



Natural Resource Evaluation

**SR-9/I-95 @ SR 842/Broward Boulevard (Broward
Boulevard from West of SW 24th Avenue to East of
NW/SW 18th Avenue)
Project Development & Environment (PD&E) Study**

Efficient Transportation Decision Making (ETDM) No.: 14226

**Broward County, Florida
Financial Project ID Number: 435513-1-22-02**

**Prepared for:
Florida Department of Transportation, District Four
3400 West Commercial Boulevard
Fort Lauderdale, FL 33309**

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The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being or have been carried out by FDOT pursuant to 23 U.S.C. §327 and a Memorandum of Understanding dated December 14, 2016 and executed by FHWA and FDOT.

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Executive Summary

The Florida Department of Transportation (FDOT), District Four, is currently conducting a Project Development and Environment (PD&E) Study that is evaluating potential improvements to the SR-9/I-95 and SR-842/Broward Boulevard Interchange in the City of Fort Lauderdale, Broward County, Florida. The primary purpose of this study is to develop and evaluate design concepts to improve traffic flow to and from I-95 and along Broward Boulevard, connectivity between the 95 Express Lanes and Broward Boulevard and intermodal connectivity. The primary need for this project is to enhance system linkage and modal interrelationships at the I-95/Broward Boulevard Interchange.

The project area extends along SR-9/I-95 from just south of Davie Boulevard to just south of Sunrise Boulevard, a distance of approximately two miles, and along Broward Boulevard from NW 24th Avenue to NW 18th Avenue, a distance of approximately one half mile. The study area includes the median ramp connections to the Park-and-Ride lots from I-95 north and south of Broward Boulevard.

This Natural Resource Evaluation (NRE) documents the natural resources analysis performed to support decisions related to the proposed project and summarizes potential impacts to wetlands and other surface waters, protected species and habitat, and Essential Fish Habitat (EFH). Measures to avoid, minimize, and mitigate for potential impacts are also discussed. This report provides documentation of this analysis to supplement the Environmental Document.

The project area was reviewed to identify, map, and assess wetlands, surface water communities, and critical and protected species habitat within and adjacent to the project corridor. These habitats were evaluated to determine the level of impact resulting from the proposed project, if any, to critical and or/protected species habitat and to protected species present. The study methodology included reviews of the Environmental Technical Advisory Team comments, literature reviews, agency database searches, geographic information system (GIS) analyses, and field reviews.

The build alternatives were evaluated for potential impacts to floodplains, wetlands, and other surface waters. One wetland exists as a fringe mangrove on the banks of the tidal North Fork of the New River. Seven surface waters exist within the project area, including the North Fork of the New River and six permitted stormwater management areas containing hydrophytic vegetation. The build alternatives encroach upon the fringe mangrove wetland (W-1) and North Fork of the New River (SW-4), however, they are already planned to be fully impacted and mitigated by the I-95 Express Phase 3A-1 project (FPID No. 433108-5-52-01), authorized under South Florida Water Management District (SFWMD) Environmental Resource Permit No.06-01465-S and United States Army Corps of Engineers (USACE) Dredge & Fill Permit No. SAJ 2014-01584. The remaining surface waters (SW-3, SW-5, and SW-7) will be mitigated through offsetting stormwater management areas to be constructed as part of the build alternative.

The National Marine Fisheries Service (NMFS) has designated areas of The North Fork of the New River as EFH, due to the presence of fringe mangroves. While the build alternatives will result in shading and pile driving impacts to the North Fork of the New River, any impacts to critical habitats and EFH have already been mitigated by the I-95 Express Phase 3A-1 project. As such, it was determined that the project “**may effect, not likely to adversely affect**” the West Indian manatee (*Trichechus manatus*) and the Smalltooth sawfish (*Pristis pectinata*). NMFS indicated that re-initiation of EFH consultation will not be required based on the previous consultation for the I-95 Express Phase 3A project and that Endangered Species Act (ESA) consultation for the Smalltooth sawfish will not require re-initiation if the means and methods for the proposed widening are the same as those used by the I-95 Phase 3A project (**See Appendix H**). The I-95 Broward Boulevard project is anticipated to use the same construction means and methods as described in the I-95 Phase 3A project. Therefore, the bridge widening associated with this project does not meet the criteria to trigger re-initiation of consultation with the NMFS.

This document has been updated with the most current listed species as of April 10, 2017. Eleven federally listed animals and two plant species were determined to potentially occur within, or within the vicinity of, the project area based on USFWS sources. However, little suitable habitat remains available for use by listed species in this developed project area.

Based on the limited available habitat and the proposed improvements, it was determined that the project will have “**no effect**” on the following federally listed species: Everglades snail kite (*Rostrhamus sociabilis plumbeus*); American alligator (*Alligator mississippiensis*); American crocodile (*Crocodylus acutus*); Hawksbill (*Eretmochelys imbricata*), Leatherback (*Dermochelys coriacea*), Green (*Chelonia mydas*), and Loggerhead sea turtles (*Caretta caretta*); Beach jacquemontia (*Jacquemontia reclinata*); and Tiny Polygala (*Polygala smallii*). It was determined that the project “**may effect, not likely to adversely affect**” the following species: Wood stork (*Mycteria americana*); West Indian manatee; Smalltooth sawfish; and the Eastern Indigo snake (*Drymarchon corais couperi*). USFWS concurred with these effects determinations on May 2, 2018 (See **Appendix H**).

Table of Contents

Contents

Executive Summary	i
Table of Contents	iv
List of Tables	v
List of Appendices	vi
Abbreviations	vii
1.0 Introduction	1
2.0 Project Description	2
2.1 Project Location	2
2.2 Description of Existing Facilities	2
2.3 Purpose and Need	4
2.3.1 System Linkage	4
2.3.2 Modal Interrelationships	4
2.3.3 Capacity	5
2.3.4 Safety	5
2.3.5 Transportation Demand	5
2.3.6 Social Demands and Economic Development	6
2.3.7 Emergency Evacuation	6
2.4 Description of the Proposed Action	6
2.4.1 Mainline I-95 Build Alternative	7
2.4.2 Broward Boulevard Interchange Build Alternatives	8
2.4.3 Eastbound Broward Boulevard to Southbound 95 Express Alternatives	9
2.4.4 Park-and-Ride Lot Build Alternatives	10
2.4.5 Recommended Alternative	11
3.0 Existing Conditions	14
3.1 Land Use	14
3.2 Soils	15
3.3 Floodplains	16
3.4 Upland Habitats	16
4.0 Wetland Evaluation	17
4.1 Preliminary Data Collection	17
4.2 Existing Wetland Habitats and Surface Waters	17
4.3 Wetland and Surface Water Impacts	21
4.3.1 Floodplain Impacts	21
4.3.2 Direct Impacts	21
4.3.3 Indirect and Cumulative Impacts	24
4.3.4 Avoidance and Minimization	25
5.0 Protected Species and Habitat	25
5.1 Preliminary Data Collection	26
5.2 Potentially Occurring Listed Species	27
5.3 Federally Protected Species	27

5.3.1	Smalltooth sawfish.....	29
5.3.2	Wood stork.....	29
5.3.3	Everglade snail kite.....	31
5.3.4	West Indian manatee.....	31
5.3.5	Eastern indigo snake.....	32
5.3.6	American alligator and American crocodile.....	33
5.3.7	Hawksbill, Leatherback, Green, and Loggerhead sea turtles.....	33
5.3.8	Beach jacquemontia.....	34
5.3.9	Tiny polygala.....	34
5.4	State Protected Species.....	34
5.4.1	Least tern.....	35
5.4.2	Little blue heron.....	36
5.4.3	Tricolored heron.....	36
5.4.4	Reddish egret.....	36
5.4.5	Roseate spoonbill.....	36
5.4.6	Black skimmer.....	37
5.4.7	American oystercatcher.....	37
5.4.8	Burrowing owl.....	37
5.4.9	Gopher tortoise.....	37
5.5	Critical Habitat.....	38
6.0	Essential Fish Habitat Assessment.....	38
7.0	Conceptual Mitigation.....	42
8.0	Anticipated Permits.....	43
9.0	Conclusion.....	43
10.0	Agency Coordination.....	47
11.0	References.....	48

List of Tables

Table 3.1.1:	Existing Land Use / Land Cover Types within 500-foot Project Area Buffer.....	15
Table 3.2.1:	Soils.....	16
Table 4.2.1	Wetlands and Surface Waters within a 500-foot Buffer of the Project Area.....	18
Table 4.3.2.1	Direct Impacts Acreages to Wetlands and Surface Waters within a 500-foot Buffer of the Project Area.....	22
Table 5.3.1	Likelihood of Occurrences of Federally Listed Species with the Project Area.....	28
Table 5.4.1	Likelihood of Occurrences of State Listed Species within the Project Area.....	35
Table 9.1	Summary of Wetland and Surface Water Classifications and Impacts.....	44
Table 9.2	Summary of Federally and State Listed Species and Their Effect Determination.....	46

List of Appendices

- Appendix A Figures
Figure 1: Project Location Map
Figure 2: Existing Land Use Map
Figure 3: Future Land Use Map
Figure 4: Soil Map
Figure 5: Flood Zone Location Map
Figure 6: Existing Wetlands and Other Surface Waters
Figure 7: Wetland and Surface Water Impacts
- Appendix B Eastern Indigo Snake Standard Protection Measures (2013)
- Appendix C USFWS Wood Stork, Eastern Indigo Snake, and Manatee Programmatic Effect Determination Keys
- Appendix D USFWS Standard Manatee Condition for In-Water Work (2011)
- Appendix E NMFS Sea Turtle and Smalltooth Sawfish Construction Conditions (2006)
- Appendix F Figures of Existing Conditions and Build Alternatives from Project's Preliminary Engineering Report; Bridge Widening Exhibit; and Concept Plans
- Appendix G I-95 Express Phase 3A (FPID 433108-4-52-01) Permit and Project Information—
Pertinent Pages
Permit Plans
SFWMD Permit Modification (Permit No. 06-01465-S)
USACE Permit (SAJ-2014-01584) (SP-GGL)
Environmental Considerations Document
NMFS Concurrence Letter (February 4, 2015)
NMFS EFH Recommendation Letter (October 24, 2014)
- Appendix H Agency Coordination
NMFS and USFWS Initial Coordination - Meeting Notes (February 23, 2018)
NMFS Memorandum to File (March 27, 2018)
USFWS ESA Section 7 Consultation / Concurrence Request Letter (May 2, 2018)

Abbreviations

BFE	Base Flood Elevation
CD	Collector-Distributor
CFA	Core Foraging Area
CFR	Code of Federal Regulation
EFH	Essential Fish Habitat
ERP	Environmental Resource Permit
ESA	Endangered Species Act
ETDM	Efficient Transportation Decision Making
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FE	Federally Endangered
FHWA	Federal Highway Administration
FLUCFCS	Florida Land Use, Cover and Forms Classification System
FMC	Fishery Management Councils
FS	Florida Statutes
FT	Federally Threatened
FWC	Florida Fish and Wildlife Conservation Commission
FY	Fiscal Year
GIS	Geographic Information System
HAPC	Habitat Areas of Particular Concern
HOV	High Occupancy Vehicles
LOS	Level of Service
LDCA	Location and Design Concept Acceptance

L RTP	Long Range Transportation Plan
MPO	Metropolitan Planning Organization
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NEPA	National Environmental Policy Act
NFHL	National Flood Hazard Layer
NMFS	National Marine Fisheries Service
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NWI	National Wetland Inventory
PD&E	Project Development and Environment Study
PROMA	Permittee-Responsible Offsite Mitigation Areas
SFH	Suitable Foraging Habitat
SFRC	South Florida Rail Corridor
SFWMD	South Florida Water Management District
SIS	Strategic Intermodal System
SSL	Sovereign Submerged Lands
ST	State Threatened
TIP	Transportation Improvement Program
U.S.C.	United States Code
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service

1.0 Introduction

The Florida Department of Transportation (FDOT), District Four, is currently conducting a Project Development and Environment (PD&E) Study that is evaluating potential improvements to the SR-9/I-95 and SR-842/Broward Boulevard Interchange in the City of Fort Lauderdale, Broward County, Florida. The primary purpose of this study is to develop and evaluate design concepts that will improve traffic flow to and from I-95, as well as along Broward Boulevard, increase connectivity between the 95 Express Lanes and Broward Boulevard, and improve intermodal connectivity. Improved connectivity and traffic flow will be achieved via widening along Broward Boulevard and I-95, new ramps to connect the 95 Express Lanes, and the re-alignment of existing ramps. As part of this PD&E Study, a natural resources evaluation was performed.

In accordance with Executive Order 11990, Protection of Wetlands, dated May 23, 1977, US Department of Transportation Order 56601.A, Preservation of the Nation's Wetlands, dated August 24, 1978, and the FDOT PD&E Manual, Part 2 - Chapter 9 "Wetlands and Other Surface Waters" (January 14, 2019); a wetland evaluation analysis was conducted as part of the I-95 at Broward Boulevard PD&E Study. This report documents the wetland evaluation and includes: 1) descriptions of the existing wetland and other surface water features within the study area; 2) qualitative and quantitative information regarding potential wetland impacts; 3) evaluations of wetland functions and values of impacted wetlands; 4) mitigation measures to compensate for any unavoidable wetland impacts; and 5) permitting requirements and agency coordination. The methods and results of this wetland evaluation are summarized in the following sections.

In accordance with 50 CFR Part 402, the Endangered Species Act of 1973, as amended, and the FDOT PD&E Manual, Part 2 – Chapter 16 "Protected Species and Habitat" (January 14, 2019), an assessment of federally and state protected wildlife and plant species involvement was conducted. The objectives of this assessment were to determine if any protected species inhabit the project site, to determine if any protected species present would be adversely impacted by the proposed project, and if necessary, develop recommendations for avoidance and minimization of potential impacts. The methods and results of this assessment are summarized in the following sections.

This Natural Resource Evaluation contains an evaluation of the environmental impacts for the SR-9/I-95 and SR-842/Broward Boulevard Interchange Project. This report is prepared in accordance with the FDOT PD&E Manual, Part 2, Chapters 7, 8, 9, 10, 11, 12, 16, and 17, dated January 14, 2019. The purpose of this report is to identify environmental features and listed species within the project limits, and to document the potential impacts to those features and listed species, in support of the PD&E study consistent with federal, state, and local objectives.

2.0 Project Description

2.1 Project Location

The Interchange of I-95 at Broward Boulevard is located in central Broward County in the City of Fort Lauderdale, in Sections 4, 5, 8, and 9 of Township 50 S, Range 42 E. The PD&E Study limits extend along SR-9/I-95, from just south of Davie Boulevard to just south of Sunrise Boulevard, a distance of approximately two miles, and along Broward Boulevard from NW 24th Avenue to east of NW/SW 18th Avenue, a distance of approximately one half mile. The study area includes the median ramp connections to the Park-and-Ride lots from I-95 north and south of Broward Boulevard. The South Florida Rail Corridor (SFRC) / CSX Railroad is adjacent to and runs parallel along the west side of I-95 in this area. The study limits are shown in **Figure 1** in **Appendix A**.

2.2 Description of Existing Facilities

The typical section of I-95 within the study area varies. From the Davie Boulevard interchange to SW 5th Place the typical section of I-95 is an eight-lane facility comprised of three General Purpose Lanes in each direction and one Special Use Lane (previously designated for High Occupancy Vehicle (HOV) use and in transition to managed toll lanes under the 95 Express Project) in each direction. From the vicinity of SW 5th Place, where the northbound Collector-Distributor (CD) road ramp system merges traffic from I-595 into the General Purpose Lanes, and through to the Sunrise Boulevard interchange, I-95 is a 10-lane facility comprised of four General Purpose Lanes in each direction and one Special Use Lane in each direction (same condition as noted above). Southbound ingress to I-95 from Broward Boulevard is provided at the western terminal intersection by a single lane access right turn lane from eastbound Broward Boulevard and a double left turn lane from westbound Broward Boulevard. Egress from southbound I-95 to Broward Boulevard is provided by a ramp with a single right turn lane for traffic heading west on Broward Boulevard and a double left turn lane for traffic heading east on Broward Boulevard.

Currently, northbound ingress to I-95 from Broward Boulevard is provided by a single lane access ramp from westbound Broward Boulevard at the eastern terminal intersection and a single lane flyover from eastbound Broward Boulevard west of the western terminal intersection. Egress to Broward Boulevard from northbound I-95 is provided by a ramp, which is part of the northbound CD road ramp system that was recently reconstructed to include triple right turn lanes for traffic heading eastbound on Broward Boulevard and double left turn lanes for traffic heading westbound on Broward Boulevard. Additional ingress and egress to I-95 is provided through the Park-and-Ride lot. For both directions of travel along I-95 ingress and egress is

provided by single lane ramps that cross over the southbound lanes of I-95 and connect with the Special Use Lanes (conversion of single HOV to dual Express Lanes under construction) located in the inside roadway of northbound and southbound I-95.

Broward Boulevard is a six-lane urban divided roadway with a raised median within the vicinity of the I-95 Interchange. In its current configuration there are no provisions for dedicated bicycle traffic within these limits outside of the general travel lanes. Seven-foot wide sidewalks are provided on both sides of Broward Boulevard between NW/SW 22nd Avenue and NW/SW 18th Avenue west of NW/SW 22nd Avenue. Westbound Broward Boulevard to the west of NW/SW 22nd Avenue the sidewalk is seven feet wide, and in the eastbound direction the sidewalk is six feet wide. Broward Boulevard provides the main entry way to the downtown Fort Lauderdale Central Business District from I-95 and the east-west connection between US-1 and SR-817/University Drive in the City of Plantation.

There are a number of transit options within the operating area of the I-95 at Broward Boulevard Interchange that provide direct service and transfer connections along the north-south and east-west corridors. These include passenger rail services (Tri-Rail and Amtrak) and bus services (Broward County Transit, Breeze, Sun Trolley, 95 Express Bus, Tri-Rail Shuttle and Tri-Rail NW Community Link). There is a Park-and-Ride lot located within the interchange area on the southwest and northwest quadrants. The existing conditions at the Park-and-Ride lot include the provision of 794 parking spaces throughout five parking lots, shown in **Figure 2** in **Appendix F**. Spaces in Lot 5 are designated for Amtrak and Tri-Rail parking only while the spaces in Lots 1-4 are available for any purpose, including car pools and 95 Express Bus. There are no designated bicycle facilities within the Park-and-Ride lot and minimal sidewalk facilities. Access to the Park-and-Ride lots is provided via Broward Boulevard and I-95. Ingress from eastbound Broward Boulevard is provided via a left turn lane at NW 24th Avenue (Lots 1-3) and via right turn lane at SW 22nd Avenue / SW 1st Street (Lots 4-5). Ingress from westbound Broward Boulevard is provided via right turn lanes at NW 22nd Avenue and NW 24th Avenue. Egress to westbound Broward Boulevard is provided via the intersections with NW 22nd Avenue and NW 24th Avenue, requiring drivers coming from the south to circulate through the northern parking areas. Egress to eastbound Broward Boulevard is provided via SW 22nd Avenue / SW 1st Street and NW 24th Avenue. Ingress from both northbound and southbound I-95 are provided in a similar manner with northbound vehicles exiting on the south side of Broward Boulevard and merging into SW 21st Terrace and southbound vehicles existing on the north side of Broward Boulevard with connections to NW 22nd Avenue and SW 22nd Avenue / SW 1st Street provided via access roads within the parking areas. Egress to southbound I-95 is provided on the south side of Broward Boulevard via a ramp that crosses over the southbound General Use Lanes of I-95 and connects to the southbound HOV lane. Egress to northbound I-95 is provided by a direct connect flyover ramp on the north side of Broward Boulevard, accessed from the northern

parking area, which crosses over the southbound General Use Lanes of I-95 and connects to the northbound HOV lane.

2.3 Purpose and Need

The primary purpose of this study is to develop and evaluate design concepts that will improve traffic flow to and from I-95, as well as along Broward Boulevard, increase connectivity between the 95 Express Lanes and Broward Boulevard, and improve intermodal connectivity. The primary need for this project is to enhance system linkage and modal interrelationships at the I-95/Broward Boulevard Interchange. Secondary considerations for the purpose and need are further described in the following sections that include Capacity, Safety, Transportation Demand, Social Demands, Economic Development, and Emergency Evacuation.

2.3.1 System Linkage

Broward Boulevard is a state road (SR 842) that provides the main entry way to the downtown Fort Lauderdale Central Business District from I-95 and the east-west connection between US-1 and SR 817/University Drive in the City of Plantation. Broward Boulevard continues west toward SR 823/Flamingo Road as a County Road. The section of Broward Boulevard from I-95 to NE 3rd Avenue is part of the state's Strategic Intermodal System (SIS), which consists of high-priority transportation facilities and services of statewide and interregional significance. I-95 north and south of Broward Boulevard is also a SIS facility and serves as the primary north-south interstate facility that links all major cities along the Atlantic Seaboard and is one of the most important transportation systems in southeast Florida. These SIS facilities are critical to the movement of people and goods in Florida, and their function is considered to be vital to Florida's economic competitiveness.

2.3.2 Modal Interrelationships

Transit services along Broward Boulevard are currently experiencing recurring congestion that reduces vehicle speeds, increases operating costs, and makes scheduling of buses from a system level challenging. There are a number of transit options on Broward Boulevard that provide direct service and transfer connections along the corridor. These include passenger rail service (Tri-Rail and Amtrak) and bus service (Broward County Transit, Breeze, Sun Trolley, 95 Express Bus, Tri-Rail Shuttle and Tri-Rail NW Community Link). The operation of these services is vital to the mobility of the entire corridor.

The desired geometric and operational improvements to the Broward Boulevard Interchange and surrounding transit facilities will reduce bus travel times, improve intermodal connectivity, and improve access to bus stops and transfers. 95 Express Bus service is desired to access

Broward Boulevard more effectively from the 95 Express Lanes and the existing Park-and-Ride lots. Functionality of the I-95 median ramps and Park-and-Ride road network is to be improved for the intermodal services within the interchange area.

2.3.3 Capacity

I-95 within the project limits currently operates at Level of Service (LOS) F. Broward Boulevard within the project limits also operates at LOS F. Without improvements, the driving conditions will continue to operate well below acceptable LOS standards into the future. The 95 Express Phase 3 improvements will help improve the mainline I-95 corridor LOS by adding one travel lane in each direction in the form of an Express Lane, managing congestion along I-95. The improvements proposed as part of the interchange project will be developed to complement the 95 Express Lanes improvements by enhancing existing connectivity within the Park-and-Ride lots, improving existing I-95/Broward Boulevard terminal intersections, and providing improved Express Lane access to Broward Boulevard.

2.3.4 Safety

The comprehensive improvements to the interchange and surrounding transit facilities will improve the interaction between the different modes of transportation in the vicinity. The improvements are to include safe connections for pedestrians using transit services, circulation of traffic within the Park-and-Ride lot network, and access between the Express Lanes and Broward Boulevard. Additionally, the capacity improvements will aid in reducing the number of crashes within the project limits.

2.3.5 Transportation Demand

The Broward Boulevard Interchange Project PD&E Study is included in the Broward Metropolitan Planning Organization's (MPO) Transportation Improvement Program (TIP) for Fiscal Years (FY) 2015-2019 and the FDOT Work Program FY 2015-2019.

The Broward MPO's 2035 Long Range Transportation Plan (LRTP) included improvements to all I-95 interchanges in Broward County under Illustrative Roadway Projects. Illustrative projects are those that cannot be included in the Cost Feasible Plan due to financial constraints but would be included in a future approved TIP. The MPO's 2040 LRTP, Commitment 2040, adopted by reference the Strategic Intermodal System 2040 Cost Feasible Plan, which includes modifications to the I-95/Broward Boulevard Interchange in the first five years.

2.3.6 Social Demands and Economic Development

Social and economic demands on the I-95 corridor will continue to increase as population and employment increase. The Broward MPO 2035 LRTP predicted that the population would grow from 1.7 million in 2005 to 2.3 million by 2035, an increase of 29 percent. Jobs were predicted to increase from 0.7 to 1 million during the same time period, an increase of 37 percent. Commitment 2040 revised the growth projections to 1.9 million persons and 0.8 million jobs by 2040. These numbers reflect growth rates of 13.4 percent for population and 10.4 percent for jobs by 2040. These numbers, however, only account for the projected growth in Broward County and do not reflect the number of commuters from adjacent areas who may use this interchange to access jobs.

2.3.7 Emergency Evacuation

The project is anticipated to improve emergency evacuation capabilities by enhancing connectivity and accessibility to major arterials designated on the state evacuation route. I-95 serves as part of the emergency evacuation route network designated by the Florida Division of Emergency Management and Broward County. Broward Boulevard moves traffic from the east and west to I-95. I-95 is critical in facilitating traffic during emergency evacuation periods as it connects to other major arterials and highways of the state evacuation route network (i.e., I-595 and the Florida's Turnpike).

2.4 Description of the Proposed Action

This project proposes improvements to the I-95 at Broward Boulevard Interchange complementing the surrounding multimodal facilities. The proposed interchange improvements will be compatible with the proposed 95 Express Phase 3 program, which will introduce two tolled, express lanes each direction, in place of the existing HOV lanes, from Stirling Road in Broward County to Linton Boulevard in Palm Beach County. 95 Express Phase 3A, which extends from Broward Boulevard to south of SW 10th Street, and includes the limits of the proposed interchange improvements, began construction in mid-2016. Functionality of the I-95 median ramps and Park-and-Ride road network is to be improved for the intermodal services within the interchange area.

The proposed improvements for the I-95 at Broward Boulevard Interchange consist of four elements:

- Improvements to the mainline of I-95 to accommodate ingress and egress ramps for 95 Express and the existing Broward Boulevard Interchange ramps,
- Three alternatives for the Broward Boulevard east and west terminal intersections to improve interchange operations,

- Two sub-alternatives for the eastbound Broward Boulevard to southbound 95 Express movement, and
- Conceptual plans for the Park-and-Ride lot to improve circulation and conditions for all users.

The mainline improvements are consistent across each of the three interchange alternatives. Each of the Park-and-Ride concepts was designed to work with the proposed mainline and interchange improvements.

The Build Alternatives under consideration are described in **Sections 2.4.1, 2.4.2, 2.4.3, and 2.4.4**. Also, under consideration is the No-Build Alternative. The No-Build Alternative assumes no proposed improvements and serves as a baseline for comparison against the Build Alternatives.

2.4.1 Mainline I-95 Build Alternative

The proposed improvements to the I-95 mainline account for the programmed implementation of 95 Express (under construction at the time of this PD&E Study), which adds one additional Special Use Lane in each direction and modifies the use of these lanes to include managed toll lanes. The resulting typical section becomes a 12-lane facility comprised of four General Purpose Lanes and two Special Use Lanes in each direction.

The ingress and egress ramps connecting to Broward Boulevard are proposed to be modified in a similar manner for each of the Interchange Build Alternatives. For northbound ingress to I-95 there are no proposed modifications to the existing single lane ramps that provide access from westbound and eastbound Broward Boulevard. For northbound egress from I-95, the existing ramp is proposed to be widened to allow for additional storage, however the turn lane configuration remains the same with dual left and triple right turn lanes. Southbound ingress to I-95 differs based on the Interchange Build Alternative and is addressed in those sections that follow. Southbound egress from I-95 is proposed to be widened for each of the Interchange Build Alternatives to accommodate one additional turn lane for left turns and two additional turn lanes for right turns, resulting in triple left and triple right turn lanes.

The primary proposed improvements for the mainline, which are shown in **Figures 3A and 3B** in **Appendix F**, are for new braided ramps providing direct ingress and egress between the 95 Express lanes and the existing Broward Boulevard service interchange ramps without requiring drivers to weave through the General Use Lanes. For southbound 95 Express egress, the proposed improvements include a braided ramp (in the vicinity of NW 6th Street/Sistrunk Boulevard) over the southbound I-95 General Use Lanes with a connection to the west terminal intersection of the Broward Boulevard service interchange. Similarly, ingress to southbound 95

Express includes a braided ramp over the southbound I-95 General Use Lanes located just south of Broward Boulevard.

For the northbound direction, egress from 95 Express near Davie Boulevard is proposed through the use of a braided ramp over the northbound I-95 General Use Lanes with a connection to the northbound CD road ramp system that terminates at the east terminal intersection of the Broward Boulevard service interchange. Ingress from the Broward Boulevard service interchange to the northbound 95 Express lanes is proposed through a braided ramp over the northbound I-95 General Use Lanes in the vicinity of NW 6th Street/Sistrunk Boulevard.

2.4.2 Broward Boulevard Interchange Build Alternatives

The proposed improvements to Broward Boulevard include the replacement of the bridge that spans I-95 and the SFRC with a wider and higher bridge span, the provision of three through lanes of traffic with six-foot wide sidewalks and seven-foot wide bicycle lanes in each direction, and three interchange alternatives, which are further described below. The replacement of this bridge span is common to all three interchange alternatives and is being proposed to accommodate necessary turn lanes at the intersections as well as to provide an envelope for a future premium transit stop with connectivity between East-West service along Broward Boulevard, and the many multimodal transit services provided in the Broward Boulevard Park-and-Ride Lot/Transit Station on the north and south sides of Broward Boulevard. In each of the interchange alternatives, the service interchange ramps are proposed for reconstruction to accommodate the wider and higher proposed bridge span. Most of the ingress and egress ramps are also proposed to include additional lanes to accommodate the forecasted 2040-year traffic.

The proposed interchange alternatives include Tight Diamond, Displaced Left Turn, and Modified Displaced Left Turn. Each of these alternatives is described below. For each of these alternatives the northbound ingress to I-95 remains as a single lane flyover access ramp.

Interchange Build Alternative 1 – Tight Diamond

The Tight Diamond Interchange is a compressed version of the diamond interchange designed to accommodate right-of-way constraints. The interchange consists of two closely spaced signalized intersections at the crossing of the ramp terminals. The key operational aspect of a Tight Diamond Interchange is signal coordination to ensure efficient progression of traffic and minimum storage of vehicles between the terminals. The existing interchange is a Tight Diamond Interchange and this alternative will improve the existing operation through the addition of turn lanes at the ramp terminal locations and optimization of the intersection signal timings. Specifically, one additional left turn lane is proposed for southbound ingress from Broward Boulevard to I-95 resulting in triple left turn lanes for traffic traveling westbound. An additional right turn lane is also proposed resulting in double right turn lanes for eastbound traffic on

Broward Boulevard. There are no proposed improvements to the northbound ingress ramps from Broward Boulevard. These improvements are illustrated in **Figure 4** in **Appendix F**.

Interchange Build Alternative 2A – Displaced Left

The Displaced Left Turn Interchange is also known as the Continuous Flow Interchange. The main geometric feature of the Displaced Left Turn Interchange is the removal of left turn movements from the main intersection to an upstream signalized location to reduce the number of traffic signal phases and conflict points. For this alternative, the westbound left turn movements are displaced at the east ramp terminal intersection to a new roadway that is south and runs parallel to the eastbound through lanes where it combines with the displaced left turn lanes from the northbound ramp. This configuration enables the westbound left turn lanes to execute the left turn simultaneously with the westbound through traffic and, under a different signal phase, transition the traffic from the northbound ramp on to the westbound at the west ramp terminal intersection. This proposed alternative increases the number of right turn lanes for the southbound ingress to I-95 from eastbound Broward Boulevard, resulting in dual right turn lanes. Although displaced as previously described, the left turn lanes for southbound ingress remain as dual left turn lanes as is currently provided. These improvements are illustrated in **Figure 5** in **Appendix F**.

Interchange Build Alternative 2B – Modified Displaced Left

The Modified Displaced Left Turn Interchange provides for the displacement of the northbound exit ramp onto a new roadway (bridge structure) over I-95 that is on the south side of Broward Boulevard, and runs south of and parallel to the eastbound Broward Boulevard through lanes. The northbound ramp left-turn traffic is then transitioned on to westbound Broward Boulevard at the west ramp terminal intersection. There are three westbound left-turn lanes at the east ramp terminal intersection. The inner left-turn lane is a buffer left turn lane providing direct connection to southbound 95 Express and the outer two left-turn lanes are for general use that feed into southbound I-95 and the CD road. This alternative involves partial right of way acquisitions along Broward Boulevard near NW/SW 18th Avenue. These improvements are illustrated in **Figure 6** in **Appendix F**. Interchange Build Alternative 2B – Modified Displaced Left is the recommended interchange build alternative for having the best operational results.

2.4.3 Eastbound Broward Boulevard to Southbound 95 Express Alternatives

In the recommended Broward Boulevard Build Alternative (Build Alternative 2B – Modified Displaced Left), there is a barrier separation on the southbound entrance ramp that restricts Broward Boulevard eastbound right turn traffic from entering the express lanes via the new braided ramp for westbound to southbound 95 Express. Thus, the eastbound traffic on Broward Boulevard destined to the southbound 95 Express lanes must use an alternative route. For

eastbound motorists seeking access to southbound 95 Express, there are two alternatives as follows:

- Option 1 (via SW 1st St) – This option directs eastbound Broward Boulevard traffic seeking southbound 95 Express to use SW 1st Street, from SW 22nd Avenue, to access the legacy HOV southbound entrance ramp at the south side of the Park and Ride Lot just south of Broward Boulevard.
 - Sub-Alternative 1: No Build
 - Sub-Alternative 2 – T-Intersection at SW 21st Terrace and Roundabout at Access Road
 - Sub-Alternative 3 – Double Roundabout
 - Sub-Alternative 4 – Combined Roundabout
- Option 2 (via Flyover) – This option provides a free flow flyover ramp to provide ingress access for the eastbound Broward Boulevard traffic. The flyover ramp spurs off of the existing Broward Boulevard eastbound to northbound on-ramp and connects to the legacy HOV southbound entrance ramp prior to merging on 95 Express.

Of these, Option 1, Sub-Alternative 4 (Combined Roundabout) was selected as the recommended sub-alternative. These improvements are illustrated in **Figure 6** in **Appendix F**. Further description and evaluation of each sub-alternative is in the Preliminary Engineering Report.

2.4.4 Park-and-Ride Lot Build Alternatives

Three concept alternatives were developed to address vehicular circulation through the northern lots. Each of the alternatives includes a realignment of Access Road to provide for a straighter geometry and adjusts the parking areas and other roadway connections as necessary. Specifically, the parking spaces provided in Lot 3 will be shifted west and accommodated in the area currently identified as Lots 1 and 2. Each alternative also provides additional sidewalk throughout the northern parking areas, identifies crosswalks, and proposes a canopy for the sidewalks connecting the train station to the newly created area underneath the expanded Broward Boulevard bridge structure.

The primary difference between these alternatives is the proposed location of the 95 Express Bus stops and the use of the newly created space underneath the expanded Broward Boulevard bridge structure. These alternatives are concepts and the details of the improvements will be determined as part of the Design phase of the project.

Park-and-Ride Alternative 1

The 95 Express Bus stop in the northern parking area is retained in its current location and a Park-and-Ride facility is provided on the opposite side of the existing bus stop. The 95 Express Bus stops currently located on Access Road just south of the Broward Boulevard bridge structure are relocated north to allow for passenger loading underneath the expanded bridge structure. A traffic signal is proposed at the intersection of Access Road with the roadway that provides ingress and egress from I-95 on the north side of the parking area to accommodate left turns by transit vehicles. The additional space provided underneath the bridge is not identified for any specific use aside from being reserved to accommodate an elevator and other access features to allow for a transfer between the possible future transit station in the median of Broward Boulevard and this lower level. These concepts are illustrated in **Figure 7** in **Appendix F**.

Park-and-Ride Alternative 2

In this alternative the 95 Express Bus stop in the northern parking area is shifted south and a Park-and-Ride facility is provided on the east-west access road that becomes the I-95 ingress and egress ramps. At the terminus of the I-95 ramps in the northern lot, a roundabout is proposed in lieu of the existing three-sided interchange. The area underneath the expanded bridge structure is proposed to be used for the 95 Express Bus stops currently located just south of the bridge structure. This concept provides for a more formal transit boarding and alighting area. These concepts are illustrated in **Figure 8** in **Appendix F**.

Park-and-Ride Alternative 3

This alternative builds on the previous Alternative 2 with the addition of a roundabout to access the formal transit station area created underneath the expanded bridge structure. These concepts are illustrated in **Figure 9** in **Appendix F**.

2.4.5 Recommended Alternative

The Recommended Alternative for this study is a combination of the Mainline I-95 Build Alternative; Interchange Build Alternative 2B; Eastbound Broward Boulevard to Southbound 95 Express Option 1, Sub-Alternative 4, Combined Roundabout Sub-Alternative; and Park-and-Ride Alternative 3. This alternative meets the purpose and need for the project and was selected for having the best operational results at the I-95 ramps' intersections with Broward Boulevard. A typical section package for the Recommended Alternative is provided in Preliminary Engineering Report.

The Recommended Alternative includes the following improvements.

Mainline I-95 Improvements

- The construction of single-lane elevated braided ramps over the General Use Lanes to provide access to and from the southbound and northbound 95 Express Lanes (**Figure 6 in Appendix F**).
 - **Southbound 95 Express Egress:** New braided ramp over the southbound I-95 General Use Lanes with a connection to the west ramp terminal intersection of the Broward Boulevard service interchange to provide egress from 95 Express near NW 6th Street/Sistrunk Boulevard.
 - **Southbound 95 Express Ingress:** New braided ramp over the southbound I-95 General Use Lanes located just south of Broward Boulevard that provides ingress access for the westbound traffic on Broward Boulevard via the west ramp terminal intersection of the Broward Boulevard service interchange.
 - **Northbound 95 Express Egress:** New braided ramp from 95 Express near Davie Boulevard over the northbound I-95 General Use Lanes with a connection to the northbound CD road ramp system that terminates at the east terminal intersection of the Broward Boulevard service interchange.
 - **Northbound 95 Express Ingress:** New braided ramp over the northbound I-95 General Use Lanes in the vicinity of NW 6th Street/Sistrunk Boulevard. This elevated braided ramp provides direct access between Broward Boulevard and the northbound 95 Express Lanes, using the existing eastbound to northbound flyover, and westbound to northbound ramp, for access to northbound 95 Express.

Broward Boulevard Interchange Improvements

- The addition of triple left and triple right turn lanes for the southbound I-95 exit ramp to Broward Boulevard.
- Replacement of the Broward Boulevard bridge structures over I-95 and the SFRC to accommodate additional turn lanes, a minimum of six-foot sidewalks and seven-foot bike lanes in each direction, and a future premium transit stop in the median.
- Provide three westbound left-turn lanes at the east ramp terminal intersection. The inner left-turn lane is a buffer left turn lane providing direct connection to southbound 95 Express and the outer two left-turn lanes are for general use that feed into southbound I-95 and the CD road.
- Displacement of northbound exit ramp traffic heading west onto a new two-lane roadway (bridge structure) that is on the south of Broward Boulevard over I-95, and runs south of and parallel to the eastbound Broward Boulevard through lanes. The northbound ramp

left-turn traffic is transitioned on to the westbound Broward Boulevard roadway at the west ramp terminal intersection (**Figure 6** in **Appendix F**).

Broward Boulevard Eastbound to 95 Express Southbound Improvements

- Barrier separation on the southbound entrance ramp that restricts Broward Boulevard eastbound right turn traffic from entering the express lanes via the new braided ramp for westbound to southbound 95 Express. Eastbound to southbound express lane traffic must continue to use the legacy HOV ramps via SW 22nd Avenue and SW 1st Street.
- Construct a combined dual intersection roundabout along SW 1st Street at SW 21st Terrace and the Connector Ramps to and from southbound 95 Express (**Figure 6** in **Appendix F**).

Park and Ride Lot Improvements

- Improvements to the Park-and-Ride facility that provide additional sidewalks for pedestrians, a covered waiting area for Express Bus users and improved circulation for vehicles by constructing roundabouts (**Figure 9** in **Appendix F**).

3.0 Existing Conditions

Existing and future land use, soils, floodplains, upland habitat, and wetlands and surface waters were analyzed using a geographic information system (GIS). A 500-foot buffer from the mainline and/or intersection improvements (ramps, etc.) was used to analyze potential environmental impacts. Analysis of the environmental characteristics can be found in the sections that follow.

3.1 Land Use

Existing land use was identified using the FDOT's 1999 edition of Florida Land Use, Cover and Forms Classification System (FLUCFCS) and the land use GIS resources obtained from the South Florida Water Management District (SFWMD). With the exception of transportation land uses, residential, commercial, and service land uses are dominant within the 500-foot buffer of the project area. The project area is highly urbanized and contains less than eight acres of potential habitat including 3.6 acres of Open (urban) Land (FLUCFCS: 190), 2.1 acres of Upland Hardwood Forests (FLUCFCS: 420), and 5.6 acres of Water (FLUCFCS: 510 & 530). One wetland exists within the project area as disturbed, fringe mangroves along the banks of the North Fork of the New River. Surface waters in the project area are limited to highway drainage, storm water features associated with development, and a portion of the North Fork of the New River. These natural land uses are disturbed due to their proximity to dense development. **Table 3.3.1** lists the existing land use and cover types encountered in the project area.

Future land use is expected to be primarily commercial, industrial, institutional, and residential. **Figures 2 and 3 in Appendix A** show the existing and future land use, respectively.

Table 3.1.1: Existing Land Use / Land Cover Types within 500-foot Project Area Buffer

FLUCFCS Code*	Land Use/Land Cover	Acreage
100	Urban and Built Up	---
121	Fixed Single Family Units	35.7
132 & 133	Mobile Home	7.0
140	Commercial and Services	61.7
155	Other Light Industrial	15.7
170	Institutional	20.4
190	Open Land (Urban)	3.6
400	Upland Forests	---
420	Upland Hardwood Forests	2.1
500	Water	---
510	Streams and Waterways	0.3
530	Reservoirs	5.3
800	Transportation, Communication and Utilities	---
812	Railroads	12.0
814	Roads and Highways	64.0

* Florida Land Use, Cover, and Forms Classification System (FLUCFCS)

3.2 Soils

Based on the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS / SCS) Soils Map for Broward County, as well as the project’s Geotechnical Report, the project area is underlain by Arents-Urban land complex, Basinger fine sand, Duette-Urban land complex, Immokalee (limestone substratum)-Urban land complex, Immokalee-Urban land complex, Udorthents, and Urban land. Based on the SCS Maps, hydric soils exist within the limits of the project. **Table 3.2.1** lists the soil types found within the limits of the project area and their hydric soil rating. See **Figure 4** in **Appendix A** for the USDA NRCS Soil Map of the project.

