detected during field surveys for this PD&E study. For these reasons, a determination of **No Adverse Effect Anticipated** is made for this species.

#### ***Florida pine snake (Threatened- State)***

The Florida pine snake has a brown back with darker blotches, a white underside, ridged scales, and a small head with a pointed snout (FWC 2014). They range from South Carolina west to Mobile Bay, Alabama and south to Florida excluding the Everglades. Florida pine snakes inhabit areas with a moderate to open tree canopy and

well-drained, sandy soils, which can include dry scrub habitat or longleaf pine communities (FWC 2014).

Florida pine snakes' chief threat is habitat loss and fragmentation resulting from urbanization, timber management practices, mining, and road construction. The suppression of fire also threatens Florida pine snakes by allowing encroachment of hardwoods (FWC 2014). The most recent Biological Status Review of Florida Pine Snake is from 2011 and predicts a continued decline in populations.

Potential habitat occurs in the project area on Improved Pastures (FLUCCS 2110), Herbaceous Upland Non-forested (FLUCCS 3100), and Upland Hardwood Forests (FLUCCS 4200). This habitat is low quality because most of it is fragmented, is heavily forested or was cleared for ranching. None of the scrub or longleaf pine communities preferred by Florida pine snakes are present in the project area. No Florida pine snakes were observed during field surveys. Therefore, a determination of **No Adverse Effect Anticipated** is made for this species.

#### ***Florida sandhill crane (Threatened-State)***

Florida sandhill cranes, a subspecies of sandhill crane, are tall birds with long necks and legs. Sandhill cranes range across most of North America; however, Florida sandhill cranes are a subspecies with a more limited range that includes Florida and extends as far north as the Okefenokee Swamp in Georgia. Florida sandhill cranes are non-migratory and usually nest over freshwater ponds and marshes.

Florida sandhill cranes inhabit freshwater marshes, prairies, and pastures throughout the state. Their wide-ranging diet includes grain, berries, seeds, insects, worms, mice, small birds, snakes, lizards, and frogs (FWC 2016b). 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 20<sup>th</sup> century, and their range shrank to its current area (FWC 2016b). The most recent Biological Status

Review of Florida Sandhill Cranes, from 2011, indicates continuing population declines from 1974 to 2003.

Suitable foraging habitat for Florida sandhill cranes occurs throughout vegetated portions of the project area. Nesting habitat for sandhill cranes is typically found in secluded areas where nests are built on mats of floating vegetation protected by shallow water. The project area contains only extremely low-quality nesting habitat because it lacks the seclusion, emergent vegetation, and protective cover more commonly observed in occupied nesting habitats. Sandhill cranes were heard along Schofield Road on October 5, 2018 and then seen foraging along Schofield on December 26, 2018 and in a pasture north of the project corridor just west of SR 429 on February 7, 2019. A pair was also observed flying just south of Schofield Road near the east end of the project corridor (**Figure 6-1**). Because the observations occurred during fall and winter it is not possible to definitively conclude those individuals were from the federally listed subspecies. They could be sandhill cranes that belong to a migratory population which overwinters in Florida. All sandhill cranes are protected by the Migratory Bird Treaty Act. For the purposes of this document and the related assessment of impacts to Florida sandhill crane, sandhill cranes observed during surveys are considered to be members of the Florida subspecies. Because the potential long-term impacts would be to such a small proportion of the available foraging habitat, and because sandhill cranes are highly mobile and able to relocate during construction, a determination of **No Adverse Effect Anticipated** is made for this species.

### ***Gopher tortoise (Candidate- Federal; Threatened-State)***

The gopher tortoise is the only of five species of tortoise in the U.S. that occurs east of the Mississippi River. They range from south-central Florida, north into Georgia and southern South Carolina, and west through Mississippi and into part of eastern Louisiana. Gopher tortoises live in areas with well drained, sandy soils and a sparse tree canopy that allows sunlight to reach the ground and support abundant herbaceous vegetation. They are commonly found in sandhill, pine flatwoods, dry scrub, scrubby flatwoods, dry prairies, xeric hammock, pine-mixed hardwoods, and coastal dunes. In

habitats where fire is suppressed, encroachment of woody vegetation makes it more difficult for gopher tortoises to move around and restricts the low growing plants that they eat. Gopher tortoises excavate burrows which offer a refuge from fire, extreme temperatures, and predators. These burrows are often co-inhabited by other species, which has caused the gopher tortoise to be considered a keystone species in some Florida ecosystems (FWC 2016b).

The primary threat to gopher tortoises is habitat loss, degradation, and fragmentation. Urbanization, agriculture, and mining have all caused habitat loss, and suppression of fire and silviculture methods that allow a closed canopy has reduced habitat quality in some forests. Gopher tortoises were once threatened due to over-collecting by humans. Mortality from pets and other predators is a continuing problem. The most recent Biological Status Report, from 2006, cites a population size reduction in Florida between 50 and 60 percent in the past 60 to 93 years and notes that increasing habitat fragmentation and destruction will affect the long-term viability of remaining populations.

Gopher tortoises require deep, sandy, well-drained soils for burrowing, but may also occur in lower numbers on somewhat poorly drained soils (USACE 2009). Active and inactive gopher tortoise burrows were observed throughout the project area, particularly within areas of Improved Pastures (FLUCCS 2110) and Field Crops (FLUCCS 2150). In a 2007 conceptual study of the CEMEX mine site, gopher tortoise burrows were detected at an average density of 3.1 occupied gopher tortoise burrows per acre of suitable habitat. Gopher tortoises and occupied burrows were identified in and around the project corridor during field surveys in 2019.

In subsequent project phases, gopher tortoise burrow surveys and relocation following FWC protocols will be conducted prior to initiating construction. Excavation of gopher tortoise burrows will also be required to minimize potential impacts to eastern indigo snakes, which commonly take refuge in burrows. Given these conditions, a determination of ***No Adverse Effect Anticipated*** is made for gopher tortoise.

### ***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 2015) 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 2015, Rodgers et al. 1996). According to the Biological Status Report published in 2011, little blue heron populations increased gradually throughout the 20<sup>th</sup> Century until the 1990s, 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. 1996). Their nests are typically built in trees and shrubs on islands, emergent vegetation, or in dense thickets near water. In the project area, potential foraging habitat occurs in Lakes (FLUCCS 5200), Wetland Forested Mixed (FLUCCS 6300), Freshwater Marshes (FLUCCS 6410), Mixed Scrub-Shrub Wetland (FLUCCS 6460) and Surface Water Collection Basins (FLUCCS 8370). The project area does not contain habitat typical of nesting little blue herons because it lacks expanses of open water or sufficient concealing vegetation. Little blue heron were reported from the CEMEX mine site, which includes part of the project area, in an earlier study but were not detected during surveys in 2019. Little blue herons are highly mobile and anticipated to avoid construction activities, potentially resulting in temporary impacts from avoidance. Therefore, a determination of ***No Adverse Effect Anticipated*** is made for this species.

