

**Northeast Connector Expressway – Phase 1
From Cyrils Drive to Nova Road (CR 532) PD&E Study**

Natural Resources Evaluation

Central Florida Expressway Authority



**CENTRAL
FLORIDA
EXPRESSWAY
AUTHORITY**



CFX Project No.: 599-228
Contract No.: 001546

October 2021

**Natural Resources Evaluation
 Northeast Connector Expressway – Phase 1
 TABLE OF CONTENTS**

1.0 Project Summary1-1

1.1 Project Background 1-1

1.2 Project Description 1-3

1.3 Purpose and Need..... 1-4

1.4 Alternatives Description 1-4

1.4.1 Jack Brack Road Alternatives 1-5

1.4.1.1 Partial Cloverleaf Interchange..... 1-5

1.4.1.2 Diamond Interchange 1-5

1.4.1.3 Tighter Diamond Interchange..... 1-5

1.4.2 Nova Road Connection Alternatives 1-7

1.4.2.1 Nova Road Connection - Option 1 1-7

1.4.2.2 Nova Road Connection - Option 2 1-7

1.5 Existing Conditions 1-9

1.5.1 Existing Land Use..... 1-9

1.5.2 Existing Conservation Areas 1-12

1.5.3 Existing Soil Conditions 1-12

2.0 Protected Species and Habitat2-1

2.1 Protected Species 2-1

2.1.1 Federally Protected Species 2-4

2.1.1.1 Florida Panther..... 2-4

2.1.1.2 Eastern Indigo Snake 2-6

2.1.1.3 Florida Grasshopper Sparrow 2-6

2.1.1.4 American Alligator..... 2-7

2.1.1.5 Everglade Snail Kite..... 2-7

2.1.1.6 Red-Cockaded Woodpecker..... 2-7

2.1.1.7 Wood Stork..... 2-8

2.1.1.8 Audubon’s Crested Caracara..... 2-8

2.1.1.9 Florida Scrub-jay 2-8

2.1.2 Federal Species Preliminary Effect Determination Summary 2-9

2.1.3 State-Listed and Other Protected Species 2-10

2.1.3.1 Florida Black Bear..... 2-10

2.1.3.2	Gopher Tortoise.....	2-10
2.1.3.3	Pine Snake	2-10
2.1.3.4	Florida Sandhill Crane.....	2-10
2.1.3.5	Florida Burrowing Owl.....	2-11
2.1.3.6	Wading Birds	2-11
2.1.3.7	Bald Eagle	2-11
2.2	Designated Critical Habitat.....	2-11
3.0	Wetland Evaluation	3-1
3.1	Methodology	3-1
3.2	Common Wetland Types	3-1
3.3	Wetland Impact Analysis	3-3
3.4	Uniform Mitigation Assessment Methodology	3-8
3.5	Uniform Mitigation Assessment Results.....	3-8
4.0	Essential Fish Habitat.....	4-1
5.0	Anticipated Permits and Mitigation	5-1
6.0	Summary Comparison of Alternatives.....	6-1
6.1	Impacts to Listed Species.....	6-1
6.2	Impacts to Wetlands.....	6-1
6.3	Commitments.....	6-2
7.0	References	7-1

LIST OF FIGURES

Figure	Title	Page
Figure 1.1.1:	Project Location Map	1-2
Figure 1.4.1:	Proposed Typical Section	1-4
Figure 1.4.2:	Jack Brack Road Alternatives Overview	1-6
Figure 1.4.3:	Nova Road Connection Alternatives Overview	1-8
Figure 1.5.1:	Existing Land Use Map Jack Brack Road Segment.....	1-10
Figure 1.5.2:	Existing Land Use Map Nova Road Segment	1-11
Figure 1.5.3:	NRCS Soil Survey Soil Types	1-13
Figure 2.1.1:	Listed Species.....	2-2
Figure 2.1.2:	Panther Telemetry Points	2-5
Figure 3.3.1:	Jack Brack Road Wetland and Surface Water Map	3-5
Figure 3.3.2:	Nova Road Connection Wetland and Surface Water Map	3-6
Figure 5.1.1:	Retained Waters Map	5-2

LIST OF TABLES

Table	Title	Page
Table 1.5.1:	NRCS Soil Types.....	1-12
Table 2.1.1:	Listed Species	2-3
Table 2.1.2:	Federally Listed Species Preliminary Effect Determination.....	2-9
Table 3.3.1:	Wetland Impact Analysis	3-7
Table 3.5.1:	Preliminary UMAM Functional Loss by Segment and Alternative	3-9

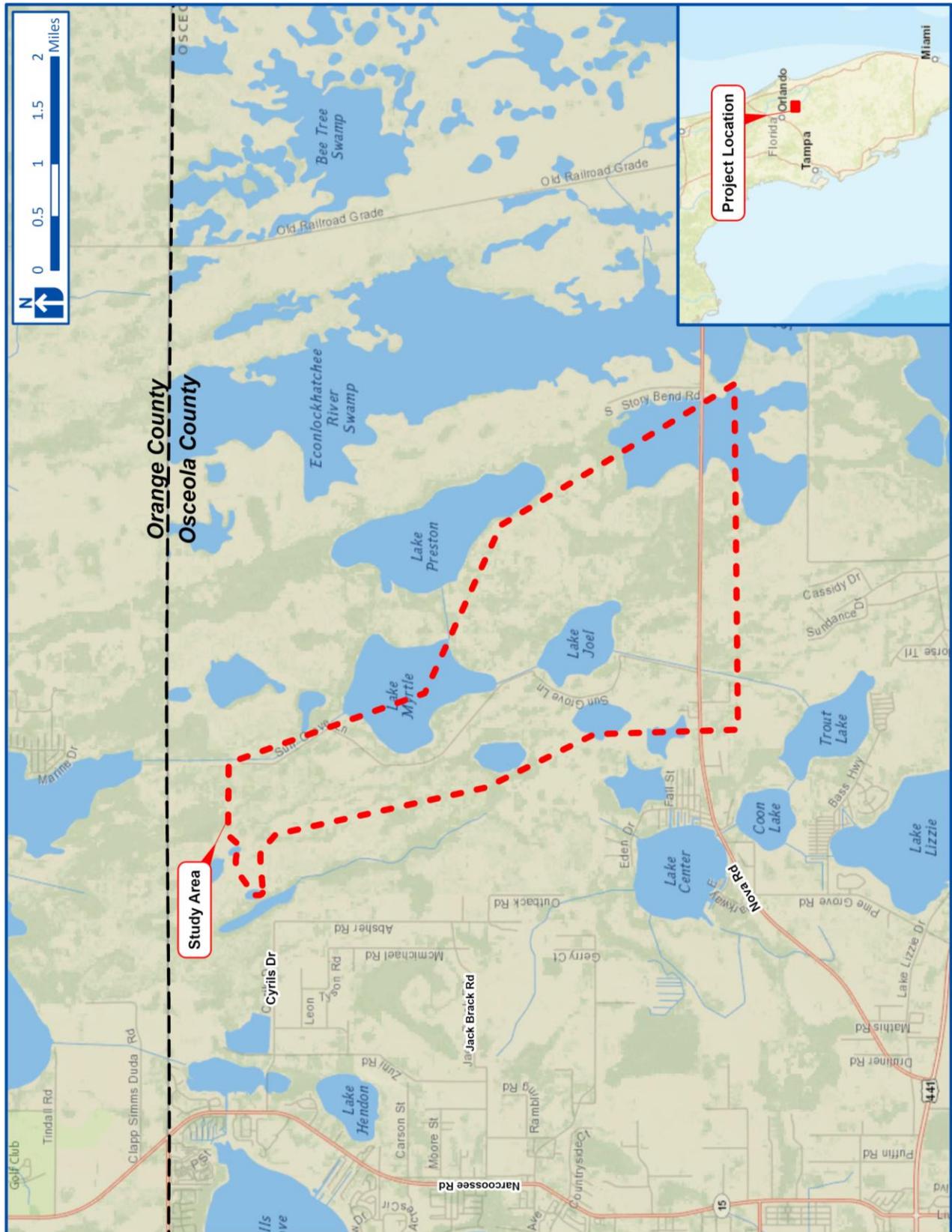
1.0 Project Summary

1.1 Project Background

The Central Florida Expressway Authority (CFX) is evaluating a new expressway connection between Cyrils Drive and Nova Road in Osceola County. The study area begins south of the terminus of the planned SR 534 extension near Cyrils Drive and extends to Nova Road, approximately 4.3 miles. The project area is shown on **Figure 1.1.1**. The Northeast Connector Expressway has been considered in numerous previous studies. The most relevant studies to this project include:

- Northeast District Conceptual Master Plan, 2010;
- Osceola County Expressway Authority (OCX) Master Plan 2040, 2013;
- East Central Florida Corridor Task Force Final Report, 2014;
- North Ranch Sector Plan, 2015; and
- CFX Northeast Connector Expressway Concept, Feasibility, and Mobility Study, 2018
- CFX Visioning 2040 Master Plan (2016)

Figure 1.1.1: Project Location Map



1.2 Project Description

The Northeast Connector Expressway will enhance north-south mobility and provide connections between existing and future east-west corridors in the study area. The Northeast Connector Expressway will link the planned SR 534, which is based on an approved CFX Project Development and Environment (PD&E) Study Re-evaluation with the planned Osceola / Brevard County Connectors, which is currently in the planning phase. These connections will promote regional connectivity, provide for transit opportunities, and enhance mobility in Osceola County. The link between the planned SR 534 and Osceola / Brevard County Connectors will also provide a seamless limited access, high-speed connection from the Orlando International Airport (OIA) to I-95 in Brevard County. In the interim, before the Osceola / Brevard County Connectors is constructed, the Northeast Connector Expressway will extend the limited access connection from Cyrils Drive to Nova Road, a major county road. This connection will be vital to providing a limited access, north-south facility within the Northeast District, a large master-planned development in northeast Osceola County owned by Deseret Ranches.

An Alternative Corridor Evaluation Report (ACER) was prepared in December 2020. The findings of that report indicate that Corridor A is superior in addressing the need for the project, and therefore recommends that Corridor A be carried forward in the PD&E Study. The ACE considered impacts on the natural environment. Corridor A's wetland impacts are anticipated to be less than those related to Corridor B. Corridor A and Corridor B are anticipated to have similar impacts on floodplains. However, Corridor A has approximately 2.4 acres of additional impact on floodplains. Corridor A has undergone further design refinement, and alternatives are described in Section 1.4 of this Natural Resources Evaluation (NRE).