Table 3.2.1: Soils

USDA NRCS Soil Name *	Hydric Rating
Arents-Urban Land Complex	No
Basinger Fine Sand, 0 to 2 Percent Slopes	Yes
Duette-Urban Land Complex	No
Immokalee Fine Sand, 0 to 2 Percent Slopes	No
Immokalee, Limestone Substratum-Urban Land Complex	No
Immokalee, Urban Land Complex	No
Udorthents, Shaped	No
Urban Land	Unranked
Water	Unranked

* USDA NRCS Soil map

3.3 Floodplains

Floodplains within the project area were identified using the Federal Emergency Management 2016 Statewide National Flood Hazard Layer (NFHL) GIS data. The majority of the project is within Zone X, “area of minimal food hazard”. The project is also within five small areas of Zone AE, 100-year floodplain and two small areas of Zone A, 100-year floodplain. Zone AE is a Special Flood Hazard Area defined as the area that will be inundated by a flood event having a 1-percent chance of being equaled or exceeded in any given year. The 1-percent annual chance flood is also referred to as the base flood or 100-year flood. Zone A is defined as an area inundated by 100 year flooding, for which no Base Flood Zone Elevation (BFE) has been established. Floodplains within the project area are shown in **Figure 5** in **Appendix A**.

3.4 Upland Habitats

Upland swales occur throughout the project limits. These swales are typically planted with sod and, in some cases, upland landscaping. Opportunistic upland floral species including, but not limited to: Spanish needles (*Bidens alba*), Brazilian pepper (*Schinus terebinthifolius*), common ragweed (*Ambrosia artemisiifolia*), and coastal sandspur (*Cenchrus incertus*) are also present. These swales are located between the travel lanes, within the median, adjacent to the road, and are included in the Roads and Highways FLUCFCS classification (814).

Parcels of open land (FLUCFCS 191 and 192) are adjacent to both sides of the I-95 right-of-way. These parcels are typically planted with sod and appear to be routinely maintained.

4.0 Wetland Evaluation

4.1 Preliminary Data Collection

The project was evaluated for potential impacts to wetlands and surface water in accordance with Part 2, Chapter 9 Wetlands and Other Surface Waters (January 14, 2019) of the FDOT PD&E Manual, as well as Executive Order 11990, Protection of Wetlands. For the purpose of this evaluation, identification of wetlands and potential impacts in the project area involved a combination of interpretation of current aerial photographs and on-site ground-truthing in April and December 2017 and August 2018. Formal delineations were not conducted. Other resources used in evaluating the wetlands included geographical data from SFWMD land use maps, the most current National Wetland Inventory (NWI) map for the same quadrangle, and existing permits.

Standard federal and state definitions were utilized in the identification of wetlands in the project area per FDOT and FHWA guidance. Characteristics of hydric soils, hydrophytic vegetation, and wetland hydrology are pertinent factors in all of these definitions. Wetlands within the project area were evaluated based on the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (Department of the Army, Waterways Experiment Station, U.S. Army Corps of Engineers, 1987) with the Atlantic and Gulf Coast Plain Regional Supplement (November 2010), as well as on the unified statewide methodology of the Florida Department of Environmental Protection (FDEP) and SFWMD specified in Chapter 62-340 F.A.C.

Wetlands are identified and described based on the Florida Land Use, Cover and Forms Classification System (FLUCFCS, 1999) and the USFWS classification system described in *Classification of Wetlands and Deep Water Habitats of the United States* (Cowardin et al. 1985).

4.2 Existing Wetland Habitats and Surface Waters

Wetlands exist as disturbed, fringe mangroves along the banks of the North Fork of the New River. Seven surface waters exist within a 500-foot buffer of the project area within the North Fork of the New River and as permitted stormwater management facilities. The open water portion of the North Fork of the New River was identified as a surface water and crosses under I-95 approximately 800 feet north of the interchange. The drainage features and stormwater management areas are located intermittently along the east side of I-95 within the project area

and in the southwest quadrant of the I-95 and Broward Boulevard Interchange. **Table 4.2.1** provides a description of the surface waters that occur within the project boundary.

Table 4.2.1 Wetlands and Surface Waters within a 500-foot Buffer of the Project Area

ID	USFWS Classification	FLUCFCS	Comment
W-1	E1UBLx	612	North Fork of the New River - Fringe Mangroves
SW-1	PUBHx	530	Drainage Feature
SW-2	PUBHx	530	Drainage Feature
SW-3	PUBHx	530	Drainage Feature
SW-4	E1UBLx	510	North Fork of the New River – Open Water
SW-5	PUBHx	530	Drainage Feature
SW-6	PUBHx	530	Drainage Feature
SW-7	PUBHx	530	Drainage Feature

Figure 6 in Appendix A displays the locations of the wetland surface water systems within the project area and adjacent property boundaries. Surface Water (SW) 4 and SW-6 were identified using available SFWMD and NWI data. Wetland (W)-1, SW-1, SW-2, SW-3, SW-5, and SW-7 were identified during ground-truthing activities and given USFWS and FLUCFCS Classification based on these findings.

Wetland 1 (W-1)

FLUCFCS Code: 612: Mangrove Swamps

USFWS Classification: E1UBLx: Estuarine, Subtidal, Unconsolidated Bottom, Subtidal, Excavated

W-1 is the mangrove fringe portion along the north and south banks of North Fork of the New River located west of I-95 and north of Broward Boulevard. These fringe mangroves exist between the I-95 southbound off ramp and the SFRC railroad bridge. The wetland was given classifications based on a field review performed April 2017. SFWMD and NWI datasets mapped this area as a surface water as opposed to a wetland. This wetland consists of white mangrove (*Laguncularia racemose*) fringe on the outer banks of the river. Other present species include

the tropical almond (*Terminalia catappa*) and *Ficus sp.* Mangrove habitat is low quality due to the presence of invasive species and limited, discontinuous fringes of mangroves present along the shorelines of the I-95 crossing of the tidal flow way. No wildlife was observed. The mangrove fringe serves as potential Essential Fish Habitat (EFH) according to the National Marine Fisheries (NMFS) comments in the ETDM Summary Comments.

Surface Water 1 (SW-1)

FLUCFCS Code: 530: Reservoirs

USFWS Classification: PUBHx: Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated

SW-1 is located to the east of the I-95 off ramp onto Davie Boulevard. It is bordered by residential land use to the east. This surface water is defined as 530: Reservoirs per field verification. The surface water is an isolated system that serves as a drainage feature to I-95. Plant species present include Sea grape (*Coccoloba uvifera*), cabbage palm (*Sabal palmetto*), and various grasses. No water was observed during the field review.

Surface Water 2 (SW-2)

FLUCFCS Code: 530: Reservoirs

USFWS Classification: PUBHx: Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated

SW-2 is located east of I-95, between I-95 and the off ramp onto Davie Boulevard, south of Davie Boulevard. This surface water is defined as 530: Reservoirs per field verification. This surface water could become connected to SW-3 during high rain events via a low concrete berm. This surface water serves as a drainage feature to I-95. Plant species present during the field review include various grasses, cabbage palm, fetterbush (*Lyonia lucida*), and Virginia creeper (*Parthenocissus quinquefolia*). No wildlife was observed.

Surface Water 3 (SW-3)

FLUCFCS Code: 530: Reservoirs

USFWS Classification: PUBHx: Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated

SW-3 is located east of I-95, between I-95 and the off ramp onto Davie Boulevard, north of Davie Boulevard. This surface water is defined as 530: Reservoirs per field verification. This surface water could become connected to SW-2 during high rain events via a low concrete berm. This surface water serves as a drainage feature to I-95. Plant species present during the field review include various grasses, cabbage palm, fetterbush, and Virginia creeper. No wildlife was observed.

Surface Water 4 (SW-4)

FLUCFCS Code: 510: Streams and Waterways

USFWS Classification: E1UBLx: Estuarine, Subtidal, Unconsolidated Bottom, Subtidal, Excavated

SW-4 represents the open water portion of the North Fork of the New River, a channelized crossing approximately 100 feet wide located west of I-95 southbound bridges. This surface water was identified by both SFWMD and NWI data. This surface water is a tidally influenced open water body with a mangrove fringe.

Surface Water 5 (SW-5)

FLUCFCS Code: 530: Reservoirs

USFWS Classification: PUBHx: Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated

SW-5 is located east of I-95, between I-95 and the I-95 on ramp from Davie Boulevard, north of Davie Boulevard. This surface water is defined as 530: Reservoirs per field verification. The surface water was identified by both SFWMD and NWI data. This surface water system is an isolated system and serves as a drainage feature to I-95. Plant species present include Sea grape, cabbage palm, and various grasses. Wildlife species observed included a Great egret (*Ardea alba*).

Surface Water 6 (SW-6)

FLUCFCS Code: 530: Reservoirs

USFWS Classification: PUBHx: Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated

SW-6 is located within the I-95 off ramp onto westbound Sunrise Boulevard. This surface water was identified by both SFWMD and NWI data. The surface water is an isolated system that serves as a drainage feature to I-95.

Surface Water 7 (SW-7)

FLUCFCS Code: 530: Reservoirs

USFWS Classification: PUBHx: Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated

SW-7 is located in the southeast quadrant of SW 1st Street and SW 21st Terrace. This surface water is defined as 530: Reservoirs per field verification. The surface water is an isolated system that serves as a drainage feature to the roads that almost completely surround it. Plant species present include cattail (*Typha sp.*), Peruvian primrose-willow (*Ludwigia peruviana*) and various grasses. Water was observed during the field review.

4.3 Wetland and Surface Water Impacts

During the course of this PD&E Study, assessments of wetland and environmental resources around the project site were conducted. The primary goal of these tasks was to determine the extent and characteristics of the wetlands and surface waters located within and adjacent to the right-of-way. The wetland and surface waters within the project area have been identified, classified, and characterized. Standard federal and state definitions were utilized in the identification of wetlands in the project area per FDOT and FHWA guidance. Wetland and surface water impacts were identified and calculated using GIS. The wetlands and surface waters within the project area were overlaid with the Recommended Alternative to identify areas of impact.

4.3.1 Floodplain Impacts

The proposed improvements are expected to impact 2.2 acres of Type AE and 2.1 acres of AH Floodplain. The total floodplain impact area of the proposed improvements is 4.3 acres. Impacts are in areas of new ramp alignments and mainline widening. Floodplain impacts will be avoided and minimized where possible. Refer to the Location Hydraulic Report for additional floodplain analysis.

4.3.2 Direct Impacts

Direct impacts are defined as those effects caused by the proposed action that occur at the same time and place (40 CFR 1508.8). Direct impact acreages to the wetland and surface waters are listed in **Table 4.3.2.1**.

Direct surface water impacts are anticipated from the proposed I-95 improvements, totaling 0.404 acre. No impacts are anticipated to occur at SW-1, SW-2, or SW-6. The southbound off ramp to Broward Boulevard is to be widened ~12-feet to the west beyond the widening of the I-95 Express Phase 3A project (FPID No. 433108-5-52-01) (See Bridge Widening Exhibit in **Appendix F**). Widening of this ramp would impact 0.004 acre of fringe mangrove wetlands at W-1 and 0.02 acre of open water at SW-4, however, the impacts associated with W-1 and SW-4 have already been identified as impacted areas as part of I-95 Express Phase 3A project (See **Exhibits 1 and 2** in **Section 6.0**). At SW-3, the drainage feature would be altered to accommodate the recommended I-95 northbound CD road ramp system that terminates at the east terminal intersection of the Broward Boulevard service interchange, resulting in 0.28 acre of impacts. At SW-5, 0.02 acre of direct impacts would occur to accommodate the proposed I-95 northbound Express Lanes on ramp from Broward Boulevard. At SW-7, 0.08 acre of direct impact will occur to accommodate the combined roundabout proposed at the culmination of SW 1st Street, SW 21st Terrace, and the HOV entrance ramp to the I-95 southbound Express Lanes.

Table 4.3.2.1 Direct Impacts Acreages to Wetlands and Surface Waters within a 500-foot Buffer of the Project Area

ID	Impact Area (Acres)
W-1	0.004
SW-3	0.28
SW-4	0.02
SW-5	0.02
SW-7	0.08
Total Impacts	0.404

Photos were taken on December 5, 2017 and August 6, 2018 during a field review. Photo 1 shows SW-3, a drainage feature, facing west from the on ramp from Davie Boulevard to I-95 northbound. Some standing water was present at the time of the field review. Photo 2 was taken facing west from the southbound off ramp from I-95 to Broward Boulevard and shows the SW-4 area impacted by the project. Photo 3 shows the drainage feature of SW-5. FDOT maintenance crews were actively clearing sea grape from the area during the filed review. Photo 4 shows the entirety of SW-7 from the west side, facing east. Direct Impacts to surface waters are depicted in **Figure 7 in Appendix A**.

Photo 1 SW-3 – on northbound I-95 on ramp from Davie Boulevard, facing southwest



Photo 2 W-1 and SW-4 – on southbound off ramp to Broward Boulevard, facing northwest



Photo 3 SW-5 – east side of surface water, facing west



Photo 4 SW-7 – west side of surface water, facing east



4.3.3 Indirect and Cumulative Impacts

Indirect impacts are those reasonably foreseeable effects of the proposed construction that occur later in time or are located adjacent to the project (40 CFR 1508.8). Indirect impacts may include effects associated with future land use changes, population growth rates and density, and effects to the existing ecosystems.

Indirect impacts to the ambient air and water resources in the project vicinity are a common result of roadway construction. Vehicle exhaust emissions associated with internal combustion engines including carbon monoxide, sulfur dioxides, nitrogen oxides, and particulates can degrade atmospheric conditions in the project vicinity. These can also detrimentally impact the adjacent upland and wetland communities. Stagnant areas can lead to the buildup of noxious gas. Acid rain fallout to adjacent areas can change the pH of the soil and thereby change the existing ecosystem. Since the express lanes will facilitate increased traffic flow, the anticipated indirect impacts associated with air pollution are considered minor.

Indirect water quality impacts from roadway construction include pollutant loading to adjacent surface waters and wetlands from roadway runoff. Heavy metals and nutrients are two of the common types of pollutants. Litter is also a problem which affects both upland and wetland systems. Water quality impacts during construction will be minimized by use of standard FDOT best management practices.

Cumulative impacts result from the total effect of the proposed project when added to other past, present, and reasonably future projects or actions (40 CFR 1508.7). As discussed in **Section**

2.3, the purpose and need of this project is to improve traffic flow to and from I-95 and along Broward Boulevard, connectivity between the 95 Express Lanes and Broward Boulevard, and intermodal connectivity. Since the proposed improvements are to be constructed within the existing right-of-way of I-95, Broward Boulevard, and the park-and-ride lot, the cumulative impacts are considered minor.

Review of cumulative wetland impacts for USACE and SFWMD occurs within defined watersheds (USACE, hydrologic cataloguing unit) or mitigation basins (SFWMD). The project is located within the boundaries of the Florida Southeast Coast Cataloguing Unit (HUC 03090206) and the SFWMD New River Mitigation Basin (30). Accordingly, cumulative impacts are not anticipated for impacts to the USACE and SFWMD jurisdictional areas since mitigation is already being provided within such boundaries.

4.3.4 Avoidance and Minimization

The project is located within urban Broward County. Minimal suitable habitat is available for use by protected species within the right-of-way, and the existing wetlands, surface waters, and uplands located outside the right-of-way will not be impacted. Those stormwater swales within the right-of-way provide marginal habitat for wading birds, including the wood stork, and impacts to these areas will be minimized throughout the project's design. Listed species were not observed in upland or surface waters during this study's field reviews.

Avoidance and minimization of wetland impacts have been integral components of the alternative alignment designs and will continue to be evaluated during the design and permitting phase of this project. FDOT will continue to incorporate avoidance and minimization measures throughout final design. No additional right-of-way is being acquired and all proposed improvements will take place within existing right-of-way.

As a result of providing adequate mitigation and maintaining turbidity control throughout construction activities, temporary and permanent construction impacts are anticipated to be minor. In accordance with FDOT's Standard Specifications for Road and Bridge Construction (2017), all best management practices for erosion control and water quality considerations will be adhered to during the construction phase of the project.

5.0 Protected Species and Habitat

This PD&E Study complies with Section 7(a) of the Endangered Species Act (ESA) of 1973, as amended. Section 7(a) (2) of the Act requires every federal agency, in consultation with and with the assistance of the Secretary, to ensure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any listed species or result in the destruction

or adverse modification of critical habitat. Section 7(a) (3) of the Act authorizes a prospective permit or license applicant to request the issuing federal agency to enter into early consultation with the USFWS and / or the NMFS on a proposed action to determine whether such an action is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat.

In accordance with 16 United States Code (U.S.C.) 1536[(a)-(d)] of the ESA, as amended, federal agencies also impose specific requirements regarding endangered or threatened species of fish, wildlife, or plants (listed species) and habitat of such species that has been designated as critical habitat under Section 7(a) of the Act. These specific requirements include the protection of all federally listed species (and their habitats) found in federally funded projects. Such species are afforded protection under CFR Title 50 Part 402 and in other legislation listed below.

Other applicable federal laws include:

- CFR, Part 771, Environmental Impact and Related Procedures;
- CFR, Part 1500 et seq., Council on Environmental Quality, Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act;
- U.S.C. 4321 et seq., National Environmental Policy Act of 1969, as amended;
- U.S.C. 662, Section 2 of the Fish and Wildlife Coordination Act; and
- U.S.C. 1536, Section 7 of the Endangered Species Act of 1973.

5.1 Preliminary Data Collection

The project was evaluated for potential impacts to threatened and endangered species in accordance with Part 2, Chapter 16 Protected Species and Habitat (January 14, 2019) of the FDOT PD&E Manual. The objective of this assessment is to determine if any protected species inhabit the project area and to determine if protected species, or their habitat, will be adversely impacted by the proposed project. Cursory wildlife surveys were conducted in April 2017 and December 2017.

A preliminary desktop review was performed prior to performing the field assessments to establish baseline information. Data collection through literature reviews, Environmental Technical Advisory Team review, agency database searches, agency coordination, and GIS analyses were performed to identify state and federally protected species occurring or potentially occurring within the project area that may be impacted by the proposed improvements to the I-95 and Broward Boulevard Interchange. Information sources and databases utilized for the wildlife analysis include the following:

- ESRI 2013-2015 world aerial imagery;

- FDOT's ETDM Screening Summary Report Number 14226;
- Florida Natural Areas Inventory (FNAI);
- Florida Fish and Wildlife Conservation Commission (FWC) databases;
- FWC Waterbird Colony Locator;
- FWC's Strategic Habitat Conservation Areas (SHCA);
- USFWS Environmental Conservation Online System (ECOS);
- USFWS Wood Stork Rookeries (18.6 mile radius);
- USFWS Manatee, Atlantic Coastal Plants, and Scrub Jay GIS databases;
- USFWS Manatee Accessibility Map and Structure Access; and
- USFWS South Florida Multi-Species Recovery Plan (1999).

5.2 Potentially Occurring Listed Species

Federally listed, threatened, and endangered species are protected under the Endangered Species Act (ESA) of 1973, Bald and Golden Eagle Protection Act, and Migratory Bird Treaty Act. State-listed species are protected under various Florida Administrative Codes. Species are listed by the Federal ESA and the State of Florida as one of the following designations: Federally Endangered (FE); Federally Threatened (FT); State-Threatened (ST); or Candidate (C). **Table 5.3.1** and **Table 5.4.1** list federal and state listed species, respectively, having the potential to occur within the project area. The habitat, presence, and effect on the federally listed species identified above and state-listed species are discussed in the following sections. Upland and wetland habitats that federally or state listed species may use are discussed in **Sections 3.4** and **4.2**.

5.3 Federally Protected Species

Based on the results of the combined desktop and on-site pedestrian reviews, the federally listed species potentially existing within the project area are presented in **Table 5.3.1** with their corresponding listing status. Likelihood of occurrence is also presented, and is based on the above-mentioned data sources. Thirteen federally listed species have the potential to occur within the project area. No critical habitat occurs in the project area. Each species, their habitat requirements, and effect determinations are discussed in the following sections.

Table 5.3.1 Likelihood of Occurrences of Federally Listed Species with the Project Area

Scientific Name	Common Name	Status	Likelihood of Occurrence
Fish			
<i>Pristis pectinata</i>	Smalltooth Sawfish	FE	Low
Avian			
<i>Mycteria americana</i>	Wood Stork	FT	Moderate
<i>Rostrhamus sociabilis plumbeus</i>	Everglades Snail Kite	FE	Low
Mammals			
<i>Trichechus manatus</i>	West Indian Manatee	FT	Moderate
Reptiles			
<i>Drymarchon corais couperi</i>	Eastern Indigo Snake	FT	Low
<i>Alligator mississippiensis</i>	American Alligator	FT (SA)	Low
<i>Crocodylus acutus</i>	American Crocodile	FT	Low
<i>Chelonia mydas</i>	Green Sea Turtle	FT	Low
<i>Eretmochelys imbricata</i>	Hawksbill Sea Turtle	FE	Low
<i>Dermochelys coriacea</i>	Leatherback Sea Turtle	FE	Low
<i>Caretta caretta</i>	Loggerhead Sea Turtle	FT	Low
Plants			
<i>Jacquemontia reclinata</i>	Beach Jacquemontia	FE	Low
<i>Polygala smallii</i>	Tiny Polygala	FE	Low

Note: FT = Federally-designated Threatened; FE = Federally-designated Endangered

Source: Florida Fish and Wildlife Conservation Commission. Florida's Endangered and Threatened Species. Official Lists, January 2017; U.S. Fish and Wildlife Service, County Listed Species; and Florida's Imperiled Species Management Plan 2016.

5.3.1 Smalltooth sawfish

The Smalltooth sawfish are known for their long, flat snouts edged with pairs of teeth and inhabit shallow coastal waters of tropical seas and estuaries throughout the world. This fish is typically found in shallow waters close to shore over muddy and sandy bottoms, often in sheltered bays, on shallow banks, and in estuaries or river mouths. Juvenile Smalltooth sawfish use red mangrove prop roots as nursery habitat.

The project area encompassing the North Fork of the New River includes mangroves which serve as EFH for the Smalltooth sawfish. In addition, the NMFS commented in the ETDM Summary Report that the project site is accessible to Smalltooth sawfish. Within the project area west of I-95, mangrove habitat is low quality due to the presence of invasive species and limited, discontinuous fringes of mangroves present along the shorelines of the I-95 crossing of the tidal flow way. See **Section 6.0** for further details regarding EFH usable by the Smalltooth sawfish within the project area. The project is not located within designated critical habitat.

The proposed improvements will result in a total of 0.004 acre of fill impacts to fringe mangrove wetlands along the banks of the North Fork of the New River and 0.02 acre of shading impacts to the open water portion of the North Fork of the New River. However, the impacts have already been identified as part of the I-95 Express Phase 3A project (See **Exhibits 1 and 2** in **Section 6.0**), authorized under SFWMD Environmental Resource Permit No.06-01465-S and USACE Dredge & Fill Permit No. SAJ 2014-01584. Therefore, the project is not anticipated to impact any additional EFH or require additional mitigation. However, due to the additionally proposed pile driving activities in the open water portion of the North Fork of the New River and the potential use of the river by the Smalltooth sawfish, the project “**may affect, not likely to adversely affect**” the Smalltooth sawfish. Due to their potential presence in the project area and to minimize potential impacts, the NMFS *Sea Turtle and Smalltooth Sawfish Construction Conditions* will be followed with respect to any in-water construction activities (**Appendix E**). This determination is consistent with the NMFS Concurrence letter dated February 4, 2015 for I-95 Express Phase 3A (See **Appendix G**).

5.3.2 Wood stork

The wood stork is a large wading bird with black in its wings and a short black tail. Primary nesting sites are cypress or mangrove swamps with foraging habitat consisting of marshes, ditches, and flooded pasture in water depths ranging from two to 15 inches. Small fish are the main dietary item. In August 2014, the USFWS downgraded the classification of the wood stork from Endangered to Threatened. The USFWS guidelines state that, in South Florida, impacts to appropriate wetland systems within an 18.6-mile radius of a colony may directly affect colony

productivity. The radius area, known as the Core Foraging Area (CFA), is defined as the distance storks may fly from the colony to capture prey for their young.

The project corridor falls within the CFA of two nesting wood stork colonies: “Sawgrass Ford” and “Emerald Estates 1 and 2 Griffin”. Both colonies were active as of 2016. Portions of the North Fork of the New River, adjacent to the project area, may contain suitable foraging habitat (SFH), which includes freshwater marshes, swamps, lagoons, ponds, tidal creeks, flooded pastures, and ditches, but this is unlikely due to the depth of the North Fork of the New River. The stormwater swales may provide potential SFH, although their location within, or adjacent to, I-95 and/or the CSX railroad decreases their suitability. In contrast, the remaining non-upland stormwater swales were not considered SFH due to their lack of wetland vegetation, attesting to a hydroperiod insufficient to provide foraging opportunities. Individuals, or nests, of this species were not observed during the field reviews.

The proposed project will impact less than one half acre of SFH for the wood stork. While the surface waters provide foraging habitat, potential for nesting by these species is low due to the close proximity to a roadway and highly developed urban setting. Fragmentation of this species habitat by the proposed project is a concern because it further fragments available habitat, impairs the species ability to move between fragments, and could lead to an increase in traffic related mortality. Since SFH occurs within the project area, although minimal in value, and the project is within two wood stork CFA’s, the key from the USFWS South Florida Programmatic Concurrence letter (May 18, 2010, **Appendix C**) suggests the following effect determination will apply:

- A. Project impacts Suitable Foraging Habitat (SFH) at a location greater than 0.76 km (0.47 mile) from a colony site.....go to B
- B. Project impact to SFH is less than 0.20 hectare (one-half acre).....”**Not likely to adversely affect (NLAA)**”

Due to the low quality habitat and minimal impact, proposed improvements **“may effect, not likely to adversely affect”** the Wood stork.

FDOT will determine if there are any active wood stork breeding colonies within a determined distance of the proposed improvements at the time the Environmental Resource Permit and Section 404 Dredge & Fill permit applications are submitted to the SFWMD and USACE, respectively. If the proposed improvements are determined to be within the CFA of any active wood stork breeding colony, any wetlands impacted will be replaced within the CFA of the active wood stork breeding colony. If the replacement of wetlands within the CFA is not practicable, the FDOT will coordinate with the USFWS to identify acceptable wetland compensation outside the CFA, such as purchasing wetland credits from a “FWS Approved” mitigation bank or permittee-

responsible mitigation area. Any impacts to SFH occurring within stormwater management areas are anticipated to be mitigated through offsetting stormwater management areas, similar to the I-95 Express Phase 3A project.

Upon locating a dead wood stork specimen, initial immediate notification will be made to the nearest Service Law Enforcement Office (10426 NW 31st Terrace, Miami, FL 33172, 305-526-2695). Secondary notification will be made to the FWC - South Region (8535 Northlake Boulevard, West Palm Beach, FL 33412, 561-625-5122). Care will be taken in handling any dead specimens of proposed or listed species found in the project area to preserve the specimen or its remains in the best possible state. In conjunction with the preservation of any dead specimens, the finder has the responsibility to ensure evidence intrinsic to determining the cause of death of the specimen is not unnecessarily disturbed. The finding of dead specimens does not imply enforcement proceedings pursuant to the Act. The reporting of dead specimens is required to enable the Service to determine if take is reached or exceeded and to ensure the terms and conditions are appropriate and effective.

5.3.3 Everglade snail kite

The snail kite is a medium size raptor whose habitat includes large, open, shallow freshwater marshes and lakes. This kite is dependent upon apple snails (*Ampullariidae*) caught at the water surface and nests in low trees or shrubs over water.

The FDOT Environmental Screening Tool identifies the project limits as being within the USFWS Consultation Area for this species, but not within any areas of critical habitat for this species. Due to the lack of suitable habitat within the project area, the project will have “*no effect*” on the Everglades snail kite.

5.3.4 West Indian manatee

In addition to being listed as federally threatened, the West Indian Manatee is also a state-listed threatened species. The manatee is a large, gray, aquatic mammal that inhabits coastal bays, rivers, and occasionally lakes. They swim at depths of three to six feet and move upstream seeking warm water refuge during cold weather.

The North Fork of the New River is located within the project corridor and provides potential manatee access to the waterways crossing underneath I-95. Manatee Protection Zones, enforced by the FWC, apply to this river and begin east and extend west of I-95 at the river crossing. A warm water refuge / Important Manatee Area (IMA) is located west of I-95, east of US 441 and south of I-595, outside the project limits. Due to limited/absence of foraging opportunities within the tidal river, manatees, if present, are traveling through this area on a

transient basis. Individuals of this species were not observed during the field reviews. Due to the limited impact on low quality mangrove habitat and nature of the project, the key from the USACE State of Florida Effect Determination Key for the Manatee in Florida (April 2013, **Appendix C**) suggests the following determination will apply:

- A. Project is located in waters accessible to manatees or directly or indirectly affects manatees.....go to B
- B. Project is other than the activities listed above (In Determination Key)go to C
- C. Project is not located in an Important Manatee Area (IMA).....go to G
- G. Project does not provide new access for watercraft, e.g., bulkheads, seawalls, riprap, maintenance dredging, boardwalks and/or the maintenance (repair or rehabilitation) of currently serviceable watercraft access structures provided all the following are met: (1) the number of slips is not increased; (2) the number of existing slips is not in question; and (3) the improvements do not allow increased watercraft usage.....go to N
- N. Project impacts to submerged aquatic vegetation, emergent vegetation or mangrove will have beneficial, insignificant, discountable, or no effects on the manatee...go to O
- O. Project proponent elects to follow standard manatee conditions for in-water work and requirements, as appropriate for the proposed activity, prescribed on the maps.....go to P
- P. If project is other than repair or rehabilitation of a multi-slip facility, a new multi-slip facility, residential dock facility, shoreline stabilization, or dredging, and does not provide new access for watercraft or improve an existing access to allow increased watercraft usage, the determination of “**NLAA**” is appropriate and no further consultation with the Service is necessary.

Due to the low quality habitat and minimal impact, proposed improvements “**may effect, not likely to adversely affect**” the West Indian manatee. To minimize any adverse effects to the West Indian manatee during construction, the FDOT will adhere to the *Standard Manatee Conditions for In-Water Work* (FWC 2011, **See Appendix D**).

5.3.5 Eastern indigo snake

The eastern indigo snake is a large, shiny, black snake reaching a length of eight feet. Habitat requirements for this snake are broad, ranging from scrub and sandhills, to wet prairies and mangrove swamps. These snakes often inhabit gopher tortoise burrows. Xeric habitats were not observed during the field reviews. Gopher tortoise burrows were not observed during field reviews. No eastern indigo snakes were observed during the field reviews. Any dry upland retention areas are located within the right-of-way of I-95 and are components of the road’s

drainage system. The Eastern Indigo Snake Programmatic Effect Determination Key (USFWS 2017, **See Appendix C**) was reviewed and results of the assessment are as follows:

- A. Project is not located in open water or salt marsh.....go to B
- B. Permit will be conditioned for use of the Service’s *Standard Protection Measures for the Eastern Indigo Snake* during site preparation and project construction.....go to C
- C. There are no gopher tortoise burrows, holes, cavities, or other refugia where a snake could be buried or trapped and injured during project activities.....**“NLAA”**

Due to the low quality habitat and minimal impact, proposed improvements **“may effect, not likely to adversely affect”** the Eastern indigo snake. To minimize adverse effects to the eastern indigo snake during construction, the FDOT will adhere to the Standard Protection Measures for the Eastern Indigo Snake (USFWS 2013, **See Appendix B**).

5.3.6 American alligator and American crocodile

The American alligator is a large, mostly black, crocodylian with a broadly rounded snout. The alligator’s listing status is due to its similarity in appearance to the American crocodile (*Crocodylus acutus*), which is Federally Threatened. Alligator habitat includes permanent bodies of fresh water such as marshes, swamps, lakes, and rivers. They can, on occasion, be found in brackish and salt water, but rarely remain. Suitable habitat for the crocodile includes mangrove swamps and along low-energy mangrove lined bays, creeks, and inland swamps. Critical habitat for the American crocodile is primarily located in the Florida Keys and within the lower portion of the Everglades National Park.

The project area is not located within a consultation area of the American crocodile. The North Fork of the New River is located within, and adjacent to, the I-95 right-of-way. The potential for this species to be found within or adjacent to the project area is low, due to the urbanized environment and the limited impact on suitable habitat; therefore, the project will have **“no effect”** on the American alligator or the American crocodile.

5.3.7 Hawksbill, Leatherback, Green, and Loggerhead sea turtles

All of these marine turtles are listed in the USFWS’ protected species database for Broward County. Habitat for these turtles is estuarine and marine coastal and oceanic waters. Nesting occurs on coastal sand beaches.

The North Fork of the New River can provide sea turtle access to the project corridor; however, this is highly unlikely. No nesting habitats or individuals of this species were observed during the project’s field reviews. Due to the lack of suitable nesting habitat and minimal impact on useable

habitat, the project will have “*no effect*” on the Hawksbill, Leatherback, Green, and Loggerhead sea turtles.

To minimize any potential for adverse effects to these species, the NMFS Sea Turtle and Smalltooth Saw Fish Construction Conditions (**Appendix E**) will be adhered to for any in-water work during the construction phase of this project.

5.3.8 Beach jacquemontia

This vine has a woody base and non-woody, creeping or twinning stems up to six feet long. This species is typically found on the lee side of stable dunes, maritime hammocks, coastal strand, coastal scrub, with sea grape (*Coccoloba uvifera*), sandspurs, poison wood (*Metopium toxiferum*), and prickly pear (*Opuntia stricta*). The USFWS Multi-species Recovery Plan states this species is native to coastal barrier islands in southeast Florida from Biscayne Bay to Palm Beach County. Its preferred habitat consists of the lee side of stable, vegetated dunes, disturbed openings in maritime hammock, coastal strand, and coastal scrub. This habitat type was not identified within, or adjacent to, the project corridor during the field reviews. Individuals of this species were not observed during the field reviews. Based on the lack of suitable habitat, the project will have “*no effect*” on the Beach jacquemontia.

5.3.9 Tiny polygala

This perennial, short-lived herb forms a rosette, and grows no more than eight centimeters tall. It has one to four typically unbranched stems with a scented taproot. The tiny polygala requires high light levels, open sand, and little to no organic litter within pine rockland, scrub, sandhill, and open coastal spoil pile habitats. The range for this species extends along the Atlantic Coastal Ridge from Perrine to southeastern St. Lucie County. These habitat types were not identified within, or adjacent to, the project corridor during the field review. Individuals of this species were not observed during the field reviews. Based on the lack of suitable habitat, the project will have “*no effect*” on the tiny polygala.

5.4 State Protected Species

FWC maintains the list of animals designated as federally endangered, federally threatened, state threatened, or species of special concern. While the USFWS has primary responsibility for Florida species that are federally endangered or threatened, the FWC works in partnership to help conserve these species. Some listed and non-listed species are also considered managed species because of the well-developed programs that address their conservation, management, or recovery. Recently, FWC also developed a comprehensive Imperiled Species Management

Plan (FWC, 2016) for the state’s 57 state-listed species. The state-listed species and their corresponding listing status are summarized in **Table 5.4.1**.

Table 5.4.1 Likelihood of Occurrences of State Listed Species within the Project Area

Scientific Name	Common Name	Status	Likelihood of Occurrence
Avian			
<i>Sternula antillarum</i>	Least Tern	ST	Low
<i>Egretta caerulea</i>	Little Blue Heron	ST	Low
<i>Egretta tricolor</i>	Tricolored Heron	ST	Low
<i>Egretta rufescens</i>	Reddish Egret	ST	Low
<i>Platalea ajaja</i>	Roseate Spoonbill	ST	Low
<i>Rynchops niger</i>	Black Skimmer	ST	Low
<i>Haematopus palliatus</i>	American Oystercatcher	ST	Low
<i>Athene cunicularia floridana</i>	Burrowing Owl	ST	Low
Reptiles			
<i>Gopherus polyphemus</i>	Gopher Tortoise	ST	Low

Note: SSC = Species of Special Concern; ST = State-designated Threatened; FT = Federally-designated Threatened; FE = Federally-designated Endangered; C = Candidate

Source: Florida Fish and Wildlife Conservation Commission. Florida’s Endangered and Threatened Species. Official Lists, January 2017; U.S. Fish and Wildlife Service, County Listed Species; and Florida’s Imperiled Species Management Plan 2016.

5.4.1 Least tern

The least tern is the smallest tern and found in coastal areas throughout Florida. These areas include beaches, lagoons, bays, and estuaries. Least terns will use artificial nest sites such as gravel rooftops, dredge spoil islands, construction sites, causeways, and mining lands. Nesting sites require well-drained sand, or gravel, and usually support limited vegetation. The project limits are inland; therefore, coastal habitats are not available. Disturbed and/or vacant uplands are adjacent to the corridor, outside the I-95 right-of-way. These uplands are planted with sod with little exposed soil (the preferred nesting substrate). No individuals or nests of this species were observed during the field reviews. No effect to the Least tern is anticipated.

5.4.2 Little blue heron

The little blue heron is a medium-size bird with a purple to maroon-brown head and neck, small white patch on the throat and upper neck, and a slate-blue body. It feeds in shallow freshwater, brackish, and saltwater habitats, and nests in woody vegetation such as cypress, willow, maple, black mangrove, and cabbage palm. Potential foraging and nesting habitat are present within the stormwater swales, although these habitats provide limited value. No individuals or nests of this species were observed during the field reviews. The project has a low potential to effect this species or its habitat. No effect to the little blue heron is anticipated.

5.4.3 Tricolored heron

The tricolored heron is a medium-size heron with a long slender neck, two-toned body coloration on the head, neck, and body along with a white underside. Nesting mostly occurs on mangrove islands or in freshwater willow thickets on islands or over standing water. This heron prefers coastal environments. Feeding areas consist of permanently, or seasonally, flooded wetlands, mangrove swamps, tidal creeks, ditches, and the edges of lakes and ponds. Potential foraging habitat is present within the stormwater swales. No individuals or nests of this species were observed during the field reviews. The project has a low potential to effect this species or its habitat. No effect to the Tricolored heron is anticipated.

5.4.4 Reddish egret

This egret has a gray body and chestnut-colored plumes on its head, neck, and upper body. Reddish egret habitat is almost exclusively in coastal areas, with nesting on coastal mangrove islands or in Brazilian pepper located on dredge spoil islands. Foraging habitats include shallow water areas (less than six inches deep) of variable salinity as well broad, open, marine tidal flats and shorelines supporting little vegetation. Potential foraging habitat is present within the stormwater swales. No individuals or nests of this species were observed during the field reviews. The project has a low potential to effect this species or its habitat. No effect to the Reddish egret is anticipated.

5.4.5 Roseate spoonbill

Adult spoonbills exhibit bright pink bodies, white necks, and flat, spoon-shaped bills. These birds nest on coastal mangrove islands or in Brazilian pepper on constructed dredge spoil islands near suitable foraging habitat. They will also nest in willow heads located in freshwater and forage in shallow water of varying salinity. Foraging habitats include marine tidal flats and ponds, coastal marshes, mangrove-dominant inlets and pools as well as freshwater marshes and sloughs. Potential foraging habitat is present within the stormwater swales. No individuals or

nests of this species were observed during the field reviews. The project has a low potential to effect this species or its habitat. No effect to the Roseate spoonbill is anticipated.

5.4.6 Black skimmer

The skimmer is a coastal bird with a red and black-tipped bill and red legs. Its habitat includes coastal waters such as beaches, bays, estuaries, sandbars, tidal creeks (for foraging), and inland waters of large lakes, phosphate pits, and flooded agricultural fields. Nesting typically occurs on sandy beaches, coastal islands, and dredge spoil islands. Retention ponds are located within, and adjacent to, the project limits, providing potential habitat for this species. The ponds' adjacent to I-95 reduces their suitability. No individuals or nests of this species were observed during the field reviews. The project has a low potential to effect this species or its habitat. No effect to the Black skimmer is anticipated.

5.4.7 American oystercatcher

The oystercatcher is a large, heavy shorebird with a bright red bill and pink legs. Habitat requirements include large areas of beach, sandbar, mudflat, and shellfish beds for foraging. This species is restricted to coastal areas. The project limits are inland, so these habitats were not observed during the field reviews. No individuals or nests of this species were observed during the field reviews. The project has a low potential to effect this species or its habitat. No effect to the American oystercatcher is anticipated.

5.4.8 Burrowing owl

This owl is a small, ground-dwelling bird with long legs, white chin stripe, round head and stubby tail. Adults are noticeably spotted and barred with brown and white. Juveniles exhibit less spotting with little or no brown barring. Habitat requirements include high, sparsely vegetated sandy ground (e.g., dry prairies and sandhills), and they make use of ruderal areas such as pastures, airports, ball fields, parks, school and university grounds, road right-of-way areas, and vacant parcels in residential areas. No individuals or nests of this species were observed during the field reviews. The areas affected by the proposed improvements do not provide suitable habitat for the Burrowing owl. Due to the highly developed project area and lack of suitable habitat, no effect to the Burrowing owl is anticipated.

5.4.9 Gopher tortoise

This tortoise is a native turtle fully adapted to a terrestrial life. The upper shell is brown and fairly flat. The lower shell is yellowish, without hinge, and projecting forward. The forelimbs are expanded for digging. This tortoise is typically found in dry upland habitats including sandhills,

scrub, xeric oak hammock, and dry pine flatwoods as well as disturbed habitats such as pastures, old fields, and road shoulders. No individuals or burrows of this species were observed during field reviews. The areas affected by the proposed improvements do not provide suitable habitat for the Gopher tortoise. Due to the highly developed project area and lack of suitable habitat, no effect to the Gopher tortoise is anticipated.

5.5 Critical Habitat

As defined by the USFWS, critical habitat 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 features essential to the conservation of endangered and threatened species and that may need special management or protection. Critical habitat may also include areas that were not occupied by the protected species at the time of listing but are essential to its conservation. The USFWS has designated critical habitat for the West Indian manatee in the North Fork of the New River. The proposed impacts to this critical habitat would be negligible, based on the information provided in **Section 5.3.4** of this NRE. The USFWS 2011 Standard Manatee Condition for In-Water Work (**Appendix D**) will be followed throughout the construction phase. No destruction or adverse modification of critical habitat is anticipated.

6.0 Essential Fish Habitat Assessment

The NMFS is responsible for the stewardship of the nation's living marine resources and their habitats. Their authority comes from the Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended. The MSA established eight Fishery Management Councils (FMC) across the country. These Councils are tasked with creating and amending Fishery Management Plans. The proposed project is located within the South Atlantic FMC. In 1996, amendments to the MSA established a mandate to identify and protect important marine and anadromous fisheries habitats. Those amendments required the FMC to describe and identify, minimize impacts to and encourage the conservation and enhancement of EFH. The MSA also requires the FMC to identify specific habitat types as Habitat Areas of Particular Concern (HAPC) within EFH that provide important ecological functions, rarity, or may be particularly vulnerable to anthropogenic degradation. EFH is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity" (16 U.S.C. 1802 sec. 3(10)) for a healthy ecosystem.