### ***Southeastern American kestrel (Threatened- State)***

The southeastern American kestrel is a non-migratory subspecies that can be found throughout Florida as well as the coastal plains of Louisiana, Georgia, and South Carolina. A northern subspecies of American kestrel, *Falco sparverius*, also occurs in

Florida, but is migratory. Any American kestrel seen in Florida in May or June is assumed to be a southeastern American kestrel (FWC 2016a).

In Florida, southeastern American kestrels inhabit open woodlands, sandhill, fire-maintained savannah pine forests, as well as pastures and open fields near residential areas. They primarily nest in dead trees, using cavities that they do not construct themselves. They are also known to use nest boxes (FWC 2016a). The primary threat to southeastern American kestrels is loss of nesting and foraging habitat. Habitat is lost primarily through development of residential areas and farmland, removal of trees in agricultural fields, and through the suppression of fire that maintains open pine habitats. Southeastern American kestrels are also vulnerable to pollutants, predation, collision with vehicles and aircraft, and the West Nile Virus (FWC 2016a). According to the Biological Status Review published in 2011, southeastern American kestrels have been experiencing significant population declines that appear to be ongoing.

Suitable foraging habitat occurs throughout the project area and potential nesting habitat occurs in trees the project area. American kestrels were observed in a pasture just north of the center of the project corridor on October 5, 2018 and February 6, 2019, however, due to the time of year it is not possible to identify them as part of the southeastern subspecies. Southeastern American kestrels were documented on the CEMEX mine site during previous studies. No nest cavities were detected during surveys, but a survey specifically for potential nesting cavities in trees was not performed. Because additional similar habitat is locally available and because southeastern American kestrel are highly mobile and likely to relocate during construction, a determination of **No Adverse Effect Anticipated** is made for this species.

### ***Tri-colored heron (Threatened- Florida)***

Tri-colored herons are medium-sized wading birds that inhabit fresh- and saltwater marshes, lagoons, estuaries, mangrove swamps, and river deltas. They 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. Tri-colored herons are permanent residents in Florida and are most common in south and central Florida regions. According to the Biological Status Review published in 2011, tri-colored 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 tri-colored heron populations is loss of habitat through development and draining of wetlands. Other threats include pesticides and pollutants (Rogers 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 2016a).

Potential foraging habitat for tri-colored herons in the project area occurs in Lakes (FLUCCS 5200), Wetland Forested Mixed (FLUCCS 6300), Freshwater Marshes (FLUCCS 6410), Mixed Scrub-Shrub Wetland (FLUCCS 6460) and Surface Water Collection Basins (FLUCCS 8370). The project area does not contain potential nesting habitat protected by open water that is typical of tri-colored herons. Tri-colored heron are highly mobile and may avoid construction activities, potentially resulting in temporary impacts. Therefore, a determination of **No Adverse Effect Anticipated** is made for this species.

### ***Other Protected Species***

#### ***Bald Eagle***

The bald eagle was removed from the Federal endangered species list in 2007 and from the State of Florida endangered species list in 2008. The species is still protected under the Bald and Golden Eagle Protection Act, Migratory Bird Treaty Act and FWC's bald eagle rule (F.A.C. 68A- 16.002). Bald eagles roost and nest in trees and are typically found close to fresh or salt water where the eagles can catch fish. Nests are usually constructed in large trees isolated from human disturbance. The project corridor does not contain the expanses of open water typical of bald eagle foraging habitat.

Adult bald eagles typically remain within Florida year-round, though sub-adults may migrate and wander further north. Bald eagles eat a wide variety of prey, often scavenging road kill and carrion or capturing fish and waterfowl from the water surface. Bald eagles once ranged across North America, except for the desert southwest, and were especially abundant in Florida. Populations in North America began to decline as early as the 18<sup>th</sup> Century due to habitat loss and direct killing through shooting, trapping and poisoning. Widespread use of DDT in the 20<sup>th</sup> century greatly exacerbated these declines by causing heavy nesting failures. DDT was banned in the U.S. in 1972 and the number of eagle nesting territories in Florida has steadily increased since then, reaching approximately 1,200 in 2006.

During field surveys in 2019, an adult bald eagle was observed just south of the center of the project corridor and a juvenile bald eagle was observed at the western terminus of the project corridor. According to the FWC bald eagle nest locator tool, the nearest reported bald eagle nest (LA182) is located approximately 1.6 miles south of the project (**Figure 6-1**). That nest was active when it was last surveyed in 2014. The project is outside the 660-foot nest buffer within which project activities may be restricted under the USFWS *Bald Eagle Management Guidelines and Conservation Measures*, so no additional restrictions or conservation measures are anticipated.

### ***Special Designations, Critical Habitat, and Conservation Lands***

A map of special designations is provided as **Figure 6-1**, which shows the locations of Conservation Easements, wood stork CFA, state parks, Bald Eagle nests, and the locations of listed species (and gopher tortoise burrow) observations from field surveys. Habitat types, as classified by SJRWMD, are provided in **Figure 3-1**.

The USFWS Critical Habitat Portal was used to locate designated Critical Habitat and assess potential impacts from the project. No designated Critical Habitat occurs in or adjacent to the project area, so no impacts to critical habitat are anticipated.

Reviews of the NOAA Essential Fish Habitat (EFH) Mapper, other existing data, and conditions observed in the field did not identify any resources or potential impacts to

EFH that might require an EFH Assessment or additional coordination with National Marine Fisheries Service.

According to the FWC Water Bird Locator, the nearest reported active water bird colony (Colony Number 612021) is approximately 10 miles north of the project corridor, at the southern end of Lake Apopka. The project is outside the 300-foot buffer FWC proposes as a standardized buffer around high priority wading bird nesting colonies (FWC 2013), so no impacts to these colonies are anticipated.