1.3 Purpose and Need

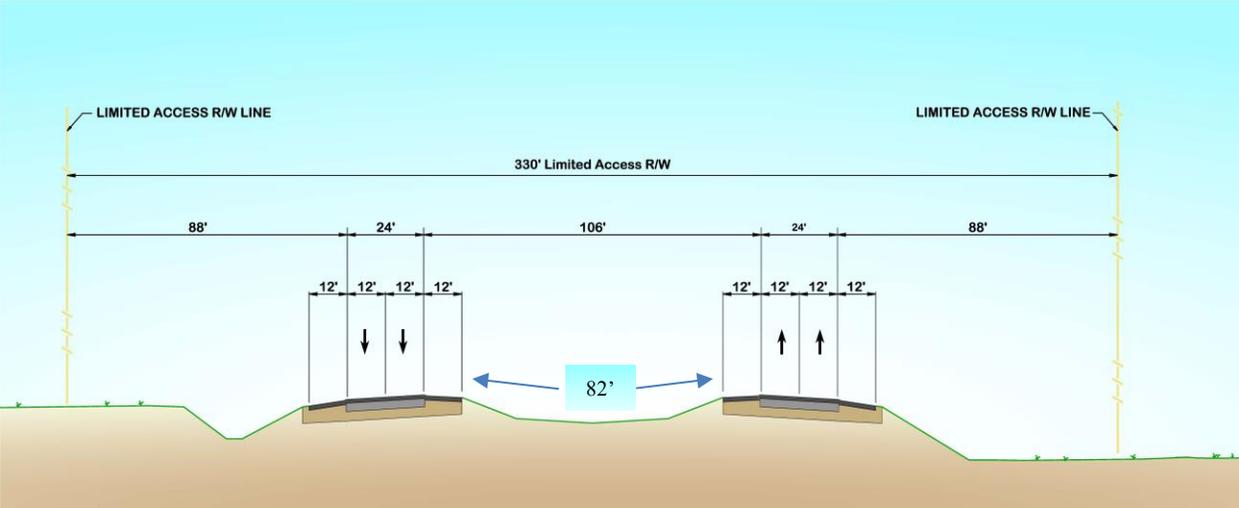
The purpose of the Northeast Connector Expressway is to enhance north-south mobility and provide connections between existing and future east-west corridors in the study area. The Northeast Connector Expressway will link the planned SR 534 with the planned Osceola / Brevard County Connectors. These connections will promote regional connectivity, provide for transit opportunities, and enhance mobility in Osceola County and the entire Central Florida region. The link between the planned SR 534 and Osceola / Brevard County Connectors will also provide a seamless limited access, high-speed connection from the OIA to I-95 in Brevard County.

The need for the project is to provide system linkage and regional connectivity, meet social and economic needs, provide additional transportation capacity, achieve consistency with transportation plans, provide multimodal opportunities, and improve safety and evacuation routes. Additionally, the East Central Florida Corridor Task Force Report recommended continuing the project development process for the Northeast Connector Expressway.

1.4 Alternatives Description

Three alternatives at Jack Brack Road and two at Nova Road comprise the alternatives for this project. One typical section is considered for the length of the project. The proposed typical section features two 12-foot travel lanes in each direction flanked by 12-foot paved inside and outside shoulders. The proposed median width is 82 feet wide, which can accommodate future widening. The ultimate typical section features an eight-lane section and two potential multi-use lanes with a concrete median barrier wall. The proposed typical section requires 330 feet of limited access right-of-way, which includes a border width of 88 feet on both sides of Northeast Connector Expressway as shown on **Figure 1.4.1**.

Figure 1.4.1: Proposed Typical Section



The alternatives for the project are split into two sections:

- Jack Brack Road: Cyrils Drive to south of Jack Brack Road (Section 1.4.1); and
- Nova Road Connection: south of Jack Brack Road to Nova Road (Section 1.4.2).

1.4.1 Jack Brack Road Alternatives

The Cyrils Drive to south of Jack Brack Road segment features one mainline alignment with two interchange alternatives at Jack Brack Road. The two interchange alignments are identified as follows:

- Partial Cloverleaf Interchange; and
- Diamond Interchange.

The mainline alignment extends south from the proposed SR 534 preferred alternative. The alignment is located between the Del Webb community to the west and the planned Sunbridge neighborhoods to the east. Continuing further south, the alignment stays just east of the Tavistock utility site, currently under construction. The mainline alignment then squeezes between Lake Myrtle and Bullock Lake, staying close to the east side of Bullock Lake.

1.4.1.1 Partial Cloverleaf Interchange

The Partial Cloverleaf Interchange is located at the proposed extension of Jack Brack Road. The Partial Cloverleaf Interchange is located on the northern side of Jack Brack Road in order to avoid impacts to Bullock Lake and the associated wetlands. The southbound lanes will have an exit ramp and entrance loop ramp on the west side of the expressway while the northbound lanes will have an entrance ramp and exit loop ramp on the east side. Easy access to and from the expressway will be present for eastbound and westbound traffic on Jack Brack Road. An overview of this alternative is shown on **Figure 1.4.2**.

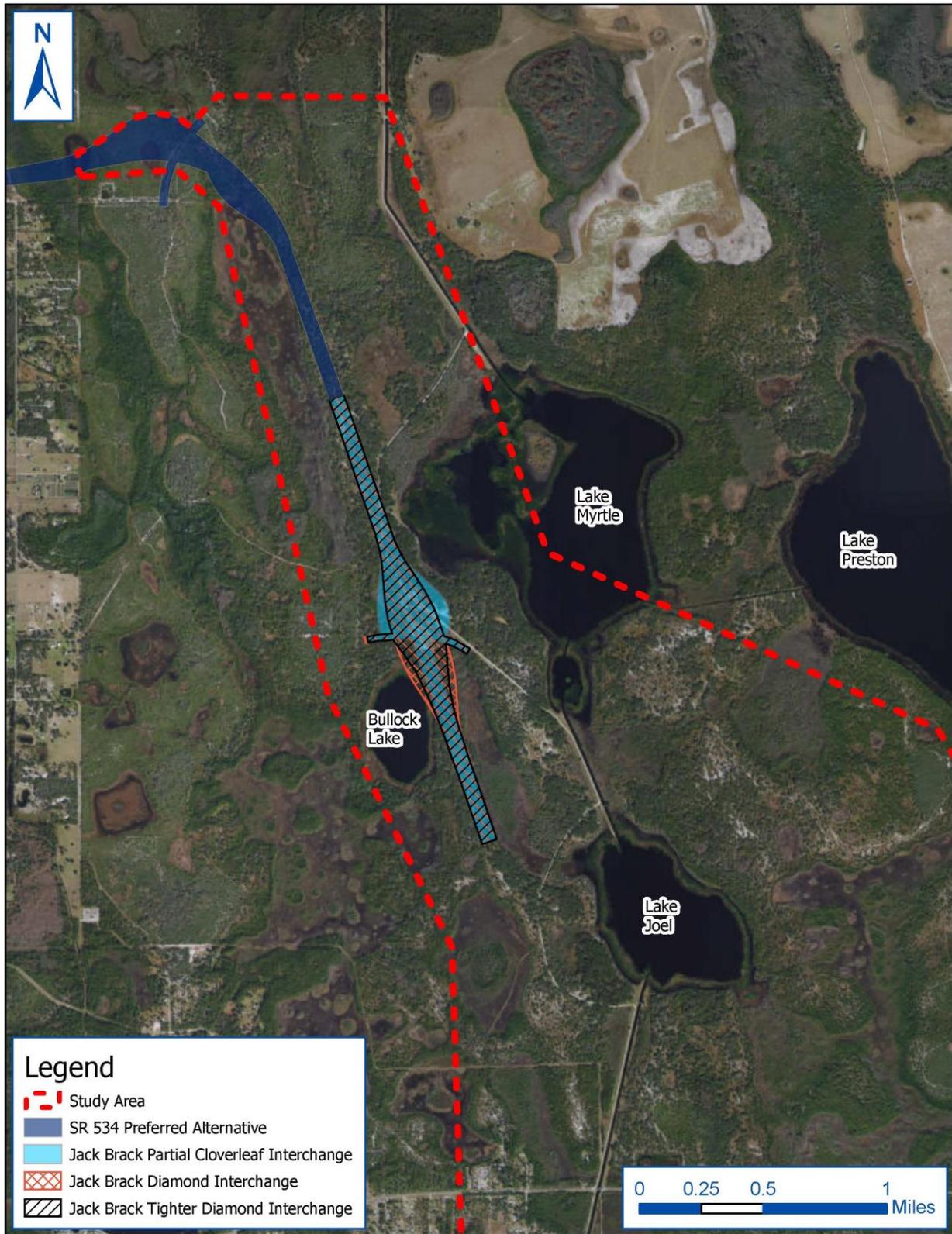
1.4.1.2 Diamond Interchange

The Diamond Interchange has exit ramps in the southeast and northwest quadrants of the interchange that will allow for traffic exiting the expressway to continue east or west along Jack Brack Road. There are also entrance ramps in the northeast and southwest corners of the interchange that will allow for traffic traveling in the eastbound or westbound direction to enter the expressway in either direction. An overview of this alternative is shown on **Figure 1.4.2**.

1.4.1.3 Tighter Diamond Interchange

The Tighter Diamond Interchange has exit ramps in the southeast and northwest quadrants of the interchange that will allow for traffic exiting the expressway to continue east or west along Jack Brack Road. There are also entrance ramps in the northeast and southwest corners of the interchange that will allow for traffic traveling in the eastbound or westbound direction to enter the expressway in either direction. The overall footprint for the Tighter Diamond Interchange is slightly smaller than the Diamond Interchange. An overview of this alternative is shown on **Figure 1.4.2**.

Figure 1.4.2: Jack Brack Road Alternatives Overview



1.4.2 Nova Road Connection Alternatives

The south of Jack Brack Road to Nova Road segment features two mainline alignments with connections to Nova Road in different locations. The two alternatives in this segment are identified as follows:

- Nova Road Connection – Option 1; and
- Nova Road Connection – Option 2.

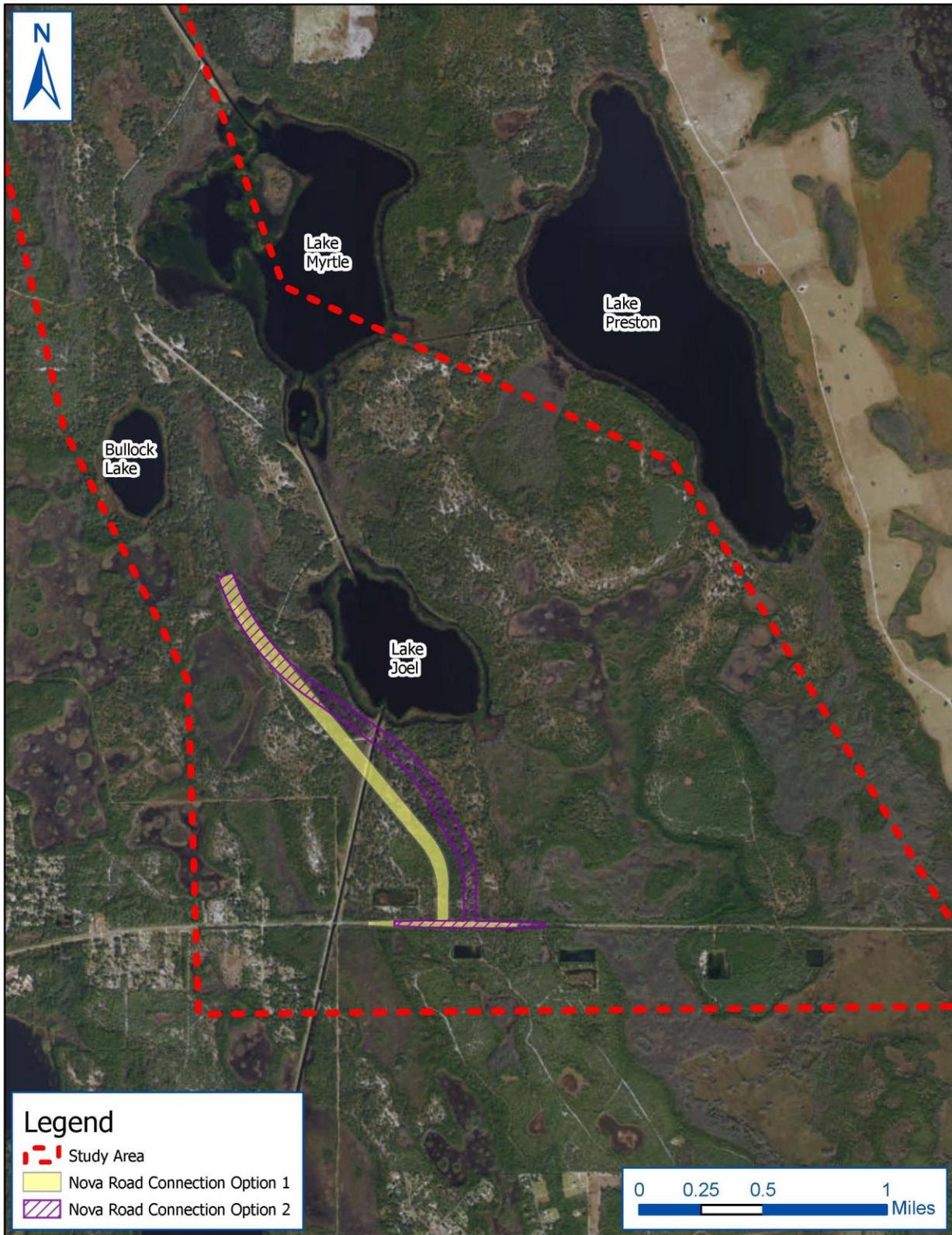
1.4.2.1 Nova Road Connection - Option 1

South of the proposed Jack Brack extension, the mainline alignment diverges between the two alternatives. Nova Road Connection – Option 1 continues on a southeasterly tangent, crosses the C-32C canal, and continues on that tangent until it terminates at Nova Road. Just north of Nova Road, the alignment bends to provide a 90-degree T-intersection at Nova Road. At this time, the expressway would end at Nova Road, but a future easterly extension of the expressway is possible if the Osceola/Brevard County Connectors project moves forward at this location. An overview of this alternative is shown on **Figure 1.4.3**.