In accordance with FDOT PD&E Manual, Part 2 – Chapter 17 "Essential Fish Habitat" (January 14, 2019), an assessment of EFH, HAPC(s), and managed species that may be affected was conducted. The objectives of this assessment were to determine if any EFH, HAPC(s), and managed species are within the project area, if any of these would be adversely affected by the

proposed project and, if necessary, develop recommendations for avoidance and minimization. NMFS and RS&H personnel have identified EFH and HAPC within the project limits.

According to the ETDM Summary Report (October 30, 2015), NMFS performed a site visit July 29, 2015 and commented that the wetlands within the North Fork of the New River are of moderate quality and are dominated by a subcanopy of red mangrove (*Rhizophora mangle*). In addition, RS&H identified white mangroves, tropical almond, and Ficus species on the banks of the river. The South Atlantic Fishery Management Council has designated mangrove as EFH as well as a HAPC. HAPC's are subsets of EFH that are rare, particularly susceptible to human-induced degradation, especially ecologically important, or located in an environmentally stressed area. The NMFS commented that the project site is accessible to Smalltooth sawfish. Juvenile Smalltooth sawfish use red mangrove prop roots as nursery habitat. If habitat usable by the Smalltooth sawfish is impacted, the NMFS indicated that an EFH assessment and ESA biological assessment should be prepared.

The project proposes widening of the southbound bridge over the North Fork of the New River. The southbound off ramp to Broward Boulevard is to be widened ~12-feet to the west beyond the widening of the I-95 Express Phase 3A project (FPID No. 433108-5-52-01) (See Bridge Widening Exhibit in **Appendix F**). The area to be affected by both projects consists of discontinuous, fringe mangrove habitat that represents potential habitat for the Smalltooth sawfish. USACE and SFWMD permits were obtained and mitigation was provided for the impacts associated with the I-95 Express Phase 3A, under SAJ-2014-01584(SP-GGL) and Environmental Resource Permit (ERP) No. 06-01465-5, respectively. The permitted area included all of the mangrove fringe between the existing I-95 southbound bridge and the FDOT western I-95 limited access right-of-way line (identified as 15(M) and 16 (M) in the USACE permit application). The permit application indicated that the mangrove fringe in this vicinity was impacted due to widening and shoreline stabilization. In addition, the Environmental Considerations document (**See Appendix G**) associated with these permits indicated that the “mangroves between the existing bridge and the railroad track located to the west of the bridge have been included as direct impacts”. NMFS indicated in a letter dated October 24, 2014 that no additional conservation recommendations were required for I-95 Express Phase 3A as permitted (**See Appendix G**).

The proposed improvements will result in a total of 0.004 acre to the fringe mangroves and 0.02 acre of shading impacts to the open water portion of the North Fork of the New River. The areas affected by the proposed improvements are shown in **Figure 7** in **Appendix A** and **Photo 2**. The 0.004 acre impact to fringe mangroves are within the I-95 Express Phase 3A fill impact area shown in the USACE Dredge and Fill Permit Sketches on Sheet 14 and within the existing I-95 limited access right-of-way. **Exhibit 1** is Sheet 14 in the USACE Dredge and Fill Permit Sketches for I-95 Express Phase 3A and shows the extent of the fill impacts. **Exhibit 2** shows the I-95

Express Phase 3A permitted dredge and fill impacts overlaid with the proposed I-95 Broward Boulevard proposed improvements.

The areas being impacted as a result of the proposed improvements have already been mitigated for by the I-95 Express Phase 3A project (See Sheets 70 and 71 in USACE Permit Application in **Appendix G**). Since no new impacts will occur, the project is not anticipated to impact any additional EFH.

Exhibit 1: I-95 Express Phase 3A USACE Dredge and Fill Permit Sketches, Sheet 14

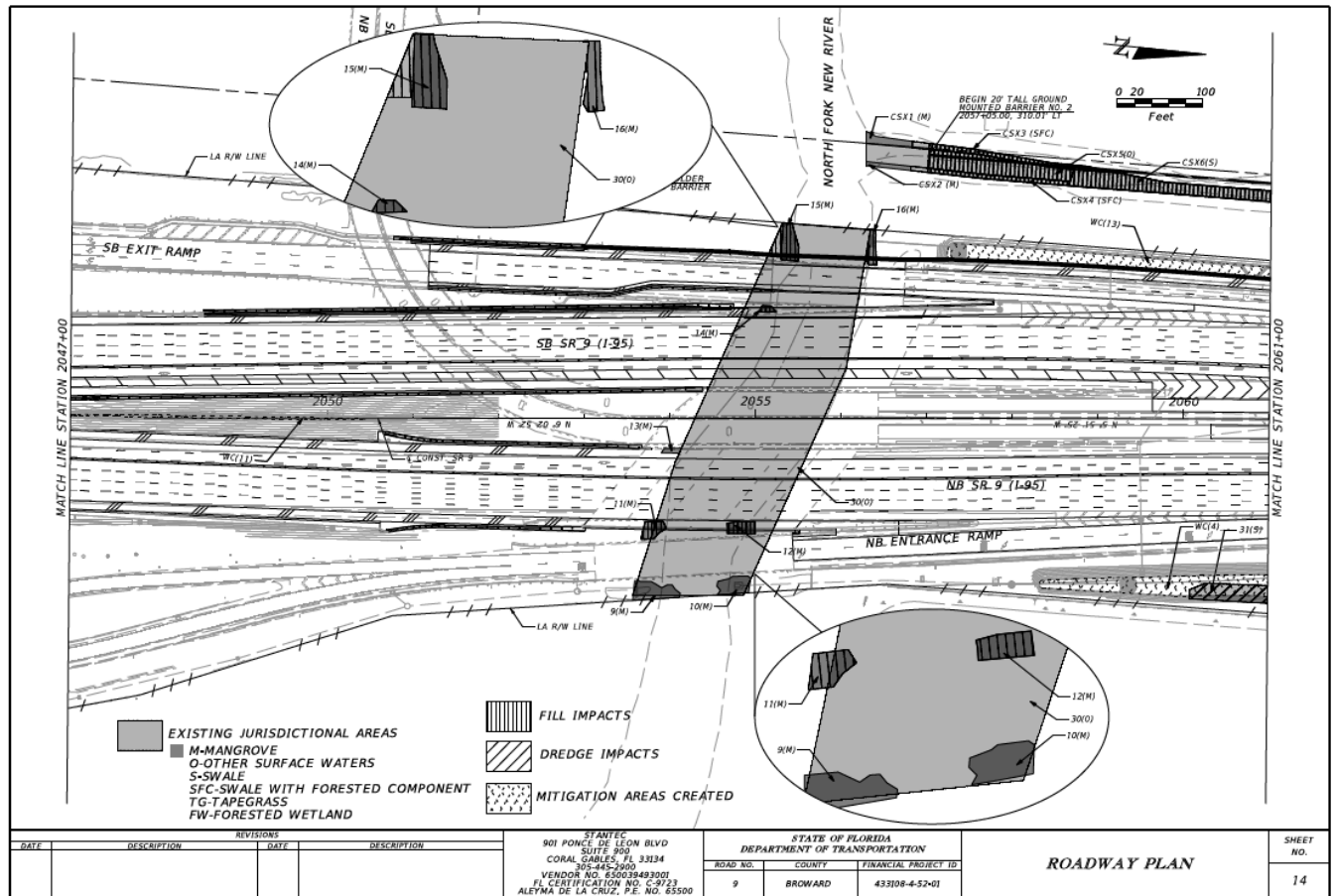
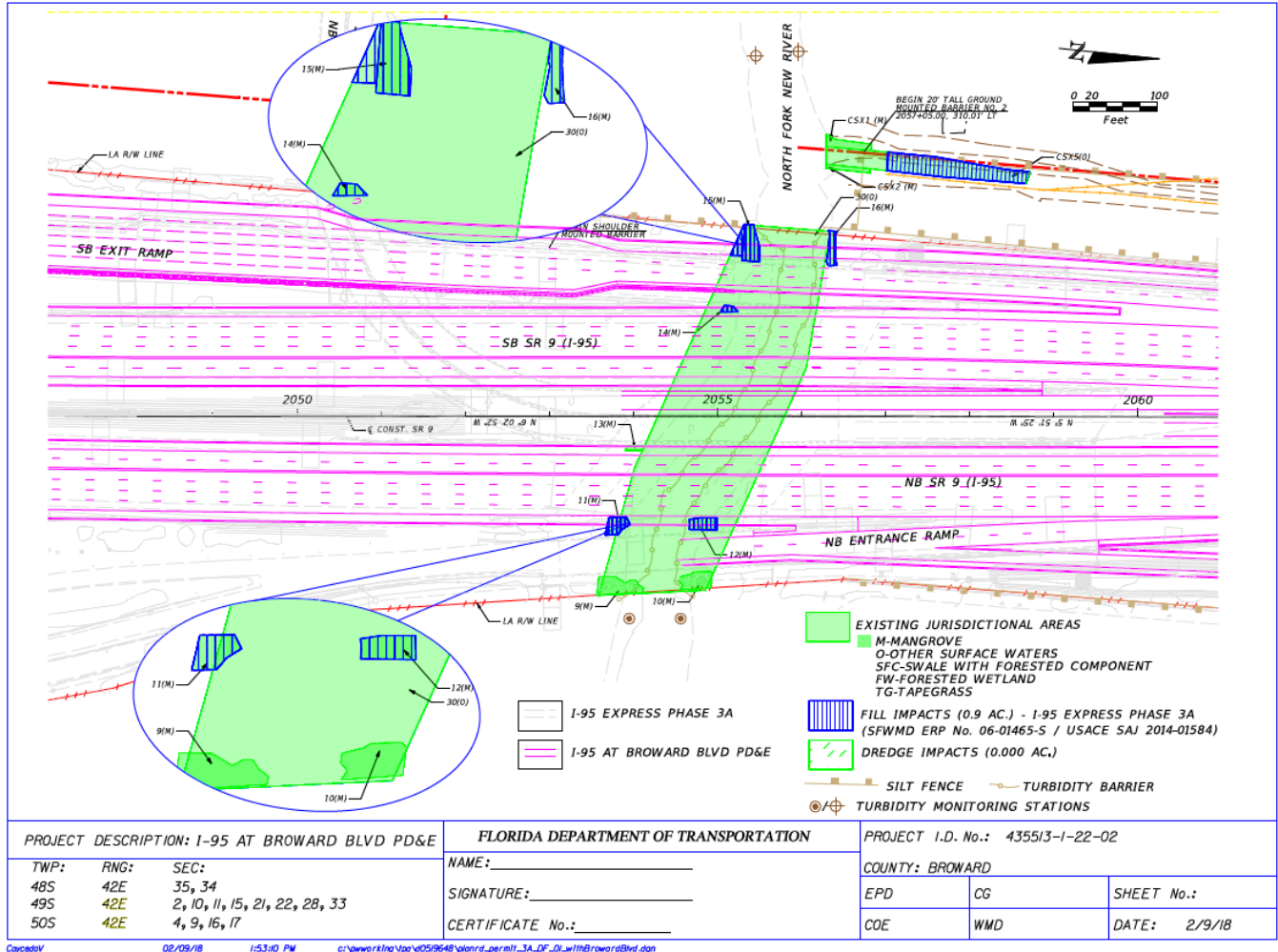


Exhibit 2: Limits of the Proposed Widening of I-95 Southbound Off Ramp to Broward Boulevard Relative to I-95 Express Phase 3A Permitted Dredge and Fill Impacts



7.0 Conceptual Mitigation

The SFWMD and the USACE, on the state and federal level, respectively, regulate the wetlands and surface waters within the project site. Pursuant to Florida Statutes, the USACE, the SFWMD, and the FDEP regulations, compensatory mitigation for unavoidable wetland impacts can be accomplished in several ways.

The proposed improvements will impact a total of 0.404 acre of wetlands and surface waters including three stormwater management areas (SW-3, SW-5, and SW-7) and a portion of the fringe mangroves (W-1) and open water (SW-4) at the North Fork of the New River.

W-1 and SW-4 have already been mitigated for by the I-95 Express Phase 3A project. USACE and SFWMD permits were obtained and mitigation was provided for the impacts associated with the I-95 Express Phase 3A, under SAJ-2014-01584 (SP-GGL) and ERP No. 06-01465-5, respectively. The permitted impacts included all of the mangrove fringe between the existing I-95 southbound bridge and the western I-95 limited access right-of-way line. The permit applications indicated that the mangrove fringe in this vicinity was impacted due to widening and shoreline stabilization. In addition, the Environmental Considerations document (**See Appendix G**) associated with these permits indicated that the “mangroves between the existing bridge and the railroad track located to the west of the bridge have been included as direct impacts”. Mitigation for the wetlands identified as 15(M) and 16(M) in the permit application (Sheet 14), which represent W-1 in the I-95 at Broward Boulevard project, was identified in the Summary of Totals on Sheets 70 and 71 of the USACE Dredge and Fill Permit Sketches (**See Appendix G**).

SW-3, SW-5, and SW-7 were constructed in uplands, are less than one acre in area, and are part of the permitted I-95 stormwater management system. Typically, these surface waters are exempt from mitigation requirements per Section 10.2.2.1 and 10.2.2.2 of the SFWMD Environmental Resource Permit Applicant’s Handbook, Volume 1. The USACE has historically allowed for impacts to stormwater management areas containing hydrophytic vegetation to be mitigated through offsetting stormwater management areas.

During the design phase, potential wetland and surface water impacts will be re-evaluated as part of the environmental permitting process. If mitigation is required due to design changes, impacts could be mitigated using remaining estuarine units at either the Department’s West Lake Park or Pond Apple Slough permittee-responsible offsite mitigation areas (PROMAs). There are currently 1.87 State/Federal mitigation units remaining at the Pond Apple Slough PROMA and 0.23 State / 0.33 Federal mitigation units remaining at the West Lake Park PROMA. As such, the preferred mitigation option is to utilize existing mitigation units from one of these two PROMAs. If these mitigation units are no longer available at time of final design and permitting, and the project is located within the service area of a permitted wetland mitigation bank with

available estuarine credits, then the purchase of credits from the bank may be acceptable. However, there are no estuarine credits currently available for purchase from the two mitigation banks serving the project limits, Everglades Mitigation Bank and Loxahatchee Mitigation Bank. If the use of a permitted wetland mitigation bank is not an option, then pursuant to Chapter 373.4137 F.S. (i.e., the Senate Bill), compensatory mitigation of wetland impacts can be implemented by the SFWMD through funding supplied by the Department. In the unlikely event that none of the aforementioned methods is a viable option, then a site-specific wetland mitigation plan will need to be developed. Compensatory wetland mitigation can be in the form of upland and/or wetland preservation, wetland restoration, wetland enhancement, wetland creation, or a combination of these methods.

8.0 Anticipated Permits

Coordination with the relevant regulatory agencies, including USACE, USFWS, NMFS, and SFWMD has commenced via the ETDM Screening Tool. The following permits are anticipated:

- NPDES General Permit;
- USACE Nationwide Permit; and
- SFWMD ERP – Major Modification
 - Existing ERP No. 06-01465-S (I-95)
 - Existing ERP No. 06-1469-S (Broward Boulevard Park-and-Ride Lot).

Additionally, the portion of the North Fork of the New River through the project limits is considered Sovereign Submerged Lands (SSL) under the jurisdiction of FDEP Division of State Lands. FDOT has an existing SSL easement authorizing transportation improvements within the existing I-95 limited access right-of-way. Pre-application and coordination meeting(s) should be conducted during the design phase of the project in order to confirm the need for the anticipated permits and/or SSL easement modification.

9.0 Conclusion

Wetlands exist as disturbed, fringe mangroves along the banks of the North Fork of the New River. Seven surface waters exist within a 500-foot buffer of the project area as a channelized river, drainage ditches, and ponds. The open water portion of the North Fork of the New River was identified as a surface water and crosses under I-95 approximately 800 feet north of Broward Boulevard. The drainage features and stormwater management areas are located intermittently along the east side of I-95 within the project area.

During the course of this PD&E Study, assessments of wetland and environmental resources around the project site were conducted. Direct impacts are defined as those effects caused by the proposed action that occur at the same time and place (40 CFR 1508.8). Direct impact acreages to surface waters are listed in **Table 9.1**.

Table 9.1 Summary of Wetland and Surface Water Classifications and Impacts

ID	USFWS Classification	FLUCFCS Code	Comment	Impact Area (Acres)
W-1	E1UBLx	612	North Fork of the New River – Fringe Mangroves	0.004
SW-1	PUBHx	530	Drainage Feature	---
SW-2	PUBHx	530	Drainage Feature	---
SW-3	PUBHx	530	Drainage Feature	0.28
SW-4	E1UBLx	510	North Fork of the New River – Open Water	0.02
SW-5	PUBHx	530	Drainage Feature	0.02
SW-6	PUBHx	530	Drainage Feature	---
SW-7	PUBHx	530	Drainage Feature	0.08
Total Impacts	---	---	---	0.404

The project was evaluated for potential impacts to threatened and endangered species in accordance with Part 2, Chapter 16 Protected Species and Habitat (January 14, 2019) of the FDOT PD&E Manual. The objective of this assessment is to determine if any protected species inhabit the project area and to determine if protected species, or their habitat, will be adversely impacted by the proposed project. Cursory wildlife surveys were conducted in April 2017 and December 2017 and August 2018. A summary of the effect determinations for each federally and state listed species is provided in **Table 9.2**. USFWS concurred with these effects determinations on May 2, 2018 (See **Appendix H**).

The USFWS has designated critical habitat for the West Indian manatee in the North Fork of the New River. The proposed impacts to this critical habitat would be negligible. The USFWS 2011 *Standard Manatee Condition for In-Water Work* (**Appendix D**) will be followed throughout the construction phase. No destruction or adverse modification of critical habitat is anticipated.

This project is located within EFH and an area designated as a HAPC due to the presence of mangroves. The NMFS commented that the project site is accessible to Smalltooth sawfish. The proposed improvements will result in a total of 0.004 acre of fill impacts to the fringe mangroves and 0.02 acre of shading impacts to the open water portion of the North Fork of the New River. However, these areas being impacted have already been mitigated for under the permits issued for the I-95 Express Phase 3A project. Since no new impacts will occur, the project is not anticipated to impact any additional EFH or require any additional mitigation. NMFS indicated that re-initiation of EFH consultation will not be required based on the previous consultation for the I-95 Express Phase 3A project and that ESA consultation for the Smalltooth sawfish will not require re-initiation if the means and methods for the proposed widening are the same as those used by the I-95 Phase 3A project (See **Appendix H**). The I-95 Broward Boulevard project is anticipated to use the same construction means and methods as described in the I-95 Phase 3A project. Therefore, the bridge widening associated with this project does not meet the criteria to trigger re-initiation of consultation with the NMFS.

In order to ensure that adverse and/or excessive impacts to wetlands and listed species within the vicinity of the project corridor will not occur, the FDOT will abide by the following commitments:

- FDOT will implement the NMFS 2006 *Sea Turtle and Smalltooth Sawfish Construction Conditions* (**Appendix E**);
- FDOT agrees to follow the U.S. Fish and Wildlife Service (USFWS) *Standard Protection Measures for the Eastern Indigo Snake* (the current version at the time of construction) during implementation of the project, and Technical Special Provisions will be incorporated into the contractor's bid documents (see **Appendix B**); and
- FDOT agrees to follow the U.S. Fish and Wildlife Service (USFWS) 2011 *Standard Manatee Condition for In-Water Work* (**Appendix D**).

Table 9.2 Summary of Federally and State Listed Species and Their Effect Determination

Scientific Name	Common Name	Status	Likelihood of Occurrence	Effect Determination
Fish				
<i>Pristis pectinata</i>	Smalltooth Sawfish	FE	Low	NLAA
Avian				
<i>Mycteria americana</i>	Wood Stork	FT	Moderate	NLAA
<i>Rostrhamus sociabilis plumbeus</i>	Everglades Snail Kite	FE	Low	NE
<i>Sternula antillarum</i>	Least Tern	ST	Low	NE
<i>Egretta caerulea</i>	Little Blue Heron	ST	Low	NE
<i>Egretta tricolor</i>	Tricolored Heron	ST	Low	NE
<i>Egretta rufescens</i>	Reddish Egret	ST	Low	NE
<i>Platalea ajaja</i>	Roseate Spoonbill	ST	Low	NE
<i>Rynchops niger</i>	Black Skimmer	ST	Low	NE
<i>Haematopus palliatus</i>	American Oystercatcher	ST	Low	NE
<i>Athene cunicularia floridana</i>	Burrowing Owl	ST	Low	NE
Mammals				
<i>Trichechus manatus</i>	West Indian Manatee	FT	Moderate	NLAA
Reptiles				
<i>Drymarchon corais couperi</i>	Eastern Indigo Snake	FT	Low	NLAA
<i>Alligator mississippiensis</i>	American Alligator	FT (SA)	Low	NE
<i>Crocodylus acutus</i>	American Crocodile	FT	Low	NE
<i>Chelonia mydas</i>	Green Sea Turtle	FT	Low	NE
<i>Eretmochelys imbricata</i>	Hawksbill Sea Turtle	FE	Low	NE
<i>Dermochelys coriacea</i>	Leatherback Sea Turtle	FE	Low	NE
<i>Caretta caretta</i>	Loggerhead Sea Turtle	FT	Low	NE
<i>Gopherus polyphemus</i>	Gopher Tortoise	ST	Low	NE
Plants				
<i>Jacquemontia reclinata</i>	Beach Jacquemontia	FE	Low	NE
<i>Polygala smallii</i>	Tiny Polygala	FE	Low	NE

10.0 Agency Coordination

A Programming Screen Summary Report was published May 2015 for the project area. Notification of the project was distributed to FDEP, FWC, NMFS, National Park Service (NPS), SFWMD, USACE, USFWS, and other governmental agencies. **Sections 4.0, 5.0, and 6.0** address agency comments and responses from the ETDM Summary Report.

A meeting was held on February 23, 2018 to facilitate initial agency coordination with NMFS and USFWS. The purpose of the meeting was to determine if the potential impacts from the interchange improvements are already covered by the coordination completed and permits issued for the I-95 Express Phase 3A-1 project. Jennifer Schull of NMFS indicated that she would follow up with the Department regarding the impacts to the Smalltooth sawfish and EFH being previously covered by the coordination and permits issued for the I-95 Express Phase 3A-1 project. Meeting Notes from this initial coordination can be found in **Appendix H**.

Jennifer Schull followed up in an email on March 23, 2018 indicating that re-initiation of EFH consultation will not be required based on the previous consultation for the I-95 Express Phase 3A project. In addition, Jennifer Schull sent a follow up email on March 26, 2018 stating that ESA consultation for the Smalltooth sawfish will not require re-initiation if the means and methods for the proposed widening are the same as those used by the I-95 Phase 3A project. The I-95 Broward Boulevard project is anticipated to use the same construction means and methods as described in the I-95 Phase 3A project. Therefore, the bridge widening associated with this project does not meet the criteria to trigger re-initiation of consultation with the NMFS. In this email she suggested that FDOT write a memo for their internal file describing the rationale for not re-initiating consultation. A Memorandum to File was created to summarize the preliminary coordination with the NMFS documenting why no further consultation on this project is required. This Memorandum to File, which includes the email correspondence with Jennifer Schull, can be found in **Appendix H**.

The NRE and ESA Section 7 Consultation / Concurrence Request Letter summarizing the proposed project, the federally listed species that may be present, and their effects determinations was sent to USFWS on March 23, 2018. USFWS responded on May 2, 2018 and concurred with the federally listed species effects determinations. The letter signed by USFWS can be found in **Appendix H**.

11.0 References

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US Army Core of Engineers. Permit No. SAJ-2014-01584 (SP-GGL).


APPENDIX A

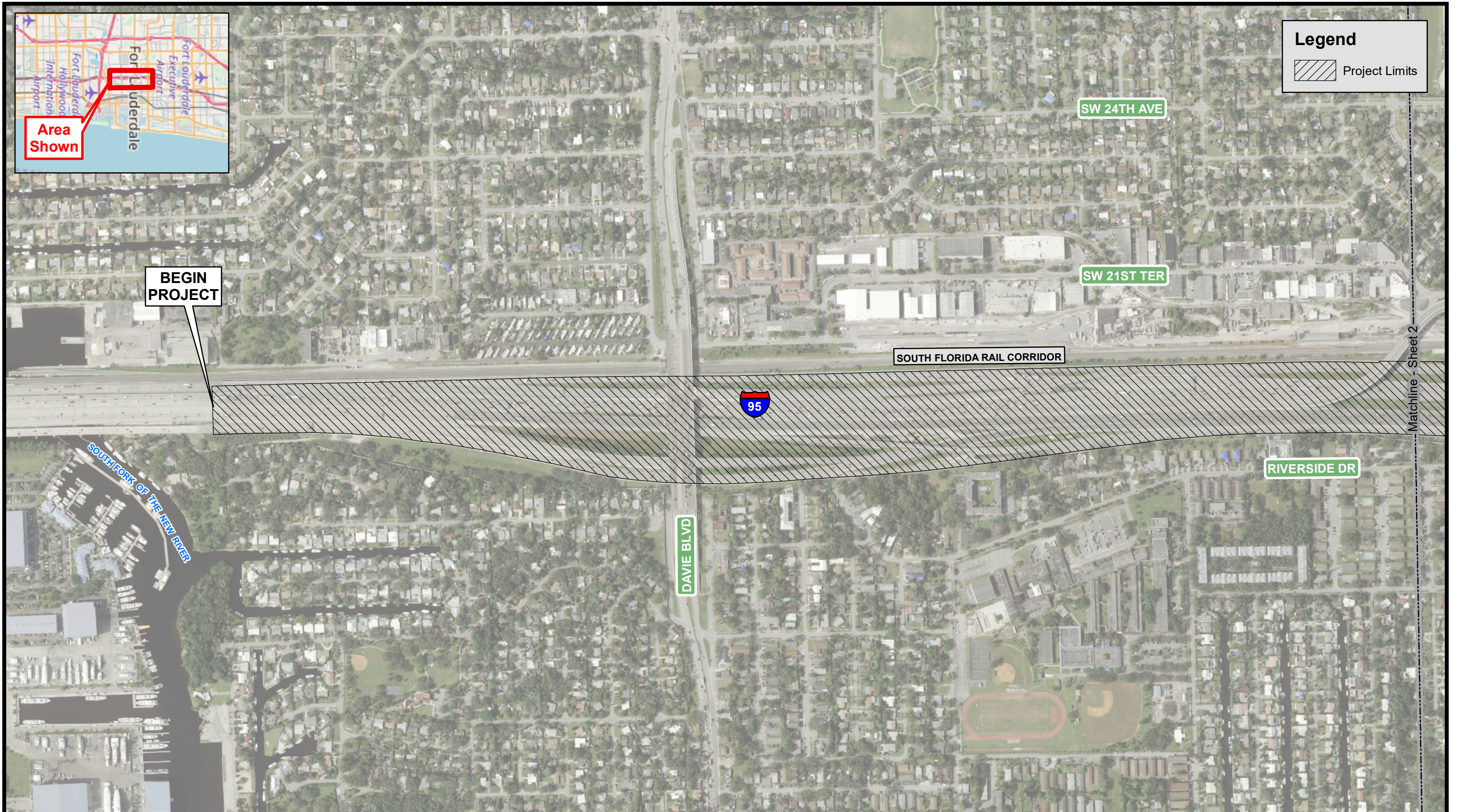
Figures

- Figure 1: Project Location Map
- Figure 2: Existing Land Use Map
- Figure 3: Future Land Use Map
- Figure 4: Soil Map
- Figure 5: Flood Zone Location Map
- Figure 6: Existing Wetlands and Other Surface Waters
- Figure 7: Wetland and Surface Water Impacts



Legend

 Project Limits



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 ETDM # 14226
 FM # 435513-1-22-02
 Broward County, Florida

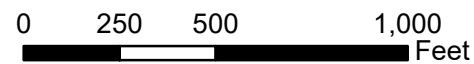
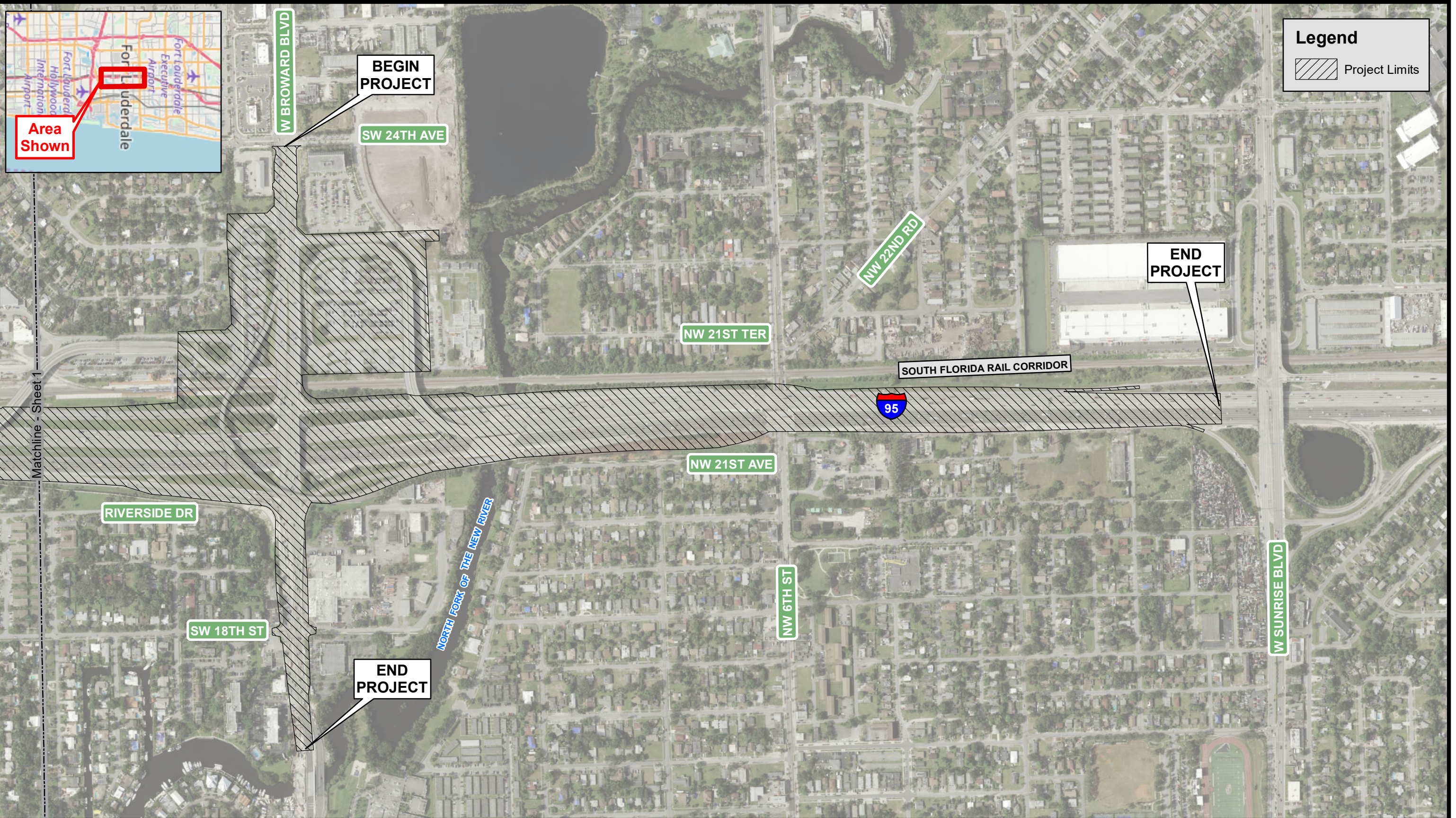


Figure 1
 Project Location Map



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 FM # 435513-1-22-02
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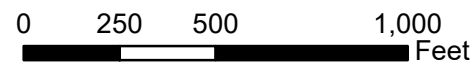
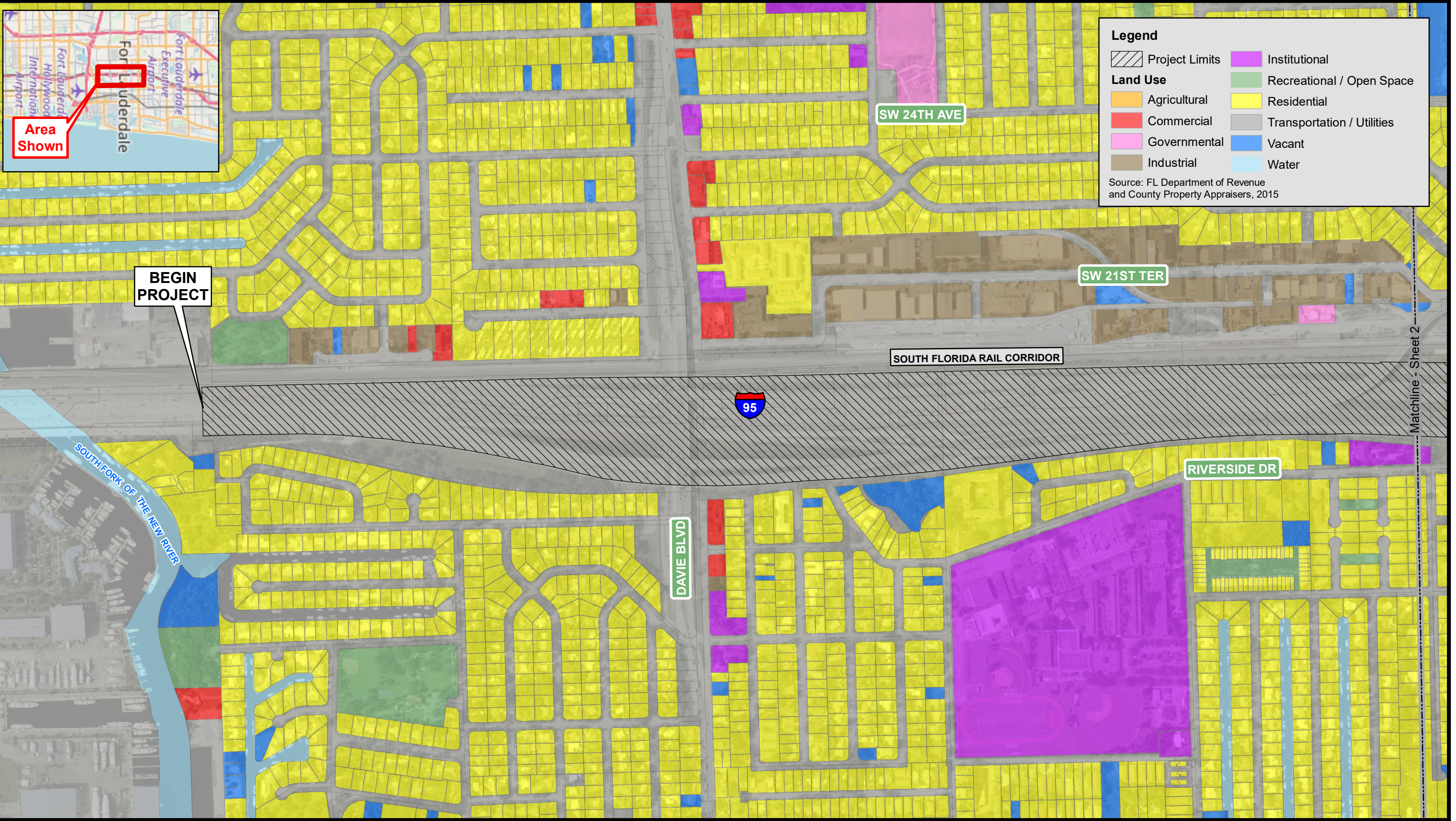


Figure 1
 Project Location Map



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 FM # 435513-1-22-02
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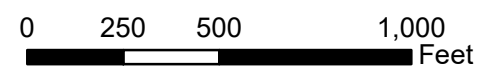
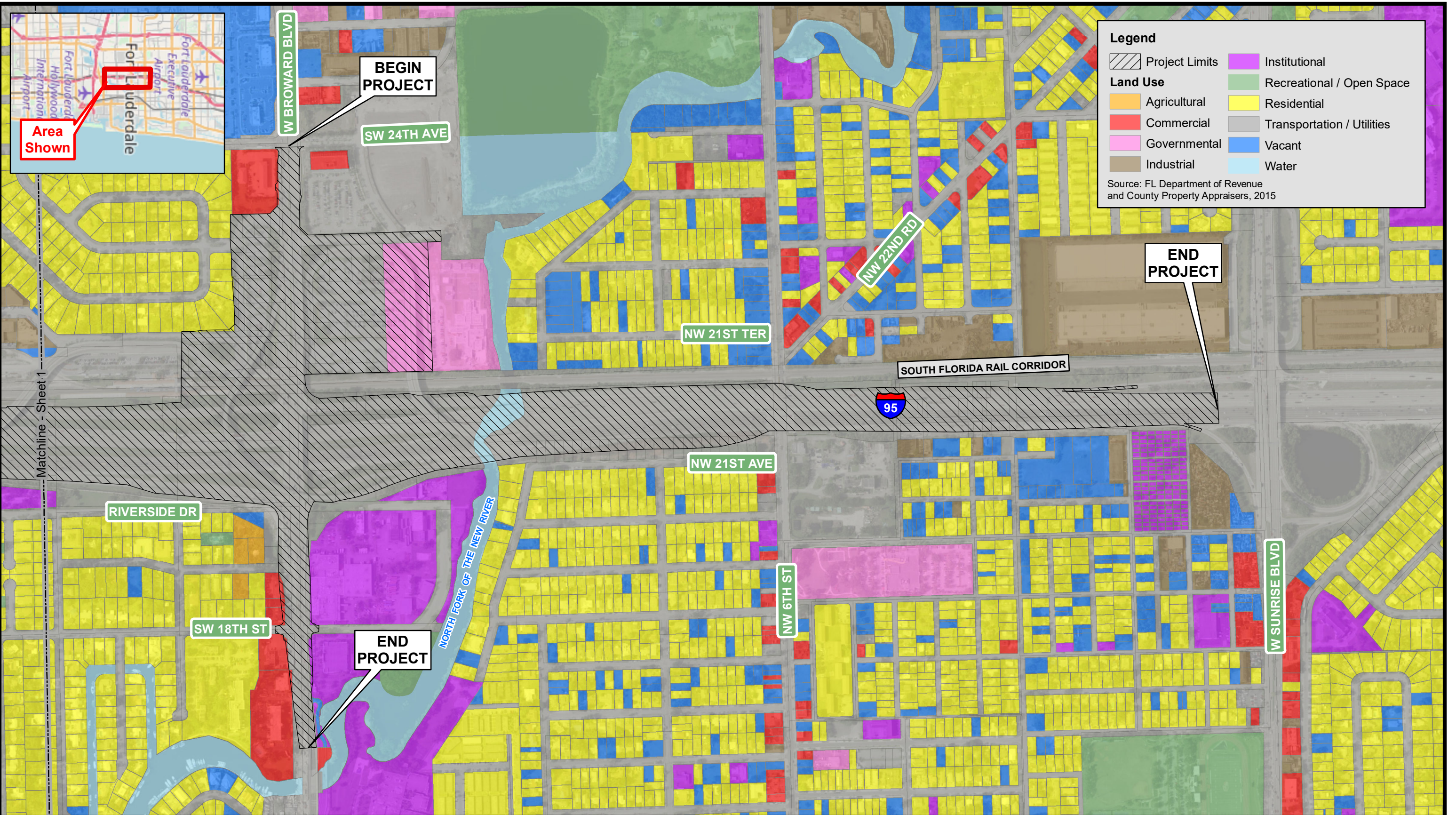


Figure 2
 Existing Land Use Map

Matchline - Sheet 2



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 FM # 435513-1-22-02
 Broward County, Florida

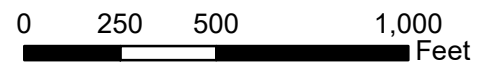
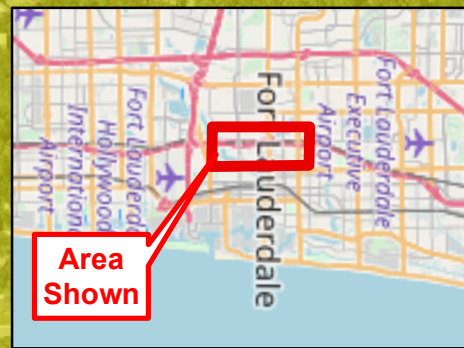


