NATURAL RESOURCES EVALUATION REPORT ADDENDUM

Florida Department of Transportation

District One

State Road 710 Re-evaluation

Limits of Project: US 441 to L-63N

Okeechobee County, Florida

Financial Management Number: 419344-3-43-01

ETDM Number: 11092

Date: August 28, 2024

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

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EXECUTIVE SUMMARY

On March 16, 2017, the Florida Department of Transportation (FDOT) Office of Environmental Management (OEM) granted Location and Design Concept Acceptance (LDCA) for the State Road (SR) 710 Project Development and Environment (PD&E) Study. The project limits are approximately 13 miles from United States Highway (US) 441 in Okeechobee County to County Road (CR) 714 (Southwest Martin Highway) in Martin County, FL. The proposed improvements include widening the existing SR 710 roadway to a four-lane and a new four-lane extension of SR 710 from US 441 to SR 70.

On August 30, 2018, the FDOT District One held a public hearing for Segment 1 of the original PD&E Study, extending from SR 710 at the South Florida Water Management District (SFWMD) L-63N Canal north to the proposed intersection at US 441, a distance of approximately 3.8 miles. This hearing was held to present changes in project design, right-of-way needs, and access management changes made since the FDOT OEM's original LDCA. The public was provided an opportunity to review and provide comments on the project's potential impacts to the social, cultural, natural, and physical environment. The FDOT OEM approved a Design Change and Right-of-Way (ROW) Authorization Re-evaluation documenting these changes on February 7, 2019.

The Design and ROW phases are on-going for the design segment (FPID No. 419344-3) covered under this Re-evaluation. The current concept proposed for advancement differs from the prior 2019 Re-evaluation in that approximately one mile of the new SR 710 alignment is being realigned and shifted north to avoid impacts to the Okeechobee Utility Authority (OUA) wellfield. Starting approximately 150 feet east of Taylor Creek, the roadway centerline shifts north of the previous alignment location, before converging with the original alignment centerline falling east of Pond 2 (proposed). As a result of the 2024 OUA wellfield realignment, Pond 2 also required minor redesign. The footprint for Pond 2 was slightly shifted and the overall acreage was reduced. A 9.432-acres parcel acquisition was required for the 2019 Pond 2 design. For the updated Pond 2, 9.326-acres of parcel acquisition is required. The parcel area to be acquired includes the entire pond footprint and the necessary area to tie-down to existing grade and to accommodate the outfall swale west of the pond site. The pond footprint decreased from 8.25-acres (2019 design) to 7.43-acres (current design), as measured from the outside top of berm, for a 0.106-acre total reduction in footprint.

This Natural Resources Evaluation (NRE) Addumeum was prepared to document natural resources analyses performed to support changes to the design and ROW and to summarize potential impacts to protected species, critical habitat, and wetland and Other Surface Waters (OSW) within the 2024 OUA wellfield realignment Re-evaluation limits in accordance with the Wetlands and OSW, Protected Species and Habitat, and Essential Fish Habitat Chapters of the FDOT PD&E Manual, effective July 1, 2023. Furthermore, this NRE Report Addendum serves as an update to the former Wetlands Evaluation Report (WER), Endangered Species Biological Assessment (ESBA) and Biological Assessment (BA) technical memorandums completed for the project during the PD&E study and prior 2019 Re-evaluation.

A total of eleven federally listed and candidate species and nine state listed species were identified as potentially occurring within the limits of the project corridor. While not state or federally listed under the Endangered Species Act (ESA), the bald eagle (*Haliaeetus leucocephalus*), Florida black bear (*Ursus americanus floridanus*), and Southern fox squirrel (*Sciurus niger niger*) were included in the

protected species analysis due to the regulatory protections associated with these species. Two species, the tri-colored bat *(Perimyotis subflavus*) and Monarch butterfly (*Danaus Plexippus*), are candidate for federal listing and were also identified as potentially present in the project area. **Table 1** below summarizes the change in effect determinations for each species covered under this Re-evaluation as compared to the PD&E study.

Table 1. Summary of Changes in Protected Species Effect Determinations

Scientific Name	Common Name	USFWS/FWC Designation	PD&E Effect Determination	Design Effect Determination
Drymarchon couperi	Eastern indigo snake	T	MANLAA	MANLAA
Mycteria americana	Wood stork	T	MANLAA	MANLAA
Caracara plancus audubonii	Audubon's crested caracara	T	LAA	MANLAA
Rostrhamus sociabilis plumbeus	Everglade snail kite	E	No Effect	No Effect
Ammodramus savannarum floridanus	Florida grasshopper sparrow	E	No Effect	No Effect
Laterallus jamaicensis jamaicensis	Eastern black rail	T	--	MANLAA
Aphelocoma coerulescens	Florida scrub-jay	T	No Effect	No Effect
Picoides borealis	Red-cockaded woodpecker	E	No Effect	No Effect
Eumops floridanus	Florida bonneted bat	E	MANLAA	No Effect
Trichechus manatus latirostris	West Indian manatee	T	MANLAA	MANLAA
Cucurbita okeechobeensis ssp. *Okeechobeensis*	Okeechobee gourd	E	No Effect	No Effect
Gopherus polyphemus	Gopher tortoise	ST	NLAA	NAEA
Pituophis melanoleucus mugitus	Florida pine snake	ST	NLAA	NAEA
Athene cunicularia floridana	Florida burrowing owl	ST	NLAA	NAEA
Antigone canadensis pratensis	Florida sandhill crane	ST	NLAA	NAEA
Falco sparverius paulus	Southeastern American kestrel	ST	NLAA	NAEA
Egretta caerulea	Little blue heron	ST	NLAA	NAEA
Egretta rufescens	Reddish egret	ST	NLAA	NAEA
Egretta tricolor	Tricolored heron	ST	NLAA	NAEA
Platalea ajaja	Roseate spoonbill	ST	NLAA	NAEA
Perimyotis subflavus	Tricolored bat	C	--	--
Danaus plexippus	Monarch butterfly	C	--	--
Haliaetus leucocephalus	Bald eagle	*	NLAA	No Impacts
Sciurus niger niger	Southern fox squirrel	***	NLAA	No Impacts

Key:
USFWS = U.S. Fish and Wildlife Service
FWC = Florida Fish and Wildlife Conservation Commission
MANLAA = May affect, not likely to adversely affect
NAEA = No Adverse Effect Anticipated
NLAA = Not likely to adversely affect
LAA= Likely to adversely affect
T = Threatened
E = Endangered
ST = State Threatened
C = Candidate for listing
* Bald eagle is protected under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA)
** Florida black bear is protected under Chapter 68A-4.009 F.A.C., the Florida Black Bear Conservation Plan
*** Southern fox squirrel is protected under 68A-4.001, F.A.C, 68A-1.004, F.A.C., and 68A-29.002(1)c, F.A.C.

None of the effect determinations have been modified from the 2019 Re-evaluation. Changes from the Re-evaluation include a newly documented wood stork colony within the project's action area, recently federally listed Eastern black rail, and finalized Florida bonneted bat consultation guidelines which resulted in a no effect determination. Status changes since the 2018 BAs are described in previous sections and include:

- The gopher tortoise state listing status changed from "species of special concern" to "threatened" and was added to the federal list of candidate species in September 2007. As of October 12, 2022, the United States Fish and Wildlife Service (USFWS) found that the status of the gopher tortoise populations in the eastern segment, which includes Florida, Georgia, South Carolina, and most of Alabama, does not require protections under the ESA and will be withdrawn as a candidate for listing in accordance with 50 C.F.R. 17 as published in the Federal Register as 87 FR 61834.

- As of November 9, 2020, the eastern black rail was listed as federally "threatened" under the ESA.
- The USWFS adopted their "Eastern Black Rail Call-Response Survey Protocol for Range-Wide Monitoring" (effective April 2023).
- As of December 17, 2020, the USFWS is currently considering the monarch butterfly as a candidate species, warranted for federal listing but precluded at this time due to higher priority listing actions.
- The USFWS' Standard Protection Measures for the Eastern Indigo Snake were recently updated on March 23, 2023.
- The USFWS has updated the designated critical habitat for the FL bonneted bat as of March 6, 2024.
- As of September 13, 2022, the USFWS is currently considering the tricolored bat as a candidate species, warranted for federal listing but precluded at this time due to higher priority listing actions.
- As of July 31, 2023, the scientific name for Audubon's crested caracara was changed to (*Caracara plancus audubonii*).
- As of February 14, 2023, the USFWS has determined that the United States (U.S.) breeding population of wood storks no longer faces the imminent threat of extinction and is proposing to remove the wood storks from the endangered species list.
- The prior document addressed the Sherman's fox squirrel. This species has been renamed to the Southern fox squirrel and is no longer a state-listed species of special concern.

The 2024 OUA wellfield realignment Re-evaluation limits were also evaluated for the presence of federally-designated Critical Habitat (CH) as defined by Congress in 50 Code of Federal Regulations (C.F.R.) 17. Based on this evaluation, it was determined that no CH, or proposed CH exists within the project area and therefore, there will be no impacts to designated critical habitat.

Additionally, the 2024 OUA wellfield realignment Re-evaluation limits were assessed for the presence of wetlands and surface waters and field-delineated during follow-up environmental site assessments conducted in June 2023. Wetland and surface water features were documented and evaluated to account for changes since the prior 2019 Re-evaluation. Additionally, the overall project study area and wetland and surface water boundaries were reassessed to identify potential changes in the reported conditions due to a 5-year time lapse between environmental field reviews.

These wetlands and surface water habitats were classified using Florida Land Use, Cover and Forms Classification System (FLUCFCS) (FDOT, 1999) and USFWS Classification of Wetlands and Deepwater Habitats of the U.S. (Cowardin, et al., 1979). **Table 2** lists the individual features present within the project study area, including the FLUCFCS and USFWS classifications, and their corresponding impact acreages.

Table 2. Summary of Changes in Wetland and Surface Water Impacts

ID	FLUCFCS[1]	USFWS Classification[2]	Direct Impacts Acreages (2019 / 2024)	Secondary Impacts Acreages (0-25 feet) (2019 / 2024)
WTL-01 * **	6410 - Freshwater Marshes	PEM1C	0.27 / 0.27	---
WTL-03 * **	6410 - Freshwater Marshes	PEM1C	0.05 / 0.02	0.00 / 0.01
WTL-05A*	6190 - Exotic Wetland Hardwoods	PFO1C	0.11 / 0.11	0.03 / 0.03
WTL-05B*	6430 - Wet Prairies	PEM1C	0.01 / 0.00	0.05 / 0.03
WTL-05C*	6210 - Cypress	PFO1C	0.69 / 1.48	0.15 / 0.33
WTL-06 * **	6430 - Wet Prairies	PEM1C	--- / 0.47	--- / 0.11
WTL-08 *	6170 - Mixed Wetland Hardwoods	PFO2/3C	0.47 / 0.51	0.05 / 0.20
WTL-09 *	6430 - Wet Prairies	PEM1F	0.83 / 0.81	0.18 / 0.13
WTL-09A *	6430 - Wet Prairies	PEM1C	--- / 0.03	--- / 0.11
WTL-10 *	6430 - Wet Prairies	PEM1C	0.40 / 0.39	0.13 / 0.13
WTL-11 * **	6430 - Wet Prairies	PEM1C	0.02 / 0.01	0.04 / 0.04
WTL-12 *	6430 - Wet Prairies	PEM1F	0.71 / 0.71	0.20 / 0.19
WTL-13 *	6430 - Wet Prairies	PEM1F	1.02 / 0.67	0.12 / 0.12
WTL-15 *	6430 - Wet Prairies	PEM1F	0.18 / 0.16	0.14 / 0.14
WTL-17 *	6170 - Mixed Wetland Hardwoods	PFO1F	0.52 / 0.87	0.25 / 0.43
WTL-18 *	6300 - Wetland Forested Mixed	PFO1F	--- / 0.17	--- / 0.12
		Sub Total:	**5.28 / 6.68**	**1.34 / 2.12**
SW-01A * ***	5340 - Reservoirs less than 10 acres	PUBHx	--- / 0.19	---
SW-01-Fill	5120 - Channelized Waterways	R2UBHx	0.44 / 0.40	---
SW-01-**Shade**	5120 - Channelized Waterways	R2UBHx	--- / 0.23	---
SW-02-Fill	5120 - Channelized Waterways	R2UBHx	0.68 / 0.69	---
SW-02-**Dredge**	5120 - Channelized Waterways	R2UBHx	--- / 0.12	---
OSW-1* ***	5110 – Streams and Waterways	R2AB4Hx	--- / 0.10	---
		Sub Total:	**1.13 / 1.73**	---
		Total:	**6.41 / 8.41**	**1.34 / 2.12**

References:
[1] FDOT 1999
[2] Cowardin *et al*., 1979
Notes:
Newly added Re-evaluation IDs shown in **bold**.
2019 ID OSW-4 removed.
*Not jurisdictional to USACE (*Sackett v. Environmental Protection Agency, 2023)*
**Mitigation for SFWMD not required for isolated wetlands 0.50 acres or less.
*** Mitigation for SFWMD not required for upland-cut ditches and ponds [62-330.040.700, F.A.C.]
USFWS Classification Descriptions:
PUBHx: Palustrine; Unconsolidated bottom; Permanently flooded; Excavated.
PEM1C: Palustrine; Emergent; Persistent; Seasonally flooded.
PEM1F: Palustrine; Emergent; Persistent; Semi-permanently flooded.
PFO1C: Palustrine; Forested; Broad leaved deciduous; Seasonally flooded.
PFO1F: Palustrine; Forested; Broad leaved deciduous; Semi-permanently flooded.
R2UBHx: Riverine; Lower Perennial; Unconsolidated bottom; Permanently flooded; Excavated.

The prior 2019 Re-evaluation proposed 5.28-acres of direct wetland impacts and 1.13-acres of direct surface water/OSW impacts, for a total of 6.41-acres of direct impacts. Additionally, the prior 2019 Re-evaluation proposed 1.34-acres of secondary impacts to remaining wetlands falling within 25-feet of the project. Impacts to jurisdictional wetlands and surface waters were reevaluated and quantified to address changes covered by this Re-evaluation. Based on an evaluation of the 2024 OUA wellfield realignment Re-evaluation limits and reevaluation of the overall project study area, the project will result in 6.68-acres of direct wetland impacts and 1.73-acres of direct surface water/OSW impacts, for 8.41-acres of total direct impacts; a 1.40-acres increase in wetland impacts and 0.60-acres increase in surface water/OSW impacts, for 2.0-acres total increase in direct impacts as compared to the prior 2019 Re-evaluation. Additionally, the project will result in 2.12-acres of secondary impacts, a 0.78-acre increase as compared to the prior 2019 Re-evaluation.

Compensatory mitigation for unavoidable impacts to wetlands and habitat will be provided in the form of credits purchased from the Bluefield Ranch Mitigation Bank (BRMB), which was permitted using the Wetland Rapid Assessment Procedure (WRAP) functional assessment methodology. The prior 2019 Re-evaluation evaluated the purchase of BRMB mitigation credits, including 1.11 forested and 1.46 herbaceous credits for a total of 2.57 total state mitigation credits to offset direct impacts to wetlands. In addition to 1.11 forested credits and 1.10 herbaceous credits to offset secondary impacts to adjacent wetlands to remain within 25-feet of the project study area. The prior 2019 Re-evaluation also identified a total of 2.21 federal mitigation credits to offset federally jurisdictional wetland impacts under the former 2018 WOTUS rule and U.S. Supreme Court ruling *Rapanos v. U.S.*, 2006.

Changes in compensatory mitigation since the prior 2019 Re-evaluation include the following:

- The SFWMD does not require compensatory wetland mitigation for impacts to isolated wetlands that are less than one half acre in size. Impacts to isolated wetlands (IDs: WTL-01, WTL-03, WTL-06, and WTL-11) less than one half acre in size do not require mitigation. Impacts to the remaining wetlands, both direct and secondary impacts within 25-feet of the project study area, will require a total of 2.08 forested credits and 1.73 herbaceous credits to be purchased from the BRMB (3.81 total state credits).

- Based on recent changes in federal regulations, specifically with regards to federal wetland jurisdiction and regulatory authority following the Supreme Court *Sackett v. EPA*, 2023 ruling and conforming WOTUS rule (detailed in Section 1.1 of this report), no impacts to federally jurisdictional wetlands under Section 404 of the CWA are anticipated. The FDOT will coordinate an Approved Jurisdictional Determination (AJD) with the USACE during permitting to verify whether the project will result in impacts to federally jurisdictional Section 404 wetlands to determine whether federal mitigation will be required.

Per coordination with the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) during the Efficient Transportation Decision Marking (ETDM) process (ETDM Project 11092), initiated in August 2009, the proposed project will have no involvement with EFH.

1.0 PROJECT OVERVIEW

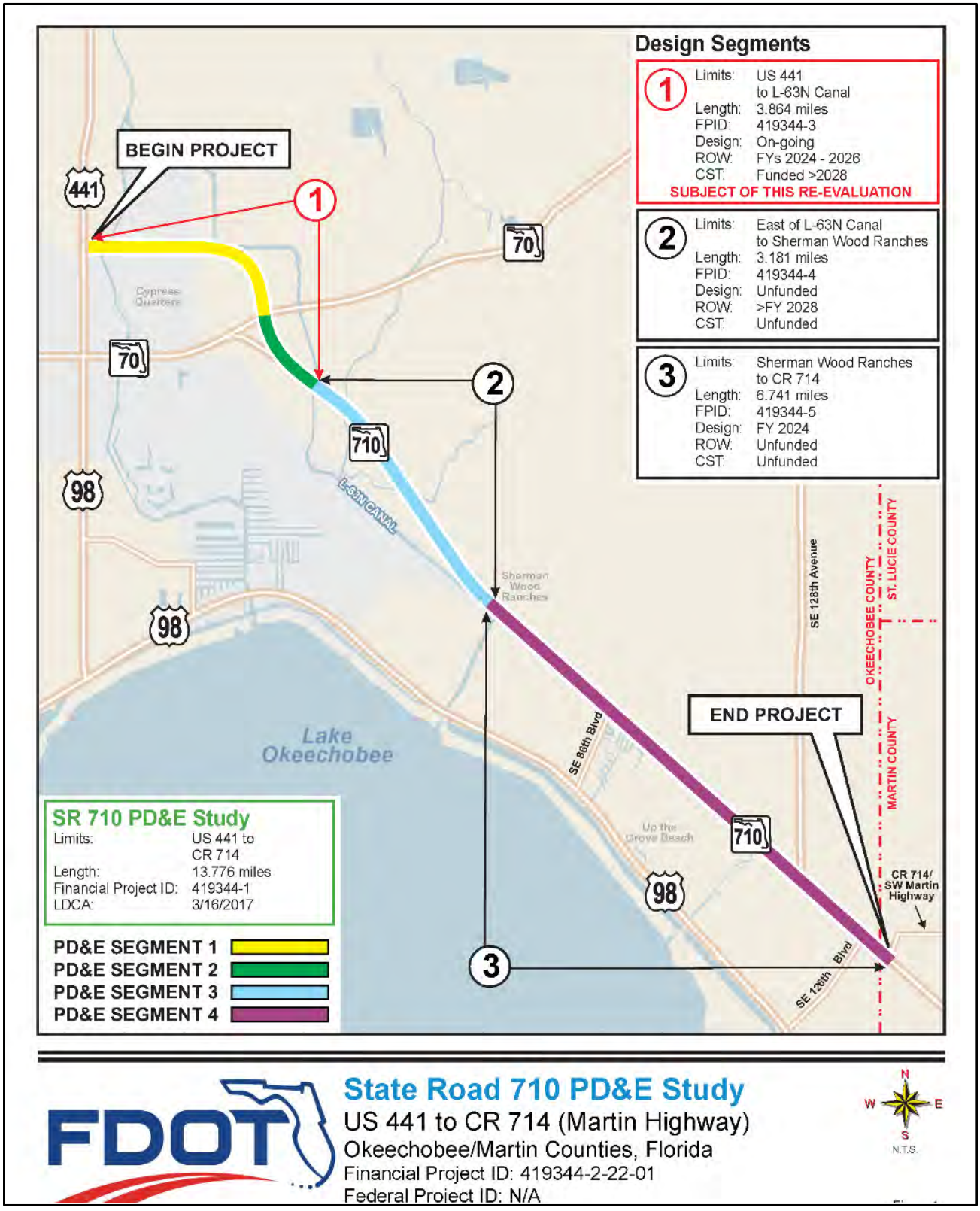
The Florida Department of Transportation (FDOT), District One, completed a PD&E study under Financial Project Identification Number (FPID No.) 419344-2-21-01. The original SR 710 PD&E study limits included the portion of SR 710 from SR 70 in Okeechobee County to CR 714 in Martin County, a distance of approximately 10.1 miles, and included four separate segments (1 through 4).

- Segment 1 – from US 441 to SR 70
- Segment 2 – from SR 70 to the SFWMD L-63N Canal
- Segment 3 – from the SFWMD L-63N Canal to Sherman Wood Ranches
- Segment 4 – Extends from Sherman Wood Ranches to CR 714

A Wetland Evaluation Report (WER) was completed in December 2010 and revised in June 2012 as a component of the original PD&E study. Additionally, an Endangered Species Biological Assessment (ESBA) was completed in June 2011, an Audubon's crested caracara (*Caracara plancus audubonii)* BA was completed in June 2013, and a wood stork (*Mycteria americana*) BA was completed in June 2013; consultation with the USFWS was initiated at that time. The USFWS issued a formal Section 7 Biological Opinion (BO) on September 9, 2015. The 2015 BO concluded the SR 710 project may affect but is not likely to adversely affect the Florida bonneted bat (*Eumops floridanus*), the eastern indigo snake (*Drymarchon corais couperi*), and wood stork (*Mycteria americana*) and is likely to adversely affect the Audubon's crested caracara (formerly known as *Caracara cheriway – Polyborus plancus audubonii)*. The 2011 PD&E ESBA was submitted to the Florida Fish and Wildlife Conservation Commission (FWC); however, no response was received during the PD&E phase.

In accordance with 23 C.F.R. 771.129, the project underwent a Design Change and ROW Authorization Re-evaluation to combine PD&E Segments 1 and 2 under FPID No. 419344-3-43-01, which received approval on February 7, 2019. An addendum WER technical memorandum was completed in August 2018 and an addendum BA update was completed in November 2018 in support of the prior 2019 Re-evaluation and served as an update to the previous WERs, ESBA, and BAs completed during the PD&E study. These documents focused on the new SR 710 alignment from the SFWMD L-63N Canal to US 441 within the subsequently combined Segments 1 and 2 (Design Segment 1), a distance of approximately 3.864 miles. Refer to **Figure 1**.

Figure 1. PD&E and Design Segment Project Location Map



The proposed improvements being advances within this Re-evaluation remain generally unchanged since the prior February 2019 Re-evaluation, except for the 2024 OUA wellfield realignment Re-evaluation limits, a distance of approximately one mile where the SR 710 roadway alignment was shifted north to avoid impacts to the OUA wellfield, and incidental Pond 2 adjustments. The roadway centerline shifted north of the previous alignment location approximately 150 feet east of Taylor Creek before converging with the original alignment centerline falling east of Pond 2. The maximum horizontal difference between the two alignments is 275 feet, and a redesign of Pond 2 was required to accommodate the roadway realignment shift. The footprint for Pond 2 was slightly shifted and the overall acreage was reduced. A 9.432-acres parcel acquisition was required for the 2019 Pond 2 design. For the updated Pond 2, 9.326-acres of parcel acquisition is required. The parcel area to be acquired includes the entire pond footprint and the necessary area to tie-down to existing grade and to accommodate the outfall swale west of the pond site. The pond footprint decreased from 8.25-acres (2019 design) to 7.43-acres (current design), as measured from the outside top of berm, for a 0.106-acre total reduction in pond size. Refer to **Figure 2** and **Figure 3.**

The FDOT District One is proposing improvements that consist of a new four-lane suburban typical section. There is no change to the proposed typical section and the roadway includes two 12-foot-wide travel lanes in each direction, separated by a raised grassed median varying from 30 to 39-foot wide. The posted speed will be 45 miles per hour (mph). The posted speed will reduce to 40 mph near the new intersection at US 441. The SR 710 extension will include 7-foot bicycle lanes, 6-foot sidewalk along the south side of the roadway, and a 10-foot shared use path along the north side of the roadway. Type E curb and gutter will be provided along the median and outside edges of the roadway with a closed stormwater conveyance system. The SR 710 extension will have new signals at the intersections with US 441, SR 70, and SE 40th Avenue. The project also includes widening the existing SR 710 bridge over the SFWMD L-63N Canal and a new bridge culvert within Taylor Creek. ROW acquisition is required for the new SR 710 roadway alignment and stormwater ponds.

Figure 2. Re-evaluation Project Study Area

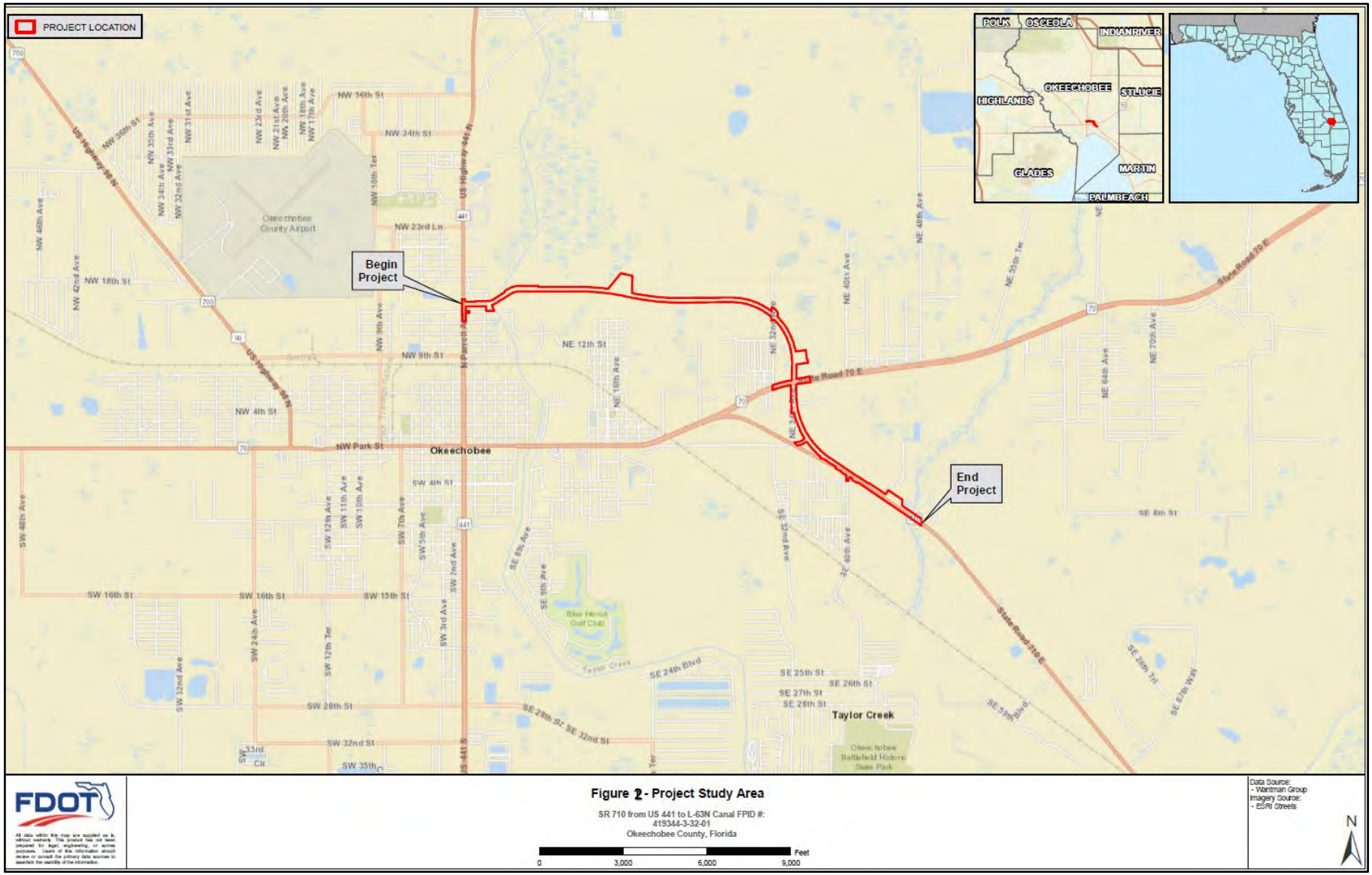
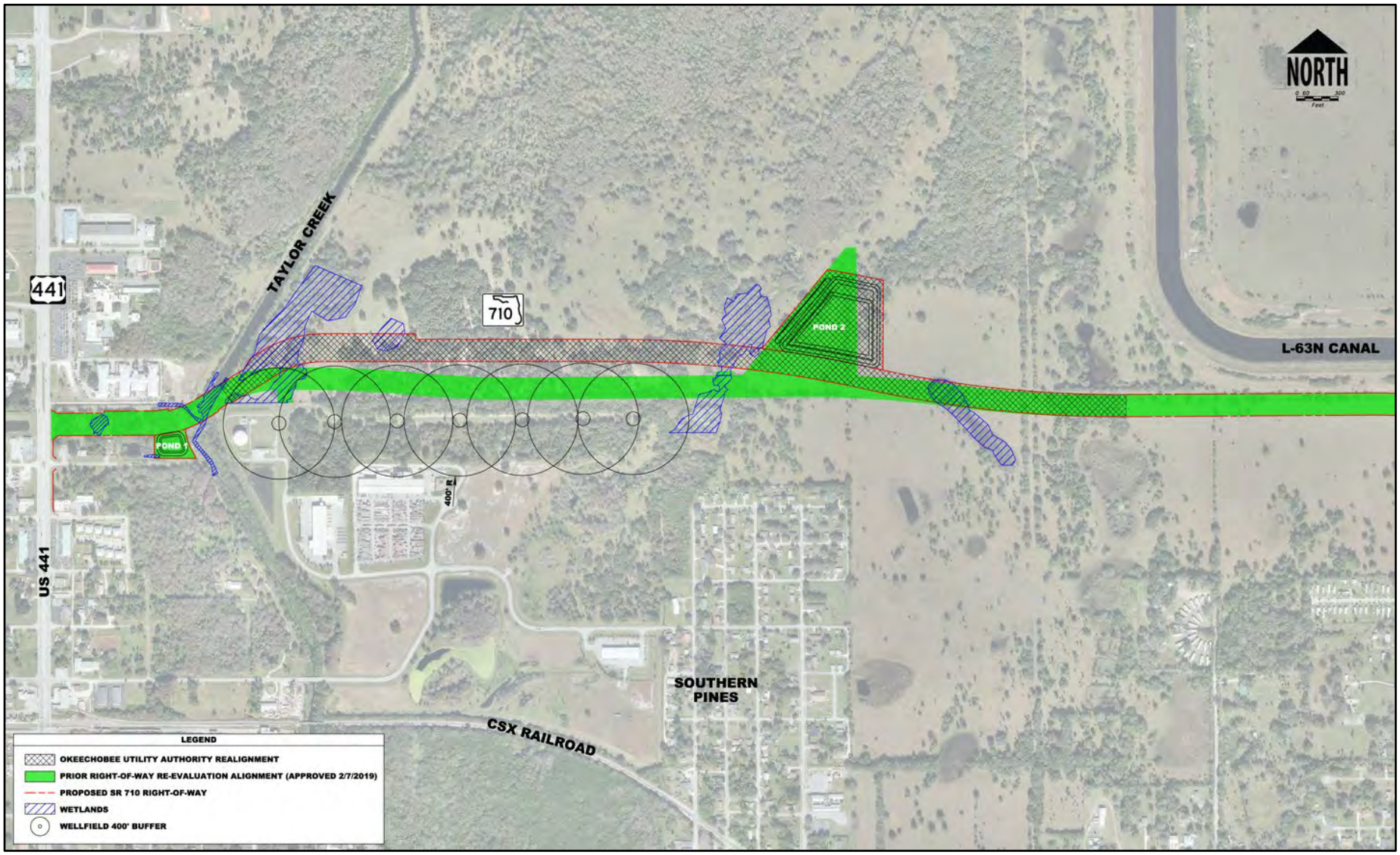


Figure 3. 2024 OUA Wellfield Realignment Re-evaluation Limits



1.1 AGENCY COORDINATION

Environmental permitting and regulatory agency coordination is on-going, and FDOT District One will obtain the following permits to authorize project construction:

- U.S. Army Corps of Engineers (USACE) Section 10/404 Permit;
- USACE Section 408 Approval;
- SFWMD Individual Environmental Resource Permit (ERP);
- SFWMD ROW Occupancy Use Permit;
- FWC Gopher Tortoise Permit;
- SFWMD Water Use Permit (Construction Dewatering); and
- Florida Department of Environmental Protection (FDEP) National Pollutant Discharge Elimination System (NPDES) Construction Generic Permit (CGP).

USACE Section 10/404 Permit

Section 10: Authority over any temporary or permanent work or structures in, over or under navigable waters of the United State (WOTUS), as defined by 33 C.F.R. §2.36, requires a Section 10 Permit under the Rivers and Harbors Act of 1899, including Taylor Creek and the L-63N Canal falling within the project study area.

Section 404: Authority over temporary or permanent federally jurisdictional dredge-and-fill impacts to WOTUS pursuant to Section 404 of the CWA. The Environmental Protection Agency (EPA) approved delegation of Section 404 permitting for certain "assumed" waters from the USACE to the FDEP, while the USACE kept authority over "retained" waters. On December 22, 2020, the state of Florida assumed administration of a CWA Section 404 program for all WOTUS within the state that are not retained by the USACE, Florida's State 404 A.H., Appendix A, and the Memorandum of Agreement (MOA) between the FDEP and the Department of the Army, which state that all waters not retained by the USACE will be assumed by the state, and that the USACE will retain permitting responsibility for the following waters:

'*Waters identified in the Retained Waters List (Appendix A), as well as all waters subject to the ebb and flow of the tide shoreward to their mean high-water mark that are not specifically listed in the Retained Waters List, including wetlands adjacent thereto landward to the administrative boundary. The administrative boundary demarcating the adjacent wetlands over which jurisdiction is retained by the Corps is a 300-foot guideline established from the ordinary high-water mark or mean high tide line of the retained water. In the case of a project that involves discharges of dredged or fill material both waterward and landward of the 300-foot guideline, the USUACE will retain jurisdiction to the landward boundary of the project for the purposes of that project only.*'

Furthermore, on July 28, 2023, the EPA issued the Jacksonville Advisory Memorandum (JAM) to the USACE Jacksonville District to clarify their position regarding permitting projects in Florida that discharge dredge or fill material both waterward and landward of the 300-foot guideline.

On August 29, 2023, the EPA and Department of the Army (the agencies) issued a final rule to amend the final Revised Definition of WOTUS rule, published in the *Federal Register* on January 18, 2023. This final rule conforms the definition of WOTUS to the U.S. Supreme Court's May 25, 2023, decision

in the case of *Sackett v. EPA*. Parts of the January 2023 Rule are invalid under the Supreme Court's interpretation of the Clean Water Act in the *Sackett* decision. Therefore, the agencies have amended key aspects of the regulatory text to conform to the Court's decision. The conforming rule, "Revised Definition of 'WOTUS'"; Conforming," was published in the *Federal Register* and became effective on September 8, 2023.

With this change, only those wetlands with a continuous surface connection to traditional navigable WOTUS, defined as those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce, are considered jurisdictional. Impacts to non-federally jurisdictional wetlands will not be regulated, and federal compensatory wetland mitigation is not required for impacts to these features. It is important to note that federal guidance pertaining to which wetlands will be retained under 404 jurisdiction and interpretation under the new rule is still uncertain.

On February 16, 2024, the U.S. District Court (USDC) for the District of Columbia issued a decision (Civil Action No. 21-119 (RDM)) vacating the EPA's approval of the State of Florida's application to assume the Clean Water Act Section 404 permitting authority in Florida. After the court vacated EPA's approval of Florida's State 404 Program, the USACE began accepting and processing applications for Section 404 permits in formerly state-assumed waters; therefore, the USACE will retain 404 regulatory authority over the entire linear project. The FDOT will coordinate an Approved Jurisdictional Determination (AJD) to verify whether the project will result in impacts to federally jurisdictional 404 wetlands.

USACE Section 408 Approval

This portion of the L-63N Canal is a federal levee and falls within the federal Central and Southern Florida (C&SF) Civil Works Project. A levee is a man-made structure, usually an earthen embankment or concrete floodwall, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water to provide reasonable assurance of excluding temporary flooding from the leveed area. The project proposes two (2) stormwater outfalls with discharge to the SFWMD L-63N Canal; a 48-inch outfall and a 36-inch outfall. These pipes will require drilling through the levee which requires a Drilling Program Plan (DPP) to be produced and reviewed as a component of a USACE Section 408 Approval for work within the L-63N canal and levee ROW. This Section 408 Approval will be reviewed concurrently with the USACE Section 10/404 and SFWMD ROW Occupancy Use Permits.

SFWMD Individual ERP

A SFWMD ERP is required for development or construction activities to prevent flooding, protect the water quality from stormwater pollution, and protect wetlands and other surface waters. A SFWMD ERP is required for the project to authorize dredge and fill impacts to wetlands and surface waters and the construction of the proposed stormwater management system. Typically, SFWMD will not issue an ERP before the related ROW Occupancy Use Permit is issued.

SFWMD ROW Occupancy Use Permit

A SFWMD ROW Occupancy Use Permit is required for temporary use and access and the installation of new permanent features within canal ROWs that are owned, operated, and maintained by the

SFWMD. A SFWMD ROW Occupancy Use Permit is required for work within the Taylor Creek and L-63N Canal ROWs.

FWC Gopher Tortoise Permit

In 2019, a total of 26 potentially occupied and one abandoned gopher tortoise burrow were documented. Because gopher tortoise burrows have been documented and there is known tortoise habitat in the project boundary, a 100 percent survey will be conducted per the FWC Gopher Tortoise Permitting Guidelines, *Gopherus polyphemus*, April 2008 (Revised April 2023) within 90 days of construction. A FWC Gopher Tortoise Permit is required for the project.

SFWMD Water Use Permit

A SFWMD Water Use Permit will be required for temporary construction dewatering activities. In accordance with the current FDOT Standard Specifications and the selected contractor shall be responsible for obtaining the state dewatering permit, as required.

FDEP NPDES CGP

Projects with soil disturbing activities one acre or greater (excluding milling and resurfacing) are governed by the FDEP NPDES CGP for Stormwater Discharge from Large and Small Construction Activities. The NPDES permit requires that a Stormwater Pollution Prevention Plan (SWPPP), or Stormwater Runoff Control Concept (SRCC), be part of the project documents. A SRCC will be developed for the project. In accordance with the current FDOT Standard Specifications, the selected contractor shall be responsible for obtaining the NPDES CGP and filing the FDEP Notice of Intent (NOI) Form 62-621.300(4)(b), F.A.C.

U.S. Coast Guard (USCG) Bridge Permit

The portions of the SFWMD L-63N Canal and Taylor Creek falling within the project limits are not jurisdictional to the USCG; therefore, a USCG Bridge Permit is not required. The Environmental Assessment (EA) with Finding of No Significant Impact (FONSI) included the FHWA's determination issued on June 24, 2016, that a USCG Bridge Permit is not be required for the project.

During the PD&E study, the FDOT determined that the proposed action may affect, not likely adversely affect the eastern indigo snake, American alligator, West Indian manatee, wood stork and Florida bonneted bat. The USFWS concurred with these findings, in letters dated January 7, 2011, August 7, 2013, and May 27, 2014. Within their BO issued on September 9, 2015, the USFWS determined that the project is not likely to jeopardize the continued existence of the Audubon's crested caracara (based on potential impacts to an active nest documented in PD&E Segment 3). Based on lack of suitable habitat and/or proximity to known populations, the FDOT further determined that the proposed action will have no effect on the Florida grasshopper sparrow, Everglade snail kite, red-cockaded woodpecker, Florida scrub jay, Florida panther and Okeechobee gourd. The FDOT also determined that the approved PD&E concept was not likely to adversely affect six state-listed wading bird species, the Florida sandhill crane, the Florida burrowing owl, the gopher tortoise, the gopher frog, the Florida pine snake, the Florida mouse, the southeastern American kestrel, and the Sherman's fox squirrel. As part of the PD&E study, the FDOT made commitments concerning various listed/protected species. The status of these commitments is provided in Section 4.1 of this report.

Design-phase field surveys for state and federally listed/protected flora and fauna were conducted within all ROW needed for the project during September and October 2013; April 2015; January through May 2017; August and September 2018; between January and April of 2023; and January 4 through April 26, 2024. The regulatory status changes for several of these species are noted in Section 3 of this report. No state or federally-protected plant species were observed during the Design-phase field surveys.

The PD&E effect determination of "may affect, not likely to adversely affect" for the Florida bonneted bat was revisited per the USFWS South Florida Ecological Service Office – Florida Bonneted Bat Consultation Guidelines (October 2019). Acoustic surveys were completed for this species in August and September 2018. The full acoustic survey found no evidence of Florida bonneted bat activity within the project limits. The FDOT has determined that the proposed project may affect, not likely to adversely affect the species.

Due to the observation of gopher tortoise burrows within and adjacent to the project footprint, a more detailed survey will be performed per FWC requirements prior to construction. The FDOT will secure any relocation permits needed for this species and relocate affected tortoises prior to construction commencement. Compensatory mitigation will be provided to offset the loss of wetland functions provided to the Florida sandhill crane, little blue heron and tricolored heron. Although not specifically observed, if Sherman's fox squirrel nests are observed in the future, they will be addressed in accordance with the FWC's Species Conservation and Permitting Guidelines established for the species.

Additional field reviews for listed/protected species will be completed as appropriate prior to construction commencement to determine the presence of these species and whether or not potential conflicts will result to/from construction activities. Species-specific project specifications or impact avoidance measures/buffers will be implemented, as applicable. Where required, compensatory mitigation to offset habitat impacts will be included within the environmental permits issued to authorize project construction. These permits will be obtained prior to construction commencement and updates will be coordinated with the FWC and USFWS as a component of permitting.

2.0 WETLAND EVALUATION

In accordance with Presidential Executive Order 11990 entitled "Protection of Wetlands", United States Department of Transportation Order 5660.1A, “Preservation of the Nation's Wetlands” and the Wetlands and OSW Chapter of the FDOT PD&E Manual, the 2024 OUA wellfield realignment Re-evaluation limits were assessed for the presence of wetlands and surface waters and field-delineated during follow-up environmental site assessments conducted in June 2023. Wetland and surface water features were documented and evaluated to account for changes in design and ROW. Additionally, the overall project study area and wetland and surface water boundaries were reassessed to identify potential changes in the reported conditions due to a 5-year time lapse between environmental field reviews. The wetland, surface water, and OSW Identifications (IDs) and naming used in this NRE Re-evaluation correspond to the prior 2019 Re-evaluation and three new wetland areas (IDs: WTL-06, WTL-09A, and WTL-18), one new surface water (ID: SW-01A), and one new OSW (ID: OSW-1) were identified within the project study area.

Direct impacts to jurisdictional wetlands and surface waters were reevaluated and quantified to address

changes included under this Re-evaluation. Based on an evaluation of the 2024 OUA wellfield realignment Re-evaluation limits and reevaluation of the overall project study area, the project will result in 6.68-acres of direct wetland impacts and 1.73-acres of direct surface water/OSW impacts, for a total of 8.41-acres of direct impacts; a 1.40-acres increase in wetland impacts and 0.60-acres increase in surface water/OSW impacts, for 2.0-acres total increase in direct impacts covered by this Re-evaluation as compared to the prior 2019 Re-evaluation. Additionally, the project will result in 2.12-acres of secondary impacts to adjacent wetlands to remain within 25-feet of the project, a 0.78-acre increase as compared to the prior 2019 Re-evaluation.

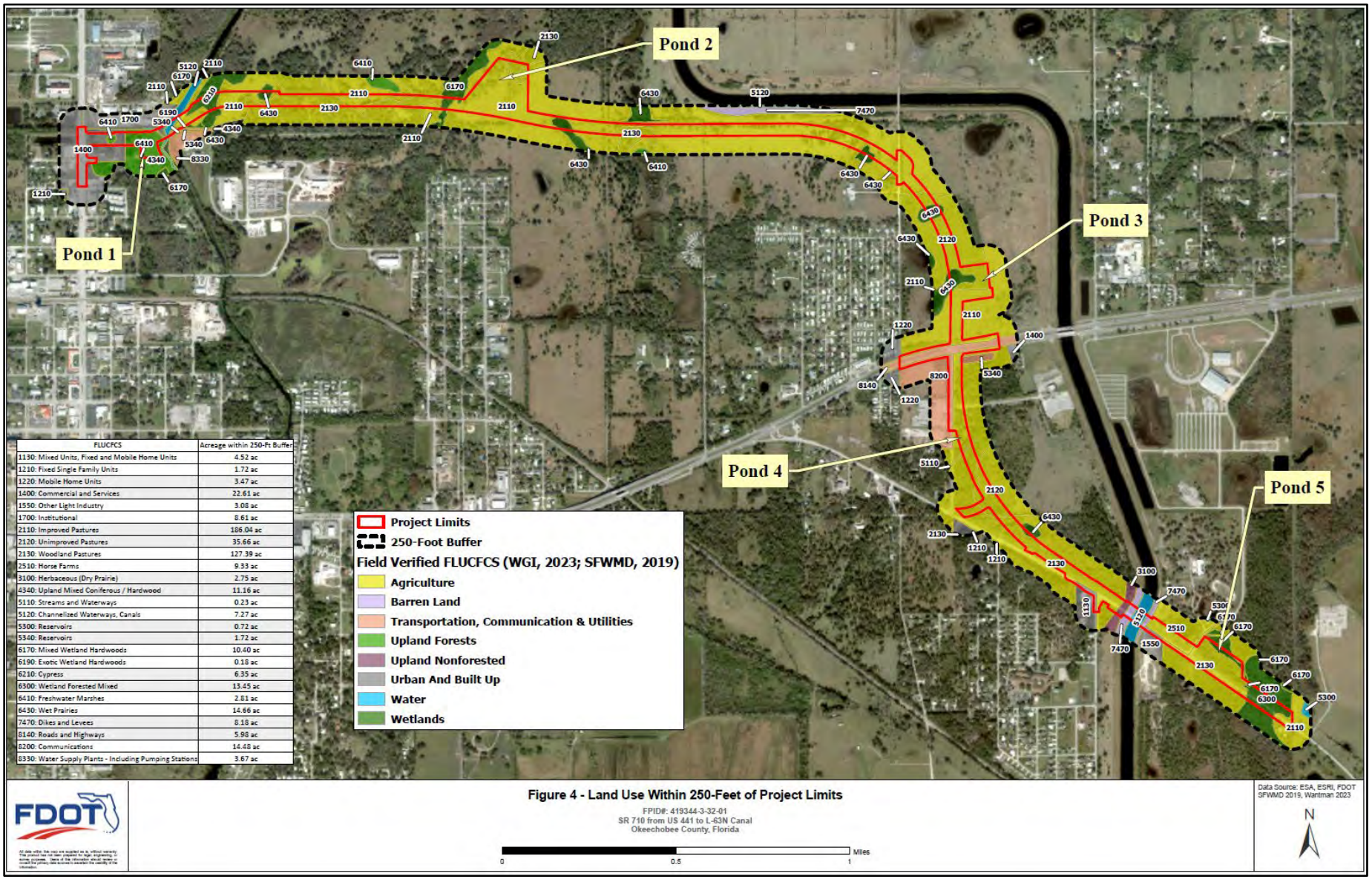
These wetlands and surface water habitats were classified using FLUCFCS (FDOT, 1999) and USFWS Classification of Wetlands and Deepwater Habitats of the U.S. (Cowardin, et al., 1979). **Table 3** summarizes changes in wetlands and surface water impacts since the prior 2019 Re-evaluation and lists the individual features present within the project study area, including the FLUCFCS (**Figure 4**) and USFWS classifications, and their corresponding impact acreages. Refer to **Appendix A** (Wetland and Surface Water Impacts Map).

Table 3. Summary of Changes in Wetland and Surface Water Impacts

ID	FLUCFCS[1]	USFWS Classification[2]	Direct Impacts Acreages (2019 / 2024)	Secondary Impacts Acreages (0-25 feet) (2019 / 2024)
WTL-01 * **	6410 - Freshwater Marshes	PEM1C	0.27 / 0.27	---
WTL-03 * **	6410 - Freshwater Marshes	PEM1C	0.05 / 0.02	0.00 / 0.01
WTL-05A*	6190 - Exotic Wetland Hardwoods	PFO1C	0.11 / 0.11	0.03 / 0.03
WTL-05B*	6430 - Wet Prairies	PEM1C	0.01 / 0.00	0.05 / 0.03
WTL-05C*	6210 - Cypress	PFO1C	0.69 / 1.48	0.15 / 0.33
WTL-06 * **	6430 - Wet Prairies	PEM1C	--- / 0.47	--- / 0.11
WTL-08 *	6170 - Mixed Wetland Hardwoods	PFO2/3C	0.47 / 0.51	0.05 / 0.20
WTL-09 *	6430 - Wet Prairies	PEM1F	0.83 / 0.81	0.18 / 0.13
WTL-09A *	6430 - Wet Prairies	PEM1C	--- / 0.03	--- / 0.11
WTL-10 *	6430 - Wet Prairies	PEM1C	0.40 / 0.39	0.13 / 0.13
WTL-11 * **	6430 - Wet Prairies	PEM1C	0.02 / 0.01	0.04 / 0.04
WTL-12 *	6430 - Wet Prairies	PEM1F	0.71 / 0.71	0.20 / 0.19
WTL-13 *	6430 - Wet Prairies	PEM1F	1.02 / 0.67	0.12 / 0.12
WTL-15 *	6430 - Wet Prairies	PEM1F	0.18 / 0.16	0.14 / 0.14
WTL-17 *	6170 - Mixed Wetland Hardwoods	PFO1F	0.52 / 0.87	0.25 / 0.43
WTL-18 *	6300 - Wetland Forested Mixed	PFO1F	--- / 0.17	--- / 0.12
		Sub Total:	**5.28 / 6.68**	**1.34 / 2.12**
SW-01A * ***	5340 - Reservoirs less than 10 acres	PUBHx	--- / 0.19	---
SW-01-Fill	5120 - Channelized Waterways	R2UBHx	0.44 / 0.40	---
SW-01-**Shade**	5120 - Channelized Waterways	R2UBHx	--- / 0.23	---
SW-02-Fill	5120 - Channelized Waterways	R2UBHx	0.68 / 0.69	---
SW-02-**Dredge**	5120 - Channelized Waterways	R2UBHx	--- / 0.12	---
OSW-1* ***	5110 – Streams and Waterways	R2AB4Hx	--- / 0.10	---
		Sub Total:	**1.13 / 1.73**	---
		Total:	**6.41 / 8.41**	**1.34 / 2.12**

References:
[1] FDOT 1999
[2] Cowardin *et al.*, 1979
Notes:
Newly added Re-evaluation IDs shown in **bold**.
2019 ID OSW-4 removed.
*Not jurisdictional to USACE (*Sackett v. Environmental Protection Agency, 2023)*
**Mitigation for SFWMD not required for isolated wetlands 0.50 acres or less.
*** Mitigation for SFWMD not required for upland-cut ditches and ponds [62-330.040.700, F.A.C.]
USFWS Classification Descriptions:
PUBHx: Palustrine; Unconsolidated bottom; Permanently flooded; Excavated.
PEM1C: Palustrine; Emergent; Persistent; Seasonally flooded.
PEM1F: Palustrine; Emergent; Persistent; Semi-permanently flooded.
PFO1C: Palustrine; Forested; Broad leaved deciduous; Seasonally flooded.
PFO1F: Palustrine; Forested; Broad leaved deciduous; Semi-permanently flooded.
R2UBHx: Riverine; Lower Perennial; Unconsolidated bottom; Permanently flooded; Excavated.