1.4.2.2 Nova Road Connection - Option 2

Nova Road Connection – Option 2 is similar to Option 1; however, the alignment differs slightly. Option 2 introduces a reverse curve in the alignment to shift the alignment closer to Lake Joel. The crossing of the C-32C canal is less skewed than in Option 1. This reverse curve also shifts the T-intersection at Nova Road further to the east. Similar to Option 1, the alignment terminates at Nova Road with a 90-degree T-intersection. At this time, the expressway would end at Nova Road, but a future easterly extension of the expressway is possible if the Osceola/Brevard County Connectors project moves forward at this location. An overview of this alternative is shown on **Figure 1.4.3**.

Figure 1.4.3: Nova Road Connection Alternatives Overview



1.5 Existing Conditions

The following sections describe the existing conditions of the natural and physical environment within the study area.

1.5.1 Existing Land Use

Land cover land use data from the South Florida Water Management District (SFWMD, 2016) was utilized to develop a baseline of existing habitat types within the study area. Limited ground-truthing by biologists was conducted during a field review on November 17, 2020, to confirm existing land uses within the study area. Habitat types were mapped using the Florida Land Use/Cover and Forms Classification System (FLUCFCS).

Habitat types within the project study area are shown on **Figures 1.5.1** and **1.5.2**.

Figure 1.5.1: Existing Land Use Map Jack Brack Road Segment

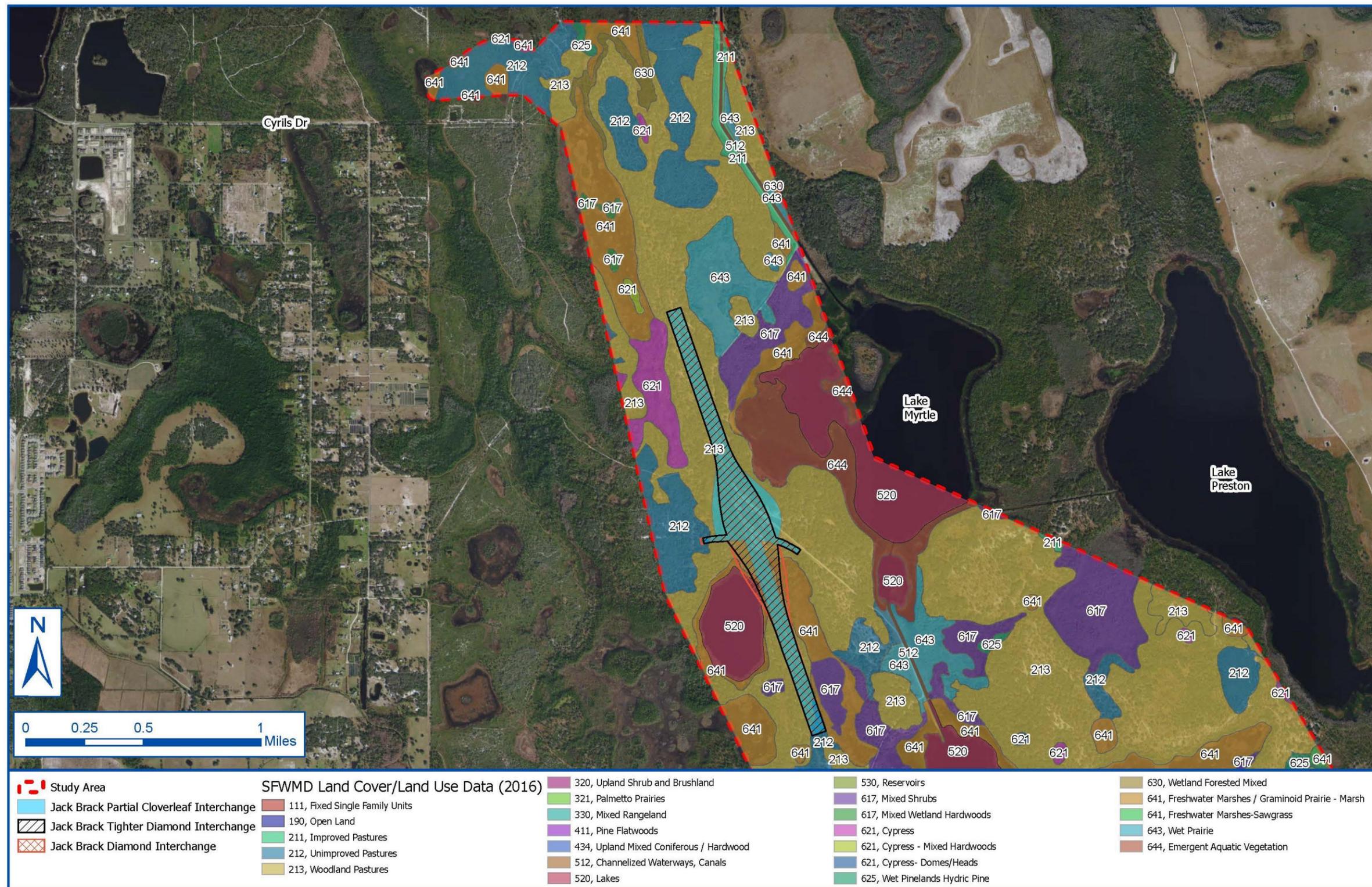
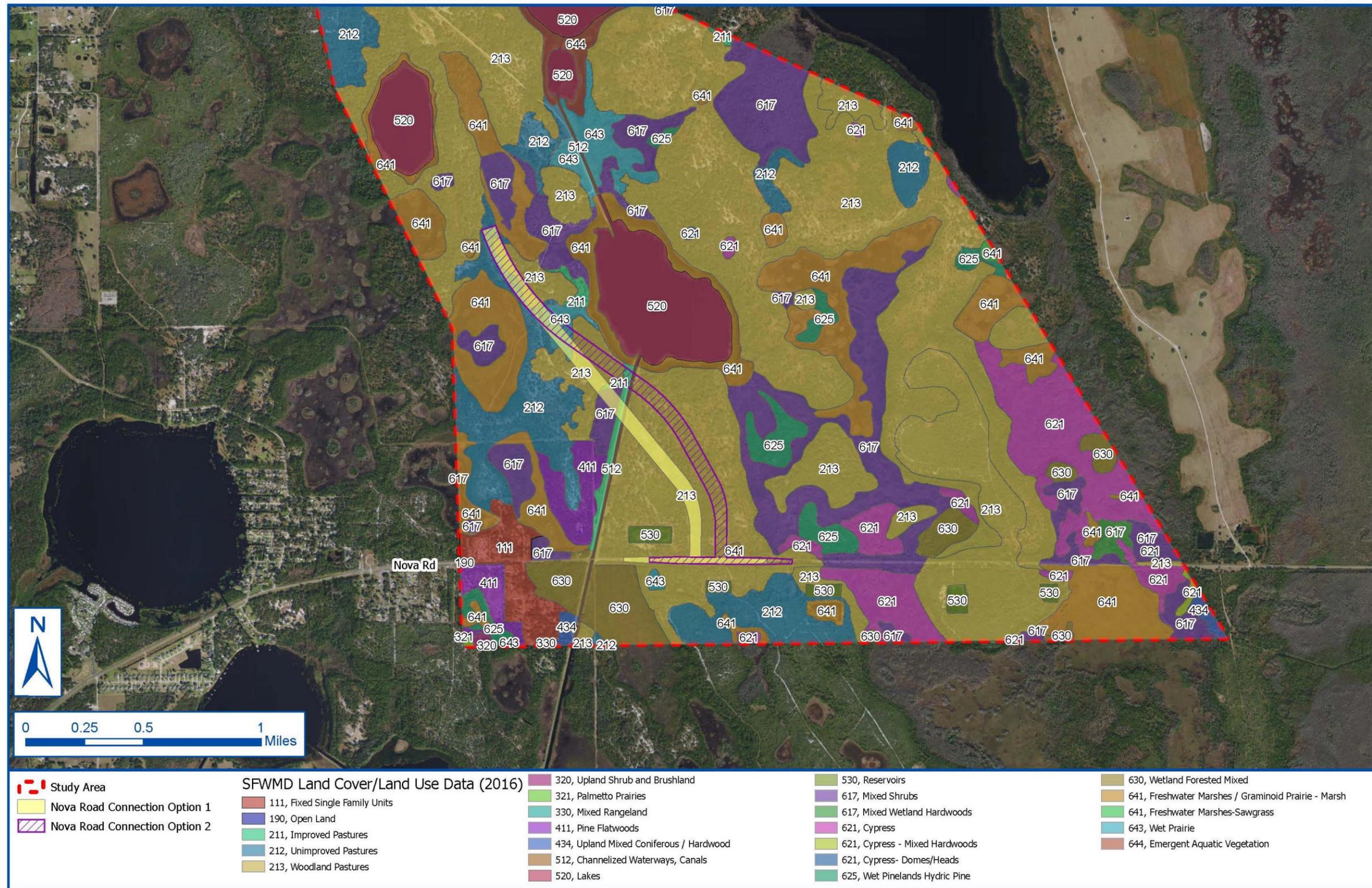


Figure 1.5.2: Existing Land Use Map Nova Road Segment



1.5.2 Existing Conservation Areas

Data from the Osceola County Property Appraiser and Florida Forever Conservation and Recreation Land Acquisition Program show that all parcels are privately owned, and there is no public conservation land located within the study area. The Northeast District Conceptual Master Plan (2010) proposes future conservation corridors, however no conservation areas, public or private, currently exist within the study area.