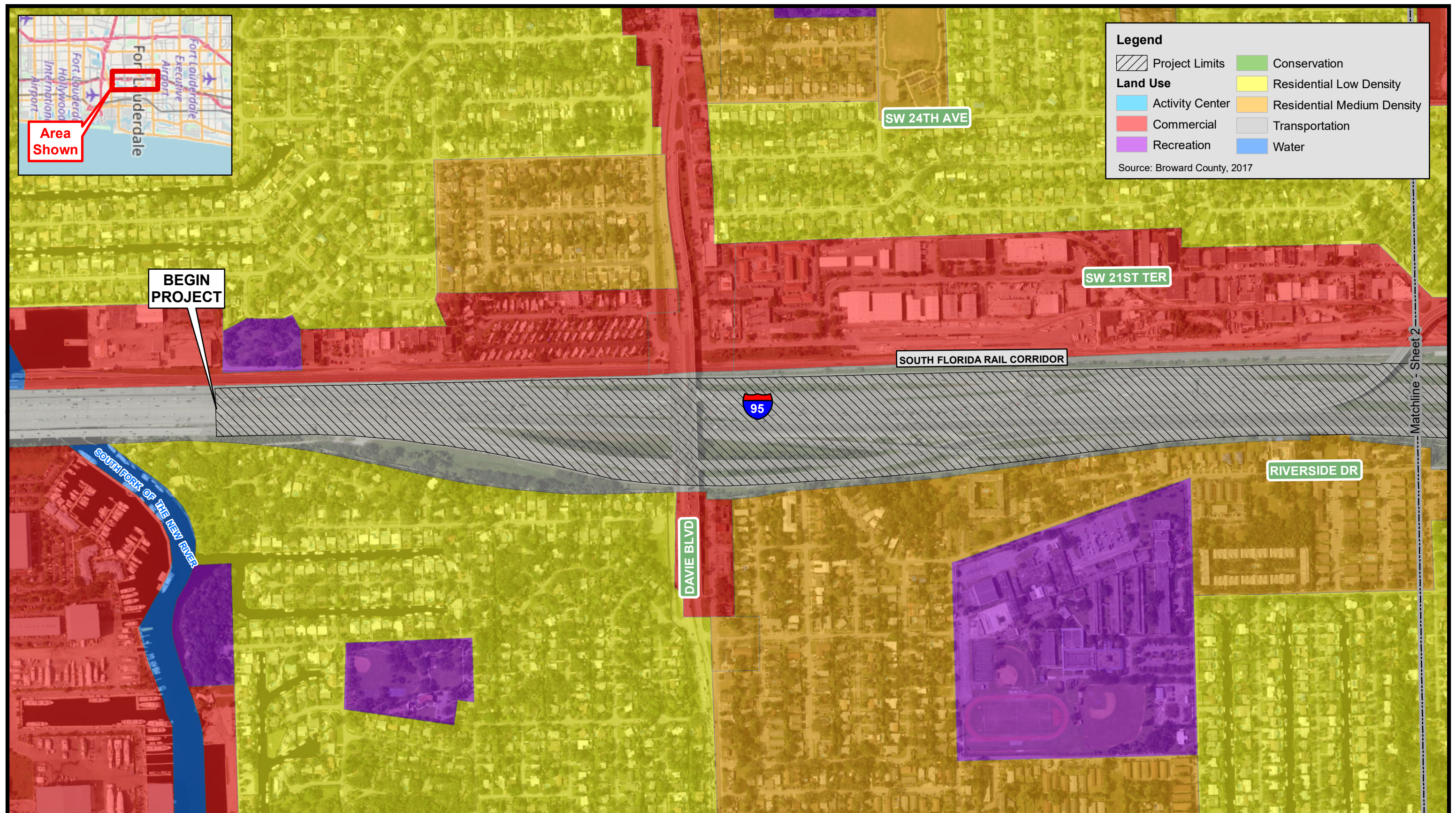
Figure 2
 Existing Land Use Map



Legend

Project Limits	Conservation
Activity Center	Residential Low Density
Commercial	Residential Medium Density
Recreation	Transportation
	Water

Source: Broward County, 2017



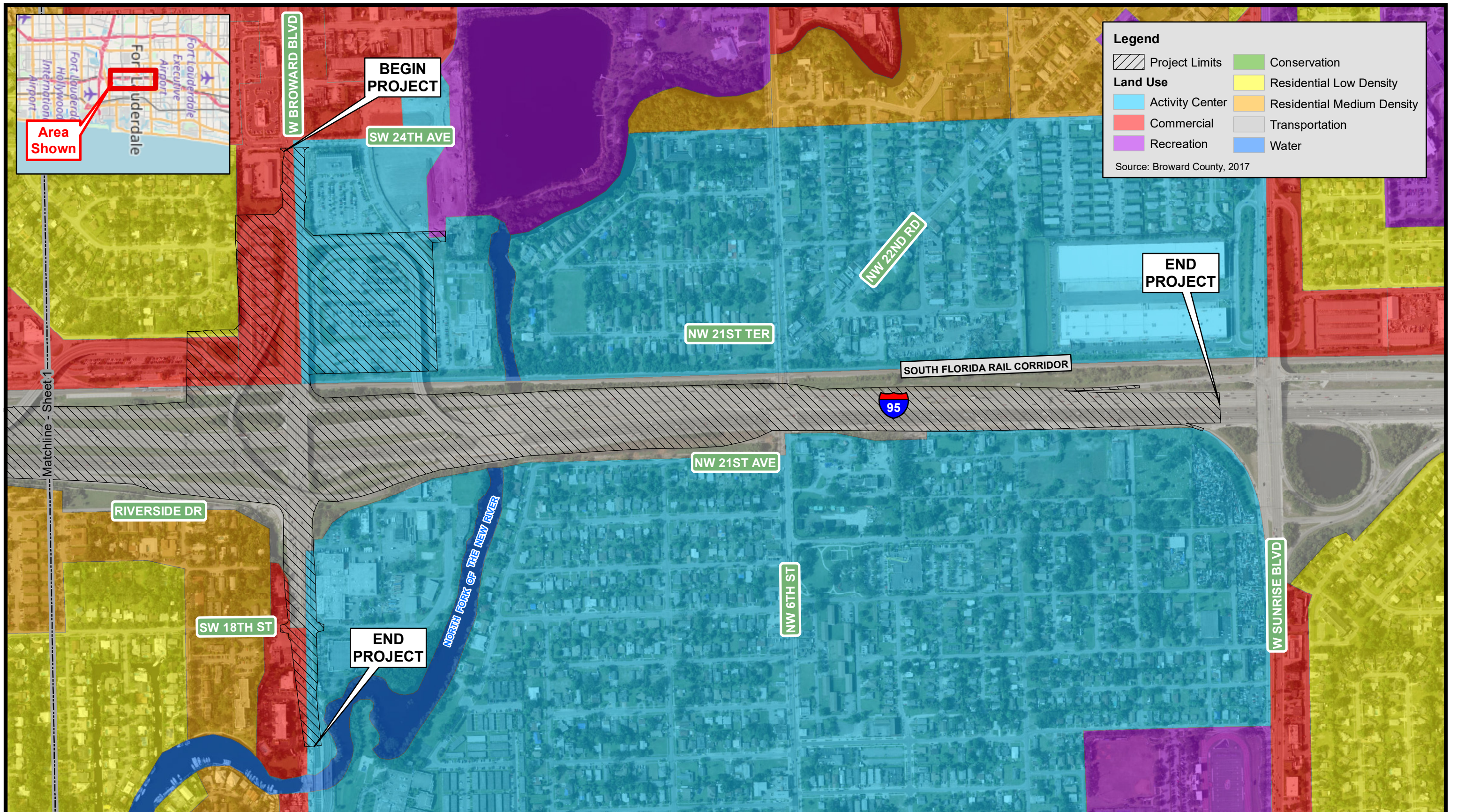
Matchline - Sheet 2



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 ETDM # 14226
 FM # 435513-1-22-02
 Broward County, Florida



Figure 3
 Future Land Use Map



Legend

Project Limits	Conservation
Activity Center	Residential Low Density
Commercial	Residential Medium Density
Recreation	Transportation
	Water

Source: Broward County, 2017



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 I-95 at Broward Blvd PD&E Study
 ETDM # 14226
 FM # 435513-1-22-02
 Broward County, Florida

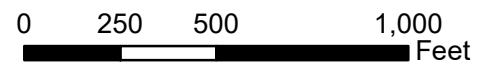
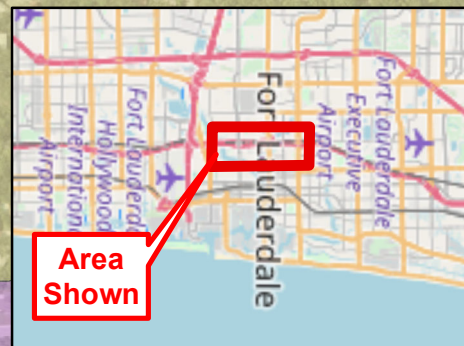
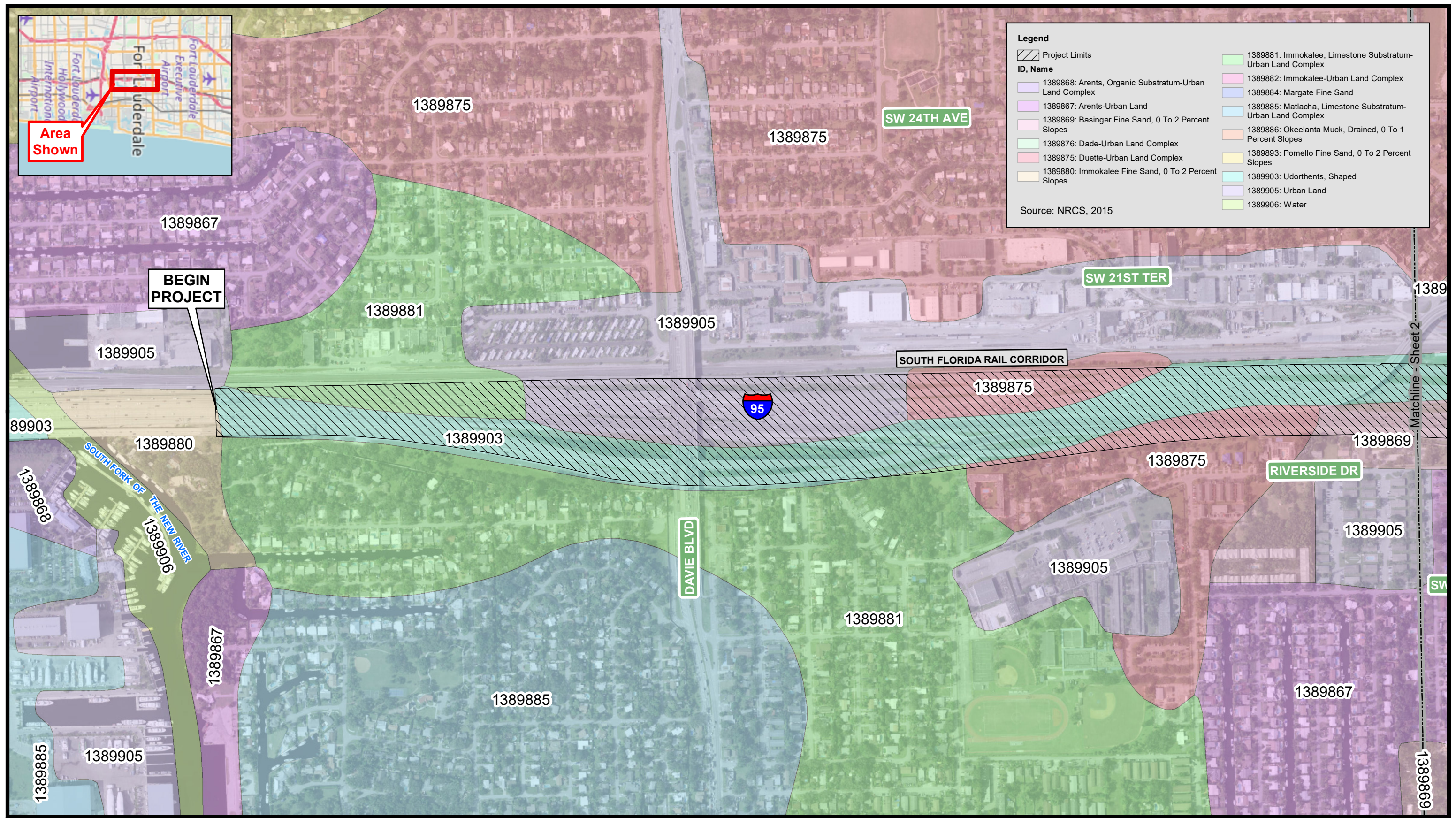


Figure 3
 Future Land Use Map



Legend	
	Project Limits
ID, Name	
	1389868: Arents, Organic Substratum-Urban Land Complex
	1389867: Arents-Urban Land
	1389869: Basinger Fine Sand, 0 To 2 Percent Slopes
	1389876: Dade-Urban Land Complex
	1389875: Duette-Urban Land Complex
	1389880: Immokalee Fine Sand, 0 To 2 Percent Slopes
	1389881: Immokalee, Limestone Substratum-Urban Land Complex
	1389882: Immokalee-Urban Land Complex
	1389884: Margate Fine Sand
	1389885: Matlacha, Limestone Substratum-Urban Land Complex
	1389886: Okeelanta Muck, Drained, 0 To 1 Percent Slopes
	1389893: Pomello Fine Sand, 0 To 2 Percent Slopes
	1389903: Udorthents, Shaped
	1389905: Urban Land
	1389906: Water

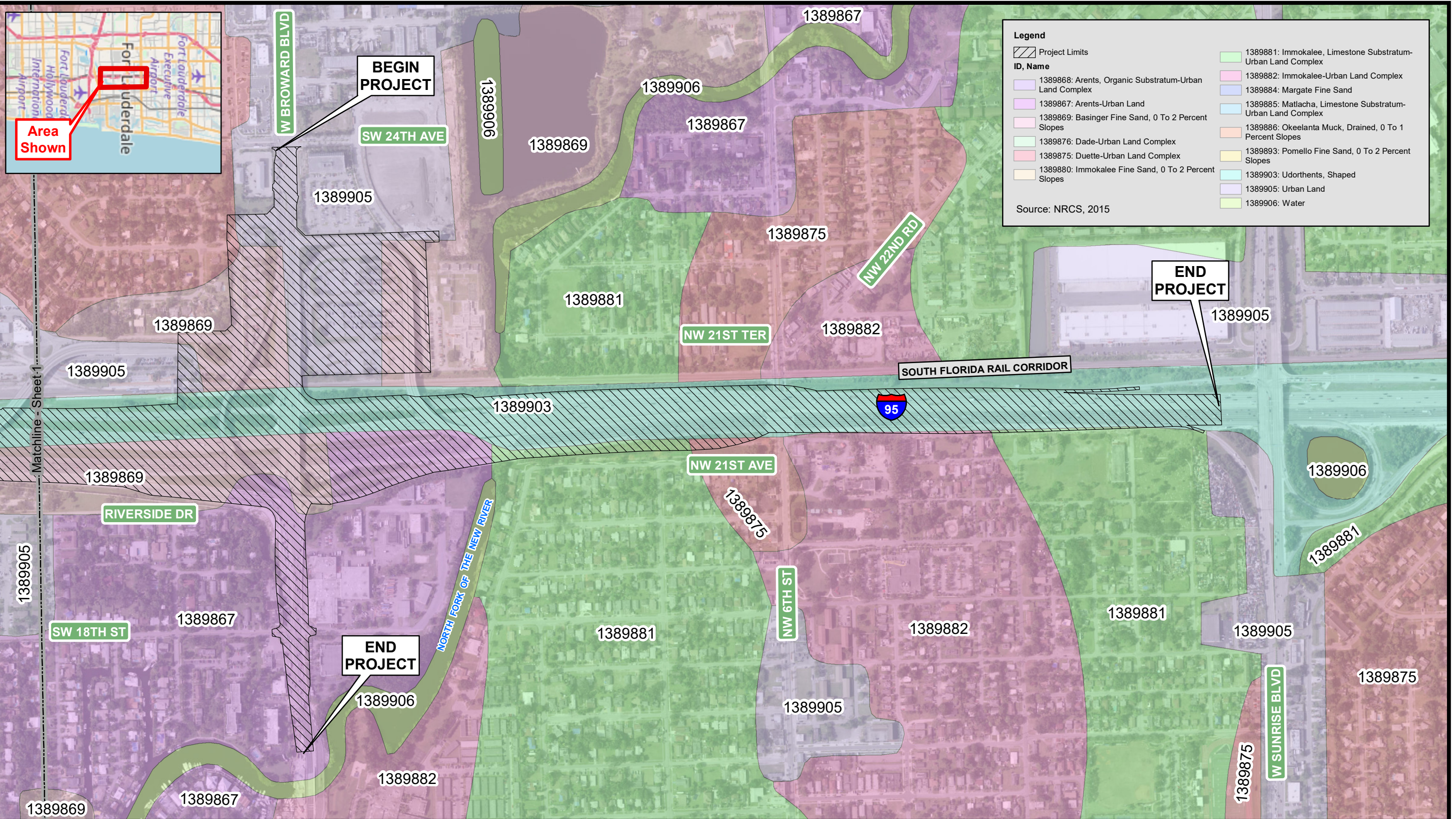
Source: NRCS, 2015



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 ETDM # 14226
 FM # 435513-1-22-02
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Figure 4
Soils Map



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 FM # 435513-1-22-02
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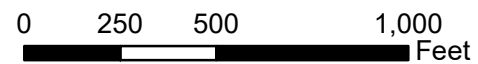


Figure 4
Soils Map



Legend

Project Limits

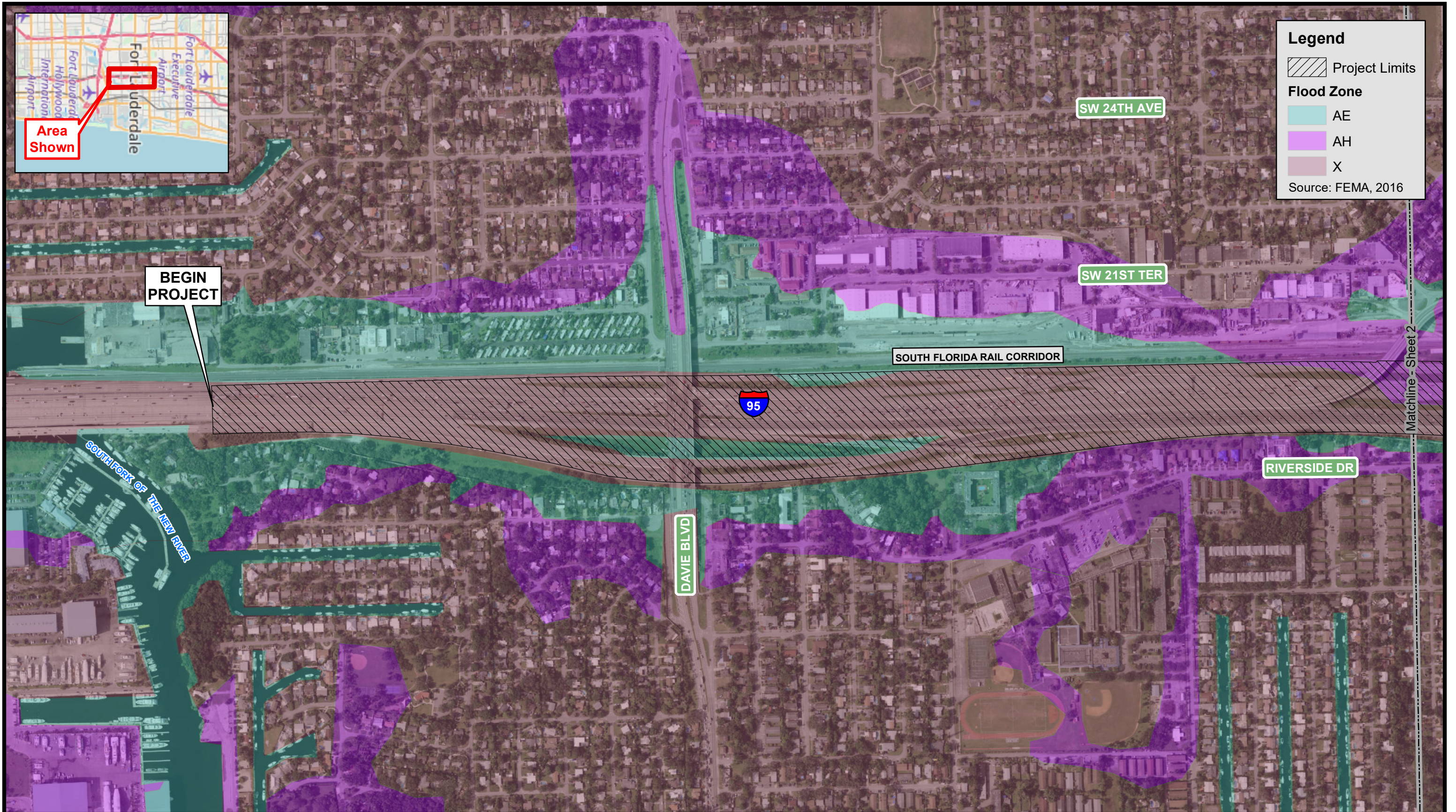
Flood Zone

AE

AH

X

Source: FEMA, 2016



Matchline - Sheet 2



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 I-95 at Broward Blvd PD&E Study
 ETDM # 14226
 FM # 435513-1-22-02
 Broward County, Florida

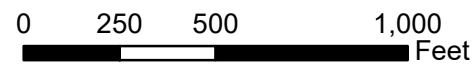
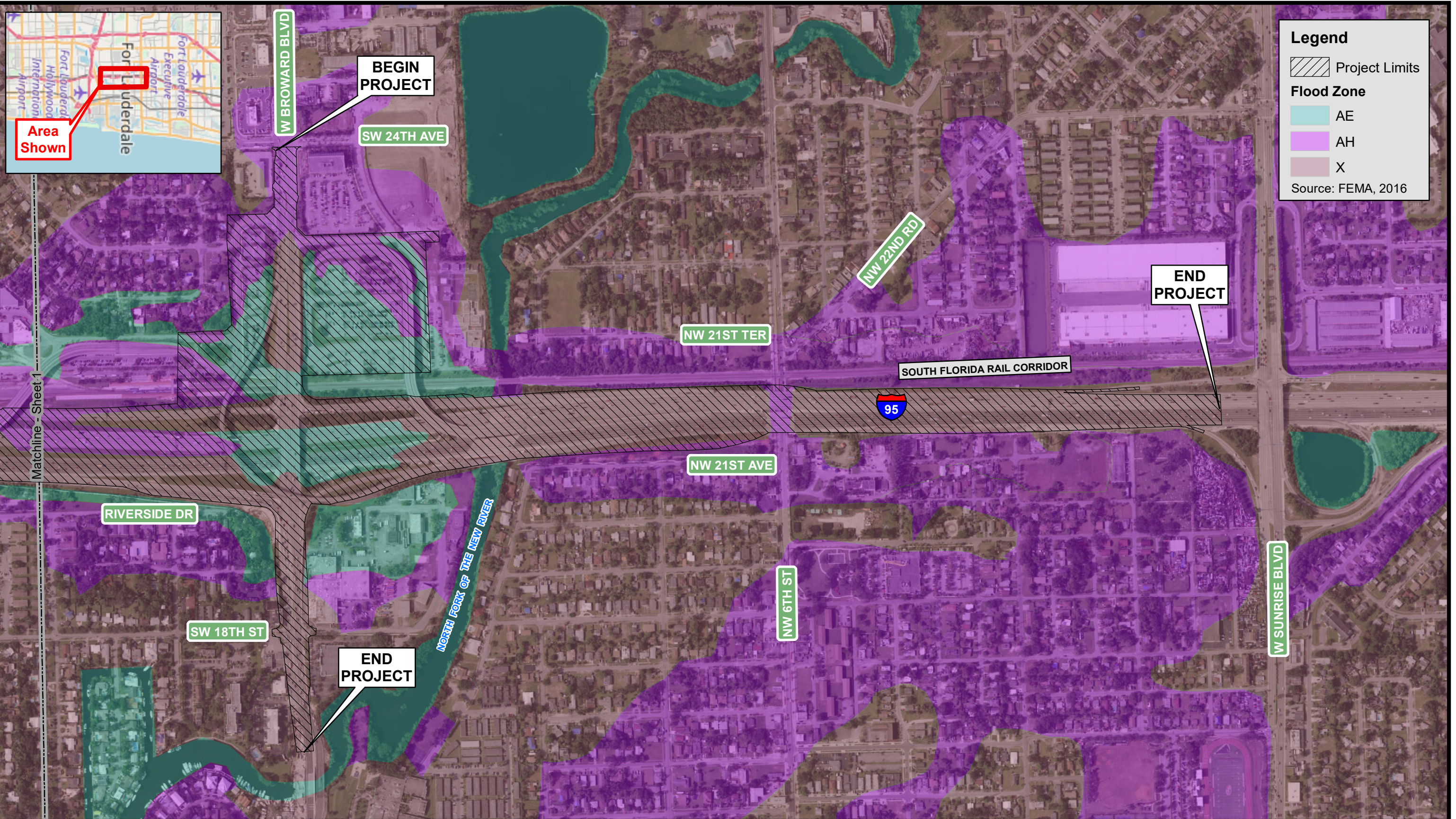


Figure 5
 Flood Zone Location Map



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 I-95 at Broward Blvd PD&E Study
 ETDM # 14226
 FM # 435513-1-22-02
 Broward County, Florida

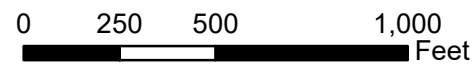
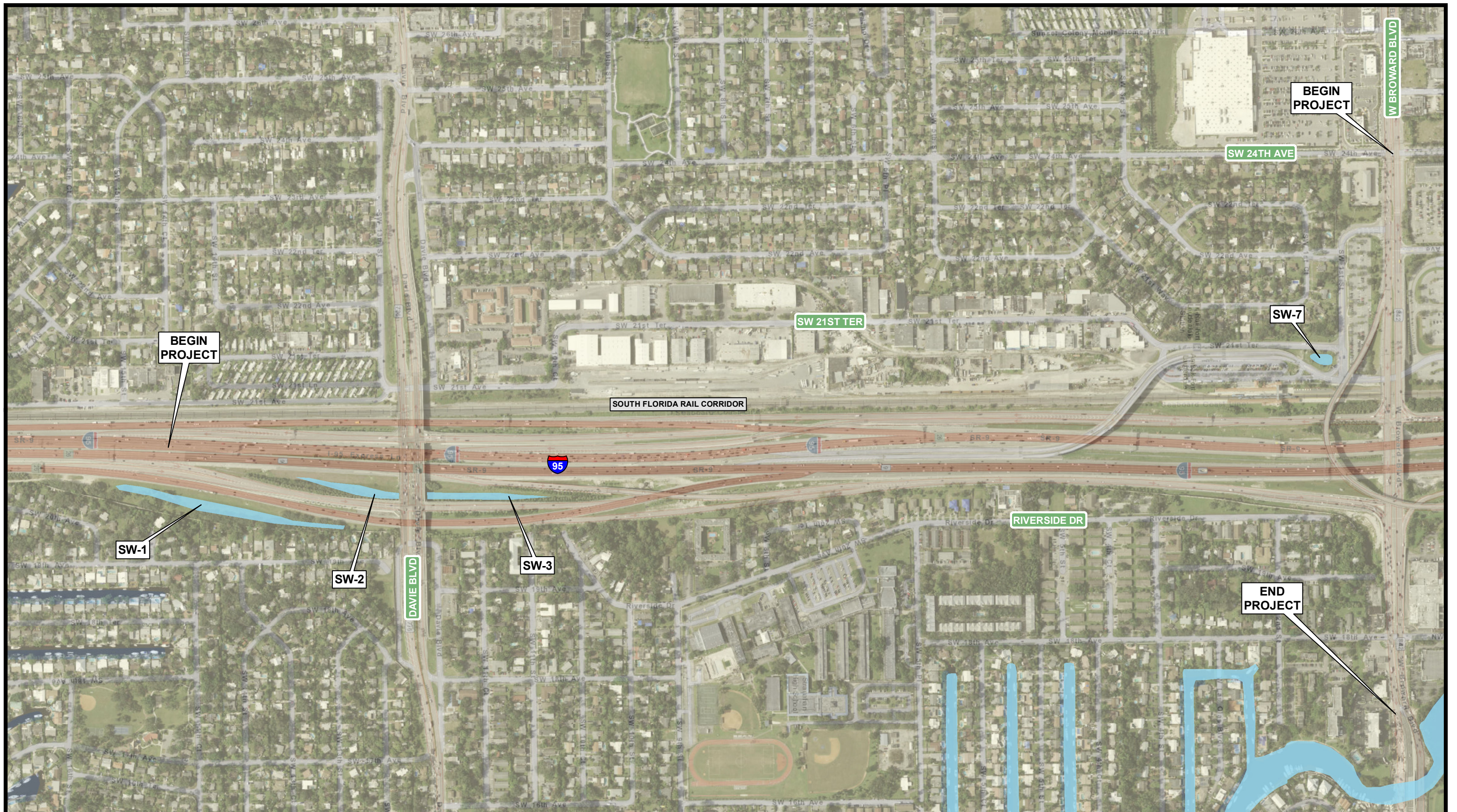


Figure 5
 Flood Zone Location Map



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 FM # 435513-1-22-02
 BROWARD COUNTY, FLORIDA

Legend

- Wetland
- Surface Water

Source: SFWMD, 2009
 Ground Truthing, 2017 & 2018

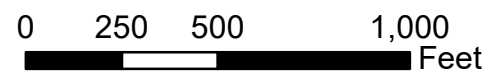
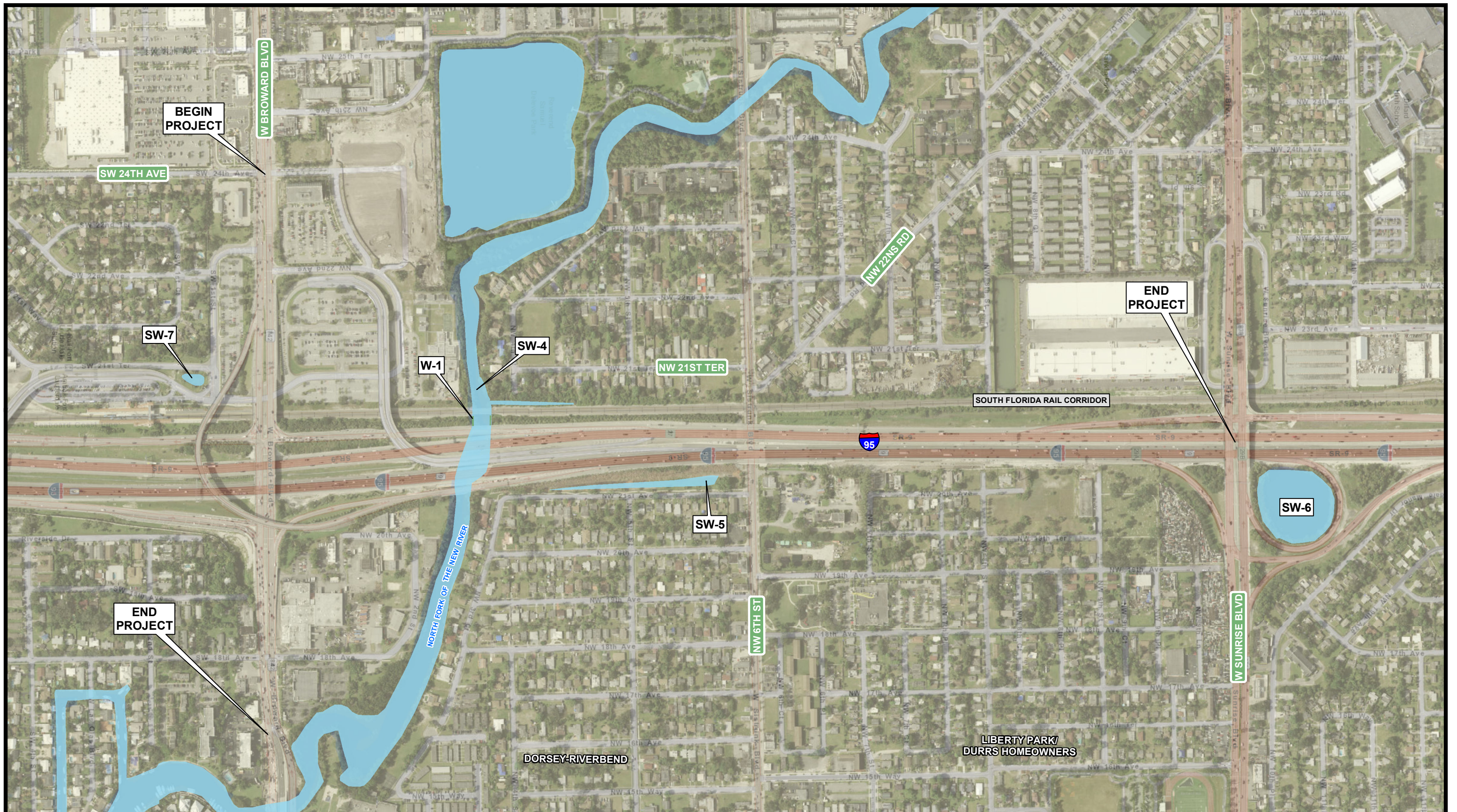


FIGURE 6
 EXISTING WETLANDS AND SURFACE WATERS
 PAGE 1 OF 2



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 I-95 AT BROWARD BLVD PD&E STUDY
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 FM # 435513-1-22-02
 BROWARD COUNTY, FLORIDA

Legend

- Wetland
 - Surface Water
- Source: SFWMD, 2009
 Ground Truthing, 2017 & 2018

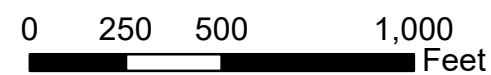
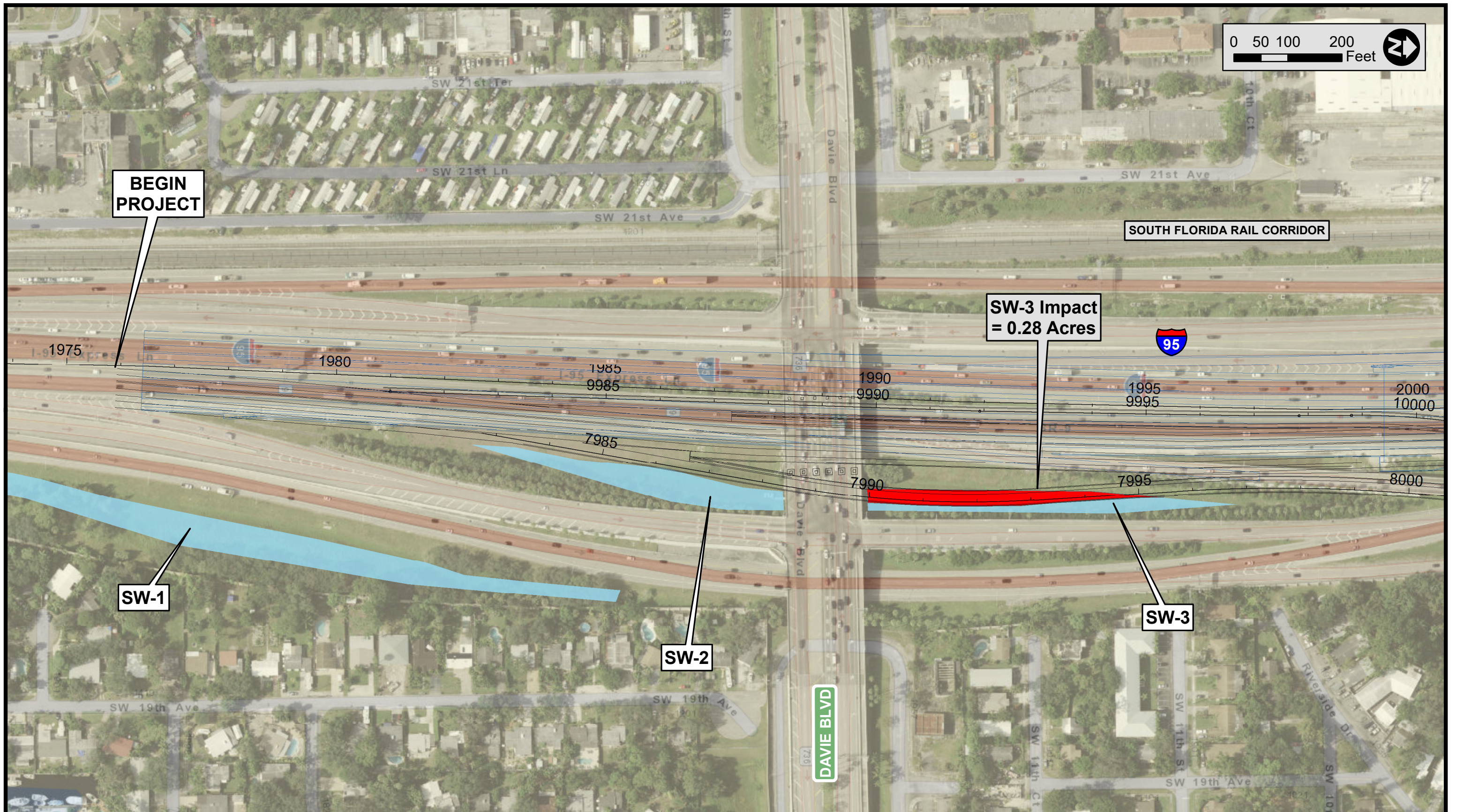


FIGURE 6
 EXISTING WETLANDS AND SURFACE WATERS
 PAGE 2 OF 2

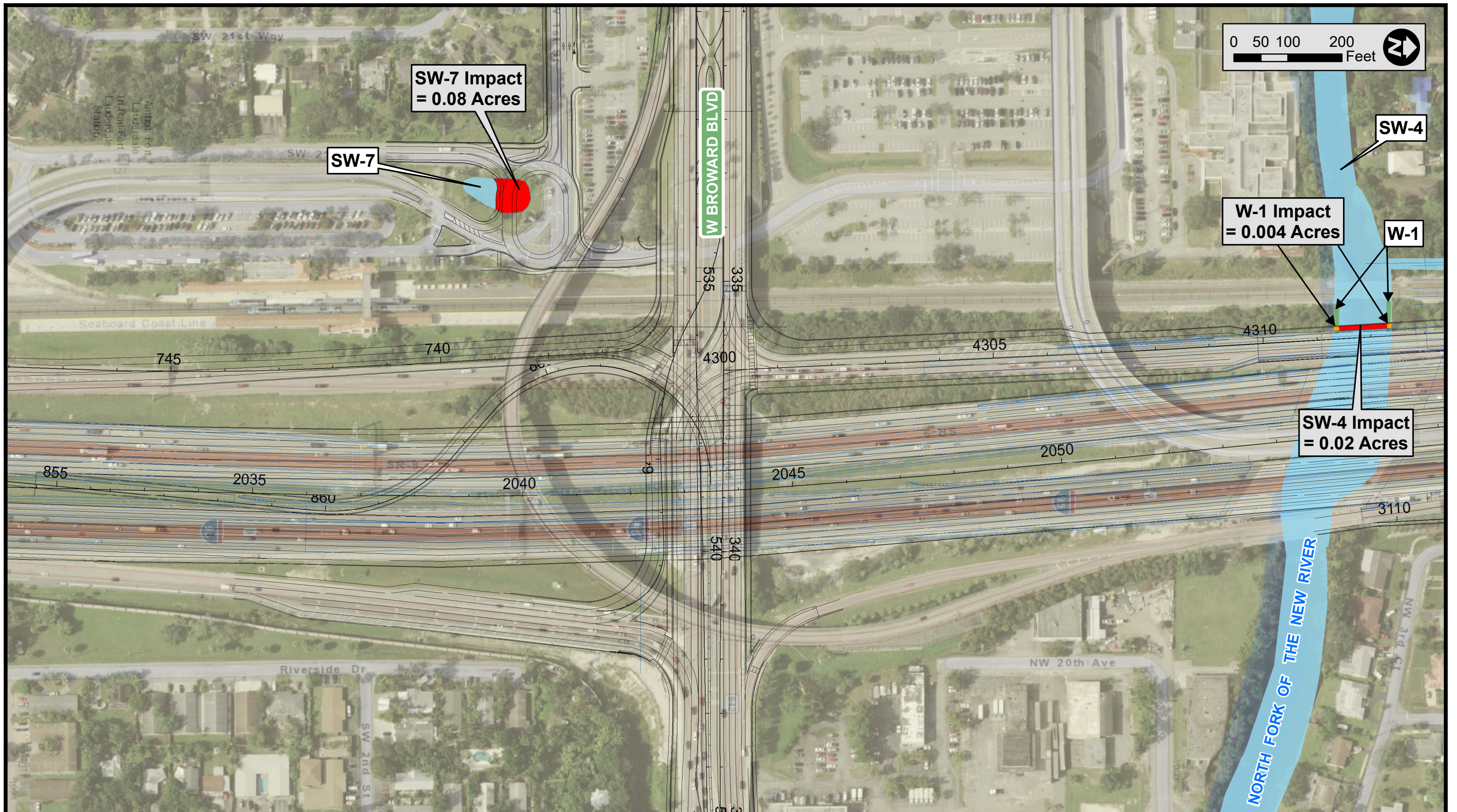


FLORIDA DEPARTMENT OF TRANSPORTATION
 I-95 AT BROWARD BLVD PD&E STUDY
 ETDM # 14226
 FM # 435513-1-22-02
 BROWARD COUNTY, FLORIDA

Legend

- Wetland Impacts
- Surface Water Impact
- Wetland
- Surface Water
- I-95 Broward Blvd. Design
- I-95 Express Phase 3A Design

FIGURE 7
WETLAND AND SURFACE WATER IMPACTS
 PAGE 1 OF 3

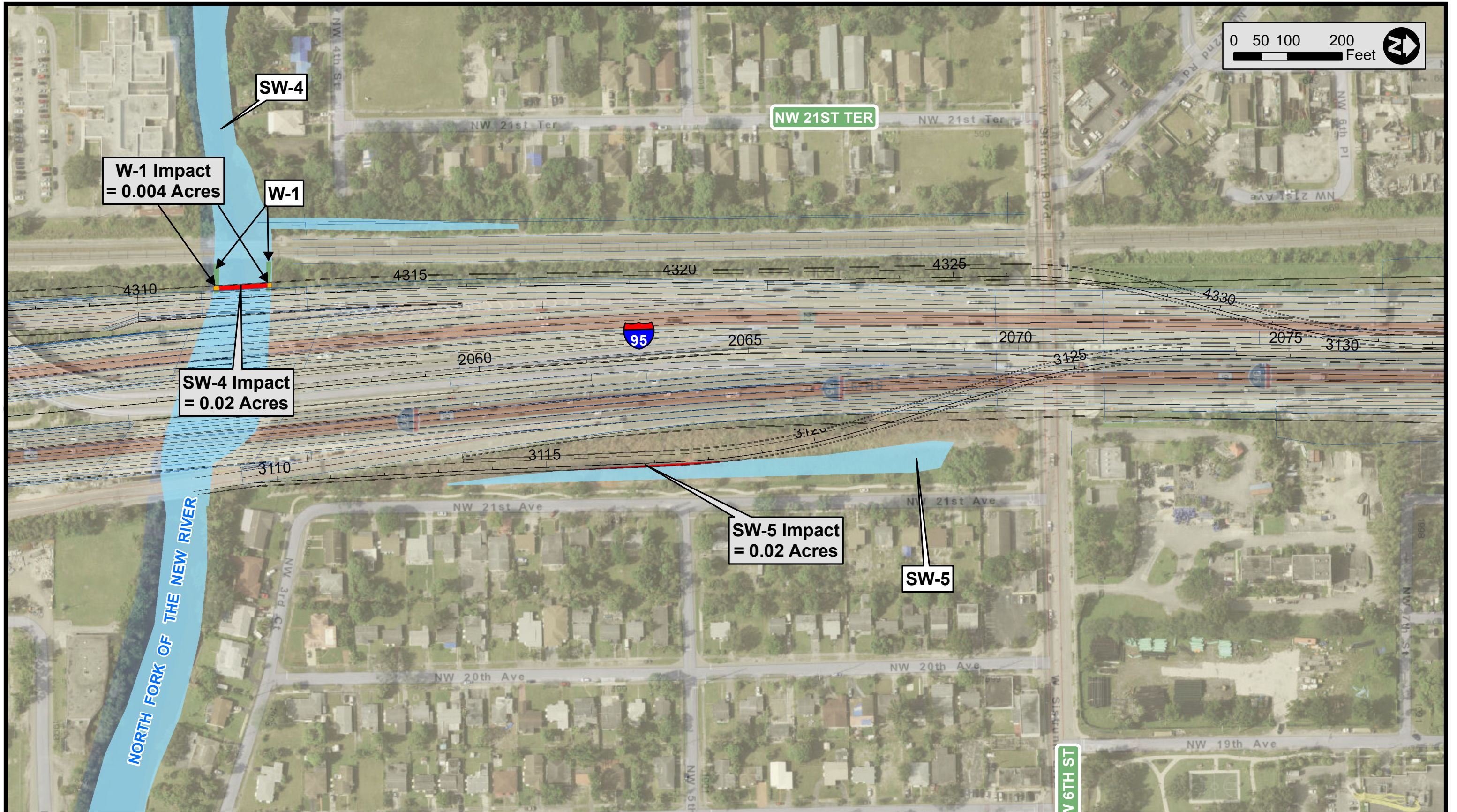


FLORIDA DEPARTMENT OF TRANSPORTATION
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FIGURE 7
 WETLAND AND SURFACE WATER IMPACTS
 PAGE 2 OF 3



FLORIDA DEPARTMENT OF TRANSPORTATION
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FIGURE 7
WETLAND AND SURFACE WATER IMPACTS
 PAGE 3 OF 3

APPENDIX B

Eastern Indigo Snake Standard Protection Measures (2013)

STANDARD PROTECTION MEASURES FOR THE EASTERN INDIGO SNAKE
U.S. Fish and Wildlife Service
August 12, 2013

The eastern indigo snake protection/education plan (Plan) below has been developed by the U.S. Fish and Wildlife Service (USFWS) in Florida for use by applicants and their construction personnel. At least **30 days prior** to any clearing/land alteration activities, the applicant shall notify the appropriate USFWS Field Office via e-mail that the Plan will be implemented as described below (North Florida Field Office: jaxregs@fws.gov; South Florida Field Office: verobeach@fws.gov; Panama City Field Office: panamacity@fws.gov). As long as the signatory of the e-mail certifies compliance with the below Plan (including use of the attached poster and brochure), no further written confirmation or “approval” from the USFWS is needed and the applicant may move forward with the project.