Figure 4. FLUCFCS Map



FLUCFCS	Acreage within 250-Ft Buffer
1130: Mixed Units, Fixed and Mobile Home Units	4.52 ac
1210: Fixed Single Family Units	1.72 ac
1220: Mobile Home Units	3.47 ac
1400: Commercial and Services	22.61 ac
1550: Other Light Industry	3.08 ac
1700: Institutional	8.61 ac
2110: Improved Pastures	186.04 ac
2120: Unimproved Pastures	35.66 ac
2130: Woodland Pastures	127.39 ac
2510: Horse Farms	9.33 ac
3100: Herbaceous (Dry Prairie)	2.75 ac
4340: Upland Mixed Coniferous / Hardwood	11.16 ac
5110: Streams and Waterways	0.23 ac
5120: Channelized Waterways, Canals	7.27 ac
5300: Reservoirs	0.72 ac
5340: Reservoirs	1.72 ac
6170: Mixed Wetland Hardwoods	10.40 ac
6190: Exotic Wetland Hardwoods	0.18 ac
6210: Cypress	6.35 ac
6300: Wetland Forested Mixed	13.45 ac
6410: Freshwater Marshes	2.81 ac
6430: Wet Prairies	14.66 ac
7470: Dikes and Levees	8.18 ac
8140: Roads and Highways	5.98 ac
8200: Communications	14.48 ac
8330: Water Supply Plants - Including Pumping Stations	3.67 ac

Significant changes in direct wetland and surface water impacts since the prior 2019 Re-evaluation include the following:

Wetlands:

- One new wetland area was identified within the OUA wellfield realignment Re-evaluation limits (ID: WTL-06) for a 0.47-acre increase in direct wetland impacts since the prior 2019 Re-evaluation.
- The OUA wellfield realignment resulted in an increase in the quantity of direct impacts proposed to WTL-05C, for a 0.79-acre increase since the prior 2019 Re-evaluation.
- An additional area of wetlands (ID: WTL-18) and direct impacts were identified within the project study area during subsequent field reviews in June 2023 to account for a 5-year time lapse between reviews. This change resulted in a 0.17-acre increase in direct wetland impacts.

Surface Waters/OSW:

- One additional area of surface water impacts (ID: SW-01A) was identified within the project study area during subsequent field reviews in June 2023 to account for a 5-year time lapse between reviews. This change is associated with stormwater pond re-shaping and resulted in a 0.19-acre increase in direct surface water impacts.

- Based on a reevaluation of the project, an additional 0.23-acre of shade impacts to the SFWMD L-63N Canal (ID: SW-01) were identified associated with bridge widening.
- Based on a reevaluation of the project, an additional 0.12-acre of dredge impacts to Taylor Creek (ID: SW-03) was identified to restore the canal to the original design section (i.e., re-channelization).
- Direct impacts (0.10-acre) associated with one new OSW (ID: OSW-1) and culvert crossing were identified within the project study area. The area identified as OSW-4 in the prior 2019 Re-evaluation was removed and determined to no longer exist during subsequent field reviews in June 2023 to account for a 5-year time lapse between reviews.

Changes in secondary impacts (0.78-acre increase) since the prior 2019 Re-evaluation are attributed to the northern OUA wellfield realignment shift, and an additional area of wetlands identified during a reevaluation of the project study area to account for a 5-year time lapse between field reviews.

Unavoidable direct and secondary impacts to wetlands and habitat will be offset via compensatory mitigation in the form of mitigation credits purchased through the Bluefield Ranch Mitigation Bank (BRMB), utilizing the Wetland Rapid Assessment Procedure (WRAP) functional assessment methodology. The prior 2019 Re-evaluation evaluated the purchase of BRMB mitigation credits, including 1.11 forested and 1.46 herbaceous credits for a total of 2.57 total state mitigation credits to offset direct impacts to wetlands. In addition to 1.11 forested credits and 1.10 herbaceous credits to offset secondary impacts to adjacent wetlands to remain within 25-feet of the project study area. The prior 2019 Re-evaluation also identified a total of 2.21 federal mitigation credits to offset federally jurisdictional wetland impacts under the former 2018 WOTUS rule and U.S. Supreme Court ruling *Rapanos v. U.S.,* 2006.

Refer to **Appendix B** (WRAP Mitigation Summary Table and Field Data Sheets). Changes in compensatory mitigation since the prior 2019 Re-evaluation include the following:

- The SFWMD does not require compensatory wetland mitigation for impacts to isolated wetlands that are less than one half acre in size. Impacts to isolated wetlands (IDs: WTL-01, WTL-03, WTL-06, and WTL-11) less than one half acre in size do not require mitigation. Impacts to the remaining wetlands, both direct and secondary impacts within 25-feet of the project study area, will require a total of 2.08 forested credits and 1.73 herbaceous credits to be purchased from the BRMB (3.81 total state credits).

- Based on recent changes in federal regulations, specifically with regards to federal wetland jurisdiction and regulatory authority following the Supreme Court *Sackett v. EPA,* 2023 ruling and conforming WOTUS rule (detailed in Section 1.1 of this report), no impacts to federally jurisdictional wetlands under Section 404 of the CWA are anticipated. The FDOT will coordinate an Approved Jurisdictional Determination (AJD) with the USACE during permitting to verify whether the project will result in impacts to federally jurisdictional Section 404 wetlands to determine whether federal mitigation will be required.

- If the USACE concurs that no federally jurisdictional wetlands under Section 404 of the CWA fall within the project study area, federal wetland mitigation will not be required and FDOT will analyze surface water and littoral area creation opportunities to offset impacts to wood stork SFH. The FDOT, in coordination with USFWS, will explore alternatives to offset losses to short-term or long-term hydroperiod features.

Compensatory mitigation will be provided to compensate for the loss of wetland functions as required by the appropriate regulatory agencies. FDOT will continue to incorporate avoidance and minimization measures throughout final design. 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.

In accordance with EO 11990, it has been determined that:

- The proposed project will have no significant short-term or long-term adverse impacts to wetlands,

- There is no practicable alternative to construction in wetlands, and

- Measures have been taken to minimize harm to wetlands.

3.0 LISTED/PROTECTED SPECIES AND HABITAT

All state and federally listed species impacted by the project were assigned a designated anticipated effect determination during the PD&E Study. However, since the June 2011 completion of the PD&E ESBA and subsequent 2019 Re-evaluation, various changes in regulations, scientific names, and listing statuses and added candidate species have occurred. Additionally, some effect determinations have been modified due to project design-phase changes. Specifically, the June 2011 ESBA made a likely to adversely affect determination for Audubon's crested caracara (*Caracara plancus audubonii*) and a may affect, not likely to adversely affect determination for the Florida bonneted bat (*Eumops*

floridanus). As of November 9, 2020, the eastern black rail (*Laterallus jamaicensis jamaicensis*) was listed as federally "threatened" under the ESA. Additionally, the project used the federal effect determination naming for state listed species instead of the current state effect determination naming. **Table 4** below summarizes the effect determination changes since the PD&E.

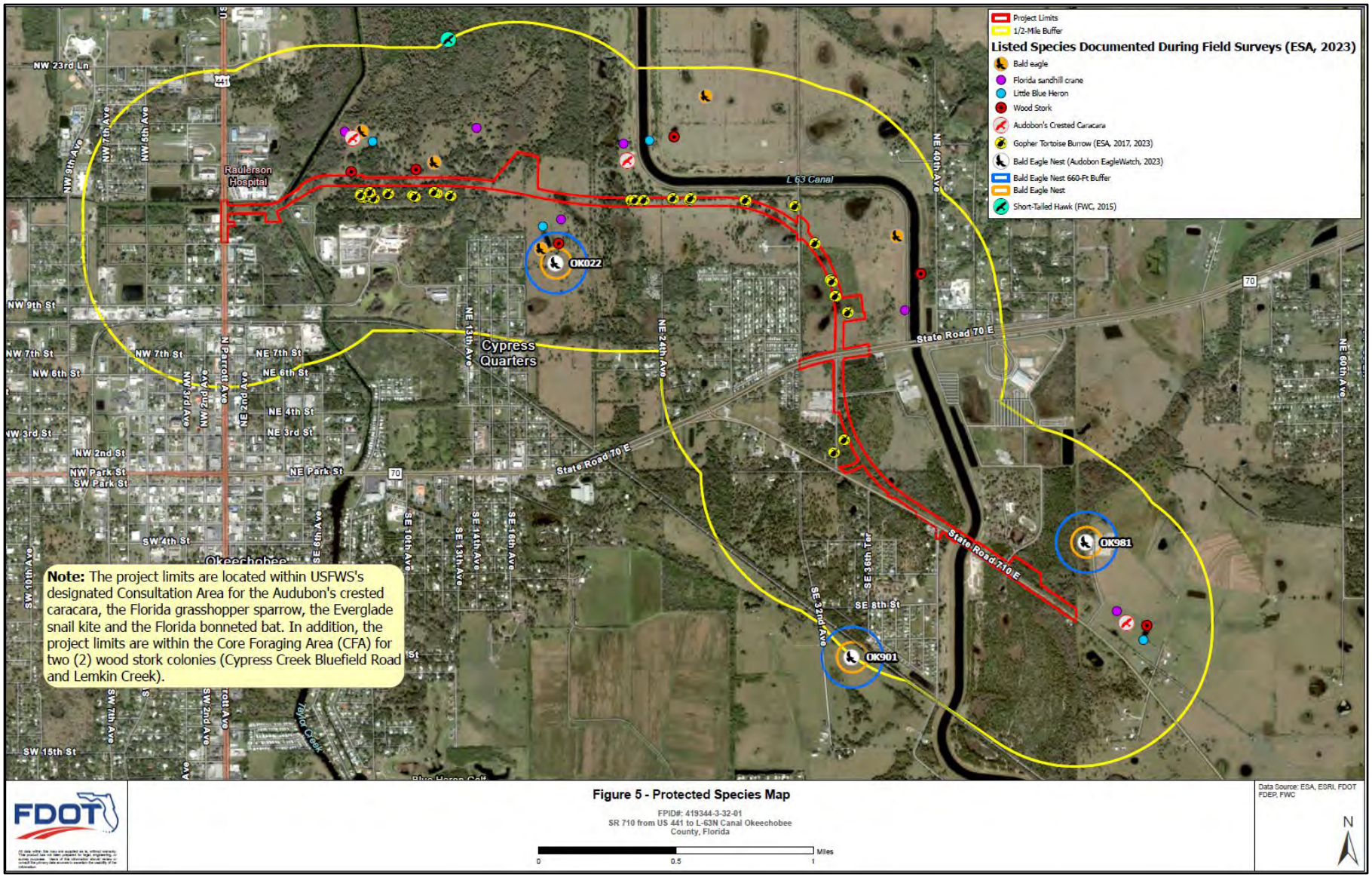
Table 4. Summary of Protected Species Effect Determinations

Scientific Name	Common Name	USFWS/FWC Designation	Effect Determination
Drymarchon couperi	Eastern indigo snake	T	MANLAA
Mycteria americana	Wood stork	T	MANLAA
Caracara plancus audubonii	Audubon's crested caracara	T	MANLAA
Rostrhamus sociabilis plumbeus	Everglade snail kite	E	No Effect
Ammodramus savannarum floridanus	Florida grasshopper sparrow	E	No Effect
Laterallus jamaicensis jamaicensis	Eastern black rail	T	MANLAA
Aphelocoma coerulescens	Florida scrub-jay	T	No Effect
Picoides borealis	Red-cockaded woodpecker	E	No Effect
Eumops floridanus	Florida bonneted bat	E	No Effect
Trichechus manatus latirostris	West Indian manatee	T	MANLAA
Cucurbita okeechobeensis ssp. *Okeechobeensis*	Okeechobee gourd	E	No Effect
Gopherus polyphemus	Gopher tortoise	ST	NAEA
Pituophis melanoleucus mugitus	Florida pine snake	ST	NAEA
Athene cunicularia floridana	Florida burrowing owl	ST	NAEA
Antigone canadensis pratensis	Florida sandhill crane	ST	NAEA
Falco sparverius paulus	Southeastern American kestrel	ST	NAEA
Egretta caerulea	Little blue heron	ST	NAEA
Egretta rufescens	Reddish egret	ST	NAEA
Egretta tricolor	Tricolored heron	ST	NAEA
Platalea ajaja	Roseate spoonbill	ST	NAEA
Perimyotis subflavus	Tricolored bat	C	--
Danaus plexippus	Monarch butterfly	C	--
Haliaetus leucocephalus	Bald eagle	*	No Impacts
Ursus americanus floridanus	Florida Black Bear	**	No Impacts
Sciurus niger niger	Southern fox squirrel	***	No Impacts

Key:
USFWS = U.S. Fish and Wildlife Service
FWC = Florida Fish and Wildlife Conservation Commission
MANLAA = May affect, not likely to adversely affect
NAEA = No Adverse Effect Anticipated
T = Threatened
E = Endangered
ST = State Threatened
C = Candidate for listing
* Bald eagle is protected under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA)
** Florida black bear is protected under Chapter 68A-4.009 F.A.C., the Florida Black Bear Conservation Plan
*** Southern fox squirrel is protected under 68A-4.001, F.A.C, 68A-1.004, F.A.C., and 68A-29.002(1)c, F.A.C.

Refer to **Figure 5** (Protected Species Map).

Figure 5. Protected Species Map



3.1 FEDERALLY LISTED SPECIES

The following species information has been updated from the June 2011 completion of the PD&E ESBA and subsequent 2019 Re-evaluation.

3.1.1 EASTERN INDIGO SNAKE (*DRYMARCHON COUPERI*)

The Eastern indigo snake is a federally and state listed threatened species that uses a wide variety of habitats and may be expected to occupy almost any tract that contains potentially suitable habitat. The project area contains potential habitat for the species. In addition, potentially occupied gopher tortoise (*Gopherus polyphemus*) burrows, which provide refuge for the indigo snake, have been documented in the project area. Notably, the USFWS' Standard Protection Measures for the Eastern Indigo Snake were most recently updated on December 23, 2021.

Per the USFWS South Florida Eastern Indigo Snake Programmatic Effect Determination Key (revised 2017), the project is not located in open water or salt marsh, the permit will be conditioned for use of the USFWS 2023 Standard Protection Measures for the Eastern Indigo Snake (**Appendix C**) during site preparation and project construction, the project will impact 25 acres or more of eastern indigo snake habitat (e.g., sandhill, scrub, pine flatwoods, pine rocklands, scrubby flatwoods, high pine, dry prairie, coastal prairie, mangrove swamps, tropical hardwood hammocks, hydric hammocks, edges of freshwater marshes, agricultural fields [including sugar cane fields and active, inactive, or abandoned citrus groves], and coastal dunes); specifically, edges of marshes and agricultural fields (Couplet: A>B>C). Therefore, the project may affect the eastern indigo snake. There are no previously documented occurrences of eastern indigo snakes within the project limits and individuals of the species have not been observed during repeated field surveys conducted for this project. Therefore, a determination of may affect, not likely to adversely affect is proposed for the eastern indigo snake. The USFWS has previously concurred with this MANLAA determination on January 7, 2011, August 7, 2013, May 27, 2014, and September 9, 2015.

3.1.2 WOOD STORK (*MYCTERIA AMERICANA*)

The wood stork is currently a federally and state listed threatened species. As of February 14, 2023, the USFWS has determined that the U.S. breeding population of wood storks no longer faces the imminent threat of extinction and is proposing to remove the wood stork from the endangered species list.

In south Florida, the USFWS considers the wood stork CFA to be an 18.6-mile radius of any known wood stork colony which has been active in the last ten years. This project is located within the CFA of two wood stork colonies: Lemkin Creek and Cypress Creek Bluefield Road. Lemkin Creek colony is closer to the project area and is approximately 5.2 miles southwest of the project. The project will result in approximately 6.68 acres of permanent wetland impacts, and 1.73 acres of surface water impacts, totaling 8.41 acres. Of the 8.41 acres, 6.78 acres are considered wood stork suitable foraging habitat (SFH). Since the project results in greater than 5 acres of impact to wood stork SFH, an analysis of foraging prey base losses was conducted. A technical report containing more detailed information including a prey biomass calculation is included as **Appendix D** (Wood Stork Technical Report). Based on the prey foraging habitat impact conducted, the project is anticipated to result in the loss of approximately 11.75 kg of long hydroperiod prey biomass and 3.25 kg of short hydroperiod prey biomass. The FDOT proposes to acquire the following wetland mitigation credits from the Bluefield

Ranch Mitigation Bank which exceeds the prey biomass loss:

- 2.19 mitigation credits to be purchased (long hydroperiod) X 8.15 kg prey biomass / credit = 17.85 kg of wood stork prey biomass (6.10 kg more than required); and
- 1.62 mitigation credits to be purchased (short hydroperiod) X 2.23 kg prey biomass / credit = 3.61 kg of wood stork prey biomass (0.36 kg more than required).

Per the USFWS South Florida Programmatic Effect Determination Key for the wood stork (revised 2010), the project impacts SFH at a location greater than 0.76 km (0.47 mile) from a colony site, the project impact to SFH is greater in scope than 0.20 hectare (one-half acre), the project impacts to SFH are within the CFA of a colony site, and the project provides SFH compensation in accordance with the Clean Water Act (CWA) section 404(b)(1) guidelines and is not contrary to the Habitat Management Guidelines (HMG); habitat compensation is within the appropriate CFA or within the service area of a Service-approved mitigation bank; and habitat compensation replaces foraging value, consisting of wetland enhancement or restoration matching the hydroperiod of the wetlands affected, and provides foraging value similar to, or higher than, that of impacted wetlands (Couplet: A>B>C>E), therefore the project may affect, but is not likely to adversely affect the wood stork.

3.1.3 AUDUBON'S CRESTED CARACARA (*CARACARA PLANCUS CHERIWAY*)

The Audubon's crested caracara is a federally and state listed threatened species, and the project is located within the USFWS Consultation Area (CA) for this species. As of July 31, 2023, the scientific name for Audubon's crested caracara was changed to (*Caracara plancus audubonii*). Because potential nest trees were documented within and adjacent to the project area, a caracara survey was conducted in accordance with the 2016 USFWS Crested Caracara Draft Survey Protocol-Additional Guidance (2016-2017 Breeding Season).

A crested caracara nesting survey was conducted per the protocol from January 4 through April 26, 2023. A technical report containing more detailed information is included as **Appendix E**. Multiple observations of flying and foraging caracara occurred during surveys; however, no nesting behavior was observed, and no nests were documented.

Within the BO issued on September 9, 2015, the USFWS determined that the project would adversely affect, but not result in jeopardy to the crested caracara. It should be noted that the original BO issued during the PD&E phase pertained to impacts to a documented roadside caracara nest in PD&E Segment 4 (located in a pasture on the north side of SR 710 east of S.E. 116th Place, approximately 428 feet north of the SR 710 ROW). This nest is outside of the limits of the current segment being advanced. Additionally, based on the 2018 and the 2023 survey results, the project area contains foraging habitat but is not used for nesting, an effect determination of may affect, not likely to adversely affect is more appropriate with the conservation measures listed in the BO.

3.1.4 EASTERN BLACK RAIL (*LATERALLUS JAMAICENSIS JAMAICENSIS)*

The eastern black rail was federally designated as a threatened species by the USFWS in 2020. Florida also affords protection to federally listed species, thus all federally listed species are also state listed. The USWFS adopted their "Eastern Black Rail Call-Response Survey Protocol for Range-Wide Monitoring" (effective April 2023). The project falls within the distribution area of the eastern black

rail. The eastern black rail is a wetland dependent bird primarily associated with herbaceous, persistent, emergent wetland plants. The subspecies requires dense overhead cover and soils that are moist to saturated (occasionally dry) and interspersed with or adjacent to very shallow water.

Based on the presence of potential habitat and the project's location within the species' range, a species-specific eastern black rail call-response survey was determined to be necessary for this project. The eastern black rail surveys followed the protocol documented in the USFWS Eastern Black Rail Call-Response Survey Protocol for Range-Wide Monitoring (USFWS 2023) A technical report containing more detailed survey information and results is included as **Appendix F**.

No individuals were observed during survey events and wetland loss will be mitigated pursuant to Part IV, Chapter 373, Florida Statutes (FS) and the CWA section 404(b)(1); therefore, the project is expected to have an effect determination of no effect on the eastern black rail.

3.1.5 FLORIDA BONNETED BAT (*EUMOPS FLORIDANUS*)

This is a federally and state listed endangered species. The project is located within the USFWS CA for the Florida bonneted bat, but it is not located within either the USFWS-designated South Florida Urban Bat Area. Florida bonneted bats inhabit a variety of natural habitats including pine flatwoods, cypress domes, hardwood hammocks, and wetlands as well as urban and suburban neighborhoods. Potential roosting sites for this species include tree snags, tree cavities, bat houses, abandoned buildings, bridges, and overpasses. USFWS designated CH for the Florida bonneted bat on March 7, 2024. The project is approximately 22 miles southeast of the nearest designated CH unit.

Florida bonneted bat acoustic surveys were conducted per the USFWS South Florida Ecological Services Office – Florida Bonneted Bat Consultation Guidelines (October 2019) from May 11 through 17, 2023. A technical report containing more detailed information is included as **Appendix G**. Per the USFWS (South Florida Ecological Services Office) Florida Bonneted Bat Consultation Key (October 2019) the proposed project or land use change is partially or wholly within the CA, potential Florida bonneted bat roosting habitat exists within the project area, the project size/footprint is greater than five acres (two hectares) so a full acoustic/roost survey was conducted, and results show no Florida bonneted bat activity (1a>2a>3b>6b), therefore the project is expected to have no effect on the Florida bonneted bat.

3.1.6 OTHER FEDERALLY LISTED SPECIES

The design-phase changes have resulted in changes to effect determinations made for Audubon's crested caracara and added an effect determination for eastern black rail. Other federally-listed species with potential to occur in the project area and effect determinations are summarized below:

No effect

- Everglade snail kite (*Rostrhamus sociabilis plumbeus*)
- Florida grasshopper sparrow (*Ammodramus savannarum floridanus*)
- Florida scrub-jay (*Aphelocoma coerulescens*)
- Red-cockaded woodpecker (*Picoides borealis*)

- Okeechobee gourd (*Cucurbita okeechobeensis* ssp. *Okeechobeensis*)

May affect, not likely to adversely affect

- West Indian manatee (*Trichechus manatus latirostris*)

3.2 STATE LISTED SPECIES

The following species information has been updated from the June 2011 completion of the PD&E ESBA and subsequent 2019 Re-evaluation.

3.2.1 GOPHER TORTOISE (*GOPHERUS POLYPHEMUS*)

This is a state listed threatened species. Suitable gopher tortoise habitat contains well-drained sandy soils for digging burrows and nesting, abundant herbaceous plants for forage, and open, sunny areas with sparse canopy for nesting and basking. Protected species surveys documented a total of 27 potentially occupied and one abandoned gopher tortoise burrow. The previous alignment would have impacted 26 burrows while the new alignment will impact 13 burrows. Overall, the new alignment decreased the number of gopher tortoise burrows impacted. Because gopher tortoise burrows have been documented and there is known tortoise habitat in the project boundary, a 100 percent survey will be conducted per the FWC Gopher Tortoise Permitting Guidelines, *Gopherus polyphemus*, April 2008 (Revised April 2023) within 90 days of construction. A gopher tortoise permit will be obtained, and all tortoises will be relocated out of the project area before construction commences. During the PD&E the project used the federal effect determination naming, as shown in **Table 1**, for state listed species instead of the current state effect determination naming. The PD&E assigned the gopher tortoise an effect determination of not likely to adversely affect; because gopher tortoises will be relocated out of the project area before construction commences. With the current state effect determination naming there is no adverse effect anticipated for the gopher tortoise.

3.2.2 FLORIDA PINE SNAKE (*PITUOPHIS MELANOLEUCUS MUGITUS*)

The Florida pine snake is a state listed threatened species. This species inhabits a variety of upland habitats, but its most common natural habitat is sandhill. The pine snake is fossorial and spends the majority (70-80 percent) of its time underground. It can be found taking refuge in pocket gopher (*Geomys pinetis*) and gopher tortoise burrows. No Florida pine snakes were observed during field surveys, but potential habitat and refugia (gopher tortoise burrows) exist in the project area. While the PD&E indicated a may affect, not likely to adversely affect determination for this species, based on design-phase field reviews, there is no suitable habitat for this species. During the PD&E the project used the federal effect determination naming, as shown in **Table 1**, for state listed species instead of the current state effect determination naming. The PD&E assigned the Florida pine snake an effect determination of not likely to adversely affect; because pursuant to FWC's Gopher Tortoise Permitting Guidelines (2023), if during gopher tortoise relocation a Florida pine snake is incidentally captured, it will be released onsite or allowed to escape unharmed. With the current state effect determination naming there is no adverse effect anticipated for the Florida pine snake.

3.2.3 FLORIDA BURROWING OWL (*ATHENE CUNICULARIA FLORIDANA*)

The Florida burrowing owl is a state threatened species. Burrowing owls inhabit open areas with short groundcover where they excavate burrows and forage. Open pasture habitat suitable for Florida

burrowing owls is present in the project area, however, no individuals were observed during field surveys. The PD&E assigned the Florida burrowing owl an effect determination of not likely to adversely affect; with the current state effect determination naming there is no adverse effect anticipated for the Florida burrowing owl.

3.2.4 FLORIDA SANDHILL CRANE (*ANTIGONE CANADENSIS* SSP. *PRATENSIS*)

The Florida sandhill crane is a state listed threatened species that forages in open pastures and nests in freshwater marshes and open water areas. Nesting typically occurs from January through June. Foraging and nesting habitat is present in the project area but only foraging sandhill cranes have been observed in the project area. No sandhill crane nests have been documented during field surveys occurring to this point in time. Pursuant to FWC's Florida Sandhill Crane Species Conservation Measures and Permitting Guidelines, FDOT will conduct surveys during the breeding season (December 1 – August 30) within 30 days prior to commencing any clearing or project activities. Surveys shall include either one aerial survey or two ground surveys and if necessary, provide a 400-foot protection buffer from construction activities during the breeding season (December to August), around any documented nests. The PD&E assigned the Florida sandhill crane an effect determination of not likely to adversely affect; with the current state effect determination naming there is no adverse effect anticipated for the Florida sandhill crane.

3.2.5 SOUTHEASTERN AMERICAN KESTREL (*FALCO SPARVERIUS PAULUS*)

The southeastern American kestrel is a state listed threatened species. Optimal habitat consists of open fields and pastures for foraging with snags for perching and nesting. Suitable nesting habitat includes tree cavities excavated by woodpeckers and artificial nest boxes. The most reliable way to document presence of southeastern American kestrels is by documenting the time of the year that the sightings occur. If a kestrel is seen in Florida from May through July, it is almost certainly a southeastern American kestrel because the northern migrants, the American kestrel (*Falco sparverius*), are not present in Florida during this time. Kestrel sightings during field surveys occurred in between January and April of 2023; therefore, it is not possible to determine if these were American or southeastern American kestrels. All kestrels observed during field surveys were either foraging or perching in the project area. Tree cavities which could provide nesting habitat for this species were observed.

Pursuant to the Southeastern American Kestrel Species Conservation Measures and Permitting Guidelines, FDOT will resurvey appropriate kestrel habitat within the project area between April and August. A minimum of 3 surveys, with at least 4 to 7 days between each survey, will be conducted to determine kestrel use of the project site and to provide sufficient information during the permitting process. FDOT will adhere to the following conservation measures unless an incidental take permit is obtained from FWC:

- If active nest cavities are found, a buffer of 490 feet (rounded from 150 meters) will be established around each nest cavity location and no activities will occur within the buffer during the breeding season (March 1 to July 30).
- Active and inactive nest cavities will not be removed or disturbed.

Because surveys to determine nesting status will be conducted as needed, and appropriate protective measures will be taken, there is no adverse effect anticipated for the southeastern American kestrel.

A technical report containing more detailed survey information and results is included as **Appendix H.**

3.2.6 PROTECTED WADING BIRDS

The little blue heron (*Egretta caerulea*), tricolored heron (*Egretta tricolor*), reddish egret (*Egretta rufescens*), and roseate spoonbill (*Platalea ajaja*) are state listed as threatened species. Wading birds inhabit inland fresh and saltwater marshes and forests. The project contains habitat for wading birds and both the little blue heron and tricolored heron were observed during field surveys. The project will result in approximately 6.68 acres of permanent wetland impacts, and 1.73 acres of surface water impacts, totaling 8.41 acres considered wading bird foraging habitat. However, because wetland loss will be mitigated pursuant to Part IV, Chapter 373, Florida Statutes (FS) and the CWA section 404(b)(1), impacts are not anticipated. The PD&E assigned wading birds an effect determination of not likely to adversely affect; with the current state effect determination naming there is no adverse effect anticipated for state-listed wading birds.

3.3 OTHER PROTECTED SPECIES AND HABITAT

The design-phase changes have not resulted changes to impacts made for bald eagle (*Haliaetus leucocephalus*). No impacts to bald eagle are anticipated as a result of the project. The section below describe species changes and species that are proposed for listing.

3.3.1 SOUTHERN FOX SQUIRREL (*SCIURUS NIGER NIGER*)

An analysis conducted in 2014 and 2015 determined that the Sherman's fox squirrel (*Sciurus niger shermani*) was not genetically distinct from other fox squirrels in north and central Florida, making it appropriate to group all fox squirrels north of the Caloosahatchee River as Southern fox squirrels. Current protections for the southern fox squirrel include protections under Chapters 68A-4.001, F.A.C. - General Prohibitions and Requirement; 68A-1.004, F.A.C. – Take; and 68A-29.002(1)c, F.A.C.- Regulations Relating to the Taking of Mammals.

Southern fox squirrels inhabit open, fire-maintained longleaf pine, turkey oak, sandhills, and flatwoods habitats. The project area contains limited appropriate habitat for the southern fox squirrel but will mainly impact areas that are already cleared of forested vegetation. No southern fox squirrels were observed during field efforts in March 2023 and June 2024. Therefore, impacts to the southern fox squirrel are not anticipated.

3.3.2 TRICOLORED BAT (*PERIMYOTIS SUBFLAVUS*)

The tricolored bat was proposed for protections under the ESA by the USFWS on September 13, 2022, and is currently proposed for listing. Typically a cave-dwelling bat, this is one of the smallest bat species in North America. Within the American south, where caves are less common, this species is known to roost in manmade structures such as roadway culverts and bridge joints and crevices. Like the Florida bonneted bat, the tricolored bat will also roost within tree cavities. No houses or man-made structures, no evidence of tree snags, or trees with cavities, hollows, deformities, decay, crevices were observed within the project's proposed construction footprint. However, tricolored bat calls were detected during the Florida bonneted bat acoustic surveys. Therefore, tricolored bats may use the project area for foraging purposes and the project may result in impacts to tricolored bat foraging habitat.

As this species is a candidate species currently proposed for listing, consultation for this species is not required at this time. If the listing status of the tricolored bat is elevated by USFWS to Threatened or Endangered and the project area is located within the consultation area, FDOT commits to re-initiating consultation with the USFWS during the design and permitting phase of the project to determine the appropriate survey methodology and to address USFWS regulations regarding the protection of the tricolored bat.

3.3.3 MONARCH BUTTERFLY (*DANAUS PLEXIPPUS*)

The monarch butterfly was identified as a candidate species for protections under the ESA by the USFWS on May 3, 2022. It is not yet proposed for listing. Within North America, the monarch butterfly is a highly migratory species which typically winters in Mexico. However, there is a resident population of this species within Florida. This species requires a diversity of blooming nectar resources, but of particular importance is milkweed (*Asclepias* spp.). Milkweed is a microhabitat requirement for this species to both deposit eggs and as a larval nutrition source. Milkweed species are known to occur throughout Okeechobee County and can occur within agricultural environments such as those within the project area. Given the potential for milkweed to occur within the project area, and the monarch's mobility, the potential for occurrence of this species within the project study area is considered high.

As this species is a candidate species and not currently proposed for listing, consultation for this species is not required at this time. If the listing status of the monarch butterfly is elevated by USFWS to Threatened or Endangered and the project is located within the consultation area, FDOT commits to re-initiating consultation with the USFWS during the design and permitting phase of the project to determine the appropriate survey methodology and to address USFWS regulations regarding the protection of the monarch butterfly.

3.4 CRITICAL HABITAT

As defined by the USFWS, CH refers to the specific areas within the geographic area, occupied by the species at the time it was listed, that contain the physical or biological feature essential to the conservation of endangered and threatened species and that may need special management or protection. CH may also include areas that were not occupied by the protected species at the time of listing but are essential to its conservation. No CH, or proposed CH exists within the project area and therefore, there will be no destruction or adverse modification of critical habitat.

4.0 SUMMARY

Significant changes in direct wetland and surface water impacts since the prior 2019 Re-evaluation include the following:

Wetlands:

- One new wetland area was identified within the OUA wellfield realignment Re-evaluation limits (ID: WTL-06) for a 0.47-acre increase in direct wetland impacts since the prior 2019 Re-evaluation.
- The OUA wellfield realignment resulted in an increase in the quantity of direct impacts proposed to WTL-05C, for a 0.79-acre increase since the prior 2019 Re-evaluation.

- An additional area of wetlands (ID: WTL-18) and direct impacts were identified within the project study area during subsequent field reviews in June 2023 to account for a 5-year time lapse between reviews. This change resulted in a 0.17-acre increase in direct wetland impacts.

Surface Waters/OSW:

- One additional area of surface water impacts (ID: SW-01A) was identified within the project study area during subsequent field reviews in June 2023 to account for a 5-year time lapse between reviews. This change is associated with stormwater pond re-shaping and resulted in a 0.19-acre increase in direct surface water impacts.

- Based on a reevaluation of the project, an additional 0.23-acre of shade impacts to the SFWMD L-63N Canal (ID: SW-01) were identified associated with bridge widening.

- Based on a reevaluation of the project, an additional 0.12-acre of dredge impacts to Taylor Creek (ID: SW-03) was identified to restore the canal to the original design section (i.e., re-channelization).

- Direct impacts (0.10-acre) associated with one new OSW (ID: OSW-1) and culvert crossing were identified within the project study area. The area identified as OSW-4 in the prior 2019 Re-evaluation was removed and determined to no longer exist during subsequent field reviews in June 2023 to account for a 5-year time lapse between reviews.

Changes in secondary impacts (0.78-acre increase) since the prior 2019 Re-evaluation are attributed to the northern OUA wellfield realignment shift, and an additional area of wetlands identified during a reevaluation of the project study area to account for a 5-year time lapse between field reviews.

Changes in compensatory mitigation since the prior 2019 Re-evaluation include the following:

- The SFWMD does not require compensatory wetland mitigation for impacts to isolated wetlands that are less than one half acre in size. Impacts to isolated wetlands (IDs: WTL-01, WTL-03, WTL-06, and WTL-11) less than one half acre in size do not require mitigation. Impacts to the remaining wetlands, both direct and secondary impacts within 25-feet of the project study area, will require a total of 2.08 forested credits and 1.73 herbaceous credits to be purchased from the BRMB (3.81 total state credits).

- Based on recent changes in federal regulations, specifically with regards to federal wetland jurisdiction and regulatory authority following the Supreme Court *Sackett v. EPA*, 2023 ruling and conforming WOTUS rule (detailed in Section 1.1 of this report), no impacts to federally jurisdictional wetlands under Section 404 of the CWA are anticipated. The FDOT will coordinate an Approved Jurisdictional Determination (AJD) with the USACE during permitting to verify whether the project will result in impacts to federally jurisdictional Section 404 wetlands to determine whether federal mitigation will be required.

- If the USACE concurs that no federally jurisdictional wetlands under Section 404 of the CWA fall within the project study area, federal wetland mitigation will not be required and FDOT will analyze surface water and littoral area creation opportunities to offset impacts to wood stork SFH. The FDOT, in coordination with USFWS, will explore alternatives to offset losses to short-term or long-term hydroperiod features.

Table 5 below summarizes the effect determinations for each species. Some changes include a newly documented wood stork colony within the project's action area and finalized Florida bonneted bat consultation guidelines which resulted in an effect determination of no effect. Additionally, the effect determination for Audubon's crested caracara was modified and eastern black rail was added. Changes since the 2019 re-evaluation are described in previous sections and include the following:

- The USFWS' Standard Protection Measures for the Eastern Indigo Snake were recently updated in December 2023.
- As of February 14, 2023, the USFWS has determined that the U.S. breeding population of wood storks no longer faces the imminent threat of extinction and is proposing to remove the wood storks from the endangered species list.
- As of July 31, 2023, the scientific name for Audubon's crested caracara was changed to (*Caracara plancus audubonii*).
- As of November 9, 2020, the eastern black rail was listed as federally "threatened" under the ESA.
- The USWFS adopted their "Eastern Black Rail Call-Response Survey Protocol for Range-Wide Monitoring" (effective April 2023).
- USFWS designated Critical Habitat (CH) for the Florida bonneted bat on March 7, 2024.
- The gopher tortoise state listing status changed from "species of special concern" to "threatened" and was added to the federal list of candidate species in September 2007. As of October 12, 2022, the USFWS found that the status of the gopher tortoise populations in the eastern segment, which includes Florida, Georgia, South Carolina, and most of Alabama, does not require protections under the ESA and will be withdrawn as a candidate for listing in accordance with 50 CFR 17 as published in the Federal Register as 87 FR 61834.
- The prior document addressed the Sherman's fox squirrel. This species has been renamed to the Southern fox squirrel and is no longer a state-listed species of special concern.
- As of September 13, 2022, the USFWS is currently considering the tricolored bat as a candidate species, warranted for federal listing but precluded at this time due to higher priority listing actions.
- As of December 17, 2020, the USFWS is currently considering the monarch butterfly as a candidate species, warranted for federal listing but precluded at this time due to higher priority listing actions.

Table 5. Summary of Protected Species Effect Determinations

Scientific Name	Common Name	USFWS/FWC Designation	Effect Determination
Drymarchon couperi	Eastern indigo snake	T	MANLAA
Mycteria americana	Wood stork	T	MANLAA
Caracara plancus audubonii	Audubon's crested caracara	T	MANLAA
Rostrhamus sociabilis plumbeus	Everglade snail kite	E	No Effect
Ammodramus savannarum floridanus	Florida grasshopper sparrow	E	No Effect
Laterallus jamaicensis jamaicensis	Eastern black rail	T	MANLAA
Aphelocoma coerulescens	Florida scrub-jay	T	No Effect
Picoides borealis	Red-cockaded woodpecker	E	No Effect
Eumops floridanus	Florida bonneted bat	E	No Effect
Trichechus manatus latirostris	West Indian manatee	T	MANLAA
Cucurbita okeechobeensis ssp. *Okeechobeensis*	Okeechobee gourd	E	No Effect
Gopherus polyphemus	Gopher tortoise	ST	NAEA
Pituophis melanoleucus mugitus	Florida pine snake	ST	NAEA
Athene cunicularia floridana	Florida burrowing owl	ST	NAEA
Antigone canadensis pratensis	Florida sandhill crane	ST	NAEA
Falco sparverius paulus	Southeastern American kestrel	ST	NAEA
Egretta caerulea	Little blue heron	ST	NAEA
Egretta rufescens	Reddish egret	ST	NAEA
Egretta tricolor	Tricolored heron	ST	NAEA
Platalea ajaja	Roseate spoonbill	ST	NAEA
Perimyotis subflavus	Tricolored bat	C	--
Danaus plexippus	Monarch butterfly	C	--
Haliaetus leucocephalus	Bald eagle	*	No Impacts
Ursus americanus floridanus	Florida Black Bear	**	No Impacts
Sciurus niger niger	Southern fox squirrel	***	No Impacts

Key:
USFWS = U.S. Fish and Wildlife Service
FWC = Florida Fish and Wildlife Conservation Commission
MANLAA = May affect, not likely to adversely affect
NAEA = No Adverse Effect Anticipated
T = Threatened
E = Endangered
ST = State Threatened
C = Candidate for listing
* Bald eagle is protected under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA)
** Florida black bear is protected under Chapter 68A-4.009 F.A.C., the Florida Black Bear Conservation Plan
*** Southern fox squirrel is protected under 68A-4.001, F.A.C, 68A-1.004, F.A.C., and 68A-29.002(1)c, F.A.C.

4.1 COMMITMENTS

Based on literature reviews, field surveys, data collection, and coordination with the agencies throughout the extent of the PD&E Study, federal and state listed species have the potential to occur within the project area. To minimize project impacts on protected species to the greatest extent practicable, the following project commitments were made during the PD&E:

- Audubon's crested caracara: Because of the potential for effects to the species, the FDOT is committed to adhering to the requirements of the Incidental Take Statement, Reasonable and

Prudent Measures, Terms and Conditions and Reporting Requirements of the USFWS' September 9, 2015 BO.
No update, this remains a valid commitment.

- Audubon's crested caracara: The FDOT has committed to provide a $100,000 donation to the Caracara Fund of the Wildlife Foundation of Florida (WFF). Construction shall not commence until the USFWS receives confirmation from the WFF indicating that the funds have been provided and the USFWS in turn informs the FDOT of their receipt of the confirmation.
  No update, this remains a valid commitment.

- Eastern indigo snake: The USFWS' most current Standard Protection Measures for the Eastern indigo snake will be adhered to during construction of the project.
  No update, this remains a valid commitment.

- Wood stork: Because of the potential for effects to the species, the FDOT is committed to mitigation. The FDOT proposes to acquire credits that provide at least 21.46 kg of wood stork biomass at the Bluefield Ranch Mitigation Bank (BRMB) to offset project impacts.
  Commitment remains valid, but biomass loss was decreased.

- West Indian manatee: The USFWS' Standard Manatee Conditions for In-Water Work will be implemented for the bridge construction over the Taylor Creek Canal.
  No update, this remains a valid commitment.

- Further coordination with USFWS/FWC will occur to consider enhancements to the existing/proposed bridge and box culverts for wildlife during the design phase.
  No update, this remains a valid commitment.

- Gopher tortoise: Due to the presence of gopher tortoise habitat within and adjacent to the existing ROW, a gopher tortoise survey in appropriate habitat within construction limits (including roadway footprint and stormwater management ponds) will be performed prior to construction. Specifically, the 100 percent gopher tortoise survey should be conducted no sooner than 90 days and no later than 72 hours before construction. The FDOT will secure any relocation permits needed for this species after permits have been issued and prior to any construction phases of the project.
  No update, this remains a valid commitment.

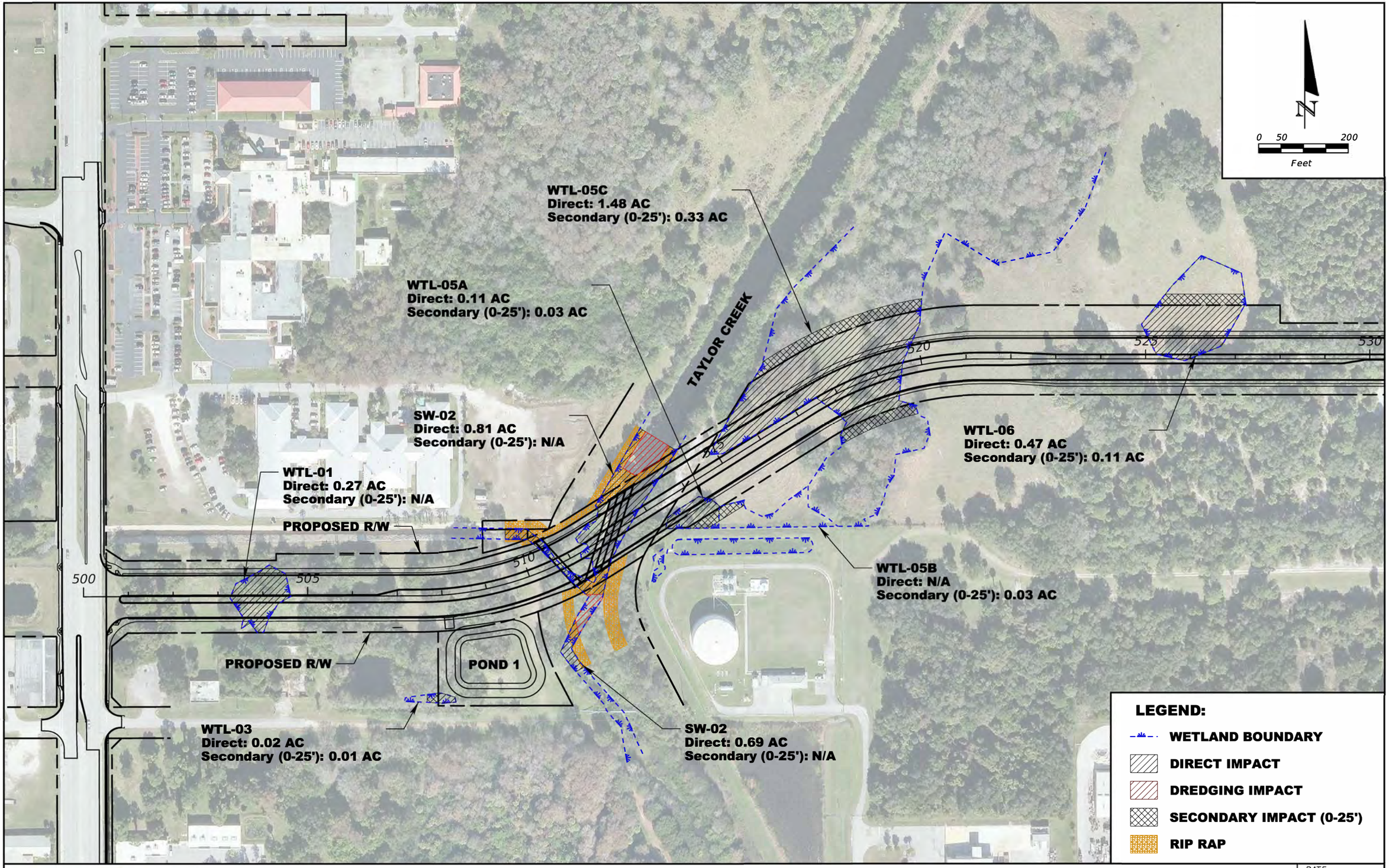
- The FDOT will resurvey for listed species (i.e., Florida sandhill crane, southeastern American kestrel) during the design phase and prior to permitting the project.
  No update, this remains a valid commitment.

- Bald eagle: Given the proximity of bald eagle nests to the project impact area, the uncertainty of activity status when construction may be scheduled to commence, and the possibility of new nests being identified by the Audubon Society during yearly surveys, the FDOT will commit to resurveying the project area prior to construction. If bald eagle nests are observed within 660 feet of the project footprint during construction, construction will pause to allow for the FDOT's coordination with the USFWS, as appropriate.
  No update, this remains a valid commitment.