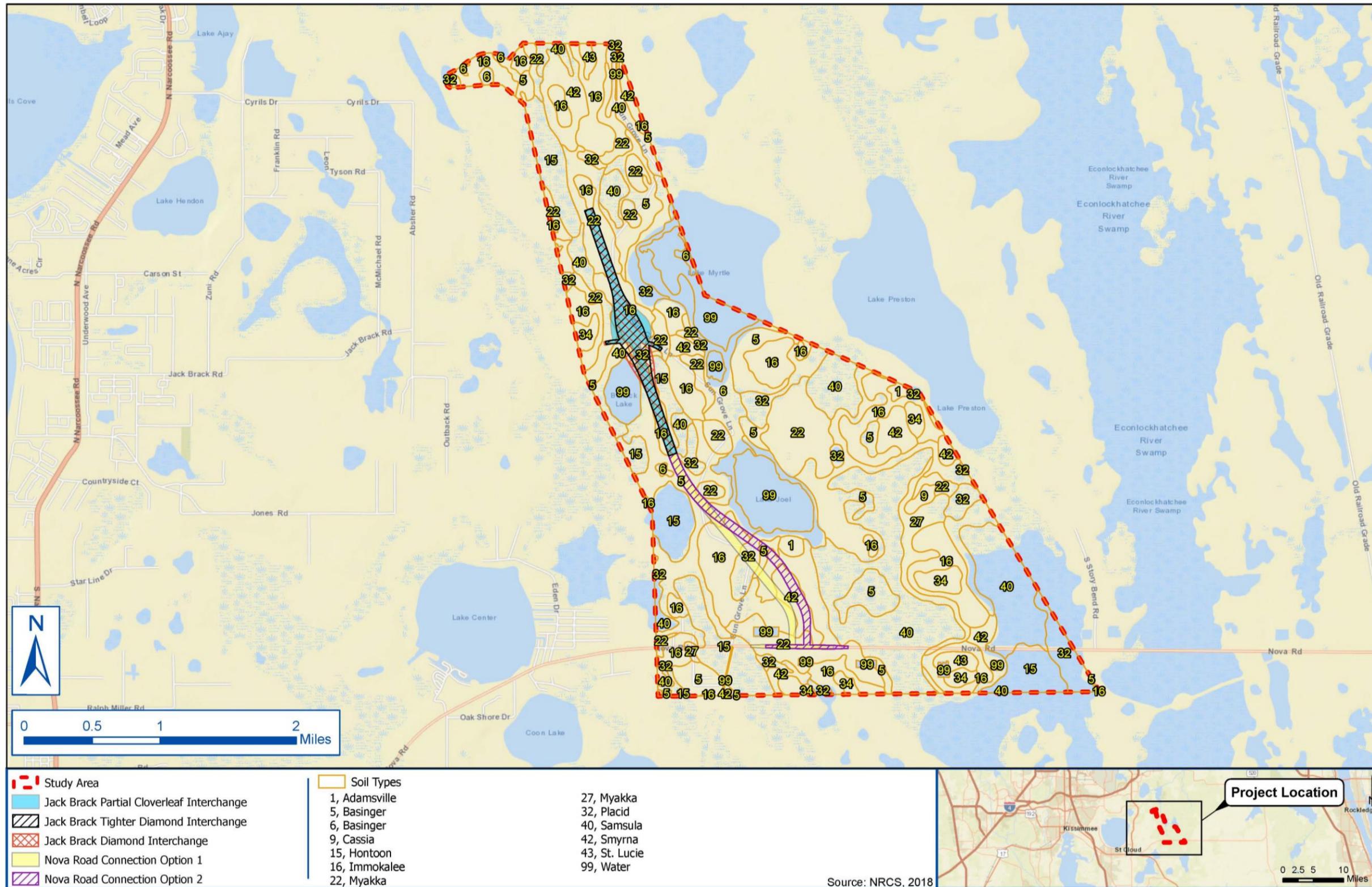
1.5.3 Existing Soil Conditions

The Natural Resources Conservation Service (NRCS) Soil Surveys for Osceola County was reviewed for near-surface soil and groundwater information. The NRCS Soil Survey maps of the study area are shown on **Figure 1.5.3**. A summary of NRCS Soil Survey soil types within the project corridor are provided in **Table 1.5.1**. A detailed geotechnical analysis of the soil types is available in a separate Geotechnical Technical Memorandum.

Table 1.5.1: NRCS Soil Types

Soil Classification	Drainage Class
Adamsville	Somewhat Poorly Drained
Basinger	Very Poorly Drained
Cassia	Somewhat Poorly Drained
Hontoon	Very Poorly Drained
Immokalee	Poorly Drained
Myakka	Poorly Drained
Ona	Poorly Drained
Placid	Very Poorly Drained
Pomello	Moderately Well Drained
Samsula	Very Poorly Drained
Smyrna	Poorly Drained
St. Lucie	Excessively Drained
Water	

Figure 1.5.3: NRCS Soil Survey Soil Types



2.0 Protected Species and Habitat

The protected species and habitats that may occur in the study area are based on available resources and confirmed by qualified ecologists during limited field reviews. The ecologists recorded the presence of and utilization by protected species. The term “protected species” generally refers to species that are protected by law, regulation, or rule. More specifically, the term protected species refers to those species listed under the *Endangered Species Act* (ESA) and those listed under Florida’s Endangered and Threatened Species List, Chapter 68A-27, Florida Administrative Code.

Ecologists documented the types and quality of habitats in the study area which includes the alignments described in Sections 1.4.1 and 1.4.2. This information was used in conjunction with publicly available geographic information systems (GIS) resources and field surveys conducted on November 17, 2020, for the purpose of supporting effect determinations for protected resources. The information was collected and prepared in accordance with Sections 7 and 10 of the ESA and Chapter 16, Protected Species and Habitat, of Part II of the FDOT’s PD&E Manual (2020).

2.1 Protected Species

The U.S. Fish and Wildlife Service’s Environmental Conservation Online System (ECOS) provided the list of potentially occurring federally protected species shown in **Table 2.1.1**. Potentially occurring species which are state-listed or included in *Florida’s Imperiled Species Management Plan* (December 2018) are also shown in **Table 2.1.1**.

Based on evaluation of collected data and field reviews, the federal- and state-listed species discussed below were observed as having the potential to occur within or adjacent to the study area. A map reflecting a summary of collected data and field reviews is provided on **Figure 2.1.1**. An effect determination was made for each of these federal and state-listed species based on an analysis of the potential impacts of the proposed project on each species.

Table 2.1.1: Listed Species

Common Name	Scientific Name	Federal Status	State Status	Likelihood of Occurrence Within Evaluated Alternatives
<i>Mammals</i>				
Florida Panther	<i>Puma concolor coryi</i>	<i>E</i>	<i>E</i>	Low
Florida Black Bear	<i>Ursus americanus floridanus</i>	<i>N</i>	<i>N*</i>	Moderate
<i>Reptiles</i>				
Eastern Indigo Snake	<i>Drymarchon corais couperi</i>	<i>T</i>	<i>T</i>	High
American Alligator	<i>Alligator mississippiensis</i>	<i>T(S/A)</i>	<i>N</i>	High
Gopher Tortoise	<i>Gopherus polyphemus</i>	<i>C</i>	<i>T</i>	High
Florida Pine Snake	<i>Pituophis melanoleucus mugitus</i>	<i>N</i>	<i>T</i>	High
<i>Birds</i>				
Everglade Snail Kite	<i>Rostrhamus sociabilis plumbeus</i>	<i>E</i>	<i>E</i>	Moderate
Florida Grasshopper Sparrow	<i>Ammodramus savannarum floridanus</i>	<i>E</i>	<i>E</i>	Low
Red-Cockaded Woodpecker	<i>Picooides borealis</i>	<i>E</i>	<i>E</i>	Low
Wood Stork	<i>Mycteria americana</i>	<i>T</i>	<i>T</i>	High
Audubon’s Crested Caracara	<i>Polyborus plancus audubonii</i>	<i>T</i>	<i>T</i>	Low
Florida Scrub-Jay	<i>Aphelocoma coerulescens</i>	<i>T</i>	<i>T</i>	Low
Florida Sandhill Crane	<i>Grus canadensis pratensis</i>	<i>N</i>	<i>T</i>	High
Florida Burrowing Owl	<i>Athene cunicularia floridana</i>	<i>N</i>	<i>T</i>	Low
Little Blue Heron	<i>Egretta caerulea</i>	<i>N</i>	<i>T</i>	High
Tricolored Heron	<i>Egretta tricolor</i>	<i>N</i>	<i>T</i>	High
Roseate Spoonbill	<i>Ajaia ajaja</i>	<i>N</i>	<i>T</i>	Moderate
Bald Eagle	<i>Haliaeetus leucocephalus</i>	<i>N**</i>	<i>N**</i>	Moderate
<p>E= Endangered; T=Threatened; T(S/A)=Threatened due to Similarity of Appearance; SSC=Species of Special Concern; C – Candidate Species; N=Not Listed; *The Florida black bear is still protected under Florida Black Bear Conservation Rule 68A-4.009 (F.A.C.) and the Florida Fish and Wildlife Conservation Commission (FFWCC) Florida Black Bear Management Plan **The Bald eagle is still protected under the <i>Bald and Golden Eagle Protection Act</i>, <i>Migratory Bird Treaty Act</i> and FFWCC Management Plan regulations</p>				

2.1.1 Federally Protected Species

2.1.1.1 Florida Panther

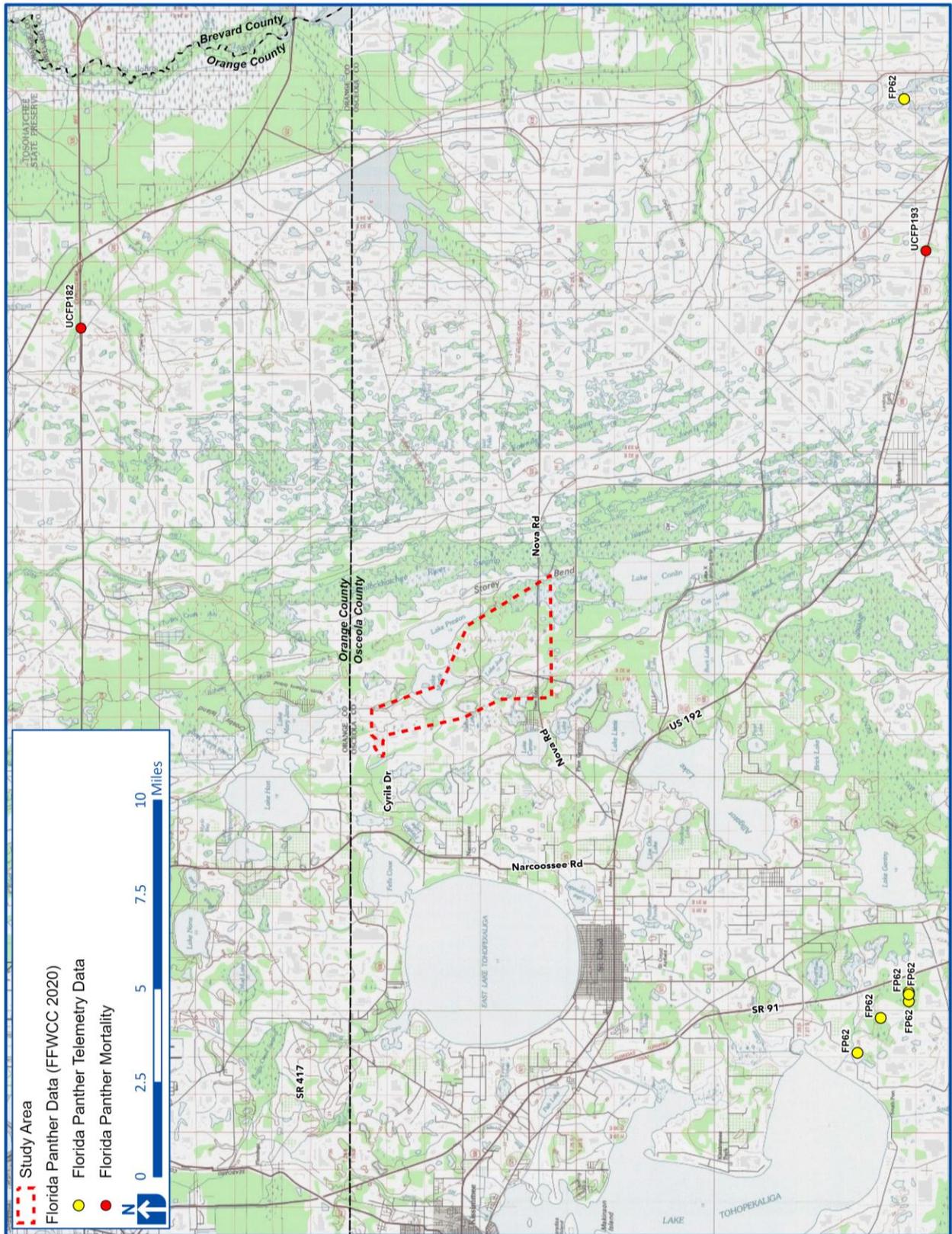
The Florida panther is considered *Endangered* by the United States Fish and Wildlife Service (USFWS) and the Florida Fish and Wildlife Conservation Commission (FFWCC). The panther historically occurred throughout the southeastern United States but hunting pressure and habitat alteration severely reduced panther populations. The study area does not fall within the USFWS “Primary”, “Secondary”, or “Dispersal” Zones for the Florida panther and the species was designated as having a low potential for occurrence based on the absence of nearby FFWCC Panther Telemetry points. Telemetry points collected from FFWCC show that one collared male (FP062) was detected in May 2000 approximately 12 miles southwest of the study area. Methodology for the collection of telemetry locations was described by Land et al. (2008). No panther telemetry data has been collected within the study area. **Figure 2.1.2** shows telemetry data of Florida panther FP062 last active in February 2000.