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

The Plan materials should consist of: 1) a combination of posters and pamphlets (see **Poster Information** section below); and 2) verbal educational instructions to construction personnel by supervisory or management personnel before any clearing/land alteration activities are initiated (see **Pre-Construction Activities** and **During Construction Activities** sections below).

POSTER INFORMATION

Posters with the following information shall be placed at strategic locations on the construction site and along any proposed access roads (a final poster for Plan compliance, to be printed on 11” x 17” or larger paper and laminated, is attached):

DESCRIPTION: The eastern indigo snake is one of the largest non-venomous snakes in North America, with individuals often reaching up to 8 feet in length. They derive their name from the glossy, blue-black color of their scales above and uniformly slate blue below. Frequently, they have orange to coral reddish coloration in the throat area, yet some specimens have been reported to only have cream coloration on the throat. These snakes are not typically aggressive and will attempt to crawl away when disturbed. Though indigo snakes rarely bite, they should NOT be handled.

SIMILAR SNAKES: The black racer is the only other solid black snake resembling the eastern indigo snake. However, black racers have a white or cream chin, thinner bodies, and WILL BITE if handled.

LIFE HISTORY: The eastern indigo snake occurs in a wide variety of terrestrial habitat types throughout Florida. Although they have a preference for uplands, they also utilize some wetlands

and agricultural areas. Eastern indigo snakes will often seek shelter inside gopher tortoise burrows and other below- and above-ground refugia, such as other animal burrows, stumps, roots, and debris piles. Females may lay from 4 - 12 white eggs as early as April through June, with young hatching in late July through October.

PROTECTION UNDER FEDERAL AND STATE LAW: The eastern indigo snake is classified as a Threatened species by both the USFWS and the Florida Fish and Wildlife Conservation Commission. “Taking” of eastern indigo snakes is prohibited by the Endangered Species Act without a permit. “Take” is defined by the USFWS as an attempt to kill, harm, harass, pursue, hunt, shoot, wound, trap, capture, collect, or engage in any such conduct. Penalties include a maximum fine of \$25,000 for civil violations and up to \$50,000 and/or imprisonment for criminal offenses, if convicted.

Only individuals currently authorized through an issued Incidental Take Statement in association with a USFWS Biological Opinion, or by a Section 10(a)(1)(A) permit issued by the USFWS, to handle an eastern indigo snake are allowed to do so.

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

- Cease clearing activities and allow the live eastern indigo snake sufficient time to move away from the site without interference;
- Personnel must NOT attempt to touch or handle snake due to protected status.
- Take photographs of the snake, if possible, for identification and documentation purposes.
- Immediately notify supervisor or the applicant’s designated agent, **and** the appropriate USFWS office, with the location information and condition of the snake.
- If the snake is located in a vicinity where continuation of the clearing or construction activities will cause harm to the snake, the activities must halt until such time that a representative of the USFWS returns the call (within one day) with further guidance as to when activities may resume.

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

- Cease clearing activities and immediately notify supervisor or the applicant’s designated agent, **and** the appropriate USFWS office, with the location information and condition of the snake.
- Take photographs of the snake, if possible, for identification and documentation purposes.
- Thoroughly soak the dead snake in water and then freeze the specimen. The appropriate wildlife agency will retrieve the dead snake.

Telephone numbers of USFWS Florida Field Offices to be contacted if a live or dead eastern indigo snake is encountered:

North Florida Field Office – (904) 731-3336
Panama City Field Office – (850) 769-0552
South Florida Field Office – (772) 562-3909

PRE-CONSTRUCTION ACTIVITIES

1. The applicant or designated agent will post educational posters in the construction office and throughout the construction site, including any access roads. The posters must be clearly visible to all construction staff. A sample poster is attached.
2. Prior to the onset of construction activities, the applicant/designated agent will conduct a meeting with all construction staff (annually for multi-year projects) to discuss identification of the snake, its protected status, what to do if a snake is observed within the project area, and applicable penalties that may be imposed if state and/or federal regulations are violated. An educational brochure including color photographs of the snake will be given to each staff member in attendance and additional copies will be provided to the construction superintendent to make available in the onsite construction office (a final brochure for Plan compliance, to be printed double-sided on 8.5" x 11" paper and then properly folded, is attached). Photos of eastern indigo snakes may be accessed on USFWS and/or FWC websites.
3. Construction staff will be informed that in the event that an eastern indigo snake (live or dead) is observed on the project site during construction activities, all such activities are to cease until the established procedures are implemented according to the Plan, which includes notification of the appropriate USFWS Field Office. The contact information for the USFWS is provided on the referenced posters and brochures.

DURING CONSTRUCTION ACTIVITIES

1. During initial site clearing activities, an onsite observer may be utilized to determine whether habitat conditions suggest a reasonable probability of an eastern indigo snake sighting (example: discovery of snake sheds, tracks, lots of refugia and cavities present in the area of clearing activities, and presence of gopher tortoises and burrows).
2. If an eastern indigo snake is discovered during gopher tortoise relocation activities (i.e. burrow excavation), the USFWS shall be contacted within one business day to obtain further guidance which may result in further project consultation.
3. Periodically during construction activities, the applicant's designated agent should visit the project area to observe the condition of the posters and Plan materials, and replace them as needed. Construction personnel should be reminded of the instructions (above) as to what is expected if any eastern indigo snakes are seen.

POST CONSTRUCTION ACTIVITIES

Whether or not eastern indigo snakes are observed during construction activities, a monitoring report should be submitted to the appropriate USFWS Field Office within 60 days of project completion. The report can be sent electronically to the appropriate USFWS e-mail address listed on page one of this Plan.

APPENDIX C
USFWS Wood Stork,
Eastern Indigo Snake, and West Indian
Manatee Programmatic Effect Determination
Keys



United States Department of the Interior



FISH AND WILDLIFE SERVICE
South Florida Ecological Services Office
1339 20th Street
Vero Beach, Florida 32960

May 18, 2010

Donnie Kinard
Chief, Regulatory Division
Jacksonville District Corps of Engineers
Post Office Box 4970
Jacksonville, Florida 32232-0019

Service Federal Activity Code: 41420-2007-FA-1494
Service Consultation Code: 41420-2007-I-0964
Subject: South Florida Programmatic
Concurrence
Species: Wood Stork

Dear Mr. Kinard:

This letter addresses minor errors identified in our January 25, 2010, wood stork key and as such, supplants the previous key. The key criteria and wood stork biomass foraging assessment methodology have not been affected by these minor revisions.

The Fish and Wildlife Service's (Service) South Florida Ecological Services Office (SFESO) and the U.S. Army Corps of Engineers Jacksonville District (Corps) have been working together to streamline the consultation process for federally listed species associated with the Corps' wetland permitting program. The Service provided letters to the Corps dated March 23, 2007, and October 18, 2007, in response to a request for a multi-county programmatic concurrence with a criteria-based determination of "may affect, not likely to adversely affect" (NLAA) for the threatened eastern indigo snake (*Drymarchon corais couperi*) and the endangered wood stork (*Mycteria americana*) for projects involving freshwater wetland impacts within specified Florida counties. In our letters, we provided effect determination keys for these two federally listed species, with specific criteria for the Service to concur with a determination of NLAA.

The Service has revisited these keys recently and believes new information provides cause to revise these keys. Specifically, the new information relates to foraging efficiencies and prey base assessments for the wood stork and permitting requirements for the eastern indigo snake. This letter addresses the wood stork key and is submitted in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C. 1531 *et seq.*). The eastern indigo snake key will be provided in a separate letter.

Wood stork

Habitat

The wood stork is primarily associated with freshwater and estuarine habitats that are used for nesting, roosting, and foraging. Wood storks typically construct their nests in medium to tall



trees that occur in stands located either in swamps or on islands surrounded by relatively broad expanses of open water (Ogden 1991, 1996; Rodgers et al. 1996). Successful colonies are those that have limited human disturbance and low exposure to land-based predators. Nesting colonies protected from land-based predators are characterized as those surrounded by large expanses of open water or where the nest trees are inundated at the onset of nesting and remain inundated throughout most of the breeding cycle. These colonies have water depths between 0.9 and 1.5 meters (3 and 5 feet) during the breeding season.

Successful nesting generally involves combinations of average or above-average rainfall during the summer rainy season and an absence of unusually rainy or cold weather during the winter-spring breeding season (Kahl 1964; Rodgers et al. 1987). This pattern produces widespread and prolonged flooding of summer marshes, which maximize production of freshwater fishes, followed by steady drying that concentrate fish during the season when storks nest (Kahl 1964). Successful nesting colonies are those that have a large number of foraging sites. To maintain a wide range of foraging sites, a variety of wetland types should be present, with both short and long hydroperiods. The Service (1999) describes a short hydroperiod as a 1 to 5-month wet/dry cycle, and a long hydroperiod as greater than 5 months. During the wet season, wood storks generally feed in the shallow water of the short-hydroperiod wetlands and in coastal habitats during low tide. During the dry season, foraging shifts to longer hydroperiod interior wetlands as they progressively dry-down (though usually retaining some surface water throughout the dry season).

Wood storks occur in a wide variety of wetland habitats. Typical foraging sites for the wood stork include freshwater marshes and stock ponds, shallow, seasonally flooded roadside and agricultural ditches, narrow tidal creeks and shallow tidal pools, managed impoundments, and depressions in cypress heads and swamp sloughs. Because of their specialized feeding behavior, wood storks forage most effectively in shallow-water areas with highly concentrated prey. Through tactolocation, or grope feeding, wood storks in south Florida feed almost exclusively on fish between 2 and 25 centimeters [cm] (1 and 10 inches) in length (Ogden et al. 1976). Good foraging conditions are characterized by water that is relatively calm, uncluttered by dense thickets of aquatic vegetation, and having a water depth between 5 and 38 cm (5 and 15 inches) deep, although wood storks may forage in other wetlands. Ideally, preferred foraging wetlands would include a mosaic of emergent and shallow open-water areas. The emergent component provides nursery habitat for small fish, frogs, and other aquatic prey and the shallow, open-water areas provide sites for concentration of the prey during seasonal dry-down of the wetland.

Conservation Measures

The Service routinely concurs with the Corps' "may affect, not likely to adversely affect" determination for individual project effects to the wood stork when project effects are insignificant due to scope or location, or if assurances are given that wetland impacts have been avoided, minimized, and adequately compensated such that there is no net loss in foraging potential. We utilize our *Habitat Management Guidelines for the Wood Stork in the Southeast Region* (Service 1990) (Enclosure 1) (HMG) in project evaluation. The HMG is currently under review and once final will replace the enclosed HMG. There is no designated critical habitat for the wood stork.

The SFESO recognizes a 29.9 kilometer [km] (18.6-mile) core foraging area (CFA) around all known wood stork colonies in south Florida. Enclosure 2 (to be updated as necessary) provides locations of colonies and their CFAs in south Florida that have been documented as active within the last 10 years. The Service believes loss of suitable wetlands within these CFAs may reduce foraging opportunities for the wood stork. To minimize adverse effects to the wood stork, we recommend compensation be provided for impacts to foraging habitat. The compensation should consider wetland type, location, function, and value (hydrology, vegetation, prey utilization) to ensure that wetland functions lost due to the project are adequately offset. Wetlands offered as compensation should be of the same hydroperiod and located within the CFAs of the affected wood stork colonies. The Service may accept, under special circumstances, wetland compensation located outside the CFAs of the affected wood stork nesting colonies. On occasion, wetland credits purchased from a "Service Approved" mitigation bank located outside the CFAs could be acceptable to the Service, depending on location of impacted wetlands relative to the permitted service area of the bank, and whether or not the bank has wetlands having the same hydroperiod as the impacted wetland.

In an effort to reduce correspondence in effect determinations and responses, the Service is providing the Wood Stork Effect Determination Key below. If the use of this key results in a Corps determination of "no effect" for a particular project, the Service supports this determination. If the use of this Key results in a determination of NLAA, the Service concurs with this determination¹. This Key is subject to revisitation as the Corps and Service deem necessary.

The Key is as follows:

- A. Project within 0.76 km (0.47 mile)² of an active colony site³ "may affect"⁴
- Project impacts Suitable Foraging Habitat (SFH)⁵ at a location greater than 0.76 km (0.47 mile) from a colony site..... "go to B"

¹ With an outcome of "no effect" or "NLAA" as outlined in this key, and the project has less than 20.2 hectares (50 acres) of wetland impacts, the requirements of section 7 of the Act are fulfilled for the wood stork and no further action is required. For projects with greater than 20.2 hectares (50 acres) of wetland impacts, written concurrence of NLAA from the Service is necessary.

² Within the secondary zone (the average distance from the border of a colony to the limits of the secondary zone is 0.76 km (2,500 feet, or 0.47 mi).

³ An active colony is defined as a colony that is currently being used for nesting by wood storks or has historically over the last 10 years been used for nesting by wood storks.

⁴ Consultation may be concluded informally or formally depending on project impacts.

⁵ Suitable foraging habitat (SFH) includes wetlands that typically have shallow-open water areas that are relatively calm and have a permanent or seasonal water depth between 5 to 38 cm (2 to 15 inches) deep. Other shallow non-wetland water bodies are also SFH. SFH supports and concentrates, or is capable of supporting and concentrating small fish, frogs, and other aquatic prey. Examples of SFH include, but are not limited to freshwater marshes, small ponds, shallow, seasonally flooded roadside or agricultural ditches, seasonally flooded pastures, narrow tidal creeks or shallow tidal pools, managed impoundments, and depressions in cypress heads and swamp sloughs.

Project does not affect SFH..... “no effect”.

B. Project impact to SFH is less than 0.20 hectare (one-half acre)⁶.....NLAA¹”

Project impact to SFH is greater in scope than 0.20 hectare (one-half acre).....go to C

C. Project impacts to SFH not within the CFA (29.9 km, 18.6 miles) of a colony sitego to D

Project impacts to SFH within the CFA of a colony sitego to E

D. Project impacts to SFH have been avoided and minimized to the extent practicable; compensation (Service approved mitigation bank or as provided in accordance with Mitigation Rule 33 CFR Part 332) for unavoidable impacts is proposed in accordance with the CWA section 404(b)(1) guidelines; and habitat compensation replaces the foraging value matching the hydroperiod⁷ of the wetlands affected and provides foraging value similar to, or higher than, that of impacted wetlands. See Enclosure 3 for a detailed discussion of the hydroperiod foraging values, an example, and further guidance⁸..... NLAA¹”

Project not as above..... “may affect⁴”

E. Project provides SFH compensation in accordance with the CWA section 404(b)(1) guidelines and is not contrary to the HMG; habitat compensation is within the appropriate CFA or within the service area of a Service-approved mitigation bank; and habitat compensation replaces foraging value, consisting of wetland enhancement or restoration matching the hydroperiod⁷ of the wetlands affected, and provides foraging value similar

⁶ On an individual basis, SFH impacts to wetlands less than 0.20 hectare (one-half acre) generally will not have a measurable effect on wood storks, although we request that the Corps require mitigation for these losses when appropriate. Wood storks are a wide ranging species, and individually, habitat change from impacts to SFH less than one-half acre are not likely to adversely affect wood storks. However, collectively they may have an effect and therefore regular monitoring and reporting of these effects are important.

⁷ Several researchers (Flemming et al. 1994; Ceilley and Bortone 2000) believe that the short hydroperiod wetlands provide a more important pre-nesting foraging food source and a greater early nestling survivor value for wood storks than the foraging base (grams of fish per square meter) than long hydroperiod wetlands provide. Although the short hydroperiod wetlands may provide less fish, these prey bases historically were more extensive and met the foraging needs of the pre-nesting storks and the early-age nestlings. Nest productivity may suffer as a result of the loss of short hydroperiod wetlands. We believe that most wetland fill and excavation impacts permitted in south Florida are in short hydroperiod wetlands. Therefore, we believe that it is especially important that impacts to these short hydroperiod wetlands within CFAs are avoided, minimized, and compensated for by enhancement/restoration of short hydroperiod wetlands.

⁸ For this Key, the Service requires an analysis of foraging prey base losses and enhancements from the proposed action as shown in the examples in Enclosure 3 for projects with greater than 2.02 hectares (5 acres) of wetland impacts. For projects with less than 2.02 hectares (5 acres) of wetland impacts, an individual foraging prey base analysis is not necessary although type for type wetland compensation is still a requirement of the Key.

to, or higher than, that of impacted wetlands. See Enclosure 3 for a detailed discussion of the hydroperiod foraging values, an example, and further guidance⁸..... "NLAA¹"

Project does not satisfy these elements "may affect⁴"

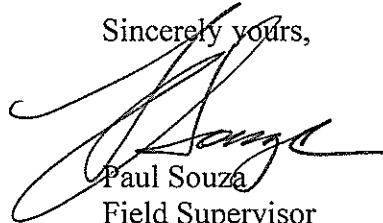
This Key does not apply to Comprehensive Everglades Restoration Plan projects, as they will require project-specific consultations with the Service.

Monitoring and Reporting Effects

For the Service to monitor cumulative effects, it is important for the Corps to monitor the number of permits and provide information to the Service regarding the number of permits issued where the effect determination was: "may affect, not likely to adversely affect." We request that the Corps send us an annual summary consisting of: project dates, Corps identification numbers, project acreages, project wetland acreages, and project locations in latitude and longitude in decimal degrees.

Thank you for your cooperation and effort in protecting federally listed species. If you have any questions, please contact Allen Webb at extension 246.

Sincerely yours,



Paul Souza
Field Supervisor
South Florida Ecological Services Office

Enclosures

- cc: w/enclosures (electronic only)
- Corps, Jacksonville, Florida (Stu Santos)
- EPA, West Palm Beach, Florida (Richard Harvey)
- FWC, Vero Beach, Florida (Joe Walsh)
- Service, Jacksonville, Florida (Billy Brooks)

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HABITAT MANAGEMENT GUIDELINES FOR THE WOOD STORK IN THE SOUTHEAST REGION



**HABITAT MANAGEMENT GUIDELINES
FOR THE WOOD STORK IN THE
SOUTHEAST REGION**

Prepared by

John C. Ogden
Acting Program Manager
Wildlife Research
Everglades National Park

for the

Southeast Region
U.S. Fish and Wildlife Service

Cover design by
Florida Power & Light Company
Miami, Florida

HABITAT MANAGEMENT GUIDELINES FOR THE WOOD STORK IN THE SOUTHEAST REGION

Introduction

A number of Federal and state laws and/or regulations prohibit, cumulatively, such acts as harrassing, disturbing, harming, molesting, pursuing, etc., wood storks, or destroying their nests (see Section VII). Although advisory in nature, these guidelines represent a biological interpretation of what would constitute violations of one or more of such prohibited acts. Their purpose is to maintain and/or improve the environmental conditions that are required for the survival and well-being of wood storks in the southeastern United States, and are designed essentially for application in wood stork/human activity conflicts (principally land development and human intrusion into stork use sites). The emphasis is to avoid or minimize detrimental human-related impacts on wood storks. These guidelines were prepared in consultations with state wildlife agencies and wood stork experts in the four southeastern states where the wood stork is listed as Endangered (Alabama, Florida, Georgia, South Carolina).

General

The wood stork is a gregarious species, which nests in colonies (rookeries), and roosts and feeds in flocks, often in association with other species of long-legged water birds. Storks that nest in the southeastern United States appear to represent a distinct population, separate from the nearest breeding population in Mexico. Storks in the southeastern U.S. population have recently (since 1980) nested in colonies scattered throughout Florida, and at several central-southern Georgia and coastal South Carolina sites. Banded and color-marked storks from central and southern Florida colonies have dispersed during non-breeding seasons as far north as southern Georgia, and the coastal counties in South Carolina and southeastern North Carolina, and as far west as central Alabama and northeastern Mississippi. Storks from a colony in south-central Georgia have wintered between southern Georgia and southern Florida. This U.S. nesting population of wood storks was listed as endangered by the U.S. Fish and Wildlife Service on February 28, 1984 (*Federal Register* 49(4):7332-7335).

Wood storks use freshwater and estuarine wetlands as feeding, nesting, and roosting sites. Although storks are not habitat specialists, their needs are exacting enough, and available habitat is limited enough, so that nesting success and the size of regional populations are closely regulated by year-to-year differences in the quality and quantity of suitable habitat. Storks are especially sensitive to environmental conditions at feeding sites; thus, birds may fly relatively long distances either daily or between regions annually, seeking adequate food resources.

All available evidence suggests that regional declines in wood stork numbers have been largely due to the loss or degradation of essential wetland habitat. An understanding of the qualities of good stork habitat should help to focus protection efforts on those sites

that are seasonally important to regional populations of wood storks. Characteristics of feeding, nesting, and roosting habitat, and management guidelines for each, are presented here by habitat type.

I. Feeding habitat.

A major reason for the wood stork decline has been the loss and degradation of feeding habitat. Storks are especially sensitive to any manipulation of a wetland site that results in either reduced amounts or changes in the timing of food availability.

Storks feed primarily (often almost exclusively) on small fish between 1 and 8 inches in length. Successful foraging sites are those where the water is between 2 and 15 inches deep. Good feeding conditions usually occur where water is relatively calm and uncluttered by dense thickets of aquatic vegetation. Often a dropping water level is necessary to concentrate fish at suitable densities. Conversely, a rise in water, especially when it occurs abruptly, disperses fish and reduces the value of a site as feeding habitat.

The types of wetland sites that provide good feeding conditions for storks include: drying marshes or stock ponds, shallow roadside or agricultural ditches, narrow tidal creeks or shallow tidal pools, and depressions in cypress heads or swamp sloughs. In fact, almost any shallow wetland depression where fish tend to become concentrated, either through local reproduction or the consequences of area drying, may be used by storks.

Nesting wood storks do most of their feeding in wetlands between 5 and 40 miles from the colony, and occasionally at distances as great as 75 miles. Within this colony foraging range and for the 110-150 day life of the colony, and depending on the size of the colony and the nature of the surrounding wetlands, anywhere from 50 to 200 different feeding sites may be used during the breeding season.

Non-breeding storks are free to travel much greater distances and remain in a region only for as long as sufficient food is available. Whether used by breeders or non-breeders, any single feeding site may at one time have small or large numbers of storks (1 to 100+), and be used for one to many days, depending on the quality and quantity of available food. Obviously, feeding sites used by relatively large numbers of storks, and/or frequently used areas, potentially are the more important sites necessary for the maintenance of a regional population of birds.

Differences between years in the seasonal distribution and amount of rainfall usually mean that storks will differ between years in where and when they feed. Successful nesting colonies are those that have a large number of feeding site options, including sites that may be suitable only in years of rainfall extremes. To maintain the wide range of feeding site options requires that many different wetlands, with both relatively short and long annual hydroperiods, be preserved. For example, protecting only the larger wetlands, or those with longer annual hydroperiods, will result in the eventual loss of smaller, seemingly less important wetlands. However, these small scale wetlands are crucial as the only available feeding sites during the wetter periods when the larger habitats are too deeply flooded to be used by storks.

II. Nesting habitat.

Wood storks nest in colonies, and will return to the same colony site for many years so long as that site and surrounding feeding habitat continue to supply the needs of the birds. Storks require between 110 and 150 days for the annual nesting cycle, from the period of courtship until the nestlings become independent. Nesting activity may begin as early as December or as late as March in southern Florida colonies, and between late February and April in colonies located between central Florida and South Carolina. Thus, full term colonies may be active until June-July in south Florida, and as late as July-August at more northern sites. Colony sites may also be used for roosting by storks during other times of the year.

Almost all recent nesting colonies in the southeastern U.S. have been located either in woody vegetation over standing water, or on islands surrounded by broad expanses of open water. The most dominant vegetation in swamp colonies has been cypress, although storks also nest in swamp hardwoods and willows. Nests in island colonies may be in more diverse vegetation, including mangroves (coastal), exotic species such as Australian pine (*Casuarina*) and Brazilian Pepper (*Schinus*), or in low thickets of cactus (*Opuntia*). Nests are usually located 15-75 feet above ground, but may be much lower, especially on island sites when vegetation is low.

Since at least the early 1970's, many colonies in the southeastern U.S. have been located in swamps where water has been impounded due to the construction of levees or roadways. Storks have also nested in dead and dying trees in flooded phosphate surface mines, or in low, woody vegetation on mounded, dredge islands. The use of these altered wetlands or completely "artificial" sites suggests that in some regions or years storks are unable to locate natural nesting habitat that is adequately flooded during the normal breeding season. The readiness with which storks will utilize water impoundments for nesting also suggests that colony sites could be intentionally created and maintained through long-term site management plans. Almost all impoundment sites used by storks become suitable for nesting only fortuitously, and therefore, these sites often do not remain available to storks for many years.

In addition to the irreversible impacts of drainage and destruction of nesting habitat, the greatest threats to colony sites are from human disturbance and predation. Nesting storks show some variation in the levels of human activity they will tolerate near a colony. In general, nesting storks are more tolerant of low levels of human activity near a colony when nests are high in trees than when they are low, and when nests contain partially or completely feathered young than during the period between nest construction and the early nestling period (adults still brooding). When adult storks are forced to leave their nests, eggs or downy young may die quickly (<20 minutes) when exposed to direct sun or rain.

Colonies located in flooded environments must remain flooded if they are to be successful. Often water is between 3 and 5 feet deep in successful colonies during the nesting season. Storks rarely form colonies, even in traditional nesting sites, when they are dry, and may abandon nests if sites become dry during the nesting period. Flooding in colonies may be most important as a defense against mammalian predators. Studies of stork colonies in Georgia and

Florida have shown high rates of raccoon predation when sites dried during the nesting period. A reasonably high water level in an active colony is also a deterrent against both human and domestic animal intrusions.

Although nesting wood storks usually do most feeding away from the colony site (>5 miles), considerable stork activity does occur close to the colony during two periods in the nesting cycle. Adult storks collect almost all nesting material in and near the colony, usually within 2500 feet. Newly fledged storks, near the end of the nesting cycle, spend from 1-4 weeks during the fledging process flying locally in the colony area, and perched in nearby trees or marshy spots on the ground. These birds return daily to their nests to be fed. It is essential that these fledging birds have little or no disturbance as far out as one-half mile within at least one or two quadrants from the colony. Both the adults, while collecting nesting material, and the inexperienced fledglings, do much low, flapping flight within this radius of the colony. At these times, storks potentially are much more likely to strike nearby towers or utility lines.

Colony sites are not necessarily used annually. Regional populations of storks shift nesting locations between years, in response to year-to-year differences in food resources. Thus, regional populations require a range of options for nesting sites, in order to successfully respond to food availability. Protection of colony sites should continue, therefore, for sites that are not used in a given year.

III. Roosting habitat.

Although wood storks tend to roost at sites that are similar to those used for nesting, they also use a wider range of site types for roosting than for nesting. Non-breeding storks, for example, may frequently change roosting sites in response to changing feeding locations, and in the process, are inclined to accept a broad range of relatively temporary roosting sites. Included in the list of frequently used roosting locations are cypress "heads" or swamps (not necessarily flooded if trees are tall), mangrove islands, expansive willow thickets or small, isolated willow "islands" in broad marshes, and on the ground either on levees or in open marshes.

Daily activity patterns at a roost vary depending on the status of the storks using the site. Non-breeding adults or immature birds may remain in roosts during major portions of some days. When storks are feeding close to a roost, they may remain on the feeding grounds until almost dark before making the short flight. Nesting storks traveling long distances (>40 miles) to feeding sites may roost at or near the latter, and return to the colony the next morning. Storks leaving roosts, especially when going long distances, tend to wait for mid-morning thermals to develop before departing.

IV. Management zones and guidelines for feeding sites.

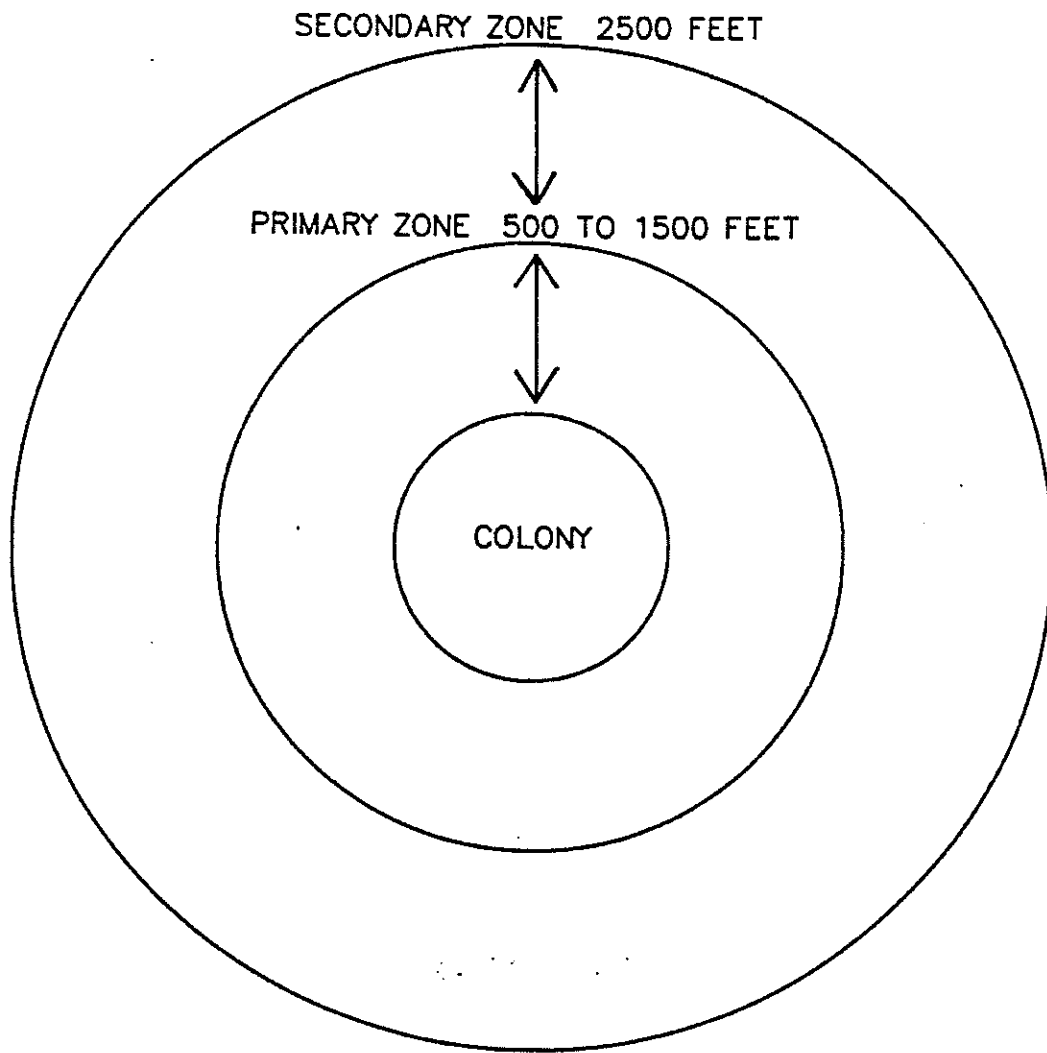
To the maximum extent possible, feeding sites should be protected by adherence to the following protection zones and guidelines:

- A. There should be no human intrusion into feeding sites when storks are present. Depending upon the amount of screening vegetation, human activity should be no closer than between 300 feet (where solid vegetation screens exist) and 750 feet (no vegetation screen).

- B. Feeding sites should not be subjected to water management practices that alter traditional water levels or the seasonally normal drying patterns and rates. Sharp rises in water levels are especially disruptive to feeding storks.
- C. The introduction of contaminants, fertilizers, or herbicides into wetlands that contain stork feeding sites should be avoided, especially those compounds that could adversely alter the diversity and numbers of native fishes, or that could substantially change the characteristics of aquatic vegetation. Increase in the density and height of emergent vegetation can degrade or destroy sites as feeding habitat.
- D. Construction of tall towers (especially with guy wires) within three miles, or high power lines (especially across long stretches of open country) within one mile of major feeding sites should be avoided.

V. Management zones and guidelines for nesting colonies.

- A. Primary zone: This is the most critical area, and must be managed according to recommended guidelines to insure that a colony site survives.
 - 1. Size: The primary zone must extend between 1000 and 1500 feet in all directions from the actual colony boundaries when there are no visual or broad aquatic barriers, and never less than 500 feet even when there are strong visual or aquatic barriers. The exact width of the primary zone in each direction from the colony can vary within this range, depending on the amount of visual screen (tall trees) surrounding the colony, the amount of relatively deep, open water between the colony and the nearest human activity, and the nature of the nearest human activity. In general, storks forming new colonies are more tolerant of existing human activity, than they will be of new human activity that begins after the colony has formed.
 - 2. Recommended Restrictions:
 - a. Any of the following activities within the primary zone, at any time of the year, are likely to be detrimental to the colony:
 - (1) Any lumbering or other removal of vegetation, and
 - (2) Any activity that reduces the area, depth, or length of flooding in wetlands under and surrounding the colony, except where periodic (less than annual) water control may be required to maintain the health of the aquatic, woody vegetation, and
 - (3) The construction of any building, roadway, tower, power line, canal, etc.
 - b. The following activities within the primary zone are likely to be detrimental to a colony if they occur when the colony is active:
 - (1) Any unauthorized human entry closer than 300 feet of the colony, and



- (2) Any increase or irregular pattern in human activity anywhere in the primary zone, and
 - (3) Any increase or irregular pattern in activity by animals, including livestock or pets, in the colony, and
 - (4) Any aircraft operation closer than 500 feet of the colony.
- B. Secondary Zone: Restrictions in this zone are needed to minimize disturbances that might impact the primary zone, and to protect essential areas outside of the primary zone. The secondary zone may be used by storks for collecting nesting material, for roosting, loafing, and feeding (especially important to newly fledged young), and may be important as a screen between the colony and areas of relatively intense human activities.
- 1. Size: The secondary zone should range outward from the primary zone 1000-2000 feet, or to a radius of 2500 feet of the outer edge of the colony.
 - 2. Recommended Restrictions:
 - a. Activities in the secondary zone which may be detrimental to nesting wood storks include:
 - (1) Any increase in human activities above the level that existed in the year when the colony first formed, especially when visual screens are lacking, and
 - (2) Any alteration in the area's hydrology that might cause changes in the primary zone, and
 - (3) Any substantial (>20 percent) decrease in the area of wetlands and woods of potential value to storks for roosting and feeding.
 - b. In addition, the probability that low flying storks, or inexperienced, newly-fledged young will strike tall obstructions, requires that high-tension power lines be no closer than one mile (especially across open country or in wetlands) and tall transmission towers no closer than 3 miles from active colonies. Other activities, including busy highways and commercial and residential buildings may be present in limited portions of the secondary zone at the time that a new colony first forms. Although storks may tolerate existing levels of human activities, it is important that these human activities not expand substantially.

VI. Roosting site guidelines.

The general characteristics and temporary use-patterns of many stork roosting sites limit the number of specific management recommendations that are possible:

- A. Avoid human activities within 500-1000 feet of roost sites during seasons of the year and times of the day when storks may be present. Nocturnal activities in active roosts may be especially disruptive.

- B. Protect the vegetative and hydrological characteristics of the more important roosting sites--those used annually and/or used by flocks of 25 or more storks. Potentially, roosting sites may, some day, become nesting sites.

VII. Legal Considerations.

A. Federal Statutes

The U.S. breeding population of the wood stork is protected by the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.)(Act). The population was listed as endangered on February 28, 1984 (49 Federal Register 7332); wood storks breeding in Alabama, Florida, Georgia, and South Carolina are protected by the Act.

Section 9 of the Endangered Species Act of 1973, as amended, states that it is unlawful for any person subject to the jurisdiction of the United States to take (defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.") any listed species anywhere within the United States.

The wood stork is also federally protected by its listing (50 CFR 10.13) under the Migratory Bird Treaty Act (167 U.S.C. 703-711), which prohibits the taking, killing or possession of migratory birds except as permitted.

B. State Statutes

1. State of Alabama

Section 9-11-232 of Alabama's Fish, Game, and Wildlife regulations curtails the possession, sale, and purchase of wild birds. "Any person, firm, association, or corporation who takes, catches, kills or has in possession at any time, living or dead, any protected wild bird not a game bird or who sells or offers for sale, buys, purchases or offers to buy or purchase any such bird or exchange same for anything of value or who shall sell or expose for sale or buy any part of the plumage, skin, or body of any bird protected by the laws of this state or who shall take or willfully destroy the nests of any wild bird or who shall have such nests or eggs of such birds in his possession, except as otherwise provided by law, shall be guilty of a misdemeanor..."

Section 1 of the Alabama Nongame Species Regulation (Regulation 87-GF-7) includes the wood stork in the list of nongame species covered by paragraph (4). " It shall be unlawful to take, capture, kill, possess, sell, trade for anything of monetary value, or offer to sell or trade for anything of monetary value, the following nongame wildlife species (or any parts or reproductive products of such species) without a scientific collection permit and written permission from the Commissioner, Department of Conservation and Natural Resources,..."

2. State of Florida

Rule 39-4.001 of the Florida Wildlife Code prohibits "taking, attempting to take, pursuing, hunting, molesting, capturing, or killing (collectively defined as "taking"), transporting, storing, serving, buying, selling,

possessing, or wantonly or willingly wasting any wildlife or freshwater fish or their nests, eggs, young, homes, or dens except as specifically provided for in other rules of Chapter 39, Florida Administrative Code.

Rule 39-27.011 of the Florida Wildlife Code prohibits "killing, attempting to kill, or wounding any endangered species." The "Official Lists of Endangered and Potentially Endangered Fauna and Flora in Florida" dated 1 July 1988, includes the wood stork, listed as "endangered" by the Florida Game and Fresh Water Fish Commission.

3. State of Georgia

Section 27-1-28 of the Conservation and Natural Resources Code states that "Except as otherwise provided by law, rule, or regulation, it shall be unlawful to hunt, trap, fish, take, possess, or transport any nongame species of wildlife..."

Section 27-1-30 states that, "Except as otherwise provided by law or regulation, it shall be unlawful to disturb, mutilate, or destroy the dens, holes, or homes of any wildlife; "

Section 27-3-22 states, in part, "It shall be unlawful for any person to hunt, trap, take, possess, sell, purchase, ship, or transport any hawk, eagle, owl, or any other bird or any part, nest, or egg thereof..."

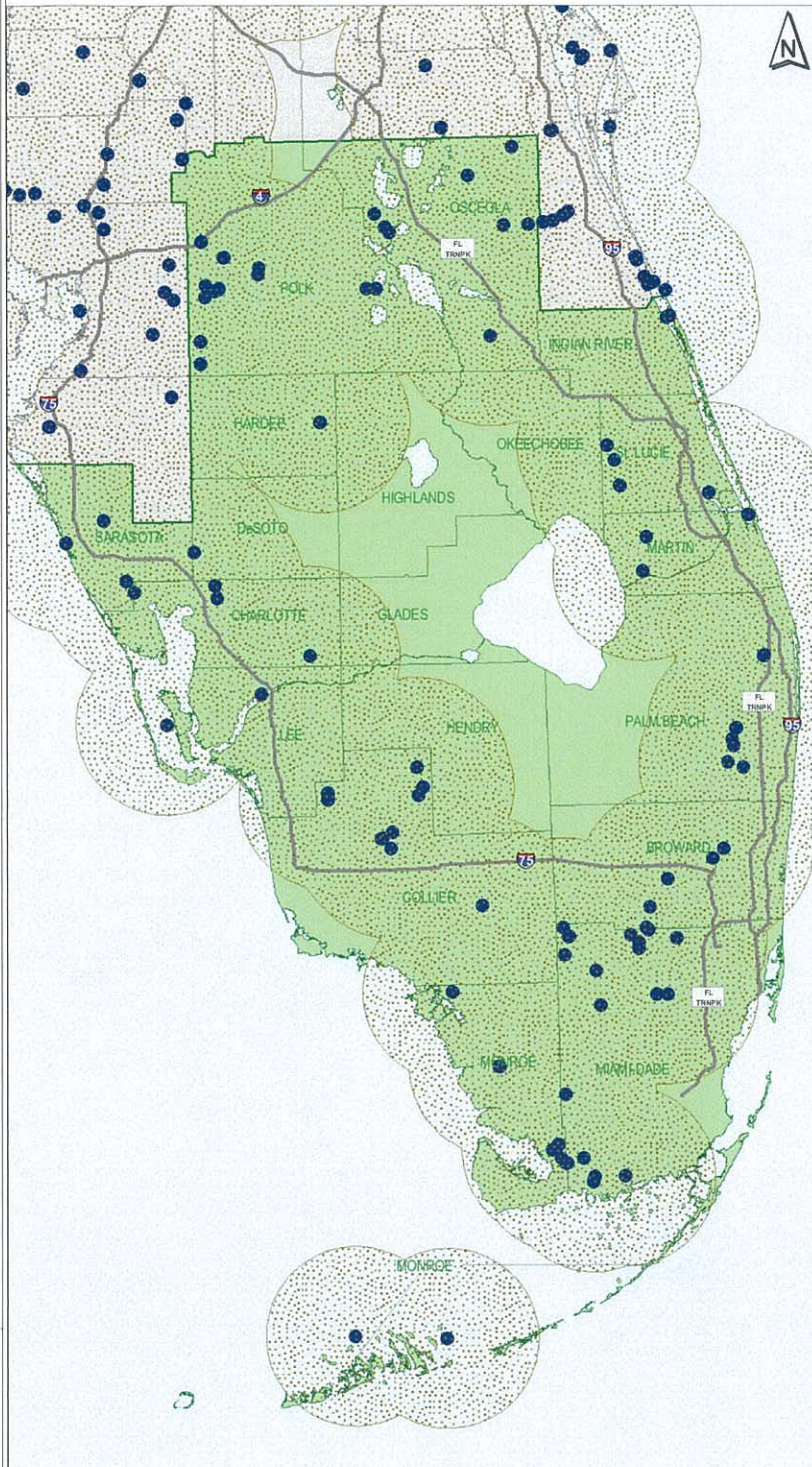
The wood stork is listed as endangered pursuant to the Endangered Wildlife Act of 1973 (Section 27-3-130 of the Code). Section 391-4-13-.06 of the Rules and Regulations of the Georgia Department of Natural Resources prohibits harassment, capture, sale, killing, or other actions which directly cause the death of animal species protected under the Endangered Wildlife Act. The destruction of habitat of protected species on public lands is also prohibited.