APPENDICES

APPENDIX A

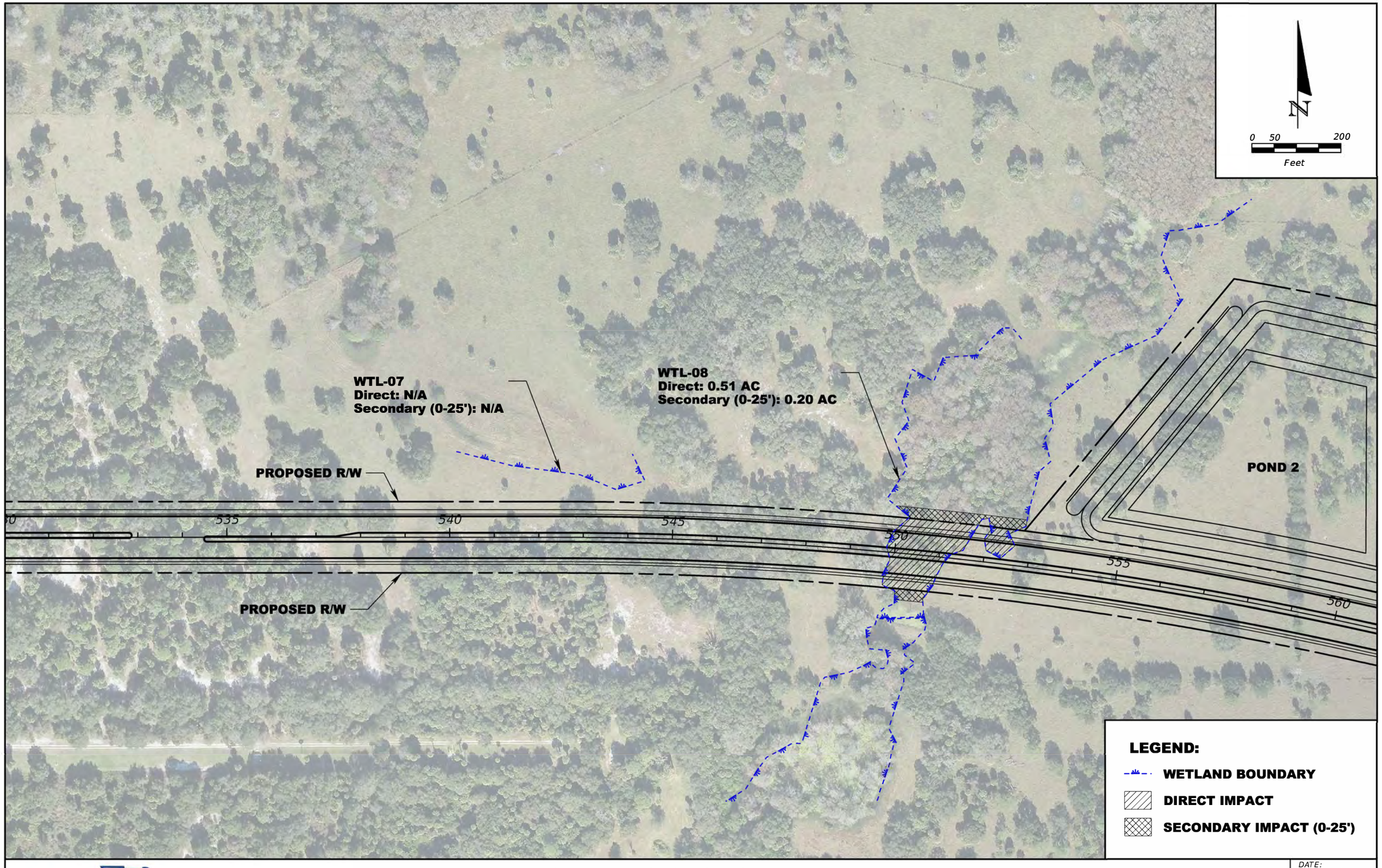
Wetland and Surface Water Impacts Map



FDOT

Figure 7 - Wetland and Surface Water Impacts Map
FPID#: 419344-3-32-01
SR 710 from US 441 to L-63N Canal
Okeechobee County, FL

DATE: 10/05/2023
FPID: 419344-3-52-01
SCALE 1 inch = 200 feet



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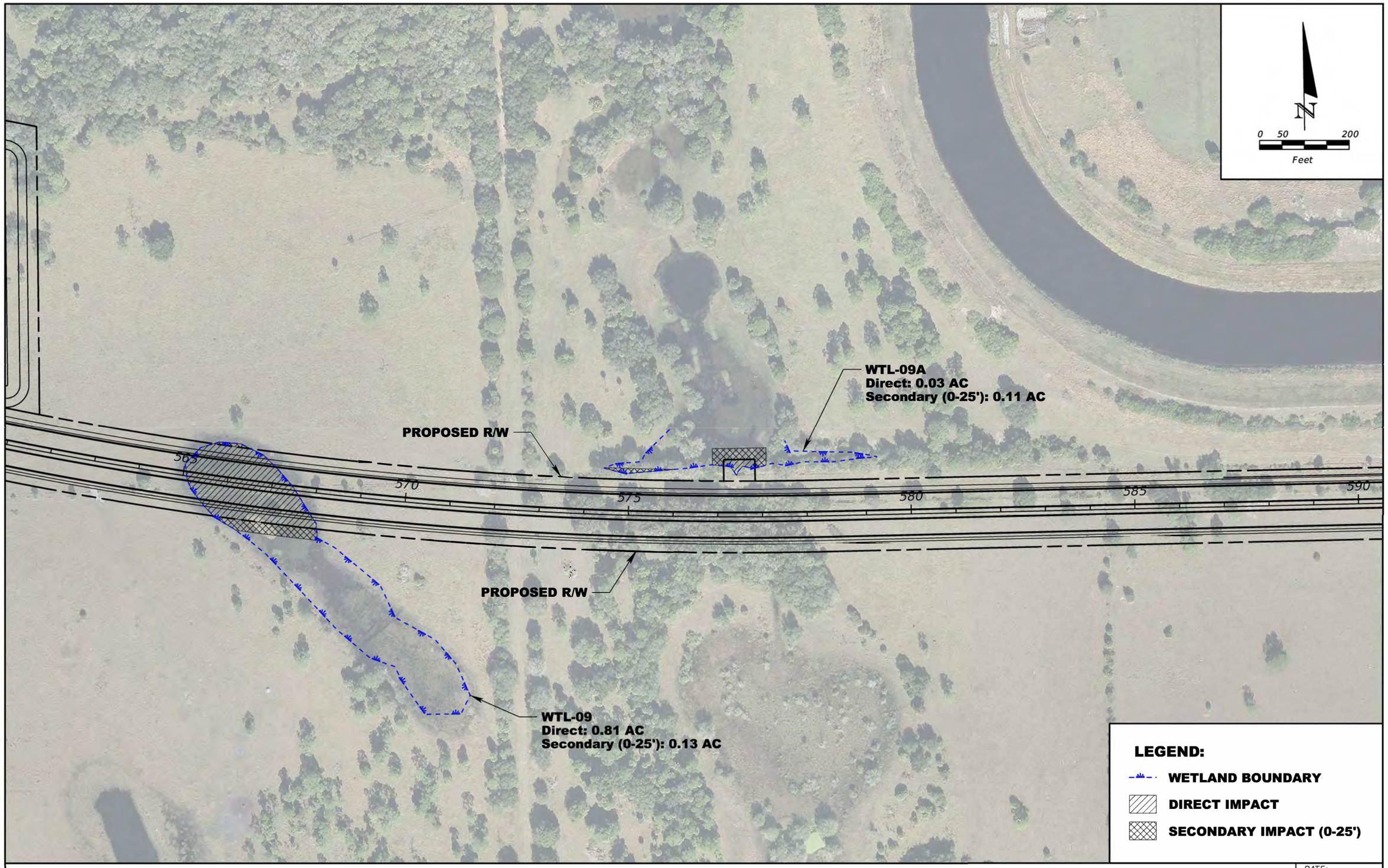
Okeechobee County, FL

DATE: 10/05/2023
FPID: 419344-3-52-01
SCALE 1 inch = 200 feet
2 of 7



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Okeechobee County, FL

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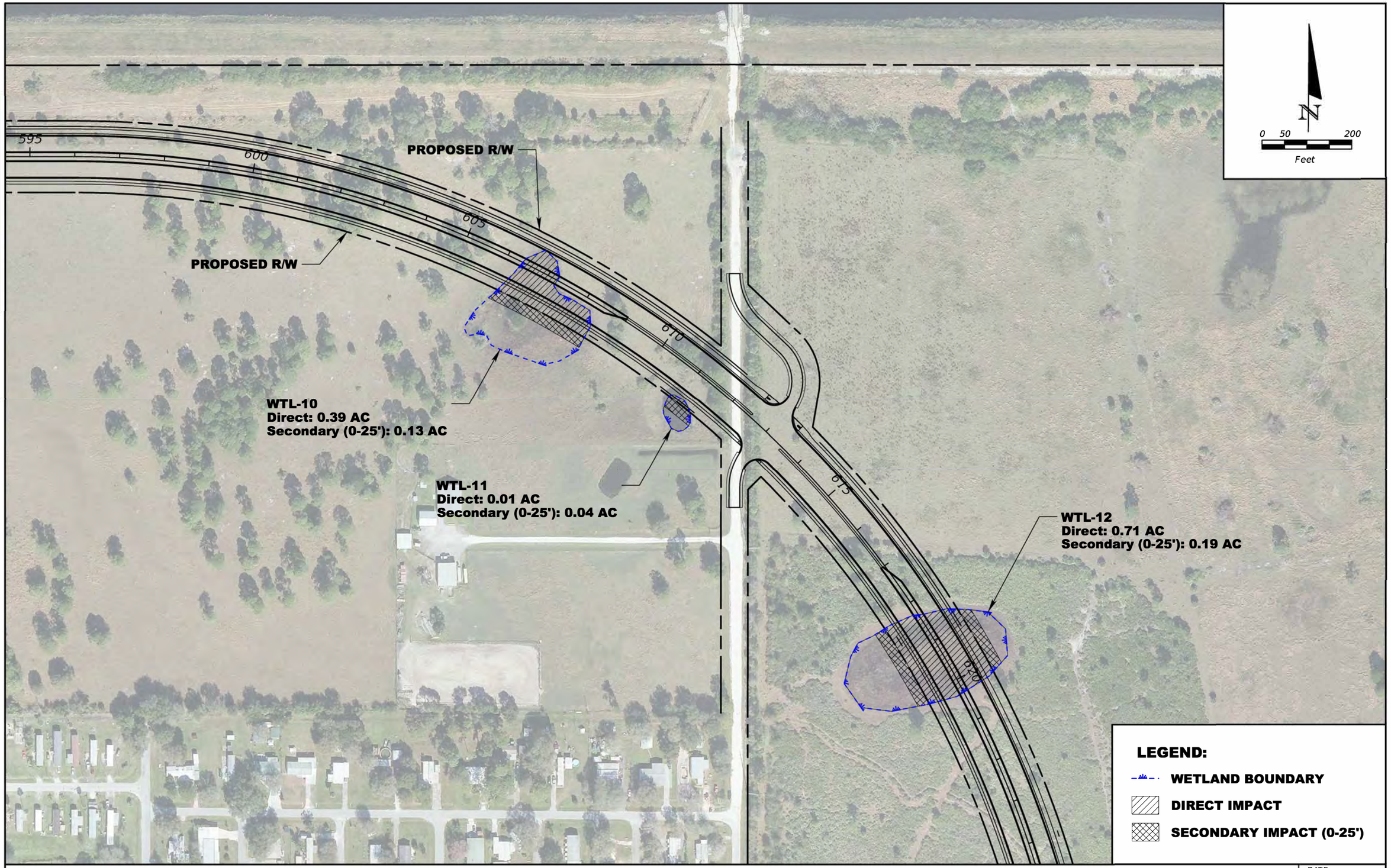

FDOT

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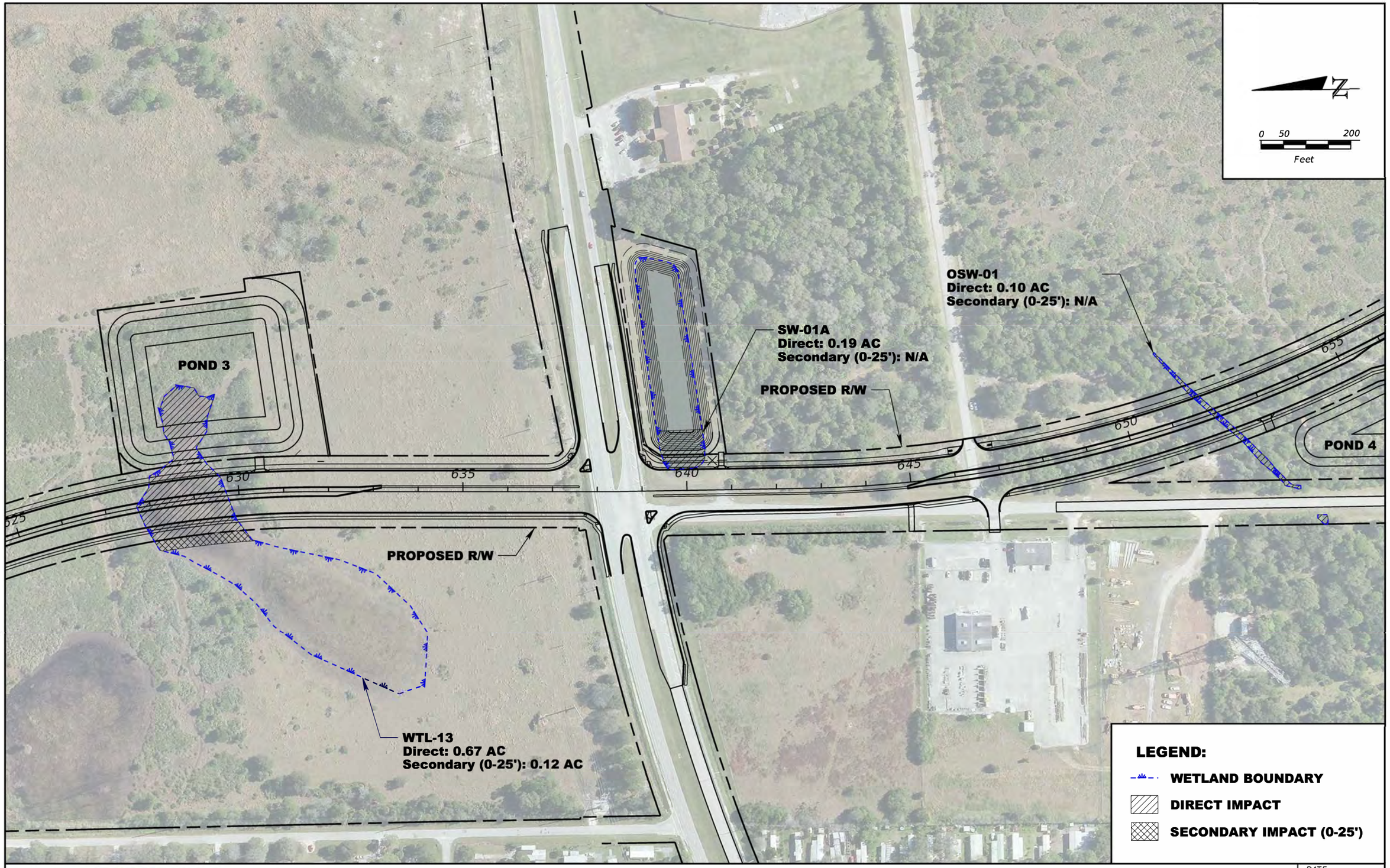
FPID#: 419344-3-32-01
SR 710 from US 441 to L-63N Canal
Okeechobee County, FL

DATE:	10/05/2023
FPID:	419344-3-52-01
SCALE	1 inch = 200 feet
	4 of 7



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SR 710 from US 441 to L-63N Canal
Okeechobee County, FL

DATE: 10/05/2023
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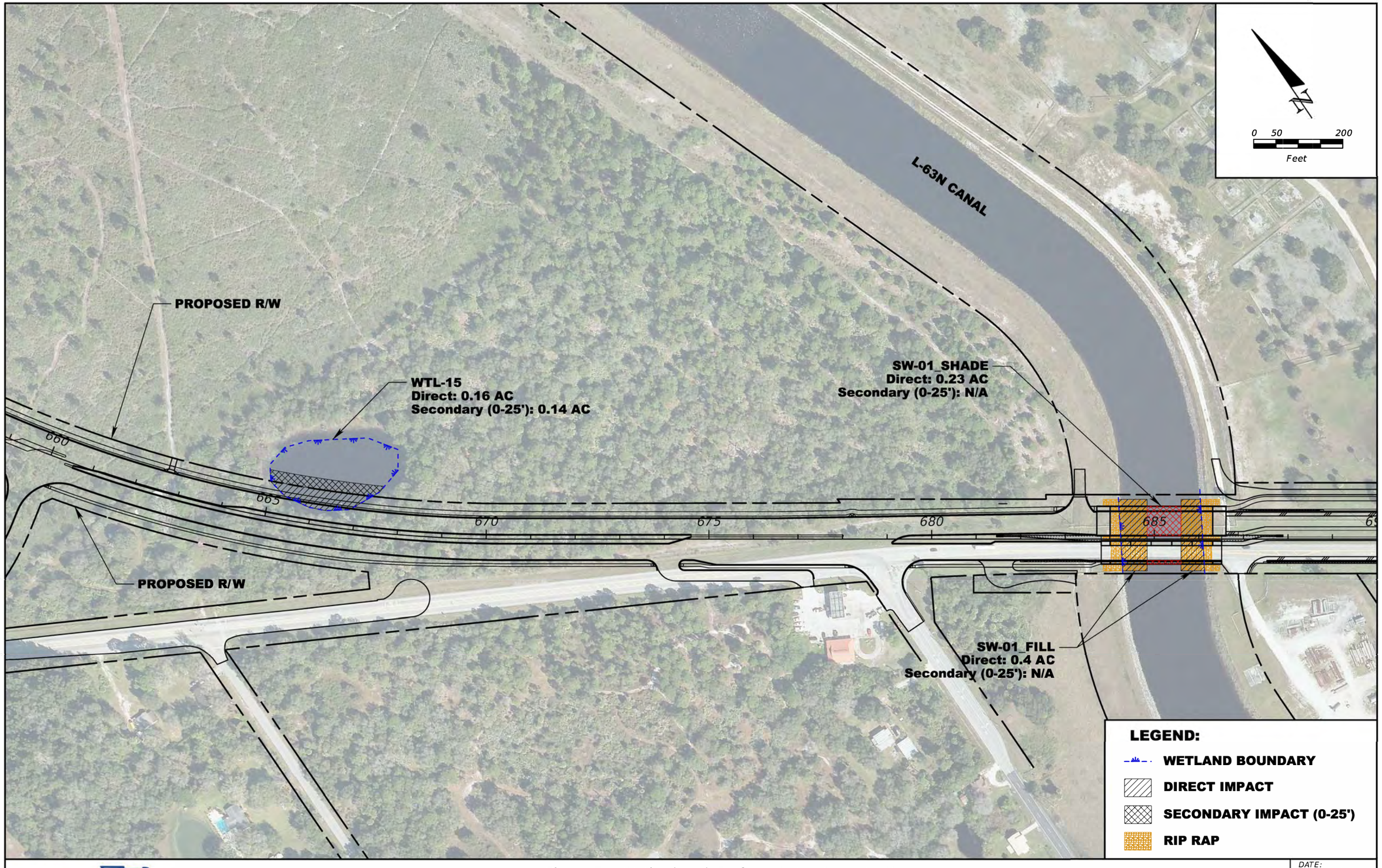
5 of 7



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SR 710 from US 441 to L-63N Canal
Okeechobee County, FL

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SCALE 1 inch = 200 feet

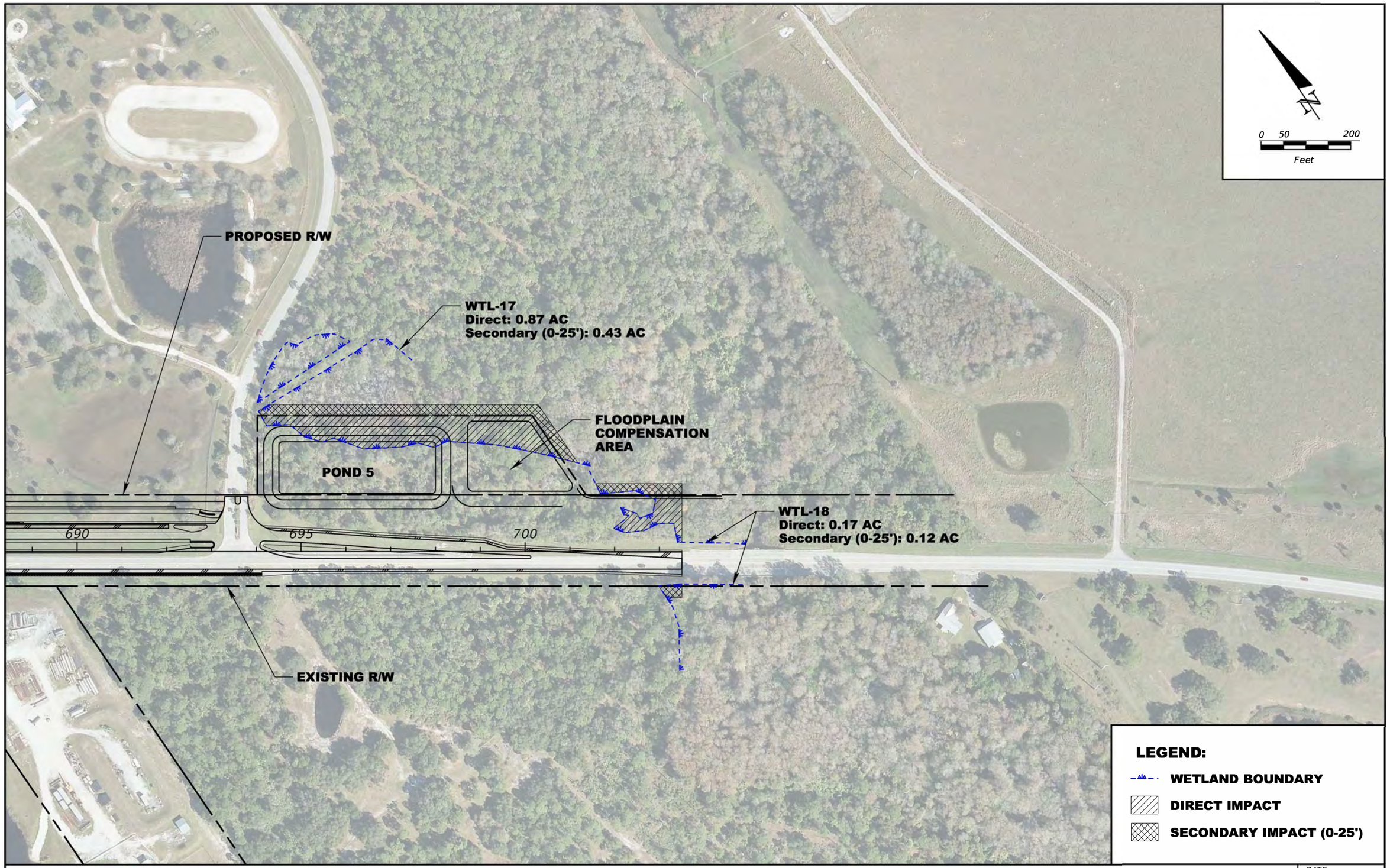

Figure 7 - Wetland and Surface Water Impacts Map
FPID#: 419344-3-32-01
SR 710 from US 441 to L-63N Canal
Okeechobee County, FL

DATE: 10/05/2023
FPID: 419344-3-52-01
SCALE 1 inch = 200 feet

APPENDIX B

WRAP Mitigation Summary Table
& Field Data Sheets

SR 710 from US 441 to L-63N

ID	FLUCFCS	Pre-Impact Area (Acres)	Dredge Impact Area (Acres)	Fill Impact Area (Acres)	WRAP (Impact) Impact Score	0-25-feet Secondary Impact Area (Acres)	WRAP (0-25-feet Secondary) WRAP Impact Score	0-25-feet Secondary WRAP Impact Delta	WRAP Functional Capacity Unit-*Debits*	Preserved/ Created Area (Acres)	Mitigation Description	WRAP (Preserve) Delta	SFWMD WRAP Functional Capacity Unit-*Credits*	USACE WRAP Functional Capacity Unit-*Credits*
WTL-01* **	641	0.27		0.27	0.40	0.00	0.00	0.00	0.00	N/A	N/A - isolated wetland, <0.5-acres total	N/A	0.00	0.00
WTL-03* **	641	0.03		0.02	0.27	0.01	0.23	0.04	0.00	N/A	N/A - isolated wetland, <0.5-acres total	N/A	0.00	0.00
WTL-05A *	619	0.14		0.11	0.28	0.03	0.22	0.06	0.09	N/A	Bluefield Ranch Mitigation Bank, Forested	N/A	0.09	0.00
WTL-05B *	643	0.03		0.00	0.40	0.03	0.33	0.07	0.07	N/A	Bluefield Ranch Mitigation Bank, Herbaceous	N/A	0.07	0.00
WTL-05C *	621	1.81		1.48	0.42	0.33	0.36	0.06	0.68	N/A	Bluefield Ranch Mitigation Bank, Forested	N/A	0.68	0.00
WTL-06 * **	643	0.58		0.47	0.37	0.11	0.30	0.07	0.00	N/A	N/A - isolated wetland, <0.5-acres total	N/A	0.00	0.00
WTL-08 *	617	0.71		0.51	0.78	0.20	0.72	0.06	0.46	N/A	Bluefield Ranch Mitigation Bank, Forested	N/A	0.46	0.00
WTL-09 *	643	0.94		0.81	0.37	0.13	0.30	0.07	0.37	N/A	Bluefield Ranch Mitigation Bank, Herbaceous	N/A	0.37	0.00
WTL-09A*	643	0.14		0.03	0.37	0.11	0.30	0.07	0.08	N/A	Bluefield Ranch Mitigation Bank, Herbaceous	N/A	0.08	0.00
WTL-10*	643	0.52		0.39	0.37	0.13	0.30	0.07	0.21	N/A	Bluefield Ranch Mitigation Bank, Herbaceous	N/A	0.21	0.00
WTL-11* **	643	0.05		0.01	0.37	0.04	0.30	0.07	0.00	N/A	N/A - isolated wetland, <0.5-acres total	N/A	0.00	0.00
WTL-12*	643	0.90		0.71	0.63	0.19	0.57	0.06	0.51	N/A	Bluefield Ranch Mitigation Bank, Herbaceous	N/A	0.51	0.00
WTL-13*	643	0.79		0.67	0.40	0.12	0.33	0.07	0.34	N/A	Bluefield Ranch Mitigation Bank, Herbaceous	N/A	0.34	0.00
WTL-15*	643	0.30		0.16	0.47	0.14	0.40	0.07	0.15	N/A	Bluefield Ranch Mitigation Bank, Herbaceous	N/A	0.15	0.00
WTL-17*	617	1.30		0.87	0.75	0.43	0.69	0.06	0.71	N/A	Bluefield Ranch Mitigation Bank, Forested	N/A	0.71	0.00
WTL-18*	630	0.29		0.17	0.71	0.12	0.69	0.02	0.14	N/A	Bluefield Ranch Mitigation Bank, Forested	N/A	0.14	0.00
SW-01A* ***	534	0.19		0.19	0.00	0.00	0.00	0.00	0.00	N/A	N/A - Upland-Cut Stormwater Pond	N/A	0.00	0.00
SW-01*	512	0.40		0.40	0.00	0.00	0.00	0.00	0.00	N/A	N/A - Channelized Waterway (SFWMD L-63N Canal)	N/A	0.00	0.00
SW-02	512	0.69	0.12	0.69	0.00	0.00	0.00	0.00	0.00	N/A	N/A - Channelized Waterway (Taylor Creek)	N/A	0.00	0.00
OSW-1* ***	510	0.10		0.10	0.00	0.00	0.00	0.00	0.00	N/A	N/A - Upland-Cut Manmade Ditch	N/A	0.00	0.00
SFWMD		**10.18**	**0.12**	**8.06**		**2.12**			**3.81**			**0.00**	**3.81**	
USACE		**1.09**	**0.12**	**6.72**		**0.00**			**0.00**			**0.00**		**0.00**

FLUCFCS Descriptions:: *510 - Streams and Waterways*
512 - Channelized Waterways
534 - Reservoirs less than 10 acres
617 = Mixed Wetland Hardwoods
619 = Exotic Wetland Hardwoods
621 = Cypress
641 = Freshwater Marsh
643 = Wet Prairie

Notes: Newly added Reevaluation IDs shown in **bold**
*Not jurisdictional to USACE (*Sackett vs. Environmental Protection Agency, 2023*)
**Mitigation for SFWMD not required for isolated wetlands 0.50 acres or less
*** Mitigation for SFWMD not required for upland-cut ditches and ponds

created by Dale Beter/USACE/not an official document

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-01	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Freshwater Marsh

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
641	1.5	N/A	1.5

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
1	1	LU= 1 - PT= 1 = 1

WRAP Score
0.40

Comments

WU- Provides foraging ground for wading birds. The site is regularly mowed.

O/S- N/A

GC- Groundcover is limited due to regular mowing. Oppotunistic species dominate.

BUFFER- The surrounding area is a combination of improved and unimproved pastures. There is little natural habitat and the buffer does not support adequate vegetation to provide cover for wildlife.

HYD- The wetland is isolated in a pasture so relies on sheet flow from surrounding areas. Hydrology is sufficient to support the presence of hydrophytic vegetation.

WQ- The wetland is entirely surrounded by improved pastures and therefore both LU and PT are 1.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-03	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Freshwater Marsh

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
641	1	N/A	0.5

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
0.5	1	LU= 1 - PT= 1 = 1

WRAP Score
0.27

Comments

WU- Provides foraging ground for wading birds. The site is regularly mowed.

O/S- N/A

GC- Groundcover is limited due to regular mowing. Oppotunistic species dominate.

BUFFER- The surrounding area is a combination of mowed field and an asphalt road/grass berm. There is little natural habitat and the buffer does not support adequate vegetation to provide cover for wildlife.

HYD- The wetland is isolated and is little more than a swale for the adjacent road. Hydrology is sufficient to support the presence of hydrophytic vegetation.

WQ- The wetland is surrounded by improved pasture and a roadway and therefore both LU and PT are 1.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-03-S25	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Freshwater Marsh

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
641	0.5	N/A	0.5

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
0.5	1	LU= 1 - PT= 1 = 1

WRAP Score: 0.23

Comments

WU- Provides foraging ground for wading birds. The site is regularly mowed.

O/S- N/A

GC- Groundcover is limited due to regular mowing. Oppotunistic species dominate.

BUFFER- The surrounding area is a combination of mowed field and an asphalt road/grass berm. There is little natural habitat and the buffer does not support adequate vegetation to provide cover for wildlife.

HYD- The wetland is isolated and is little more than a swale for the adjacent road. Hydrology is sufficient to support the presence of hydrophytic vegetation.

WQ- The wetland is surrounded by improved pasture and a roadway and therefore both LU and PT are 1.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-05A	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Exotic Wetland Hardwoods

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
619	1	0	0.5

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
1	1.5	LU= 1 - PT= 1 = 1

WRAP Score
0.28

Comments

WU- The density of the Brazilian pepper prohibits use by avian species and there is little ground cover to provide foraging and nesting opportunities for other wildlife.

O/S- The canopy is dominated by Brazilian pepper, an invasive exotic species.

GC- Ground cover is limited due to the dense canopy coverage of Brazilian pepper. Sword fern and common rush were observed in varying densities.

BUFFER- The surrounding area is pastureland with a berm separating it from Taylor Creek.

HYD- Hydrology is poor but sufficient to provide some wetland functions.

WQ- The wetland area is surrounded on all sides by pasture land. LU = 1 and PT = 1.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-05A-S25	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Exotic Wetland Hardwoods

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
619	1	0	0.5

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
0.5	1	LU= 1 - PT= 1 = 1

WRAP Score
0.22

Comments

WU- The density of the Brazilian pepper prohibits use by avian species and there is little ground cover to provide foraging and nesting opportunities for other wildlife.

O/S- The canopy is dominated by Brazilian pepper, an invasive exotic species.

GC- Ground cover is limited due to the dense canopy coverage of Brazilian pepper. Sword fern and common rush were observed in varying densities.

BUFFER- The surrounding area is pastureland with a berm separating it from Taylor Creek as well as the adjacent proposed ROW.

HYD- Hydrology is poor but sufficient to provide some wetland functions. Proposed ROW will eliminate contributing area.

WQ- The wetland area is surrounded on all sides by pasture land. LU = 1 and PT = 1.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-05B	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Wet Prairie

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
643	1	N/A	1.5

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
1	1.5	LU= 1 - PT= 1 = 1

WRAP Score
0.40

Comments

WU- The southern portion is bound by a chain link fence preventing access for wildlife other than avian species.

O/S- N/A

GC- Ground cover is limited due to cattle grazing however appropriate wetland species were present.

BUFFER- The surrounding area is pastureland with a berm separating it from Taylor Creek.

HYD- Hydrology is poor but sufficient to provide some wetland functions.

WQ- The wetland area is surrounded on all sides by pasture land. LU = 1 and PT = 1.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-05B-S25	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Wet Prairie

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
643	1	N/A	1.5

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
0.5	1	LU= 1 - PT= 1 = 1

WRAP Score
0.33

Comments

WU- The southern portion is bound by a chain link fence preventing access for wildlife other than avian species.

O/S- N/A

GC- Ground cover is limited due to cattle grazing however appropriate wetland species were present.

BUFFER- The surrounding area is pastureland with a berm separating it from Taylor Creek and the adjacent proposed ROW.

HYD- Hydrology is poor but sufficient to provide some wetland functions. Adjacent proposed ROW will reduce contributing area.

WQ- The wetland area is surrounded on all sides by pasture land. LU = 1 and PT = 1.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-05C	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Cypress

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
621	1.5	1.5	0.5

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
1	2	LU= 1 - PT= 1 = 1

WRAP Score
0.42

Comments

WU- Small and medium sized mammals, small reptiles, and small crustaceans are expected to use this wetland. Due to Brazilian pepper cover, wading birds are not expected to use this wetland.

O/S- The canopy is made up of native and non-native species including pond cypress and Brazilian pepper.

GC- Groundcover is sparse due to near complete cover from canopy and understory.

BUFFER- The surrounding area is improved pastureland.

HYD- Hydrology appeared sufficient to support the wetland system. Standing water was observed in some areas and water lines were present on trees and cypress knees.

WQ- The wetland area is surrounded on all sides by improved pasture. LU = 1 and PT = 1.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-05C-S25	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Cypress

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
621	1.5	1.5	0.5

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
0.5	1.5	LU= 1 - PT= 1 = 1

WRAP Score
0.36

Comments

WU- Small and medium sized mammals, small reptiles, and small crustaceans are expected to use this wetland. Due to Brazilian pepper cover, wading birds are not expected to use this wetland.

O/S- The canopy is made up of native and non-native species including pond cypress and Brazilian pepper.

GC- Groundcover is sparse due to near complete cover from canopy and understory.

BUFFER- The surrounding area is improved pastureland with the proposed ROW alignment adjacent.

HYD- Hydrology appeared sufficient to support the wetland system. Standing water was observed in some areas and water lines were present on trees and cypress knees. The proposed ROW will reduce the contributing area.

WQ- The wetland area is surrounded on all sides by improved pasture. LU = 1 and PT = 1.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-09	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Wet Prairie

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
643	1.5	N/A	1

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
1	1	LU= 1 - PT= 1 = 1

WRAP Score
0.37

Comments

WU- Wading birds may use the wetland however due to disturbances from cattle, presence is low.

O/S- N/A

GC- Diversity is limited due to cattle grazing with bare spots present from cattle tracks.

BUFFER- The surrounding area is improved pasture for cattle.

HYD- Hydrology has suffered however is sufficient to support wetland functions

WQ- The wetland area is surrounded on all sides by improved pasture. LU = 1 and PT = 1.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-09-S25	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Wet Prairie

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
643	1.5	N/A	1

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
0.5	0.5	LU= 1 - PT= 1 = 1

WRAP Score
0.30

Comments

WU- Wading birds may use the wetland however due to disturbances from cattle, presence is low.

O/S- N/A

GC- Diversity is limited due to cattle grazing with bare spots present from cattle tracks.

BUFFER- The surrounding area is improved pasture for cattle along with the proposed ROW.

HYD- Hydrology has suffered however is sufficient to support wetland functions however the proposed ROW will reduce the contributing area.

WQ- The wetland area is surrounded on all sides by improved pasture. LU = 1 and PT = 1.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-08	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Mixed Wetland Hardwoods

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
617	2	2.5	2

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
2	2.5	LU= 3 - PT= 3 = 3

WRAP Score: 0.78

Comments

WU- Wading birds, small and medium sized mammals, small reptiles, and small crustaceans are expected to use this wetland.

O/S- The canopy and understory are made up primarily of native trees (cypress, red maple, and sabal palms) and shrubs (wax myrtle and wild coffee).

GC- A variety of native species were observed for groundcover including pickerelweed, red root, and spikerush.

BUFFER- The surrounding area is considered hardwood hammock dominated by live oak, slash pine, and sabal palm that provides habitat for wildlife using the wetland area.

HYD- Hydrology appeared sufficient to support the wetland system. Standing water was observed in some areas and water lines were present on trees.

WQ- The wetland area is surrounded on all sides by natural land. LU = 3 and PT = 3.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-08-S25	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Mixed Wetland Hardwoods

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
617	2	2.5	2

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
1.5	2	LU= 3 - PT= 3 = 3

WRAP Score: 0.72

Comments

WU- Wading birds, small and medium sized mammals, small reptiles, and small crustaceans are expected to use this wetland.

O/S- The canopy and understory are made up primarily of native trees (cypress, red maple, and sabal palms) and shrubs (wax myrtle and wild coffee).

GC- A variety of native species were observed for groundcover including pickerelweed, red root, and spikerush.

BUFFER- The surrounding area is considered hardwood hammock dominated by live oak, slash pine, and sabal palm that provides habitat for wildlife using the wetland area. The proposed ROW will run adjacent to this area.

HYD- Hydrology appeared sufficient to support the wetland system. Standing water was observed in some areas and water lines were present on trees. The proposed ROW will reduce the contributing area.

WQ- The wetland area is surrounded on all sides by natural land. LU = 3 and PT = 3.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-09	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Wet Prairie

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
643	1.5	N/A	1

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
1	1	LU= 1 - PT= 1 = 1

WRAP Score
0.37

Comments

WU- Wading birds may use the wetland however due to disturbances from cattle, presence is low.

O/S- N/A

GC- Diversity is limited due to cattle grazing with bare spots present from cattle tracks.

BUFFER- The surrounding area is improved pasture for cattle.

HYD- Hydrology has suffered however is sufficient to support wetland functions

WQ- The wetland area is surrounded on all sides by improved pasture. LU = 1 and PT = 1.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-09-S25	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Wet Prairie

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
643	1.5	N/A	1

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
0.5	0.5	LU= 1 - PT= 1 = 1

WRAP Score
0.30

Comments

WU- Wading birds may use the wetland however due to disturbances from cattle, presence is low.

O/S- N/A

GC- Diversity is limited due to cattle grazing with bare spots present from cattle tracks.

BUFFER- The surrounding area is improved pasture for cattle along with the proposed ROW.

HYD- Hydrology has suffered however is sufficient to support wetland functions however the proposed ROW will reduce the contributing area.

WQ- The wetland area is surrounded on all sides by improved pasture. LU = 1 and PT = 1.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-09	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Wet Prairie

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
643	1.5	N/A	1

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
1	1	LU= 1 - PT= 1 = 1

WRAP Score
0.37

Comments

WU- Wading birds may use the wetland however due to disturbances from cattle, presence is low.

O/S- N/A

GC- Diversity is limited due to cattle grazing and ditching associated with rancher acitivies.

BUFFER- The surrounding area is improved pasture for cattle.

HYD- Hydrology has suffered however is sufficient to support wetland functions

WQ- The wetland area is surrounded on all sides by improved pasture. LU = 1 and PT = 1.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-09-S25	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Wet Prairie

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
643	1.5	N/A	1

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
0.5	0.5	LU= 1 - PT= 1 = 1

WRAP Score
0.30

Comments

WU- Wading birds may use the wetland however due to disturbances from cattle, presence is low.

O/S- N/A

GC- Diversity is limited due to cattle grazing with bare spots present from cattle tracks.

BUFFER- The surrounding area is improved pasture for cattle along with the proposed ROW.

HYD- Hydrology has suffered however is sufficient to support wetland functions however the proposed ROW will reduce the contributing area.

WQ- The wetland area is surrounded on all sides by improved pasture. LU = 1 and PT = 1.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-10	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Wetland Prairie

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
643	1.5	N/A	1

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
1	1	LU= 1 - PT= 1 = 1

WRAP Score
0.37

Comments

WU- Provides foraging ground for wading birds. The presence of cattle inhibits use by other wildlife.

O/S- N/A

GC- Groundcover is limited due to grazing by cattle. Opportunistic species dominate.

BUFFER- The surrounding area is a combination of improved and unimproved pastures. There is little natural habitat and the buffer does not support adequate vegetation to provide cover for wildlife.

HYD- The wetland is isolated in a pasture so relies on sheet flow from surrounding areas. Hydrology is sufficient to support the presence of hydrophytic vegetation.

WQ- The wetland is entirely surrounded by improved pastures and therefore both LU and PT are 1.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-10-S25	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Wetland Prairie

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
643	1.5	N/A	1

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
0.5	0.5	LU= 1 - PT= 1 = 1

WRAP Score
0.30

Comments

WU- Provides foraging ground for wading birds. The presence of cattle inhibits use by other wildlife.

O/S- N/A

GC- Groundcover is limited due to grazing by cattle. Opportunistic species dominate.

BUFFER- The surrounding area is a combination of improved and unimproved pastures. There is little natural habitat and the buffer does not support adequate vegetation to provide cover for wildlife. The proposed ROW will run adjacent to the area.

HYD- The wetland is isolated in a pasture so relies on sheet flow from surrounding areas. Hydrology is sufficient to support the presence of hydrophytic vegetation. The proposed ROW will reduce the contributing area.

WQ- The wetland is entirely surrounded by improved pastures and therefore both LU and PT are 1.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-11	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Wet Prairie

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
643	1.5	N/A	1

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
1	1	LU= 1 - PT= 1 = 1

WRAP Score
0.37

Comments

WU- Wading birds may use the wetland however due to disturbances from cattle, presence is low.

O/S- N/A

GC- Diversity is limited due to cattle grazing with bare spots present from cattle tracks.

BUFFER- The surrounding area is improved pasture for cattle.

HYD- Hydrology has suffered however is sufficient to support wetland functions. Water appears anoxic.

WQ- The wetland area is surrounded on all sides by improved pasture. LU = 1 and PT = 1.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-11-S25	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Wet Prairie

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
643	1.5	N/A	1

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
0.5	0.5	LU= 1 - PT= 1 = 1

WRAP Score
0.30

Comments

WU- Wading birds may use the wetland however due to disturbances from cattle, presence is low.

O/S- N/A

GC- Diversity is limited due to cattle grazing with bare spots present from cattle tracks.

BUFFER- The surrounding area is improved pasture for cattle. The proposed ROW will be adjacent to the area.

HYD- Hydrology has suffered however is sufficient to support wetland functions. Water appears anoxic. The proposed ROW will reduce the contributing area.

WQ- The wetland area is surrounded on all sides by improved pasture. LU = 1 and PT = 1.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-12	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Wet Prairie

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
643	1.5	N/A	1.5

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
2.5	1	LU= 3 - PT= 3 = 3

WRAP Score
0.63

Comments

WU- Wading birds may use the wetland however due to disturbances from cattle, presence is low.

O/S- N/A

GC- Diversity is limited due to cattle grazing with bare spots present from cattle tracks.

BUFFER- The surrounding area is pine flatwoods.

HYD- Hydrology has suffered however is sufficient to support wetland functions.

WQ- The wetland area is surrounded on all sides by unimproved lands. LU = 3 and PT = 3.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-12-S25	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Wet Prairie

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
643	1.5	N/A	1.5

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
2	0.5	LU= 3 - PT= 3 = 3

WRAP Score
0.57

Comments

WU- Wading birds may use the wetland however due to disturbances from cattle, presence is low.

O/S- N/A

GC- Diversity is limited due to cattle grazing with bare spots present from cattle tracks.

BUFFER- The surrounding area is pine flatwoods. The proposed ROW will be adjacent to the area.

HYD- Hydrology has suffered however is sufficient to support wetland functions. The proposed ROW will reduce the contributing area of the wetland.

WQ- The wetland area is surrounded on all sides by unimproved lands. LU = 3 and PT = 3.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-13	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Wetland Prairie

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
643	1.5	N/A	1.5

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
1	1	LU= 1 - PT= 1 = 1

WRAP Score
0.40

Comments

WU- Provides foraging ground for wading birds. The presence of cattle inhibits use by other wildlife.

O/S- N/A

GC- Groundcover is limited due to grazing by cattle. Opportunistic species dominate.

BUFFER- The surrounding area is a combination of improved and unimproved pastures. There is little natural habitat and the buffer does not support adequate vegetation to provide cover for wildlife.

HYD- The wetland is isolated in a pasture so relies on sheet flow from surrounding areas. Hydrology is sufficient to support the presence of hydrophytic vegetation.

WQ- The wetland is entirely surrounded by improved pastures and therefore both LU and PT are 1.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-13-S25	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Wetland Prairie

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
643	1.5	N/A	1.5

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
0.5	0.5	LU= 1 - PT= 1 = 1

WRAP Score
0.33

Comments

WU- Provides foraging ground for wading birds. The presence of cattle inhibits use by other wildlife.

O/S- N/A

GC- Groundcover is limited due to grazing by cattle. Opportunistic species dominate.

BUFFER- The surrounding area is a combination of improved and unimproved pastures. There is little natural habitat and the buffer does not support adequate vegetation to provide cover for wildlife. The proposed ROW will run adjacent to the area.

HYD- The wetland is isolated in a pasture so relies on sheet flow from surrounding areas. Hydrology is sufficient to support the presence of hydrophytic vegetation. The proposed ROW will reduce the contributing area.

WQ- The wetland is entirely surrounded by improved pastures and therefore both LU and PT are 1.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-15	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Wetland Prairie

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
643	1.5	N/A	0.5

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
1	1	LU= 3 - PT= 3 = 3

WRAP Score
0.47

Comments

WU- Provides foraging ground for wading birds. The presence of cattle inhibits use by other wildlife.

O/S- N/A

GC- Groundcover is limited due to cattle grazing.

BUFFER- The surrounding area consists of a pine flatwood with the existing SR 710 ROW approximately 100' to the south.

HYD- Hydrology has suffered within wetland.

WQ- The wetland is entirely surrounded by natural lands and therefore both LU and PT are 3.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-15-S25	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Wetland Prairie

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
643	1.5	N/A	0.5

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
0.5	0.5	LU= 2.5 - PT= 2 = 2.25

WRAP Score: 0.40

Comments

WU- Provides foraging ground for wading birds. The presence of cattle inhibits use by other wildlife.

O/S- N/A

GC- Groundcover is limited due to cattle grazing.

BUFFER- The surrounding area consists of a pine flatwood with the existing SR 710 ROW approximately 100' to the south. The proposed ROW will be adjacent to the area.

HYD- Hydrology has suffered within wetland. The proposed ROW will reduce the contributing area.

WQ- The wetland is entirely surrounded by natural lands and therefore both LU and PT are 3.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-17	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Mixed Wetland Hardwoods

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
617	2	2	2

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
2	2.5	LU= 3 - PT= 3 = 3

WRAP Score
0.75

Comments

WU- Wading birds, small and medium sized mammals, small reptiles, and small crustaceans are expected to use this wetland.

O/S- The canopy and understory are made up primarily of native trees (cypress, red maple, and sabal palms) and shrubs (wax myrtle and wild coffee).

GC- A variety of native species were observed for groundcover including pickerelweed, red root, and spikerush.

BUFFER- The surrounding area is considered hardwood hammock dominated by live oak, slash pine, and sabal palm that provides habitat for wildlife using the wetland area. However the existing SR 710 ROW and another road are within 150' and 60' respectively of the wetland boundaries.

HYD- Hydrology appeared sufficient to support the wetland system. Standing water was observed in some areas and water lines were present on trees.

WQ- The wetland area is surrounded on all sides by natural land. LU = 3 and PT = 3.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-17-S25	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Mixed Wetland Hardwoods

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
617	2	2	2

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
1.5	2	LU= 3 - PT= 3 = 3

WRAP Score: 0.69

Comments

WU- Wading birds, small and medium sized mammals, small reptiles, and small crustaceans are expected to use this wetland.

O/S- The canopy and understory are made up primarily of native trees (cypress, red maple, and sabal palms) and shrubs (wax myrtle and wild coffee).

GC- A variety of native species were observed for groundcover including pickerelweed, red root, and spikerush.

BUFFER- The surrounding area is considered hardwood hammock dominated by live oak, slash pine, and sabal palm that provides habitat for wildlife using the wetland area. The proposed ROW will be adjacent to the area.

HYD- Hydrology appeared sufficient to support the wetland system. Standing water was observed in some areas and water lines were present on trees. The proposed ROW will reduce the contributing area.

WQ- The wetland area is surrounded on all sides by natural land. LU = 3 and PT = 3.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-17	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Wetland Forested Mixed

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
630	2	2	2

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
2	2.5	LU= 2.5 - PT= 2 = 2.25

WRAP Score
0.71

Comments

WU- Wading birds, small and medium sized mammals, small reptiles, and small crustaceans are expected to use this wetland.

O/S- The canopy and understory are made up primarily of mixed native trees (cypress, red maple, sabal palms, laurel oak, sweetgum) and shrubs (wax myrtle and intermittent saw palmetto). Air potato vine and Brazillian pepper was observed within the asessment area.

GC- A variety of native species were observed for groundcover including southern shield fern and swamp fern.

BUFFER- The surrounding area is upland and wetland forested areas and provides habitat for wildlife using the wetland area. However the existing SR 710 ROW abuts the asssment area to the south..

HYD- Forested fringe wetalnd associated with Mosquito Creek (regulatory floodway). Hydrology is sufficient to support the wetland system. Saturation and standing water was observed in some areas and water lines were present on trees.

WQ- The wetland is entirely surrounded by natural lands and a low volume highway with a vegetated buffer strip therefore the LU is 2.5 and PT is 2.0.

2.3.1 WETLAND RAPID ASSESSMENT PROCEDURE
FIELD DATA SHEET

Wetland Number	Project	Date	Evaluator	Wetland Type
WTL-18-S25	SR 710	10/18/2017	Rick Harman, Amanda Montgomery	Wetland Forested Mixed

Land Use	Wildlife Utilization (WU)	Wetland Canopy (O/S)	WL Grndcover (GC)
630	2	2	2

Habitat Support Buffer	Field Hydrology (HYD)	WQ Input & Trtmnt (WQ)
1.5	2	LU= 3 - PT= 3 = 3

WRAP Score: 0.69

Comments

WU- Wading birds, small and medium sized mammals, small reptiles, and small crustaceans are expected to use this wetland.

O/S- The canopy and understory are made up primarily of mixed native trees (cypress, red maple, sabal palms, laurel oak, sweetgum) and shrubs (wax myrtle and intermittent saw palmetto). Air potato vine and Brazillian pepper was observed within the asessment area.

GC- A variety of native species were observed for groundcover including southern shield fern and swamp fern.

BUFFER- The surrounding area is upland and wetland forested areas and provides habitat for wildlife using the wetland area. However the existing SR 710 ROW abuts the asssment area to the south. The proposed ROW will be adjacent to the area.

HYD- Forested fringe wetalnd associated with Mosquito Creek (regulatory floodway). Hydrology is sufficient to support the wetland system. Saturation and standing water was observed in some areas and water lines were present on trees.

WQ- The wetland is entirely surrounded by natural lands and a low volume highway with a vegetated buffer strip therefore the LU is 2.5 and PT is 2.0.

APPENDIX C

USFWS 2023 Standard Protection Measures for the Eastern Indigo Snake

STANDARD PROTECTION MEASURES FOR THE EASTERN INDIGO SNAKE

U.S. Fish and Wildlife Service

December 2023

The Standard Protection Measures for the Eastern Indigo Snake (Plan) below has been developed by the U.S. Fish and Wildlife Service (USFWS) in Florida and Georgia for use by project proponents and their construction personnel help minimize adverse impacts to eastern indigo snakes. However, implementation of this Plan does not replace any state of federal consultation or regulatory requirements. At least 30 days prior to any land disturbance activities, the project proponent shall notify the appropriate USFWS Field Office (see Field Office contact information) via e-mail that the Plan will be implemented as described below.

As long as the signatory of the e-mail certifies compliance with the below Plan (including use of the approved poster and pamphlet (USFWS Eastern Indigo Snake Conservation webpage), no further written confirmation or approval from the USFWS is needed regarding use of this Plan as a component of the project.

If the project proponent decides to use an eastern indigo snake protection/education plan other than the approved Plan below, written confirmation or approval from the USFWS that the plan is adequate must be obtained. The project proponent shall submit their unique plan for review and approval. The USFWS will respond via e-mail, typically within 30 days of receiving the plan, either concurring that the plan is adequate or requesting additional information. A concurrence e-mail from the appropriate USFWS Field Office will fulfill approval requirements.