## WETLANDS AND SURFACE WATERS

The locations of wetlands in the project area identified by SJRWMD land use data are shown on **Figure 3-1**. They include Wetland Forested Mixed (FLUCCS 6300; three locations within the project area), Freshwater Marsh (FLUCCS 6410; nine locations within the project area), and Mixed Scrub-Shrub Wetland (FLUCCS 6460; one location in project area). Lakes (FLUCCS 5200) and Surface Water Collection Basins (FLUCCS 8370) also occur in the project area and are considered Other Surface Waters (OSW). The locations of wetlands and OSW in the project area as mapped by the USFWS NWI are shown in **Figure 3-3** and include Freshwater Emergent Wetlands, Freshwater Forested/Shrub Wetlands, Freshwater Ponds, Lakes, and Riverine.

### ***Wetland and Surface Water Assessment Areas***

Wetlands and Surface Waters that may be directly impacted by the proposed project or that are adjacent to the Build Alternative were each assigned a unique Assessment Area (AA) number to aid analysis and ease discussion. There are eight AAs, and each is described on page 5-29, listed in **Table 6-2**, and shown on **Figure 6-2**. Wetland AAs were generally grouped by proximity and hydrologic connectivity and most AAs contain multiple FLUCCS code wetland types that occur in close association.

**Table 6-2 Wetland and OWS Assessment Areas**

AA #	FLUCCS Code	USFWS NWI Classification	Contiguity	Edge Relationships	Wildlife Habitat Value	Hydrologic Functions	Public Use	Integrity
1	5200 / 6300 / 6410 / 6460	Freshwater Forested/Shrub Wetland / Freshwater Pond	Connected to larger wetland system	Bordered by US 27, agriculture, and woodlands	Medium	water quality enhancement / pollution abatement, water detention / flood and erosion control	None	Medium: Natural with moderate human impacts
2	6300 / 6410	Freshwater Emergent Wetland	Connected to larger wetland system	Bordered by US 27, agriculture, and woodlands	Low	water quality enhancement / pollution abatement, water detention / flood and erosion control	None	Medium: Natural with moderate human impacts
3	5200 / 6300 / 6410	Freshwater Emergent Wetland / Freshwater Forested/Shrub Wetland	Connected to larger wetland system	Bordered by citrus, cattle pasture, woodlands, lakes	High	water quality enhancement / pollution abatement, water detention / flood and erosion control	None	High
4	6460	None	Isolated	Surrounded by citrus production	Low	water quality enhancement / pollution abatement, water detention / flood and erosion control	None	Low: surrounded by citrus production
5	5200 / 6410	Lake	Connected to larger wetland system	Cattle pasture, wetlands, lake	High	water quality enhancement / pollution abatement, water detention / flood and erosion control	None	High
6	5200 / 6410	Freshwater Emergent Wetland / Freshwater Pond	Isolated	Surrounded by cattle pasture	Low	water quality enhancement / pollution abatement, water detention / flood and erosion control	None	Medium: Natural with moderate human impacts
7	5200 / 6410	Freshwater Pond	Isolated	Surrounded by cattle pasture, near house	Low	water quality enhancement / pollution abatement, water detention / flood and erosion control	None	Medium: Natural with moderate human impacts
8	5200 / 6250 / 6410 / 6430	Freshwater Pond	Connected to larger wetland system	Lakes, pasture, residential development	High	water quality enhancement / pollution abatement, water detention / flood and erosion control	None	High