4. State of South Carolina

Section 50-15-40 of the South Carolina Nongame and Endangered Species Conservation Act states, "Except as otherwise provided in this chapter, it shall be unlawful for any person to take, possess, transport, export, process, sell, or offer of sale or ship, and for any common or contract carrier knowingly to transport or receive for shipment any species or subspecies of wildlife appearing on any of the following lists: (1) the list of wildlife indigenous to the State, determined to be endangered within the State...(2) the United States' List of Endangered Native Fish and Wildlife... (3) the United States' List of Endangered Foreign Fish and Wildlife ..."

5/21/2010

Wood Stork



Nesting Colonies Core Foraging Areas

1999 to 2005

- Colony Location
- ▨ Core Foraging Area
- South Florida Service Area



Produced by:
South Florida Ecological Services Office
<http://verobeach.fws.gov>
Phone: 772.562.3909



5/21/2010

Enclosure 3

Wood Stork Foraging Analysis: Excerpts of concepts and procedure as presented by the Service in this appendix may be viewed in detail in any one of our recent Biological Opinions for project related impacts to the wood stork. These documents can be found at the internet website address <http://www.fws.gov/filedownloads/ftp%5verobeach>.

Foraging Habitat

Researchers have shown that wood storks forage most efficiently and effectively in habitats where prey densities are high and the water shallow and canopy open enough to hunt successfully (Ogden et al. 1978, Browder 1984, Coulter 1987). Prey availability to wood storks is dependent on a composite variable consisting of density (number or biomass/m²) and the vulnerability of the prey items to capture (Gawlik 2002). For wood storks, prey vulnerability appears to be largely controlled by physical access to the foraging site, water depth, the density of submerged vegetation, and the species-specific characteristics of the prey. For example, fish populations may be very dense, but not available (vulnerable) because the water depth is too deep (greater than 30 cm) for storks or the tree canopy at the site is too dense for storks to land. Calm water, about 5-40 cm (2-16 in) in depth, and free of dense aquatic vegetation is ideal (Coulter and Bryan 1993).

Coulter and Bryan's (1993) study suggested that wood storks preferred ponds and marshes, and visited areas with little or no canopy more frequently. Even in foraging sites in swamps, the canopy tended to be sparse. They suggested that open canopies may have contributed to detection of the sites and more importantly may have allowed the storks to negotiate landing more easily than at closed-canopy sites. In their study, the median amount of canopy cover where wood stork foraging was observed was 32 percent. Other researchers (P.C. Frederick, University of Florida, personal communication 2006; J.A. Rodgers, FWC, personal communication 2006) also confirm that wood storks will forage in woodlands, though the woodlands have to be fairly open and vegetation not very dense. Furthermore, the canopies must be open enough for wood storks to take flight quickly to avoid predators.

Melaleuca-infested Wetlands: As discussed previously, wetland suitability for wood stork foraging is partially dependent on vegetation density. Melaleuca is a dense-stand growth plant species, effectively producing a closed canopy and dense understory growth pattern that generally limits a site's accessibility to foraging by wading birds. However, O'Hare and Dalrymple (1997) suggest moderate infestations of melaleuca may have little effect on some species' productivity (*i.e.*, amphibians and reptiles) as long as critical abiotic factors such as hydrology remain. They also note as the levels of infestation increase, usage by wetland dependent species decreases. Their studies also showed that the number of fish species present in a wetland system remain stable at certain levels of melaleuca. However, the availability of the prey base for wood storks and other foraging wading birds is reduced by the restriction of access caused from dense and thick exotic vegetation. Wood storks and other wading birds can forage in these systems in open area pockets (*e.g.*, wind blow-downs), provided multiple conditions are optimal (*e.g.*, water depth, prey density). In O'Hare and Dalrymple's study (1997), they identify five cover types (Table 1) and

provide information on the number of wetland dependent bird species and the number of individuals observed within each of these vegetation classes (Table 2).

Table 1: Vegetation classes

DMM	75-100 percent mature dense melaleuca coverage
DMS or (SDM)	75-100 percent sapling dense melaleuca coverage
P75	50-75 percent melaleuca coverage
P50	0-50 percent melaleuca coverage
MAR (Marsh)	0-10 percent melaleuca coverage

The number of wetland-dependent species and individuals observed per cover type is shown below in columns 1, 2, and 3 (Table 2). To develop an estimate of the importance a particular wetland type may have (based on density and aerial coverage by exotic species) to wetland dependent species, we developed a foraging suitability value using observational data from O'Hare and Dalrymple (1997). The Foraging Suitability Value as shown in column 5 (Table 2) is calculated by multiplying the number of species by the number of individuals and dividing this value by the maximum number of species and individuals combined ($12 \times 132 = 1584$). The results are shown below for each of the cover types in O'Hare and Dalrymple (1997) study (Table 1). As an example, for the P50 cover type, the foraging suitability is calculated by multiplying 11 species times 92 individuals for a total of 1,012. Divide this value by 1,584, which is the maximum number of species times the maximum number of individuals ($12 \times 132 = 1,584$). The resultant is 0.6389 or 64 percent $11 \times 92 = 1012 / 1584 \times 100 = 63.89$.

Table 2: Habitat Foraging Suitability

Cover Type	# of Species (S)	# of Individuals (I)	S*I	Foraging Suitability
DMM	1	2	2	0.001
DMS	4	10	40	0.025
P75	10	59	590	0.372
P50	11	92	1,012	0.639
MAR	12	132	1,584	1.000

This approach was developed to provide us with a method of assessing wetland acreages and their relationship to prey densities and prey availability. We consider wetland dependent bird use to be a general index of food availability. Based on this assessment we developed an exotic foraging suitability index (Table 3):

Table 3. Foraging Suitability Percentages

Exotic Percentage	Foraging Suitability (percent)
Between 0 and 25 percent exotics	100
Between 25 and 50 percent exotics	64
Between 50 and 75 percent exotics	37
Between 75 and 90 percent exotics	3
Between 90 and 100 percent exotics	0

In our assessment however, we consider DMM to represent all exotic species densities between 90 and 100 percent and DMS to represent all exotic species densities between 75 and 90 percent. In our evaluation of a habitat's suitability, the field distinction between an exotic coverage of

90 percent and 100 percent in many situations is not definable, therefore unless otherwise noted in the field reports and in our analysis; we consider a suitability value of 3 percent to represent both densities.

Hydroperiod: The hydroperiod of a wetland can affect the prey densities in a wetland. For instance, research on Everglades fish populations using a variety of quantitative sampling techniques (pull traps, throw traps, block nets) have shown that the density of small forage fish increases with hydroperiod. Marshes inundated for less than 120 days of the year average ± 4 fish/m²; whereas, those flooded for more than 340 days of the year average ± 25 fish/m² (Loftus and Eklund 1994, Trexler et al. 2002).

The Service (1999) described a short hydroperiod wetland as wetlands with between 0 and 180-day inundation, and long hydroperiod wetlands as those with greater than 180-day inundation. However, Trexler et al. (2002) defined short hydroperiod wetlands as systems with less than 300 days per year inundation. In our discussion of hydroperiods, we are considering short hydroperiod wetlands to be those that have an inundation of 180 days or fewer.

The most current information on hydroperiods in south Florida was developed by the SFWMD for evaluation of various restoration projects throughout the Everglades Protection Area. In their modeling efforts, they identified the following seven hydroperiods:

Table 4. SFWMD Hydroperiod Classes – Everglades Protection Area

Hydroperiod Class	Days Inundated
Class 1	0-60
Class 2	60-120
Class 3	120-180
Class 4	180-240
Class 5	240-300
Class 6	300-330
Class 7	330-365

Fish Density per Hydroperiod: In the Service’s assessment of project related impacts to wood storks, the importance of fish data specific to individual hydroperiods is the principle basis of our assessment. In order to determine the fish density per individual hydroperiod, the Service relied on the number of fish per hydroperiod developed from throw-trap data in Trexler et al.’s (2002) study and did not use the electrofishing data also presented in Trexler et al.’s study that defined fish densities in catch per unit effort, which is not hydroperiod specific. Although the throw-trap sampling generally only samples fish 8 cm or less, the Service believes the data can be used as a surrogate representation of all fish, including those larger than 8 cm, which are typically sampled by either electrofishing or block net sampling.

We base this evaluation on the following assessment. Trexler et al.’s (2002) study included electrofishing data targeting fish greater than 8 cm, the data is recorded in catch per unit effort and in general is not hydroperiod specific. However, Trexler et al. (2002) notes in their assessment of the electrofishing data that in general there is a correlation with the number of fish per unit effort per changes in water depth. In literature reviews of electrofishing data by Chick et

al. (1999 and 2004), they note that electrofishing data provides a useful index of the abundance of larger fish in shallow, vegetated habitat, but length, frequency, and species compositional data should be interpreted with caution. Chick et al. (2004) also noted that electrofishing data for large fish (> 8cm) provided a positive correlation of the number of fish per unit effort (abundance) per changes in hydroperiod. The data in general show that as the hydroperiod decreases, the abundance of larger fishes also decreases.

Studies by Turner et al. (1999), Turner and Trexler (1997), and Carlson and Duever (1979) also noted this abundance trend for fish species sampled. We also noted in our assessment of prey consumption by wood storks in the Ogden et al. (1976) study (Figure 4) (discussed below), that the wood stork's general preference is for fish measuring 1.5 cm to 9 cm, although we also acknowledged that wood storks consume fish larger than the limits discussed in the Ogden et al. (1976) study. A similar assessment is reference by Trexler and Goss (2009) noting a diversity of size ranges of prey available for wading birds to consume, with fish ranging from 6 to 8 cm being the preferred prey for larger species of wading birds, particularly wood storks (Kushlan et al. 1975).

Therefore, since data were not available to quantify densities (biomass) of fish larger than 8 cm to a specific hydroperiod, and Ogden et al.'s (1976) study notes that the wood stork's general preference is for fish measuring 1.5 cm to 9 cm, and that empirical data on fish densities per unit effort correlated positively with changes in water depth, we believe that the Trexler et al. (2002) throw-trap data represents a surrogate assessment tool to predict the changes in total fish density and the corresponding biomass per hydroperiod for our wood stork assessment.

In consideration of this assessment, the Service used the data presented in Trexler et al.'s (2002) study on the number of fish per square-meter per hydroperiod for fish 8 cm or less to be applicable for estimating the total biomass per square-meter per hydroperiod for all fish. In determining the biomass of fish per square-meter per hydroperiod, the Service relied on the summary data provided by Turner et al. (1999), which provides an estimated fish biomass of 6.5 g/m² for a Class 7 hydroperiod for all fish and used the number of fish per square-meter per hydroperiod from Trexler et al.'s data to extrapolate biomass values per individual hydroperiods.

Trexler et al.'s (2002) studies in the Everglades provided densities, calculated as the square-root of the number of fish per square meter, for only six hydroperiods; although these cover the same range of hydroperiods developed by the SFWMD. Based on the throw-trap data and Trexler et al.'s (2002) hydroperiods, the square-root fish densities are:

Table 5. Fish Densities per Hydroperiod from Trexler et al. (2002)

Hydroperiod Class	Days Inundated	Fish Density
Class 1	0-120	2.0
Class 2	120-180	3.0
Class 3	180-240	4.0
Class 4	240-300	4.5
Class 5	300-330	4.8
Class 6	330-365	5.0

Trexler et al.'s (2002) fish densities are provided as the square root of the number of fish per square meter. For our assessment, we squared these numbers to provide fish per square meter, a simpler calculation when other prey density factors are included in our evaluation of adverse effects to listed species from the proposed action. We also extrapolated the densities over seven hydroperiods, which is the same number of hydroperiods characterized by the SFWMD. For example, Trexler et al.'s (2002) square-root density of a Class 2 wetland with three fish would equate to a SFWMD Model Class 3 wetland with nine fish. Based on the above discussion, the following mean annual fish densities were extrapolated to the seven SFWMD Model hydroperiods:

Table 6. Extrapolated Fish Densities for SFWMD Hydroperiods

Hydroperiod Class	Days Inundated	Extrapolated Fish Density
Class 1	0-60	2 fish/m ²
Class 2	60-120	4 fish/m ²
Class 3	120-180	9 fish/m ²
Class 4	180-240	16 fish/m ²
Class 5	240-300	20 fish/m ²
Class 6	300-330	23 fish/m ²
Class 7	330-365	25 fish/m ²

Fish Biomass per Hydroperiod: A more important parameter than fish per square-meter in defining fish densities is the biomass these fish provide. In the ENP and WCA-3, based on studies by Turner et al. (1999), Turner and Trexler (1997), and Carlson and Duever (1979), the standing stock (biomass) of large and small fishes combined in unenriched Class 5 and 6 hydroperiod wetlands averaged between 5.5 to 6.5 grams-wet-mass/m². In these studies, the data was provided in g/m² dry-weight and was converted to g/m² wet-weight following the procedures referenced in Kushlan et al. (1986) and also referenced in Turner et al. (1999). The fish density data provided in Turner et al. (1999) included both data from samples representing fish 8 cm or smaller and fish larger than 8 cm and included summaries of Turner and Trexler (1997) data, Carlson and Duever (1979) data, and Loftus and Eklund (1994) data. These data sets also reflected a 0.6 g/m² dry-weight correction estimate for fish greater than 8 cm based on Turner et al.'s (1999) block-net rotenone samples.

Relating this information to the hydroperiod classes developed by the SFWMD, we estimated the mean annual biomass densities per hydroperiod. For our assessment, we considered Class 7 hydroperiod wetlands based on Turner et al. (1999) and Trexler et al. (2002) studies to have a mean annual biomass of 6.5 grams-wet-mass/m² and to be composed of 25 fish/m². The remaining biomass weights per hydroperiod were determined as a direct proportion of the number of fish per total weight of fish for a Class 7 hydroperiod (6.5 grams divided by 25 fish equals 0.26 grams per fish).

For example, given that a Class 3 hydroperiod has a mean annual fish density of 9 fish/m², with an average weight of 0.26 grams per fish, the biomass of a Class 3 hydroperiod would be 2.3 grams/m² (9*0.26 = 2.3). Based on the above discussion, the biomass per hydroperiod class is:

Table 7. Extrapolated Mean Annual Fish Biomass for SFWMD Hydroperiods

Hydroperiod Class	Days Inundated	Extrapolated Fish Biomass
Class 1	0-60	0.5 gram/m ²
Class 2	60-120	1.0 gram/m ²
Class 3	120-180	2.3 grams/m ²
Class 4	180-240	4.2 grams/m ²
Class 5	240-300	5.2 grams/m ²
Class 6	300-330	6.0 grams/m ²
Class 7	330-365	6.5 grams/m ²

Wood stork suitable prey size: Wood storks are highly selective in their feeding habits and in studies on fish consumed by wood storks, five species of fish comprised over 85 percent of the number and 84 percent of the biomass of over 3,000 prey items collected from adult and nestling wood storks (Ogden et al. 1976). Table 8 lists the fish species consumed by wood storks in Ogden et al. (1976).

Table 8. Primary Fish Species consumed by Wood Storks from Ogden et al. (1976)

Common name	Scientific name	Percent Individuals	Percent Biomass
Sunfishes	<i>Centrarchidae</i>	14	44
Yellow bullhead	<i>Italurus natalis</i>	2	12
Marsh killifish	<i>Fundulus confluentus</i>	18	11
Flagfish	<i>Jordenella floridae</i>	32	7
Sailfin molly	<i>Poecilia latipinna</i>	20	11

These species were also observed to be consumed in much greater proportions than they occur at feeding sites, and abundant smaller species [e.g., mosquitofish (*Gambusia affinis*), least killifish (*Heterandria formosa*), bluefin killifish (*Lucania goodei*)] are under-represented, which the researchers believed was probably because their small size did not elicit a bill-snapping reflex in these tactile feeders (Coulter et al. 1999). Their studies also showed that, in addition to selecting larger species of fish, wood storks consumed individuals that are significantly larger (>3.5 cm) than the mean size available (2.5 cm), and many were greater than 1-year old (Ogden et al. 1976, Coulter et al. 1999). However, Ogden et al. (1976) also found that wood storks most likely consumed fish that were between 1.5 and 9.0 cm in length (Figure 4 in Ogden et al. 1976).

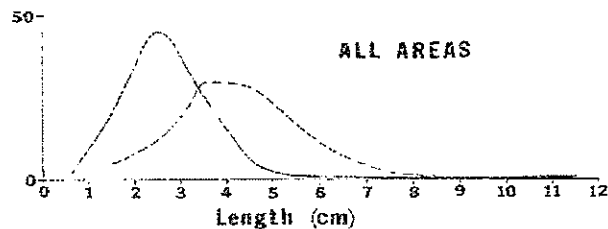


FIGURE 4. Length frequency distribution of fish available to and consumed by Wood Storks in different habitats.

In Ogden et al.'s (1976) Figure 4, the dotted line is the distribution of fish consumed and the solid line is the available fish. Straight interpretation of the area under the dotted line curve

represents the size classes of fish most likely consumed by wood storks and is the basis of our determination of the amount of biomass that is within the size range of fish most likely consumed by wood storks, which in this example is a range size of 1.5 to 9.0 cm in length.

Wood stork suitable prey base (biomass per hydroperiod): To estimate that fraction of the available fish biomass that might be consumed by wood storks, the following analysis was conducted. Trexler et al.'s (2002) 2-year throw trap data of absolute and relative fish abundance per hydroperiod distributed across 20 study sites in the ENP and the WCAs was considered to be representative of the Everglades fish assemblage available to wood storks (n = 37,718 specimens of 33 species). Although Trexler et al.'s (2002) data was based on throw-trap data and representative of fish 8 cm or smaller, the Service believes the data set can be used to predict the biomass/m² for total fish (those both smaller and larger than 8 cm). This approach is also supported, based on our assessment of prey consumption by wood storks in Ogden et al.'s (1976) study (Figure 4), that the wood storks general preference is for fish measuring 1.5 cm to 9 cm and is generally inclusive of Trexler et al.'s (2002) throw-trap data of fish 8 cm or smaller.

To estimate the fraction of the fish biomass that might be consumed by wood storks, the Service, using Trexler et al.'s (2002) throw-trap data set, determined the mean biomass of each fish species that fell within the wood stork prey size limits of 1.5 to 9.0 cm. The mean biomass of each fish species was estimated from the length and wet mass relationships for Everglades' ichthyofauna developed by Kushlan et al. (1986). The proportion of each species that was outside of this prey length and biomass range was estimated using the species mean and variance provided in Table 1 in Kushlan et al. (1986). These biomass estimates assumed the length and mass distributions of each species was normally distributed and the fish biomass could be estimated by eliminating that portion of each species outside of this size range. These biomass estimates of available fish prey were then standardized to a sum of 6.5 g/m² for Class 7 hydroperiod wetlands (Service 2009).

For example, Kushlan et al. (1986) lists the warmouth (*Lepomis gulosus*) with a mean average biomass of 36.76 g. In fish samples collected by Trexler et al. (2002), this species accounted for 0.048 percent ($18/37,715=0.000477$) of the Everglades freshwater ichthyofauna. Based on an average biomass of 36.76 g (Kushlan et al. 1986), the 0.048 percent representation from Trexler et al. (2002) is equivalent to an average biomass of 1.75 g ($36.76*0.048$) or 6.57 percent ($1.75/26.715$) of the estimated average biomass (26.715 g) of Trexler et al.'s (2002) samples (Service 2009).

Standardizing these data to a sample size of 6.5 g/m², the warmouth biomass for long hydroperiod wetlands would be about 0.427 g (Service 2009). However, the size frequency distribution (assumed normal) for warmouth (Kushlan et al. 1986) indicate 48 percent are too large for wood storks and 0.6 percent are too small (outside the 1.5 cm to 9 cm size range most likely consumed), so the warmouth biomass within the wood stork's most likely consumed size range is only 0.208 g ($0.427*(0.48+0.006)=0.2075$) in a 6.5 g/m² sample. Using this approach summed over all species in long hydroperiod wetlands, only 3.685 g/m² of the 6.5 g/m² sample consists of fish within the size range likely consumed by wood storks or about 57 percent ($3.685/6.5*100=56.7$) of the total biomass available.

An alternative approach to estimate the available biomass is based on Ogden et al. (1976). In their study (Table 8), the sunfishes and four other species that accounted for 84 percent of the biomass eaten by wood storks totaled 2.522 g of the 6.5 g/m² sample (Service 2009). Adding the remaining 16 percent from other species in the sample, the total biomass would suggest that 2.97 g of a 6.5 g/m² sample are most likely to be consumed by wood storks or about 45.7 percent (2.97/6.5=0.4569)

The mean of these two estimates is 3.33g/m² for long hydroperiod wetlands (3.685 + 2.97 = 6.655/ 2 = 3.33). This proportion of available fish prey of a suitable size (3.33 g/m² / 6.5 g/m² = 0.51 or 51 percent) was then multiplied by the total fish biomass in each hydroperiod class to provide an estimate of the total biomass of a hydroperiod that is the appropriate size and species composition most likely consumed by wood storks.

As an example, a Class 3 SFWMD model hydroperiod wetland with a biomass of 2.3 grams/m², adjusted by 51 percent for appropriate size and species composition, provides an available biomass of 1.196 grams/m². Following this approach, the biomass per hydroperiod potentially available to predation by wood storks based on size and species composition is:

Table 9. Wood Stork Suitable Prey Base (fish biomass per hydroperiod)

Hydroperiod Class	Days Inundated	Fish Biomass
Class 1	0-60	0.26 gram/m ²
Class 2	60-120	0.52 gram/m ²
Class 3	120-180	1.196 grams/m ²
Class 4	180-240	2.184 grams/m ²
Class 5	240-300	2.704 grams/m ²
Class 6	300-330	3.12 grams/m ²
Class 7	330-365	3.38 grams/m ²

Wood Stork-Wading Bird Prey Consumption Competition: In 2006, (Service 2006), the Service developed an assessment approach that provided a foraging efficiency estimate that 55 percent of the available biomass was actually consumed by wood storks. Since the implementation of this assessment approach, the Service has received comments from various sources concerning the Service's understanding of Fleming et al.'s (1994) assessment of prey base consumed by wood storks versus prey base assumed available to wood stork and the factors included in the 90 percent prey reduction value.

In our original assessment, we noted that, "*Fleming et al. (1994) provided an estimate of 10 percent of the total biomass in their studies of wood stork foraging as the amount that is actually consumed by the storks. However, the Fleming et al. (1994) estimate also includes a second factor, the suitability of the foraging site for wood storks, a factor that we have calculated separately. In their assessment, these two factors accounted for a 90 percent reduction in the biomass actually consumed by the storks. We consider these two factors as equally important and are treated as equal components in the 90 percent reduction; therefore, we consider each factor to represent 45 percent of the reduction. In consideration of this approach, Fleming et al.'s (1994) estimate that 10 percent of the biomass would actually be consumed by the storks would be added to the 45 percent value for an estimate that 55 percent (10 percent plus the remaining 45 percent) of the available biomass would actually be consumed by the storks and is the factor we believe represents the amount of the prey base that is actually consumed by the stork.*"

In a follow-up review of Fleming et al.'s (1994) report, we noted that the 10 percent reference is to prey available to wood storks, not prey consumed by wood storks. We also noted the 90 percent reduction also includes an assessment of prey size, an assessment of prey available by water level (hydroperiod), an assessment of suitability of habitat for foraging (openness), and an assessment for competition with other species, not just the two factors considered originally by the Service (suitability and competition). Therefore, in re-evaluating of our approach, we identified four factors in the 90 percent biomass reduction and not two as we previously considered. We believe these four factors are represented as equal proportions of the 90 percent reduction, which corresponds to an equal split of 22.5 percent for each factor. Since we have accounted previously for three of these factors in our approach (prey size, habitat suitability, and hydroperiod) and they are treated separately in our assessment, we consider a more appropriate foraging efficiency to represent the original 10 percent and the remaining 22.5 percent from the 90 percent reduction discussed above. Following this revised assessment, our competition factor would be 32.5 percent, not the initial estimate of 55 percent.

Other comments reference the methodology's lack of sensitivity to limiting factors, i.e., is there sufficient habitat available across all hydroperiods during critical life stages of wood stork nesting and does this approach over emphasize the foraging biomass of long hydroperiod wetlands with a corresponding under valuation of short hydroperiod wetlands. The Service is aware of these questions and is examining alternative ways to assess these concerns. However, until further research is generated to refine our approach, we continue to support the assessment tool as outlined.

Following this approach, Table 10 has been adjusted to reflect the competition factor and represents the amount of biomass consumed by wood storks and is the basis of our effects assessments (Class 1 hydroperiod with a biomass 0.26 g, multiplied by 0.325, results in a value of 0.08 g [$0.26 \times 0.325 = 0.08$]) (Table 10).

Table 10 Actual Biomass Consumed by Wood Storks

Hydroperiod Class	Days Inundated	Fish Biomass
Class 1	0-60	0.08 gram/m ²
Class 2	60-120	0.17 gram/m ²
Class 3	120-180	0.39 grams/m ²
Class 4	180-240	0.71 grams/m ²
Class 5	240-300	0.88 grams/m ²
Class 6	300-330	1.01 grams/m ²
Class 7	330-365	1.10 grams/m ²

Sample Project of Biomass Calculations and Corresponding Concurrence Determination

Example 1:

An applicant is proposing to construct a residential development with unavoidable impacts to 5 acres of wetlands and is proposing to restore and preserve 3 acres of wetlands onsite. Data on the onsite wetlands classified these systems as exotic impacted wetlands with greater than 50

percent but less than 75 percent exotics (Table 3) with an average hydroperiod of 120-180 days of inundation.

The equation to calculate the biomass lost is: The number of acres, converted to square-meters, times the amount of actual biomass consumed by the wood stork (Table 10), times the exotic foraging suitability index (Table 3), equals the amount of grams lost, which is converted to kg.

Biomass lost $(5 * 4,047 * 0.39 \text{ (Table 10)} * 0.37 \text{ (Table 3)}) = 2,919.9 \text{ grams or } 2.92 \text{ kg}$

In the example provided, the 5 acres of wetlands, converted to square-meters (1 acre = 4,047 m²) would provide 2.9 kg of biomass ($5 * 4,047 * 0.39 \text{ (Table 10)} * 0.37 \text{ (Table 3)} = 2,919.9 \text{ grams or } 2.9 \text{ kg}$), which would be lost from development.

The equation to calculate the biomass from the preserve is the same, except two calculations are needed, one for the existing biomass available and one for the biomass available after restoration.

Biomass Pre: $(3 * 4,047 * 0.39 \text{ (Table 10)} * 0.37 \text{ (Table 3)}) = 1,751.95 \text{ grams or } 1.75 \text{ kg}$

Biomass Post: $(3 * 4,047 * 0.39 \text{ (Table 10)} * 1 \text{ (Table 3)}) = 4,734.99 \text{ grams or } 4.74 \text{ kg}$

Net increase: $4.74 \text{ kg} - 1.75 \text{ kg} = 2.98 \text{ kg Compensation Site}$

Project Site Balance $2.98 \text{ kg} - 2.92 \text{ kg} = 0.07 \text{ kg}$

The compensation proposed is 3 acres, which is within the same hydroperiod and has the same level of exotics. Following the calculations for the 5 acres, the 3 acres in its current habitat state, provides 1.75 kg ($3 * 4,047 * 0.39 \text{ (Table 10)} * 0.37 \text{ (Table 3)} = 1,751.95 \text{ grams or } 1.75 \text{ kg}$) and following restoration provides 4.74 kg ($3 * 4,047 * 0.39 \text{ (Table 10)} * 1 \text{ (Table 3)} = 4,734.99 \text{ grams or } 4.74 \text{ kg}$), a net increase in biomass of 2.98 kg ($4.74 - 1.75 = 2.98$).

Example 1: 5 acre wetland loss, 3 acre wetland enhanced – same hydroperiod - NLAA

Hydroperiod	Existing Footprint		On-site Preserve Area				Net Change*	
			Pre Enhancement		Post Enhancement			
	Acres	Kgrams	Acres	Kgrams	Acres	Kgrams	Acres	Kgrams
Class 1 - 0 to 60 Days								
Class 2 - 60 to 120 Days								
Class 3 - 120 to 180 Days	5	2.92	3	1.75	3	4.74	(5)	0.07
Class 4 - 180 to 240 Days								
Class 5 - 240 to 300 Days								
Class 6 - 300 to 330 Days								
Class 7 - 330 to 365 days								
TOTAL	5	2.92	3	1.75	3	4.74	(5)	0.07

*Since the net increase in biomass from the restoration provides 2.98 kg and the loss is 2.92 kg, there is a positive outcome (4.74-1.75-2.92=0.07) in the same hydroperiod and Service concurrence with a NLAA is appropriate.

Example 2:

In the above example, if the onsite preserve wetlands were a class 4 hydroperiod, which has a value of 0.71. grams/m² instead of a class 3 hydroperiod with a 0.39 grams/m² [Table 10]), there would be a loss of 2.92 kg of short hydroperiod wetlands (as above) and a net gain of 8.62 kg of long-hydroperiod wetlands.

Biomass lost: $(5 * 4,047 * 0.39 \text{ (Table 10)} * 0.37 \text{ (Table 3)}) = 2,919.9 \text{ grams or } 2.92 \text{ kg}$

The current habitat state of the preserve provides 3.19 kg $(3 * 4,047 * 0.71 \text{ (Table 10)} * 0.37 \text{ (Table 3)}) = 3,189.44 \text{ grams or } 3.19 \text{ kg}$ and following restoration the preserve provides 8.62 kg $(3 * 4,047 * 0.71 \text{ (Table 10)} * 1 \text{ (Table 3)}) = 8,620.11 \text{ grams or } 8.62 \text{ kg}$, thus providing a net increase in class 4 hydroperiod biomass of 5.43 kg $(8.62 - 3.19 = 5.43)$.

Biomass Pre: $(3 * 4,047 * 0.71 \text{ (Table 10)} * 0.37 \text{ (Table 3)}) = 3,189.44 \text{ grams or } 3.19 \text{ kg}$

Biomass Post: $(3 * 4,047 * 0.71 \text{ (Table 10)} * 1 \text{ (Table 3)}) = 8,620.11 \text{ grams or } 8.62 \text{ kg}$

Net increase: $8.62 \text{ kg} - 3.19 \text{ kg} = 5.43 \text{ kg}$

Project Site Balance $5.43 \text{ kg} - 2.92 \text{ kg} = 2.51 \text{ kg}$

Example 2: 5 acre wetland loss, 3 acre wetland enhanced – different hydroperiod – May Affect

Hydroperiod	Existing Footprint		On-site Preserve Area				Net Change*	
			Pre Enhancement		Post Enhancement			
	Acres	Kgrams	Acres	Kgrams	Acres	Kgrams	Acres	Kgrams
Class 1 - 0 to 60 Days								
Class 2 - 60 to 120 Days								
Class 3 - 120 to 180 Days	5	2.92					(5)	-2.92
Class 4 - 180 to 240 Days			3	3.19	3	8.62	0	5.43
Class 5 - 240 to 300 Days								
Class 6 - 300 to 330 Days								
Class 7 - 330 to 365 days								
TOTAL	5	2.92	3	3.19	3	8.62	(5)	2.51

In this second example, even though there is an overall increase in biomass, the biomass loss is a different hydroperiod than the biomass gain from restoration, therefore, the Service could not concur with a NLAA and further coordination with the Service is appropriate.

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United States Department of the Interior



FISH AND WILDLIFE SERVICE
South Florida Ecological Services Office
1339 20th Street
Vero Beach, Florida 32960

August 1, 2017

Donnie Kinard
U.S. Army Corps of Engineers
Post Office Box 4970
Jacksonville, Florida 32232-0019

Subject: Consultation Key for the Eastern Indigo Snake – Revised

Dear Mr. Kinard:

This letter revises and replaces the January 25, 2010, and August 13, 2013, letters to the U.S. Army Corps of Engineers (Corps) regarding the use of the eastern indigo snake programmatic effect determination key (Key) for projects occurring within the South Florida Ecological Service's Office (SFESO) jurisdiction. This revision supersedes all prior versions of the Key in the SFESO area. The purpose of this revision is to clarify portions of the previous keys based on questions we have been asked, specifically related to habitat and refugia used by eastern indigo snakes (*Drymarchon corais couperi*), in the southern portion of their range and within the jurisdiction of the SFESO. This Key is provided pursuant to the Service's authorities under the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C.1531 *et seq.*). This Key revision has been assigned Service Consultation Code: 41420-2009-I-0467-R001.

The purpose of this Key is to assist the Corps (or other Federal action agency) in making appropriate effects determinations for the eastern indigo snake under section 7 of the Act, and streamline informal consultation with the SFESO for the eastern indigo snake when the proposed action can be walked through the Key. The Key is a tool available to the Corps (or other Federal action agency) for the purposes of expediting section 7 consultations. There is no requirement to use the Key. There will be cases when the use of the Key is not appropriate. These include, but are not limited to: where project specific information is outside of the scope of the Key or instances where there is new biological information about the species. In these cases, we recommend the Corps (or other Federal action agency) initiates traditional consultation pursuant to section 7 of the Act, and identify that consultation is being requested outside of the Key.

This Key uses project size and home ranges of eastern indigo snakes as the basis for making determinations of "may affect, but is not likely to adversely affect" (NLAA) and "may affect, and is likely to adversely affect" (may affect). Suitable habitat for the eastern indigo snake consists of a mosaic of habitats types, most of which occur throughout South Florida. Information on home ranges for individuals is not available in specific habitats in South Florida. Therefore, the SFESO uses the information from a 26-year study conducted by Layne and Steiner (1996) at Archbold Biological Station, Lake Placid, Florida, as the best available

information. Layne and Steiner (1996) determined the average home range size for a female eastern indigo snake was 46 acres and 184 acres for a male.

Projects that would remove/destroy less than 25 acres of eastern indigo snake habitat are expected to result in the loss of a portion of an eastern indigo snakes home range that would not impair the ability of the individual to feed, breed, and shelter. Therefore, the Service finds that take would not be reasonably certain to occur due to habitat loss. However, these projects have the potential to injure or kill an eastern indigo snake if the individual is crushed by equipment during site preparation or other project aspects. The Service's *Standard Protection Measures for the Eastern Indigo Snake* (Service 2013 or most current version) and the excavation of underground refugia (where a snake could be buried, trapped and/or injured), when implemented, are designed to avoid these forms of take. Consequently, projects less than 25 acres that include the Service's *Standard Protection Measures for the Eastern Indigo Snake* (Service 2013 or most current version) and a commitment to excavate underground refugia as part of the proposed action would be expected to avoid take and thus, may affect, but are not likely to adversely affect the species.

If a proposed project would impact less than 25 acres of vegetated eastern indigo snake habitat (not urban/ human-altered) completely surrounded by urban development, and an eastern indigo snake has been observed on site, the Key should not be used. The Service recommends formal consultation for this situation because of the expected increased value of the vegetated habitat within the individual's home range.

Projects that would remove 25 acres or more of eastern indigo snake habitat could remove more than half of a female eastern indigo snakes home range. This loss of habitat within a home range would be expected to significantly impair the ability of that individual to feed, breed, and shelter. Therefore, the Service finds take through habitat loss would be reasonably certain to occur and formal consultation is appropriate. Furthermore, these projects have the potential to injure or kill an eastern indigo snake if the individual is crushed by equipment during site preparation or other project aspects. The Service's *Standard Protection Measures for the Eastern Indigo Snake* (Service 2013 or most current version) and the excavation of underground refugia (where a snake could be buried, trapped and/or injured), when implemented, are designed to avoid these forms of take.

Eastern indigo snakes use a variety of habitat and are difficult to detect. Therefore, site specific information on the land use, observations of eastern indigo snakes within the vicinity, as well as other factors, as appropriate, will all be considered by the Service when making a final recommendation on the appropriate effects determination and whether it is appropriate to conclude consultation with the Corps (or other Federal action agency) formally or informally for projects that will impact 25 acres or more of habitat. Accordingly, when the use of the Key results in a determination of "may affect," the Corps (or other Federal action agency) is advised that consultation may be concluded informally or formally, depending on the project specific effects to eastern indigo snakes. Technical assistance from the Service can assist you in making a determination prior to submitting a request for consultation. In circumstances where the Corps (or other Federal action agency) desires to proceed with a consultation request prior to receiving

additional technical assistance from the Service, we recommend the agency documents the biological rationale for their determination and proceed with a request accordingly.

If the use of the Key results in a determination of “no effect,” no further consultation is necessary with the SFESO. If the use of the Key results in a determination of “NLAA,” the SFESO concurs with this determination based on the rationale provide above, and no further consultation is necessary for the effects of the proposed action on the eastern indigo snake. For “no effect” or “NLAA” determinations, the Service recommends that the Corps (or other Federal action agency) documents the pathway used to reach your no effect or NLAA determination in the project record and proceed with other species analysis as warranted.

Eastern Indigo Snake Programmatic Effect Determination Key
Revised July 2017
South Florida Ecological Service Office

Scope of the Key

This Key should be used only in the review of permit applications for effects determinations for the eastern indigo snake (*Drymarchon corais couperi*) within the South Florida Ecological Service’s Office (SFESO) area (Broward, Charlotte, Collier, De Soto, Glades, Hardee, Hendry, Highlands, Lee, Indian River, Martin, Miami-Dade, Monroe, Okeechobee, Osceola, Palm Beach, Polk, Sarasota, and St. Lucie Counties). There is no designated critical habitat for the eastern indigo snake.

This Key is subject to revision as the Corps (or other Federal action agency) and Service deem necessary and in particular whenever there is new information on eastern indigo snake biology and effects of proposed projects.

The Key is a tool available to the Corps (or other Federal action agency) for the purposes of expediting section 7 consultations. There is no requirement to use the Key. There will be cases when the use of the Key is not appropriate. These include, but are not limited to: where project specific information is outside of the scope of the Key or instances where there is new biological information about the species. In these cases, we recommend the Corps (or other Federal action agency) initiates traditional consultation pursuant to section 7 of the Act, and identify that consultation is being requested outside of the Key.

Habitat

Habitat use varies seasonally between upland and wetland areas, especially in the more northern parts of the species' range. In southern parts of their range eastern indigo snakes are habitat generalists which use most available habitat types. Movements between habitat types in northern areas of their range may relate to the need for thermal refugia (protection from cold and/or heat).

In northern areas of their range eastern indigo snakes prefer an interspersed of tortoise-inhabited sandhills and wetlands (Landers and Speake 1980). In these northern regions eastern indigo

snakes most often use forested areas rich with gopher tortoise burrows, hollowed root channels, hollow logs, or the burrows of rodents, armadillos, or land crabs as thermal refugia during cooler seasons (Lawler 1977; Moler 1985a; Layne and Steiner 1996). The eastern indigo snake in the northern region is typically classified as a longleaf pine savanna specialist because here, in the northern four-fifths of its range, the eastern indigo snake is typically only found in vicinity of xeric longleaf pine–turkey oak sandhills inhabited by the gopher tortoise (Means 2006).

In the milder climates of central and southern Florida, comprising the remaining one fifth of its range, thermal refugia such as those provided by gopher tortoise burrows may not be as critical to survival of indigo snakes. Consequently, eastern indigo snakes in these regions use a more diverse assemblage of habitats such as pine flatwoods, scrubby flatwoods, floodplain edges, sand ridges, dry glades, tropical hammocks, edges of freshwater marshes, muckland fields, coastal dunes, and xeric sandhill communities; with highest population concentrations of eastern indigo snakes occurring in the sandhill and pineland regions of northern and central Florida (Service 1999). Eastern indigo snakes have also been found on agricultural lands with close proximity to wetlands (Zeigler 2006).

In south Florida, agricultural sites (*e.g.*, sugar cane fields and citrus groves) are occupied by eastern indigo snakes. The use of sugarcane fields by eastern indigo snakes was first documented by Layne and Steiner in 1996. In these areas there is typically an abundance of wetland and upland ecotones (due to the presence of many ditches and canals), which support a diverse prey base for foraging. In fact, some speculate agricultural areas may actually have a higher density of eastern indigo snakes than natural communities due to the increased availability of prey. Gopher tortoise burrows are absent at these locations but there is an abundance of both natural and artificial refugia. Enge and Endries (2009) reporting on the status of the eastern indigo snake included sugarcane fields and citrus groves in a Global Information Systems (GIS)-base map of potential eastern indigo snake habitat. Numerous sightings of eastern indigo snakes within sugarcane fields have been reported within south Florida (Florida Fish and Wildlife Conservation Commission Indigo Snake Database [Enge 2017]). A recent study associated with the Comprehensive Everglades Restoration Plan (CERP) (A-1 FEB Project formerly A-1 Reservoir; Service code: 41420-2006-F-0477) documented eastern indigo snakes within sugarcane fields. The snakes used artificial habitats such as piles of limerock, construction debris, and pump stations. Recent studies also associated with the CERP at the C-44 Project (Service code: 41420-2009-FA-0314), and C-43 Project (Service code: 41420-2007-F-0589) documented eastern indigo snakes within citrus groves. The snakes used artificial habitats such as boards, sheets of tin, construction debris, pipes, drain pipes in abandoned buildings and septic tanks.