STANDARD PROTECTION MEASURES

BEFORE AND DURING CONSTRUCTION ACTIVITIES:

- All Project personnel shall be notified about the potential presence and appearance of the federally protected eastern indigo snake (*Drymarchon couperi*).
- All personnel shall be advised that there are civil and criminal penalties for harassing, harming, pursuing, hunting, shooting, wounding, killing, capturing, or collecting the species, in knowing violation of the Endangered Species Act of 1973.
- The project proponent or designated agent will post educational posters in the construction office and throughout the construction site. The posters must be clearly visible to all construction staff and shall be posted in a conspicuous location in the

Project field office until such time that Project construction has been completed and time charges have stopped.

- Prior to the onset of construction activities, the project proponent or designated agent will conduct a meeting with all construction staff (annually for multi-year projects) to discuss identification of the snake, its protected status, what to do if a snake is observed within the project area, and applicable penalties that may be imposed if state and/or federal regulations are violated. An educational pamphlet including color photographs of the snake will be given to each staff member in attendance and additional copies will be provided to the construction superintendent to make available in the onsite construction office. Photos of eastern indigo snakes may be accessed on USFWS, Florida Fish and Wildlife Conservation Commission and/or Georgia Department of Natural Resources websites.
- Each day, prior to the commencement of maintenance or construction activities, the Contractor shall perform a thorough inspection for the species of all worksite equipment.
- If an eastern indigo snake (alive, dead or skin shed) is observed on the project site during construction activities, all such activities are to cease until the established procedures are implemented according to the Plan, which includes notification of the appropriate USFWS Office. The contact information for the USFWS is provided below and on the referenced posters and pamphlets.
- During initial site clearing activities, an onsite observer is recommended to determine whether habitat conditions suggest a reasonable probability of an eastern indigo snake sighting (example: discovery of snake sheds, tracks, lots of refugia and cavities present in the area of clearing activities, and presence of gopher tortoises and burrows).
- Periodically during construction activities, the project area should be visited to observe the condition of the posters and Plan materials and replace them as needed. Construction personnel should be reminded of the instructions (above) as to what is expected if any eastern indigo snakes are seen.
- For erosion control use biodegradable, 100% natural fiber, net-free rolled erosion control blankets to avoid wildlife entanglement.

POST CONSTRUCTION ACTIVITIES:

Whether or not eastern indigo snakes are observed during construction activities, a monitoring report should be submitted to the appropriate USFWS Field Office within 60 days of project completion (See USFWS Field Office Contact Information).

USFWS FIELD OFFICE CONTACT INFORMATION

Georgia Field Office: Phone: (706) 613-9493, email: gaes_assistance@fws.gov
Florida Field Office: Phone: (352) 448-9151, email: fw4flesregs@fws.gov

POSTER & PAMPHLET INFORMATION

Posters with the following information shall be placed at strategic locations on the construction site and along any proposed access roads (final posters for Plan compliance are available on our website in English and Spanish and should be printed on 11 x 17in or larger paper and laminated (USFWS Eastern Indigo Snake Conservation webpage). Pamphlets are also available on our webpage and should be printed on 8.5 x 11in paper and folded, and available and distributed to staff working on the site.

POSTER CONTENT (ENGLISH):

ATTENTION

Federally-Threatened Eastern Indigo Snakes may be present on this site!

Killing, harming, or harassing eastern indigo snakes is strictly prohibited and punishable under State and Federal Law.

IF YOU SEE A LIVE EASTERN INDIGO SNAKE OR ANY BLACK SNAKE ON THE SITE:

• Stop land disturbing activities and allow the snake time to move away from the site without interference. Do NOT attempt to touch or handle the snake.

• Take photographs of the snake, if possible, for identification and documentation purposes.

• Immediately notify supervisor/agent, and a U.S. Fish and Wildlife Service (USFWS) Ecological Services Field Office, with the location information and condition of the snake.

• If the snake is located near clearing or construction activities that will cause harm to the snake, the activities must pause until a representative of the USFWS returns the call (within one day) with further guidance.

IF YOU SEE A DEAD EASTERN INDIGO SNAKE ON THE SITE:

• Stop land disturbing activities and immediately notify supervisor/applicant, and a USFWS Ecological Services Field Office, with the location information and condition of the snake.

• Take photographs of the snake, if possible, for identification and documentation purposes.

• Thoroughly soak the dead snake in water and then freeze the specimen. The appropriate wildlife agency will retrieve the dead snake.

DESCRIPTION: The eastern indigo snake is one of the largest non-venomous snakes in North America, reaching up to 8 ft long. Named for the glossy, blue-black scales above and slate blue below, they often have orange to reddish color (cream color in some cases)

in the throat area. They are not typically aggressive.

SIMILAR SPECIES: The black racer resembles the eastern indigo snake. However, black racers have a white or cream chin, and thinner bodies.

LIFE HISTORY: Eastern indigo snakes live in a variety of terrestrial habitat types. Although they prefer uplands, they also use wetlands and agricultural areas. They will shelter inside gopher tortoise burrows, other animal burrows, stumps, roots, and debris piles. Females may lay from 4 to 12 white eggs as early as April through June, with young hatching in late July through October.

PROTECTED STATUS: The eastern indigo snake is protected by the USFWS, Florida Fish and Wildlife Conservation Commission, and Georgia Department of Natural Resources. Any attempt to kill, harm, harass, pursue, hunt, shoot, wound, trap, capture, collect, or engage eastern indigo snakes is prohibited by the U.S. Endangered Species Act. Penalties include a maximum fine of $25,000 for civil violations and up to $50,000 and/or imprisonment for criminal offenses. Only authorized individuals with a permit (or an Incidental Take Statement associated with a USFWS Biological Opinion) may handle an eastern indigo snake.

Please contact your nearest USFWS Ecological Services Field Office if a live or dead eastern indigo snake is encountered:

Florida Office: (352) 448-9151

Georgia Office: (706) 613-9493

POSTER CONTENT (SPANISH):

ATENCIÓN

¡Especie amenazada, la culebra Índigo del Este, puede ocupar el área!

Matar, herir o hostigar culebras Índigo del Este es estrictamente prohibido bajo la Ley Federal.

SI VES UNA CULEBRA ÍNDIGO DEL ESTE O UNA CULEBRA NEGRA VIVA EN EL ÁREA:

• Pare excavación y permite el movimiento de la culebra fuera del área sin interferir. NO atentes tocar o recoger la culebra.

• Fotografié la culebra si es posible para identificación y documentación.

• Notifique supervisor/agente, y la Oficina de Campo de Servicios Ecológicos del Servicio Federal de Pesca y Vida Silvestre (USFWS) apropiada con información acerca del sitio y condición de la culebra.

• Si la culebra está cerca de un área de construcción que le pueda causar daño, las actividades deben parar hasta un representante del USFWS regrese la llamada (dentro de un día) con más orientación.

SI VES UNA CULEBRA ÍNDIGO DEL ESTE MUERTA EN EL ÁREA:

• Pare excavación. Notifique supervisor/aplicante, y la Oficina de Campo de Servicios Ecológicos apropiada con información acerca del sitio y condición de la culebra.

• Fotografié la culebra si es posible para identificación y documentación.

• Emerge completamente la culebra en agua y congele la especie hasta que personal apropiado de la agencia de vida silvestre la recoja.

DESCRIPCIÓN. La culebra Índigo del Este es una de las serpientes sin veneno más grande en Norte América, alcanzando hasta 8 pies de largo. Su nombre proviene del color azul-negro brilloso de sus escamas, pero pueden tener un color anaranjado-rojizo (color crema en algunos casos) en su mandíbula inferior. No tienden a ser agresivas.

SERPIENTES PARECIDAS. La corredora negra, que es de color negro sólido, es la única otra serpiente que se asemeja a la Índigo del Este. La corredora negra se diferencia por una mandíbula inferior color blanca o crema y un cuerpo más delgado.

HÁBITATS Y ECOLOGÍA. La culebra Índigo del Este vive en una variedad de hábitats, incluyendo tierras secas, humedales, y áreas de agricultura. Ellas buscan refugio en agujeros o huecos de tierra, en especial madrigueras de tortugas de tierra. Las hembras ponen 4 hasta 12 huevos blancos entre abril y junio, y la cría emergen entre julio y octubre.

PROTECCIÓN LEGAL. La culebra Índigo del Este es clasificada como especie amenazada por el USFWS, la Comisión de Conservación de Pesca y Vida Silvestre de Florida y el Departamento de Recursos Naturales de Georgia. Intento de matar, hostigar, herir, lastimar, perseguir, cazar, disparar, capturar, colectar o conducta parecida hacia las culebras Índigo del Este es prohibido por la Ley Federal de Especies en Peligro de Extinción. Penalidades incluyen un máximo de $25,000 por violaciones civiles y $50,000 y/o encarcelamiento por actos criminales. Solos individuales autorizados con un permiso o Determinación de toma incidental (Incidental Take Statement) asociado con una Opinión Biológico del USFWS pueden recoger una Índigo del Este.

Por favor de contactar tu Oficina de Campo de Servicios Ecológicos más cercana si encuentras una culebra Índigo del Este viva o muerta:

Oficina de Florida: (352) 448-9151

Oficina de Georgia: (706) 613-9493

APPENDIX D

Wood Stork Technical Report

WOOD STORK TECHNICAL REPORT

Florida Department of Transportation

District One

SR 710

Limits of Project: from US 441 to L-63N Canal

Okeechobee County, Florida

Financial Management Number: 419344-3-32-01

ETDM Number: 11092

Date: 10/25/2023

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

SR 710 FROM US 441 TO L-63N CANAL OKEECHOBEE COUNTY, FLORIDA FPID NO. 419344-3-32-01

Wood Stork Technical Report

Prepared for
Wantman Group, Inc. and FDOT District One

October 2023

OUR COMMITMENT TO SUSTAINABILITY | ESA helps a variety of public and private sector clients plan and prepare for climate change and emerging regulations that limit GHG emissions. ESA is a registered assessor with the California Climate Action Registry, a Climate Leader, and founding reporter for the Climate Registry. ESA is also a corporate member of the U.S. Green Building Council and the Business Council on Climate Change (BC3). Internally, ESA has adopted a Sustainability Vision and Policy Statement and a plan to reduce waste and energy within our operations. This document was produced using recycled paper.

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Wood Stork Technical Report

Introduction

On March 16, 2017, the Florida Department of Transportation (FDOT) Office of Environmental Management (OEM) granted Location and Design Concept Acceptance (LDCA) for the State Road (SR) 710 Project Development and Environment (PD&E) Study. The project limits are approximately 13 miles from United States Highway (US) 441 in Okeechobee County to County Road (CR) 714 (Southwest Martin Highway) in Martin County. The proposed improvements include widening the existing SR 710 roadway to four-lane and a new four-lane extension of SR 710 from US 441 to SR 70.

On Thursday, August 30, 2018, the FDOT District One held a public hearing for Segment 1 of the original PD&E Study, extending from SR 710 at the L-63N Canal north to the proposed intersection at US 441, a distance of approximately 3.8 miles. This hearing was held to present changes in project design, right-of-way needs, and access management changes made since the FDOT OEM's original LDCA. The public was provided an opportunity to review and provide comments on the project's potential impacts to the social, cultural, natural, and physical environment. The FDOT OEM approved a Design Change and Right of Way Authorization re-evaluation documenting these changes on February 7, 2019.

The proposed roadway improvements being advanced within this re-evaluation generally remain unchanged since the prior February 2019 re-evaluation. The improvements consist of a new four-lane suburban typical section. The roadway includes two 12-feet-wide travel lanes in each direction, separated by a raised grassed median varying from 30 feet to 39 feet wide. The posted speed will be 45 miles per hour (mph). The posted speed will reduce to 40 mph near the new intersection at US 441. The SR 710 extension will include 7 feet bicycle lanes, 6 feet sidewalk along the south side of the roadway, and a 10 feet shared use path along the north side of the roadway. Type E curb and gutter will be provided along the median and outside edges of the roadway with a closed stormwater conveyance system. The SR 710 extension will have new signals at the intersections with US 441, SR 70, and SE 40th Avenue. The project also includes widening the existing SR 710 bridge over the L-63N Canal and a new bridge culvert over Taylor Creek. Acquisition of right-of-way will be required for the new roadway alignment and stormwater ponds.

The current concept proposed for advancement differs from the prior 2019 concept in that approximately one mile of the new SR 710 is being realigned to avoid impacts to the Okeechobee Utility Authority wellfield. Starting approximately 150 feet east of Taylor Creek, the centerline of the road shifts north of the prior alignment, before converging with the original alignment east of the proposed Pond 2 site. There is no change in the proposed roadway typical section. The maximum difference between the two alignments is 275 feet, occurring near Station 536+00. The changes in acreage for the current design is approximately one acre more than the 2018 public hearing concept.

The project is in Okeechobee County, Florida in Sections 9, 10, 11, 13, 14, 15, 16, 24; Township 37 South; Range 35 East (**Figure 1**).

This document details the Biological Assessment for effects on the federally threatened wood stork (*Mycteria americana*) associated with the proposed construction of SR 710 from US 441 to L-63 Canal. This Biological Assessment has been prepared in accordance with Section 7 of the Endangered Species Act of 1973, as amended (Act: ref. 16 U.S.C. 1531 et seq.; 50 CFR 17) to complete consultation with the USFWS.

Species and Habitat Description

The wood stork is a large, long-legged wading bird, with a head to tail length of 85 to 115 cm (33 to 45 inches) and a wingspan of 150 to 165 cm (59 to 65 inches) (Coulter et al. 1999). Typical foraging sites throughout the wood stork's range include freshwater marshes and stock ponds, shallow, seasonally flooded roadside or agricultural ditches, narrow tidal creeks or shallow tidal pools, managed impoundments, and depressions in cypress heads and swamp sloughs. Shallow wetland depressions that concentrate fish, either through local reproduction or through the consequences of drying, may be used as a feeding habitat.

In south Florida, Ogden et al. (1976) found that certain fish species were taken preferentially. Mosquito fish (*Gambusia affinis*) were under-represented in the diet in proportion to abundance, whereas, flagfish (*Jordanella floridae*), sailfin mollies (*Poecilia latipinna*), marsh killifish (*Fundulus confluentus*), yellow bullheads (*Ameiurus natalis*), and sunfish (*Centrarchidae* spp.) were overrepresented. Wood storks also occasionally consume crustaceans, amphibians, reptiles, mammals, birds, and arthropods.

Wood storks forage in wetlands within fifty kilometers (km) of the colony site (Bryan and Coulter 1987), but forage most frequently within 20 km of the colony (Coulter and Bryan 1993). Maintaining this wide range of feeding site options ensures sufficient wetlands of all sizes and varying hydroperiods are available, during shifts in seasonal and annual rainfall and surface water patterns, to support wood storks.

Status

The wood stork was federally listed as endangered on February 28, 1984 (49 FR 7332-7335) but was down-listed as threatened on July 30, 2015 (Federal Register 2014). On February 14, 2023, the USFWS announced the U.S. breeding population of wood storks no longer faces the imminent threat of extinction and proposed to remove the species from the Endangered Species Act.

The wood stork is from northern Argentina, eastern Peru, and western Ecuador north to Central America, Mexico, Cuba, Hispaniola, and the southeastern United States (American Ornithologists' Union 1998). In the United States, wood storks were historically known to nest in all coastal states from Texas to South Carolina (Wayne 1910; Bent 1926; Howell 1932; Oberholser 1938; Dusi and Dusi 1968; Cone and Hall 1970; Oberholser and Kincaid 1974). Dahl (1990) estimates these states lost about thirty-eight million acres, or 45.6%, of their historic wetlands between the 1780s and the 1980s. However, it is important to note that wetlands and wetland losses are not evenly distributed in the landscape. Hefner et al. (1994) estimated 55% of the 2.3 million acres of the wetlands lost in the southeastern United States between the mid-1970s and mid-1980s were in the Gulf-Atlantic

Coastal Flats. These wetlands were strongly preferred by wood storks as nesting habitat. No critical habitat is designated for the wood stork.

Existing Environmental Characteristics

The project is located within the Core Foraging Area (CFA) of two active wood stork nesting colonies, Cypress Creek Bluefield Road and Lemkin Creek which were documented as active in 2019. Cypress Creek Bluefield Road is located approximately 10.6 miles northeast of the project and Lemkin Creek is located approximately 5.2 miles southwest of the project. The USFWS considers the area within 18.6 miles of a nesting colony as the CFA for wood storks in south Florida. The Action Area of this biological assessment includes the project limits and the CFA of two wood stork colonies (**Figure 2**).

The land use / land cover within the project limits were field reviewed. The predominant land use cover includes, Improved Pastures (FLUCFCS 2110) at approximately 33.4% of total cover, Woodland Pastures (FLUCFCS 2130) at approximately 30.3% of total cover, and Unimproved Pasture (FLUCFCS 2120) at approximately 7.6% of total area cover.

Methodology

Impacts to wetlands and surface waters within the project area are subject to state and federal mitigation compensation requirements and, where applicable, wood stork suitable foraging habitat (SFH) mitigation. Wetlands and surface waters considered non-jurisdictional waters are still subject to federal review from the perspective of wood stork SFH impact and mitigation.

The USFWS Wood Stork Foraging Habitat Assessment Methodology was used by FDOT, District 1 to assess wood stork SFH affected by the project. Our analysis of the proposed wetland and surface water impacts has addressed both short and long hydroperiod wetland impacts. Specifically, the USFWS considers short hydroperiod wetlands as those inundated with water less than 180 days per year (i.e., Class 1, Class 2, and Class 3 hydroperiod wetlands), and long hydroperiod wetlands as those inundated greater than 180 days per year (i.e., Class 4, Class 5, Class 6, and Class 7).

Results

The wood stork is known to forage within suitable wetland habitats located throughout the project site. As reflected in **Table 1,** approximately 308,277 acres of wetlands and surface waters containing potential SFH for wood storks occur within the project action area (**Figure 3**). This calculation was based on FLUCFCS mapping completed by SFWMD in 2019 and it excludes land use codes deemed to not provide SFH such as bays and estuaries (FLUCFCS 5400).

The project will result in the loss of approximately 6.68 acres of permanent wetland impacts, and 1.73 acres of surface water impacts, totaling 8.41 acres (**Appendix A**). Of the 8.41 acres, 6.78 acres are considered wood stork SFH. Surface Water 01A, Surface Water 01, and Surface Water 02 totaling acres, are not considered wood stork SFH. Surface Water 02 is a canal system that has steep side slopes and water levels greater than fifteen inches which is outside the hydrological range

to be foraging habitat for wood storks. Surface Water 01A is an existing pond that will be regraded/reshaped and provide similar function in the post construction condition so compensation for impacts is not considered as part of this assessment.

As mentioned above, the Wood Stork Foraging Habitat Assessment Methodology was used to calculate wood stork foraging biomass loss for the 6.78 acres of impact to wood stork SFH associated with the extension of SR 710. It was determined that the permanent impacts will result in 15.00 kg of wood stork foraging biomass. Of this loss 3.25 kg are considered short hydroperiod wetlands (this loss comes from 1.12 acres of Class 2 hydroperiod wetlands, 1.55 acres of Class 3 hydroperiod wetlands) and 11.75 kg are considered long hydroperiod wetlands (this loss comes from 4.11 acres of Class 4 hydroperiod wetlands) (**Table 2**).

Compensation

Mitigation for unavoidable wetland impacts will be provided through purchase of credits from a private, fully permitted (both state and federal) wetland mitigation bank to satisfy all mitigation requirements of Part IV, Chapter 373 F.S., and U.S.C. 1344. Currently, Bluefield Ranch Mitigation Bank is the only bank with available credits that overlaps the project area and provides kilograms (kg) of wood stork prey biomass per credit. Specifically, each wetland credit also provides 2.23 kg of short hydroperiod prey biomass and/or 8.15 kg of long hydroperiod prey biomass compensation.

In total, 3.81 units of functional loss are estimated for jurisdictional wetland impacts. The cumulative wood stork prey biomass gained through the purchase of 3.81 wetland mitigation credits will result in a total gain of approximately 21.46 kg of wood stork prey biomass. Outlined below is the breakdown of wetland mitigation credits and biomass gain, which will more than compensate for the 15.00 kg of anticipated prey biomass loss (**Table 2**).

Bluefield Ranch Mitigation Bank

- 2.19 mitigation credits to be purchased (long hydroperiod) X 8.15 kg prey biomass / credit = 17.85 kg of wood stork prey biomass (6.10 kg more than required)

- 1.62 mitigation credits to be purchased (short hydroperiod) X 2.23 kg prey biomass / credit = 3.61 kg of wood stork prey biomass (0.36 kg more than required)

Surface waters impacts totaling 1.73 acres are composed of two canal systems (Surface Waters 01 and 02), one pond (Surface Water 01A), and one roadside ditch (Other Surface Water 1). The roadside ditch will periodically hold water during rain events, and it does provide wood stork SFH. Surface Waters 01 and 02 have steep side slopes and contain standing water greater than fifteen inches deep; therefore, these systems do not provide appropriate wood stork foraging habitat. Surface Water 01A is an existing pond that will be regraded/reshaped and provide similar function in the post construction condition so compensation for impacts is not considered as part of this assessment. Furthermore, the proposed project will result in the creation of stormwater management facilities to treat water flowing from impervious areas. These stormwater management areas include dry retention ponds, wet retention ponds, and swales/ditches. The dry retention ponds and swales will have ditch bottoms set at an elevation at least one foot above seasonal high ground

water. The wet retention ponds will contain littoral areas along the pond edges set at an elevation of six inches above and two inches below seasonal high ground water. These stormwater management systems will provide foraging habitat for the wood stork that compensates for any functions provided by the impacted surface waters.

Effect Determination

Mitigation for the loss of wood stork foraging habitat will be provided by credit purchase from a state and federal approved wetland mitigation bank (Bluefield Ranch Mitigation Bank). A portion of the mitigation bank's service area falls within the CFA of the wood stork colonies affected by the project. It is anticipated that credits purchased for wetland mitigation will compensate for the loss of wood stork prey due to the proposed project. Therefore, it is anticipated that the proposed project may affect, but is not likely to adversely affect the wood stork.

References

American Ornithologists' Union. 1998. Checklist of North American birds. 7th ed. Am. Ornithol. Union, Washington, D.C.

Bent, A.C. 1926. Life histories of North American Marsh Birds. U.S. Natural Museum Bulletin 135. 392 pp

Bryan, A.L., Jr., and M.C. Coulter. 1987. Foraging Characteristics of Wood Storks in East-Central Georgia, U.S.A. Colonial Waterbirds 10(2):157-161.

Cone, W.C., and J.V. Hall. 1970. Wood ibis found nesting in Okeefenokee Refuge. Oriole 35:14

Coulter, M.C. and A.L. Bryan, Jr. 1993. Foraging Ecology of Wood storks (Mycteria americana) in East Central Georgia: Characteristics of foraging sites. Colonial Waterbirds 16:59 70.

Coulter, M.C., J.A. Rodgers, J.C. Ogden, and F.C. Depkin. 1999. Wood stork (Mycteria americana). In: The Birds of North America, No. 409 9A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.

Dahl, T.E. 1990. Wetlands losses in the United States 1780s to 1980s. U.S. Department of the Interior, Fish and Wildlife Service; Washington, D.C.

Dusi, J. L., and R. T. Dusi. 1968. Evidence for the Breeding of the Wood Stork in Alabama. Alabama. Birds 16: 14-16.

Federal Register. 2014. Endangered and Threatened Wildlife and Plants; Reclassification of the U.S. Breeding Population of the Wood Stork From Endangered to Threatened; Final Rule. Volume 79, Number 125. Page 37077.

Hefner, J.M., B.O. Wilen, T.E. Dahl, and W.E. Frayer. 1994. Southeast wetlands: Status and trends, Mid-1970s to Mid-1980s. U.S. Department of the Interior, Fish and Wildlife Service, Atlanta, Georgia.

Howell, A. H. 1932. Florida birdlife. Coward McCann, New York.

Oberholser, H. C. 1938. The bird life of Louisiana. Louisiana Dept. Conserv. Bull. 28.

Oberholser, H.C. and E.B. Kincaid, Jr. 1974. The bird life of Texas. University of Texas Press; Austin, Texas.

Ogden, J.C., J.A. Kushlan, and J.T. Tilmant. 1976. Prey Selectivity by the Wood Stork. Condor 78(3):324-330.

USFWS. 2011. Biological Opinion Nubbin Slough Stormwater Treatment Area Intake Design Refinement. Service Federal Activity Code 04EF2000-2012-CPA-023, Service Consultation Code 04EF2000-2012-0001.

USFWS. 2013. Biological Opinion SR 70 from Northeast 31st Avenue to East of Northeast 80th Avenue. Service Federal Activity Code 2007-FA-1378, Service Consultation Code 2007-F-0905.

USFWS. 2013. Wood Stork Foraging Habitat Assessment Methodology.

Wayne, A. T. 1910. Birds of South Carolina. Contribution to the Charleston Museum No. 1, Charleston, South Carolina.

Figures

PROJECT LOCATION

Begin Project

End Project

POLK
OSCEOLA
INDIANRIVER
OKEECHOBEE
STLUCIE
HIGHLANDS
GLADES
MARTIN
PALMBEACH

Okeechobee County Airport
Okeechobee
Taylor Creek
Blue Heron Golf Club
Okeechobee Battlefield Historic State Park
Amtrak
CSX Transportation

US Highway 98 N
US Highway 441 N
US 441 S
State Road 70 E
State Road 710 E

NW 36th St
NW 34th St
NW 23rd Ln
NW 18th St
NW 9th St
NW 4th St
NW Park St
SW 4th St
SW 16th St
SW 15th St
SW 28th St
SW 32nd St
SW 33rd Cir
SW 35th
NE 12th St
SE 8th St
SE 24th Blvd
SE 25th St
SE 26th St
SE 27th St
SE 28th St
SE 28th St SE 32nd St
SE 59th Blvd

NW 46th Ave
NW 42nd Ave
NW 35th Ave
NW 34th Ave
NW 33rd Ave
NW 32nd Ave
NW 31st Ave
NW 23rd Ave
NW 21st Ave
NW 20th Ave
NW 18th Ave
NW 17th Ave
NW 10th Ter
NW 9th Ave
SW 48th Ave
SW 12th Ave
SW 11th Ave
SW 10th Ave
SW 7th Ave
SW 5th Ave
SW 2nd Ave
SW 3rd Ave
SW 24th Ave
SW 12th Ter
SW 32nd Ave
SE 8th Ave
SE 9th Ave
SE 32nd Ave
SE 40th Ave
NE 48th Ave
NE 55th Ter
NE 40th Ave
NE 32nd Ave
NE 16th Ave
NE 64th Ave
NE 70th Ave
SE 26th Trl
SE 67th Way

700
98
70
441

Figure 1 - Project Location

SR 710 from US 441 to L-63N Canal
FPID #: 419344-3-32-01
Okeechobee County, Florida

0 3,000 6,000 9,000 Feet

N

Data Source:
- Wantman Group
Imagery Source:
- ESRI Streets

Date: 06/26/2023 PM: RM GIS Analyst: GB Map Document: 2316_loc_tms_20170726.mxd Project Number: 0023.16.10.01 PDF Document: Figure1_Project_Location_2023/6/23_GB.pdf Plot Size: 11x17

Project Location

WOOD STORK NESTING COLONIES

WOOD STORK CORE FORAGING AREAS (ACTION AREA)

Cypress Creek Bluefield Road

Lemkin Creek

Date: 06/26/2023 PM, RM GIS Analyst: GB Map Document: 23.16_wood_stork_colony_tms_20170727.mxd Project Number: 002316.20 C PDF Document: Figure2_USFWS_WoodStorkCFA_20230623_GB.pdf Plot Size: 11x17

Figure 2 - Wood Stork Action Area and Nesting Colonies

SR 710 from US 441 to L-63N Canal
FPID #: 419344-3-32-01
Okeechobee County, Florida

0 22,000 44,000 66,000 Feet

Data Source:
- Wantman Group
- USFWS

Imagery Source:
- ESRI Streets

N

Project Location
WOOD STORK NESTING COLONIES
WOOD STORK CORE FORAGING AREA (ACTION AREA)
WETLANDS
SURFACE WATERS

Cypress Creek Bluefield Road
Lemkin Creek

Lorida
Lake Istokpoga
Lake June in Winter
Lake Placid
Lakes
Venus
Highlands Glades
Palmdale
Okeechobee
Brighton Reservation
Indiantown
Port St Lucie
Lakewood Park
St Lucie
Fort Pierce
Indian River Estates
Jensen Beach
Stuart
Palm City
Martin
Palm Beach

Figure 3 - Wetland Habitats Within the Wood Stork Action Area

SR 710 from US 441 to L-63N Canal
FPID #: 419344-3-32-01
Okeechobee County, Florida

0 22,000 44,000 66,000 Feet

Data Source:
- Wantman Group
- USFWS
- SFWMD

Imagery Source:
- ESRI Streets

N

Tables

Table 1. Wetland Habitats within the Project Action Area

Land Cover Code	Land Cover Description	Acreage
5110	Natural River, Stream, Waterway	1169.91
5120	Channelized Waterways, Canals	6,884.74
5200	Lakes	146,873.28
5300	Reservoirs	14,692.66
5410	Bays and Estuaries	136.70
5600	Slough Waters	158.68
6110	Bay Swamps	1,307.36
6120	Mangrove Swamp	406.07
6170	Mixed Wetland Hardwoods	12,344.14
6172	Mixed Shrubs	15,969.15
6180	Cabbage Palm Wetland	2,099.90
6191	Wet Melaleuca	28.40
6200	Wetland Coniferous Forests	7.70
6210	Cypress	3,672.56
6215	Cypress- Domes/Heads	341.94
6216	Cypress - Mixed Hardwoods	3,678.45
6240	Cypress - Pine - Cabbage Palm	88.31
6250	Wet Pinelands Hydric Pine	551.67
6300	Wetland Forested Mixed	2,285.88
6410	Freshwater Marshes / Graminoid Prairie - Marsh	66,887.63
6411	Freshwater Marshes-Sawgrass	753.35
6420	Saltwater Marshes / Halophytic Herbaceous Prairie	5.47
6430	Wet Prairie	8,905.70
6440	Emergent Aquatic Vegetation	19,027.42
Total		**308,277.07**

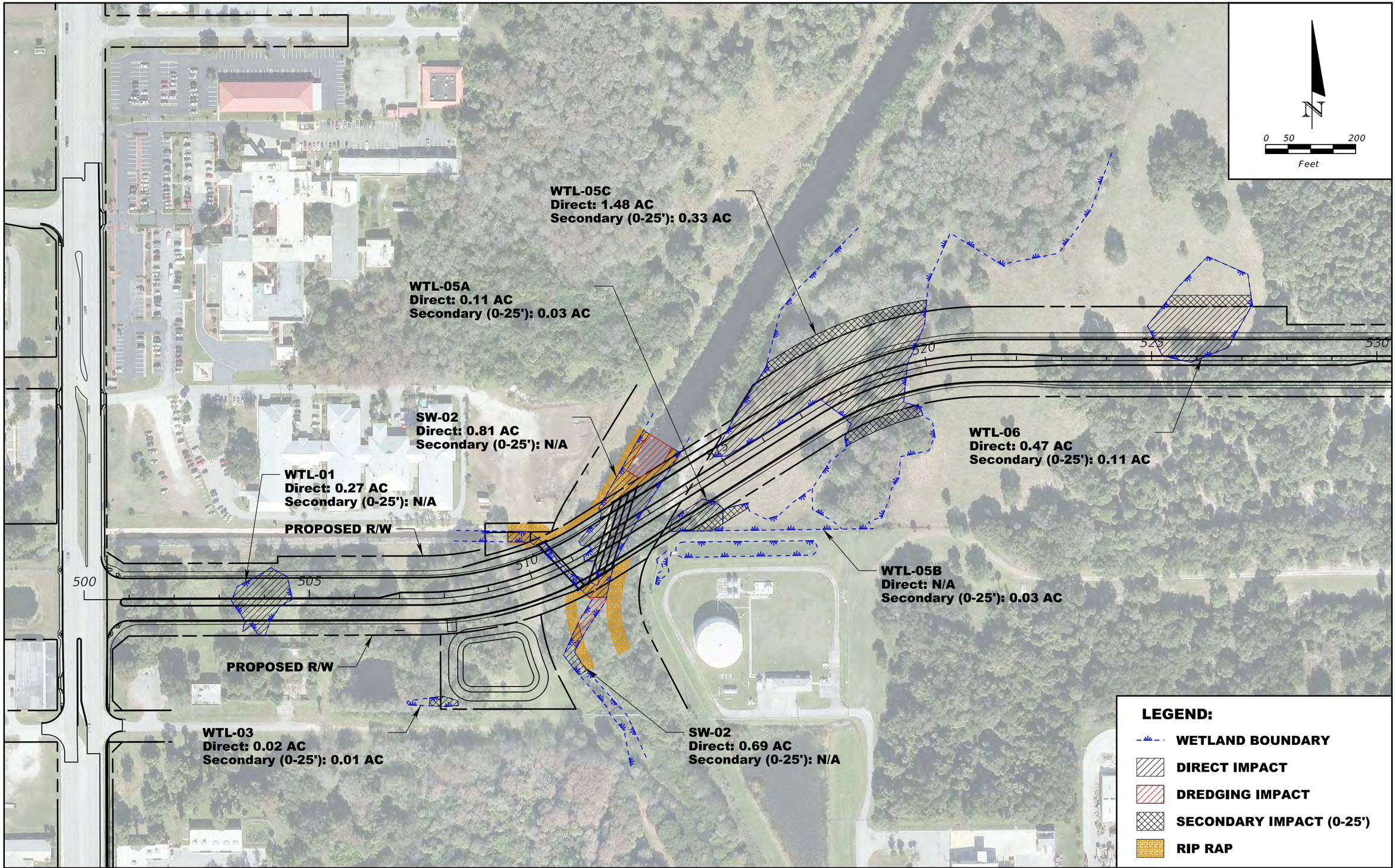
Table 2. Wood Stork Prey Biomass Loss Per Wetland Impact Area

Wetland ID	Type	Hydroperiod Classification	Impact Area (acres)	Percent Exotics	Biomass loss (kg)
WTL-01	Herbaceous	Class 3 (120-180 days)	0.27	0-25	0.47
WTL-03	Herbaceous	Class 3 (120-180 days)	0.02	25-50	0.02
WTL-05A	Forested	Class 2 (60-120 days)	0.11	75-90	0.00
WTL-05C	Forested	Class 4 (180-240 days)	1.48	0-25	4.55
WTL-06	Herbaceous	Class 2 (60-120 days)	0.47	0-25	0.38
WTL-08	Forested	Class 2 (60-120 days)	0.51	0-25	0.42
WTL-09	Herbaceous	Class 4 (180-240 days)	0.81	25-50	1.60
WTL-09A	Herbaceous	Class 2 (60-120 days)	0.03	0-25	0.02
WTL-10	Herbaceous	Class 3 (120-180 days)	0.39	25-50	0.43
WTL-11	Herbaceous	Class 4 (180-240 days)	0.01	25-50	0.02
WTL-12	Herbaceous	Class 4 (180-240 days)	0.71	0-25	2.19
WTL-13	Herbaceous	Class 4 (180-240 days)	0.67	0-25	2.06
WTL-15	Herbaceous	Class 4 (180-240 days)	0.16	0-25	0.49
WTL-17	Forested	Class 3 (120-180 days)	0.87	0-25	1.51
WTL-18	Forested	Class 4 (180-240 days)	0.17	0-25	0.52
OSW-1	Herbaceous	Class 4 (180-240 days)	0.10	0-25	0.31
Total Wood Stork Prey Biomass Loss					**15.00**

Note: Values are subject to rounding effects

Appendix A

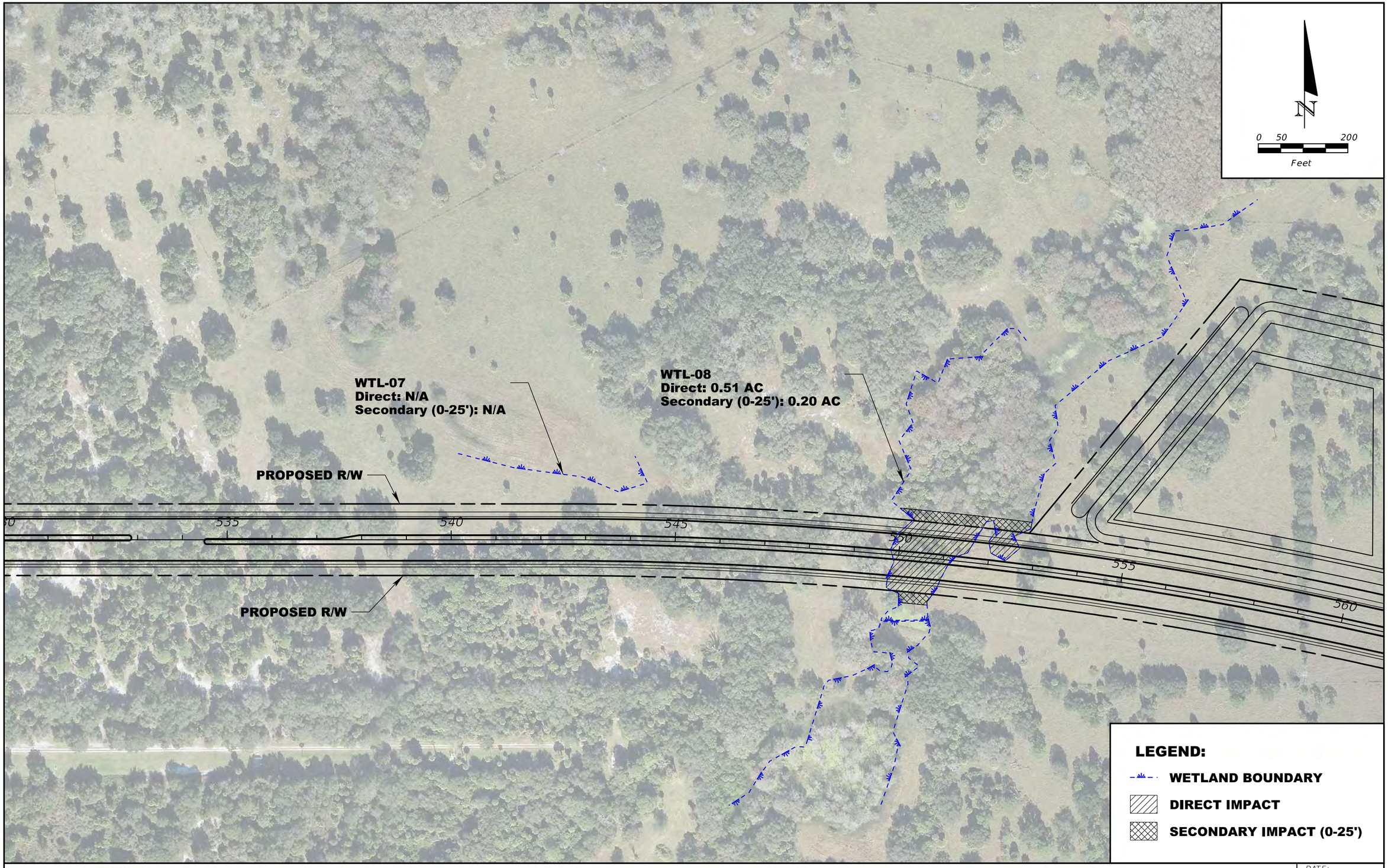
Wetland Impact Map – Direct and Secondary Effects



FDOT

Wetland Impact Map - Direct and Secondary Effects
SR 710
US 441 to L-63N Canal
Okeechobee County

DATE: 10/05/2023
FPID: 419344-3-52-01
SCALE 1 inch = 200 feet



FDOT

Wetland Impact Map - Direct and Secondary Effects
SR 710
US 441 to L-63N Canal
Okeechobee County

DATE: 10/05/2023
FPID: 419344-3-52-01
SCALE 1 inch = 200 feet

N

0 50 200

Feet

WTL-09A
Direct: 0.03 AC
Secondary (0-25'): 0.11 AC

PROPOSED R/W

565 570 575 580 585 590

PROPOSED R/W

WTL-09
Direct: 0.81 AC
Secondary (0-25'): 0.13 AC

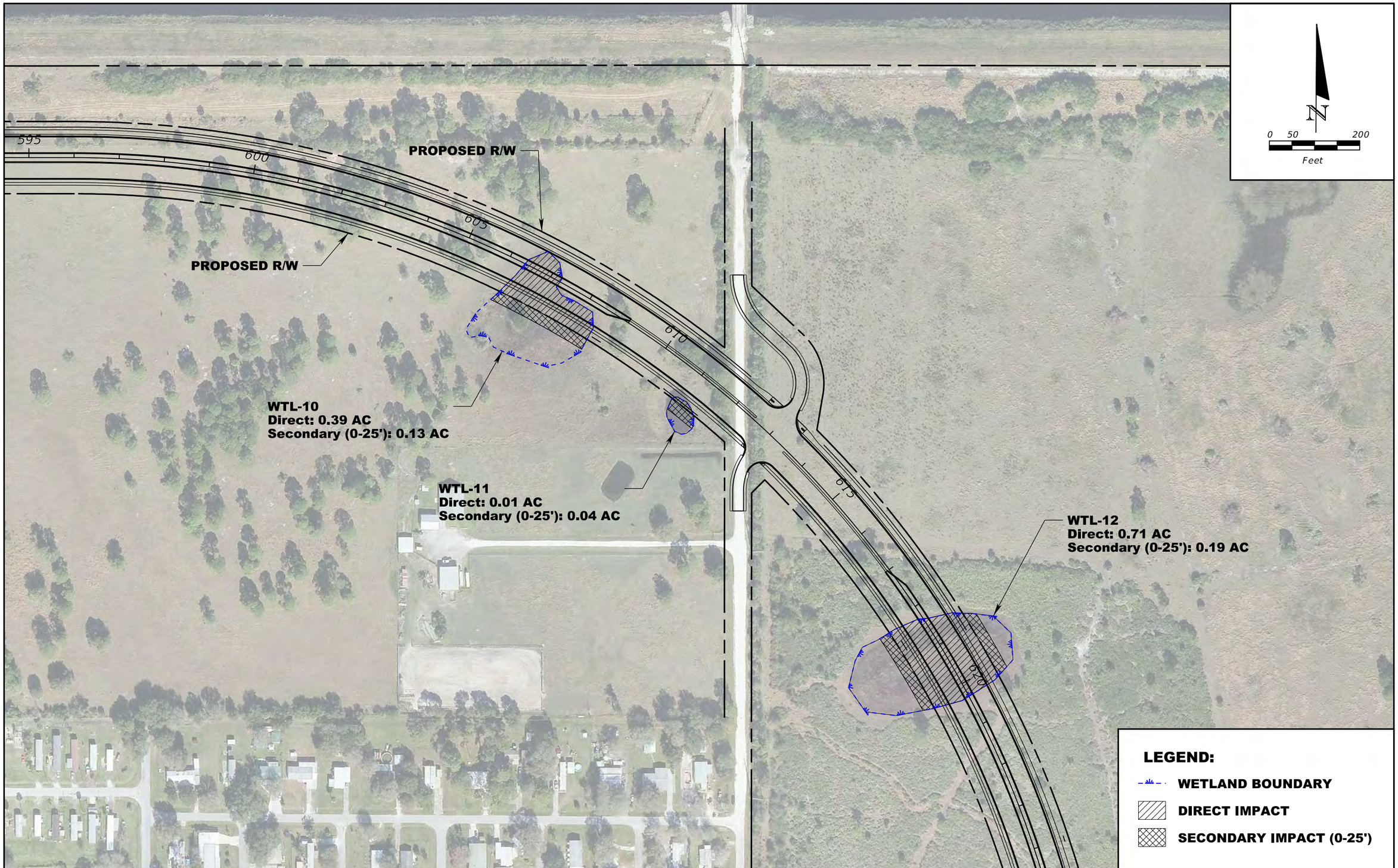
LEGEND:

- WETLAND BOUNDARY
- DIRECT IMPACT
- SECONDARY IMPACT (0-25')

FDOT

Wetland Impact Map - Direct and Secondary Effects
SR 710
US 441 to L-63N Canal
Okeechobee County

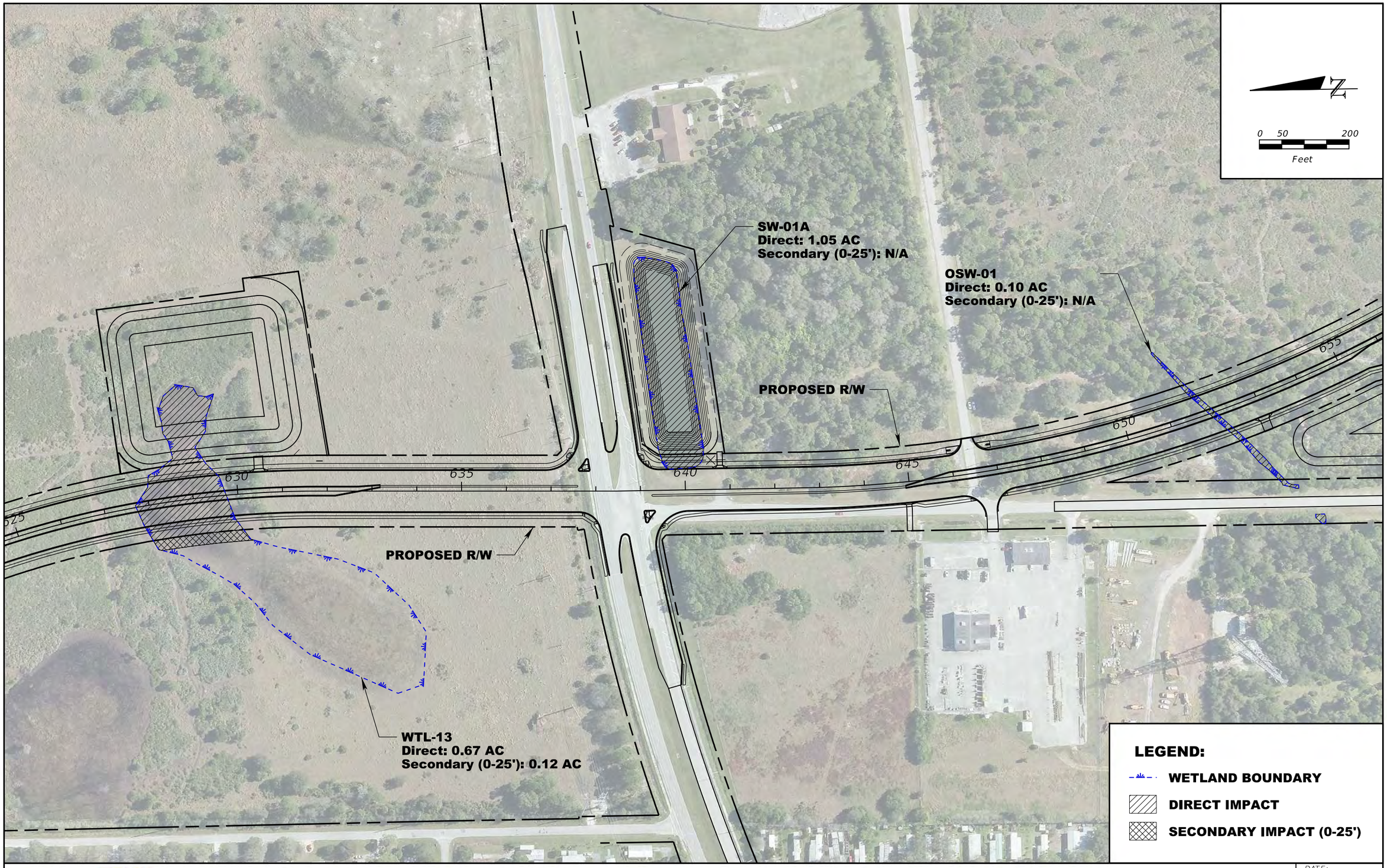
DATE: 10/05/2023
FPID: 419344-3-52-01
SCALE 1 inch = 200 feet



FDOT

Wetland Impact Map - Direct and Secondary Effects
SR 710
US 441 to L-63N Canal
Okeechobee County

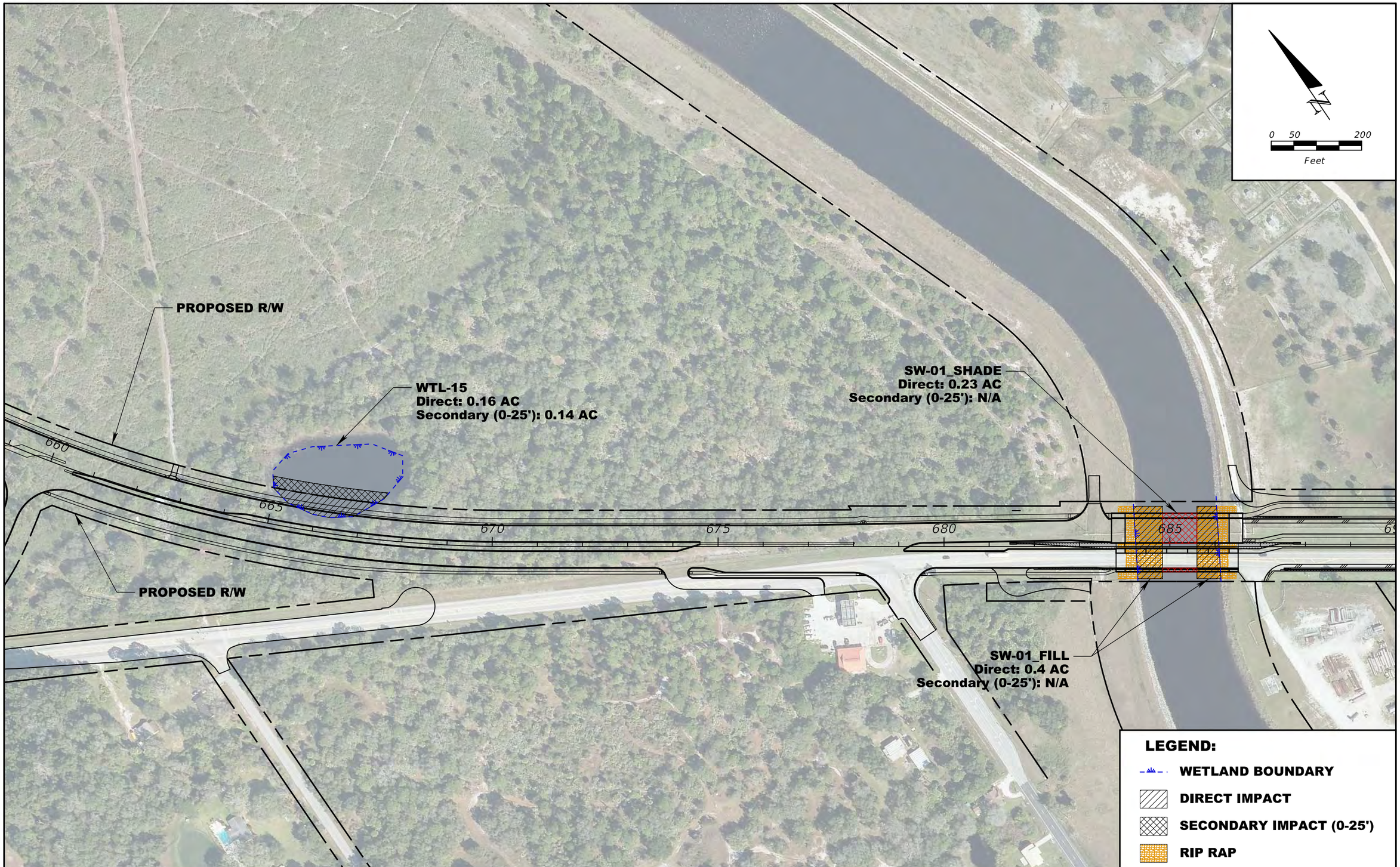
DATE: 10/05/2023
FPID: 419344-3-52-01
SCALE 1 inch = 200 feet
4 of 7



FDOT

Wetland Impact Map - Direct and Secondary Effects
SR 710
US 441 to L-63N Canal
Okeechobee County

DATE: 10/05/2023
FPID: 419344-3-52-01
SCALE 1 inch = 200 feet



FDOT

Wetland Impact Map - Direct and Secondary Effects
SR 710
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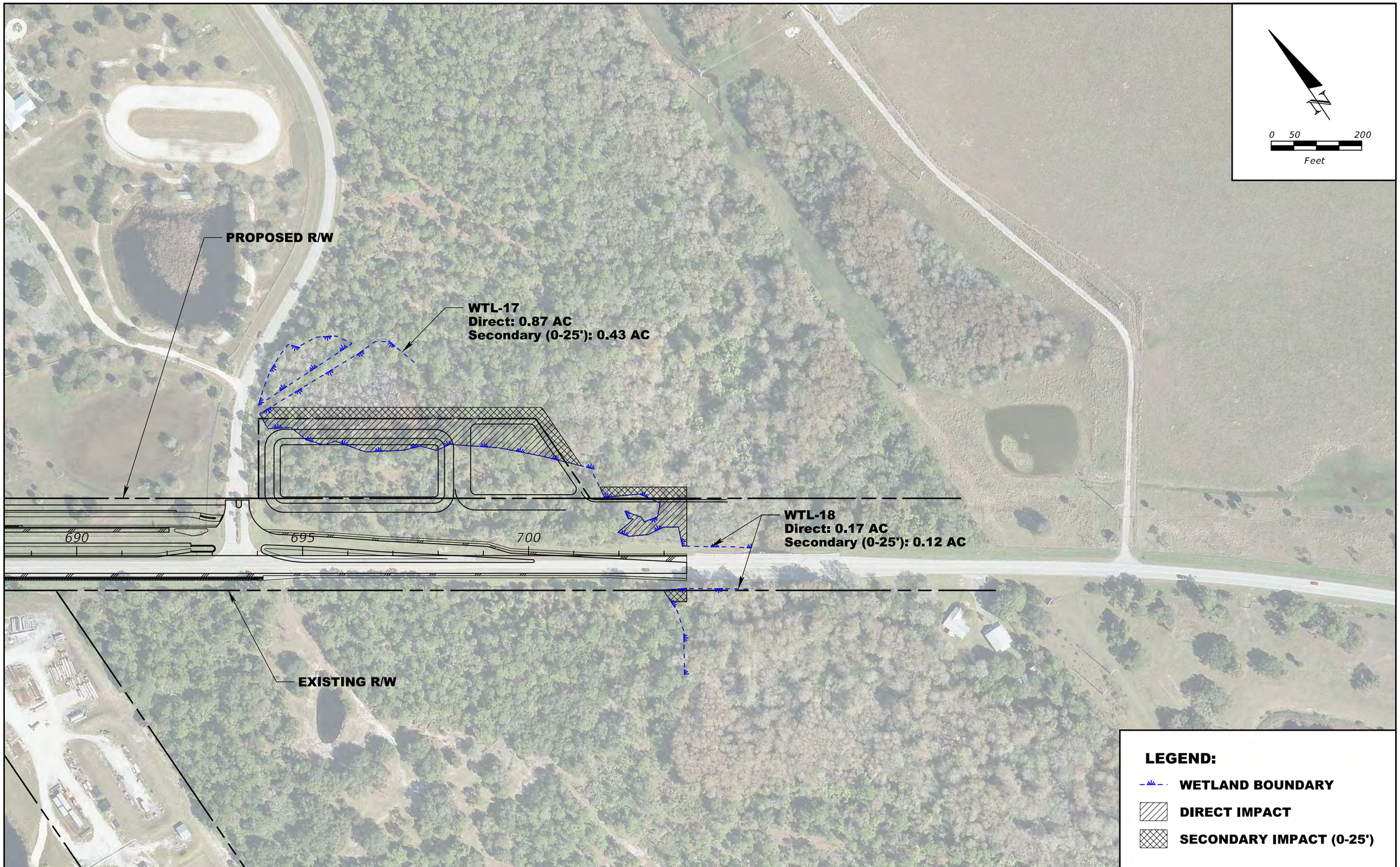
Okeechobee County

DATE: 10/05/2023
FPID: 419344-3-52-01
SCALE 1 inch = 200 feet



FDOT

Wetland Impact Map - Direct and Secondary Effects
SR 710
US 441 to L-63N Canal
Okeechobee County

DATE:	10/05/2023
FPID:	419344-3-52-01
SCALE	1 inch = 200 feet
	7 of 7

APPENDIX E

Audubon's Crested Caracara Survey
Technical Report

AUDUBON'S CRESTED CARACARA SURVEY TECHNICAL REPORT

Florida Department of Transportation

District One

Design Services for SR 710

Limits of Project: From US 441 to L-63N Canal

Okeechobee County, Florida

Financial Management Number: 419344-3

ETDM Number: 11092

Date: 10/09/2023

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

SR 710 FROM US 441 TO L-63N CANAL
OKEECHOBEE COUNTY, FLORIDA
FPID NO. 419344-3
Audubon's Crested Caracara Survey Technical Report

Prepared for
FDOT, District 1

October 2023

Prepared by
Environmental Science Associates
5404 Cypress Center Drive, Suite 125
Tampa, FL 33609

Prepared on behalf of
Wantman Group, Inc.
800 N Magnolia Avenue, Suite 1750
Orlando, FL 32803

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SR 710 FROM US 441 TO L-63N CANAL

Audubon's Crested Caracara Survey Technical Report

Introduction

On March 16, 2017, the Florida Department of Transportation (FDOT) Office of Environmental Management (OEM) granted Location and Design Concept Acceptance (LDCA) for the State Road (SR) 710 Project Development and Environment (PD&E) Study. The project limits are approximately 13 miles from United States Highway (US) 441 in Okeechobee County to County Road (CR) 714 (Southwest Martin Highway) in Martin County. The proposed improvements include widening the existing SR 710 roadway to four-lane and a new four-lane extension of SR 710 from US 441 to SR 70.