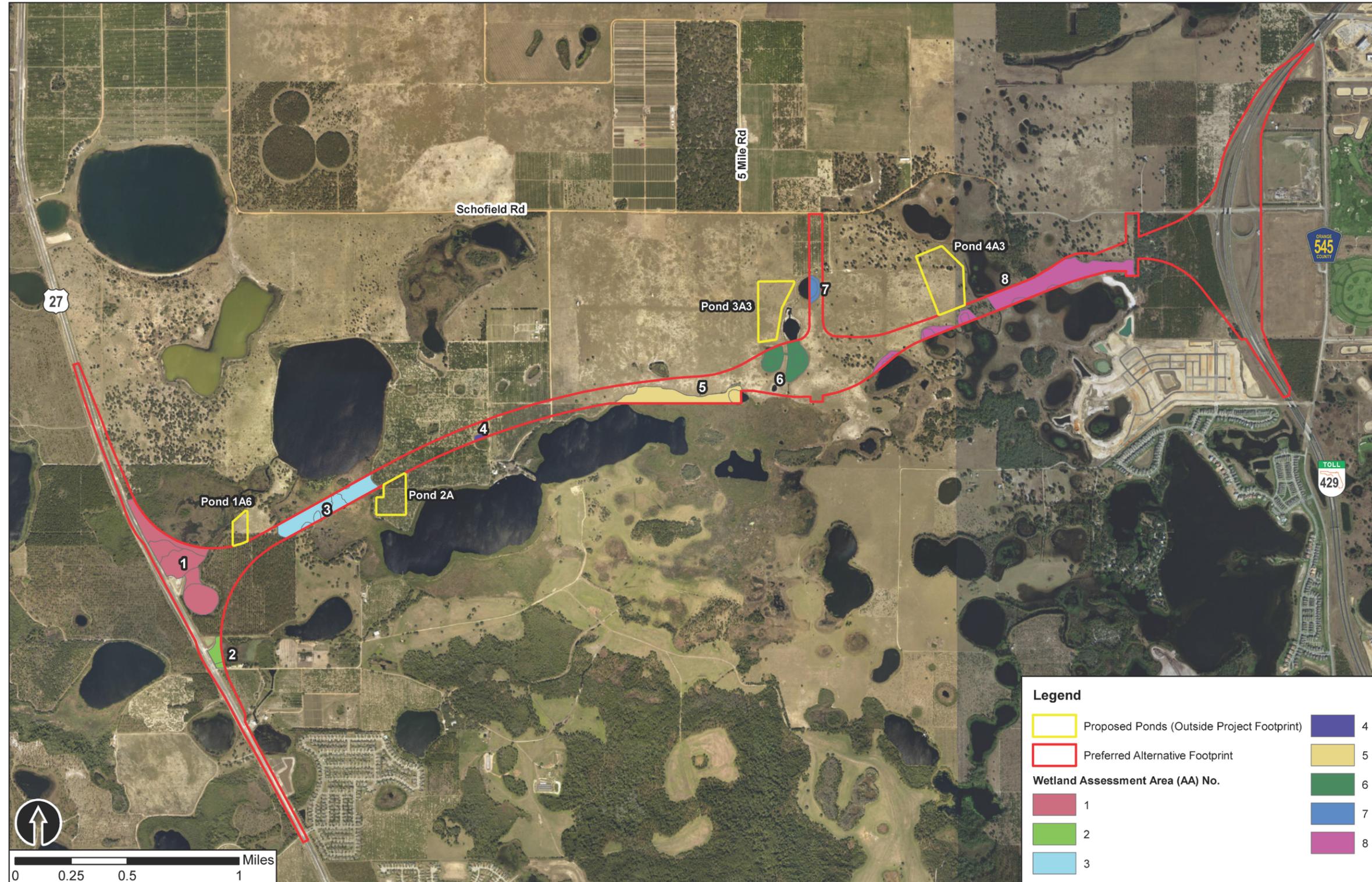


Figure 6-2 Wetland and Surface Water Assessment Areas

**AA-1**

AA-1 is a patch of wetlands located at the western terminus of the project corridor, adjacent to northbound US 27 and extending south to include a small lake (**Photograph 5-1**). That lake is an OSW and is approximately 1,200 feet north of Frank Jarrell Road. AA-1 (**Photograph 5-2**) is contiguous with a larger wetland system that extends northward and connects to Adain Lake just north of the project corridor. Most of the lake is open water with some cattails (*Typha* sp.) along its margin. The wetlands to the north contain cattails as well as woody vegetation like bald cypress (*Taxodium distichum*) and willow (*Salix* sp.). This area is mapped by SJRWMD as Lakes (FLUCCS 5200), Wetland Forested Mixed (FLUCCS 6300), Freshwater Marshes (FLUCCS 6410), and Mixed Scrub/Shrub Wetland (FLUCCS 6460). AA-1 is mapped by NWI as Freshwater Forested/Shrub Wetland and Freshwater Pond. US 27 and AA-1 are adjacent to a stormwater pond (**Photograph 5-3**) constructed in 2017 that was mapped by SJRWMD as Pine Plantation (FLUCCS 4110). That pond receives stormwater runoff from US 27 and is located immediately north of the small lake in AA-1. Gopher tortoise burrows were discovered between the small lake in AA-1 and US 27.

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**Photograph 5-1 Lake in AA1, facing northeast**



**Photograph 5-2 AA1, facing north**



**Photograph 5-3 Stormwater Pond adjacent to AA1, facing southeast**

## **AA-2**

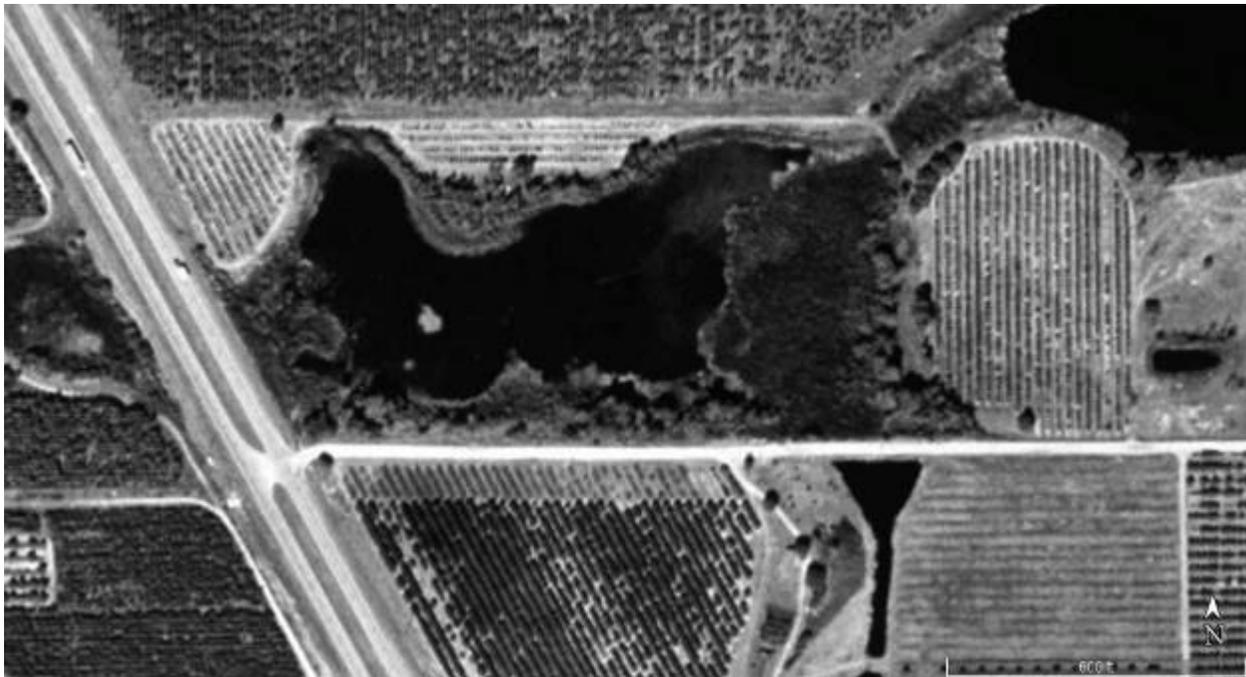
AA-2 is a small wetland area immediately east of US 27 extending from Frank Jarrell Road to approximately 600 feet north (**Photographs 5-4** through **5-7**). This area connects to a larger wetland system to the east that includes an unnamed waterbody and Square Lake. AA-2 is mapped by SJRWMD as Wetland Forested/Mixed (FLUCCS 6300) and Freshwater Marsh (FLUCCS 6410) and by NWI as Freshwater Emergent Wetlands. Immediately north of AA-2 and east of US 27 is a stormwater pond constructed in 2016 that receives runoff from US 27. Aerial imagery shows the location of that stormwater pond was previously used for citrus.



**Photograph 5-4 AA-2 and Stormwater Pond**



**Photograph 5-5 AA-2 in 2007 Before Stormwater Pond was Constructed**



Photograph 5-6 Historic Image of AA-2 from 1999



Photograph 5-7 AA-2 from US 27, facing east

### AA-3

AA-3 appears as a linear patch of freshwater wetlands that begins approximately 2,400 feet east of US 27 (**Photographs 5-8 through 5-10**). This area is part of a larger wetland system that provides a significant hydrologic connection between two relatively

large lakes, Adain Lake and Sawgrass Lake, located north and south of the project corridor, respectively. Those lakes are broad expanses of open water and in many areas are ringed with emergent herbaceous vegetation like cattails or pickerel weed (*Pontederia cordata*). The area west of AA-3 is cattle pasture and woodlands and to the east is citrus. AA-3 is mapped by SJRWMD as Freshwater Marshes (FLUCCS 6410) and Lakes (FLUCCS 5200) and by NWI as Freshwater Emergent Wetland and Freshwater Forested/Shrub Wetland. An American alligator was sighted in AA-3 during field surveys.