Following the USFWS *Rationale for the Panther Effect Determination Key* (February 19, 2007), it has been determined that the proposed project will have “*no effect*” on the Florida panther (A>B).

A: The project is not within the Panther Focus Area.

B: The project will have no increase and/or change in vehicle traffic patterns or other identifiable effects to panthers or their habitat, as there is no documented physical evidence of panther occurrence within a two-mile radius of a project within the past two years.

Figure 2.1.2: Panther Telemetry Points



2.1.1.2 Eastern Indigo Snake

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

The Eastern indigo snake was designated as having a high potential for occurrence based on the presence of suitable upland habitat within the study area. To minimize potential adverse impacts to the eastern indigo snake, CFX will implement the USFWS-approved *Standard Protection Measures for the Eastern Indigo Snake* (updated August 1, 2017) during the proposed roadway improvements. 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 that the project “*may affect, not likely to adversely affect*” has been 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.

2.1.1.3 Florida Grasshopper Sparrow

The Florida grasshopper sparrow is listed by both the FFWCC and the USFWS as *Endangered*. The Florida grasshopper sparrow is a small bird that can reach a length of five inches with a wingspan of eight inches. This species is drab colored with a pale median stripe on top of its flattened head, and a light brown breast. Florida grasshopper sparrows tend to be very secretive and quiet, and almost seem to disappear completely at certain times of the year. They may be easily overlooked when not surveyed at the appropriate time. Males vigorously defend the boundaries of their territories from courtship through incubation. Florida grasshopper sparrows nest from March through September with the peak nesting activity occurring between early April and late June.

Habitat for the Florida grasshopper sparrow has been described as dry prairie that is relatively open and low in stature (Shriver and Vickery 1995). The habitat consists of treeless, relatively poorly-drained grasslands that have a history of frequent fires (USFWS 1999). There are currently only six known populations of Florida grasshopper sparrows in Florida, three on Avon Park Air Force Range, one on Kissimmee Prairie State Preserve, one on Three Lakes Wildlife Management Area, and one on private property. The nearest known population to this project is found on Three Lakes Wildlife Management Area, which is approximately 24 miles south of the project area.

As no occupied Florida grasshopper sparrow habitat has been documented within the design alternatives evaluated, it has been determined that the proposed project will have “*no effect*” to

the Florida grasshopper sparrow. Consultation regarding the Florida grasshopper sparrow will occur during the design phase.

2.1.1.4 American Alligator

The USFWS continues to protect the alligator under the ESA classification as *Threatened due to similarity of appearance*. The USFWS thus regulates the harvest of alligators and legal trade in the animals, their skins, and products made from them, as part of efforts to prevent the illegal take and trafficking of endangered “look-alike” reptiles.

The American alligator was designated as having a high potential for occurrence based on the presence of suitable habitat within the study area. This species is common within Central Florida and long-term viability of this species is not anticipated to be affected. The USFWS does not consult or make determinations of affect for this species due to its commonality, and listing is maintained primarily for law enforcement purposes. Based on the provision of compensatory mitigation to offset wetland and surface water habitat impacts, CFX has determined that the proposed project “*may affect, not likely to adversely affect*” the American alligator.

2.1.1.5 Everglade Snail Kite

The Everglade snail kite is listed as *Endangered* by the USFWS. The Everglade snail kite was designated as having a low potential for occurrence based on the project’s location within the USFWS Snail Kite Consultation Area and presence of suitable nesting habitat at East Lake Joel.

The project is located within the consultation area for the Everglade snail kite, but outside of critical habitat and the priority management zones. The current alternatives do not affect Lake Joel or suitable nesting habitat. Suitable foraging habitat consists of relatively shallow, emergent wetland vegetation suitable for occupation by apple snails.

No surveys for snail kites or their nesting habitat was conducted for this study. Based on the distance to documented nesting habitat, it has been determined that the proposed project will likely have “*no effect*” to the Everglade snail kite. Consultation regarding the Everglade snail kite will occur during the design phase.

2.1.1.6 Red-Cockaded Woodpecker

This species is listed as *Endangered* by the USFWS. The red-cockaded woodpecker (RCW) is a habitat specialist, requiring stands of mature pine which are over 60 years old and have a minimum diameter at breast height of six inches (USFWS, July 2004). The RCW favors pines that have contracted the red-heart disease which they use for nest and roost cavities. Preferred pine stands need to have a fairly open canopy with a sparse subcanopy to allow easy flight. RCWs must also have ample foraging habitat consisting of younger pines surrounding the cavity trees.

The RCW was designated as having a low potential for occurrence based on the absence of suitable habitat within the study area and the lack of documented sightings within the project corridor. No species-specific RCW surveys were conducted for this study. Based on this information and the project’s location within the USFWS RCW Consultation Area, it has been

determined that the proposed project will have “*no effect*” to the RCW. Consultation regarding the RCW will occur during the design phase.

2.1.1.7 Wood Stork

The wood stork is listed by USFWS as *Threatened*. The wood stork was designated as having a high potential for occurrence based on the presence of foraging habitat, the project’s location within the 18.6-mile Core Foraging Area (CFA) of three active nesting colonies. The primary concern for this species is loss of suitable foraging habitat within the CFA of a wood stork colony.

As part of the design and permitting of this project, impacts to wetlands within the study area will be mitigated at a federally permitted, regionally significant mitigation bank that has been approved by the USFWS. Therefore, it has been determined that the proposed project “*may affect, not likely to adversely affect*” the wood stork.

2.1.1.8 Audubon’s Crested Caracara

The Audubon’s crested caracara is listed as *Threatened* by the USFWS. The crested caracara inhabits Florida’s prairies and rangelands. They forage on many kinds of insects, fish, reptiles, birds, and mammals. They will feed on live captured prey, but also on carrion. Caracara nests are usually constructed within cabbage palms.

The project is located within the USFWS Audubon’s Crested Caracara Consultation Area. The project occurs at the northernmost edge of the consultation area for this bird in Central Florida. During field reviews, no caracara or their nests were immediately observed, but full surveys were not conducted following the USFWS *Audubon’s Crested Caracara Draft Survey Protocol – Additional Guidance (2016-2017 Breeding Season)*. Any species specific surveys will first be coordinated with USFWS, then conducted as agreed to with USFWS during permitting phase.

Based on the lack of documented caracara nesting within the study area, it has been determined that the proposed project “*may affect, not likely to adversely affect*” Audubon’s crested caracara. Consultation regarding the caracara will occur during the design phase.

2.1.1.9 Florida Scrub-jay

The Florida scrub-jay, listed as *Threatened* by the USFWS, is an endemic species found in Florida scrub habitats. This gregarious jay is a habitat specialist and typically lives in scrub and scrubby flatwoods habitats. No suitable habitat was identified within the study area during limited field reviews. As the project corridor has not been surveyed following USFWS *Scrub-jay Survey Guidelines*, surveys will be required during the design and permitting phase. If occupied habitat is documented during design-phase surveys, a mitigation plan will address unavoidable impacts.

While the project study limits are wholly located within the USFWS Florida scrub jay consultation area, based on general wildlife survey results and lack of documented habitat, it is anticipated that this project “*may affect, but is not likely to adversely affect*” the Florida scrub-jay. Consultation regarding the scrub-jay will occur during the design phase.

2.1.2 Federal Species Preliminary Effect Determination Summary

Nine federally listed species were evaluated to determine if the proposed project will affect these species. Based on a review of available data, in conjunction with field reconnaissance and surveys, the following preliminary effects determinations shown in **Table 2.1.2** have been made:

Table 2.1.2: Federally Listed Species Preliminary Effect Determination

Common Name	Preliminary Effect Determination	Federal Status
Florida Panther	<i>no effect</i>	<i>E</i>
Eastern Indigo Snake	<i>may affect, not likely to adversely affect</i>	<i>T</i>
Florida Grasshopper Sparrow	<i>no effect</i>	<i>E</i>
American Alligator	<i>may affect, not likely to adversely affect</i>	<i>T(S/A)</i>
Everglade Snail Kite	<i>no effect</i>	<i>E</i>
Red-Cockaded Woodpecker	<i>no effect</i>	<i>E</i>
Wood Stork	<i>may affect, not likely to adversely affect</i>	<i>T</i>
Audubon's Crested Caracara	<i>may affect, not likely to adversely affect</i>	<i>T</i>
Florida Scrub-Jay	<i>may affect, not likely to adversely affect</i>	<i>T</i>
E= Endangered; T=Threatened; T(S/A)=Threatened due to Similarity of Appearance; SSC=Species of Special Concern; C = Candidate Species; N=Not Listed		

2.1.3 State-Listed and Other Protected Species

2.1.3.1 Florida Black Bear

The Florida black bear is protected under Florida Black Bear Conservation Rule 68A-4.009 (F.A.C.) and the *FFWCC Florida Black Bear Management Plan*. The Florida black bear was designated as having a moderate potential for occurrence based on the presence of suitable habitat, location of the study area within the FFWCC-designated Occasional Range of the Central Bear Management Unit, and documentation of the species within one mile of the study area. Due to the project's location outside of the FFWCC-designated Abundant and Common Ranges for the species, it has been determined that there is “*no adverse effect anticipated*” to the Florida black bear by the proposed project.

2.1.3.2 Gopher Tortoise

Gopher tortoises are a *Threatened* wildlife species and are protected by state law, Chapter 68A-27, Florida Administrative Code. This species requires well-drained and loose sandy soils for burrowing and low-growing herbs and grasses for food. These conditions are best found in the sandhill (longleaf pine-xeric oak) community, although tortoises are known to use many other habitats including sand pine scrub, xeric oak hammocks, dry prairies, and pine flatwoods. No evidence of gopher tortoises was observed during field reviews.

If gopher tortoises or burrows are found within the study area during the permitting phase of the project, CFX will coordinate with FFWCC to secure all permits needed to relocate the tortoises and associated commensal species prior to construction. With the implementation of these measures, it has been determined that there is “*no adverse effect anticipated*” to the gopher tortoise by the proposed project.