On Thursday, August 30, 2018, the FDOT District One held a public hearing for Segment 1 of the original PD&E Study, extending from SR 710 at the L-63N Canal north to the proposed intersection at US 441, a distance of approximately 3.8 miles. This hearing was held to present changes in project design, right-of-way needs, and access management changes made since the FDOT OEM's original LDCA. The public was provided an opportunity to review and provide comments on the project's potential impacts to the social, cultural, natural, and physical environment. The FDOT OEM approved a Design Change and Right of Way Authorization re-evaluation documenting these changes on February 7, 2019.

The proposed roadway improvements being advanced within this re-evaluation generally remain unchanged since the prior February 2019 re-evaluation. The improvements consist of a new four-lane suburban typical section. The roadway includes two 12-feet-wide travel lanes in each direction, separated by a raised grassed median varying from 30 feet to 39 feet wide. The posted speed will be 45 miles per hour (mph). The posted speed will reduce to 40 mph near the new intersection at US 441. The SR 710 extension will include 7 feet bicycle lanes, 6 feet sidewalk along the south side of the roadway, and a 10 feet shared use path along the north side of the roadway. Type E curb and gutter will be provided along the median and outside edges of the roadway with a closed stormwater conveyance system. The SR 710 extension will have new signals at the intersections with US 441, SR 70, and SE 40th Avenue. The project also includes widening the existing SR 710 bridge over the L-63N Canal and a new bridge culvert over Taylor Creek. Acquisition of right-of-way will be required for the new roadway alignment and stormwater ponds.

The current concept proposed for advancement differs from the prior 2019 concept in that approximately one mile of the new SR 710 is being realigned to avoid impacts to the Okeechobee Utility Authority wellfield. Starting approximately 150 feet east of Taylor Creek, the centerline of the road shifts north of the prior alignment, before converging with the original alignment east of

the proposed Pond 2 site. There is no change in the proposed roadway typical section. The maximum difference between the two alignments is 275 feet, occurring near Station 536+00. The changes in acreage for the current design is approximately one acre more than the 2018 public hearing concept.

The project is in Okeechobee County, Florida in Sections 9, 10, 11, 13, 14, 15, 16, 24; Township 37 South; Range 35 East (**Figure 1**).

This technical report summarizes the methods and results of a species-specific survey for the federally threatened Audubon's crested caracara (Polyborus plancus audubonii). The project limits fall within the U.S. Fish and Wildlife Service (USFWS) Audubon's crested caracara consultation area (CA); therefore, there is the potential for this species' habitat to be impacted. This survey was conducted in accordance with the 2016 Crested Caracara Draft Survey Protocol-Additional Guidance (2016-2017 Breeding Season).

Species Information

Species and Habitat Description

The Audubon's crested caracara is a large, boldly patterned raptor with a crest, naked face, heavy bill, elongated neck, and long legs. It has a body length of about 50-60 centimeters (cm) (20-24 inches) and a wingspan of about 124 cm (50 inches). The adult is blackish-brown on the crown, upper abdomen, rump, wings, and thighs. The lower part of the head, throat, upper breast, lower abdomen, and undertail coverts are white or cream. The lower breast has blackish barring with a buff background color. The back is also heavily barred with black and white. The tail is white with 11 to 14 narrow dark crossbars and a broad terminal band; there are conspicuous white patches in the outer part of the wing in flight. The bill is bluish-gray which contrasts with the bright yellow facial skin, which turns reddish-orange when flushed with blood. The legs and feet are deep yellow. Juveniles have a similar color pattern but are brownish and buff with the breast and upper back streaked instead of barred. In addition, facial skin of juveniles is pinkish in color and the legs are gray.

Caracaras inhabit open xeric to mesic habitats. Its preferred habitat is native dry or wet prairie with associated marshes, cabbage palm (*Sabal palmetto*), and cabbage palm-live oak (*Quercus virginiana*) hammocks. Native prairie habitats have been greatly reduced in Florida through construction of housing developments and conversion to improved pasture, consequently caracaras frequently utilize unimproved and improved pastures.

Adult caracaras maintain and defend large territories, usually with their mates. Breeding activity can occur between September and June with the primary season being November through April. Suitable nest trees are an important component of caracara habitat. Cabbage palms are most frequently utilized followed by live oaks, cypress (*Taxodium* spp.*),* and occasionally Australian pine (*Casuarina* spp.*)* and black gum (*Nyssa sylvatica*). Caracaras usually construct their nests 12-50 feet above the ground and consist primarily of woven vines trampled to form a depression (Humphrey and Morrison 1997). Caracara pairs sometimes have two or three alternate nest trees

that may be used in different years or for a second nesting effort within the first year. All nest trees are typically situated in the same general vicinity, usually within 0.3 miles of each other.

Caracaras forage extensively on the ground with a foraging range average of 3,000 acres and a radius of approximately one mile. Caracaras are opportunistic feeders with a diet consisting of carrion as well as a wide variety of live invertebrate and vertebrate prey. This species also closely follows agricultural equipment to capitalize on prey that may be exposed during agricultural activities. Agricultural drainage ditches, cattle ponds, roadside ditches, and other shallow water features also provide good feeding areas for caracaras (Morrison 2001). Within native habitats, caracaras regularly scavenge in recently burned areas and forage along the margins of wetlands within dry prairie communities.

Status

The Audubon's crested caracara is a federally designated threatened species by the USFWS and protected by the Endangered Species Act (ESA), as amended (16 U.S.C. 1531 et seq.) and the Migratory Bird Treaty Act. No Critical Habitat has been designated for this species.

The decline of the caracara in Florida is primarily due to habitat loss. In particular, the optimal habitat for caracaras, dry prairie, has been largely destroyed or modified for agriculture and residential development. Additionally, previous regulatory mechanisms did not adequately prevent the destruction or modification of the caracara's habitat, located mainly on private land. Both factors led to the federal listing of the species.

In order to reduce the potential for nest abandonment and loss of eggs and small chicks from human disturbance, the USFWS recommends that a primary and secondary protection zone be placed around nest trees (2004 Species Conservation Guidelines South Florida). The primary zone encompasses a 360-degree area extending 300 meters (984 feet) outward from the nest tree. Morrison (2001) found that the adult caracaras are most sensitive to human disturbance during incubation or early nesting stages if the source of disturbance is within 300 meters (984 feet) from the nest tree. Year-round restrictions in the primary zone typically include activities such as alteration to pasture, wetlands, nest trees, and other vegetation, as well as construction of buildings, roads, power lines or canals, changes in land management activities, and chemical applications that are harmful to wildlife. Nesting season limitations within the primary zone include normal agricultural activities (only until nestlings fledge), human entry, and low flyovers by aircraft.

A 360-degree secondary zone is recommended as a foraging protection zone and extends 1,500 meters (4921 feet) outward from the nest tree. Conservation measures for this zone include maintaining pasture, grassland, and wetlands (including ditches and canals) that are necessary for caracara foraging habitat. Conversion of pasture and wetland habitats in this zone to row crops, sugarcane, citrus groves, pine plantations or hardwood forest may adversely affect caracaras. The use of chemicals toxic to wildlife including pesticides, fertilizers, or herbicides should be limited as they may impact the food supply available for caracaras. Normal ranching and agricultural operations (including sod farming), hiking, bird watching, fishing, camping, picnicking, hunting, and recreational off-road vehicle use are allowed within the secondary zone.

Methodology

Preliminary Data Collection

A comprehensive literature and GIS database search was conducted for the project action area (1,500-meter (4921 feet) buffer of the project boundary) to determine if the Audubon's crested caracara was previously documented within the project limits and if suitable habitat was available. The literature and database search included standard references such as the Rare and Endangered Biota of Florida Series, Florida Geographic Data Library (FGDL) GIS databases, as well as the Florida Fish and Wildlife Conservation Commission (FWC) and USFWS lists of protected species and their GIS databases.

Based on this preliminary protected species effort, caracara findings include the following:

- The project falls within the USFWS Audubon's crested caracara CA;
- No critical habitat has been designated for the caracara;
- Suitable foraging and nesting habitat was identified within the project boundary (proposed ROW) and outside the project boundary;
- Caracaras were documented flying, feeding, and perching in the vicinity of the project area in the PD&E Study during the 2013 nesting season;
- In 2005 and 2009-2011 caracara nest trees were documented within the South Florida Water Management District (SFWMD)-managed Lake Okeechobee Water Retention Phosphorus Removal project site, approximately 3.12 miles east of the SR 710 project boundary (2011 USFWS Biological Opinion Nubbin Slough STA Intake Design Refinement);
- In 2018, the nearest caracara nest tree was documented for the SR 70 widening from NE 31st Avenue to east of NE 80th Avenue project. The nest tree was documented in 2010 and was approximately 2.91 miles northeast of the SR 710 project (2013 USFWS Biological Opinion State Road 70 From Northeast 31st Avenue to East of Northeast 80th Avenue); therefore, will not be affected; and
- Caracaras were documented flying, feeding, and perching in the vicinity of the project area in the 2018 survey season. No breeding pairs or nesting activities were observed during the 2018 survey season.

Existing Environmental Characteristics

Natural/biological features and land use within the survey boundary were initially reviewed using the 2017 Florida Land Use, Cover and Forms Classification System (FLUCFCS) Geographic Information System (GIS) data layer available from the South Florida Water Management District (SFWMD) and which was subsequently field verified. A 1,500-meter (4921 feet) secondary zone buffer of the survey boundary, which comprises the project action area for this species, was created and improved pastures (FLUCFCS 2110 ~ 34%) is the predominant land cover, followed by woodland pastures (FLUCFCS 2130 ~ 10%). The remaining land use categories with significant coverage in this survey area include: fixed single family units (FLUCFCS 1210 ~ 7%), mixed wetland hardwoods (FLUCFCS 6170 ~ 6%), commercial and services (FLUCFCS 1400 ~ 5%), and open land (FLUCFCS 1900 ~ 5%). Additional suitable habitat utilized by caracaras for nesting

include unimproved pastures (FLUCFCS 2120 ~3%), herbaceous (dry prairie) (FLUCFCS 3100 ~ <1%), shrub and brushland (FLUCFCS 3200 ~1%), upland hardwood forests (FLUCFCS 4200 ~1%), and oak-cabbage palm forest (FLUCFCS 4271 ~ <1%). **Figure 2** depicts the land uses within the 1,500-meter (4921 feet) buffer. Land use within the project limit is heavily impacted due to agricultural activities such as growing row crops, cattle grazing, and citrus farming.

Field Survey Methodology

Project biologists examined current aerial photographic imagery and field-verified 2017 SFWMD FLUCFCS data to identify appropriate areas to survey for caracara nests. The 1,500-meter (4921 feet) survey boundary buffer was used to identify any potential nests that would have a primary and/or secondary protection zone that overlaps with the proposed project.

Six survey stations were established which allowed for a field of view that included potential caracara nesting trees. Determination of survey stations was based upon potential available nesting habitat, area of visibility, and suitable foraging habitat. Field surveys were conducted bi-weekly; each included field surveys in the morning as per the 2016 USFWS Crested Caracara Draft Survey Protocol – Additional Guidance (2016-2017 Breeding Season) (December 2016). Each survey event was conducted over a two or more-day period in the same week. Field surveys were conducted from January 4 through April 26, 2023. Surveys began fifteen minutes before sunrise and continued for three hours, as per the guidance. For each survey event, a team of one or two field biologists monitored a pre-determined survey station from a vehicle or on foot. Typically, each person worked individually and routinely assessed the project area to the greatest extent possible and monitored areas that had suitable nesting and/or foraging habitat in the vicinity. Survey efforts were focused in open pastures which provide the best foraging habitat for the species in the survey boundary. Survey stations and observation blocks are presented in **Figure 3**. Crested caracara observer experience is documented in **Table 1**.

Caracara datasheets were used to record observations (**Appendix A**). The datasheets document information on the number of individuals, age class, and activity during observation periods as well as other wildlife observations.

Results

Potential foraging habitat for the species was identified throughout the project landscape. Pastureland, dry prairies and open lands, lightly wooded areas, and roadways (which provide carrion) offer foraging opportunities for the species and are all present within the project area. Potential nesting habitat for the species was also identified within the project area; specifically, pastureland and dry prairies with scattered cabbage palms. Within the immediate roadway footprint, only minimal potential nesting habitat was observed which consists of scattered cabbage palms and oaks in the region of the new alignment.

Caracaras were observed at Stations 1, 4, and 6. The other stations did not have any caracara observations. Individual caracaras were recorded, and the results are presented in **Figure 4.** USFWS Caracara Survey Forms are provided in **Appendix A** and a summary of the survey data is documented in **Table 2**. Photos documenting the representative field of view at each survey station

are in **Appendix B**. The faunal species observed during the Audubon's crested caracara surveys are documented in **Table 3**.

The first observation of a caracara was on January 10, 2023, when one adult caracara was observed at Station 6, flying from the southeast, landing in the road to scavenge carrion, and then flying northeast out of sight. Individual caracaras were also observed several times throughout the field surveys on January 26, 2023; February 1, 7, 16, 2023; March 3, 2023; and April 3, 2023. No nesting behavior was observed and no nests of the Audubon crested caracara were documented during the field surveys.

Conclusion

Caracaras were observed during species-specific field surveys at Stations 1, 4, and 6. Caracara observations included individuals flying away from the project area to pasture areas, scavenging on carrion, and perching on posts. No territorial behaviors, mating behaviors, or nest building activities were observed at Stations 1, 4, or 6, during the caracara survey season. Based upon caracara flight patterns and behaviors, it is unlikely that the project limits contain any active caracara nests, nor is the project likely located within the 300-meter (984 feet) primary zone buffer or 1,500-meter (4921 feet) secondary zone buffer of any active caracara nests. Therefore, it was determined that the proposed project may affect, but is not likely to adversely affect the Audubon's crested caracara.

References

Humphrey, S.R., and J. L. Morrison. 1997. Habitat Associations, Reproduction, and Foraging Ecology of Audubon's Crested Caracaras in South-Central Florida. Final Report. Florida Game and Freshwater Fish Commission (Florida Fish and Wildlife Conservation Commission) Nongame Program Project No. NG91-007 (August 8, 1997).

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

USFWS. 2004. Species Conservation Guidelines, South Florida: Audubon's Crested Caracara.

USFWS. 2011. Biological Opinion Nubbin Slough Stormwater Treatment Area Intake Design Refinement. Service Federal Activity Code 04EF2000-2012-CPA-023, Service Consultation Code 04EF2000-2012-0001.

USFWS. 2013. Biological Opinion SR 70 from Northeast 31st Avenue to East of Northeast 80th Avenue. Service Federal Activity Code 2007-FA-1378, Service Consultation Code 2007-F-0905.

USFWS. 2016. USFWS Crested Caracara Draft Survey Protocol-Additional Guidance (2016-2017 Breeding Season).

FIGURES

PROJECT LOCATION

Begin Project

End Project

POLK
OSCEOLA
INDIANRIVER
OKEECHOBEE
STLUCIE
HIGHLANDS
GLADES
MARTIN
PALMBEACH

Okeechobee County Airport
Okeechobee
Taylor Creek
Blue Heron Golf Club
Okeechobee Battlefield Historic State Park
Amtrak
CSX Transportation

US Highway 98 N
US Highway 441 N
US 441 S
State Road 70 E
State Road 710 E

NW 36th St
NW 34th St
NW 23rd Ln
NW 18th St
NW 9th St
NW 4th St
NW Park St
SW 4th St
SW 16th St
SW 15th St
SW 28th St
SW 32nd St
SW 33rd Cir
SW 35th
SE 28th St
SE 32nd St
NE 12th St
SE 24th Blvd
SE 25th St
SE 26th St
SE 27th St
SE 28th St
SE 59th Blvd
SE 8th St

NW 46th Ave
NW 42nd Ave
NW 35th Ave
NW 34th Ave
NW 33rd Ave
NW 32nd Ave
NW 31st Ave
NW 23rd Ave
NW 21st Ave
NW 20th Ave
NW 18th Ave
NW 17th Ave
NW 10th Ter
NW 9th Ave
N Parrott Ave
SW 48th Ave
SW 12th Ave
SW 11th Ave
SW 10th Ave
SW 7th Ave
SW 5th Ave
SW 2nd Ave
SW 3rd Ave
SW 24th Ave
SW 12th Ter
SE 8th Ave
SE 9th Ave
SE 32nd Ave
SE 40th Ave
NE 48th Ave
NE 55th Ter
NE 40th Ave
NE 32nd Ave
NE 16th Ave
NE 64th Ave
NE 70th Ave
SE 26th Trl
SE 67th Way

700
98
70
441

Figure 1 - Project Location

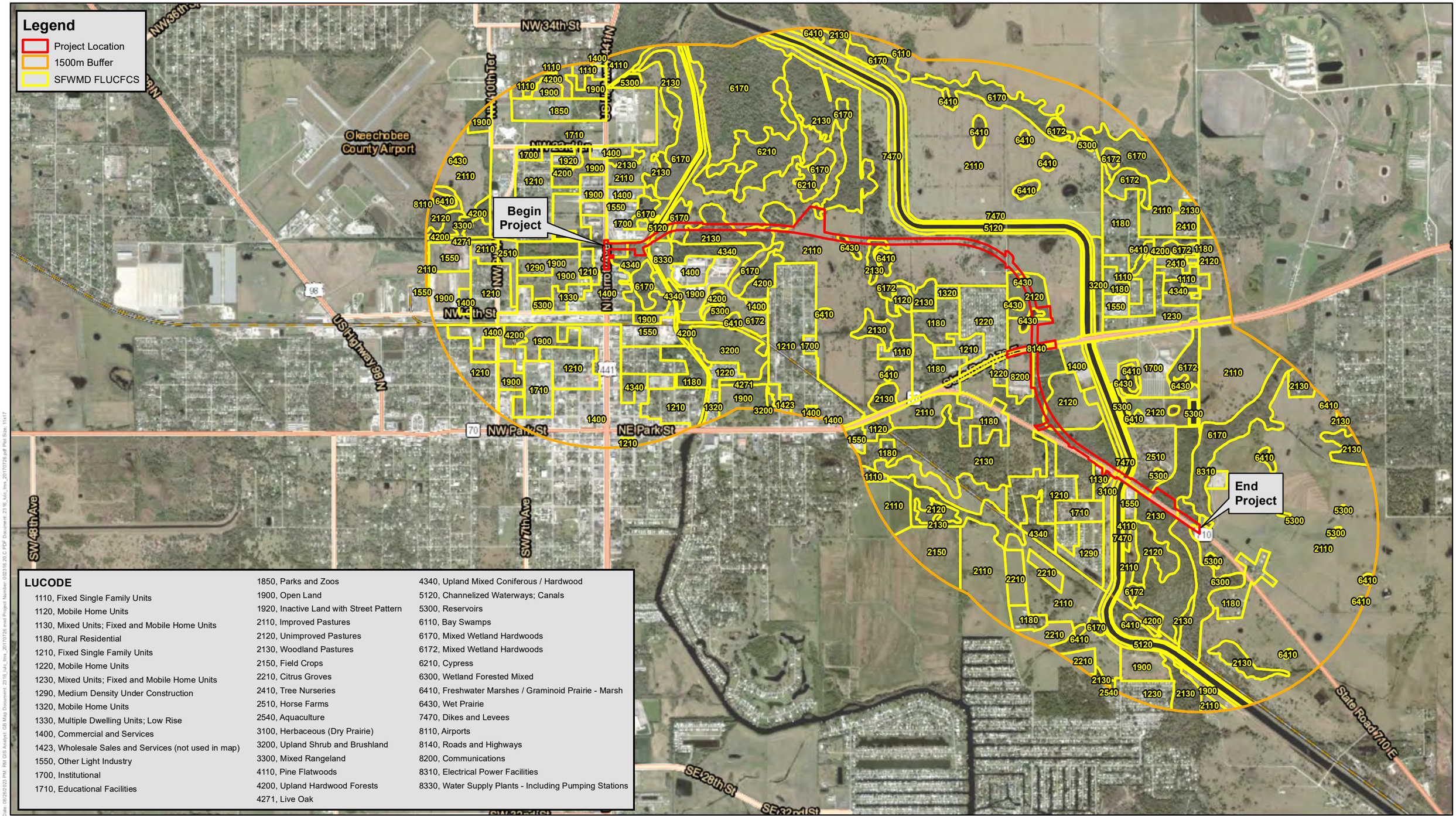
SR 710 from US 441 to L-63N Canal
FPID #: 419344-3-32-01
Okeechobee County, Florida

0 3,000 6,000 9,000 Feet

N

Data Source:
- Wantman Group
Imagery Source:
- ESRI Streets

Date: 06/26/2023 PM: RM GIS Analyst: GB Map Document: 2316_loc_tms_20170726.mxd Project Number: 0023.16.10.01 PDF Document: Figure1_Project_Location_2023/6/23_GB.pdf Plot Size: 11x17



LUCODE

- 1110, Fixed Single Family Units
- 1120, Mobile Home Units
- 1130, Mixed Units; Fixed and Mobile Home Units
- 1180, Rural Residential
- 1210, Fixed Single Family Units
- 1220, Mobile Home Units
- 1230, Mixed Units; Fixed and Mobile Home Units
- 1290, Medium Density Under Construction
- 1320, Mobile Home Units
- 1330, Multiple Dwelling Units; Low Rise
- 1400, Commercial and Services
- 1423, Wholesale Sales and Services (not used in map)
- 1550, Other Light Industry
- 1700, Institutional
- 1710, Educational Facilities
- 1850, Parks and Zoos
- 1900, Open Land
- 1920, Inactive Land with Street Pattern
- 2110, Improved Pastures
- 2120, Unimproved Pastures
- 2130, Woodland Pastures
- 2150, Field Crops
- 2210, Citrus Groves
- 2410, Tree Nurseries
- 2510, Horse Farms
- 2540, Aquaculture
- 3100, Herbaceous (Dry Prairie)
- 3200, Upland Shrub and Brushland
- 3300, Mixed Rangeland
- 4110, Pine Flatwoods
- 4200, Upland Hardwood Forests
- 4271, Live Oak
- 4340, Upland Mixed Coniferous / Hardwood
- 5120, Channelized Waterways; Canals
- 5300, Reservoirs
- 6110, Bay Swamps
- 6170, Mixed Wetland Hardwoods
- 6172, Mixed Wetland Hardwoods
- 6210, Cypress
- 6300, Wetland Forested Mixed
- 6410, Freshwater Marshes / Graminoid Prairie - Marsh
- 6430, Wet Prairie
- 7470, Dikes and Levees
- 8110, Airports
- 8140, Roads and Highways
- 8200, Communications
- 8310, Electrical Power Facilities
- 8330, Water Supply Plants - Including Pumping Stations

Figure 2 - Land Use Within the 1500-Meter Buffer Map

SR 710 from US 441 to L-63N Canal
FPID #: 419344-3-32-01
Okeechobee County, Florida

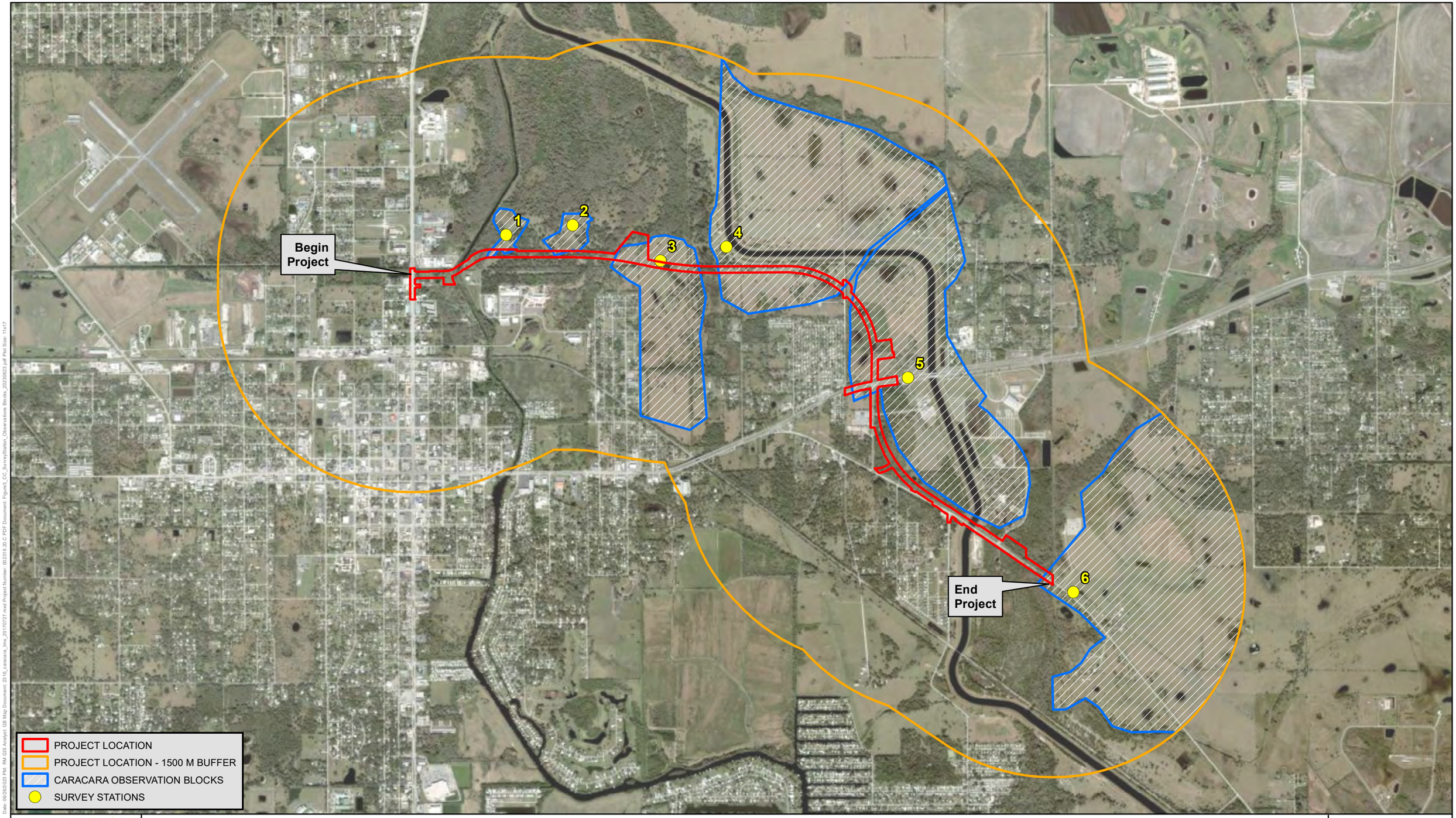
0 2,200 4,400 6,600 Feet

Data Source:
- Wantman Group
- SFWMD

Imagery Source:
- ESRI Aerial Imagery

N

Date: 06/26/2023 PM: RM GIS Analyst: GB Map Document: 23116_lulc_tms_20170726.mxd Project Number: 0/23/16 20.C PDF Document: 23116_lulc_tms_20170726.pdf Plot Size: 11x17



Date: 06/26/2023 PM: RM GIS Analyst: GB Map Document: 2316_caracara_ims_20170727.mxd Project Number: 002316.20 C PDF Document: Figure3_CC_SurveyStation_Observation_Blocks_20230623.pdf Plot Size: 11x17

FDOT

All data within this map are supplied as is, without warranty. This product has not been prepared for legal, engineering, or survey purposes. Users of this information should review or consult the primary data sources to ascertain the usability of the information.

Figure 3 - Crested Caracara Survey Stations and Observation Blocks

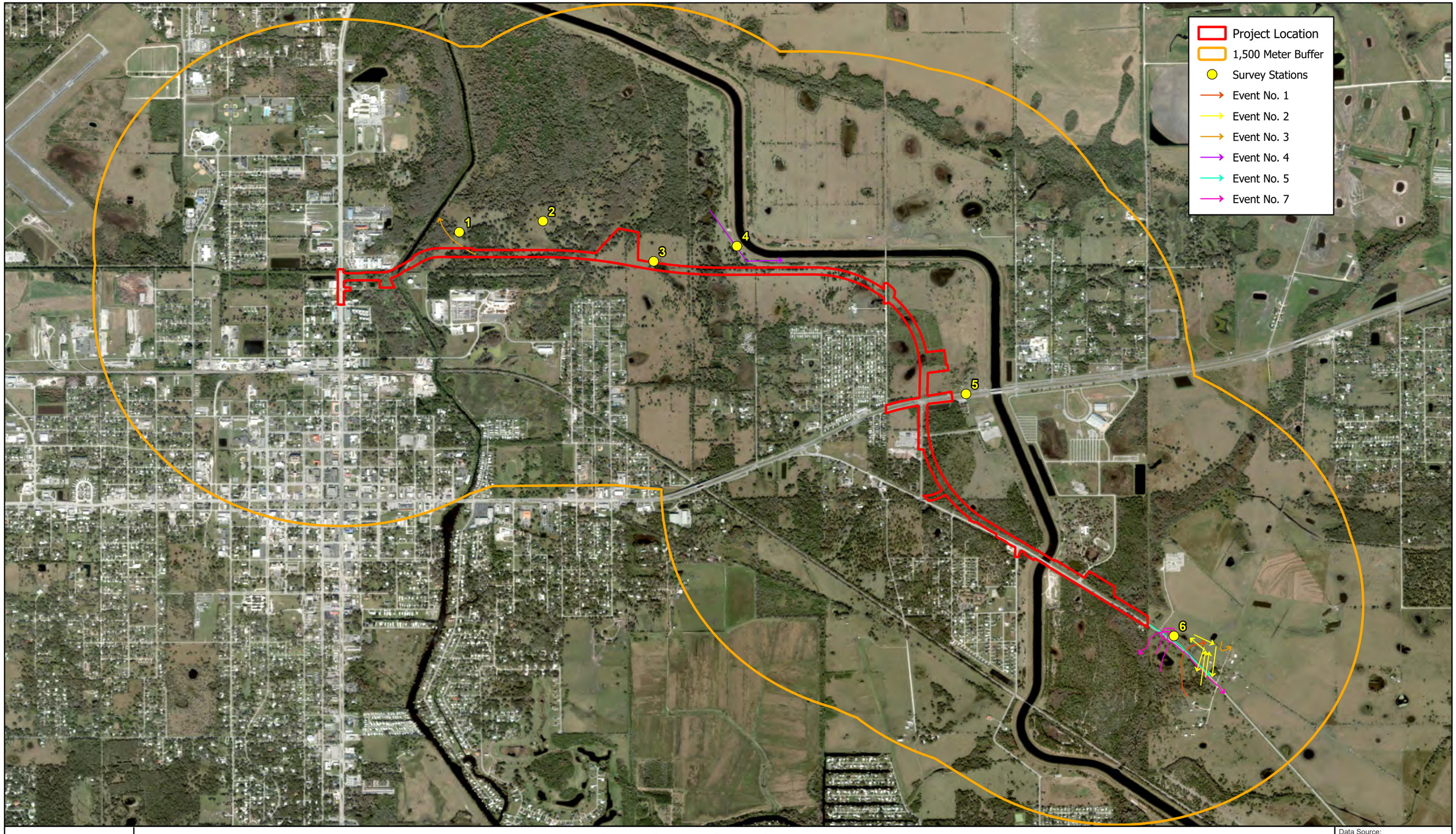
SR 710 from US 441 to L-63N Canal
FPID #: 419344-3-32-01
Okeechobee County, Florida

0 2,000 4,000 6,000 Feet

Data Source:
- Wantman Group
- ESA Scheda

Imagery Source:
- ESRI Aerial Imagery

N



Date: 06/26/2023 PM, RM GIS Analyst: GB Map Document: SR_710_Caracara.mxd Project Number: 002316.20 C PDF Document: Figure4_CC_Flight_Path_Exhibit_20230623_GB Plot Size: 11x17

FDOT

All data within this map are supplied as is, without warranty. This product has not been prepared for legal, engineering, or survey purposes. Users of this information should review or consult the primary data sources to ascertain the usability of the information.

Figure 4 - Crested Caracara Survey Stations and Flight Paths

SR 710 from US 441 to L-63N Canal
FPID #: 419344-3-52-01
Okeechobee County, Florida

0 0.5 1 Miles

Data Source:
-ESA
-Wantman Group
Imagery Source:
-ESRI Aerial Imagery

N

TABLES

Table 1. Crested Caracara Observer Experience

Name	Primary Observor	Total Hours of Experience	Number of Caracara Nests Previously Found
Craig Stout	Primary	336	4
Maurice Pearson	Primary	300	3
Susan Shaw	Primary	283	4
Tori Kuba	Primary	211	3
Zack Yawn	Primary	48	1
Emily Keenan	Primary	41	0

Table 2. Summary of Caracara Survey Data

Event No.	Bi-Weekly Survey Period	Survey Station	Survey Date	Time	Number of Caracaras Observed	Activity Observed
1	January 1, 2023 to January 10, 2023	Survey Station 1	January 5, 2023	N/A	0	No Caracara observed
		Survey Station 2	January 5, 2023	N/A	0	No Caracara observed
		Survey Station 3	January 4, 2023	N/A	0	No Caracara observed
		Survey Station 4	January 4, 2023	N/A	0	No Caracara observed
		Survey Station 5	January 10, 2023	N/A	0	No Caracara observed
		Survey Station 6	January 10, 2023	7:34 AM	1	Adult flies from SE, lands in road to scavenge carrion, then flies NE out of sight
2	January 16, 2023 to January 29, 2023	Survey Station 1	January 19, 2023	N/A	0	No Caracara observed
		Survey Station 2	January 19, 2023	N/A	0	No Caracara observed
		Survey Station 3	January 18, 2023	N/A	0	No Caracara observed
		Survey Station 4	January 18, 2023	N/A	0	No Caracara observed
		Survey Station 5	January 25, 2023	N/A	0	No Caracara observed
		Survey Station 6	January 26, 2023	8:50 AM	1	Adult flies from S to feed among vultures in a pasture and then flies S out of sight
				10:02-10:20 AM	1	Adult flies from S to feed among vultures in a pasture, spent time perched on a post and flying around the pasture, and then flies S out of sight
3	January 30, 2023 to February 12, 2023	Survey Station 1	February 1, 2023	10:01 AM	1	Adult transitioning from SE of station and continued NW out of sight
		Survey Station 2	February 1, 2023	N/A	0	No Caracara observed
		Survey Station 3	January 31, 2023	N/A	0	No Caracara observed
		Survey Station 4	January 31, 2023	N/A	0	No Caracara observed
		Survey Station 5	February 6, 2023	N/A	0	No Caracara observed
		Survey Station 6	February 7, 2023	7:10 AM	1	Adult flew from the ground, circled the cattle, and landed on a snag
4	February 13, 2023 to February 26, 2023	Survey Station 1	February 15, 2023	N/A	0	No Caracara observed
		Survey Station 2	February 15, 2023	N/A	0	No Caracara observed
		Survey Station 3	February 16, 2023	N/A	0	No Caracara observed
		Survey Station 4	February 16, 2023	7:38 AM	1	Adult flew W to E to a pine tree and then proceeded E out of sight
		Survey Station 5	February 20, 2023	N/A	0	No Caracara observed
		Survey Station 6	February 21, 2023	N/A	0	No Caracara observed
5	February 27, 2023 to March 12, 2023	Survey Station 1	February 28, 2023	N/A	0	No Caracara observed
		Survey Station 2	February 28, 2023	N/A	0	No Caracara observed
		Survey Station 3	March 1, 2023	N/A	0	No Caracara observed
		Survey Station 4	March 1, 2023	N/A	0	No Caracara observed
		Survey Station 5	March 7, 2023	N/A	0	No Caracara observed
		Survey Station 6	March 8, 2023	7:24 AM	1	Adult flying and scanning the road from W to E
6	March 13, 2023 to March 26, 2023	Survey Station 1	March 15, 2023	N/A	0	No Caracara observed
		Survey Station 2	March 15, 2023	N/A	0	No Caracara observed
		Survey Station 3	March 16, 2023	N/A	0	No Caracara observed
		Survey Station 4	March 16, 2023	N/A	0	No Caracara observed
		Survey Station 5	March 20, 2023	N/A	0	No Caracara observed
		Survey Station 6	March 21, 2023	N/A	0	No Caracara observed
7	March 27, 2023 to April 9, 2023	Survey Station 1	March 28, 2023	N/A	0	No Caracara observed
		Survey Station 2	March 28, 2023	N/A	0	No Caracara observed
		Survey Station 3	March 29, 2023	N/A	0	No Caracara observed
		Survey Station 4	March 29, 2023	N/A	0	No Caracara observed
		Survey Station 5	April 5, 2023	N/A	0	No Caracara observed
		Survey Station 6	April 3, 2023	8:01 AM	1	Adult flew North from the pasture and perched in a pine. Flew from the pine to carrion on SR 710 on the West bound lane. Continued back and forth from pine to carrion to avoid traffic. Flew South out of site at 8:12 AM.
				8:44 AM	1	Adult flew S of the pasture to a fence post adjacent to carrion in the Northern ROW. Fed on carrion and then took it to the pasture. Flew back to carrion on the road and took it to the pine. Flew from the pine east along SR710 out of sight.
8	April 10, 2023 to April 23, 2023	Survey Station 1	April 12, 2023	N/A	0	No Caracara observed
		Survey Station 2	April 12, 2023	N/A	0	No Caracara observed
		Survey Station 3	April 13, 2023	N/A	0	No Caracara observed
		Survey Station 4	April 13, 2023	N/A	0	No Caracara observed
		Survey Station 5	April 18, 2023	N/A	0	No Caracara observed
		Survey Station 6	April 19, 2023	N/A	0	No Caracara observed
9	April 24, 2023 to May 7, 2023	Survey Station 1	April 25, 2023	N/A	0	No Caracara observed
		Survey Station 2	April 25, 2023	N/A	0	No Caracara observed
		Survey Station 3	April 26, 2023	N/A	0	No Caracara observed
		Survey Station 4	April 26, 2023	N/A	0	No Caracara observed
	Note stations 5 and 6 have eight surveys due to starting the second week of January.					

Table 3. Listed and Non-Listed Wildlife Species Observed

Scientific Name	Common Name	FWC Status	USFWS Status
BIRDS			
Agelaius phoeniceus	Red-winged blackbird		
Aix sponsa	Wood duck		
Anas fulvigula	Mottled duck		
Anas discors	Blue-winged teal duck		
Anhinga anhinga	Anhinga		
Anser caerulescens	Snow goose		
Antigone canadensis pratensis	Florida sandhill crane	T	
Aramus guarauna	Limpkin		
Ardea alba	Great egret		
Ardea herodias	Great blue heron		
Baeolophus bicolor	Tufted titmouse		
Bombycilla cedrorum	Cedar waxwing		
Branta canadensis	Goose		
Bubo virginianus	Great horned owl		
Bubulcus ibis	Cattle egret		
Buteo jamaicensis	Red-tailed hawk		
Buteo lineatus	Red-shouldered hawk		
Butorides striata	Green backed heron		
Cardinalis cardinalis	Northern cardinal		
Cathartes aura	Turkey vulture		
Charadrius vociferus	Killdeer		
Charadrium wilsonia	Wilson's plover		
Circus hudsonius	Northern harrier		
Colaptes auratus	Northern flicker		
Colinus virginianus	Northern bobwhite		
Columbina passerina	Common ground dove		
Coragyps atratus	Black vulture		
Corvus brachyrhynchos	American crow		
Corvus ossicfragus	Fish crow		
Cyanocitta cristata	Blue jay		
Dendrocygna autumnalis	Black-bellied whistling duck		
Dryobates pubescens	Downy woodpecker		
Dryocopus pileatus	Pileated woodpecker		
Dumetella carolinensis	Gray catbird		
Egretta caerulea	Little blue heron	T	
Egretta thula	Snowy egret		
Elanoides forficatus	Swallow-tailed kite		
Eudocimus albus	American white ibis		
Gallinago delicata	Wilson's snipe		
Gallinago gallinago	Common snipe		
Gallinula chloropus	Common moorhen		
Haemorhouse mexicanus	House finch		
Haliaeetus leucocephalus	Bald eagle		*
Hirundo rustica	Barn swallow		
Lanius ludovicianus	Loggerhead shrike		
Leucophaeus atricilla	Laughing gull		
Megaceryle alcyon	Belted kingfisher		
Melanerpes carolinus	Red-bellied woodpecker		
Melanerpes erythrocephalus	Red-headed woodpecker		
Meleagris gallopavo	Wild turkey		

Table 3. Listed and Non-Listed Wildlife Species Observed

Scientific Name	Common Name	FWC Status	USFWS Status
Mimus polyglottos	Northern mockingbird		
Miniotilta varia	Black-and-white warbler		
Molothrus ater	Brown-headed cowbird		
Mycteria americana	Wood stork	T	T
Myiarchus crinitus	Great crested flycatcher		
Pandion haliaetus	Osprey		
Passer montanus	Tree sparrow		
Pelecanus occidentalis	Brown pelican		
Peucaea aestivalis	Bachman's sparrow		
Phalacrocorax auritus	Double-crested cormorant		
Pipilo erythrophthalmus	Eastern towhee		
Platalea ajaja	Roseate spoonbill	T	
Plegadis falcinellus	Glossy ibis		
Podilymbus podiceps	Pied-billed grebe		
Poecile carolinensis	Carolina chickadee		
Polioptila caerulea	Blue-gray gnatcatcher		
Polyborus plancus audubonii	Audubon's crested caracara	T	T
Progne subis	Purple martin		
Quiscalus major	Boat-tailed grackle		
Quiscalus quiscula	Common grackle		
Regulus calendula	Ruby-crowned kinglet		
Sayornis phoebe	Eastern phoebe		
Setophaga americana	Northern parula		
Setophaga coronata	Yellow-rumped warbler		
Setophaga palmarum	Palm warbler		
Sitta pusilla	Brown-headed nuthatch		
Streptopelia decaocto	Eurasian collared dove		
Strix varia	Barred owl		
Sturnella magna	Eastern meadowlark		
Sturnus vulgaris	European starling		
Tachycineta bicolor	Tree swallow		
Thryothorus ludovicianus	Carolina wren		
Toxostoma rufum	Brown thrasher		
Tringa flavipes	Lesser yellowlegs		
Troglodytes aedon	House wren		
Turdus migratorius	American robin		
Vireo grideus	White-eyed vireo		
Zenaida macroura	Mourning dove		
Zonotrichia albicollis	White-throated sparrow		

Table 3. Listed and Non-Listed Wildlife Species Observed

Scientific Name	Common Name	FWC Status	USFWS Status
REPTILES			
Alligator mississippiensis	American alligator	T(S/A)	T (S/A)
MAMMALS			
Didelphis virginiana	Virginia opossum		
Lontra canadensis	American river otter		
Odocoileus virginianus	White-tailed deer		
Oryctolagus cuniculus	Rabbit		
Procyon lotor	Racoon		
Sciurus carolinensis	Grey squirrel		
Sus scrofa	Wild boar		

E = Endangered
T = Threatened
SSC = Species of Special Concern
* Protected by Bald and Golden Eagle Protection Act

Appendix A

Audubon's Crested Caracara Field Datasheets

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: 710

Location/Observation Block/Lat-Long: STA #1

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/5/23	0710	1015	C STONE QUALIFIED

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0710	70	5/SSW	30	CIRRUS & STRATUS	MINIMAL
Finish: 1015	77	13/SW	60	STRATUS	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
WOODED PASTURE WITH OPEN GRASS AREAS & FORESTED WETLANDS - ACTIVE CATTLE GRAZING VEG - LIVE OAK, CYPRESS, BRAZ PEP, CABBAGE PALM, LAUREL OAK, BAHIA, BEAUTY BERRY, DOG FENNEL, ANDROPOGON

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
NO CARACARA OBSERVATIONS			

1/5/23
STA #1

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
OSPREY BALD EAGLE WHITE IBIS GRAY CATBIRD	VOCALIZING IN TREE TRANSITIONING FROM NORTH TO EAST TRANSITIONING FROM NORTH TO SW VOCALIZING IN TREE/SHRUBS
PILEATED WOODPECKER BLACK BELLIED WHISTLING DUCK LITTLE BLUE HERON DOUBLE CRESTED CORMORANT	VOCALIZING IN TREE TRANSITIONING FROM NE TO WEST TRANSITIONING FROM WEST TO SE TRANSITIONING FROM WEST TO EAST
SNOWY EGRET TREE SWALLOW TURKEY VULTURE BLUE JAY	TRANSITIONING FROM SW TO NE FORAGING IN AIR. TRANSITIONING FROM SW TO NE VOCALIZING IN TREE
MOURNING DOVE GREAT BLUE HERON RED SHOULDER HAWK RED BELLIED WOODPECKER	TRANSITIONING FROM SW TO NE TRANSITIONING FROM NORTH TO SOUTH VOCALIZING IN TREE VOCALIZING IN TREE
PALM WARBLERS CAROLINA WREN BLUE GRAY GNATCATCHER AMERICAN ROBIN	TRANSITIONING FROM SOUTH TO NORTH VOCALIZING IN TREE/SHRUBS FORAGING IN TREE TRANSITIONING FROM NORTH TO SE
COMMON GRACKLE CATTLE EGRET AMERICAN CROW NORTHERN CARDINAL	TRANSITIONING FROM WEST TO NE FORAGING ON GROUND TRANSITIONING FROM SE TO NW VOCALIZING IN TREE/SHRUBS
EASTERN PHOEBE KILLDEER BARRED OWL	LOAFING/PERCHED IN TREE TRANSITIONING/VOCALIZING FROM SE TO NOR VOCALIZING IN TREE

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: 710

Location/Observation Block/Lat-Long: STATION 2

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/5/2023	705 AM	1015 PM	SUSAN SHAW, QUALIFIED

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 705	70F	5/SSW	20	CIRRUS/STRATUS	Minimal
Finish: 1015	76F	13/SW	60	STRATUS	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Unimproved cattle pasture, w/ Depressional wetlands (herbaceous) Depressional veg = Mowed cattails, Xyris, Cyperus spp., upland veg = thick bahiagrass, scattered cabbage palm, forested sections w/ long leaf pine, live & water OAKS, Braz pepp, Maple & Cypress. & large Amount of Ambient noise from nearby industrial work space banging, loading, Beeps heavy equipment - constant

Observations
(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
	NO CARACARAS OBSERVER		

→ & farmer STARTED TO MOW BACK pasture @ 8:33AM

1/5/2023

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
Cattle egrets, White Ibis, Sandhill Cranes, pileated woodpecker Morning Doves	• Transitioning N/S • Vocalizing while in Trans.
Wood storks, Black Vultures Tree sparrows, Turkey Vultures	• Transiting E to W
Deer	• grazing
?? A. Kestrel, palm warblers, Eastern phoebe, tufted titmouse Brown-thrasher	• Vocalizing in tree • foraging in tree • loafing in tree
Great Egret, cattle egret, Snowy Egret, Turkey	• foraging on ground
A. crow. Red bellied woodpecker, Bluejay, catbird, Blue-gray Gnatcatcher, Carolina wren,	• Vocalizing in tree • loafing in tree
Northern Cardinal, Red Shoulder Hawk, mocking Bird, Great Horned owl.	