In extreme south Florida (*i.e.*, the Everglades and Florida Keys), eastern indigo snakes also utilize tropical hardwood hammocks, pine rocklands, freshwater marshes, abandoned agricultural land, coastal prairie, mangrove swamps, and human-altered habitats. Though eastern indigo snakes have been found in all available habitats of south Florida it is thought they prefer hammocks and pine forests since most observations occur there and use of these areas is disproportionate compared to the relatively small total area of these habitats (Steiner *et al.* 1983).

Even though thermal stress may not be a limiting factor throughout the year in south Florida, eastern indigo snakes still seek and use underground refugia. On the sandy central ridge of central Florida, eastern indigo snakes use gopher tortoise burrows more (62 percent) than other underground refugia (Layne and Steiner 1996). Other underground refugia used include armadillo (*Dasyus novemcinctus*) burrows near citrus groves, cotton rat (*Sigmodon hispidus*) burrows, and land crab (*Cardisoma guanhumi*) burrows in coastal areas (Layne and Steiner 1996; Wilson and Porras 1983). Natural ground holes, hollows at the base of trees or shrubs, ground litter, trash piles, and crevices of rock-lined ditch walls are also used (Layne and Steiner 1996). These refugia are used most frequently where tortoise burrows are not available, principally in low-lying areas off the central and coastal ridges.

Minimization Measures

The Service developed protection measures for the eastern indigo snake “Standard Protection Measures for the Eastern Indigo Snake” (Service 2013) located at: https://www.fws.gov/verobeach/ReptilesPDFs/20130812_EIS%20Standard%20Protection%20Measures_final.pdf. These protection measures (or the most updated version) are considered a minimization measure for projects proposed within eastern indigo snake habitat.

Determinations

If the use of this Key results in a determination of “**no effect**,” no further consultation is necessary with the SFESO.

If the use of this Key results in a determination of “**NLAA**,” the SFESO concurs with this determination and no further consultation is necessary for the effects of the proposed action on the eastern indigo snake.

For no effect or NLAA determinations, the Corps (or other Federal action agency) should make a note in the project file indicating the pathway used to reach your no effect or NLAA determination.

If a proposed project would impact less than 25 acres of vegetated eastern indigo snake habitat (not urban/ human-altered) completely surrounded by urban development, and an eastern indigo snake has been observed on site, the subsequent Key should not be used. The Service recommends formal consultation for this situation because of the expected increased value of the vegetated habitat within the individual’s home range.

If the use of this Key results in a determination of “**may affect**,” consultation may be concluded informally or formally depending on project effects to eastern indigo snakes. Technical assistance from the Service can assist you in making a determination prior to submitting a request for consultation. In circumstances where the Corps desires to proceed with a consultation request prior to receiving additional technical assistance from the Service, we recommend the Corps document the biological rationale for their determination and proceed with a request accordingly.

- A. Project is not located in open water or salt marsh.....go to B
 Project is located solely in open water or salt marsh.....**no effect**

- B. Permit will be conditioned for use of the Service's most current guidance for Standard Protection Measures For The Eastern Indigo Snake (currently 2013) during site preparation and project construction.....go to C
 Permit will not be conditioned as above for the eastern indigo snake, or it is not known whether an applicant intends to use these measures and consultation with the Service is requested.....**may affect**

- C. The project will impact less than 25 acres of eastern indigo snake habitat (e.g., sandhill, scrub, pine flatwoods, pine rocklands, scrubby flatwoods, high pine, dry prairie, coastal prairie, mangrove swamps, tropical hardwood hammocks, hydric hammocks, edges of freshwater marshes, agricultural fields [including sugar cane fields and active, inactive, or abandoned citrus groves], and coastal dunes).....go to D
 The project will impact 25 acres or more of eastern indigo snake habitat (e.g., sandhill, scrub, pine flatwoods, pine rocklands, scrubby flatwoods, high pine, dry prairie, coastal prairie, mangrove swamps, tropical hardwood hammocks, hydric hammocks, edges of freshwater marshes, agricultural fields [including sugar cane fields and active, inactive, or abandoned citrus groves], and coastal dunes).....**may affect**

- D. The project has no known holes, cavities, active or inactive gopher tortoise burrows, or other underground refugia where a snake could be buried, trapped and/or injured during project activities.....NLAA
 The project has known holes, cavities, active or inactive gopher tortoise burrows, or other underground refugia where a snake could be buried, trapped and /or injured.....go to E

- E. Any permit will be conditioned such that all gopher tortoise burrows, active or inactive, will be excavated prior to site manipulation in the vicinity of the burrow¹. If an eastern indigo snake is encountered, the snake must be allowed to vacate the area prior to additional site manipulation in the vicinity. Any permit will also be conditioned such that holes, cavities, and snake refugia other than gopher tortoise burrows will be inspected each morning before planned site manipulation of a particular area, and, if occupied by an eastern indigo snake, no work will commence until the snake has vacated the vicinity of proposed work.....NLAA²
 Permit will not be conditioned as outlined above.....**may affect**

End Key

¹ If excavating potentially occupied burrows, active or inactive, individuals must first obtain state authorization via a Florida Fish and Wildlife Conservation Commission Authorized Gopher Tortoise Agent permit. The excavation method selected should also minimize the potential for injury of an indigo snake. Applicants should follow the excavation guidance provided within the most current Gopher Tortoise Permitting Guidelines found at <http://myfwc.com/gophertortoise>.

² Please note, if the proposed project will impact less than 25 acres of vegetated eastern indigo snake habitat (not urban/ human-altered) completely surrounded by urban development, and an eastern indigo snake has been observed on site. NLAA is not the appropriate conclusion. The Service recommends formal consultation for this situation because of the expected increased value of the vegetated habitat within the individual's home range

Working with the Fish and Wildlife Foundation of Florida, the Service has established a fund to support conservation and recovery for the eastern indigo snake. Any project that has the potential to affect the eastern indigo snake and/or its habitat is encouraged to make a voluntary contribution to this fund. If you would like additional information about how to make a contribution and how these monies are used to support eastern indigo snake recovery please contact Ashleigh Blackford, Connie Cassler, or José Rivera at 772-562-3559.

This revised Key is effective immediately upon receipt by the Corps. Should circumstances change or new information become available regarding the eastern indigo snake and/or implementation of the Key, the determinations herein may be reconsidered and this Key further revised or amended.

Thank you for your continued cooperation in the effort to conserve fish and wildlife resources. If you have any questions or comments regarding this Key, please contact the SFESO at 772-562-3909.

Sincerely,



Roxanna Hinzman
Field Supervisor
South Florida Ecological Services

Cc:

Corps, Jacksonville, Florida (Dale Beter, Muriel Blaisdell, Ingrid Gilbert, Angela Ryan,
Irene Sadowski, Victoria White, Alisa Zarbo)
Service, Athens, Georgia (Michelle Elmore)
Service, Jacksonville, Florida (Annie Dziergowski)
Service, Panama City, Florida (Sean Blomquist)

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**THE CORPS OF ENGINEERS, JACKSONVILLE DISTRICT, AND THE STATE OF
FLORIDA EFFECT DETERMINATION KEY FOR THE MANATEE IN FLORIDA
April 2013**

Purpose and background of the key

The purpose of this document is to provide guidance to improve the review of permit applications by U.S. Army Corps of Engineers' (Corps) Project Managers in the Regulatory Division regarding the potential effects of proposed projects on the endangered West Indian manatee (*Trichechus manatus*) in Florida, and by the Florida Department of Environmental Protection or its authorized designee or Water Management District, for evaluating projects under the State Programmatic General Permit (SPGP) or any other Programmatic General Permits that the Corps may issue for administration by the above agencies. Such guidance is contained in the following dichotomous key. The key applies to permit applications for in-water activities such as, but not limited to: (1) dredging [new or maintenance dredging of not more than 50,000 cubic yards], placement of fill material for shoreline stabilization, and construction/placement of other in-water structures as well as (2) construction of docks, marinas, boat ramps and associated trailer parking spaces, boat slips, dry storage or any other watercraft access structures or facilities.

At a certain step in the key, the user is referred to graphics depicting important manatee areas or areas with inadequate protection. The maps can be downloaded from the Corps' web page at <http://www.saj.usace.army.mil/Missions/Regulatory/SourceBook.aspx>. We intend to utilize the most recent depiction of these areas, so should these areas be modified by statute, rule, ordinance and/or other legal mandate or authorization, we will modify the graphical depictions accordingly. These areas may be shaded or otherwise differentiated for identification on the maps.

Explanatory footnotes are provided in the key and must be closely followed whenever encountered.

Scope of the key

This key should only be used in the review of permit applications for effect determinations on manatees and should not be used for other listed species or for other aquatic resources such as Essential Fish Habitat (EFH). Corps Project Managers should ensure that consideration of the project's effects on any other listed species and/or on EFH is performed independently. This key may be used to evaluate applications for all types of State of Florida (State Programmatic General Permits, noticed general permits, standard general permits, submerged lands leases, conceptual and individual permits) and Department of the Army (standard permits, letters of permission, nationwide permits, and regional general permits) permits and authorizations. The final effect determination will be based on the project location and description; the potential effects to manatees, manatee habitat, and/or manatee critical habitat; and any measures (such as project components, standard construction precautions, or special conditions included in the authorization) to avoid or minimize effects to manatees or manatee critical habitat. Projects that key to a "may affect" determination equate to "likely to adversely affect" situations, and those projects should not be processed under the SPGP or any other programmatic general permit. For

all “may affect” determinations, Corps Project Managers shall refer to the Manatee Programmatic Biological Opinion, dated March 21, 2011, for guidance on eliminating or minimizing potential adverse effects resulting from the proposed project. If unable to resolve the adverse effects, the Corps may refer the applicant to the U.S. Fish and Wildlife Service (Service) for further assistance in attempting to revise the proposed project to a “may affect, not likely to adversely affect” level. The Service will coordinate with the Florida Fish and Wildlife Conservation Commission (FWC) and the counties, as appropriate. Projects that provide new access for watercraft and key to “may affect, not likely to adversely affect” may or may not need to be reviewed individually by the Service.

MANATEE KEY
Florida¹
April 2013

The key is not designed to be used by the Corps' Regulatory Division for making their effect determinations for dredging projects greater than 50,000 cubic yards, the Corps' Planning Division in making their effect determinations for civil works projects or by the Corps' Regulatory Division for making their effect determinations for projects of the same relative scope as civil works projects. These types of activities must be evaluated by the Corps independently of the key.

- A. Project is not located in waters accessible to manatees and does not directly or indirectly affect manatees (see Glossary).....*No effect*
- Project is located in waters accessible to manatees **or** directly or indirectly affects manatees **B**
- B. Project consists of one or more of the following activities, all of which are *May affect*:
1. blasting or other detonation activity for channel deepening and/or widening, geotechnical surveys or exploration, bridge removal, movies, military shows, special events, etc.;
 2. installation of structures which could restrict or act as a barrier to manatees;
 3. new or changes to existing warm or fresh water discharges from industrial sites, power plants, or natural springs or artesian wells (but only if the new or proposed change in discharge requires a Corps permit to accomplish the work);
 4. installation of new culverts and/or maintenance or modification of existing culverts (where the culverts are 8 inches to 8 feet in diameter, ungrated and in waters accessible, or potentially accessible, to manatees)²;
 5. mechanical dredging from a floating platform, barge or structure³ that restricts manatee access to less than half the width of the waterway;
 6. creation of new slips or change in use of existing slips, even those located in a county with a State-approved Manatee Protection Plan (MPP) in place and the number of slips is less than the MPP threshold, to accommodate docking for repeat use vessels, (e.g., water taxis, tour boats, gambling boats, etc; or slips or structures that are not civil works projects, but are frequently used to moor large vessels (>100') for shipping and/or freight purposes; does not include slips used for docking at boat sales or repair facilities or loading/unloading at dry stack storage facilities and boat ramps); [Note: For projects within Bay, Dixie, Escambia, Franklin, Gilchrist, Gulf, Hernando, Jefferson, Lafayette, Monroe (south of Craig Key), Nassau, Okaloosa, Okeechobee, Santa Rosa, Suwannee, Taylor, Wakulla or Walton County, the reviewer should proceed to Couplet C.]
 7. any type of in-water activity in a Warm Water Aggregation Area (WWAA) or No Entry Area (see Glossary and accompanying Maps⁴); [Note: For residential docking facilities in a Warm Water Aggregation Area that is not a Federal manatee sanctuary or No Entry Area, the reviewer should proceed to couplet C.]
 8. creation or expansion of canals, basins or other artificial shoreline and/or the connection of such features to navigable waters of the U.S.; [Note: For projects proposing a single residential dock, the reviewer should proceed to couplet C; otherwise, project is a *May Affect*.]

- 9. installation of temporary structures (docks, buoys, etc.) utilized for special events such as boat races, boat shows, military shows, etc., but only when consultation with the U.S. Coast Guard and FWS has not occurred; [Note: See programmatic consultation with the U.S. Coast Guard on manatees dated May 10, 2010.].

Project is other than the activities listed above..... C

C. Project is located in an Important Manatee Area (IMA) (see Glossary and accompanying Maps⁴) D

Project is not located in an Important Manatee Area (IMA) (see Glossary and accompanying Maps⁴) G

D. Project includes dredging of less than 50,000 cubic yards E

Project does not include dredging G

E. Project is for dredging a residential dock facility or is a land-based dredging operation N

Project not as above..... F

F. Project proponent **does not elect** to follow all dredging protocols described on the maps for the respective IMA in which the project is proposed *May affect*

Project proponent **elects** to follow all dredging protocols described on the maps for the respective IMA in which the project is proposed G

G. Project provides new⁵ access for watercraft, *e.g.*, docks or piers, marinas, boat ramps and associated trailer parking spaces, new dredging, boat lifts, pilings, floats, floating docks, floating vessel platforms, boat slips, dry storage, mooring buoys, or other watercraft access (residential boat lifts, pilings, floating docks, and floating vessel platforms installed in existing slips are not considered new access) or improvements allowing increased watercraft usage..... H

Project does not provide new⁵ access for watercraft, *e.g.*, bulkheads, seawalls, riprap, maintenance dredging, boardwalks and/or the maintenance (repair or rehabilitation) of currently serviceable watercraft access structures provided all of the following are met: (1) the number of slips is not increased; (2) the number of existing slips is not in question; and (3) the improvements do not allow increased watercraft usage..... N

H. Project is located in the Braden River Area of Inadequate Protection (Manatee County) (see Glossary and accompanying AIP Map⁴) *May affect*

Project is not located in the Braden River Area of Inadequate Protection (Manatee County) (see Glossary and accompanying AIP Map⁴)..... I

I. Project is for a multi-slip facility (see Glossary) J

Project is for a residential dock facility or is for dredging (see Glossary)..... N

J. Project is located in a county that currently has a State-approved MPP in place (BREVARD, BROWARD, CITRUS, CLAY, COLLIER, DUVAL, INDIAN RIVER, LEE, MARTIN, MIAMI-DADE, PALM BEACH, ST. LUCIE, SARASOTA, VOLUSIA) or shares contiguous waters with a county having a State-approved MPP in place (LAKE, MARION, SEMINOLE)⁶ K

Project is located in a county not required to have a State-approved MPP L

K. Project has been developed or modified to be consistent with the county’s State-approved MPP **and** has been verified by a FWC review (or FWS review if project is exempt from State permitting) **or** the number of slips is below the MPP threshold N

Project has not been reviewed by the FWC or FWS **or** has been reviewed by the FWC or FWS **and** determined that the project is not consistent with the county’s State-approved MPP *May affect*

L. Project is located in one of the following counties: CHARLOTTE, DESOTO⁷, FLAGLER, GLADES, HENDRY, HILLSBOROUGH, LEVY, MANATEE, MONROE⁷, PASCO⁷, PINELLAS M

Project is located in one of the following counties: BAY, DIXIE, ESCAMBIA, FRANKLIN, GILCHRIST, GULF, HERNANDO, JEFFERSON, LAFAYETTE, MONROE (south of Craig Key), NASSAU, OKALOOSA, OKEECHOBEE, PUTNAM, SANTA ROSA, ST. JOHNS, SUWANNEE, TAYLOR, WAKULLA, WALTON N

M. The number of slips does not exceed the residential dock density threshold (see Glossary) N

The number of slips exceeds the residential dock density threshold (see Glossary) *May affect*

N. Project impacts to submerged aquatic vegetation⁸, emergent vegetation or mangrove will have beneficial, insignificant, discountable⁹ or no effects on the manatee¹⁰ O

Project impacts to submerged aquatic vegetation⁸, emergent vegetation or mangrove may adversely affect the manatee¹⁰ *May affect*

O. Project proponent **elects** to follow standard manatee conditions for in-water work¹¹ and requirements, as appropriate for the proposed activity, prescribed on the maps⁴ P

Project proponent **does not elect** to follow standard manatee conditions for in-water work¹¹ and appropriate requirements prescribed on the maps⁴ *May affect*

P. If project is for a new or expanding⁵ multi-slip facility and is located in a county with a State-approved MPP in place **or** in Bay, Dixie, Escambia, Franklin, Gilchrist, Gulf, Hernando, Jefferson, Lafayette, Monroe (south of Craig Key), Nassau, Okaloosa, Okeechobee, Putnam, St. Johns, Santa Rosa, Suwannee, Taylor, Wakulla or Walton County, the determination of “*May affect, not likely to adversely affect*” is appropriate¹² and no further consultation with the Service is necessary.

If project is for a new or expanding⁵ multi-slip facility and is located in Charlotte, Desoto, Flagler, Glades, Hendry, Hillsborough, Levy, Manatee, Monroe (north of Craig Key), Pasco, or Pinellas County, further consultation with the Service is necessary for “*May affect, not likely to adversely affect*” determinations.

If project is for repair or rehabilitation of a multi-slip facility and is located in an Important Manatee Area, further consultation with the Service is necessary for “*May affect, not likely to adversely affect*” determinations. If project is for repair or rehabilitation of a multi-slip facility and: (1) is not located in an Important Manatee Area; (2) the number of slips is not increased; (3) the number of existing slips is not in question; and (4) the improvements to the existing watercraft access structures do not allow increased watercraft usage, the determination of “*May affect, not likely to adversely affect*” is appropriate¹² and no further consultation with the Service is necessary.

If project is a residential dock facility, shoreline stabilization, or dredging, the determination of “*May affect, not likely to adversely affect*” is appropriate¹² and no further consultation with the Service is necessary. **Note:** For residential dock facilities located in a Warm Water Aggregation Area or in a No Entry area, seasonal restrictions may apply. See footnote 4 below for maps showing restrictions.

If project is other than repair or rehabilitation of a multi-slip facility, a new⁵ multi-slip facility, residential dock facility, shoreline stabilization, or dredging, and does not provide new⁵ access for watercraft or

improve an existing access to allow increased watercraft usage, the determination of “*May affect, not likely to adversely affect*” is appropriate¹² and no further consultation with the Service is necessary.

¹ On the St. Mary’s River, this key is only applicable to those areas that are within the geographical limits of the State of Florida.

² All culverts 8 inches to 8 feet in diameter must be grated to prevent manatee entrapment. To effectively prevent manatee access, grates must be permanently fixed, spaced a maximum of 8 inches apart (may be less for culverts smaller than 16 inches in diameter) and may be installed diagonally, horizontally or vertically. For new culverts, grates must be attached prior to installation of the culverts. Culverts less than 8 inches or greater than 8 feet in diameter are exempt from this requirement. If new culverts and/or the maintenance or modification of existing culverts are grated as described above, the determination of “*May affect, not likely to adversely affect*” is appropriate¹¹ and no further consultation with the Service is necessary.

³ If the project proponent agrees to follow the standard manatee conditions for in-water work as well as any special conditions appropriate for the proposed activity, further consultation with the Service is necessary for “*May affect, not likely to adversely affect*” determinations. These special conditions may include, but are not limited to, the use of dedicated observers (see Glossary for definition of dedicated observers), dredging during specific months (warm weather months vs cold weather months), dredging during daylight hours only, adjusting the number of dredging days, does not preclude or discourage manatee egress/ingress with turbidity curtains or other barriers that span the width of the waterway, etc.

⁴ Areas of Inadequate Protection (AIPs), Important Manatee Areas (IMAs), Warm Water Aggregation Areas (WWAAs) and No Entry Areas are identified on these maps and defined in the Glossary for the purposes of this key. These maps can be viewed on the [Corps’ web page](#). If projects are located in a No Entry Area, special permits may be required from FWC in order to access these areas (please refer to Chapter 68C-22 F.A.C. for boundaries; maps are also available at [FWC’s web page](#)).

⁵ New access for watercraft is the addition or improvement of structures such as, but not limited to, docks or piers, marinas, boat ramps and associated trailer parking spaces, boat lifts, pilings, floats, floating docks, floating vessel platforms, (maintenance dredging, residential boat lifts, pilings, floating docks, and floating vessel platforms installed in existing slips are not considered new access), boat slips, dry storage, mooring buoys, new dredging, etc., that facilitates the addition of watercraft to, and/or increases watercraft usage in, waters accessible to manatees. The repair or rehabilitation of any type of currently serviceable watercraft access structure is not considered new access provided all of the following are met: (1) the number of slips is not increased; (2) the number of existing slips is not in question; and (3) the improvements to the existing watercraft access structures do not result in increased watercraft usage.

⁶ Projects proposed within the St. Johns River portion of Lake, Marion, and Seminole counties and contiguous with Volusia County shall be evaluated using the Volusia County MPP.

⁷ For projects proposed within the following areas: the Peace River in DeSoto County; all areas north of Craig Key in Monroe County, and the Anclote and Pithlachascotee Rivers in Pasco County, proceed to Couplet M. For all other locations in DeSoto, Monroe (south of Craig Key) and Pasco Counties, proceed to couplet N.

⁸ Where the presence of the referenced vegetation is confirmed within the area affected by docks and other piling-supported minor structures and the reviewer has concluded that the impacts to SAV, marsh or mangroves would not adversely affect the manatee or its critical habitat, proceed to couplet O.

Where the presence of the referenced vegetation is confirmed within the area affected by docks and other piling-supported minor structures and the reviewer has concluded that the impacts to SAV, marsh or mangroves would adversely affect the manatee or its critical habitat, the applicant can elect to avoid/minimize impacts to that vegetation. In that instance, where impacts are unavoidable and the applicant elects to abide by or employ construction techniques that exceed the criteria in the following documents, the reviewer should conclude that the impacts to SAV, marsh or mangroves would not adversely affect the manatee or its critical habitat and proceed to couplet O.

- “Construction Guidelines in Florida for Minor Piling-Supported Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat,” prepared jointly by the U.S. Army Corps of Engineers and the National Marine Fisheries Service (August 2001) [refer to the [Corps’ web page](#)], and
- “Key for Construction Conditions for Docks or Other Minor Structures Constructed in or over Johnson’s seagrass (*Halophila johnsonii*),” prepared jointly by the National Marine Fisheries Service and U.S. Army Corps of Engineers (October 2002), for those projects within the known range of Johnson’s seagrass occurrence (Sebastian Inlet to central Biscayne Bay in the lagoon systems on the east coast of Florida) [refer to the [Corps’ web page](#)],

Where the presence of the referenced vegetation is confirmed within the area affected by docks and other piling-supported minor structures and the reviewer has concluded that the impacts to SAV, marsh or mangroves would adversely affect the manatee or its critical habitat, and the applicant does not elect to follow the above Guidelines, the Corps will need to request formal consultation on the manatee with the Service as *May affect*.

For activities other than docks and other piling-supported minor structures proposed in SAV, marsh, or mangroves (*e.g.*, new dredging, placement of riprap, bulkheads, etc.), if the reviewer determines the impacts to the SAV, marsh or mangroves will not adversely affect the manatee or its critical habitat, proceed to couplet O, otherwise the Corps will need to request formal consultation on the manatee with the Service as *May affect*.

⁹ See Glossary, under “is not likely to adversely affect.”

¹⁰ Federal reviewers, when making your effects determination, consider effects to manatee designated critical habitat pursuant to section 7(a)(2) of the Endangered Species Act. State reviewers, when making your effects determination, consider effects to manatee habitat within the entire State of Florida, pursuant to Chapter 370.12(2)(b) Florida Statutes.

¹¹ See the [Corps' web page](#) for manatee construction conditions. At this time, manatee construction precautions c and f are not required in the following Florida counties: Bay, Escambia, Franklin, Gilchrist, Gulf, Jefferson, Lafayette, Okaloosa, Santa Rosa, Suwannee, and Walton.

¹² By letter dated April 25, 2013, the Corps received the Service's concurrence with “*May affect, not likely to adversely affect*” determinations made pursuant to this key for the following activities: (1) selected non-watercraft access projects; (2) watercraft-access projects that are residential dock facilities, excluding those located in the Braden River AIP; (3) launching facilities solely for kayaks and canoes, and (4) new or expanding multi-slip facilities located in Bay, Dixie, Escambia, Franklin, Gilchrist, Gulf, Hernando, Jefferson, Lafayette, Monroe (south of Craig Key), Nassau, Okaloosa, Okeechobee, Santa Rosa, Suwannee, Taylor, Wakulla or Walton County.

Additionally, in the same letter dated April 25, 2013, the Corps received the Service's concurrence for “*May affect, not likely to adversely affect*” determinations specifically made pursuant to Couplet G of the key for the repair or rehabilitation of currently serviceable multi-slip watercraft access structures provided all of the following are met: (1) the project is not located in an IMA, (2) the number of slips is not increased; (3) the number of existing slips is not in question; and (4) the improvements to the existing watercraft access structures do not allow increased watercraft usage. Upon receipt of such a programmatic concurrence, no further consultation with the Service for these projects is required.

GLOSSARY

Areas of inadequate protection (AIP) – Areas within counties as shown on the maps where the Service has determined that measures intended to protect manatees from the reasonable certainty of watercraft-related take are inadequate. Inadequate protection may be the result of the absence of manatee or other watercraft speed zones, insufficiency of existing speed zones, deficient speed zone signage, or the absence or insufficiency of speed zone enforcement.

Boat slip – A space on land or in or over the water, other than on residential land, that is intended and/or actively used to hold a stationary watercraft or its trailer, and for which intention and/or use is confirmed by legal authorization or other documentary evidence. Examples of boat slips include, but are not limited to, docks or piers, marinas, boat ramps and associated trailer parking spaces, boat lifts, floats, floating docks, pilings, boat davits, dry storage, etc.

Critical habitat – For listed species, this consists of: (1) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 4 of the Endangered Species Act (ESA), on which are found those physical or biological features (constituent elements) (a) essential to the conservation of the species and (b) which may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 4 of the ESA, upon a determination by the Secretary that such areas are essential for the conservation of the species. Designated critical habitats are described in 50 CFR 17 and 50 CFR 226.

Currently serviceable – Currently, serviceable means usable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects – The direct or immediate effects of the project on the species or its habitat.

Dredging – For the purposes of this key, the term dredging refers to all in-water work associated with dredging operations, including mobilization and demobilization activities that occur in water or require vessels.

Emergent vegetation – Rooted emergent vascular macrophytes such as, but not limited to, cordgrass (*Spartina alterniflora* and *S. patens*), needle rush (*Juncus roemerianus*), swamp sawgrass (*Cladium mariscoides*), saltwort (*Batis maritima*), saltgrass (*Distichlis spicata*), and glasswort (*Salicornia virginica*) found in coastal salt marsh-related habitats (tidal marsh, salt marsh, brackish marsh, coastal marsh, coastal wetlands, tidal wetlands).

Formal consultation – A process between the Services and a Federal agency or applicant that: (1) determines whether a proposed Federal action is likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat; (2) begins with a Federal agency's written request and submittal of a complete initiation package; and (3) concludes with the issuance of a biological opinion and incidental take statement by either of the Services. If a proposed Federal action may affect a listed species or designated critical habitat, formal consultation is required (except when the Services concur, in writing, that a proposed

action “is not likely to adversely affect” listed species or designated critical habitat). [50 CFR 402.02, 50 CFR 402.14]

Important manatee areas (IMA) – Areas within certain counties where increased densities of manatees occur due to the proximity of warm water discharges, freshwater discharges, natural springs and other habitat features that are attractive to manatees. These areas are heavily utilized for feeding, transiting, mating, calving, nursing or resting as indicated by aerial survey data, mortality data and telemetry data. Some of these areas may be federally-designated sanctuaries or state-designated “seasonal no entry” zones. Maps depicting important manatee areas and any accompanying text may contain a reference to these areas and their special requirements. Projects proposed within these areas must address their special requirements.

Indirect effects – Those effects that are caused by or will result from the proposed action and are later in time, but are still reasonably certain to occur. Examples of indirect effects include, but are not limited to, changes in water flow, water temperature, water quality (*e.g.*, salinity, pH, turbidity, nutrients, chemistry), prop dredging of seagrasses, and manatee watercraft injury and mortality. Indirect effects also include watercraft access developments in waters not currently accessible to manatees, but watercraft access can, is, or may be planned to waters accessible to manatees by the addition of a boat lift or the removal of a dike or plug.

Informal consultation – A process that includes all discussions and correspondence between the Services and a Federal agency or designated non-Federal representative, prior to formal consultation, to determine whether a proposed Federal action may affect listed species or critical habitat. This process allows the Federal agency to utilize the Services’ expertise to evaluate the agency’s assessment of potential effects or to suggest possible modifications to the proposed action which could avoid potentially adverse effects. If a proposed Federal action may affect a listed species or designated critical habitat, formal consultation is required (except when the Services concur, in writing, that a proposed action “is not likely to adversely affect” listed species or designated critical habitat). [50 CFR 402.02, 50 CFR 402.13]

In-water activity – Any type of activity used to construct/repair/replace any type of in-water structure or fill; the act of dredging.

In-water structures – watercraft access structures – Docks or piers, marinas, boat ramps, boat slips, boat lifts, floats, floating docks, pilings (depending on use), boat davits, etc.

In-water structures – other than watercraft access structures – Bulkheads, seawalls, riprap, groins, boardwalks, pilings (depending on use), etc.

Is likely to adversely affect – The appropriate finding in a biological assessment (or conclusion during informal consultation) if any adverse effect to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions and the effect is not: discountable, insignificant, or beneficial (see definition of “is not likely to adversely affect”). An “is likely to adversely affect” determination requires the initiation of formal consultation under section 7 of the ESA.

Is not likely to adversely affect – The appropriate conclusion when effects on listed species are expected to be discountable, insignificant, or completely beneficial. **Discountable effects** are those extremely unlikely to occur. **Insignificant effects** relate to the size of the impact and should never reach the scale where take occurs. **Beneficial effects** are contemporaneous positive effects without any adverse effects to the species. Based on best judgment, a person would not (1) be able to meaningfully measure, detect, or evaluate insignificant effects or (2) expect discountable effects to occur.

Manatee Protection Plan (MPP) – A manatee protection plan (MPP) is a comprehensive planning document that addresses the long-term protection of the Florida manatee through law enforcement, education, boat facility siting, and habitat protection initiatives. Although MPPs are primarily developed by the counties, the plans are the product of extensive coordination and cooperation between the local governments, the FWC, the Service, and other interested parties.

Manatee Protection Plan thresholds – The smallest size of a multi-slip facility addressed under the purview of a Manatee Protection Plan (MPP). For most MPPs, this threshold is five slips or more. For Brevard, Clay, Citrus, and Volusia County MPPs, this threshold is three slips or more.

Mangroves – Rooted emergent trees along a shoreline that, for the purposes of this key, include red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*) and white mangrove (*Laguncularia racemosa*).

May affect – The appropriate conclusion when a proposed action may pose any effects on listed species or designated critical habitat. When the Federal agency proposing the action determines that a “may affect” situation exists, then they must either request the Services to initiate formal consultation or seek written concurrence from the Services that the action “is not likely to adversely affect” listed species. For the purpose of this key, all “may affect” determinations equate to “likely to adversely affect” and Corps Project Managers should request the Service to initiate formal consultation on the manatee or designated critical habitat. **No effect** – the appropriate conclusion when the action agency determines its proposed action will not affect a listed species or designated critical habitat.

Multi-slip facility – Multi-slip facilities include commercial marinas, private multi-family docks, boat ramps and associated trailer parking spaces, dry storage facilities and any other similar structures or activities that provide access to the water for multiple (five slips or more, except in Brevard, Clay, Citrus, and Volusia counties where it is three slips or more) watercraft. In some instances, the Corps and the Service may elect to review multiple residential dock facilities as a multi-slip facility.

New access for watercraft – New dredging and the addition, expansion or improvement of structures such as, but not limited to, docks or piers, marinas, boat ramps and associated trailer parking spaces, boat lifts, pilings, floats, floating docks, floating vessel platforms, (residential boat lifts, pilings, floats, and floating vessel platforms installed in existing slips are not considered new access), boat slips, dry storage, mooring buoys, etc., that facilitates the addition of watercraft to, and/or increases watercraft usage in, waters accessible to manatees.

Observers – During dredging and other in-water operations within manatee accessible waters, the standard manatee construction conditions require all on-site project personnel to watch for manatees to ensure that those standard manatee construction conditions are met. Within important manatee areas (IMA) and under special circumstances, heightened observation is needed. **Dedicated Observers** are those having some prior experience in manatee observation, are dedicated only for this task, and must be someone other than the dredge and equipment operators/mechanics. **Approved Observers** are dedicated observers who also must be approved by the Service (if Federal permits are involved) and the FWC (if state permits are involved), prior to work commencement. Approved observers typically have significant and often project-specific observational experience. Documentation on prior experience must be submitted to these agencies for approval and must be submitted a minimum of 30 days prior to work commencement. When dedicated or approved observers are required, observers must be on site during all in-water activities, and be equipped with polarized sunglasses to aid in manatee observation. For prolonged in-water operations, multiple observers may be needed to perform observation in shifts to reduce fatigue (recommended shift length is no longer than six hours). Additional information concerning observer approval can be found at [FWC's web page](#).

Residential boat lift – A boat lift installed on a residential dock facility.

Residential dock density ratio threshold – The residential dock density ratio threshold is used in the evaluation of multi-slip projects in some counties without a State-approved Manatee Protection Plan and is consistent with 1 boat slip per 100 linear feet of shoreline (1:100) owned by the applicant.

Residential dock facility – A residential dock facility means a private residential dock which is used for private, recreational or leisure purposes for single-family or multi-family residences designed to moor no more than four vessels (except in Brevard, Clay, Citrus, and Volusia counties which allow only two vessels). This also includes normal appurtenances such as residential boat lifts, boat shelters with open sides, stairways, walkways, mooring pilings, dolphins, etc. In some instances, the Corps and the Service may elect to review multiple residential dock facilities as a multi-slip facility.

Submerged aquatic vegetation (SAV) – Rooted, submerged, aquatic plants such as, but not limited to, shoal grass (*Halodule wrightii*), paddle grass (*Halophila decipiens*), star grass (*Halophila engelmanni*), Johnson's seagrass (*Halophila johnsonii*), sago pondweed (*Potamogeton pectinatus*), clasping-leaved pondweed (*Potamogeton perfoliatus*), widgeon grass (*Ruppia maritima*), manatee grass (*Syringodium filiforme*), turtle grass (*Thalassia testudinum*), tapegrass (*Vallisneria americana*), and horned pondweed (*Zannichellia palustris*).

Warm Water Aggregation Areas (WWAAs) and No Entry Areas – Areas within certain counties where increased densities of manatees occur due to the proximity of artificial or natural warm water discharges or springs and are considered necessary for survival. Some of these areas may be federally-designated manatee sanctuaries or state-designated seasonal “no entry” manatee protection zones. Projects proposed within these areas may require consultation in order to offset expected adverse impacts. In addition, special permits may be required from the FWC in order to access these areas.

Watercraft access structures – Docks or piers, marinas, boat ramps and associated trailer parking spaces, boat slips, boat lifts, floats, floating docks, pilings, boat davits, dry storage, etc.

Waters accessible to manatees – Although most waters of the State of Florida are accessible to the manatee, there are some areas such as landlocked lakes that are not. There are also some weirs, salinity control structures and locks that may preclude manatees from accessing water bodies. If there is any question about accessibility, contact the Service or the FWC.

APPENDIX D

USFWS Standard Manatee Condition for In-Water Work (2011)

STANDARD MANATEE CONDITIONS FOR IN-WATER WORK

2011

The permittee shall comply with the following conditions intended to protect manatees from direct project effects:

- a. All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with and injury to manatees. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act, the Endangered Species Act, and the Florida Manatee Sanctuary Act.
- b. All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.
- c. Siltation or turbidity barriers shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement.
- d. All on-site project personnel are responsible for observing water-related activities for the presence of manatee(s). All in-water operations, including vessels, must be shutdown if a manatee(s) comes within 50 feet of the operation. Activities will not resume until the manatee(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.
- e. Any collision with or injury to a manatee shall be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1-888-404-3922. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-731-3336) for north Florida or in Vero Beach (1-772-562-3909) for south Florida, and emailed to FWC at ImperiledSpecies@myFWC.com.
- f. Temporary signs concerning manatees shall be posted prior to and during all in-water project activities. All signs are to be removed by the permittee upon completion of the project. Temporary signs that have already been approved for this use by the FWC must be used. One sign which reads *Caution: Boaters* must be posted. A second sign measuring at least 8½" by 11" explaining the requirements for "Idle Speed/No Wake" and the shut down of in-water operations must be posted in a location prominently visible to all personnel engaged in water-related activities. These signs can be viewed at http://www.myfwc.com/WILDLIFEHABITATS/manatee_sign_vendors.htm. Questions concerning these signs can be forwarded to the email address listed above.

CAUTION: MANATEE HABITAT

All project vessels

IDLE SPEED / NO WAKE

When a manatee is within 50 feet of work
all in-water activities must

SHUT DOWN

Report any collision with or injury to a manatee:



Wildlife Alert:

1-888-404-FWCC(3922)

cell *FWC or #FWC

APPENDIX E

NMFS Sea Turtle and Smalltooth Sawfish Construction Conditions (2006)



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, FL 33701

SEA TURTLE AND SMALLTOOTH SAWFISH CONSTRUCTION CONDITIONS

The permittee shall comply with the following protected species construction conditions:

- a. The permittee shall instruct all personnel associated with the project of the potential presence of these species and the need to avoid collisions with sea turtles and smalltooth sawfish. All construction personnel are responsible for observing water-related activities for the presence of these species.
- b. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing sea turtles or smalltooth sawfish, which are protected under the Endangered Species Act of 1973.
- c. Siltation barriers shall be made of material in which a sea turtle or smalltooth sawfish cannot become entangled, be properly secured, and be regularly monitored to avoid protected species entrapment. Barriers may not block sea turtle or smalltooth sawfish entry to or exit from designated critical habitat without prior agreement from the National Marine Fisheries Service's Protected Resources Division, St. Petersburg, Florida.
- d. All vessels associated with the construction project shall operate at "no wake/idle" speeds at all times while in the construction area and while in water depths where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will preferentially follow deep-water routes (e.g., marked channels) whenever possible.
- e. If a sea turtle or smalltooth sawfish is seen within 100 yards of the active daily construction/dredging operation or vessel movement, all appropriate precautions shall be implemented to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 50 feet of a sea turtle or smalltooth sawfish. Operation of any mechanical construction equipment shall cease immediately if a sea turtle or smalltooth sawfish is seen within a 50-ft radius of the equipment. Activities may not resume until the protected species has departed the project area of its own volition.
- f. Any collision with and/or injury to a sea turtle or smalltooth sawfish shall be reported immediately to the National Marine Fisheries Service's Protected Resources Division (727-824-5312) and the local authorized sea turtle stranding/rescue organization.
- g. Any special construction conditions, required of your specific project, outside these general conditions, if applicable, will be addressed in the primary consultation.