2.1.3.3 Pine Snake

The pine snake is a large, stocky, tan or rusty colored snake with an indistinct pattern of blotches that is listed as *Threatened* by the FFWCC. The species requires habitats with open canopies and dry sandy soils in sandhill, sand pine scrub, and scrubby flatwoods, in which it burrows and often coexists with gopher tortoises. Suitable habitat exists within the project corridor but there have been no documented sightings of the pine snake within the study area and it was not observed during field reviews. CFX will survey the study area for gopher tortoises prior to construction and will coordinate with FFWCC to secure the necessary permits to relocate gopher tortoises and associated commensal species prior to construction. With the implementation of these measures, it has been determined that there is “*no adverse effect anticipated*” to the pine snake by the proposed project.

2.1.3.4 Florida Sandhill Crane

The Florida sandhill crane is a tall, long-necked, long-legged crane that is listed as *Threatened* by the FFWCC. This species requires wet and dry prairies, marshes, and marshy lake edges. No species-specific surveys were conducted for sandhill crane nests for this study. Three Florida sandhill cranes were observed foraging during the field review on November 17, 2020. The location is shown in **Figure 2.1.1**. CFX will survey areas of suitable nesting habitat prior to construction if construction activities take place during the nesting season (January through

July), and will coordinate with FFWCC if nesting pairs are identified within 400 feet of the project's construction limits.

2.1.3.5 Florida Burrowing Owl

The Florida burrowing owl is a small, long-legged owl classified as *Threatened* by the FFWCC. Burrowing owls live in pairs or loose colonies in open habitats that offer short ground cover for the essential behaviors of breeding, feeding, and sheltering. Historically, these habitat requirements were met by native dry prairies covering much of central Florida. As the availability of native dry prairie decreased, burrowing owls have inhabited human altered landscapes, including pastures, urban parks, schools, agricultural fields, golf courses, airports, and vacant lots (Millsap 1996, Bowen 2001). The Florida burrowing owl was designated as having a low potential of occurrence based on the lack of documented sightings within one mile of the study area, the minimal suitable habitat present, and the lack of sightings during field reviews. CFX will survey areas in accordance with the methodology described in the *2018 Florida Burrowing Owl Species Conservation Measures and Permitting Guidelines*.

2.1.3.6 Wading Birds

The tricolor heron and little blue heron are designated as having a high potential of occurrence based on visual observations of these species in the study area. The roseate spoonbill was designated as having a moderate potential of occurrence based on visual observations. The primary concern for impacts to these species is the loss of foraging habitat consisting primarily of wetlands. As part of the design and permitting of the proposed project, wetland impacts will be mitigated to prevent a net loss of wetland habitat functions and values. Since the mitigation of wetland impacts will be undertaken by CFX, it has been determined that there is ***“no adverse effect anticipated”*** to the little blue heron, tricolored heron, and roseate spoonbill.

2.1.3.7 Bald Eagle

The bald eagle is protected under the *Bald and Golden Eagle Protection Act*, *Migratory Bird Treaty Act*, and FFWCC's bald eagle rule (F.A.C. 68A-16.002). On April 20th, 2017, the FFWCC approved revisions to the state's bald eagle rule (68A-16.002, F.A.C.). The approved rule revisions became effective in June 2017 and eliminate the need for applicants to obtain both a state and federal permit for activities with the potential to take or disturb bald eagles or their nests. Under the approved revisions, only a federal permit is required.

Based on the USFWS National Bald Eagle Management Guidelines and the *FFWCC Bald Eagle Management Plan*, construction activities proposed at least 660 feet from an eagle nest do not require an Eagle Permit from the USFWS. Based on FFWCC's eagle nest locator, no nests are recorded within the study area. No nests were observed during a pedestrian survey conducted on November 17, 2020. Coordination will be required with USFWS if nests are present within 660 feet of proposed development.

2.2 Designated Critical Habitat

A review of USFWS's ECOS shows that the study area does not include any designated or proposed critical habitat for any threatened or endangered species.

3.0 Wetland Evaluation

3.1 Methodology

The proposed project has been evaluated for potential impacts to wetlands in accordance with Executive Order 11990, “Protection of Wetlands”. Wetlands and surface waters within the study area were identified and assessed in accordance with Part II, Chapter 9 of the PD&E Manual (2020) and consistent with the state wetland jurisdictional methodology, as described in Chapter 62-340, Florida Administrative Code, and the U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual (1987); USACE Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region.

Formal wetland boundary delineations and surveys were not conducted as a part of this study and will be completed as part of any state and federal permit process. Limited ground-truthing by biologists was conducted during field reviews on November 17, 2020. During the field review, a representative sample of wetlands were visited by biologists. When appropriate, these communities are discussed collectively depending upon their hydrologic connection. There are no wetlands or surface waters designated as Outstanding Florida Waters within the project study area.

On October 22, 2020, the SFWMD issued Conceptual Environmental Resource Permit No. 49-103688-P. This conceptual permit for Sunbridge Northeast District established the wetland boundaries for a portion of the project area north of the proposed Jack Brack extension. The wetland boundaries shown on Figure 3.3.1 match the boundaries in this conceptual Environmental Resource Permit.

3.2 Common Wetland Types

Wetland types within the study area can be categorized as herbaceous or forested wetland types and include mixed wetland hardwoods, cypress, hydric pine flatwoods, wetland forested mixed, freshwater marshes, wet prairies, and emergent aquatic vegetation. All wetland types were mapped using the Florida Land Use, Cover, and Forms Classification System (FLUCFCS; FDOT, 1999).

Mixed wetland hardwoods (FLUCFCS 617) are communities of wetland that are composed of a large variety of hardwood species which are tolerant of hydric conditions.

Cypress (FLUCFCS 621) is present in the study area. This community is composed of bald cypress (*Taxodium distichum*) which is either pure or predominant. Bald cypress may be associated with red maple (*Acer rubrum*), laurel oak (*Quercus laurifolia*), sweetgum (*Liquidambar styraciflua*), and loblolly pine (*Pinus taeda*) on less moist sites.

Hydric pine flatwoods (FLUCFCS 625) are forested wetlands with a sparse to moderate canopy of slash pine (*Pinus elliottii*). The understory in hydric pine flatwoods generally consists of wiregrass (*Aristida stricta*), sedges (*Carex spp.*), and sparse saw palmetto (*Serenoa repens*).

Wetland forested mixed (FLUCFCS 630) are forested wetlands that include mixed wetlands forest communities in which neither hardwoods nor conifers achieve a 66 percent dominance of the crown canopy composition.

Freshwater marshes (FLUCFCS 641) are characterized by having common emergent vegetation including; cattail (*Typha latifolia*), arrowhead (*Sagittaria lancifolia*.), pickerel weed (*Pontederia cordata*), maidencane (*Panicum hemitomon*), arrowroot (*Thalia geniuclata*). The fringes of the marshes are generally vegetated with wax myrtle (*Myrica cerifera*) and buttonbush (*Cephalanthus occidentalis*).

☉ 322°NW (T) ● 28°17'42"N, 81°9'47"W ±13ft



Photo 3-1. Freshwater marsh within project area.

Wet prairies (FLUCFCS 643) are herbaceous type wetlands composed predominately of grassy vegetation on hydric soils and are usually distinguished from marshes by having less water and shorter herbage. These communities are predominated by one or more of the following species: maidencane, arrowroot and sedges. The fringes of the marshes are generally vegetated with wax myrtle.

☉ 306°NW (T) ● 28°19'12"N, 81°10'25"W ±13ft



Photo 3-2. Wet prairie within project area.

Emergent aquatic vegetation (FLUCFCS 644) is a category of wetland plant species that includes both floating vegetation and vegetation which is found either partially or completely above the surface of water.

3.3 Wetland Impact Analysis

As described in Section 1.4, the project is composed of two segments. The Jack Brack Road and Nova Road Connection segments are shown on **Figure 3.3.1** and **Figure 3.3.2**.

The No-Build Alternative would result in no impacts to wetlands, surface waters, or other surface waters.

For the build alternatives, potential direct impacts to wetlands, surface waters, and other surface waters were assessed for the study area. **Table 3.3.1** shows the proposed wetland, other surface water, and surface water impacts within the study area by alternative and project segment.

Within the Jack Brack Road Segment, the Jack Brack Road Partial Cloverleaf Interchange Alternative is anticipated to include approximately 12.5 acres of impacts to forested wetlands, and 0.5 acre of impacts to non-forested wetlands. No impacts to other surface waters are

anticipated at the Jack Brack Road Partial Cloverleaf Interchange Alternative. Total impacts to wetlands for the Jack Brack Road Partial Cloverleaf Interchange Alternative are estimated at 13 acres.

Also, within the Jack Brack Road Segment, the Jack Brack Road Diamond Interchange Alternative is anticipated to include 7.5 acres of impacts to forested wetlands, and seven acres of impacts to non-forested wetlands. The Jack Brack Road Diamond Interchange Alternative also includes two acres of impacts to other surface waters. Total impacts to wetlands for the Jack Brack Road Diamond Alternative are estimated at 14.5 acres.

Also, within the Jack Brack Road Segment, the Jack Brack Road Tighter Diamond Interchange Alternative is anticipated to include 7.5 acres of impacts to forested wetlands, and 3.5 acres of impacts to non-forested wetlands. The Jack Brack Road Tighter Diamond Interchange Alternative also includes 0.5 acre of impacts to other surface waters. Total impacts to wetlands for the Jack Brack Road Diamond Alternative are estimated at 11 acres.

Within the Nova Road Connection segment, the Nova Road Connection Option 1 Alternative is anticipated to include approximately four acres of impacts to forested wetlands, and seven acres of impacts to non-forested wetlands. The Nova Road Connection Option 1 Alternative also includes 0.5 acre of impact to other surface waters. Total impacts to wetlands for the Nova Road Connection Option 1 Alternative is estimated at 11 acres.

Also, within the Nova Road Connection Segment, the Nova Road Connection Option 2 Alternative is anticipated to include no impacts to forested wetlands, and 6.5 acres of impacts to non-forested wetlands. Nova Road Connection Option 2 Alternative also includes 0.5 acre of impact to other surface waters. Total impacts to wetlands for the Nova Road Connection Option 2 Alternative is estimated at 6.5 acres.