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: 710

Location/Observation Block/Lat-Long: STA 3

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/4/23	0708	1013	CRAIG STOUT / QUALIFIED

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0708	70	7/SOUTH	20	CIRRUS	N/A
Finish: 1013	79	10/SSW	30	CIRRUS/CUMULUS	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
POINT IS LOCATED IN AN ACTIVE CATTLE PASTURE WITH HERBACEOUS WETLAND FEATURES AND FORESTED HABITAT VEG - CABBAGE PALM, LIVE/LAUREL OAK, SLASH PINE, BRAZ PEPPER, BAHIA, ANDROPOGON, WAX MYRTLE

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
	NO CARACARA OBSERVATIONS		

1/4/23
STA #3

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
SANDHILL CRANE KILLDEER RED SHOULDER HAWK DEER	FORAGING ON GROUND LOAFING ON GROUND / VOCALIZING VOCALIZING IN TREE FORAGING ON GROUND
SNIPE EASTERN MEADOWLARK PILEATED / RED BELLIED WOODPECKER LOGGERHEAD SHRIKE	FORAGING IN WATER VOCALIZING ON GROUND VOCALIZING IN TREE LOAFING ON FENCE
GREATER / LESSER YELLOWLEGS DOUBLE CRESTED CORMORANT GLOSSY IBIS CAROLINA WREN	FORAGING IN WATER TRANSITIONING FROM NORTH TO SOUTH TRANSITIONING FROM SE TO NORTH VOCALIZING IN TREE / BUSH
LITTLE BLUE HERON CATTLE EGRET GREAT EGRET NORTHERN CARDINAL	TRANSITIONING FROM WEST TO SE FORAGING ON GROUND FORAGING IN WATER VOCALIZING IN TREE
COMMON GRACKLE NORTHERN MOCKINGBIRD TREE SWALLOW NORTHERN HARRIER	TRANSITIONING FROM NW TO SE LOAFING IN TREE (PERCHED) FORAGING IN AIR FORAGING ON GROUND
GREAT BLUE HERON AMERICAN ROBIN ~~NORTHERN~~ BLUE JAY MOURNING DOVE	TRANSITIONING FROM WEST TO EAST TRANSITIONING FROM NORTH TO SOUTH VOCALIZING IN TREE TRANSITIONING FROM WEST TO EAST
BOAT-TAIL GRACKLE BALD EAGLE PIED BILLED GREBE AMERICAN CROW	VOCALIZING IN TREE TRANSITIONING FROM SE TO NW FORAGING IN WATER LOAFING (PERCHED) / VOCALIZING IN TREE
TURKEY VULTURE SNOWY EGRET WHITE IBIS SOUTHEASTERN KESTREL	TRANSITIONING FROM EAST TO WEST (CIRCLING TRANSITIONING FROM SW TO EAST TRANSITIONING FROM SW AND LANDED TO SOUTH LOAFING / PERCHED ON TREE / FORAGING ON GROU
BELTED KINGFISHER ANHINGA BLACK VULTURE	TRANSITIONING FROM NW TO SE, PERCHED ON FEN TRANSITIONING FROM EAST TO SW TRANISTIONING (CIRCLING) FROM WEST TO EAST

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: 710

Location/Observation Block/Lat-Long: STATION 4

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/4/23	704AM	10:10AM	SUSAN SHAW, QUALIFIED

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 704	70F	~~E~~ SW 10MPS/5MPS	15	CIRRUS	Slight Fog on Canal
Finish: 1010	79F	SSW / 10MPS	35	CIRRUS/CUMULUS	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Improved/unimproved CATTLE PASTURE, with ACTIVE grazing CATTLE AND horses. Site location overlooks large canal feature to the North - with open fields and scattered OAKS and palms. Veg = live 3 water OAKS, PALM Trees, long leaf Pines, SAW palmetto, BRAZ pepp., and bahia grass.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
	NO CARACARA OBSERVATIONS		

1/4/2023
STA 4

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
American crow, Catbird, Robins, mocking Birds, Brow thrasher, Red Shoulder hawk, Eastern Phoebe	• Vocalizing in Tree • loafing on ground
Snowy Egret, Sand Hill cranes, limpkin, morning Doves, green backed Heron, Cattle egrets, little blese heron, Red Bellied woodpecker	• Trazitioning – E to West Across REVIEW AREA
Eastern towhee, Blue jay, Tufted titmouse, N. CARDINAL, Palm Warbler, Blue grey Gnatcatcher	• Vocalizing in Tree
otters Anhinga DC Cormorants	• Swimming - in canal feature • foragin in the water
White Tailed Deer	• grazing
great Blue heron	• foraging along canal bank
tree swallows, Wood Stork, Black Vultures, Brown pelicans, Boat Tail grackles, turkey Vultures	• Transitioning N to S

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710

Location/Observation Block/Lat-Long: 5

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
11/10/23	7:02	10:08	Emily Keenan, Qualified Mike Poniatowski, Secondary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:02	54	NNW 3	60	Cirrostratus Cirrus	0
Finish: 10:08	64	NNW 6	60	Cirrostratus Cirrus	0

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

N of 710 - Pastureland - stands of cabbage palm + oak near roadway
Cell tower to East
power line adjacent to roadway
cattle present

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			No caracara observed

Incidental Obs:
MD, WE, WI, WS, SK
SHC, BV

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Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710

Location/Observation Block/Lat-Long: Station 6 27.2357132, -80.7790107

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/10/2023	7:00	10:03	T. Kuba - Qualified M. Mulbarger - secondary

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:00	55°	NW 3mph	40%	cirrostratus	—
Finish: 10:03	64°	NNW 5mph	60%	cirrostratus	—

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Adjact to SR 710 w/ 50-60 mph traffic. Improved pasture to north w/ cattle grazing and occasional c. palm. Pature to south w/ oak and pine. cypress slough system to west.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
vehicle	A	7:34	From SE landed in road scavenged carrion and flew NE out of sight

Obs. Wildlife: cattle egret, wood stork, red-shoulder hawk, great blue heron, black vulture, snowy egret, Am. crow, turkey vulture,

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710

Location/Observation Block/Lat-Long: STATION 1

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/19/23	0712	1014	C STOUT - QUALIFIED

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0712	57°	6/S	10%	CIRRUS	NONE
Finish: 1014	73°	9/SSE	30%	CIRRUS STRATUS	NONE

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
STATION IS LOCATED IN AN ACTIVE CATTLE PASTURE BETWEEN A FORESTED WETLAND FEATURE AND A FORESTED UPLAND AREA.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
NO	CARACARA		OBSERVATIONS

STATION 1
1/19/23 - CS

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
AMERICAN ROBIN RED BELLIED WOODPECKER RED SHOULDER HAWK	TRANSITIONING FROM N TO S VOCALIZING IN TREE VOCALIZING IN TREE
NORTHERN CARDINAL BALD EAGLE OSPREY BLUE JAY	VOCALIZING IN SHRUB TRANSITIONING FROM NW TO SE TRANSITIONING FROM NW TO SE VOCALIZING IN TREE
GRAY CATBIRD MOURNING DOVE AMERICAN CROW DOWNY WOODPECKER	VOCALIZING IN SHRUB TRANSITIONING FROM NORTH TO SE TRANSITIONING FROM SE TO NW VOCALIZING IN TREE
WHITE IBIS PILEATED WOODPECKER TUFTED TITMOUSE LAUGHING GULL	TRANSITIONING FROM NW TO SE VOCALIZING IN TREE VOCALIZING IN TREE TRANSITIONING FROM SE TO NW
PALM WARBLER EASTERN PHOEBE BLUE GRAY GNATCATCHER SNOWY EGRET	FORAGING IN SHRUBS TRANSITIONING FROM SOUTH TO NORTH FORAGING IN TREE TRANSITIONING FROM EAST TO WEST
CATTLE EGRET CEDAR WAXWING DOUBLE CRESTED CORMORANT CAROLINA WREN	TRANSITIONING FROM NORTH TO SOUTH TRANSITIONING FROM WEST TO EAST TRANSITIONING FROM NW TO SOUTH VOCALIZING IN SHRUB
GREAT EGRET TREE SWALLOWS TURKEY VULTURE YELLOW RUMPED WARBLER	TRANSITIONING FROM WEST TO EAST FORAGING IN AIR TRANSITIONING/CIRCLING FROM W TO E FORAGING IN TREE
AMERICAN KESTREL GREAT BLUE HERON COMMON GRACKLE ANHINGA	TRANSITIONING FROM WEST TO EAST TRANSITIONING FROM NORTH TO SW TRANSITIONING FROM WEST TO EAST TRANSITIONING/CIRCLING FROM EAST TO WEST
BLACK VULTURE	TRANSITIONING/CIRCLING FROM N TO S

USFWS Crested Caracara Draft Survey Protocol –
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Caracara Survey Form (updated 12/9/2016)

Project Name: 710

Location/Observation Block/Lat-Long: STATION 2

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/19/2023	7:10	10:15	Susan Shaw, OBSERVER-Qualifie

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 710	57°F	6/out of S.	5% ~~Cir~~	CIRRUS	Slight fog on ground
Finish: 1015	72F	9 / SSE	30%	STATUS	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
SEE PREVIOUS NOTES CANNOT SEE INDUSTRIAL ACTIVITY BUT YOU CAN HEAR HAMMERING, ENGINS, EQUIPMENT MOVEMENT.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
	NO		CARACARAS OBSERVED

1/19/2023
STAT 2

USFWS Crested Caracara Draft Survey Protocol – Additional Guidance (2016-2017 Breeding Season)

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
WOOD STORK, RED SHOULDER HAWK 2 KESTRELS (ALONG THE EASTERN WOOD LINE), CATTLE EGRETS, BLACK VUR, GREAT WHITE EGRET, TURKEY VUR., TREE SWALLOWS, ~~BOAT TAILED~~ COMMON GRACKLES	Transit - N 105 3 Vocalizing
ANHINGA, A. CROW, DB CORMORANT	
N. CARD, Yellow-rumped warbler, ROBINS, BLUE JAYS, CAROLINA WREN, TUFTED titmouse, Mocking BIRD, RED BELLIED WOODPECKER, CAROLINA CHICKADEE, PALM WARBLER, SPARROW (WHITE-THROATED I BELIEVE), THRASHER, BLUE GREY GNATCATCHER, E. MEADOWLARK, CATBIRD	Vocalizing / foraging / loafing in trees
Pileated woodpecker, Downy woodpecker, SNOWY EGRET	Foraging in trees → foraging on ground
SAND HILL CRANES, ~~CARACARA~~	Vocalizing, in flight E to West movement
[redacted] DEER	Foraging / Tranz (grazing)

USFWS Crested Caracara Draft Survey Protocol –
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Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710

Location/Observation Block/Lat-Long: STATION 3

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/18/23	0709	1019	CRAIG STOUT - QUALIFIED

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0709	54°	3 SSE	10%	STRATUS	MINIMAL
Finish: 1019	72°	5 SSW	40%	STRATUS CIRRUS	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
STATION IS IN AN OPEN PASTURE AREA WITH HERBACEOUS WETLAND FEATURES AND SURROUNDED BY FORESTED HABITAT.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
NO CARACARA OBSERVATIONS			

CS
STATION 3
1/18/23

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
SANDHILL CRANE KILLDEER PILEATED WOODPECKER AMERICAN ROBIN	FORAGING IN WATER LOAFING ON GROUND VOCALIZING IN TREE TRANSITIONING FROM NE TO SW
DOWNY WOODPECKER EASTERN MEADOWLARK NORTHERN CARDINAL LOGGERHEAD SHRIKE	VOCALIZING IN TREE VOCALIZING ON GROUND VOCALIZING IN SHRUBS/TREE LOAFING/PERCHED ON FENCE POST
DEER RED-BELLIED WOODPECKER RED-SHOULDER HAWK BOAT-TAILED GRACKLE	FORAGING ON GROUND FORAGING/VOCALIZING IN TREE VOCALIZING IN TREE VOCALIZING IN TREE
SOUTHEASTERN KESTREL WOOD STORK CAROLINA WREN LITTLE BLUE HERON	LOAFING/PERCHED ON SNAG FORAGING IN WATER. VOCALIZING IN TREE/SHRUBS FORAGING IN WATER
GREAT EGRET BLUE JAY BELTED KINGFISHER FERAL HOG	LOAFING IN WATER VOCALIZING IN TREE LOAFING/PERCHED ON FENCE POST FORAGING ON GROUND
COMMON GRACKLE AMERICAN CROW WHITE IBIS GREAT BLUE HERON	TRANSITIONING FROM WEST TO EAST TRANSITIONING FROM SOUTH TO NORTH TRANSITIONING FROM NE TO SW LOAFING IN WATER
BALD EAGLE TRICOLOR HERON TREE SWALLOW SNOWY EGRET	PERCHED/LOAFING IN TREE FORAGING IN WATER FORAGING IN AIR TRANSITIONING FROM WEST TO EAST
GREATER YELLOWLEGS GLOSSY IBIS TURKEY VULTURE CATTLE EGRET	FORAGING IN WATER TRANSITIONING FROM EAST TO WEST TRANSITIONING/CIRCLING FROM SOUTH TO NORTH FORAGING ON GROUND

USFWS Crested Caracara Draft Survey Protocol –
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Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710

Location/Observation Block/Lat-Long: STATION 4

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/18	710 AM	1020 AM	SUSAN SHAW / QUALIFIED

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 710	52 F	5 / SSE	5%	STRATUS	Minimal
Finish: 1020	70 F	5 / SSW	45%	STRATUS/CIRRUS	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
See previous site Description 3 photos

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
	NO	CARACARAS	OBSERVED

1/18/2023
STAT 4

USFWS Crested Caracara Draft Survey Protocol – Additional Guidance (2016-2017 Breeding Season)

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
N. CARDINAL, CAT BIRD, Carolina wren, tufted titmouse, American Crow, Blue jay, Mocking Bird, Eastern towhee, Palm Warbler	• Vocalizing in tree • loafing in tree
SAND Hill CRANES, Cedar Waxwing, Robins (FLYS), Little Blue Heron, Tree swallows, WOOD DUCKS,	• Transitioning N to S.
WOOD STORKS, Red Sholder Hawk	
Morning Doves, great egret, limpkin, Cattle egrets, meadow lark	• loafing on ground • foraging on ground • Vocalizing
Deer	• foraging on ground (grazing)
Anhinga, DC Cormorants, Pied-billed grebe	• Swimming / foraging
Blue-grey gnat catcher, Red bellied WOOD pecker, Ruby crowned Kinglet, Brown thrasher	• foraging in tree
limpkin, loggerhead shrike	• foraging on ground
Black Vulture, Northern Flicker, laughing gulls, Common grackles.	• Transitioning E to W

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Caracara Survey Form (updated 12/9/2016)

Project Name: State Road 710 Station No. 5

Location/Observation Block/Lat-Long: 27.250534 / -80.791897

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
01/25/2023	0659	1010	Maurice Pearson, Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0659	66 F	5-10mph / SE	1% - 5%	Cumulus	light fog
Finish: 1010	75 F	10-15mph / SE	5% - 10%	Cumulus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Some fog smoke from pile burn to the south. Area is improved pasture with scattered canopy trees, which include palms. Cattle actively using the site.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			No Caracara Observed

Other Avain Species Observed:

Vultures (flyover), blue heron, crows, sandhill cranes, grackles.

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: State Road 710 Station No. 6
Location/Observation Block/Lat-Long: 27.234631 / -80.777414

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
01/26/2023	0709	1020	Maurice Pearson, Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0709	67 F	5-10mph / SE	90% -100%	Nimbostratus	Rain
Finish: 1020	68 F	5-10mph / SE	80% - 90%	Nimbostatus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Overnight rains, light rains first hour and half of survey. Area is improved pasture with scattered canopy trees, which include palms. Cattle actively using the site.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
#6 SE of Observation Point	Im	0850 - 0901	Fly in from the south to feed among vultures in pasture. Flyout southward.
#6 SE of Observation Point	Im	1002 - 1020	Fly in from the south to feed among vultures in pasture. Spent time perching on post and general flying around pasture before leaving to the south again. Likely same bird as first observed at 0850.

Other Avain Species Observed:

Vultures (flyover), blue heron, crows, sandhill cranes, grackles, little blue heron, cowbrids, eastern starlings, egrets.

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710

Location/Observation Block/Lat-Long: STATION 1

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/1/23	0705	1015	CRAIG STOUT - QUALIFIED

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0705	63°F	Ø	25%	CUMULUS	MINIMAL
Finish: 1015	75°F	5/NW	2%	CUMULUS	NONE

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
STATION IS LOCATED IN AN ACTIVE CATTLE PASTURE WITH FORESTED UPLAND/WETLAND HABITAT ADJACENT

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
STA 1	A	1001	ONE ADULT TRANSITIONING FROM SE OF STATION AND CONTINUED OUT OF SIGHT TO THE WEST/NW (SEE MAP)

(1)

STATION 1
2/1/23 CSS

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
RED SHOULDER HAWK DOUBLE CRESTED CORMORANT RED BELLIED WOODPECKER OSPREY	TRANSITIONING FROM EAST TO WEST TRANSITIONING FROM E TO W. FORAGING IN TREE VOCALIZING IN TREE
COMMON GRACKLE MOURNING DOVE KILLDEER CAROLINA WREN	TRANSITIONING FROM W TO E TRANSITIONING FROM W TO E VOCALIZING/TRANSITIONING FROM W TO NE VOCALIZING IN SHRUB
NORTHERN CARDINAL AMERICAN ROBIN GRAY CATBIRD PILEATED WOODPECKER	TRANSITIONING FROM E TO W TRANSITIONING FROM SE TO NW VOCALIZING IN SHRUB VOCALIZING IN TREE
TUFTED TITMOUSE AMERICAN CROW CATTLE EGRET WOOD STORK	VOCALIZING IN TREE TRANSITIONING FROM E TO NW FORAGING ON GROUND TRANSITIONING FROM W TO E
WHITE IBIS WHITEEYED VIREO PALM WARBLER BLUE JAY	TRANSITIONING FROM N TO S VOCALIZING IN TREE FORAGING IN TREE VOCALIZING IN TREE
DOWNY WOODPECKER YELLOW RUMPED WARBLER RUBY CROWNED KINGLET TREE SWALLOW	TRANSITIONING FROM W TO E FORAGING ON GROUND FORAGING IN SHRUB FORAGING IN AIR.
SNOWY EGRET EASTERN PHOEBE NORTHERN MOCKINGBIRD TURKEY VULTURE	TRANSITIONING FROM E TO W FORAGING ON GROUND FORAGING IN SHRUB TRANSITIONING FROM E TO W
BLUE-GRAY GNATCATCHER BLACK VULTURE RED TAILED HAWK GREAT BLUE HERON	FORAGING IN TREE TRANSITIONING/CIRCLING FROM S TO N TRANSITIONING/CIRCLING FROM NW TO S TRANSITIONING FROM SW TO NE

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: FDOT 710
Location/Observation Block/Lat-Long: STATION 2

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/1/23	710	10:20	SUSAN SHAW, QUALIFIED

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 710	63°F	0	25%	Cumulus	minimal
Finish: 1020	75°F	5 @ NW	2%	cumulus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			NO CARACARA OBSERVED

2/1/23
Stat 2

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
Blue JAY, N. CARD, Red Bellied WOODPECKER, CAT BIRD, C. WREN, BLUE-GREY GNAT CATCHERS, MOCKING BIRDS	VOC, LOAFING, foraging - in Trees
A. CROW, BALD EAGLE, RED SHOLDER HAWK, ROBINS, TREE SWALLOWS, KESTREL,	TRANS - E to West SNOWY EGRET
C. EGRET, MEADOW LARK, SAND HILL CRANES,	foraging on GROUND
DEER, Horses	grazing
great Blue HERON, CEDAR WAX WINGS, Black Vul., WOOD STORK, M. DOVES, Snowy Egret, P. leated WOODPECKER	TRANS - N/South
Yellow-rumped Warbler, Ruby crowned Kinglet, Downy WOODPECKERS, White throated Sparrows??	VOC, LOAFING, foraging - in Trees

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710

Location/Observation Block/Lat-Long: STATION 3

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/31/23	0702	1009	CRAIG STOUT - QUALIFIED

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/(Fog)
Start:	61	Ø	20%	Cumulus	MINIMAL
Finish:	73	Ø	50%	Cumulus	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
STATION IS IN AN ACTIVE CATTLE PASTURE SURROUNDED BY FORESTED HABITAT AND HERBACEOUS WETLANDS

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
NO CARACARA OBSERVATIONS			

STA 3 - CSS
1/31/23

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
KILLDEER CATTLE EGRET AMERICAN KESTREL RED BELLIED WOODPECKER	LOAFING ON GROUND TRANSITIONING FROM SW TO NE PERCHED ON SNAG VOCALIZING IN TREE
AMERICAN ROBIN AMERICAN CROW EASTERN MEADOWLARK TREE SWALLOW	TRANSITIONING FROM N TO S TRANSITIONING FROM W TO E VOCALIZING ON GROUND FORAGING IN AIR
RED SHOULDER HAWK DOWNY WOODPECKER SANDHILL CRANE BLUEJAY	VOCALIZING IN TREE VOCALIZING IN TREE VOCALIZING ON GROUND VOCALIZING IN TREE
NORTHERN CARDINAL COMMON GRACKLE PILEATED WOODPECKER CAROLINA WREN	VOCALIZING IN SHRUB TRANSITIONING FROM SW TO NE FORAGING IN TREE VOCALIZING IN SHRUB
GREAT EGRET GREATER YELLOW LEGS TUFTED TITMOUSE DOUBLE CRESTED CORMORANT	FORAGING IN WATER TRANSITIONING FROM E TO W VOCALIZING IN TREE TRANSITIONING FROM N TO S
SNOWY EGRET BOAT TAIL GRACKLE LOGGERHEAD SHRIKE DEER	TRANSITIONING FROM S TO N LOAFING/PERCHED IN TREE LOAFING ON GROUND TRANSITIONING ON GROUND
FERAL HOG ANHINGA LITTLE BLUE HERON RACCOON	FORAGING ON GROUND LOAFING IN WATER LOAFING ON FENCE POST FORAGING ON GROUND
GREAT BLUE HERON TURKEY VULTURE EASTERN PHOEBE BLACK VULTURE	TRANSITIONING FROM N TO S TRANSITIONING/CIRCLING FROM S TO N LOAFING ON FENCE TRANSITIONING/CIRCLING FROM S TO N

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: 710

Location/Observation Block/Lat-Long: STATION 4

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/31/23	7 AM	1015 AM	SUSAN SHAW - Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7 AM	61	∅	20%	Cumulus	minimal
Finish: 1015 AM	73	∅	50%	Cumulus	minimal

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
See prior sheets

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
	NO CARACARA OBSERVED		

1/31/2023
STA 4

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
Billed Pied grebe, Anhinga, DC Cormor, Alligator	Foraging, loafing n water
Tree Swallows, Black Vul., Northern Harrier, CATTLE Egrets, Turkey Vul, SAND HILL CRANES, Common Grackles	Transitioning N to S
N. Cardinal, Mocking Birds, Tufted Titmouse, CATBIRD, Blue jay, Blue Grey GNATCATCHERS	Vocalizing, ~~foraging~~, loafing in trees
Palm Warbler, Meadow lark, EASTERN Phoebe	loafing on fence & foraging in grass
Limpkin, Great Blue Heron, Tricolored Heron, little Blue Heron,	foraging along Canal Banks
DEER	Grazing
pileated Woodpecker, Morning Doves, A CROWS, N. Flicker	Trans. E to West
Red Shouldered Hawk Red Bellied woodpecker	Vocalizing

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710
Location/Observation Block/Lat-Long: Station 5 27 15' 02.0" N 80 47' 27.6" W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/6/23	6:50am	9:50am	Zack Yawn "Authorized observer"

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	59 F	6 MPH S	70%	Altocumulus	None
Finish:	67 F	7 MPH S	20%	Cumulus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
This station is located in the ROW of SR 70 with actively used pasture to the North and mixed Urban/Agr land to the South. There was moderate to high vehicle traffic today, but no other activity.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
None			

Other Species: Osprey, Cattle egret, double crested cormorant, mourning dove, American crow, red shoulder hawk.

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710
Location/Observation Block/Lat-Long: Station 6 27°14'06.9"N 80°46'40.4"W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/7/23	6:48AM	9:48AM	Zack Yawn "Authorized Observer"

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	57°	6mph SW	5 %	Stratus	None
Finish:	68°	9mph W	0%	N/A	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
This station is located in the ROW of SR 710. To the NE there is maintained pasture, to the SW is a small forested pasture and beyond that is a mixed forested system with some wetland features. Traffic on SR 710 was high. No other activity.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
Vehicle	Adult	7:10am	Flew from the ground, circled the cattle corral + landed on a Snag.

Other Species: Great blue heron, Cattle egret, Turkey vulture, Mocking bird, Double crested Cormorant, Red shoulder hawk,

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710

Location/Observation Block/Lat-Long: STATION 1

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/15/23	0652	1005	C STOUT - QUALIFIED

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0652	54°F	Ø	20%	STRATUS	MINIMAL
Finish: 1005	73°F	6mph/SE	15%	CUMULUS	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
STATION IS LOCATED IN AN ACTIVE CATTLE PASTURE, SURROUNDED BY FORESTED UPLANDS & WETLANDS

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
NO	CARACARA		OBSERVATIONS

SR 710
STATION 1
2/15/23 - CSS

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
WHITE IBIS	TRANSITIONING FROM W TO SE
AMERICAN CROW	TRANSITIONING FROM SE TO NW
NORTHERN CARDINAL	VOCALIZING IN TREE
WHITE EYED VIREO	VOCALIZING IN TREE
RED-BELLIED WOODPECKER	VOCALIZING IN TREE
GREAT EGRET	TRANSITIONING FROM W TO E
CEDAR WAXWING	TRANISTIONING FROM W TO SE
AMERICAN ROBIN	PERCHED IN TREE
PILEATED WOODPECKER	VOCALIZING IN TREE
RED SHOULDER HAWK	VOCALIZING IN TREE
BLUE JAY	VOCALIZING IN TREE
MOURNING DOVE	TRANSITIONING FROM E TO W
SNOWY EGRET	TRANSITIONING FROM W TO E
GRAY CATBIRD	VOCALIZING IN SHRUB
FERAL HOG	TRANSITIONING ON GROUND
CAROLINA WREN	VOCALIZING IN TREE
EASTERN PHOEBE	PERCHED IN TREE
GREAT CRESTED FLYCATCHER	VOCALIZING IN TREE
NORTHERN PARULA	VOCALIZING IN TREE
TREE SWALLOW	TRANSITIONING FROM S TO N
TUFTED TITMOUSE	VOCALIZING IN TREE
KILLDEER	TRANSITIONING/VOCALIZING FROM SE TO N
DEER	TRANSITIONING ON GROUND
PALM WARBLER	TRANSITIONING FROM SE TO N
AMERICAN KESTREL	TRANSITIONING FROM S TO N
DOWNY WOODPECKER	VOCALIZING IN TREE
TURKEY VULTURE	TRANSITIONING FROM S TO N
BLACK VULTURE	TRANSITIONING FROM E TO W
SANDHILL CRANE	VOCALIZING ON GROUND
CATTLE EGRET	FORAGING ON GROUND

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: 710

Location/Observation Block/Lat-Long: STATION 2

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/15/23	7 AM	10:15	Susan Shaw Qualified observer

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7AM	54°F	0	15%	Stratus	N/A
Finish: 1016AM	73°F	6 @ SE	15%	Cumulus	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
SITE 2 OKEECHOBEE

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
N/A	—	—	NO CARACARA'S OBSERVED

710 STATION 2 — 2/15/2023 STAT 2

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
Redbelliedwood pecker, A.crow, tree swallows, boat tailed, turkey vul. Grackles, American Robins, E. collard Dove, Am. Kestrel ??	Transition (W-E) or SE
rooster, sandhill cranes, C.wren, Blue jay, common Grackles, N. cardinal, Pileated wood pecker, Red-shoulder Hawk	Vocalization
Titmouse, Blue Grey gnat catcher	Foraging (Trees) / Loafing (Trees)
A. Robins, Palm warbler, Cattle egret	Foraging (ground
Catbird, meadow lark, N. parula, Barred owl, Morning Dove	Vocalization (trees)
Deer, Hogs	foraging
Wood storks, Black vul., N. flicker, White ibis, Great Blue Heron, Northern Harrier	Transitioning (N→S)

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710

Location/Observation Block/Lat-Long: STATION 3

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/16/23	0654	1001	C STOLT – QUALIFIED A. RAMOS - TRAINEE

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0654	57°F	3 NE	35%	CUMULUS SIRRUS	MINIMAL
Finish: 1001	75°F	6 N	25%	CUMULUS SIRRUS	NO

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
STATION IS LOCATED IN AN ACTIVE CATTLE PASTURE WITH HERBACEOUS, & FORESTED WETLANDS, SURROUNDED BY FORESTED UPLANDS

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
NO CARACARA OBSERVATIONS			

SR 710
STATION 3
2/16/23 - CSS
AR

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
CATTLE EGRET	TRANSITIONING FROM N TO S
AMERICAN KESTREL	LOAFING/PERCHING ON TREE
LOGGERHEAD SHRIKE	LOAFING ON FENCE
RED BELLIED WOODPECKER	VOCALIZING IN TREE
BLUE JAY	VOCALIZING IN TREE
EASTERN MEADOWLARK	VOCALIZING ON GROUND
WHITE IBIS	TRANSITIONING FROM N TO S
COMMON GRACKLE	TRANSITIONING FROM N TO S
RED SHOULDER HAWK	VOCALIZING IN TREE
DOWNY WOODPECKER	VOCALIZING IN TREE
PILEATED WOODPECKER	VOCALIZING IN TREE
KILLDEER	VOCALIZING ON GROUND
SANDHILL CRANE	TRANSITIONING FROM N TO SE
MOURNING DOVE	TRANSITIONING FROM N TO SE
GLOSSY IBIS	TRANSITIONING FROM S TO N
AMERICAN CROW	TRANSITIONING FROM S TO N
BOAT TAIL GRACKLE	TRANSITIONING FROM W TO E
EASTERN PHOEBE	FORAGING ON GROUND
NORTHERN CARDINAL	VOCALIZING IN SHRUB
TREE SWALLOW	FORAGING IN AIR
GREATER YELLOW LEGS	TRANSITIONING FROM W TO E
NORTHERN MOCKINGBIRD	LOAFING ON FENCE
LITTLE BLUE HERON	FORAGING IN WATER
CAROLINA WREN	VOCALIZING IN SHRUB
AMERICAN ROBIN	FORAGING ON GROUND
RED SHOULDER HAWK	VOCALIZING IN TREE
GRAY SQUIRREL	FORAGING ON GROUND
WOOD STORK	FORAGING IN WATER
ANHINGA	LOAFING ON FENCE
TURKEY VULTURE	LOAFING/PERCHED IN TREE
PALM WARBLER	TRANSITIONING FROM N TO S
GREAT CRESTED FLYCATCHER	VOCALIZING IN TREE
TUFTED TITMOUSE	VOCALIZING IN TREE
BLACK VULTURE	TRANSITIONING FROM E TO W

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: FDOT 710
Location/Observation Block/Lat-Long: STATION 4

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/16/23	654AM	10:15AM	SUE SHAW Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 654AM	57°F	NE@3MPH	25%	CUM/SIRRUS	N/A
Finish: 1015AM	75°F	6@W	20%	CUM/SIRRUS	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
STATION 4

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
1	A	738	W to EAST of OBSERVATION RANGE- FLEW TO PINE TREE, THEN PROCEEDED EAST OUT OF VIEWING RANGE

SR 710
STATION 4
2/16/23

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
CAROLINA WREN, CATBIRD, MOCKING BIRD, SAND HILL CRANES, N. CARDINAL, B/G GNATCATCH, RED BELLIED WOODPECKER, MORNING DOVES, BLUE JAYS, EURASIAN COLLARED DOVE	VOCAL
AMERICAN CROW, CATTLE EGRETS, GREAT BLUE, HERON, OSPREY,	TRANS (E to W)
BALD EAGLE, SNOWY EGRETS, REDSHOULDER HAWK, BELTED KINGFISHER, BLACK VUL, TREE SPARROWS	TRANS (N to S)
MEADOW LARK, EASTERN PHOEBE, AMER. ROBINS, LIMPKIN	FORAGING (GROUND)
ANHINGA, DOUBLE CRESTED CORMORANT, WHITE IBIS,	LOAFING/ FORAGING (WATER)
GLOSSY IBIS, COMMON GRACKLES, WOODSTORK, TURKEY VUL, NORTHERN FLICKER	TRANS (S to N)
B. THRASHER, YELLOW RUMPED WARBLER, TUFTED TITMOUSE,	LOAFING (TREES)
DOWNY WOODPECKER	FORAGING (TREES)

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710

Location/Observation Block/Lat-Long: Station 5 27.2504962, -80.7894169

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/20/23	6:46AM	9:46AM	Zack Yuan "Authorized Observer"

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	61°F	4MPH SE	5%	AltoStratus	light fog
Finish:	73°F	4MPH E	0%	N/A	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Today this station did not have any activities in the area. Weather was warm with low cloud cover & high visibility.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
none			

Other Species: White ibis, House finch(?), glossy ibis, Am. crow, (Barn swallow, killdeer, turkey vulture,

USFWS Crested Caracara Draft Survey Protocol – Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710

Location/Observation Block/Lat-Long: Station 6 27.2358011, -80.7737475

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/21/23	6:50 AM	9:50 AM	Zack Yauch "Authorized Observer"

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	62°F	6MPH NE	80%	Stratus	fog
Finish:	72°F	7MPH E	80%	cumulus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
at this Station today conditions were foggy early on arrival and remained cloudy after the start of the survey. No other activities to mention.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
None			

Other Species: mocking bird, wood stork, common grackle, robin, black vulture, blue jay, osprey, house finch, Am. crow, red bellied wood pecker, cattle egret, Pilated wood pecker, white ibis, mourning dove,

USFWS Crested Caracara Draft Survey Protocol –
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Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710

Location/Observation Block/Lat-Long: STATION 1

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/28/23	0644	0955	C. STOUT - QUALIFIED

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0644	59°F	6 / WSW	15%	CIRRUS	N/A
Finish: 0955	75°F	9 / WSW	10%	CIRRUS	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
STATION IS IN AN ACTIVE CATTLE PASTURE SURROUNDED BY UPLAND AND WETLAND FORESTED HABITAT. HERBACEOUS MARSH AREAS ARE PRESENT IN PASTURE AREA

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
NO	CARACARA		OBSERVATIONS

SR 710 - STA 1
2/28/23 - CSS

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
WHITE IBIS	TRANSITIONING FROM E TO W
PALM WARBLER	TRANSITIONING FROM NE TO SW
RED BELLIED WOODPECKER	TRANSITIONING FROM N TO S
PILEATED WOODPECKER	VOCALIZING IN TREE
NORTHERN PARULA	VOCALIZING IN TREE
RED-SHOULDER HAWK	VOCALIZING IN TREE
BLUE JAY	PERCHED/VOCALIZING IN TREE
GREAT EGRET	TRANSITIONING FROM E TO W
GRAY CATBIRD	VOCALIZING IN SHRUBS
GREAT CRESTED FLYCATCHER	VOCALIZING IN TREE
NORTHERN CARDINAL	VOCALIZING IN SHRUBS
AMERICAN ROBIN	TRANSITIONING FROM N TO S
COMMON GRACKLE	TRANSITIONING FROM E TO W
OSPREY	TRANSITIONING FROM E TO W
CAROLINA WREN	VOCALIZING IN SHRUBS
DOUBLE CRESTED CORMORANT	TRANSITIONING FROM NW TO S
FERAL HOG	TRANSITIONING FROM S TO N
WILD TURKEY	TRANSITIONING FROM N TO S
SWALLOW-TAIL KITE	TRANSITIONING FROM W TO NE
BLACK VULTURE	TRANSITIONING FROM N TO SE
YELLOW RUMPED WARBLER	FORAGING IN TREE
MOURNING DOVE	TRANSITIONING FROM SW TO NE
TREE SWALLOWS	FORAGING IN AIR
AMERICAN CROW	TRANSITIONING FROM E TO W
ANHINGA	TRANSITIONING FROM SE TO NW
CATTLE EGRET	TRANSITIONING FROM S TO N
OVENBIRD	FORAGING IN SHRUB
TURKEY VULTURE	TRANSITIONING FROM N TO
YELLOW THROATED WARBLER	VOCALIZING IN TREE
BOAT-TAIL GRACKLE	TRANSITIONING FROM N TO SW
PEREGRINE FALCON	TRANSITIONING FROM NE TO S
WHITE EYED VIREO	VOCALIZING IN TREE
EASTERN PHOEBE	PERCHED IN TREE
SANDHILL CRANE	TRANSITIONING FROM W TO E

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: 710

Location/Observation Block/Lat-Long: STATION 2

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2-28-23	6:43 AM	9:55 AM	S. SHAW – QUALIFIED

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 643AM	59°F	~6 SW	15%	CIRRUS	N/A
Finish: 955	75°F	~9 SW	10%	CIRRUS	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Site 2 Chara 3 Description on 1st Survey

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
	NO CARACARAS OBSERVED		

SR710 STATION 2 2/28/23

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
Common. grackles, W. IBIS, Red-Bellied woodpecker, Anhingas, Cedar Way wings,	Trans. West to East Northern Flicker, Black Vul.,
Barred Owl, Red Shoulder Hawk, BlueJay, Carolina wren, morning Doves, Brown Headed Nuthatch Little Blue Heron, Ovenbird, Northern Cardinal, CatBird, N. Parula	Vocalization
Pileated Woodpecker, Morning Dove, Wood Storks, Turkey Vul,	Trans. North to South.
Hogs, Deer, Turkey	Grazing / Loating
robins, Egrets (cattle), Sand Hill Cranes	Foraging ground
Yellow-bellied woodpecker, Kestril, Carolina Chickadee, Palm warbler, Blue-Grey Gnatcatcher,	Foraging trees, tufted titmouse Yellow-throated Warblers

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710

Location/Observation Block/Lat-Long: STATION 3

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/1/23	0650	1010	C STOUT – QUALIFIED

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0650	57°F	Ø	10%	CUMULUS	BURNED OFF @ T20
Finish: 1010	73°F	3 / NORTH	40%.	CUMULUS	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
STATION IS IN AN ACTIVE CATTLE PASTURE WITH UPLAND & WETLAND (FORESTED) FEATURES HERBACEOUS WETLANDS EXIST WITHIN THE PASTURE AREA AS WELL

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
NO CARACARA OBSERVATIONS			

SR 710 - STA 3
3/1/23 - CSS

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
RED BELLIED WOODPECKER	VOCALIZING IN TREE
KILLDEER	LOAFING ON GROUND
GREAT CRESTED FLYCATCHER	VOCALIZING IN TREE
BLUEJAY	VOCALIZING IN TREE
EASTERN MEADOWLARK	VOCALIZING ON GROUND
RED SHOULDER HAWK	LOAFING/PERCHED IN TREE
LOGGERHEAD SHRIKE	LOAFING ON FENCE
NORTHERN CARDINAL	VOCALIZING IN SHRUB
GREATER YELLOWLEGS	FORAGING IN WATER
GRAY CATBIRD	VOCALIZING IN SHRUBS
WILSONS SNIPE	FORAGING IN WATER
DOWNY WOODPECKER	VOCALIZING IN TREE
AMERICAN ROBIN	TRANSITIONING FROM N TO S
AMERICAN KESTREL	TRANSITIONING FROM W TO E
COMMON GRACKLE	TRANSITIONING FROM NW TO SE
BOAT TAIL GRACKLE	PERCHED/VOCALIZING IN TREE
SANDHILL CRANE	FORAGING ON GROUND
LITTLE BLUE HERON	FORAGING IN WATER
AMERICAN CROW	TRANSITIONING/VOCALIZING FROM W TO E
WHITE IBIS	TRANSITIONING FROM S TO N
ANHINGA	LOAFING IN WATER
MOURNING DOVE	VOCALIZING IN TREE
CAROLINA WREN	VOCALIZING IN SHRUB
RACCOON	FORAGING ON GROUND
NORTHERN MOCKINGBIRD	PERCHED IN TREE
PILEATED WOODPECKER	VOCALIZING IN TREE
TURKEY VULTURE	TRANSITIONING FROM S TO N
BLACK VULTURE	TRANSITIONING/CIRCLING FROM N TO S
TREE SWALLOW	FORAGING IN AIR
GREAT EGRET	FORAGING IN WATER
EASTERN PHOEBE	VOCALIZING IN TREE

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: 710 - FDOT OKEECHOBEE, FL
Location/Observation Block/Lat-Long: STATION 4

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3-01-23	647AM	1019 AM	Susan Shaw

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 647	57°F	0	10 %	Cumulus	Minimal cover
Finish: 1019	73°F	3@ N.	30%	Cumulus	Burned off around 720

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
STATION 4 Description on 1st DATASHEET

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
	NO CARACARA'S OBSERVED		

SR 710
STATION 4
3/1/23

USFWS Crested Caracara Draft Survey Protocol – Additional Guidance (2016-2017 Breeding Season)

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
Red Sh. HAWK, E. Phoebe, Mocking Bird, N. CARDINAL, Car. WREN, Limpkin, Blue jays, blue grey Gnatcatcher, Grey CAT BIRD,	VOCALIZATION
Loggerhead Shrike, great Blue Heron, Brown thrasher, Mourn. DOVE, Eastern Bluebird, SAND HILL Cranes,	LOAFING - Fence & Ground
American Crow, Am. Kestrel	Transitioning - N to S
Robins, E. MEADOW LARK,	Foraging on ground
SNOWY EGRET, Double Cres. Cormorant,	LOAFING / foraging in Water & SHORELI
Red-bellied woodpecker	foraging in trees
OSPREY (over CANAL)	Transitioning E to W
White IBIS, Spoonbills	Transitioning W to E

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710

Location/Observation Block/Lat-Long: Station 5, 27.250830, -80.796654

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/7/23	6:32 AM	9:32 AM	Zack Yawn "Authorized observer"

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	65°F	4 MPH SE	foggy	N/A	foggy
Finish:	76°F	6 MPH SE	10%	Altocumulus	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
upon arrival this site has foggy conditions. Fog burns off by 7:52 am.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
none			

other wildlife: Limpkin, Great egret, Sandhill crane, Cattle egret, Finch (house?), eastern towhee, Osprey, Red-wing blackbird, Am. Crows, Double crested cormorant, Common grackle,

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710

Location/Observation Block/Lat-Long: Station 6 (27.2358452, -80.7786331)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/9/23	6:55AM	9:55AM	Zack Yawn "Authorized Observer"

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	64°F	6MPH SE	Foggy	N/A	Fog
Finish:	77°F	9MPH S	5%	Cumulus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Foggy conditions in the morning at this station. Fog burned off by 8:36AM. Farming/tractor work taking place on the farm East of this station. No other activity to mention

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
Vehicle	Adult	7:24AM	One adult following the road, flying from West to East. While flying the caracara was clearly scanning the road, moving its head side to side.