**Photograph 5-8 West side of AA-3, facing east**



**Photograph 5-9 North Side of AA-3, facing north toward Adain Lake**



**Photograph 5-10 Southeast side of AA-3 facing east**

**AA-4**

AA-4 is a small isolated area (**Photographs 5-11 and 5-12**) surrounded by citrus and located approximately 300 feet northwest of the southern terminus of Cook Road. AA-4 is mapped by SJRWMD as Mixed Scrub/Shrub Wetland (FLUCCS 6460) and does not have an NWI category rating. Field surveys revealed that AA-4 is a deep depression that contains dense shrubs. The depth of this area suggests that it was previously excavated or that it possibly contains a sinkhole.



**Photograph 5-11 AA-4, facing east**



**Photograph 5-12 AA-4, facing north**

### **AA-5**

AA-5 is a linear area of freshwater marshes and lakes (**Photographs 5-13 through 5-15**) along the southern edge of the project corridor, beginning approximately 1,100 feet east of Cook Road. AA-5 forms the northern margins of a larger wetland system of emergent herbaceous vegetation that extends southward beyond the project area and connects to Sawgrass Lake. In some locations immediately north of AA-5, there are manmade berms and swales on the margins separating the wetlands from cattle pasture. While SJRWMD maps this area as Freshwater Marsh (FLUCCS 6410) with a small Lake (FLUCCS 5200), the entire area is mapped by NWI as a Lake. AA-5 is bordered to the north by cattle pasture and is contiguous with wetlands to the south. This contiguity with a larger wetland makes AA-5 of relatively high value to wildlife.



**Photograph 5-13 Northern edge of AA-5, facing west**



**Photograph 5-14 Lake in AA-5, facing southeast**



**Photograph 5-15 Lake in AA-5, facing west**

### **AA-6**

AA-6 is an isolated system of two connected wetlands (**Photographs 5-16** and **5-17**) in the central portion of the project, near a proposed interchange. AA-6 is mapped by SJRWMD as Lakes (FLUCCS 5200) and Freshwater Marshes (FLUCCS 6410) but is mapped by NWI as Freshwater Pond surrounded by a small area of Freshwater Emergent Wetland. Field surveys revealed that AA-6 contains small ponds that are connected by a ditch. Relatively little wetland vegetation was apparent around the ponds. Manmade berms and swales occur in pastures adjacent to much of the eastern margin of AA-6, separating cattle pasture from the wetlands.



**Photograph 5-16 AA-6, facing east**



**Photograph 5-17 AA-6, facing northeast**

**AA-7**

AA-7 is a small wetland area within the western proposed interchange with Schofield Road, in the central portion of the project (**Photographs 5-18** through **5-20**). It appears that AA-7 is connected to AA-6 during times of high water but is isolated under normal conditions. A substantial amount of debris, old machinery, and construction materials were observed on the ground between AA-7 and AA-6. AA-7 is mapped by SJRWMD as Lakes (FLUCCS 5200) and Freshwater Marshes (FLUCCS 6410) and is mapped by NWI as a Freshwater Pond. Field inspections revealed an approximately 4.2-acre pond with relatively little wetland vegetation except for a patch of spikerush (*Eleocharis* sp.) along the southern bank. AA-7 is surrounded on three sides by cattle pasture that was previously used for citrus or row crops. A citrus orchard and a farm house and barns are located immediately north of AA-7.



**Photograph 5-18 North Side of AA-7, facing south**



**Photograph 5-19 Tank and sheds on north side of AA-7, facing southwest**



**Photograph 5-20 Southern End of AA-7, facing north**

## AA-8

AA-8 is a group of wetlands and OSWs (**Photographs 5-21** through **5-24**) located near the eastern end of the project area. It is part of a larger contiguous wetland system labeled on maps as Lake Needham. However, aerial imagery often shows Lake Needham as multiple small ponds that are connected at times of high water. In AA-8, the project corridor crosses the area mapped as Lake Needham and associated wetlands. AA-8 begins just east of the western proposed interchange with Schofield Road and ends near the eastern proposed interchange with Schofield Road. A portion of AA-8 is mapped by SJRWMD as Lakes (FLUCCS 5200) and by NWI as Freshwater Pond. The majority of this area, however, is mapped by SJRWMD as Improved Pastures (FLUCCS 2110) and has no NWI category rating. Historic aerial imagery and field inspections revealed most of the Improved Pasture in AA-8 is periodically inundated (**Photograph 5-25**) and is actually wetland. Historic imagery shows that from 2004 through most of 2006, Lake Needham is larger than under current conditions, and open water occupies the majority of AA-8 (**Photograph 5-26**). The open water areas of Lake Needham appeared to shrink in size from 2007 to 2014 (**Photograph 5-18**). Many parts of AA-8 contain very gradual slopes that transition from pasture grasses to wetter areas that contain cattails, pickerel weed, broadleaf arrowhead (*Sagittaria latifolia*), and spikerush.



**Photograph 5-21 AA-8, facing northeast**



**Photograph 5-22 AA-8, facing southeast**



**Photograph 5-23 Wet Pasture in AA-8, facing south**



**Photograph 5-24 Lake and Wetlands in AA-8, facing south**



**Photograph 5-25 Lake Needham Historic Aerial, 2004**



**Photograph 5-26 Lake Needham Aerial, 2018**

## 7.0 IMPACTS EVALUATION

The “No-Build” alternative would have no impacts on wildlife, habitats, wetlands or other surface waters; however, the “No-Build” alternative would not address the needs of the proposed project. The extent of potential impacts to wildlife habitats and wetlands was assessed by overlaying land use types (as mapped by SJRWMD and supplemented with data collected in the field) with proposed project alternatives. Typical sections for the Build Alternative, along with illustrations and an aerial view of the roadway are provided in Section 4.0.

### DIRECT IMPACTS

Potential direct impacts to wetlands and OSW, wood stork SFH, and vegetated uplands are summarized in **Table 7-1** for the preferred alternative and four stormwater ponds that occur outside the project corridor. Direct impacts are summarized by FLUCCS code in **Table 7-2**. Acreages of impacts were rounded to the nearest whole number, except that impacts less than one acre were expressed to the tenth of an acre. The directly impacted wetlands include areas mapped by SJRWMD as Hydric Pine Flatwoods (FLUCCS 6250), Wetland Forested Mixed (FLUCCS 6300), Freshwater Marshes (FLUCCS 6410), and Mixed Scrub-Shrub Wetland (FLUCCS 6460). OSW include areas mapped as Lakes (FLUCCS 5200) and Surface Water Collection Basins (FLUCCS 8370). Jurisdictional determinations of wetland limits will be made during the permitting phase and may potentially reduce the extent of direct wetland impacts.