Figure 3.3.1: Jack Brack Road Wetland and Surface Water Map

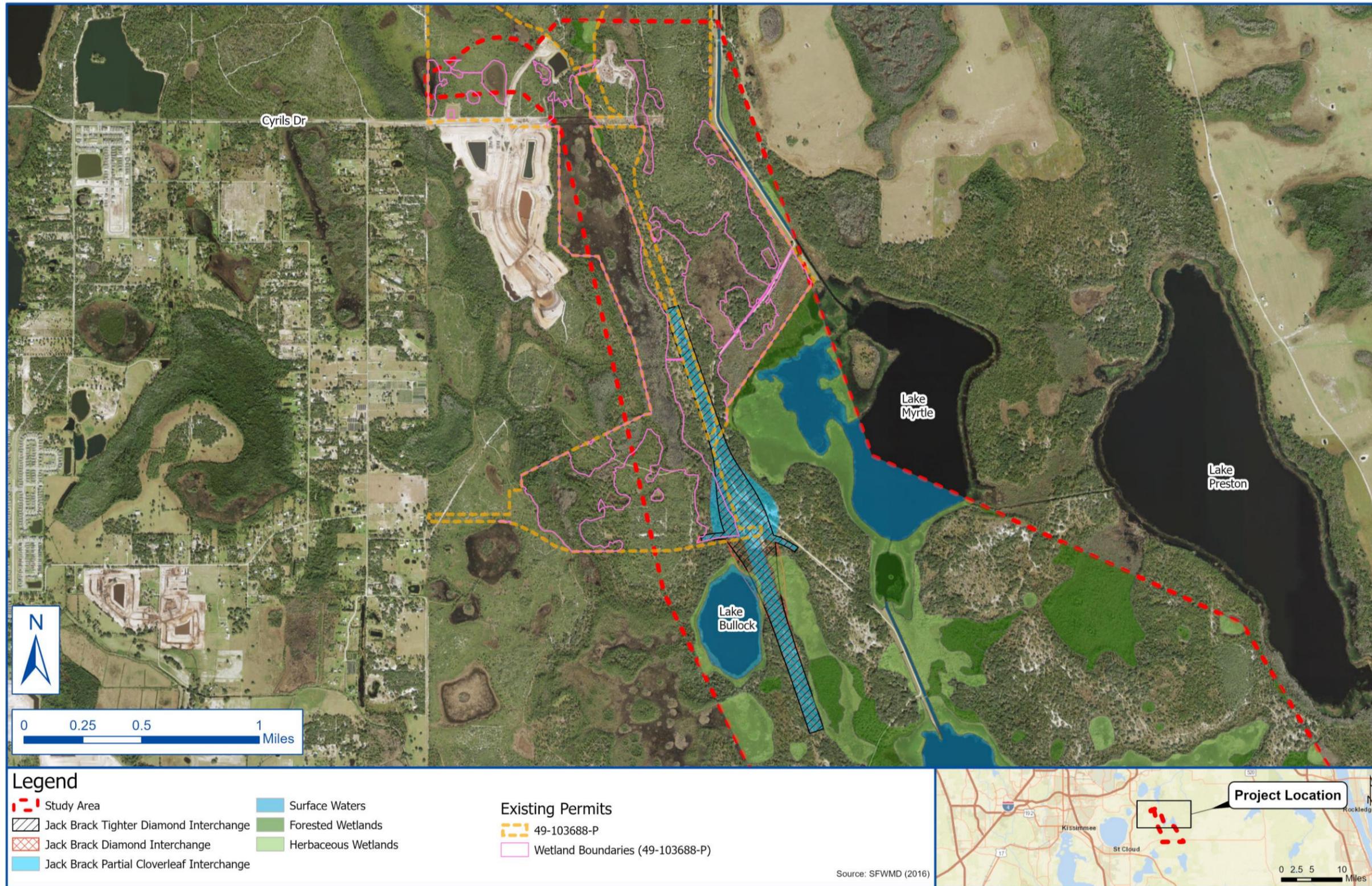


Figure 3.3.2: Nova Road Connection Wetland and Surface Water Map



Table 3.3.1: Wetland Impact Analysis

Segment	Alternative	Description	FLUCFCS	Impact (Acres)	
Jack Brack Road	Jack Brack Road Partial Cloverleaf Interchange	Cypress	621	1	
		Mixed Wetland Hardwoods	617	11.5	
		Freshwater Marshes	641	0.5	
		Forested Wetland Impacts			12.5
		Non-Forested Wetland Impacts			0.5
		Total Wetland Impacts			13
	Jack Brack Road Diamond Interchange	Other Surface Waters	520	2	
		Freshwater Marshes	641	7	
		Mixed Wetland Hardwoods	617	7.5	
		Forested Wetland Impacts			7.5
		Non-Forested Wetland Impacts			7
		Total Wetland Impacts			14.5
	Jack Brack Road Tighter Diamond Interchange	Other Surface Waters	520	0.5	
		Freshwater Marshes	641	3.5	
		Mixed Wetland Hardwoods	617	7.5	
		Forested Wetland Impacts			7.5
		Non-Forested Wetland Impacts			3.5
		Total Wetland Impacts			11
Nova Road Connection	Nova Road Connection Option 1	Other Surface Waters	512	0.5	
		Mixed Wetland Hardwoods	617	4	
		Wet Prairie	643	7	
		Forested Wetland Impacts			4
		Non-Forested Wetland Impacts			7
	Total Wetland Impacts			11	
	Nova Road Connection Option 2	Other Surface Waters	512	0.5	
		Wet Prairie	643	6.5	
		Forested Wetland Impacts			0
		Non-Forested Wetland Impacts			6.5
Total Wetland Impacts			6.5		

Wetland impact estimates are based on available GIS data and Conceptual Environmental Resource Permit No. 49-103688-P. Wetland impacts represented in this table are rounded to the nearest one-half acre.

3.4 Uniform Mitigation Assessment Methodology

The Uniform Mitigation Assessment Methodology (UMAM) per Chapter 62-345, F.A.C., is a state and federally approved method used to assess wetlands in the State of Florida. UMAM was developed by the Florida Department of Environmental Protection (FDEP) and the water management districts to determine the amount of mitigation required to offset adverse impacts to wetlands. The methodology was designed to assess functions provided by wetlands, the amount those functions are reduced by a proposed impact, and the amount of mitigation necessary to offset the proposed functional losses. This method is also used to determine the degree of improvement in ecological value that will be created by proposed mitigation activities.

3.5 Uniform Mitigation Assessment Results

For this PD&E Study, representative UMAM scores were developed for representative wetlands (by FLUCFCS category) directly impacted by the proposed project. In order to calculate functional loss, the difference between the existing condition (current) scores and the proposed condition (with) scores for each habitat type (see **Table 3.5.1**) was multiplied by the acreage of proposed impact to determine the lost value of functions to fish and wildlife resulting from construction of the proposed project (see **Table 3.5.1**). Functional loss was calculated by habitat type for each Build Alternative and Project Segment.

Within the Jack Brack Road segment, the Jack Brack Road Partial Cloverleaf Interchange Alternative is anticipated to result in a loss of 9.5 UMAM Functional Units. The Jack Brack Road Diamond Interchange Alternative is anticipated to result in a loss of 10.6 UMAM Functional Units. The Jack Brack Road Tighter Diamond Interchange Alternative is anticipated to result in a loss of 8.1 UMAM Functional Units.

Within the Nova Road Connection segment, the Nova Road Connection Option 1 Alternative is anticipated to result in a loss of 8.0 UMAM Functional Units. The Nova Road Connection Option 2 Alternative is anticipated to result in a loss of 4.7 UMAM Functional Units.

The estimated functional loss values presented here are based on existing conditions with limited ground-truthing. The UMAM scores and values presented in **Table 3.5.1** are subject to agency review and are likely to change during any state and federal permitting process.

Table 3.5.1: Preliminary UMAM Functional Loss by Segment and Alternative

Segment	Alternative	Description	FLUCFCS	Location and Landscape	Water Environment	Community Structure	Score (Sum/30)	Delta	Impact Acres	UMAM Functional Loss
Jack Brack Road	Jack Brack Road Partial Cloverleaf Interchange	Cypress	621	7	6	6	0.73	-0.73	1	-0.7
		Mixed Wetland Hardwoods	617	7	6	6	0.73	-0.73	11.5	-8.4
		Freshwater Marshes	641	7	6	6	0.73	-0.73	0.5	-0.4
	Total								13	-9.5
	Jack Brack Road Diamond Interchange	Mixed Wetland Hardwoods	641	7	6	6	0.73	-0.73	7	-5.1
		Freshwater Marshes	617	7	6	6	0.73	-0.73	7.5	-5.5
	Total								14.5	-10.6
	Jack Brack Road Tighter Diamond Interchange	Mixed Wetland Hardwoods	617	7	6	6	0.73	-0.73	7.5	-5.5
		Freshwater Marshes	641	7	6	6	0.73	-0.73	3.5	-2.6
		Total								11
Nova Road Connection	Nova Road Connection Option 1	Mixed Wetland Hardwoods	617	7	6	6	0.73	-0.73	4	-2.9
		Wet Prairie	643	7	6	6	0.73	-0.73	7	-5.1
	Total								11	-8.0
	Nova Road Connection Option 2	Wet Prairie	643	7	6	6	0.73	-0.73	6.5	-4.7
		Total								6.5

Wetland impact estimates are based on available GIS data and Conceptual Environmental Resource Permit No. 49-103688-P. Wetland impacts represented in this table are rounded to the nearest one-half acre.

4.0 Essential Fish Habitat

The *Magnuson-Stevens Fishery Conservation and Management Act*, as amended through October 11, 1996, requires the regional Fishery Management Councils and the Secretary of Commerce to describe and identify Essential Fish Habitat (EFH) for species under federal *Fishery Management Plans*. EFH is defined in the *Magnuson-Stevens Act* as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” The term “fish” includes finfish, crabs, shrimp, and lobsters in the Gulf of Mexico region. On April 23, 1997 [62 Federal Register (FR) 19723], the National Marine Fishery Service (NMFS) issued proposed regulations containing guidelines for the description and identification of EFH in fishery management plans, adverse impacts on EFH, and actions to conserve and enhance EFH. These rules were revised and finalized on January 22, 2002 (67 FR 2343). The regulations also provide a process for NMFS to coordinate and consult with federal and state agencies on activities that may adversely affect EFH. The purpose of the rule is to assist in describing and identifying EFH, minimize adverse effects on EFH, and identify other actions to conserve and enhance EFH. The purpose of the coordination and consultation provisions is to specify procedures for adequate consultation with NMFS on activities that may adversely affect EFH.

The study area is located within the central portion of the state of Florida and the impacts associated with this project will not affect marine or estuarine environments. Therefore, no potential impacts to EFH are proposed or expected.

5.0 Anticipated Permits and Mitigation

The USACE, FDEP and SFWMD regulate impacts to wetlands within the study area. Waters where permitting authority is retained by the USACE are called “retained waters”. Retained waters are present, (see **Figure 5.1.1**) and therefore the project falls under the jurisdiction of the USACE for Section 404 Clean Water Act Dredge and Fill Permits within retained waters. The State 404 Program, administered by FDEP, is responsible for overseeing permitting for any project proposing dredge or fill activities within state assumed waters, or “non-retained waters”. The State 404 Program is a separate program from the existing ERP program, and projects within state-assumed waters require both an ERP and a State 404 Program authorization. Other agencies, including the USFWS, the U.S. Environmental Protection Agency (EPA), and the FFWCC, review and comment on wetland permit applications. The FFWCC also issues permits for gopher tortoise relocation activities. In addition, the FDEP regulates stormwater discharges from construction sites.