Other wildlife: AM. crow, Red winged black bird, meadow lark, Red Shoulder hawk, Pileated wood Pecker, common grackle, Turkey vulture, morning dove, cattle egret, Black Vultures, Great blue heron,

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710 CARACARA

Location/Observation Block/Lat-Long: STATION 1

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/15/23	0728	1032	C STOUT - QUALIFIED

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0728	55°F	5/EAST	100	CUMULUS (OVERCAST)	N/A
Finish: 1032	57°F	10/NORTH	90	CUMULUS (OVERCAST)	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
STATION IS LOCATED WITHIN ACTIVE CATTLE PASTURE WITH FORESTED WETLANDS, UPLANDS AND HERBACEOUS WETLAND HABITATS

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
NO	CARACARA		OBSERVATIONS

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3/15/23 - STA 1
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USFWS Crested Caracara Draft Survey Protocol – Additional Guidance (2016-2017 Breeding Season)

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
FISH CROW MOURNING DOVE RED BELLIED WOODPECKER PALM WARBLER	TRANSITIONING FROM E TO W VOCALIZING IN TREE VOCALIZING IN TREE FORAGING ON GROUND
PILEATED WOODPECKER SWALLOW TAIL KITE RED-SHOULDER HAWK TURKEY VULTURE	TRANSITIONING FROM W TO E TRANSITIONING FROM N TO S VOCALIZING IN TREE TRANSITIONING FROM E TO W
BALD EAGLE OSPREY NORTHERN CARDINAL WHITE IBIS	TRANSITIONING FROM N TO S TRANSITIONING FROM NW TO S VOCALIZING IN SHRUBS TRANSITIONING FROM N TO S
DOUBLE CRESTED CORMORANT TREE SWALLOW AMERICAN CROW BLACK VULTURE	TRANSITIONING FROM NW TO SE TRANSITIONING FROM E TO W TRANSITIONING FROM E TO W TRANSITIONING FROM E TO SW
BLUE JAY DOWNY WOODPECKER COMMON GRACKLE COMMON YELLOWTHROAT	VOCALIZING IN TREE VOCALIZING IN TREE TRANSITIONING FROM NW TO SE VOCALIZING IN TREE
TUFTED TITMOUSE WHITE EYED VIREO CATTLE EGRET YELLOW RUMPED WARBLER	VOCALIZING IN TREE VOCALIZING IN TREE TRANSITIONING FROM E TO W FORAGING ON GROUND

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: 710

Location/Observation Block/Lat-Long: STATION 2

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3-15-23	725AM	1047 AM	SUE SHAW - Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 725 AM	55°F	5MPH@N	100%	CUMULUS	Slight Drizzle NO Fog
Finish: 1047 AM	57°F	10@N	90%	"	"

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
	NO CARA	CARA	CARA OBSERVED

STATION 2
3/15/23
SR710

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
Boat tail grackles, common grackles, pileated woodpecker	Transitioning N to S, white ibis, Swallow tail kite
Red shoulder HAWK, red bellied woodpeckers, sand hill cranes, A. crow, car. wren, mocking bird,	vocalizing, tufted titmouse, Blue jays, N. cardinals
turkey, Eastern meadow lark,	Foraging - ground
morning Dove, Blue grey gnat catcher, ~~tvs~~	Roosting - in trees
Great white Egrets, Black Vulture, D. Crested Cormorant, wood stork	Transitioning S to N, tree swallows, tree swallows,
Downy woodpecker,	Foraging - Trees

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710

Location/Observation Block/Lat-Long: STATION 3

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/16/23	0727	1032	C STOUT - QUALIFIED

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0727	50°F	6/NE	20%	CUMULUS	N/A
Finish: 1032	68°F	10/SE	20%	CUMULUS	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
STATION IS LOCATED IN ACTIVE CATTLE PASTURE WITH FORESTED UPLANDS, WETLANDS AND HERBACEOUS MARSHES

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
NO	CARCAMA		OBSERVATIONS

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USFWS Crested Caracara Draft Survey Protocol – Additional Guidance (2016-2017 Breeding Season)

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
TURKEY TREE SWALLOW EASTERN MEADOWLARK PILEATED WOODPECKER	TRANSITIONING ON GROUND TRANSITIONING FROM S TO N VOCALIZING ON GROUND VOCALIZING IN TREE
NORTHERN CARDINAL BLACK BELLIED WHISTLING DUCK GREATER YELLOWLEGS CAROLINA WREN	VOCALIZING IN SHRUB TRANSITIONING FROM W TO E FORAGING IN WATER VOCALIZING IN SHRUB
AMERICAN CROW RED BELLIED WOODPECKER LOGGERHEAD SHRIKE SANDHILL CRANES	VOCALIZING IN TREE FORAGING IN TREE PERCHED IN TREE TRANSITIONING FROM E TO W
CATTLE EGRET RED SHOULDER HAWK NORTHERN PARULA WHITE EYED VIREO	FORAGING ON GROUND VOCALIZING IN TREE VOCALIZING IN TREE VOCALIZING IN TREE
BLUEJAY NORTHERN MOCKINGBIRD COMMON GRACKLE TURKEY VULTURE	PERCHED/VOCALIZING IN TREE TRANSITIONING FROM W TO E TRANSITIONING FROM S TO N TRANSITIONING FROM S TO N
ANHINGA BLACK VULTURE MOURNING DOVE BALD EAGLE	TRANSITIONING FROM S TO N TRANSITIONING FROM E TO W TRANSITIONING FROM N TO S TRANSITIONING/CIRCLING FROM E TO W
FISH CROW OSPREY FOX SQUIRREL WHITE IBIS	TRANSITIONING FROM S TO N TRANSITIONING FROM E TO W FORAGING ON GROUND TRANSITIONING FROM S TO N
AMERICAN KESTREL GREAT BLUE HERON	PERCHED IN TREE FORAGING IN WATER

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: 710

Location/Observation Block/Lat-Long: STATION 2

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
~~4/22/AM~~ 3/16/23	724 AM	1045	SUSAN SHAW [redacted] Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 724AM	50F	NE@6MPH	20%	CUMULUS	0%
Finish: 1045	68°F	SE@ VV	20%	"	0%

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
STATION 2

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			NO CARACARA'S OBSERVED

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Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
N. CARDINAL, SAND HILL CRANES, Blue jay, red bellied woodpecker, fish crow, Tufted titmouse, Carolina wren, Morning Dove, Red shouldered Hawks, A. Crow, Cattle	vocalizing
Limpkin, Meadow lark, Blue wing teal ducks, pied billed grebe, Anhinga, Great Blue Heron	in or on edge of water (canal) foraging/loafing
Phoebe, D. Crested Cormorant, N. Mocking Bird, Killdeer, N. Robin, Loggerhead shrike	loafing - ground / fence post
Swallows (tree), Wisting Ducks (14)	Transitioning S to N
Brown trasher, Blue-Grey gnatcatcher	Foraging / loafing - trees
Pileated Woodpecker, Turkey Vultures, Black Vultures, Northern Harrier (fishing), Boat-tailed grackles.	Transitioning W to E
Deer - foraging Hogs	Other wildlife -

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710
Location/Observation Block/Lat-Long: Station 5 27.250568, -80.790997

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/20/23	7:26 AM	10:26 AM	Zack Yawn "Authorized Observer"

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	51°F	11mph S	100%	Stratus	none
Finish:	57°F	12 mph S	98%	Stratus	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Cloudy & overcast due to cold front. No other activity to mention.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
none			

Other wildlife: White ibis, cattle egret, Tri-colored heron, Am. crow, Black vulture, Osprey, Low birds, swallows, cormorant, warbler, Laughing gull,

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR710
Location/Observation Block/Lat-Long: Station 6 27.250568, -80.790997

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/21/23	7:37AM	10:37AM	Zack Yawn "Authorized Observer"

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	45°F	6 mph S	10 %	Stratus	none
Finish:	64°F	5 mph SSW	0%	none	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Chilly morning, but warmed up quickly. Clear + sunny skies.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
none			

Other Species: Goose (?), Common grackle, Great blue heron, Sandhill cranes, finch, mocking bird, Blue Jay, European starling, Turkey vulture, cattle egret, warbler,

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710

Location/Observation Block/Lat-Long: STATION 1

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/28/23	0715	1022	C STOUT - QUALIFIED

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0715	66°F	Ø	50%	CUMULUS	MINIMAL
Finish: 1022	72°F	3 / NORTH	5%	CUMULUS	NONE

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
STATION IS AN AN ACTIVE CATTLE PASTURE SURROUNDED BY FORESTED WETLANDS AND UPLANDS.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
NO	CARA CARA		OBSERVATIONS

3/28/23
C STOUT
STATION 1

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
FISH CROW	TRANSITIONING FROM EAST TO WEST
PILEATED WOODPECKER	VOCALIZING IN TREE
RED BELLIED WOODPECKER	VOCALIZING IN TREE
NORTHERN CARDINAL	VOCALIZING IN SHRUBS
CATTLE EGRET	TRANSITIONING FROM SOUTH TO NORTH
MOURNING DOVE	VOCALIZING IN TREE
BLUE JAY	TRANSITIONING/VOCALIZING FROM S TO N
GREAT CRESTED FLYCATCHER	VOCALIZING IN TREE
RED SHOULDER HAWK	VOCALIZING IN TREE
PALM WARBLER	LOAFING ON GROUND
NORTHERN MOCKING BIRD	VOCALIZING/PERCHED IN TREE
GRAY CATBIRD	VOCALIZING IN SHRUB
SWALLOW TAILED KITE	TRANSITIONING FROM NE TO W
AMERICAN CROW	VOCALIZING/TRANSITIONING FROM W TO SE
WHITE EYED VIREO	VOCALIZING IN TREE
CAROLINA WREN	VOCALIZING IN SHRUB
BLACK VULTURE	TRANSITIONING FROM W TO E
LIMPKIN	VOCALIZING IN WATER
TUFTED TITMOUSE	VOCALIZING IN TREE
LITTLE BLUE HERON	TRANSITIONING FROM E TO W
OSPREY	TRANSITIONING FROM S TO N
WILD TURKEY	FORAGING ON GROUND
SNOW GOOSE	TRANSITIONING FROM NE TO SW
ANHINGA	TRANSITIONING FROM SE TO NW
RED TAILED HAWK	CIRCLING/TRANSITIONING FROM W TO E
SNOWY EGRET	TRANSITIONING FROM SE TO W
TURKEY VULTURE	TRANSITIONING FROM W TO E
TREE SWALLOW	VOCALIZING/TRANSITIONING FROM E TO W
BALD EAGLE	TRANSITIONING FROM E TO SW

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: 710 FDOT

Location/Observation Block/Lat-Long: STATION 2

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3-28-23	710 AM	1025	Sue Shaw

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 710	66°F	15mph@N	50%	Cirrocalus	Minimal
Finish: 1025	72°F	3/North	10%	n	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
STATION 2

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
	No CARACARA's Observed		

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Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
Morning Dove, Boat-tail grackle, Mocking Bird, Blue jay, cat Birds, N. Parula, Red shoulder Hawk, A. crow, Carolina wren, Belted kingfisher, Purple Martin	VOCAL
Caronial, Cattle egret, Common Grackle,	Transit - E/W
Red Bellied woodpeckers, palm Warbler, tufted titmouse, Blue grey Gnatcatchers, Downy	In trees - loafing wood pecker
E. Meadow Lark, Sand Hill cranes	Ground - foraging
Pileated woodpeckers, Black Vulture, Swallow tail Kites (5),	Trans - SN to S
foraging - Wild Hogs, Turkey	Other Wildlife

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710

Location/Observation Block/Lat-Long: STATION 3

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/29/23	0715	1020	C. STOUT - QUALIFIED

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/(Fog)
Start: 0715	66°F	5 /N	20%	CIRRUS CUMULUS	MINIMAL
Finish: 1020	78°F	8/NW	50%	STRATUS CUMULUS	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
STATION IS LOCATED IN AN ACTIVE CATTLE PASTURE WITH FORESTED WETLANDS, UPLANDS AND HERBACEOUS WETLANDS

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
NO	CARACARA	CARACARA	OBSERVATIONS

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3/29/23
CSTOUT

USFWS Crested Caracara Draft Survey Protocol – Additional Guidance (2016-2017 Breeding Season)

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
EASTERN MEADOWLARK GREAT BLUE HERON LOGGERHEAD SHRIKE BOAT-TAILED GRACKLE	VOCALIZING ON GROUND TRANSITIONING FROM W TO E LOAFING ON FENCE PERCHED/VOCALIZING IN TREE
SANDHILL CRANE NORTHERN CARDINAL RED BELLIED WOODPECKER CAROLINA WREN	VOCALIZING ON GROUND VOCALIZING IN SHRUBS FORAGING/VOCALIZING IN TREE VOCALIZING IN SHRUB
LIMPKIN COMMON GRACKLE FISH CROW AMERICAN? KESTREL	VOCALIZING IN TREE TRANSITIONING FROM SE TO NW FORAGING ON GROUND PERCHED/VOCALIZING IN TREE (SNAG)
BLUE JAY RED SHOULDER HAWK PILEATED WOODPECKER TUFTED TITMOUSE	VOCALIZING IN TREE VOCALIZING/TRANSITIONING FROM E TO W TRANSITIONING FROM S TO N VOCALIZING IN TREE
NORTHERN MOCKINGBIRD GREAT EGRET TREE SWALLOWS DOWNY WOODPECKER	VOCALIZING IN TREE TRANSITIONING FROM NE TO SW TRANSITIONING FROM S TO N VOCALIZING IN TREE
AMERICAN CROW MOURNING DOVE WHITE IBIS CATTLE EGRETS	TRANSITIONING/VOCALIZING FROM W TO E VOCALIZING IN TREE TRANSITIONING FROM S TO N TRANSITIONING FROM SW TO NE
GREAT CRESTED FLYCATCHER FOX SQUIRREL BLACK VULTURE TURKEY VULTURE	VOCALIZING IN TREE FORAGING ON GROUND TRANSITIONING FROM E TO NW TRANSITIONING/CIRCLING FROM N TO S
BALD EAGLE	TRANSITIONING/CIRCLING FROM S TO N

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: 710 FDOT

Location/Observation Block/Lat-Long: STATION # 4

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3-29-23	7:10AM	10:25pm	SUE SHAW

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 710	66°F	NE@5MPH	20%	Cumulus/cirrus	Slight *
Finish: 1025pm	78°F	NW@8MPH	50%	Stratus/cumulus	Ø

* Control Burn? Slight smoke in the Area

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
STATION 4

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
	NO		CARACARA OBSERVED

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
Limpkin, Blue jay, CATbird, Bobwhite, Red Bellied woodpecker, CAROLINA WREN, CARDINAL, A. CROW, titmouse, N. Parula, Red shoulder Hawk, Mocking Bird	Vocal
SAND Hill Cranes, MALLARDS, Boat tail grackle, Turkey Vultures,	Trans - N to S
Ibis, Brown pelicans, DC. CORMORANTS, Little Blue, Anhinga, Seagulls, Black Vultures	Trans - S to N
~~White~~ ~~Heron~~ Great egret, Great Blue Heron, SPOONBILL	loafing / foraging in water
Blue grey Gnatcatcher, palm Warbler	loafing / foraging trees
Meadow lark, Killdeer, Robins	loafing / foraging - Ground / fence
in water - gator	Other wildlife

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710
Location/Observation Block/Lat-Long: Station 5 (27.250568, -80.790997)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/5/23	7:10 AM	10:10 AM	Zack Yawn "Authorized Observer"

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	68°F	5 mph ESE	20%	Stratus	none
Finish:	81°F	3 mph SE	10%	Alto Stratus	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Relatively calm day & clear skies.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
None			

Am. Crow, Ibis, morning dove, double crested cormorant, Red-bellied woodpecker, Great blue Heron, Tricolored Heron, black vulture, Great crested fly catcher, moorhen

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710

Location/Observation Block/Lat-Long: Station 6 (27.2352526, -80.7778831)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/3/23	7:10AM	10:10AM	Zack Yawn "Authorized Observer"

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	69°F	3MPH NNE	30%	Altostratus	fog
Finish:	74°F	9 MPH SSW	10%	Stratus	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Fair day, foggy in the morning and burned off by 8:20AM.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
Vehicle	Adult	8:01AM	Flew from pasture to the north, perched in Pine. Flew from perch to carrion on SR 710 in the west bound lane. Continued back & forth from pine to carrion – avoiding traffic. Eventually flying to the South out of sight at 8:12AM.
Pedestrian	Adult	8:44AM	Flew from south of pasture to a fence post adjacent to the carrion in the northern ROW. Fed on carrion & took a hunk to the pasture and ate. Flew back to carrion took a piece up to pine to eat. Flew from perch East following 710.

Euro. sterling, mocking bird, Blue Jay, Am. crow, White ibis, Morning dove, redbellied W.P., House sparrow, B. vulture, Great blue heron,

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710

Location/Observation Block/Lat-Long: STATION 1

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/12/23	0655	1010	C STOUT - QUALIFIED

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0655	68°F	8 NE	100%	CUMULUS	NONE
Finish: 1010	72°F	9 E	100%	CUMULUS	NONE

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
STATION IS IN AN ACTIVE CATTLE PASTURE SURROUNDED BY FORESTED WETLANDS & UPLANDS

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
NO	CARACARA		OBSERVATIONS

STATION 1
SR710
4/12/23 - CSS

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
NORTHERN CARDINAL	VOCALIZING IN SHRUBS
CAROLINA WREN	VOCALIZING IN SHRUB
RED BELLIED WOODPECKER	FORAGING/VOCALIZING IN TREE
SANDHILL CRANES	TRANSITIONING FROM E TO NW
AMERICAN CROW	TRANSITIONING/VOCALIZING FROM E TO W
RED SHOULDER HAWK	VOCALIZING/TRANSITIONING FROM N TO E
PILEATED WOODPECKER	VOCALIZING/TRANSITIONING FROM E TO W
TURKEY VULTURE	TRANSITIONING FROM EAST TO WEST
SWALLOW TAIL KITE	TRANSITIONING FROM N TO S
TREE SWALLOW	TRANSITIONING FROM S TO N
RED EYED VIREO	VOCALIZING IN TREE
GREAT CRESTED FLYCATCHER	VOCALIZING IN TREE
DOWNY WOODPECKER	TRANSITIONING FROM W TO E
GRAY CATBIRD	VOCALIZING IN SHRUB
WHITE EYED VIREO	VOCALIZING IN TREE
FISH CROW	VOCALIZING/TRANSITIONING FROM W TO E
BOAT TAILED GRACKLE	TRANSITIONING FROM E TO W
BLUE JAY	VOCALIZING IN TREE
RED TAILED HAWK	TRANSITIONING FROM N TO S
CATTLE EGRET	FORAGING ON GROUND
BALD EAGLE	TRANSITIONING FROM E TO NW
ANHINGA	TRANSITIONING FROM S TO N
COMMON GRACKLE	TRANSITIONING FROM S TO N
BLACK VULTURE	TRANSITIONING FROM W TO NE
LAUGHING GULL	TRANSITIONING FROM E TO NW

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: 710 FOOT STATION 2
Location/Observation Block/Lat-Long: SUSAN SHAW - QUALIFIED

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/12/23	7 AM	1020AM	*

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7AM	68°F	8mph@SW	95%	Cumulus	rain clouds NONE
Finish: 10:20 AM	72°F	9@E	100%	"	NONE

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
	NO CARACARAS OBSERVED		

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STAT 2

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
Mourning Dove, Sand Hill Cranes, Red bellied Woodpecker, N. CARD., Great Crested Flycatcher, Blue jays, loggerhead shrike, A. Crow	Vocal Carolina wren, Catbird, tufted titmouse
Boat-tailed grackles, Pileated Woodpeckers, Black Vul	Transitioning E/W
Cattle Egrets, Red shouldered Hawk, Bald Eagle	Transitioning N/S
N. Mockingbird, pine warbler, Brown thrasher	loafing / foraging – Trees
* Swallow tail Kite, Turkey Vul., common grackles	Transitioning W/E
Killdeer	Foraging - Ground
Deer, Hogs	Other Wildlife

* fly over caused a lot of vocalizations from the area red bellied woodpeckers!

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710

Location/Observation Block/Lat-Long: STATION 3

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/13/23	0700	1004	C STOUT - QUALIFIED

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0700	69°F	4 SE	40%	STRATUS	N/A
Finish: 1004	77°F	9 W	40%	STRATUS CUMULUS	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
STATION IS LOCATED IN AN ACTIVE CATTLE PASTURE WITH FORESTED UPLANDS & WETLANDS AREAS

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
NO CARACARA OBSERVATIONS			

 SR 710 - STATION 3 4/13/23 - CSS

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
LITTLE BLUE HERON EASTERN MEADOWLARK NORTHERN CARDINAL DEER	TRANSITIONING FROM N TO S VOCALIZING ON FENCE VOCALIZING IN SHRUB TRANSITIONING ON GROUND
FISH CROW TUFTED TITMOUSE LOGGERHEAD SHRIKE RED BELLIED WOODPECKER	TRANSITIONING FROM SW TO E VOCALIZING IN TREE LOAFING ON FENCE VOCALIZING IN TREE
NORTHERN MOCKINGBIRD MOURNING DOVE PILEATED WOODPECKER GREAT CRESTED FLYCATCHER	VOCALIZING IN TREE TRANSITIONING FROM E TO W VOCALIZING IN TREE VOCALIZING IN TREE
KILLDEER COMMON GRACKLE NORTHERN PARULA CAROLINA WREN	VOCALIZING/TRANSITIONING FROM E TO W TRANSITIONING FROM W TO E VOCALIZING IN TREE VOCALIZING IN SHRUBS
WHITE IBIS BALD EAGLE BOAT TAILED GRACKLE SNOWY EGRET	TRANSITIONING FROM SE TO NW TRANSITIONING FROM S TO NW VOCALIZING IN TREE TRANSITIONING FROM SE TO NW
AMERICAN KESTREL BLUEJAY AMERICAN CROW BLACK VULTURE	LOAFING/PERCHED IN TREE VOCALIZING IN TREE TRANSITIONING FROM W TO E TRANSITIONING FROM S TO N
GREAT EGRET ANHINGA BLACK BELLIED WHISTLING DUCKS GLOSSY IBIS	TRANSITIONING FROM N TO SE TRANSITIONING FROM N TO S TRANSITIONING FROM W TO E TRANSITIONING FROM S TO N
GREATER YELLOW LEGS RED SHOULDER HAWK TURKEY VULTURE WILD TURKEY	TRANSITIONING FROM S TO NE TRANSITIONING FROM W TO E TRANSITIONING/CIRCLING FROM S TO N TRANSITIONING ON GROUND FROM W TO E
SWALLOW TAILED KITE DOUBLE CRESTED CORMORANT CATTLE EGRETS	TRANSITIONING FROM W TO E TRANSITIONING FROM E TO W TRANSITIONING FROM S TO N

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: 710 FDOT

Location/Observation Block/Lat-Long: STATION 4

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/13/23	7 AM	10:10 AM	SUSAN SHAW Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7 AM	70°F	4 @ SE	40%	STRATUS	SLIGHT FOG
Finish: 10:10 AM	77°F	9 @ W	40%	11	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
	NO CARACARAS OBSERVED		

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STAT 4 Cont.

USFWS Crested Caracara Draft Survey Protocol – Additional Guidance (2016-2017 Breeding Season)

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
tufted titmouse, N. CARD., House wren, red bellied woodpecker, Blue jays, CATBIRD, killdeer,	Vocalizations Meadow lark SANDHILL Cranes, CAROLINA WREN, IMPKIN, MOURNING DOVE, Bachmans Sparrow
Cattle Egret, DC cormorants, Wisting Ducks, OSPREY	Trans - W to E
Great Blue Heron, Great Egret	LOAFing / Foraging - Water
White ibis, Bald Eagle, red shouldered Hawk, TURKEY	Tranz - N to South Vulture,
Blue-Grey Gnatcatcher.	LOAfing / Foraging - Trees
N. Parula, red Headed woodpecker Black & White Warbler	Cont. Vocalizations
Alligator, White tail Deer,	Other wildlife

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710

Location/Observation Block/Lat-Long: Station 5 (27.250568, -80.790997)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/18/23	7:00AM	10:00 AM	Zack Yaun "Authorized Observer"

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	59°F	7mpH S	10%	Stratus	none
Finish:	64°F	9mpH SSW	0%	none	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Clear skies + sunny

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
none			

Other wildlife: Boat-Tailed grackle, ANCR, GBHE, Barn swallow, Osprey, Glossy Ibis, snowy egret, RW BB, meadow lark, Bald eagle, wood stork

STA 5 Photos E, N, W, S

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710
Location/Observation Block/Lat-Long: Station 6 (27.2356410, -80.7787716)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/19/23	6:50 AM	9:50 AM	Zack Yawn "Authorized Observer"

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:	60°F	6MPH S	90%	Stratus	none
Finish:	72°F	6MPH SW	60%	cirrus	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Tractor working pasture

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
none			

Other wildlife: Great egret, European Starling, Rabbit, Great blue heron, house sparrow, King bird?, Black vulture, Am. Crow, Red-bellied woodpecker, N. mocking bird, E. meadowlark, Carolina wren, Northern cardinal,

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 710

Location/Observation Block/Lat-Long: STATION 1

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/25/23	0643	0949	C. STOUT - QUALIFIED

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0643	67°F	5 NE	90%	CUMULUS STRATUS	N/A
Finish: 0949	77°F	7 SE	80%	CUMULUS	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
STATION IS LOCATED IN ACTIVE CATTLE PASTURE WITH FORESTED WETLANDS AN UPLAND AREAS

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
NO	CARACARA		OBSERVATIONS

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STATION 1
4/25/23, CSS

USFWS Crested Caracara Draft Survey Protocol – Additional Guidance (2016-2017 Breeding Season)

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
AMERICAN CROW	TRANSITIONING FROM SE TO NW
BLUEJAY	VOCALIZING IN TREE
SANDHILL CRANE	VOCALIZING ON GROUND
GRAY CATBIRD	TRANSITIONING FROM S TO N
NORTHERN CARDINAL	VOCALIZING IN SHRUBS
RED BELLIED WOODPECKER	VOCALIZING/FORAGING IN TREE
CAROLINA WREN	VOCALIZING IN SHRUBS
FISH CROW	TRANSITIONING/VOCALIZING FROM E TO W
MOURNING DOVE	VOCALIZING IN TREE
WHITE IBIS	TRANSITIONING FROM E TO W
OPOSSUM	TRANSITIONING ON GROUND
PILEATED WOODPECKER	VOCALIZING IN TREE
TURKEY VULTURE	TRANSITIONING FROM SE TO W
GREAT CRESTED FLYCATCHER	VOCALIZING IN TREE
RED-EYED VIREO	VOCALIZING IN TREE
GLOSSY IBIS	TRANSITIONING FROM E TO W
BLACK BELLIED WHISTLING DUCK	TRANSITIONING FROM W TO E
TUFTED TITMOUSE	VOCALIZING IN TREE
GREAT BLUE HERON	TRANSITIONING FROM NE TO SW
NORTHERN PARULA	VOCALIZING IN TREE
MOTTLED DUCKS	TRANSITIONING FROM E TO W
DOWNY WOODPECKER	VOCALIZING IN TREE
WILD TURKEY	TRANSITIONING ON GROUND FROM E TO W
COMMON GRACKLE	TRANSITIONING FROM W TO SE
TREE SWALLOW	TRANSITIONING FROM E TO NW
BARRED OWL	VOCALIZING IN TREE
RED SHOULDER HAWK	VOCALIZING/TRANSITIONING FROM E TO W
RED WINGED BLACKBIRD	VOCALIZING IN SHRUBS
SWALLOW TAIL KITE	TRANSITIONING FROM E TO W
BLACK VULTURE	TRANSITIONING/CIRCLING FROM W TO E
CATTLE EGRET	TRANSITIONING FROM N TO S

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: 710 FDOT
Location/Observation Block/Lat-Long: STATION 2

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4-25-23	636am		Susan Shaw Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 636	67°F	5@NE	90%	Cum & Stratus	N/A
Finish: 955	77°F	7@SE	80%	Cumulus	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
STATION 2

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			NO CARACARA'S OBSERVED

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STATION 2

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
A Crow, N. Cardinal, N. Bobwhite, Blue jay, Morning Dove, Red bellied woodpecker, Smooth Hill Cranes Mocking bird, Turkey, great crested flycatcher, red shouldered Hawk	Vocal
G. egret, Fish Crows, C. Wren, White ibis, Boat tail grackles	Trans - S to N
Tufted Titmouse, Bachmans Sparrow	Vocal cont.
Pileated Woodpecker, Cattle Egret, Great Blue Heron,	Trans E to W
Mottled Ducks, Common grackles, Black Vulture, Swallow tail Kites,	Trans N to S
Blue grey gnat catcher,	loafing / foraging - Trees
Snowy Egret, Killdeer, Meadow larks,	loafing / foraging - ground
Deer, raccoon, fox squirrel	Addo. Wildlife

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR710

Location/Observation Block/Lat-Long: STATION 3

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/26/23	0645	0947	C STOUT - QUALIFIED

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/(Fog)
Start: 0645	65°F	0	Ø	N/A	MINIMAL
Finish: 0947	75°F	5 N	40%	CUMULUS CIRRUS	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
STATION IS LOCATED IN ACTIVE CATTLE PASTURE WITH FORRESTED UPLANDS AND WETLANDS

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
NO CARACARA OBSERVATIONS			

STATION 3 - SR 710
4/26/23
C. STOUT

USFWS Crested Caracara Draft Survey Protocol – Additional Guidance (2016-2017 Breeding Season)

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
WILD TURKEY	TRANSITIONING ON GROUND
GLOSSY IBIS	TRANSITIONING FROM N TO S
EASTERN MEADOWLARK	VOCALIZING ON GROUND
NORTHERN CARDINAL	VOCALIZING ON SHRUBS
LOGGERHEAD SHRIKE	LOAFING ON FENCE
COMMON GRACKLE	LOAFING IN TREE
WHITE IBIS	TRANSITIONING FROM S TO N
KILLDEER	LOAFING ON GROUND
CATTLE EGRET	FORAGING ON GROUND
NORTHERN PARULA	VOCALIZING IN TREE
RED BELLIED WOODPECKER	VOCALIZING IN TREE
GREATER YELLOWLEGS	FORAGING ON GROUND
BOAT TAILED GRACKLE	TRANSITIONING FROM W TO E
SWALLOW TAIL KITE	TRANSITIONING FROM N TO S
NORTHERN MOCKINGBIRD	TRANSITIONING FROM W TO E
RED SHOULDER HAWK	VOCALIZING IN TREE
NORTHERN BOBWHITE	VOCALIZING ON GROUND
BLACK BELLIED WHISTLING DUCK	TRANSITIONING FROM E TO W
BARN SWALLOW	TRANSITIONING FROM S TO N
DEER	TRANSITIONING ON GROUND
BLACK VULTURE	TRANSITIONING FROM E TO W
AMERICAN CROW	VOCALIZING/TRANSITIONING FROM S TO N
TUFTED TITMOUSE	VOCALIZING IN TREE
GREAT CRESTED FLYCATCHER	VOCALIZING IN TREE
FISH CROW	TRANSITIONING FROM N TO S
SANDHILL CRANE	VOCALIZING ON GROUND
MOURNING DOVE	TRANSITIONING FROM S TO N
SNOWY EGRET	TRANSITIONING FROM N TO S
WHITE EYED VIREO	VOCALIZING IN TREE
CAROLINA WREN	VOCALIZING IN SHRUB
PILEATED WOODPECKER	VOCALIZING IN TREE
GROUND DOVE	TRANSITIONING FROM W TO E
DOWNY WOODPECKER	VOCALIZING IN TREE
WOOD DUCK	TRANSITIONING FROM SE TO NW
BLUE JAY	VOCALIZING IN TREE
OSPREY	TRANSITIONING FROM W TO E
TURKEY VULTURE	TRANSITIONING FROM W TO E
WOOD STORK	TRANSITIONING/CIRCLING FROM S TO N

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: FDOT 710
Location/Observation Block/Lat-Long: STATION 4

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/24/23	644 AM	954 AM	Susan Shaw Qualified

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 644AM	64°F	NE@5mph	5%	CIRRUS	Minor fog
Finish: 954AM	78F	N@7.5mph	40%	Cumulus Cirrus	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
STATION 4

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			NO CARACARA OBSERVATIONS

page 2
4/26/23
STATION 4

Other Species Observations

Other Species Observations	Description of behavior, flight path, etc
Meadow lark, Mocking bird, Sand hill Cranes, Limpkin, N. Cardinal, Catbird, Black bellied whistling Wood storks, Common grackles snowy egret, Anhinga, Cattle	Vocal Red bellied wood peckers, Blue jay, tufted titmouse, wood pecker Ducks, Carolina wren, red headed Transi. - W to E egret, White Ibis
DC. Cormorant, great Blue heron little Blue Heron, Belted King fisher	loafing / Foraging - Water ; Water's edge (shoreline); over water
Bob white Quail, Morning Dove, Bachmans Sparrow. Boat tailed	Vocal cont... grackles, Wilson's plover, A. Crow
Brown pelicans, Barn Swallows Red shouldered Hawk, glossy ibis	Trans - S to N
Boat tailed grackles,	Trans - N to S
Killdeer	loafing/foraging - on ground
gator, opossum, Deer, wild hogs, Rabbits	other wildlife

Appendix B

Representative Field of View at Survey Station

Survey Station No. 1 – Facing North

Survey Station No. 1 – Facing East

Survey Station No. 1 – Facing South

Survey Station No. 1 – Facing West

Survey Station No. 2 – Facing North

Survey Station No. 2 – Facing East

Survey Station No. 2 – Facing South

Survey Station No. 2 – Facing West

Survey Station No. 3 – Facing North

Survey Station No. 3 – Facing East

Survey Station No. 3 – Facing South

Survey Station No. 3 – Facing West

Survey Station No. 4 – Facing North

Survey Station No. 4 – Facing East

Survey Station No. 4 – Facing South

Survey Station No. 4 – Facing West

Survey Station No. 5 – Facing North

Survey Station No. 5 – Facing East

Survey Station No. 5 – Facing South

Survey Station No. 5 – Facing West

Survey Station No. 6 – Facing North

Survey Station No. 6 – Facing East

Survey Station No. 6 – Facing South

Survey Station No. 6 – Facing West

APPENDIX F

Eastern Black Rail Survey Technical Report

[To Be Included in Final Report]

APPENDIX G

Florida Bonneted Bat Acoustic Survey
Technical Report

FLORIDA BONNETED BAT ACOUSTIC SURVEY TECHNICAL REPORT

Florida Department of Transportation

District One

Design Services for SR 710

Limits of Project: From US 441 to L-63N Canal

Okeechobee County, Florida

Financial Management Number: 419344-3

ETDM Number: 11092

Date: 10/09/2023

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

SR 710 FROM US 441 TO L-63N CANAL
OKEECHOBEE COUNTY, FLORIDA
FPID 419344-3

Florida Bonneted Bat Acoustic Survey Technical Report

Prepared for
FDOT, District 1

October 2023

Prepared by
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Prepared on behalf of
Wantman Group, Inc.
800 N Magnolia Avenue, Suite 1750 Orlando,
FL 32803

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Florida Bonneted Bat Acoustic Survey Technical Report

Introduction

On March 16, 2017, the Florida Department of Transportation (FDOT) Office of Environmental Management (OEM) granted Location and Design Concept Acceptance (LDCA) for the State Road (SR) 710 Project Development and Environment (PD&E) Study. The project limits are approximately 13 miles from United States Highway (US) 441 in Okeechobee County to County Road (CR) 714 (Southwest Martin Highway) in Martin County. The proposed improvements include widening the existing SR 710 roadway to four-lane and a new four-lane extension of SR 710 from US 441 to SR 70.

On Thursday, August 30, 2018, the FDOT District One held a public hearing for Segment 1 of the original PD&E Study, extending from SR 710 at the L-63N Canal north to the proposed intersection at US 441, a distance of approximately 3.8 miles. This hearing was held to present changes in project design, right-of-way needs, and access management changes made since the FDOT OEM's original LDCA. The public was provided an opportunity to review and provide comments on the project's potential impacts to the social, cultural, natural, and physical environment. The FDOT OEM approved a Design Change and Right of Way Authorization re-evaluation documenting these changes on February 7, 2019.

The proposed roadway improvements being advanced within this re-evaluation generally remain unchanged since the prior February 2019 re-evaluation. The improvements consist of a new four-lane suburban typical section. The roadway includes two 12-feet-wide travel lanes in each direction, separated by a raised grassed median varying from 30 feet to 39 feet wide. The posted speed will be 45 miles per hour (mph). The posted speed will reduce to 40 mph near the new intersection at US 441. The SR 710 extension will include 7 feet bicycle lanes, 6 feet sidewalk along the south side of the roadway, and a 10 feet shared use path along the north side of the roadway. Type E curb and gutter will be provided along the median and outside edges of the roadway with a closed stormwater conveyance system. The SR 710 extension will have new signals at the intersections with US 441, SR 70, and SE 40th Avenue. The project also includes widening the existing SR 710 bridge over the L-63N Canal and a new bridge culvert over Taylor Creek. Acquisition of right-of-way will be required for the new roadway alignment and stormwater ponds.

The current concept proposed for advancement differs from the prior 2019 concept in that approximately one mile of the new SR 710 is being realigned to avoid impacts to the Okeechobee

Utility Authority wellfield. Starting approximately 150 feet east of Taylor Creek, the centerline of the road shifts north of the prior alignment, before converging with the original alignment east of the proposed Pond 2 site. There is no change in the proposed roadway typical section. The maximum difference between the two alignments is 275 feet, occurring near Station 536+00. The changes in acreage for the current design is approximately one acre more than the 2018 public hearing concept.

The project is in Okeechobee County, Florida in Sections 9, 10, 11, 13, 14, 15, 16, 24; Township 37 South; Range 35 East (**Figure 1: Project Location Map**).

This report summarizes the methods and results of a species-specific survey for the Florida bonneted bat (*Eumops floridanus*). The project limits fall within the U.S. Fish and Wildlife Service (USFWS) Florida bonneted bat Consultation Area (CA). This survey was conducted in accordance with the 2019 USFWS Florida Bonneted Bat Consultation Guidelines. The Florida Bonneted Bat Consultation Key was used to determine that acoustic surveys were needed for the proposed project. The progression through the key was 1a → 2a → 3b = Conduct Full Acoustic/Roost Surveys.

Species Information

Species and Habitat Description

The Florida bonneted bat has a body length of 84 to 108 millimeters (mm) (approximately 3.75 inches) with a wingspan of 490 to 530 mm (approximately 20 inches), making it the largest species of bat in Florida. Its fur color can range from a dark grey to reddish brown. A distinguishing characteristic of the Florida bonneted bat is its large, rounded ears that are joined at the midline of the forehead. There is no significant difference in size or appearance between males and females. Florida bonneted bat echolocations have a minimum frequency of 10-18 kilohertz (kHz) and a maximum frequency of 16-22 kHz.

Very little is known about the life history and ecology of the Florida bonneted bat. Natural roosting habitat for this species includes forested areas containing tall mature trees such as pine flatwoods, mixed or hardwood hammocks, wetland forested systems, and sand pine scrub. In these natural habitats, Florida bonneted bats may roost in tree snags, tree cavities, tree crevices, under loose bark, or other deformities of mature trees. Documented roosts have occurred in trees greater than six (6) meters (20 feet) tall, with a diameter-at-breast height (DBH) of 20.3 centimeters (cm) (8 inches), and having cavities higher than 4.6 meters (15 feet) above ground. Florida bonneted bats have also been documented roosting in urban/suburban areas. Roosting habitat in these areas includes the shafts of royal palm (*Roystonea regia*) leaves, underneath tiles in Spanish tile roofs, attics, rock or brick chimneys of buildings, utility poles, and manmade bat houses.

This species can cover large areas when foraging. Studies at the Babcock-Webb Wildlife Management Area (WMA) conducted with Florida bonneted bats fitted with Global Positioning System (GPS) satellite tags documented the maximum distance detected from a capture site was 24.2 miles and the longest path traveled in a single night was 56.3 miles. In a sample size of eight

(8) individuals, Florida bonneted bats were documented traveling a mean maximum distance of 9.5 miles from the roost. (FWC 2013; Ober 2016; Webb 2018a-b).

Florida bonneted bats are unique from other bat species in Florida because they are reproductively active through most of the year, and their large size makes them capable of foraging long distances from their roost. Consequently, this species is vulnerable to disturbances around the roost during the greater portion of the year and considerations about foraging habitat extend further than the localized roost. Furthermore, impacts to their foraging habitat can also have adverse effects, even if the impacts are located a significant distance from their roosts.

Status

The Florida bonneted bat is listed as a federally designated endangered species by the USFWS and is protected by the Endangered Species Act, as amended (16 U.S. Code (U.S.C.) 1531-1544, 87 Stat. 884). No critical habitat (CH) has been designated for this species; however, in June 2020 the USFWS proposed draft language for designation of CH. Following a public comment and in response to new information, the USFWS revised the proposed rule designating CH in November 2022 and made the rule available for public comment through January 23, 2023. The revised rule includes nine (9) CH units (Kissimmee, Peace River, Babcock, Fisheating Creek, Corkscrew, Big Cypress, Everglades Tree Islands, Long Pine Key, and Miami Rocklands) covering portions of 13 counties. This project does not fall within the proposed CH (see **Figure 2**). If a project is located in the proposed CH, the consultation key does not apply and specific guidance from USFWS and individual consultation to address this area is required.

Methodology

Desktop Data Collection

A comprehensive literature and geospatial database search were conducted for the project area to determine if the Florida bonneted bat has been previously documented within the project limits and if suitable roosting or foraging habitat is available. The literature and geospatial database search included standard references such as the Rare and Endangered Biota of Florida Series, Florida Geographic Data Library (FGDL) Geographic Information System (GIS) databases, as well as resources from the Florida Fish and Wildlife Conservation Commission (FWC) and USFWS databases such as National Wetlands Inventory (NWI) mapping, CA limits, proposed CH limits, and the 2019 USFWS Consultation Key for the Florida Bonneted Bat. Additional reviewed sources included the 2019 South Florida Water Management District (SFWMD) Florida Land Use, Cover and Forms Classification System (FLUCFCS), current information from the Federal Register for Endangered and Threatened Wildlife and Plants, and current aerial imagery.

Based on this preliminary data collection effort, findings related to the Florida bonneted bat and this project include the following:

- The project falls entirely within the USFWS Florida bonneted bat CA;

- The project does not fall within the USFWS designated South Florida Urban Bat Area located in Miami-Dade and Broward County;
- The project does not fall within the species' currently proposed CH; and
- Potentially suitable foraging and roosting habitat was identified within the project boundary.

Field Surveys

The Florida bonneted bat acoustic surveys followed the protocol documented in the October 2019 U.S. Fish and Wildlife Service (USFWS) South Florida Ecological Services Office - Florida Bonneted Bat Consultation Guidelines (USFWS 2019) for linear projects that contain potential bonneted bat roosting and foraging habitat and that are also greater than five (5) acres in size. Per the Guidelines, the following weather conditions are required to be met for the first five (5) hours of each survey night:

• Temperature at or above 65 degrees Fahrenheit;
• Precipitation events, including rain and/or fog cannot exceed 30 minutes in length; and
• Sustained wind speeds cannot be greater than nine (9) miles per hour.

For the SR 710 improvements, six (6) acoustic survey stations were established based on the minimum requirements of five (5) detector nights per 0.60 miles for linear projects. The acoustic survey station locations are depicted in **Figure 3: Acoustic Survey Station Location Map**. Representative photos of the acoustic survey stations are provided in **Appendix A** and the survey locations and dates for each survey station are provided in **Table 1** below.

Weather data was collected from the National Oceanic and Atmospheric Administration (NOAA) National Weather Service (NWS) from 30 minutes prior to sunset to 30 minutes after sunrise and is provided in **Appendix B**. The closest NOAA station (Okeechobee County Airport) is approximately 1.2 miles west of the project site. Weather data was used from this station for the dates May 11 – May 17, 2023.

TABLE 1
EQUIPMENT DEPLOYMENT DETAILS

Station	Latitude	Longitude	Deployment Dates (2023)	Notes
1	27.258152	-80.825826	5/11/23 through 5/17/23	None
2	27.258285	-80.814039	5/11/23 through 5/17/23	None
3	27.259030	-80.804232	5/11/23 through 5/17/23	None
4	27.258181	-80.796720	5/11/23 through 5/17/23	None
5	27.251451	-80.794960	5/11/23 through 5/17/23	None
6	27.240013	-80.786729	5/11/23 through 5/17/23	None

Each acoustic survey station was placed in an area deemed to be a potentially suitable flight path for the Florida bonneted bat and where nearby habitat contained mature forested areas and an open water source to maximize chances of detecting foraging bats and potential roosting areas. At each survey station, a Wildlife Acoustics Song Meter SM4BAT Full Spectrum (FS) detector, set to

automatically begin collecting data continuously from 30 minutes before sunset to 30 minutes after sunrise, was deployed and programmed to record 15-second file lengths with a two-second trigger window. Each detector was fitted with an omnidirectional Wildlife Acoustic SMM-U2 External Ultrasonic Microphone placed atop an adjustable pole. The microphones were not placed beneath tree canopies and were situated away from echo-producing surfaces including open water.

Data Analysis

The Wildlife Acoustics Song Meter SM4BAT Full Spectrum detector records bat echolocations as Waveform Audio (WAV) files. A single WAV file is made up of a series of pulses that are considered a single bat pass. The WAV files recorded at each survey station were analyzed using Wildlife Acoustics Kaleidoscope Pro version 5.6.0. The auto-identification parameters used by Kaleidoscope Pro were from Bats of North America (Version 5.4.0), region Florida, and the sensitivity setting was set to +1 more accurate (conservative). The species to be selected in the auto identification classifier included: big brown bat (*Eptesicus fuscus*), Florida bonneted bat (*Eumops floridanus*), eastern red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), northern yellow bat (*Lasiurus intermedius*), Seminole bat (*Lasiurus seminolus*), southeastern myotis (*Myotis austroriparius*), northern long-eared bat (*Myotis septentrionalis*), evening bat (*Nycticeius humeralis*), tri-colored bat (*Perimyotis subflavus*), and Brazilian free-tailed bat (*Tadarida brasiliensis*).

The bat acoustic data was retrieved, saved, analyzed, and interpreted by experienced biologists who have taken one or more bat acoustic courses/workshops and who have also previously reviewed Florida bonneted bat echolocations using Kaleidoscope Pro. All echolocations auto identified by Kaleidoscope Pro as being created by a Florida bonneted bat were visually reviewed and manually verified by experienced biologists. The following parameters were considered in manual verification of Florida bonneted bat echolocations:

- Whether the characteristic frequency of echolocations fall within the documented range for the Florida bonneted bat;
- Whether there are three or more echolocations where the time between echolocations remained consistent across the sequence of echolocations;
- Whether the minimum frequency remained consistent across the sequence of echolocations;
- Whether the slope and bandwidth remained consistent from echolocation to echolocation; and
- Whether there was good signal to noise ratio as evidenced by a crisp, clean oscillogram.

All WAV files with characteristic frequencies below 25 kHz not assigned an auto identification and classified by Kaleidoscope Pro as “No ID” were manually reviewed to determine if they could contain Florida bonneted bat echolocations.

Results

A summary of the acoustic data collected at each survey station is listed in **Appendix C** and is detailed in the following sections. This summary includes the total number of nights the detectors were deployed and the nights during which the weather conditions met the requirements in the

Guidelines. The results of the Florida bonneted bat call analysis were packaged as required and uploaded into the NABat database on June 27, 2023. All WAV files were matched to the metadata files for each station and no errors were reported.

Acoustic Survey Station 1

Station 1 was surveyed from May 11 through May 17, 2023. All survey nights had acceptable weather conditions. A total of 3,803 WAV files were recorded and, of these, 2,146 WAV files were auto-identified to the species level, 926 WAV files were not assigned an auto-identification, and 731 WAV files were classified as noise. Seven WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and were confirmed to not contain Florida bonneted bat echolocations. The following is a summary of the auto-identification data:

- Big brown bat (71 WAV files)
- Eastern red bat (36 WAV files)
- Hoary bat (312 WAV files)
- Northern yellow bat (110 WAV files)
- Seminole bat (97 WAV files)
- Southeastern myotis (2 WAV files)
- Evening bat (111 WAV files)
- Tricolored bat (21 WAV files)
- Brazilian free-tailed bat (1,379 WAV files)
- **Florida bonneted bat (7 WAV files with 0 confirmed WAV files)**

Acoustic Survey Station 2

Station 2 was surveyed from May 11 through May 17, 2023. All survey nights had acceptable weather conditions. A total of 3,970 WAV files were recorded and, of these, 2,510 WAV files were auto-identified to the species level, 1,129 WAV files were not assigned an auto-identification, and 331 WAV files were classified as noise. Three WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and confirmed to not contain Florida bonneted bat echolocations. The following is a summary of the auto-identification data:

- Big brown bat (139 WAV files)
- Eastern red bat (116 WAV files)
- Hoary bat (417 WAV files)
- Northern yellow bat (202 WAV files)
- Seminole bat (299 WAV files)
- Southeastern myotis (1 WAV file)
- Evening bat (297 WAV files)
- Tricolored bat (10 WAV files)
- Brazilian free-tailed bat (1,026 WAV files)

- **Florida bonneted bat (3 WAV files with 0 confirmed WAV files)**

Acoustic Survey Station 3

Station 3 was surveyed from May 11 through May 17, 2023. All survey nights had acceptable weather conditions. A total of 4,239 WAV files were recorded and, of these, 2,755 WAV files were auto-identified to the species level, 838 WAV files were not assigned an auto-identification, and 646 WAV files were classified as noise. Five WAV files were auto-identified as containing Florida bonneted bat echolocations. These WAV files were manually inspected and were confirmed to not contain Florida bonneted bat echolocations. The following is a summary of the auto-identification data:

- Big brown bat (80 WAV files)
- Eastern red bat (16 WAV files)
- Hoary bat (295 WAV files)
- Northern yellow bat (439 WAV files)
- Seminole bat (61 WAV files)
- Evening bat (77 WAV files)
- Tricolored bat (147 WAV files)
- Brazilian free-tailed bat (1,635 WAV files)
- **Florida bonneted bat (5 WAV files with 0 confirmed WAV files)**

Acoustic Survey Station 4

Station 4 was surveyed from May 11 through May 17, 2023. All survey nights had acceptable weather conditions. A total of 4,868 WAV files were recorded and, of these, 3,021 WAV files were auto-identified to the species level, 1,339 WAV files were not assigned an auto-identification, and 508 WAV files were classified as noise. One WAV file was auto-identified as containing Florida bonneted bat echolocations. This WAV file was manually inspected and confirmed to not contain Florida bonneted bat echolocations. The following is a summary of the auto-identification data:

- Big brown bat (466 WAV files)
- Eastern red bat (42 WAV files)
- Hoary bat (244 WAV files)
- Northern yellow bat (435 WAV files)
- Seminole bat (447 WAV files)
- Southeastern myotis bat (1 WAV file)
- Evening bat (149 WAV file)
- Tricolored bat (13 WAV files)
- Brazilian free-tailed bat (1,223 WAV files)
- **Florida bonneted bat (1 WAV file with 0 confirmed WAV files)**

Acoustic Survey Station 5

Station 5 was surveyed from May 11 through May 17, 2023. All survey nights had acceptable weather conditions. A total of 5,482 WAV files were recorded and, of these, 1,345 WAV files were auto-identified to the species level, 526 WAV files were not assigned an auto-identification, and 3,611 WAV files were classified as noise. No WAV files were auto-identified as containing Florida bonneted bat echolocations. The following is a summary of the auto-identification data:

- Big brown bat (39 WAV files)
- Eastern red bat (8 WAV files)
- Hoary bat (248 WAV files)
- Northern yellow bat (43 WAV files)
- Seminole bat (263 WAV files)
- Southeastern myotis (1 WAV file)
- Evening bat (161 WAV files)
- Tricolored bat (9 WAV files)
- Brazilian free-tailed bat (573 WAV files)

Acoustic Survey Station 6

Station 6 was surveyed from May 11 through May 17, 2023. All survey nights had acceptable weather conditions. A total of 2,925 WAV files were recorded and, of these, 1,798 WAV files were auto-identified to the species level, 809 WAV files were not assigned an auto-identification, and 318 WAV files were classified as noise. No WAV files were auto-identified as containing Florida bonneted bat echolocations. The following is a summary of the auto-identification data:

- Big brown bat (59 WAV files)
- Eastern red bat (37 WAV files)
- Hoary bat (150 WAV files)
- Northern yellow bat (126 WAV files)
- Seminole bat (176 WAV files)
- Southeastern myotis (1 WAV file)
- Evening bat (173 WAV files)
- Tricolored bat (17 WAV files)
- Brazilian free-tailed bat (1,059 WAV files)

Conclusion

A total of 25,287 WAV files were recorded at the six (6) survey stations during Florida bonneted bat acoustic surveys for the proposed SR-710 improvements. Of those, 16 WAV files were auto identified by Kaleidoscope Pro as containing Florida bonneted bat echolocations. Biologists manually verified each of the auto identified Florida bonneted bat WAV files and all files with frequencies between 8 kHz and 25 kHz classified by Kaleidoscope Pro as “No ID”. As a result, it was found that none of the files contain echolocations from the Florida bonneted bat. Many of the

files were identified as noise (potentially from vehicular traffic, insects, or birds). **Figure 4** is an example of a call that was misclassified as Florida bonneted bat.

The USFWS Florida Bonneted Bat Consultation Key within the Guidelines was used to identify the effect determination for the proposed SR-710 project. The progression through the key was 1a → 2a → 3b → 6b, resulting in a no effect determination for the Florida bonneted bat. A highlighted key is included as **Appendix D**.

References

Bailey, A.M., H.K. Ober, A.R. Sovie, and R.A. McCleery. 2017. Impact of Land Use and Climate on the Distribution of the Endangered Florida Bonneted Bat. Journal of Mammalogy 98(6): 1586-1593.

Federal Register. 2013. Department of the Interior, U.S. Fish and Wildlife Service, 50 CFR Part 17, Endangered and Threatened Wildlife and Plants; Endangered Species Status for the Florida Bonneted Bat; Final Rule. Volume 78, Number 191. Pages 61004-61043.

Florida Fish and Wildlife Conservation Commission. 2013. A Species Action Plan for the Florida Bonneted Bat *Eumops floridanus.* Final Draft November 1, 2013.

Florida Fish and Wildlife Conservation Commission. 2016. Wildlife Occurrence System Database, Species Locations in Florida 1988-2015.

Florida Geographic Data Library. 2018. FGDL Metadata Explorer: Search and Download Data. https://www.fgdl.org/metadataexplorer/explorer.jsp

Marks, C.S. and G.E. Marks. 2006. Bats of Florida. The University Press of Florida. 176 Pages.

Ober, H. 2016. Annual report to USFWS for calendar year 2016. Permit number TE23583B-1. University of Florida, Department of Wildlife Ecology and Conservation, North Florida Research and Education Center. Quincy, Florida.

Schnitzler, H-R and E.K.V. Kalko. 2001. Echolocation by Insect Eating Bats. BioScience 51(7): 557-569.

South Florida Water Management District. 2020. SFWMD Land Cover Land Use 2017-2019. https://geo-sfwmd.opendata.arcgis.com/

U.S. Fish and Wildlife Service. 2019. Florida Bonneted Bat Consultation Guidelines. Consultation Key for the Florida Bonneted Bat: 04EF2000-2014_I-03230-R001, dated October 22, 2019.