**Table 7-1 Approximate Potential Direct Impacts**

Alternative	Wetlands (acres)	OSW (acres)	Wood Stork SFH (acres)	Vegetated Uplands (acres)
No Build	-	-	-	-
Preferred Alternative	64	71	49	282
Stormwater Ponds 1A6, 2A, 3A3, 4A3	0.13	-	0.13	50

**Table 7-2 Direct Impacts by FLUCCS Code**

Land Cover	FLUCCS CODE	Preferred Alternative (acres)	Pond 1A6 (acres)	Pond 2A (acres)	Pond 3A3 (acres)	Pond 4A3 (acres)
Improved Pastures	2110	131	-	-	15	21
Field Crops	2150	19	-	-	-	-
Citrus Groves	2210	65	-	9	-	-
Horse Farms	2510	2	-	-	-	-
Herbaceous (Dry Prairie)	3100	16	3	-	-	-
Upland Hardwood Forests	4200	3	-	-	-	-
Xeric Oak	4210	11	-	-	-	-
Pine Plantation	4410	35	2	-	-	-
Lakes	5200	18	-	-	-	-
Hydric Pine Flatwoods	6250	0.05	-	-	-	-
Wetland Forested Mixed	6300	10	-	-	-	-
Freshwater Marshes	6410	50	0.13	-	-	-
Mixed Scrub-Shrub Wetland	6460	4	-	-	-	-
Solid Waste Disposal	8350	0.54	-	-	-	-
Surface Water Collection Basins	8370	53	-	-	-	-
	<b>TOTAL</b>	<b>417.59</b>	<b>5.13</b>	<b>9</b>	<b>15</b>	<b>21</b>

Wood stork SFH includes wetlands and other surface waters. The total current acreage of SFH in the form of wetland and OSW impacts was used to estimate a maximum total of approximately 49 acres of potential impacts to wood stork SFH (**Table 7-1**). The precise amount of required mitigation for impacts to wood stork SFH will be determined during the design and permitting processes. Mitigation is typically secured through the purchase of Federal wetland mitigation credits.

Impacts to vegetated uplands are calculated to estimate the acreage of potential impacts to terrestrial habitats. Under the preferred alternative, there would be approximately 332 acres of direct impacts to vegetated uplands. Vegetated uplands include areas mapped by SJRWMD as Improved Pastures (FLUCCS 2110), Field Crops (2150), Citrus Groves (FLUCCS 2210), Horse Farms (FLUCCS 2510), Herbaceous Upland Nonforested (FLUCCS 3100), Upland Hardwood Forests (FLUCCS 4200), Xeric Oak (FLUCCS 4210), and Pine Plantation (FLUCCS 4410).

### ***POTENTIAL DIRECT IMPACTS TO LISTED SPECIES***

For each listed species, the conservation status, typical habitat, and potential to occur in the project area are described in Section 6.0 along with effect determinations. **Table 7-3** presents each species and lists those effect determinations.

No adverse impacts to listed species are anticipated from the proposed project. Federally listed species that may be affected but would not be adversely affected by the proposed project are American alligator, Audubon's crested caracara, Britton's beargrass, bluetail mole skink, Carter's mustard, clasping warea, eastern diamondback rattlesnake, eastern indigo snake, Everglade snail kite, Lewton's polygala, papery whitlow-wort, pygmy fringe tree, sand skink, scrub blazingstar, scrub plum, striped newt, and wood stork. A determination of No Effect was made for Florida bonamia, Florida scrub-jay, red-cockaded woodpecker, scrub buckwheat, scrub lupine, and short-leaved rosemary.

No adverse effects are anticipated for the state listed burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, little blue heron, southeastern American kestrel, or tri-colored heron.

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**Table 7-3 Effect Determinations for Preferred Alternative**

Common Name	Scientific Name	Effect Determination
American alligator	<i>Alligator mississippiensis</i>	MANLAA
Audubon's crested caracara	<i>Polyborus plancus audubonii</i>	MANLAA
Bluetail mole skink	<i>Eumeces egregius lividus</i>	MANLAA
Britton's beargrass	<i>Nolina brittoniana</i>	MANLAA
Burrowing owl	<i>Athene cunicularia</i>	NAEA
Carter's mustard	<i>Warea carteri</i>	MANLAA
Clasping warea	<i>Warea amplexifolia</i>	MANLAA
Eastern diamondback rattlesnake	<i>Crotalus adamanteus</i>	MANLAA
Eastern indigo snake	<i>Drymarchon corais couperi</i>	MANLAA
Everglade snail kite	<i>Rostrhamus sociabilis plumbeus</i>	MANLAA
Florida bonamia	<i>Bonamia grandiflora</i>	No Effect
Florida pine snake	<i>Pituophis melanoleucus mugitus</i>	NAEA
Florida sandhill crane	<i>Grus canadensis pratensis</i>	NAEA
Florida scrub-jay	<i>Aphelocoma coerulescens</i>	No Effect
Gopher tortoise	<i>Gopherus polyphemus</i>	NAEA
Lewton's polygala	<i>Polygala lewtonii</i>	MANLAA
Little blue heron	<i>Egretta caerulea</i>	NAEA
Papery whitlow-wort	<i>Paronychia chartacea</i>	MANLAA
Pygmy fringe tree	<i>Chionanthus pygmaeus</i>	MANLAA
Red-cockaded woodpecker	<i>Picoides borealis</i>	No Effect
Sand skink	<i>Neoseps reynoldsi</i>	MANLAA
Scrub blazingstar	<i>Liatris ohlingerae</i>	MANLAA
Scrub buckwheat	<i>Eriogonum longifolium var. gnaphalifolium</i>	No Effect
Scrub lupine	<i>Lupinus aridorum</i>	No Effect
Scrub plum	<i>Prunus geniculata</i>	MANLAA
Short-leaved rosemary	<i>Conradina brevifolia</i>	No Effect
Southeastern American kestrel	<i>Falco sparverius paulus</i>	NAEA
Striped Newt	<i>Notophthalmus perstriatus</i>	MANLAA
Tri-colored heron	<i>Egretta tricolor</i>	NAEA
Wood stork	<i>Mycteria americana</i>	MANLAA

MANLAA- May Affect, Not Likely to Adversely Affect, NAEA= No Adverse Effect Anticipated

**POTENTIAL DIRECT IMPACTS TO WETLANDS**

**Table 7-4** lists the approximate acres of potential direct impacts to each wetland AA as mapped by SJRWMD FLUCCS code. According to SJRWMD data confirmed in the field, approximately 64 total acres of impacts to wetlands and 71 total acres of impacts to OSW are anticipated under the preferred alternative. Impacts to OSW include approximately 18 acres of impacts to Lakes (FLUCCS 5200) as well as approximately 53 acres of impacts to Surface Water Collection Basins (FLUCCS 8370). These wetlands and OSW fall within the jurisdiction of the USACE and SJRWMD or SFWMD.