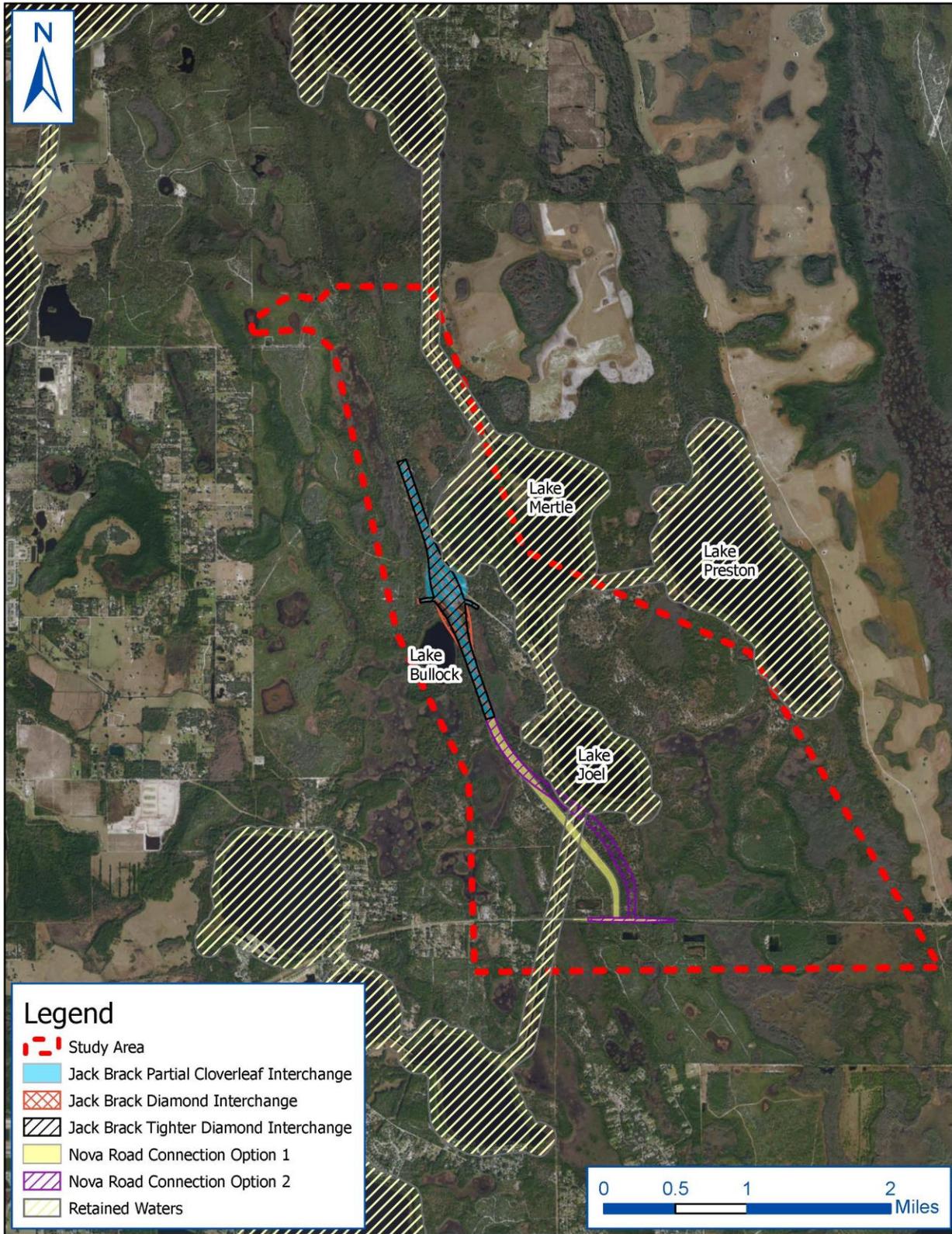
It is anticipated that the following permits will be required for this project:

<u>Permit</u>	<u>Issuing Agency</u>
Section 404 Clean Water Act Dredge and Fill Permit	USACE & FDEP
Section 408 Clean Water Act Permit	USACE
Environmental Resource Permit (ERP)	SFWMD
Right-of-Way Occupancy Permit	SFWMD
National Pollutant Discharge Elimination System (NPDES)	FDEP
Gopher Tortoise Conservation Permit	FFWCC
Listed Species Incidental Take Permit	USFWS
Bridge Permit	USCG

Section 408 of the *Clean Water Act* requires that any proposed occupation or use of an existing USACE civil works project be authorized by the Secretary of the Army. Examples of civil works projects include levees, dams, sea walls, bulkheads, jetties, dikes, wharfs, piers, and wetland restoration projects funded by or built by the USACE. The USACE may grant such permission if it determines the alteration proposed will not be “injurious to the public interest” and “will not impair the usefulness” of the civil works project. Under USACE policy, a Section 408 permission will not be issued before decisions on *Clean Water Act* Section 404 permits and *Rivers and Harbors Act* Section 10 permits are made.

Wetland impacts which will result from the construction of this project will be mitigated pursuant to Section 373.4137, F.S., to satisfy all mitigation requirements of Part IV of Chapter 373, F.S., and 33 U.S.C. §1344.

Figure 5.1.1: Retained Waters Map



6.0 Summary Comparison of Alternatives

6.1 Impacts to Listed Species

As described in Section 1.4, the project is composed of two segments: Jack Brack Road and Nova Road Connection. In addition to the No-Build Alternative, each segment has two build alternatives. The No-Build Alternative would result in no impacts to listed species. Each of the build alternatives are anticipated to have impacts to listed species.

Impacts to listed species within the Jack Brack Road segment are anticipated to be comparable between the Jack Brack Road Partial Cloverleaf Interchange, the Jack Brack Road Tighter Diamond Interchange, and the Jack Brack Road Diamond Interchange. As no species-specific surveys were conducted during the development of this study, it is not practical to rank one alternative within the Jack Brack Road segment as having higher or lower impacts to listed species by using available data.

Impacts to listed species within the Nova Road connection segment are anticipated to be comparable between the Nova Road Connection Option 1 and the Nova Road Connection Option 2. As no species-specific surveys were conducted during the development of this study, it is not practical to rank one alternative within the Nova Road Connection segment as having higher or lower impacts to listed species by using available data.

6.2 Impacts to Wetlands

Each of the build alternatives evaluated are anticipated to have unavoidable impacts to wetlands. Final determination of jurisdictional boundaries, in addition to mitigation requirements, will be coordinated between CFX and permitting agencies during the final design phase of the project. In the Jack Brack Road segment, as shown in **Table 3.3.1**, wetland impacts associated with the Jack Brack Road Diamond Interchange Alternative are higher than impacts anticipated by the construction of the Jack Brack Road Tighter Diamond Interchange, and the Jack Brack Road Partial Cloverleaf Interchange Alternative.

In the Nova Road Connection segment, as shown in **Table 3.3.1**, wetland impacts associated with Nova Road Connection Option 1 Alternative are greater than the Nova Road Connection Option 2 Alternative. UMAM scores are consistent between both segments.

6.3 Commitments

The following commitments are included in this Natural Resources Evaluation:

- Wetland impacts which will result from the construction of this project will be mitigated pursuant to Section 373.4137, F.S., to satisfy all mitigation requirements of Part IV of Chapter 373, F.S., and 33 U.S.C. §1344.
- Any species specific surveys will first be coordinated with USFWS and FFWCC, then conducted as agreed to with USFWS and FFWCC during permitting phase.
- A preconstruction gopher tortoise burrow survey and any resultant permitting will be conducted in accordance with FFWCC protocols.
- The project will implement the USFWS-approved Standard Protection Measures for the Eastern Indigo Snake (updated August 1, 2017) during the proposed roadway improvements.

7.0 References

Bowen, P. J. 2001. "Demography and distribution of the burrowing owl in Florida." *Florida Field Naturalist* 29(4):113-142.

Florida Administrative Code, 2007. Chapter 62-345, F.A.C. Uniform Mitigation Assessment Method, Retrieved (January 2, 2019) from <https://www.flrules.org/gateway/ChapterHome.asp?Chapter=62-345>.

Florida Department of Transportation. 1999. *Florida Land Use, Cover and Forms Classification System: Handbook* (3rd edition). FDOT Surveying and Mapping Office, Geographic Mapping Section. Tallahassee, Florida: 91 pp.

Florida Department of Transportation 2020. *Project Development and Environment Manual*, Tallahassee, Florida.

FNAI, 2018. Element Occurrence Data Report. Florida Natural Areas Inventory.

FNAI. 2016. Florida Geographic Data Library Documentation. Florida Conservation Lands metadata- Florida Managed Areas. (<http://www.fnai.org/gisdata.cfm>). Florida Natural Areas Inventory.

Florida Fish and Wildlife Conservation Commission. 2018 "Florida Burrowing Owl". *Species Measures and Conservation Guidelines*. Florida fish and Wildlife Conservation Commission, Tallahassee, FL. February, 2018.

Florida Fish and Wildlife Conservation Commission. 2018. *Florida Black Bear Management Plan*. Florida Fish and Wildlife Conservation Commission, Tallahassee, FL. 215 pp. June 27, 2012.

Florida Fish and Wildlife Conservation Commission. 2019. Eagle Nest Locator website. (<https://public.myfwc.com/FWRI/EagleNests/nestlocator.aspx>). Florida Fish and Wildlife Conservation Commission.

Florida Fish and Wildlife Conservation Commission. 2016 – Amended December 2018. *Florida's Imperiled Species Management Plan*. Florida Fish and Wildlife Conservation Commission.

Land, E. Darrell, et al. "Florida panther habitat selection analysis of concurrent GPS and VHF telemetry data." *The Journal of Wildlife Management* 72.3 (2008): 633-639.

Millsap, B. A. 1996. "Florida burrowing owl." Pages 579-587 in J. A. Rodger, H. W. Kale II, and H. T. Smith, editors. *Rare and endangered biota of Florida*. Volume V. Birds. University Presses of Florida, Gainesville.

NRCS. 2021. Web Soil Survey.

<https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx> (January, 2021)

NRCS. 1979. *Soil Survey of Osceola County, Florida*. U.S. Department of Agriculture. Natural Resource Conservation Service.

NRCS. 1990. *Soil Survey of Orange County, Florida*. U.S. Department of Agriculture. Natural Resource Conservation Service.

Osceola County. 2010. *Osceola County Northeast District Conceptual Master Plan*. Osceola County

Osceola County Property Appraiser. 2020. Web Map Search.

<https://ira.property-appraiser.org/gis/> (February 2021)

SFWMD. 2016. Florida Land Use, Cover and Forms Classification System (FLUCFCS) GIS Database. South Florida Water Management District.

Shiver, W.G., and P.D. Vickery. 1999. Aerial assessment of potential Florida grasshopper sparrow habitat: conservation in a fragmented landscape. *Florida Field Naturalist* 27:1-9

USACE .1987. *Corps of Engineers Wetlands Delineation Manual*. U.S. Army Engineers Waterways Experiment Station, Vicksburg, MS. Technical Report Y-87-1. 169 pp.

USACE. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coast Plain Region (Version 2.0) (ERDC/EL TR-10-20)*. U.S Army Corps of Engineers.

U.S. Fish and Wildlife Service. 2004. *Draft Snail Kite Survey Protocol*. South Florida Ecological Services Office. May 2004.

U.S. Fish and Wildlife Service. 2004. *Draft Species Conservation Guidelines South Florida Red-Cockaded Woodpecker*. South Florida Ecological Services Office. July, 2004.

U.S. Fish and Wildlife Service. 2007. *Scrub-Jay Survey Guidelines*. US Fish and Wildlife Service. August 24, 2007.

U.S. Fish and Wildlife Service. 2020. *Peninsular Florida Species Conservation and Consultation Guide. Sand Skink and Blue-tailed (Bluetail) Mole Skink*. U.S. Fish and Wildlife Service.

U.S. Fish and Wildlife Service. 2020. National Wetlands Inventory, Wetlands Online Mapper (January 2019).

U.S. Fish and Wildlife Service. 2015. *Crested Caracara Survey Protocol*. South Florida Ecological Services, U.S. Fish and Wildlife Service. November 2015

U.S. Fish and Wildlife Service. 1999. South Florida multi-species recovery plan.
<http://verbeach.fws.gov>.

U.S. Fish and Wildlife Service. 2021. Environmental Conservation Online System Species Reports- Species by County Report. (<https://ecos.fws.gov/ecp/>). U.S. Fish and Wildlife Service.

U.S. Fish and Wildlife Service. 2021. Threatened and Endangered Species' Critical Habitat Online Mapping Application. (<http://crithab.fws.gov/>). U.S. Fish and Wildlife Service.

U.S. Fish and Wildlife Service. 2021. Endangered Species Database (<http://www.fws.gov/endangered/>). U.S. Fish and Wildlife Service