U.S. Fish and Wildlife Service. 2019. USFWS IPAC Threatened and Endangered Species in Florida – 2021. https://www.fws.gov/endangered

Webb, E.N. 2018a. Email to Paula Halupa et al. University of Florida, Department of Wildlife Ecology and Conservation. Gainesville, Florida. April 1, 2018.

FIGURES

PROJECT LOCATION

Begin Project

End Project

POLK
OSCEOLA
INDIANRIVER
OKEECHOBEE
STLUCIE
HIGHLANDS
GLADES
MARTIN
PALMBEACH

Okeechobee County Airport
Okeechobee
Taylor Creek
Blue Heron Golf Club
Okeechobee Battlefield Historic State Park
Amtrak
CSX Transportation

US Highway 98 N
US Highway 441 N
State Road 70 E
State Road 710 E

NW 36th St
NW 34th St
NW 23rd Ln
NW 18th St
NW 9th St
NW 4th St
NW Park St
SW 4th St
SW 16th St
SW 15th St
SW 28th St
SW 32nd St
SW 33rd Cir
SW 35th
SE 28th St
SE 32nd St
NE 12th St
SE 8th St
SE 24th Blvd
SE 25th St
SE 26th St
SE 27th St
SE 28th St
SE 59th Blvd
SE 67th Way
SE 26th Trl

NW 46th Ave
NW 42nd Ave
NW 35th Ave
NW 34th Ave
NW 33rd Ave
NW 32nd Ave
NW 31st Ave
NW 23rd Ave
NW 21st Ave
NW 20th Ave
NW 18th Ave
NW 17th Ave
NW 10th Ter
NW 9th Ave
N Parrott Ave
NE 16th Ave
NE 32nd Ave
NE 34th Ave
NE 40th Ave
NE 48th Ave
NE 55th Ter
NE 64th Ave
NE 70th Ave
SW 48th Ave
SW 12th Ave
SW 11th Ave
SW 10th Ave
SW 7th Ave
SW 5th Ave
SW 2nd Ave
SW 3rd Ave
SW 24th Ave
SW 12th Ter
SW 32nd Ave
SE 8th Ave
SE 9th Ave
SE 32nd Ave
SE 40th Ave

700
98
70
441
US-441 S

Figure 1 - Project Location

SR 710 from US 441 to L-63N Canal
FPID #: 419344-3-32-01
Okeechobee County, Florida

0 3,000 6,000 9,000 Feet

N

Data Source:
- Wantman Group
Imagery Source:
- ESRI Streets

Date: 06/26/2023 PM: RM GIS Analyst: GB Map Document: 2316_loc_tms_20170726.mxd Project Number: 0023.16.10.01 PDF Document: Figure1_Project_Location_2023/6/23_GB.pdf Plot Size: 11x17

Project Location
Florida Bonneted Bat Proposed Critical Habitat (USFWS, 2023)

PASCO
HILLSBOROUGH
PINELLAS
POLK
OSCEOLA
BREVARD
INDIAN RIVER
MANATEE
HARDEE
OKEECHOBEE
STLUCIE
HIGHLANDS
SARASOTA
DESOTO
MARTIN
GLADES
CHARLOTTE
PALMBEACH
LEE
HENDRY
COLLIER
BROWARD
MIAMI-DADE
MONROE

Project Location

FDOT

All data within this map are supplied as is, without warranty. This product has not been prepared for legal, engineering, or survey purposes. Users of this information should review or consult the primary data sources to ascertain the usability of the information.

Figure 2 - Florida Bonneted Bat Proposed Critical Habitat

SR 710 from US 441 to L-63N Canal
FPID #: 419344-3-32-01 Okeechobee
County, Florida

0 25 50 75 Miles

Data Source:
- Wantman Group
- USFWS

Imagery Source:
- ESRI

N

Florida Bonneted Bat Survey Station

Project Location

1 2 3 4 5 6

NW 16th St · NW 13th St · NW 12th St · NW 11th St · NW 10th St · NW 2nd St · NE 9th St · NE 11th St · NE 12th St · NE 10th St · NE 7th St · NE 6th St · NE 5th St · NE 4th St · NE 3rd St · NE 2nd St · NE Park St · SE Park St · SE 2nd St · SE 3rd St · SW 4th St · SW 5th St · SW 8th St · SW 10th St · SW 11th St · SE 4th St · SE 5th St · SE 6th St · SE 7th St · SE 8th St · SE 9th St · SE 9th Ct · SE 10th St · SE 11th St · SE 2nd St · SE 17th Way · SE 6th Ln · NE 15th St · NE 14th St · NE 11th Ct · NE 11th Ln · NE 7th St · NE 6th St · NE 5th St · NE 4th St · NE 3rd St · NE 5th Tri · NE 4th Tri · NE 6th Ct · NE 12th Ln · NE 10th Ln · NE 9th Ln · NE 16th Ct · NE 42nd Ter · NE 44th Ter · NE 46th Ter · NE 48th Ave · NE 40th Ave · NE 34th Ave · NE 24th Ave · NE 21st Ave · NE 18th Ter · NE 16th Ave · NE 15th Ave · NE 14th Ave · NE 13th Ave · NE 12th Ave · NE 8th Ave · NE 7th Ave · NE 6th Ave · NE 5th Ave · NE 4th Ave · NE 3rd Ave · NE 2nd Ave · NW 5th Ave · NW 4th Ave · NW 3rd Ave · NW 2nd Ave · SW 4th Ave · SW 3rd Ave · SW 2nd Ave · SE 10th Ave · SE 11th Ave · SE 12th Ave · SE 13th Ave · SE 14th Ave · SE 16th Ave · SE 8th Ct · SE 8th Ave · SE 34th Ave · SE 35th Ter · SE 36th Ter · SE 37th Ter · SE 38th Ave · SE 38th Ter · SE 39th Ter · SE 46th Ter · SE 9th Ct · NE 32nd Ave · NE 31st Ter · NE 30th Ter · NE 30th Ave · NE 29th Ter · NE 28th Ter · NE 28th Ave · N Parrott Ave · US 441 S · State Road 70 E · Highway 70 E · E Center St · Center St · State Road 710 E · 441 · 15 · 70 · 710

Date: 06/26/2023 PM - RM GIS Analyst: GB Map Document: 23.16_wood_stork_colony_fms_20170727.mxd Project Number: 00.2316.20.C PDF Document: Figure2_USFWS_WoodStorkCFA_20230623_GB.pdf Plot Size: 11x17

FDOT

All data within this map are supplied as is, without warranty. This product has not been prepared for legal, engineering, or survey purposes. Users of this information should review or consult the primary data sources to ascertain the usability of the information.

Figure 3 - Florida Bonneted Bat Acoustic Survey Stations Locations

SR 710 from US 441 to L-63N Canal
FPID #: 419344-3-32-01
Okeechobee County, Florida

Data Source:
- Wantman Group
- USFWS

Imagery Source:
- ESRI Streets

N

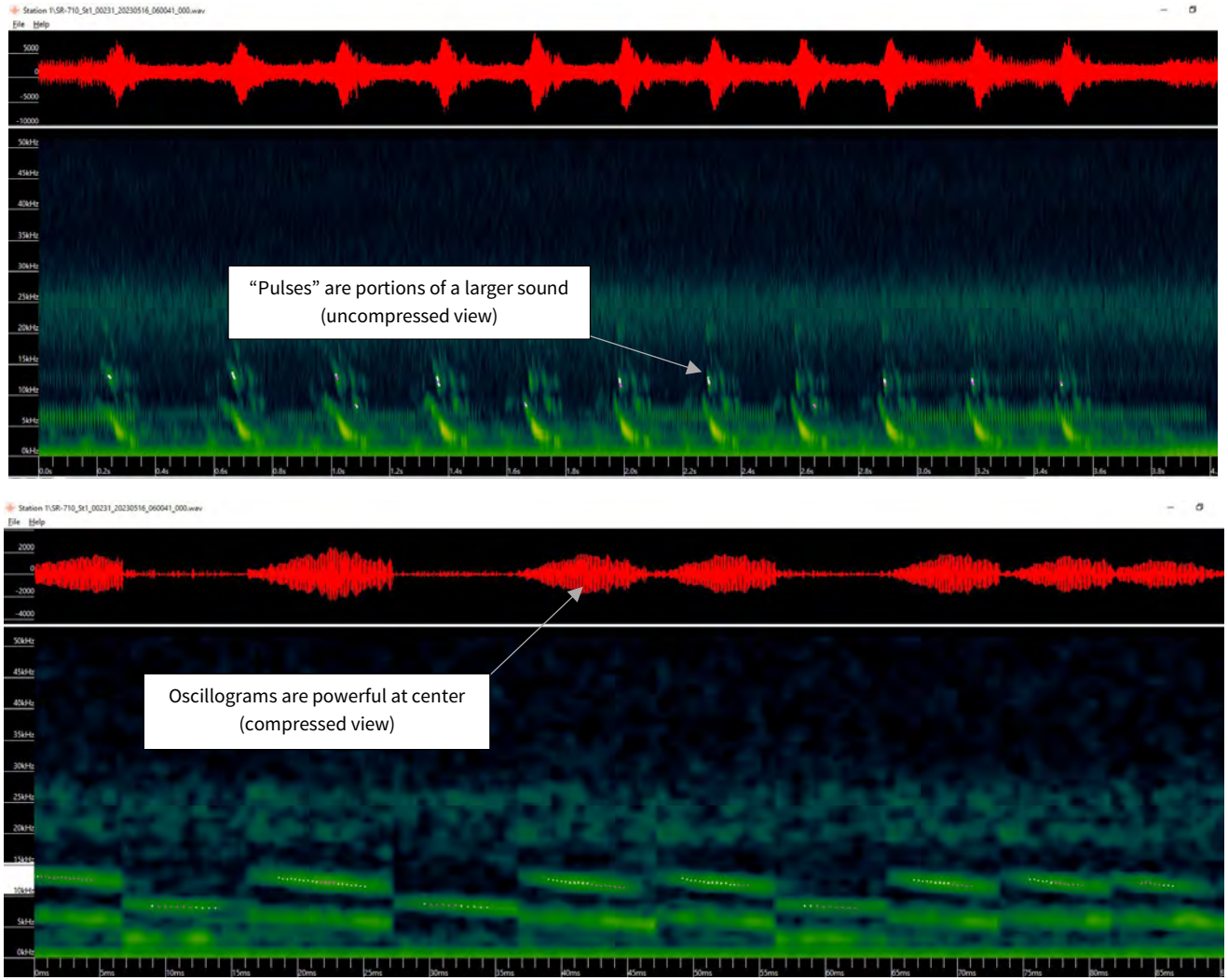

Figure 4: Examples of calls misclassified as Florida bonneted bat

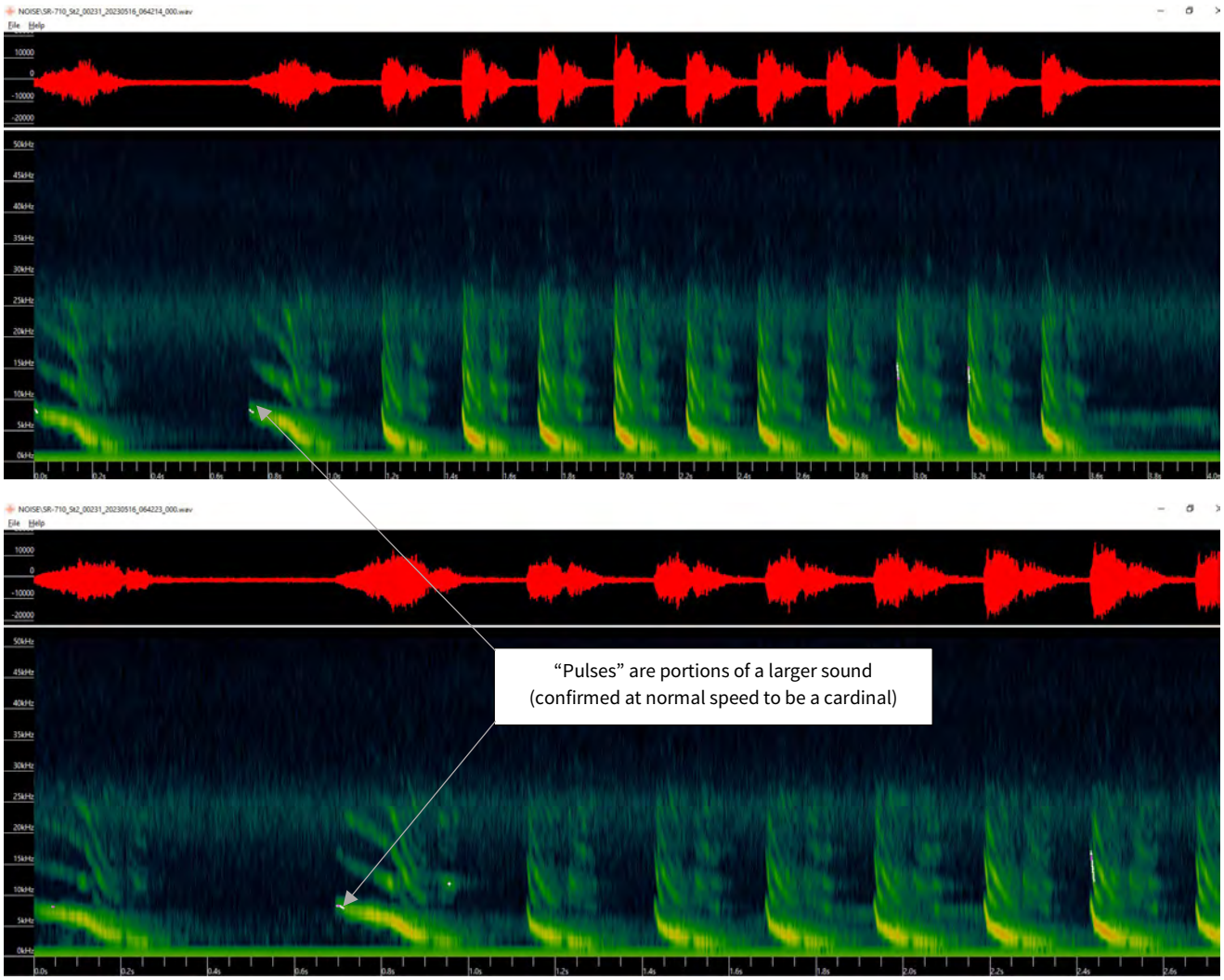

Figure 4: Examples of calls misclassified as Florida bonneted bat

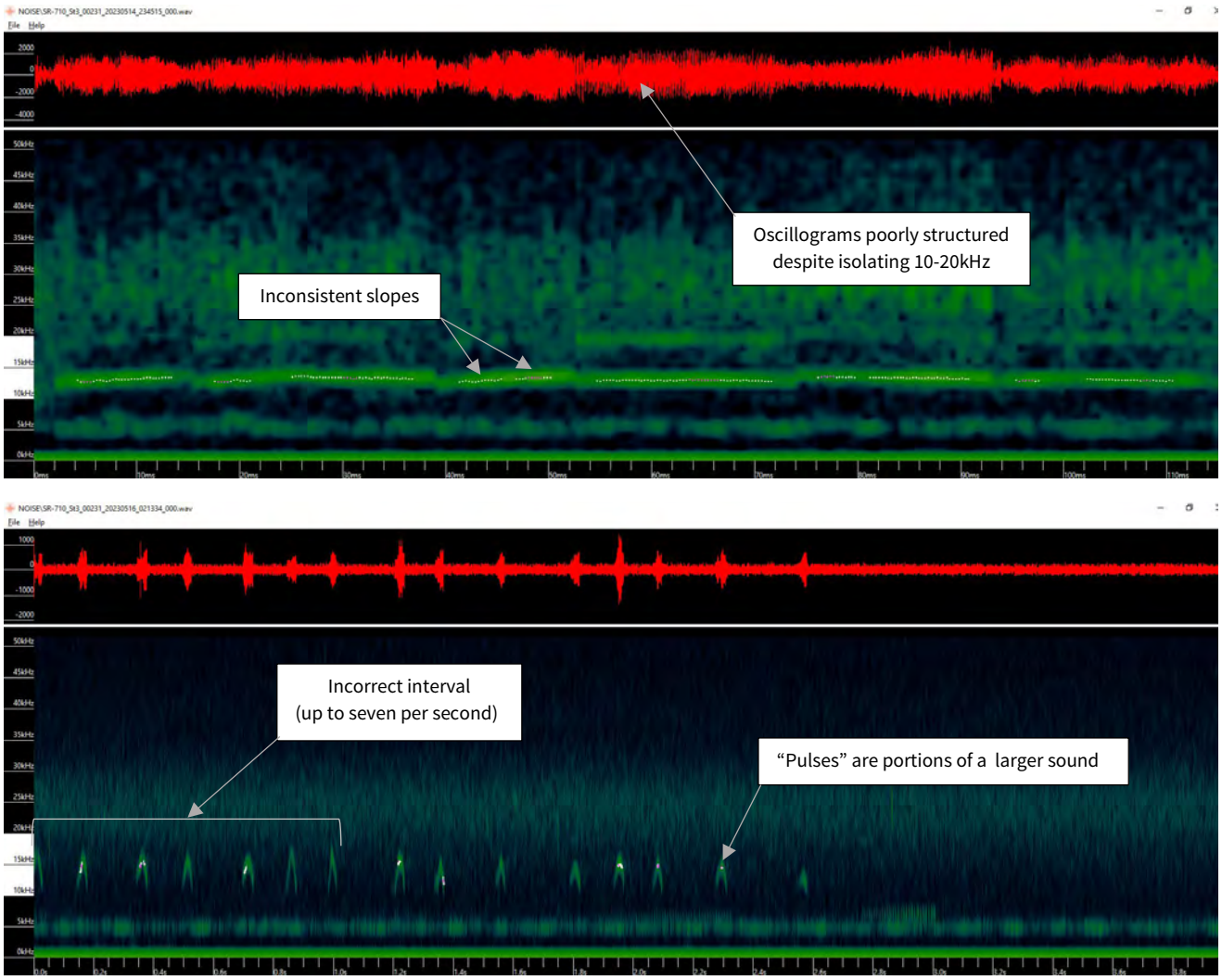

Figure 4: Examples of calls misclassified as Florida bonneted bat

Appendix A

PHOTOGRAPHS OF SURVEY STATIONS

Survey Station No. 1

Survey Station No. 2

SR 710 from US 441 to L-63N Canal
FPID No. 419344-3

Appendix A

Representative Photographs of Acoustic Survey Stations

Survey Station No. 3

Survey Station No. 4

SR 710 from US 441 to L-63N Canal FPID No. 419344-3	**Appendix A** Representative Photographs of Acoustic Survey Stations

Survey Station No. 5

Survey Station No. 6

Appendix B

NOAA National Weather Service Data

Appendix B. NOAA National Weather Service Data

Survey Day	Date	Time	Temperature (°F)	Dew Point (°F)	Humidity (%)	Wind Direction	Wind Speed (mph)	Wind Gust (mph)	Pressure (in.)	Precipitation (in.)	Conditions
1	5/11/2023 - 5/12/2023 Sunset 8:01 PM Sunrise: 6:35 AM	6:55 PM	82 °F	68 °F	62 %	VAR	6 mph	16 mph	29.98 in	0.0 in	Fair
		7:15 PM	82 °F	70 °F	66 %	VAR	7 mph	14 mph	29.99 in	0.0 in	Fair
		7:35 PM	81 °F	70 °F	70 %	VAR	5 mph	0 mph	29.99 in	0.0 in	Fair
		7:55 PM	79 °F	70 °F	74 %	VAR	7 mph	0 mph	30.00 in	0.0 in	Fair
		8:15 PM	79 °F	70 °F	74 %	E	5 mph	0 mph	30.00 in	0.0 in	Fair
		8:35 PM	77 °F	70 °F	78 %	E	3 mph	0 mph	30.01 in	0.0 in	Fair
		8:55 PM	75 °F	70 °F	83 %	E	3 mph	0 mph	30.03 in	0.0 in	Fair
		9:15 PM	75 °F	70 °F	83 %	VAR	3 mph	0 mph	30.03 in	0.0 in	Fair
		9:35 PM	73 °F	70 °F	88 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fair
		9:55 PM	73 °F	70 °F	88 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fair
		10:15 PM	72 °F	70 °F	94 %	CALM	0 mph	0 mph	30.04 in	0.0 in	Fair
		10:35 PM	72 °F	70 °F	94 %	CALM	0 mph	0 mph	30.04 in	0.0 in	Fair
		10:55 PM	72 °F	70 °F	94 %	CALM	0 mph	0 mph	30.05 in	0.0 in	Fair
		11:15 PM	72 °F	72 °F	100 %	CALM	0 mph	0 mph	30.05 in	0.0 in	Fair
		11:35 PM	72 °F	72 °F	100 %	CALM	0 mph	0 mph	30.05 in	0.0 in	Fair
		11:55 PM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	30.05 in	0.0 in	Fair
		10:53 PM	75 °F	66 °F	73 %	E	7 mph	0 mph	30.09 in	0.0 in	Fair
		11:53 PM	75 °F	66 °F	73 %	E	7 mph	0 mph	30.08 in	0.0 in	Partly Cloudy
		12:15 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	30.04 in	0.0 in	Fair
		12:35 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fair
		12:55 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fair
		1:15 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	30.02 in	0.0 in	Fair
		1:35 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	30.02 in	0.0 in	Fair
		1:55 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	30.02 in	0.0 in	Fair
		2:15 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	30.01 in	0.0 in	Fair
		2:35 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	30.01 in	0.0 in	Fair
		2:55 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	30.00 in	0.0 in	Fair
		3:15 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	30.00 in	0.0 in	Fair
		3:35 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	30.01 in	0.0 in	Fair
		3:55 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	30.01 in	0.0 in	Fair
		4:15 AM	68 °F	68 °F	100 %	NE	3 mph	0 mph	30.01 in	0.0 in	Fair
		4:35 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	30.01 in	0.0 in	Fair
		4:55 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	30.01 in	0.0 in	Fair
		5:15 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	30.01 in	0.0 in	Fair
		5:35 AM	66 °F	66 °F	100 %	CALM	0 mph	0 mph	30.01 in	0.0 in	Fair
		5:55 AM	66 °F	66 °F	100 %	CALM	0 mph	0 mph	30.02 in	0.0 in	Fair
		6:15 AM	68 °F	68 °F	100 %	NE	3 mph	0 mph	30.02 in	0.0 in	Fair
		6:35 AM	66 °F	66 °F	100 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fair
		6:55 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	30.04 in	0.0 in	Fair
		7:15 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	30.05 in	0.0 in	Fair
		7:35 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	30.05 in	0.0 in	Fair
2	5/12/2023 - 5/13/2023 Sunset 8:02 PM Sunrise: 6:35 AM	6:55 PM	82 °F	70 °F	66 %	ESE	9 mph	16 mph	30.01 in	0.0 in	Fair
		7:15 PM	82 °F	72 °F	70 %	VAR	6 mph	13 mph	30.01 in	0.0 in	Fair
		7:35 PM	81 °F	70 °F	70 %	E	8 mph	15 mph	30.02 in	0.0 in	Fair
		7:55 PM	79 °F	70 °F	74 %	E	8 mph	0 mph	30.02 in	0.0 in	Fair
		8:15 PM	79 °F	70 °F	74 %	VAR	3 mph	0 mph	30.02 in	0.0 in	Fair
		8:35 PM	77 °F	72 °F	83 %	VAR	5 mph	0 mph	30.03 in	0.0 in	Fair
		8:55 PM	77 °F	72 °F	83 %	VAR	5 mph	0 mph	30.03 in	0.0 in	Fair
		9:15 PM	75 °F	72 °F	89 %	VAR	5 mph	0 mph	30.04 in	0.0 in	Fair
		9:35 PM	75 °F	72 °F	89 %	E	5 mph	0 mph	30.04 in	0.0 in	Fair
		9:55 PM	73 °F	72 °F	94 %	VAR	3 mph	0 mph	30.05 in	0.0 in	Fair
		10:15 PM	73 °F	72 °F	94 %	CALM	0 mph	0 mph	30.05 in	0.0 in	Fair
		10:35 PM	73 °F	72 °F	94 %	ENE	3 mph	0 mph	30.06 in	0.0 in	Fair
		10:55 PM	72 °F	72 °F	100 %	ENE	3 mph	0 mph	30.06 in	0.0 in	Fair
		11:15 PM	72 °F	72 °F	100 %	ENE	5 mph	0 mph	30.06 in	0.0 in	Fair
		11:35 PM	73 °F	73 °F	100 %	ENE	3 mph	0 mph	30.06 in	0.0 in	Mostly Cloudy
		11:55 PM	72 °F	72 °F	100 %	ENE	3 mph	0 mph	30.06 in	0.0 in	Partly Cloudy
		12:15 AM	72 °F	72 °F	100 %	ESE	5 mph	0 mph	30.05 in	0.0 in	Fair
		12:35 AM	72 °F	72 °F	100 %	CALM	0 mph	0 mph	30.05 in	0.0 in	Fair
		12:55 AM	72 °F	72 °F	100 %	NE	5 mph	0 mph	30.04 in	0.0 in	Fair
		1:15 AM	72 °F	72 °F	100 %	ENE	3 mph	0 mph	30.04 in	0.0 in	Fair
		1:35 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	30.04 in	0.0 in	Fair
		1:55 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	30.04 in	0.0 in	Fair
		2:15 AM	68 °F	68 °F	100 %	NNE	3 mph	0 mph	30.03 in	0.0 in	Fair
		2:35 AM	70 °F	70 °F	100 %	NNE	3 mph	0 mph	30.03 in	0.0 in	Fair
		2:55 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	30.04 in	0.0 in	Fair
		3:15 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	30.04 in	0.0 in	Fair
		3:35 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	30.04 in	0.0 in	Fair
		3:55 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fair
		4:15 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fair
		4:35 AM	68 °F	68 °F	100 %	ENE	3 mph	0 mph	30.03 in	0.0 in	Fair
		4:55 AM	68 °F	68 °F	100 %	NE	3 mph	0 mph	30.03 in	0.0 in	Fair
		5:15 AM	68 °F	68 °F	100 %	NNE	5 mph	0 mph	30.03 in	0.0 in	Mostly Cloudy
		5:35 AM	68 °F	68 °F	100 %	NE	3 mph	0 mph	30.03 in	0.0 in	Mostly Cloudy
		5:55 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fair
		6:15 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fair
		6:35 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fair
		6:55 AM	66 °F	66 °F	100 %	CALM	0 mph	0 mph	30.02 in	0.0 in	Fair
		7:15 AM	66 °F	66 °F	100 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Light Rain
		7:35 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fair

Appendix B. NOAA National Weather Service Data

Survey Day	Date	Time	Temperature (°F)	Dew Point (°F)	Humidity (%)	Wind Direction	Wind Speed (mph)	Wind Gust (mph)	Pressure (in.)	Precipitation (in.)	Conditions
3	5/13/2023 - 5/14/2023 Sunset 8:02 PM Sunrise: 6:34 AM	6:55 PM	82 °F	66 °F	58 %	VAR	7 mph	14 mph	29.99 in	0.0 in	Fair
		7:15 PM	81 °F	66 °F	61 %	VAR	6 mph	0 mph	30.00 in	0.0 in	Fair
		7:35 PM	79 °F	64 °F	61 %	VAR	6 mph	14 mph	30.01 in	0.0 in	Fair
		7:55 PM	77 °F	64 °F	65 %	VAR	6 mph	0 mph	30.02 in	0.0 in	Fair
		8:15 PM	77 °F	66 °F	69 %	E	5 mph	0 mph	30.03 in	0.0 in	Fair
		8:35 PM	75 °F	66 °F	73 %	ENE	5 mph	0 mph	30.03 in	0.0 in	Fair
		8:55 PM	75 °F	66 °F	73 %	ENE	5 mph	0 mph	30.04 in	0.0 in	Fair
		9:15 PM	73 °F	66 °F	78 %	ENE	3 mph	0 mph	30.04 in	0.0 in	Fair
		9:35 PM	73 °F	66 °F	78 %	CALM	0 mph	0 mph	30.05 in	0.0 in	Fair
		9:55 PM	73 °F	66 °F	78 %	E	5 mph	0 mph	30.06 in	0.0 in	Fair
		10:15 PM	72 °F	66 °F	83 %	VAR	3 mph	0 mph	30.06 in	0.0 in	Fair
		10:35 PM	72 °F	66 °F	83 %	VAR	3 mph	0 mph	30.06 in	0.0 in	Fair
		10:55 PM	72 °F	66 °F	83 %	CALM	0 mph	0 mph	30.06 in	0.0 in	Unknown
		11:15 PM	72 °F	66 °F	83 %	CALM	0 mph	0 mph	30.06 in	0.0 in	Unknown
		11:35 PM	70 °F	66 °F	88 %	CALM	0 mph	0 mph	30.06 in	0.0 in	Fair
		11:55 PM	68 °F	66 °F	94 %	CALM	0 mph	0 mph	30.05 in	0.0 in	Fair
		12:15 AM	68 °F	66 °F	94 %	CALM	0 mph	0 mph	30.05 in	0.0 in	Fog
		12:35 AM	68 °F	66 °F	94 %	CALM	0 mph	0 mph	30.05 in	0.0 in	Light Rain
		12:55 AM	68 °F	66 °F	94 %	CALM	0 mph	0 mph	30.04 in	0.0 in	Fog
		1:15 AM	68 °F	66 °F	94 %	CALM	0 mph	0 mph	30.04 in	0.0 in	Fog
		1:35 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fog
		1:55 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fair
		2:15 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fog
		2:35 AM	66 °F	66 °F	100 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fair
		2:55 AM	66 °F	66 °F	100 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fair
		3:15 AM	66 °F	66 °F	100 %	CALM	0 mph	0 mph	30.02 in	0.0 in	Fair
		3:35 AM	66 °F	66 °F	100 %	CALM	0 mph	0 mph	30.02 in	0.0 in	Fair
		3:55 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	30.02 in	0.0 in	Fair
		4:15 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	30.02 in	0.0 in	Fair
		4:35 AM	66 °F	66 °F	100 %	NE	5 mph	0 mph	30.02 in	0.0 in	Fair
		4:55 AM	66 °F	66 °F	100 %	NNE	5 mph	0 mph	30.02 in	0.0 in	Fair
		5:15 AM	66 °F	66 °F	100 %	NE	5 mph	0 mph	30.02 in	0.0 in	Fair
		5:35 AM	64 °F	64 °F	100 %	NE	5 mph	0 mph	30.01 in	0.0 in	Fair
		5:55 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	30.02 in	0.0 in	Fair
		6:15 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	30.02 in	0.0 in	Fair
		6:35 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fair
		6:55 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	30.02 in	0.0 in	Fair
		7:15 AM	66 °F	66 °F	100 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fair
		7:35 AM	68 °F	68 °F	100 %	NNE	5 mph	0 mph	30.04 in	0.0 in	Fair
4	5/14/2023 - 5/15/2023 Sunset 8:03 PM Sunrise: 6:34 AM	6:55 PM	82 °F	68 °F	62 %	E	7 mph	0 mph	30.00 in	0.0 in	Fair
		7:15 PM	81 °F	66 °F	61 %	VAR	6 mph	0 mph	30.00 in	0.0 in	Fair
		7:35 PM	81 °F	66 °F	61 %	ENE	8 mph	0 mph	30.00 in	0.0 in	Fair
		7:55 PM	79 °F	68 °F	69 %	E	7 mph	15 mph	30.01 in	0.0 in	Fair
		8:15 PM	77 °F	68 °F	74 %	VAR	5 mph	0 mph	30.02 in	0.0 in	Fair
		8:35 PM	77 °F	68 °F	74 %	ENE	7 mph	0 mph	30.03 in	0.0 in	Fair
		8:55 PM	75 °F	68 °F	78 %	VAR	6 mph	0 mph	30.04 in	0.0 in	Fair
		9:15 PM	75 °F	68 °F	78 %	VAR	3 mph	0 mph	30.05 in	0.0 in	Fair
		9:35 PM	75 °F	68 °F	78 %	ENE	5 mph	0 mph	30.06 in	0.0 in	Fair
		9:55 PM	73 °F	70 °F	88 %	E	5 mph	0 mph	30.06 in	0.0 in	Fair
		10:15 PM	73 °F	70 °F	88 %	ENE	3 mph	0 mph	30.07 in	0.0 in	Fair
		10:35 PM	73 °F	70 °F	88 %	ESE	3 mph	0 mph	30.07 in	0.0 in	Fair
		10:55 PM	72 °F	70 °F	94 %	CALM	0 mph	0 mph	30.07 in	0.0 in	Fair
		11:15 PM	72 °F	70 °F	94 %	CALM	0 mph	0 mph	30.07 in	0.0 in	Fair
		11:35 PM	72 °F	70 °F	94 %	CALM	0 mph	0 mph	30.07 in	0.0 in	Fair
		11:55 PM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	30.07 in	0.0 in	Fair
		12:15 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	30.06 in	0.0 in	Fair
		12:35 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	30.06 in	0.0 in	Fair
		12:55 AM	70 °F	70 °F	100 %	CALM	0 mph	0 mph	30.06 in	0.0 in	Fair
		1:15 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	30.05 in	0.0 in	Fair
		1:35 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	30.05 in	0.0 in	Fair
		1:55 AM	66 °F	66 °F	100 %	CALM	0 mph	0 mph	30.04 in	0.0 in	Fair
		2:15 AM	66 °F	66 °F	100 %	NNW	3 mph	0 mph	30.04 in	0.0 in	Fair
		2:35 AM	66 °F	66 °F	100 %	N	3 mph	0 mph	30.04 in	0.0 in	Fair
		2:55 AM	66 °F	66 °F	100 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fair
		3:15 AM	66 °F	66 °F	100 %	N	5 mph	0 mph	30.03 in	0.0 in	Fair
		3:35 AM	66 °F	66 °F	100 %	CALM	0 mph	0 mph	30.02 in	0.0 in	Fair
		3:55 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fair
		4:15 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fair
		4:35 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fair
		4:55 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fair
		5:15 AM	64 °F	64 °F	100 %	N	5 mph	0 mph	30.03 in	0.0 in	Fair
		5:35 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fair
		5:55 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	30.04 in	0.0 in	Fair
		6:15 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	30.04 in	0.0 in	Fair
		6:35 AM	64 °F	64 °F	100 %	N	5 mph	0 mph	30.04 in	0.0 in	Fair
		6:55 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	30.04 in	0.0 in	Fair
		7:15 AM	66 °F	66 °F	100 %	N	6 mph	0 mph	30.05 in	0.0 in	Fair
		7:35 AM	66 °F	66 °F	100 %	N	7 mph	0 mph	30.05 in	0.0 in	Fair
5	5/15/2023 - 5/16/2023 Sunset 8:06 PM Sunrise: 6:36 AM	6:55 PM	82 °F	68 °F	62 %	VAR	6 mph	0 mph	30.01 in	0.0 in	Fair
		7:15 PM	82 °F	68 °F	62 %	E	8 mph	0 mph	30.00 in	0.0 in	Fair
		7:35 PM	81 °F	68 °F	65 %	ENE	7 mph	0 mph	30.00 in	0.0 in	Fair
		7:55 PM	79 °F	68 °F	69 %	E	6 mph	13 mph	30.01 in	0.0 in	Fair
		8:15 PM	77 °F	68 °F	74 %	VAR	5 mph	0 mph	30.01 in	0.0 in	Fair
		8:35 PM	77 °F	68 °F	74 %	VAR	5 mph	0 mph	30.01 in	0.0 in	Fair
		8:55 PM	75 °F	68 °F	78 %	VAR	5 mph	0 mph	30.02 in	0.0 in	Haze
		9:15 PM	75 °F	68 °F	78 %	ENE	6 mph	0 mph	30.02 in	0.0 in	Fair
		9:35 PM	73 °F	68 °F	83 %	VAR	3 mph	0 mph	30.03 in	0.0 in	Fair
		9:55 PM	73 °F	68 °F	83 %	ENE	3 mph	0 mph	30.04 in	0.0 in	Fair
		10:15 PM	72 °F	68 °F	88 %	CALM	0 mph	0 mph	30.04 in	0.0 in	Fair
		10:35 PM	72 °F	68 °F	88 %	CALM	0 mph	0 mph	30.05 in	0.0 in	Fair
		10:55 PM	70 °F	68 °F	94 %	CALM	0 mph	0 mph	30.05 in	0.0 in	Fair
		11:15 PM	70 °F	68 °F	94 %	CALM	0 mph	0 mph	30.05 in	0.0 in	Fair
		11:35 PM	70 °F	68 °F	94 %	CALM	0 mph	0 mph	30.04 in	0.0 in	Fair
		11:55 PM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	30.05 in	0.0 in	Fair
		12:15 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	30.05 in	0.0 in	Fair
		12:30 AM	68 °F	68 °F	100 %	CALM	0 mph	0 mph	30.04 in	0.0 in	Fair
		12:55 AM	66 °F	66 °F	100 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fair
		1:15 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	30.02 in	0.0 in	Fair
		1:35 AM	66 °F	66 °F	100 %	CALM	0 mph	0 mph	30.02 in	0.0 in	Fair
		1:55 AM	66 °F	66 °F	100 %	CALM	0 mph	0 mph	30.01 in	0.0 in	Fair
		2:15 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	30.01 in	0.0 in	Fair
		2:35 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	30.00 in	0.0 in	Fair
		2:55 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	30.00 in	0.0 in	Partly Cloudy
		3:15 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	29.99 in	0.0 in	Mostly Cloudy
		3:35 AM	66 °F	66 °F	100 %	CALM	0 mph	0 mph	29.98 in	0.0 in	Partly Cloudy
		3:55 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	29.98 in	0.0 in	Fair
		4:15 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	29.97 in	0.0 in	Fair
		4:35 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	29.97 in	0.0 in	Fair
		4:55 AM	63 °F	63 °F	100 %	CALM	0 mph	0 mph	29.97 in	0.0 in	Fair
		5:15 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	29.97 in	0.0 in	Fair
		5:35 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	29.98 in	0.0 in	Fair
		5:55 AM	63 °F	63 °F	100 %	CALM	0 mph	0 mph	29.98 in	0.0 in	Fair
		6:15 AM	63 °F	63 °F	100 %	CALM	0 mph	0 mph	29.98 in	0.0 in	Fair
		6:35 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	29.98 in	0.0 in	Fair
		6:55 AM	64 °F	64 °F	100 %	NNE	3 mph	0 mph	29.98 in	0.0 in	Fair
		7:15 AM	64 °F	64 °F	100 %	CALM	0 mph	0 mph	29.98 in	0.0 in	Fair
		7:35 AM	66 °F	66 °F	100 %	CALM	0 mph	0 mph	29.99 in	0.0 in	Fair

Appendix B. NOAA National Weather Service Data

Survey Day	Date	Time	Temperature (°F)	Dew Point (°F)	Humidity (%)	Wind Direction	Wind Speed (mph)	Wind Gust (mph)	Pressure (in.)	Precipitation (in.)	Conditions
6	5/16/2023 - 5/17/2023 Sunset 8:06 PM Sunrise: 6:36 AM	6:55 PM	84 °F	70 °F	62 %	VAR	7 mph	13 mph	29.83 in	0.0 in	Fair
		7:15 PM	84 °F	70 °F	62 %	VAR	7 mph	13 mph	29.83 in	0.0 in	Fair
		7:35 PM	82 °F	70 °F	66 %	ESE	7 mph	13 mph	29.83 in	0.0 in	Fair
		7:55 PM	81 °F	70 °F	70 %	VAR	7 mph	0 mph	29.84 in	0.0 in	Fair
		8:15 PM	81 °F	70 °F	70 %	E	5 mph	0 mph	29.85 in	0.0 in	Fair
		8:35 PM	79 °F	70 °F	74 %	VAR	6 mph	0 mph	29.85 in	0.0 in	Fair
		8:55 PM	79 °F	70 °F	74 %	ESE	6 mph	0 mph	29.86 in	0.0 in	Fair
		9:15 PM	77 °F	70 °F	78 %	SE	6 mph	0 mph	29.87 in	0.0 in	Fair
		9:35 PM	77 °F	70 °F	78 %	SE	6 mph	0 mph	29.87 in	0.0 in	Fair
		9:55 PM	77 °F	70 °F	78 %	SE	5 mph	0 mph	29.88 in	0.0 in	Fair
		10:15 PM	77 °F	72 °F	83 %	VAR	6 mph	0 mph	29.87 in	0.0 in	Fair
		10:35 PM	77 °F	72 °F	83 %	VAR	5 mph	0 mph	29.88 in	0.0 in	Fair
		10:55 PM	77 °F	72 °F	83 %	SE	5 mph	0 mph	29.88 in	0.0 in	Mostly Cloudy
		11:15 PM	77 °F	72 °F	83 %	SSE	3 mph	0 mph	29.89 in	0.0 in	Partly Cloudy
		11:35 PM	79 °F	73 °F	83 %	SSE	7 mph	0 mph	29.88 in	0.0 in	Mostly Cloudy
		11:55 PM	79 °F	73 °F	83 %	S	5 mph	0 mph	29.88 in	0.0 in	Mostly Cloudy
		12:15 AM	79 °F	73 °F	83 %	SSW	8 mph	0 mph	29.88 in	0.0 in	Mostly Cloudy
		12:35 AM	77 °F	73 °F	89 %	SW	6 mph	0 mph	29.88 in	0.0 in	Partly Cloudy
		12:55 AM	77 °F	73 °F	89 %	WSW	6 mph	0 mph	29.88 in	0.0 in	Mostly Cloudy
		1:15 AM	75 °F	73 °F	94 %	SW	5 mph	0 mph	29.88 in	0.0 in	Cloudy
		1:35 AM	75 °F	73 °F	94 %	SSW	3 mph	0 mph	29.87 in	0.0 in	Mostly Cloudy
		1:55 AM	75 °F	73 °F	94 %	WSW	6 mph	0 mph	29.87 in	0.0 in	Cloudy
		2:15 AM	75 °F	73 °F	94 %	SW	6 mph	0 mph	29.87 in	0.0 in	Cloudy
		2:35 AM	75 °F	72 °F	89 %	SW	5 mph	0 mph	29.86 in	0.0 in	Cloudy
		2:55 AM	75 °F	70 °F	83 %	W	5 mph	0 mph	29.85 in	0.0 in	Cloudy
		3:15 AM	75 °F	70 °F	83 %	W	5 mph	0 mph	29.84 in	0.0 in	Cloudy
		3:35 AM	73 °F	70 °F	88 %	WSW	3 mph	0 mph	29.83 in	0.0 in	Cloudy
		3:55 AM	73 °F	70 °F	88 %	CALM	0 mph	0 mph	29.83 in	0.0 in	Partly Cloudy
		4:15 AM	73 °F	72 °F	94 %	CALM	0 mph	0 mph	29.83 in	0.0 in	Mostly Cloudy
		4:35 AM	73 °F	72 °F	94 %	W	3 mph	0 mph	29.83 in	0.0 in	Mostly Cloudy
		4:55 AM	73 °F	73 °F	100 %	WNW	6 mph	0 mph	29.83 in	0.0 in	Cloudy
		5:15 AM	73 °F	73 °F	100 %	WNW	6 mph	0 mph	29.83 in	0.0 in	Mostly Cloudy
		5:35 AM	73 °F	73 °F	100 %	WNW	5 mph	0 mph	29.83 in	0.0 in	Fair
		5:55 AM	73 °F	73 °F	100 %	WNW	6 mph	0 mph	29.83 in	0.0 in	Fair
		6:15 AM	73 °F	73 °F	100 %	NW	5 mph	0 mph	29.84 in	0.0 in	Fair
		6:35 AM	72 °F	72 °F	100 %	CALM	0 mph	0 mph	29.84 in	0.0 in	Mostly Cloudy
		6:55 AM	72 °F	72 °F	100 %	WSW	3 mph	0 mph	29.85 in	0.0 in	Cloudy
		7:15 AM	73 °F	73 °F	100 %	W	6 mph	0 mph	29.85 in	0.0 in	Mostly Cloudy
		7:35 AM	73 °F	73 °F	100 %	W	6 mph	0 mph	29.85 in	0.0 in	Mostly Cloudy

Appendix C

ACOUSTIC DATA SUMMARY

Station	Number of Kaleidoscope Pro Auto ID'd WAV files															Number of manually verified WAV files
	Total recorded files	Classifed as noise	Not assigned auto ID	Total auto ID'd to species level	Big brown bat (*Eptesicus fuscus*)	Eastern red bat (*Lasiurus borealis*)	Hoary bat (*Lasiurus cinereus*)	Northern yellow bat (*Lasiurus intermedius*)	Seminole bat (*Lasiurus seminolus*)	Southeastern myotis (*Myotis austroriparius*)	Northern Long-Eared Bat (*Myotis septentrionalis*)	Evening bat (*Nycticeius humeralis*)	Tricolored bat (*Perimyotis subflavus*)	Brazilian free-tailed bat (*Tadarida brasiliensis*)	Florida bonneted bat (*Eumops floridanus*)	Florida bonneted bat
1	3,803	731	926	2,146	71	36	312	110	97	2	0	111	21	1,379	7	0
2	3,970	331	1,129	2,510	139	116	417	202	299	1	0	297	10	1,026	3	0
3	4,239	646	838	2,755	80	16	295	439	61	0	0	77	147	1,635	5	0
4	4,868	508	1,339	3,021	466	42	244	435	447	1	0	149	13	1,223	1	0
5	5,482	3,611	526	1,345	39	8	248	43	263	1	0	161	9	573	0	0
6	2,925	318	809	1,798	59	37	150	126	176	1	0	173	17	1,059	0	0

NOTES:
The following species were not included in Kaleidoscope Pro analysis due to rarity in Florida: silver haired bat, fringed myotis, Palla's mastiff bat, gray myotis, and little brown myotis.

Appendix D

FLORIDA BONNETED BAT CONSULTATION KEY

Florida Bonneted Bat Consultation Key[#]

Use the following key to evaluate potential effects to the Florida bonneted bat (FBB) from the proposed project. Refer to the Glossary as needed.

1a. Proposed project or land use change is partially or wholly within the Consultation Area (Figure 1).....**Go to 2**
1b. Proposed project or land use change is wholly outside of the Consultation Area (Figure 1).....**No Effect**

2a. Potential FBB roosting habitat exists within the project area.....**Go to 3**
2b. No potential FBB roosting habitat exists within the project area.....**Go to 13**

3a. Project size/footprint* ≤ 5 acres (2 hectares)..... **Conduct Limited Roost Survey (Appendix C)** then **Go to 4**
3b. Project size/footprint* > 5 acres (2 hectares).....**Conduct Full Acoustic/Roost Surveys (Appendix B)** then **Go to 6**

4a. Results show FBB roosting is likely .....**Go to 5**
4b. Results do not show FBB roosting is likely.....**MANLAA-P if BMPs (Appendix D) used and survey reports are submitted. Programmatic concurrence.**

5a. Project will affect roosting habitat.....**LAA$^+$ Further consultation with the Service required.**
5b. Project will not affect roosting habitat..... **MANLAA-C with required BMPs (Appendix D). Further consultation with the Service required.**

6a. Results show some FBB activity.....**Go to 7**
6b. Results show no FBB activity.....**No Effect**

7a. Results show FBB roosting is likely.....**Go to 8**
7b. Results do not show FBB roosting is likely.....**Go to 10**

8a. Project will not affect roosting habitat.....**Go to 9**
8b. Project will affect roosting habitat.....**LAA$^+$ Further consultation with the Service required.**

9a. Project will affect* > 50 acres (20 hectares) (wetlands and uplands) of foraging habitat.....**LAA$^+$ Further consultation with the Service required.**
9b. Project will affect* ≤ 50 acres (20 hectares) (wetlands and uplands) of foraging habitat..... **MANLAA-C with required BMPs (Appendix D). Further consultation with the Service required.**

10a. Results show high FBB activity/use.....**Go to 11**
10b. Results do not show high FBB activity/use.....**Go to 12**

11a. Project will affect* > 50 acres (20 hectares) (wetlands and uplands) of FBB habitat (roosting and/or foraging)..... **LAA$^+$ Further consultation with the Service required.**
11b. Project will affect* ≤ 50 acres (20 hectares) (wetlands and uplands) of FBB habitat (roosting and/or foraging)..... **MANLAA-C with required BMPs (Appendix D). Further consultation with the Service required.**

12a. Project will affect* > 50 acres (20 hectares) (wetlands and uplands) of FBB habitat..... **LAA$^+$ Further consultation with the Service required.**
12b. Project will affect* ≤ 50 acres (20 hectares) (wetlands and uplands) of FBB habitat..... **MANLAA-P if BMPs (Appendix D) used and survey reports are submitted. Programmatic concurrence.**

13a. FBB foraging habitat exists within the project area and foraging habitat will be affected…..……..**Go to 14**

13b. FBB foraging habitat exists within the project area and foraging habitat will not be affected **OR** no FBB foraging habitat exists within the project area….……..**No Effect**

14a. Project size* > 50 acres (20 hectares) (wetlands and uplands) ……..…….....**Go to 15**

14b. Project size* ≤ 50 acres (20 hectares) (wetlands and uplands) ……...….. **MANLAA-P if BMPs (Appendix D) used. Programmatic concurrence.**

15a. Project is within 8 miles (12.9 kilometers) of high quality potential roosting areas^……..…..…**Conduct Full Acoustic Survey (Appendix B) and Go to 16**

15b. Project is not within 8 miles (12.9 kilometers) of high quality potential roosting area^…….....….**MANLAA-P if BMPs (Appendix D) used. Programmatic concurrence.**

16a. Results show some FBB activity……...…….…....**Go to 17**

16b. Results show no FBB activity……..…….…....**No Effect**

17a. Results show high FBB activity/use……...…...…....**LAA[+] Further consultation with the Service required.**

17b. Results do not show high FBB activity/use……..... **MANLAA-P if BMPs (Appendix D) used and survey reports submitted. Programmatic concurrence.**

[#] If you are within the urban environment and you are renovating an existing artificial structure (with or without additional ground disturbing activities), these Guidelines do not apply. The Service is developing separate guidelines for consultation in these situations. Until the urban guidelines are complete, please contact the Service for additional guidance

*****Includes wetlands and uplands that are going to be altered along with a 250- foot (76.2- meter) buffer around these areas if the parcel is larger than the altered area.

[+]Project modifications could change the **LAA** determinations in numbers 5, 8, 9, 11, 12, and 17 to **MANLAA** determinations.

^Determining if **high quality potential roosting areas** are within 8 mi (12.9 km) of a project is intended to be a desk-top exercise looking at most recent aerial imagery, not a field exercise.

APPENDIX H

Southeastern American Kestrel Survey
Technical Report

[To Be Included in Final Report]