**Table 7-4 Wetland Assessment Area Potential Direct Impacts**

<b>AA #</b>	<b>FLUCCS Code</b>	<b>USFWS NWI Classification</b>	<b>Approximate acres of FLUCCS Impacts from Preferred Alternative</b>
1	5200 / 6300 / 6410 / 6460	Freshwater Forested/Shrub Wetland / Freshwater Pond	31
2	6300 / 6410	Freshwater Emergent Wetland	3
3	5200 / 6300 / 6410	Freshwater Emergent Wetland / Freshwater Forested/Shrub Wetland	17
4	6460	None	0.50
5	5200 / 6410	Lake	14
6	5200 / 6410	Freshwater Emergent Wetland / Freshwater Pond	11
7	5200 / 6410	Freshwater Pond	2
8	5200 / 6250 / 6410 / 6430	Freshwater Pond	31

Unavoidable impacts to wetlands will be mitigated in accordance with policies and procedures set forth by USACE, FDEP, SJRWMD, and SFWMD. The wetland impacts from the project occur within the service areas of the Collany, Reedy Creek, Southport Ranch, Shingle Creek, Hammock Lakes and the Lake Louisa and Green Swamp Mitigation Banks.

## INDIRECT IMPACTS

*Indirect Impacts* are those impacts that are caused by or will result from the proposed action and are later in time but are still reasonably certain to occur. For transportation projects, indirect impacts typically include disturbance to areas adjacent to the project area. 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 and wetlands. Indirect impacts are typically mitigated at a reduced rate compared to direct impacts.

Potential short-term indirect impacts for the preferred alternative could result from the use of heavy equipment (and avoidance of construction areas by wildlife) and sedimentation resulting from increased erosion associated with soil disturbance. Best Management Practices (BMPs) typically associated with road construction projects will be implemented and maintained throughout all construction activities to minimize indirect impacts. Staging and stockpiling locations will be coordinated with the construction project manager and environmental staff in order to avoid and minimize impacts to any of the aforementioned species.

Potential longer-term indirect impacts include habitat fragmentation. Another indirect impact would be development on vacant land that is spurred by improvements to an adjacent roadway. This is a limited access facility, which will likely reduce the level of local development spurred by the project because there are limited intersections and access points.

## CUMULATIVE IMPACTS

A “cumulative impact”, according to the definition in the Council of Environmental Quality Regulations (40 CFR 1508.) and the FDOT *Cumulative Effects Evaluation Handbook*, “results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions.” Cumulative impacts are the combined effects of the direct and indirect impacts over time.

Clean Water Act Section 404 permits guidelines focus on the discharge of dredge and fill materials and related effects on aquatic ecosystems. The USACE evaluates cumulative effects of numerous piecemeal changes to wetlands that can result in impairment to and changes in floodplain values and functions that may result in significant degradation of the floodplain and increased potential for harm to upstream and downstream activities (33 CFR 320).

This project spans the boundary of two water management districts, SJRWMD and SFWMD. FDEP (or the SJRWMD or SFWMD as delegated to by FDEP) considers cumulative impacts in the context of surface waters and wetlands within a drainage basin (Section 373.414(8) F.S.). The FDEP definition for cumulative impacts is “residual adverse impacts to wetlands and other surface waters in the same drainage basin that have or are likely to result from similar activities (to that under review) that have been built in the past, that are under current review, or that can reasonably be expected to be located in the same drainage basin as the activity under review. Mitigation that fully offsets impacts within the drainage basin where the project impacts occur is assumed to not have any adverse cumulative impacts.”

Under the Endangered Species Act, cumulative impacts “are those effects of future state or private activities, not involving federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation.” (50 CFR 402.02).

Direct impacts from the preferred alternative would include 332 acres of impacts to vegetated uplands and 64 acres of impacts to wetlands. None of these areas contain designated Critical Habitat for listed species and no adverse impacts to listed species are anticipated from the proposed project. Unavoidable impacts to wetlands will be mitigated within the same hydrologic basin whenever possible. BMPs will be implemented to reduce potential indirect impacts from construction, runoff and sedimentation. Mitigation will be provided for impacts to wood stork SFH, as applicable, during the design/permitting phase of the project. Gopher tortoise impacts will be minimized through surveys and potential relocations in accordance with FWC protocols.

For these reasons, cumulative impacts to wetlands and listed species are not anticipated as a result of the proposed project.

## **AVOIDANCE AND MINIMIZATION MEASURES**

Sensitive environmental features, such as wetlands, nesting areas, and known species occurrences were identified early during the PD&E process so that alternatives could be developed that avoid and minimize impacts as much as practicable. Proposed stormwater pond sites will be further evaluated to minimize impacts to environmental resources to the maximum extent practicable, and unavoidable impacts from pond sites will be mitigated. Standard BMPs for construction of roads and bridges will be observed during all construction activities. The *USFWS Standard Protection Measures for the Eastern Indigo Snake* will be implemented as minimization measures and require the excavation of gopher tortoise burrows and other refugia where eastern indigo snakes could be trapped or injured. Gopher tortoise burrow surveys, relocations, and permitting will be performed in accordance with FWC protocols to avoid and minimize potential impacts.

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## 8.0 AGENCY COORDINATION AND ANTICIPATED PERMITS

Representatives from USFWS and FWC were involved in the Advance Notification and preliminary screening processes. No listed species under the jurisdiction of NMFS is likely to occur in the project corridor, so no further coordination with the NMFS is anticipated. Additional coordination with the SJRWMD, SFWMD, and Orange and Lake Counties occurred through Environmental Advisory Group meetings. No response to the Advance Notification was received from FWC, USFWS, FDEP, SFWMD, SJRWMD, or USACE.

This project spans the boundary of two water management districts, SJRWMD and SFWMD, and will therefore require ERPs from both agencies or a permitting agreement between the two agencies. The Water Management Districts will require that any existing wells within the project footprint be sealed and closed prior to construction. The project will also require a USACE 404 Dredge and Fill Permit, mitigation for impacts to wetlands and wood stork SFH, and permitting and relocation of gopher tortoise.

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## 9.0 CONCLUSIONS

The No Build and the preferred alternative were evaluated for impacts to listed species and habitats using a review of existing project literature and data, GIS resources, agency coordination, and field surveys.

No adverse impacts to listed species are anticipated from the proposed project. Federally listed species that may be affected but would not be adversely affected by the proposed project are American alligator, Audubon's crested caracara, Britton's beargrass, bluetail mole skink, Carter's mustard, clasping warea, eastern diamondback rattlesnake, eastern indigo snake, Everglade snail kite, Lewton's polygala, papery whitlow-wort, pygmy fringe tree, sand skink, scrub blazingstar, scrub plum, striped newt, and wood stork. A determination of No Effect was made for Florida bonamia, Florida scrub-jay, red-cockaded woodpecker, scrub buckwheat, scrub lupine, and short-leaved rosemary.

No adverse effects are anticipated for the state listed burrowing owl, Florida pine snake, Florida sandhill crane, gopher tortoise, little blue heron, southeastern American kestrel, or tri-colored heron.

It is anticipated that the preferred alternative would result in 64 acres of wetland impacts, 71 acres of OSW impacts, 49 acres of impacts to wood stork SFH, and 332 acres of impacts to vegetated uplands. The wetland impacts from the project occur within the service areas of the Collany, Reedy Creek, Southport Ranch, Shingle Creek, Hammock Lakes and the Lake Louisa and Green Swamp Mitigation Banks.

This project spans the boundary of two water management districts, SJRWMD and SFWMD, and will therefore require ERPs from both agencies or a permitting agreement between the two agencies. The project will also require a USACE 404 Dredge and Fill Permit, mitigation for impacts to wetlands and wood stork SFH, and permitting and relocation of gopher tortoise.

## COMMITMENTS

CFX commitments are listed below.

- To minimize adverse impacts to the eastern indigo snake, during construction, CFX will adhere to the *USFWS Standard Protection Measures for the Eastern Indigo Snake*.
- CFX will mitigate for any unavoidable impacts to wood stork SFH at an approved mitigation bank and in accordance with the *USFWS Wood Stork Effect Determination Key* (U.S. Army Corps of Engineers and USFWS 2008).
- A preconstruction gopher tortoise burrow survey and any resultant permitting will be conducted in accordance with FWC protocols.
- To mitigate for unavoidable impact to wetlands consistent with state and Federal standards.

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## 10.0 REFERENCES

- Florida Department of Environmental Protection. 1995. Florida Wetlands Delineation Manual. Available at:  
<http://www.dep.state.fl.us/water/wetlands/delineation/manual.htm>.
- Federal Register. 2012. Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition To List the Eastern Diamondback Rattlesnake as Threatened. U.S. Fish and Wildlife Service, Department of the Interior. FR Volume Number 77, No. 91, pg. 27403-27411
- FNAI. 2018. Claspig Warea. Available at:  
[https://www.fnai.org/FieldGuide/pdf/Warea\\_amplexifolia.pdf](https://www.fnai.org/FieldGuide/pdf/Warea_amplexifolia.pdf)
- Florida Fish and Wildlife Conservation Commission (FWC). 2007. Gopher Tortoise Management Plan. Florida Fish and Wildlife Conservation Commission. Tallahassee Florida. Available at:  
[http://myfwc.com/media/214304/gt\\_mgmt\\_plan.pdf](http://myfwc.com/media/214304/gt_mgmt_plan.pdf)
- Four Corners Sand Mine. 2013. Attachment F: CEMEX Construction Materials Florida LLC, Four Corners Sand Mine Environmental Report. Prepared by Southeast Environmental Solutions, Inc.
- FWC. 2014. Florida pine snake (*Pituophis melanoleucus mugitus*). Available at:  
<http://myfwc.com/media/2212141/Florida-Pine-Snake.pdf>.
- FWC. 2015. Little Blue Heron. Available at:  
<http://myfwc.com/wildlifehabitats/imperiled/profiles/birds/little-blue-heron/>. Last accessed July 8, 2015.
- Natural Resources Conservation Service. 2019. Web Soil Survey. Online tool provided by U.S. Department of Agriculture. Available at:  
<http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>.
- 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.
- 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.

- U.S. Fish and Wildlife Service (USFWS). 1996. Carter's Mustard. Multi-Species Recovery Plan for South Florida. Available at:  
<https://www.fws.gov/verobeach/MSRPPDFs/Carter.PDF>
- USFWS. 1989. Recovery Plan for the Florida Population of Audubon's Crested Caracara. U.S. Fish and Wildlife Service, Atlanta, Georgia.
- USFWS. 2014a. Audubon's Crested Caracara *Polyborus plancus audubonii*. U.S. Fish and Wildlife Service. Available at:  
<http://www.fws.gov/southeast/vbpdfs/species/birds/acca.pdf>.
- USFWS. 2014b. Eastern Indigo Snake *Crymarchon corais couperi*. U.S. Fish and Wildlife Service information sheet. Available at: <http://www.fws.gov/verobeach/msrppdfs/easternindigosnake.pdf>. Last accessed August 18, 2014.
- USFWS. 2014c. Wood Stork. U.S. Fish and Wildlife Service Information Sheet Available at: <http://www.fws.gov/verobeach/msrppdfs/woodstork.pdf>. Last accessed August 18, 2014.
- USFWS. 2014d. Florida Bonamia *Bonamia grandiflora*. U.S. Fish and Wildlife Service information sheet. Available at:  
<http://www.fws.gov/verobeach/MSRPPDFs/FLBonamia.PDF>. Last accessed August 15, 2014.
- USFWS. 2014e. Sand and Bluetail Mole Skink. U.S. Fish and Wildlife Service Information Sheet. Available at: <https://www.fws.gov/northflorida/Skink/skinks.htm>. Last Updated February 7, 2018.
- USFWS. 2015. South Florida Multi-Species Recovery Plan. Available at:  
<https://www.fws.gov/verobeach/ListedSpeciesMSRP.html>. Last accessed December 1, 2017