Revised: March 23, 2006

O:\forms\Sea Turtle and Smalltooth Sawfish Construction Conditions.doc



APPENDIX F

Figures of Existing Conditions and Build
Alternatives from Project's Preliminary
Engineering Report; Bridge Widening Exhibit;
and Concept Plans

Figure 2 | Existing Park-and-Ride Conditions

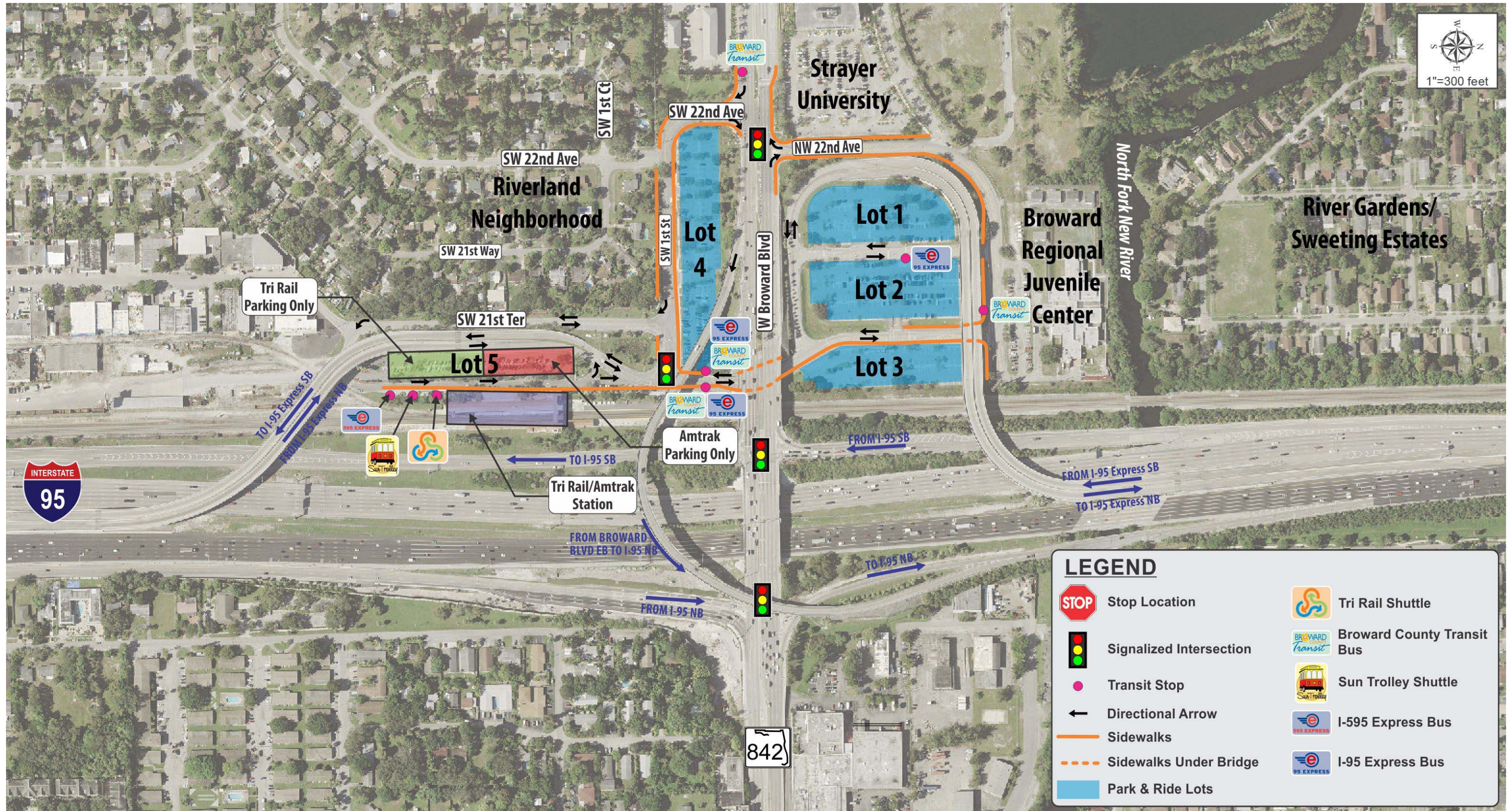


Figure 3A | 95 Express Ingress-Egress Connections with Broward Boulevard Interchange



Figure 3B | 95 Express Ingress-Egress Connections with Broward Boulevard Interchange



Figure 4 | Alternative 1 – Tight Diamond



Figure 5 | Alternative 2A – Displaced Left



Figure 6 | Recommended Alternative (Alternative 2B – Modified Displaced Left with Combined Roundabout)



Figure 7 | Alternative 1 – With I-95 at Broward Boulevard Interchange Modified Displaced Left Alternative

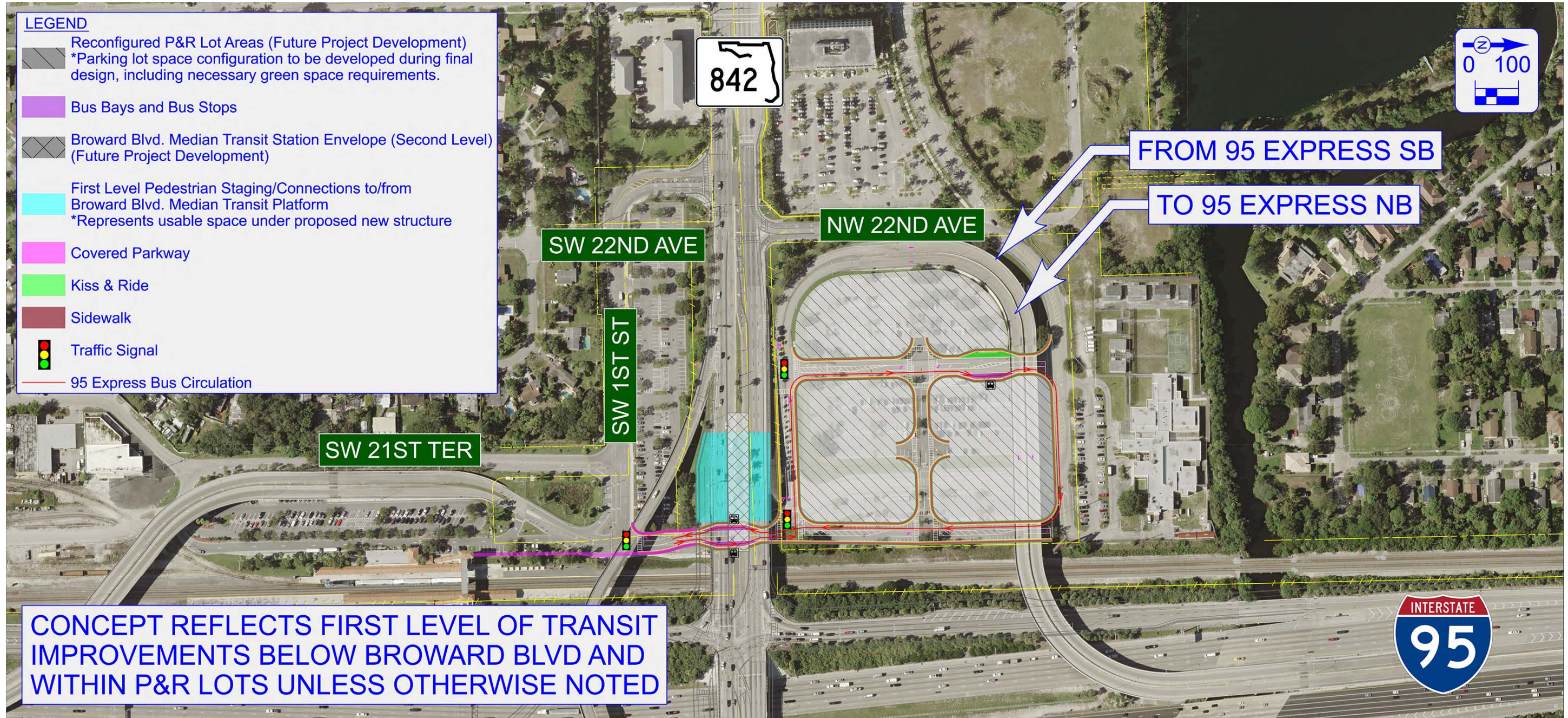


Figure 8 | Alternative 2 – With I-95 at Broward Boulevard Interchange Modified Displaced Left Alternative

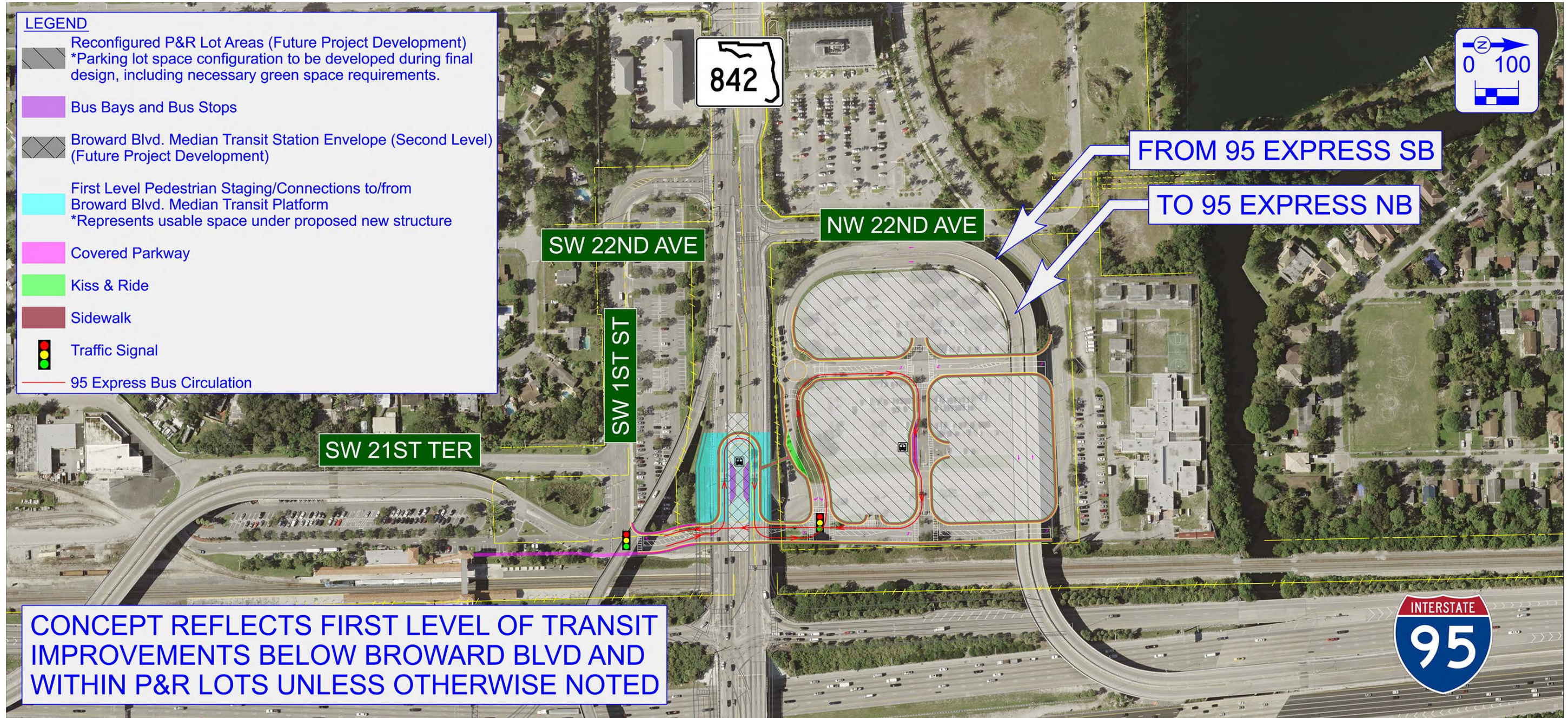
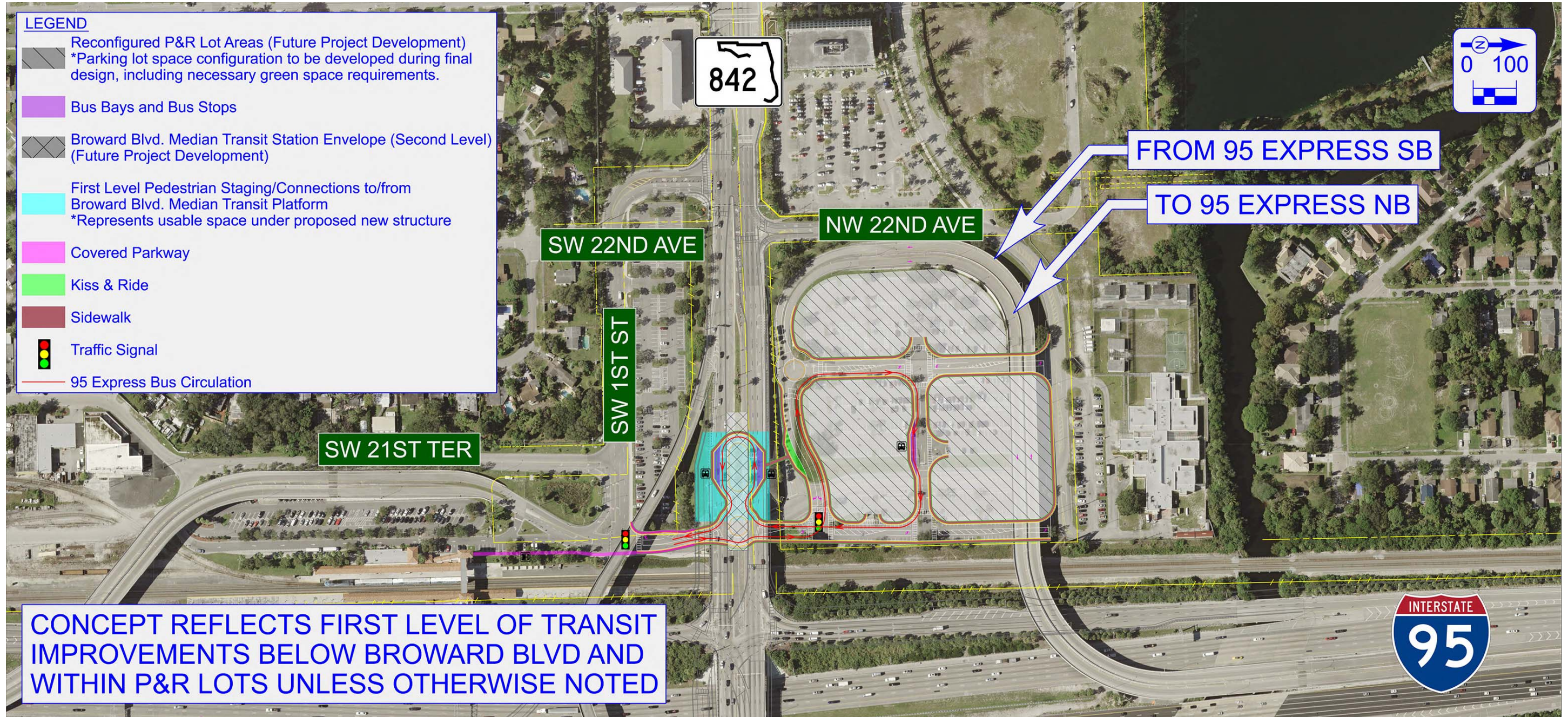



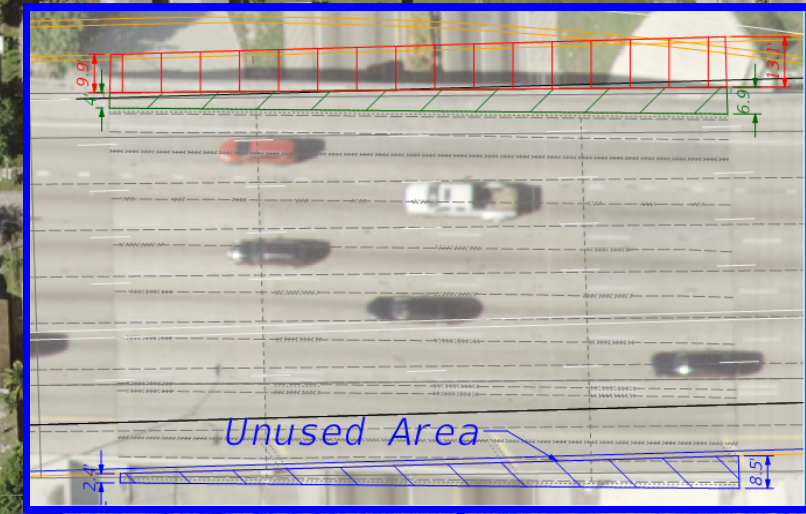
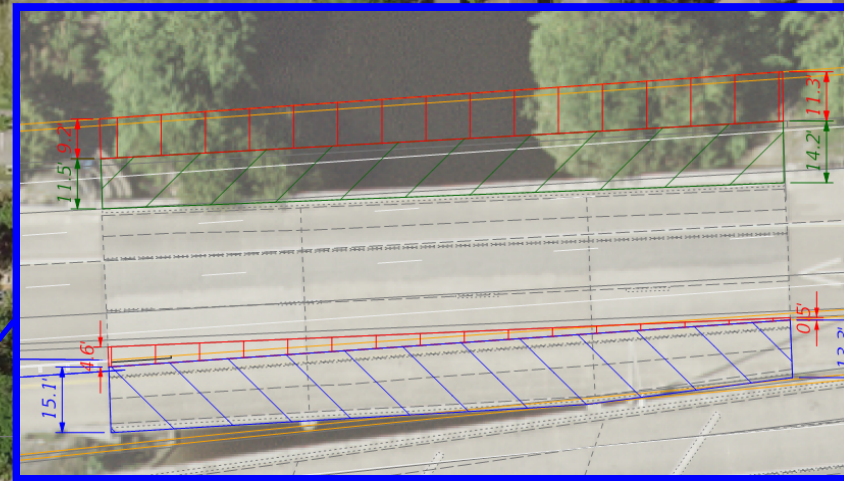


Figure 9 | Alternative 3 – With I-95 at Broward Boulevard Interchange Modified Displaced Left Alternative

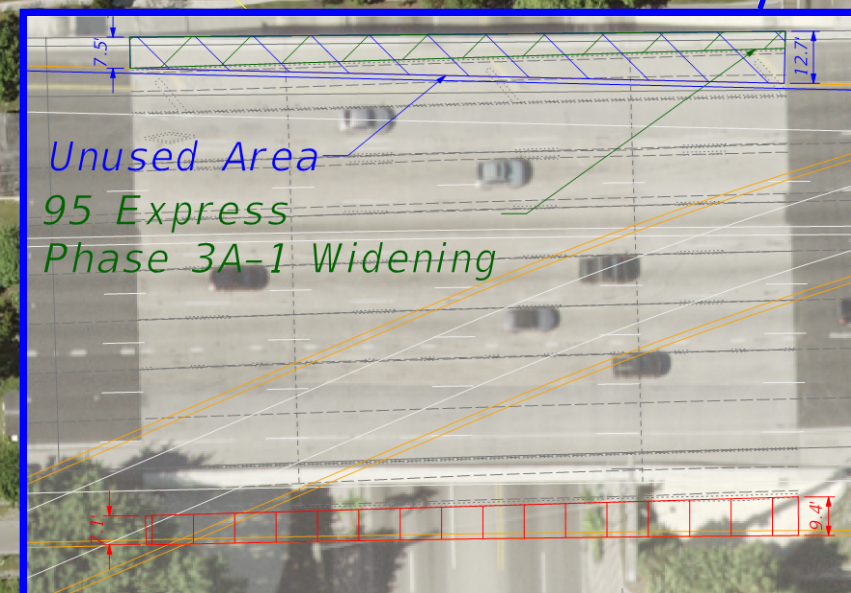
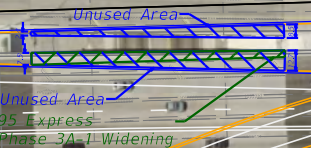
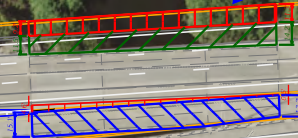


Legend

-  95 Express Phase 3A-1 Widening
-  PD&E Additional Widening/
Bridge Surface Area
-  Unused original area



Ramp



APPENDIX G

I-95 Express Phase 3A (FPID 433108-4-52-01) Permit and Project Information – Pertinent Pages

- Permit Plans
- SFWMD Permit Modification (Permit No. 06-01465-S)
- USACE Permit (SAJ-2014-01584) (SP-GGL)
- Environmental Considerations Document
- NMFS Concurrence Letter (February 4, 2015)
- NMFS EFH Recommendation Letter (October 24, 2014)

COMPONENTS OF PERMIT PLANS SET
 PERMIT PLANS
 EROSION CONTROL PLANS

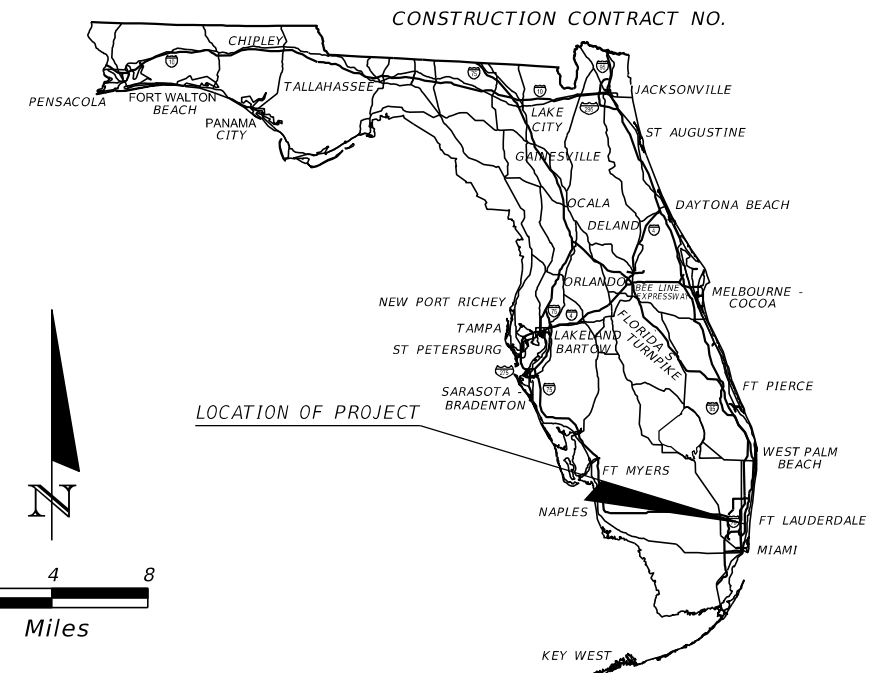
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
PERMIT PLANS

FINANCIAL PROJECT ID 433108-4-52-01

BROWARD COUNTY (86070)

STATE ROAD NO. 9 (I-95)

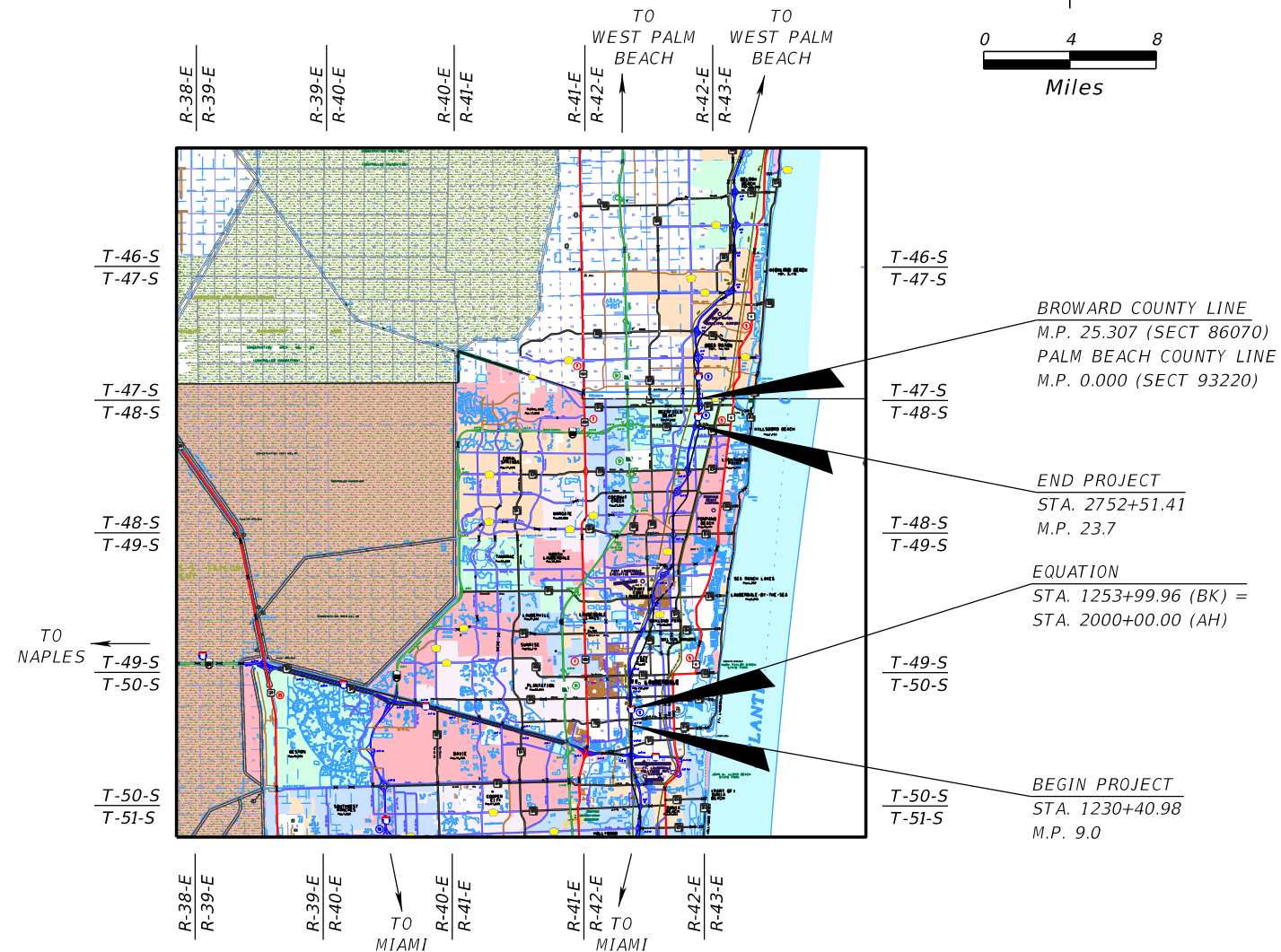
SR 9/I-95 FROM SOUTH OF DAVIE BOULEVARD (736)
 TO NORTH OF SW 10TH STREET (SR 869)



A DETAILED INDEX APPEARS ON THE
 KEY SHEET OF EACH COMPONENT

INDEX OF ROADWAY PLANS

SHEET NO.	SHEET DESCRIPTION
K-1	KEY SHEET
P-1 THRU P-7	PROJECT LAYOUT
BL-1	BASELINE SURVEY REFERENCE
TS-1 THRU TS-37	TYPICAL SECTIONS
R-1 THRU R-59	ROADWAY PLANS
PD-1 THRU PD-49	POND DETAILS
DD-1 THRU DD-21	DRAINAGE DETAILS
X-1 THRU X-221	CROSS SECTIONS
CTL-1 THRU CTL-19	PROJECT SURVEY CONTROL



GOVERNING STANDARDS AND SPECIFICATIONS:
 Florida Department of Transportation, 2014 Design Standards and revised Index Drawings as appended herein, and 2013 Standard Specifications for Road and Bridge Construction, as amended by Contract Documents.

For Design Standards click on the "Design Standards" link at the following web site:
<http://www.dot.state.fl.us/rddesign/DesignStandards>

For the Standard Specifications for Road and Bridge Construction click on the "Specifications" link at the following web site:
<http://www.dot.state.fl.us/specificationsoffice/StandardSpecifications>

PLANS PREPARED BY:

HDR ENGINEERING, INC.
 15450 NEW BARN ROAD - SUITE 304
 MIAMI LAKES, FL 33014
 TEL: (305) 728-7400
 FAX: (305) 728-7447
 VENDOR NO. F59-2986466
 FL. CERTIFICATE NO. EB0005620

NOTE: THE SCALE OF THESE PLANS MAY
 HAVE CHANGED DUE TO REPRODUCTION.

AUGUST 12th, 2014

REVISIONS

LENGTH OF PROJECT		
	LINEAR FEET	MILES
ROADWAY	74,870.39	14.180
BRIDGES	2,740.00	0.519
NET LENGTH OF PROJECT	77,610.39	14.699
EXCEPTIONS	0.00	0.000
GROSS LENGTH OF PROJECT	77,610.39	14.699

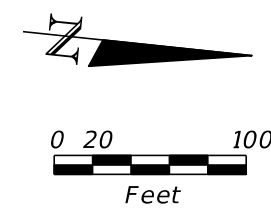
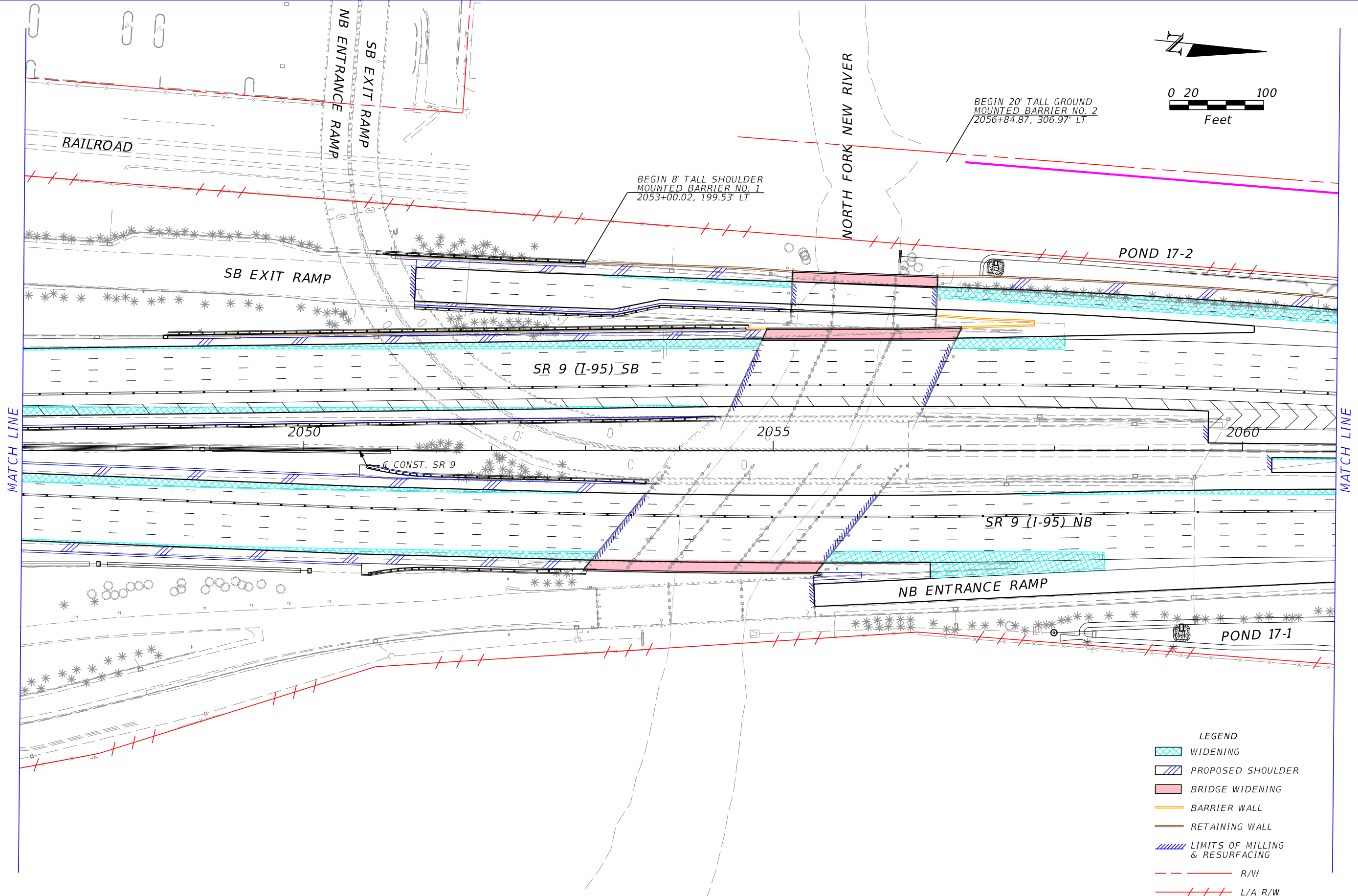
FDOT PROJECT MANAGER: ROBERT BOSTIAN, P.E.

KEY SHEET REVISIONS	
DATE	DESCRIPTION

PERMIT PLANS
 ENGINEER OF RECORD: JAVIER MANSO, P.E.

P.E. NO.: 69183

FISCAL YEAR	SHEET NO.
15	K-1



MATCH LINE

MATCH LINE

- LEGEND**
- WIDENING
 - PROPOSED SHOULDER
 - BRIDGE WIDENING
 - BARRIER WALL
 - RETAINING WALL
 - LIMITS OF MILLING & RESURFACING
 - R/W
 - L/A R/W

REVISIONS		REVISIONS	
DATE	DESCRIPTION	DATE	DESCRIPTION

JAVIER MANSO
 P.E. LICENSE NUMBER 69183
 HDR ENGINEERING, INC
 15450 NEW BARN ROAD, SUITE 304
 MIAMI LAKES, FLORIDA 33014
 CERTIFICATE OF AUTHORIZATION 4213

STATE OF FLORIDA		
DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	BROWARD	433108-4-52-01

ROADWAY PLAN

SHEET NO.
R-7



FORM #0157
Rev. 07/09

**SOUTH FLORIDA WATER MANAGEMENT DISTRICT
ENVIRONMENTAL RESOURCE
PERMIT MODIFICATION NO. 06-01465-S
DATE ISSUED: DECEMBER 15, 2014**

PERMITTEE: FLORIDA DEPARTMENT OF TRANSPORTATION
(I-95 EXPRESS LANES PHASE 3A)
3400 W COMMERCIAL BLVD.
FORT LAUDERDALE, FL 33309

ORIGINAL PERMIT ISSUED: NOVEMBER 15, 1990

ORIGINAL PROJECT DESCRIPTION: CONSTRUCTION AND OPERATION OF A SURFACE WATER MANAGEMENT SYSTEM SERVING 40 ACRES OF A ROADWAY PROJECT KNOWN AS I-95 FROM SOUTH OF BROWARD BLVD TO 6TH STREET.

APPROVED MODIFICATION: MODIFICATION FOR THE CONCEPTUAL APPROVAL OF A 993.78 ACRE ROADWAY PROJECT KNOWN AS I-95 EXPRESS LANES PHASE 3A. (NO CONSTRUCTION IS AUTHORIZED BY THIS PERMIT.)

PROJECT LOCATION: BROWARD COUNTY , SECTION 2,10,11,15,21,22,28,33 TWP 49S RGE 42E
SECTION 4,9,16,17 TWP 50S RGE 42E

PERMIT DURATION: See Special Condition No:1. SECTION 34,35 TWP 48S RGE 42E

This is to notify you of the District's agency action concerning Permit Application No. 140516-1, dated May 15, 2014. This action is taken pursuant to the provisions of Chapter 373, Part IV, Florida Statutes (F.S.).

Based on the information provided, District rules have been adhered to and an Environmental Resource Permit Modification is in effect for this project subject to:

1. Not receiving a filed request for an administrative hearing pursuant to Section 120.57 and Section 120.569, or request a judicial review pursuant Section 120.68, Florida Statutes.
2. The attached 18 General Conditions.
3. The attached 9 Special Conditions.
4. The attached 5 Exhibits.

Should you object to these conditions, please refer to the attached "Notice of Rights" which addresses the procedures to be followed if you desire a public hearing or other review of the proposed agency action. Should you wish to object to the proposed agency action or file a petition, please provide written objections, petitions and/or waivers to:

Office of the District Clerk
South Florida Water Management District
Post Office Box 24680
West Palm Beach, FL 33416-4680
e-mail: clerk@sfwmd.gov

Please contact this office if you have any questions concerning this matter. If we do not hear from you in accordance with the "Notice of Rights", we will assume that you concur with the District's action.

CERTIFICATION OF SERVICE

I HEREBY CERTIFY THAT this written notice has been mailed or electronically submitted to the Permittee (and the persons listed on the attached distribution list) this 16th day of December, 2014, in accordance with Section 120.60(3), F.S. Notice was also electronically posted on this date through a link on the home page of the District's website (my.sfwmd.gov/ePermitting).

By 
DEPUTY CLERK
SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Attachments

SPECIAL CONDITIONS

1. The conceptual phase of this permit shall expire on December 15, 2034.
2. Operation of the stormwater management system shall be the responsibility of PERMITTEE.
3. Discharge Facilities: See Exhibit 2 (Plans) and Exhibit 3 (Summary Table)
4. A stable, permanent and accessible elevation reference shall be established on or within one hundred (100) feet of all permitted discharge structures no later than the submission of the certification report. The location of the elevation reference must be noted on or with the certification report.
5. Reference is made to Exhibit Numbers 2A, 2B, 2C, and 2D consisting of typical sections and roadway plan sheets, pond details and drainage details, cross sections and project survey control sheets, and erosion control plan sheets. The drawings have been signed and sealed by a registered professional and have been incorporated in this permit by reference (please see permit file).
6. In accordance with the work schedule, the permittee shall submit verification from the Florida Department of Environmental Protection (FDEP) that 0.04 freshwater forested mitigation credit has been debited from the Loxahatchee Mitigation Bank ledger as mitigation for this impact.
7. The permittee shall comply with the following conditions intended to protect manatees and marine turtles from direct project effects:
 - a. All personnel associated with the project shall be instructed about the presence of marine turtles, manatees and manatee speed zones, and the need to avoid collisions with and injuries to manatees. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act, the Endangered Species Act, and the Florida Manatee Sanctuary Act.
 - b. All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.
 - c. Siltation or turbidity barriers shall be made of material in which manatees and marine turtles cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee and marine turtle entanglement or entrapment. Barriers must not impede manatee movement.
 - d. All on-site project personnel are responsible for observing water-related activities for the presence of marine turtles and manatee(s). All in-water operations, including vessels, must be shutdown if a marine turtle or manatee(s) comes within 50 feet of the operation. Activities will not resume until the animal(s) have moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the animal(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.
 - e. Any collision with or injury to a marine turtle or manatee shall be reported immediately to the FWC Hotline at 1-888-404-3922. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-731-3336) for north Florida or Vero Beach (1-772-562-3909) for south Florida, and to FWC at ImperiledSpecies@myFWC.com.
 - f. Temporary signs concerning manatees shall be posted prior to and during all in-water project activities. All signs are to be removed by the permittee upon completion of the project. Awareness signs that have already been approved for this use by the Florida Fish and Wildlife Conservation Commission (FWC) must be used. One sign measuring at least 3 ft. by 4 ft. which reads Caution: Manatee Area must be posted. A second sign measuring at least 8 1/2" by 11" explaining the requirements for "Idle Speed/No Wake" and the shut down of in-water operations must be posted in a

location prominently visible to all personnel engaged in water-related activities. These signs can be viewed at MyFWC.com/manatee. Questions concerning these signs can be sent to FWC at ImperiledSpecies@myFWC.com.

8. Manatee exclusion devices (such as grating or valves) shall be installed and maintained over any existing or proposed pipes or culverts greater than 8 inches, but smaller than 8 feet in diameter that are submerged or partially submerged and reasonably accessible to manatees, in accordance with Exhibit No. 2. If horizontal or vertical bars are used, no more than 8 inch gaps on center shall be allowed. Grates or valves shall be in place at the accessible end(s) during all phases of the construction process and as a final design element to restrict manatee access.
9. The permittee shall comply with the following protected species construction conditions for sea turtles and smalltooth sawfish:
 - a. The permittee shall instruct all personnel associated with the project of the potential presence of these species and the need to avoid collisions with sea turtles and smalltooth sawfish. All construction personnel are responsible for observing water-related activities for the presence of these species.
 - b. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing sea turtles or smalltooth sawfish, which are protected under the Endangered Species Act of 1973.
 - c. Siltation barriers shall be made of material in which a sea turtle or smalltooth sawfish cannot become entangled, be properly secured, and be regularly monitored to avoid protected species entrapment. Barriers may not block sea turtle or smalltooth sawfish entry to or exit from designated critical habitat without prior agreement from the National Marine Fisheries Service's Protected Resources Division, St. Petersburg, Florida.
 - d. All vessels associated with the construction project shall operate at "no wake/idle" speeds at all times while in the construction area and while in water depths where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will preferentially follow deep-water routes (e.g., marked channels) whenever possible.
 - e. If a sea turtle or smalltooth sawfish is seen within 100 yards of the active daily construction/dredging operation or vessel movement, all appropriate precautions shall be implemented to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 50 feet of a sea turtle or smalltooth sawfish. Operation of any mechanical construction equipment shall cease immediately if a sea turtle or smalltooth sawfish is seen within a 50-ft radius of the equipment. Activities may not resume until the protected species has departed the project area of its own volition.
 - f. Any collision with and/or injury to a sea turtle or smalltooth sawfish shall be reported immediately to the National Marine Fisheries Service's Protected Resources Division (727-824-5312) and the local authorized sea turtle stranding/rescue organization.

GENERAL CONDITIONS

1. All activities shall be implemented following the plans, specifications and performance criteria approved by this permit. Any deviations must be authorized in a permit modification in accordance with Rule 62-330.315, F.A.C. Any deviations that are not so authorized shall subject the permittee to enforcement action and revocation of the permit under Chapter 373, F.S. (2012).
2. A Recorded Notice of Environmental Resource Permit may be recorded in the county public records in accordance with Rule 62-330.090(7), F.A.C. Such notice is not an encumbrance upon the property.
3. Activities shall be conducted in a manner that does not cause or contribute to violations of state water quality standards. Performance-based erosion and sediment control best management practices shall be installed immediately prior to, and be maintained during and after construction as needed, to prevent adverse impacts to the water resources and adjacent lands. Such practices shall be in accordance with the "State of Florida Erosion and Sediment Control Designer and Reviewer Manual" (Florida Department of Environmental Protection and Florida Department of Transportation June 2007), and the "Florida Stormwater Erosion and Sedimentation Control Inspector's Manual" (Florida Department of Environmental Protection, Nonpoint Source Management Section, Tallahassee, Florida, July 2008), unless a project-specific erosion and sediment control plan is approved or other water quality control measures are required as part of the permit.
4. At least 48 hours prior to beginning the authorized activities, the permittee shall submit to the Agency a fully executed Form 62-330.350(1), "Construction Commencement Notice" indicating the expected start and completion dates. If available, an Agency website that fulfills this notification requirement may be used in lieu of the form.
5. Unless the permit is transferred under Rule 62-330.340, F.A.C., or transferred to an operating entity under Rule 62-330.310, F.A.C., the permittee is liable to comply with the plans, terms and conditions of the permit for the life of the project or activity.
6. Within 30 days after completing construction of the entire project, or any independent portion of the project, the permittee shall provide the following to the Agency, as applicable:
 - a. For an individual, private single-family residential dwelling unit, duplex, triplex, or quadruplex- "Construction Completion and Inspection Certification for Activities Associated With a Private Single-Family Dwelling Unit"[Form 62-330.310(3)]; or
 - b. For all other activities- "As-Built Certification and Request for Conversion to Operational Phase" [Form 62-330.310(1)].
 - c. If available, an Agency website that fulfills this certification requirement may be used in lieu of the form.
7. If the final operation and maintenance entity is a third party:
 - a. Prior to sales of any lot or unit served by the activity and within one year of permit issuance, or within 30 days of as-built certification, whichever comes first, the permittee shall submit, as applicable, a copy of the operation and maintenance documents (see sections 12.3 thru 12.3.3 of Applicant's Handbook Volume I) as filed with the Department of State, Division of Corporations and a copy of any easement, plat, or deed restriction needed to operate or maintain the project, as recorded with the Clerk of the Court in the County in which the activity is located.
 - b. Within 30 days of submittal of the as- built certification, the permittee shall submit "Request for Transfer of Environmental Resource Permit to the Perpetual Operation Entity" [Form 62-330.310(2)] to transfer the permit to the operation and maintenance entity, along with the documentation requested in the form. If available, an Agency website that fulfills this transfer requirement may be used in lieu of the form.
8. The permittee shall notify the Agency in writing of changes required by any other regulatory agency that require changes to the permitted activity, and any required modification of this permit must be obtained prior to implementing the changes.
9. This permit does not:
 - a. Convey to the permittee any property rights or privileges, or any other rights or privileges other than those specified

herein or in Chapter 62-330, F.A.C.;

- b. Convey to the permittee or create in the permittee any interest in real property;
 - c. Relieve the permittee from the need to obtain and comply with any other required federal, state, and local authorization, law, rule, or ordinance; or
 - d. Authorize any entrance upon or work on property that is not owned, held in easement, or controlled by the permittee.
10. Prior to conducting any activities on state-owned submerged lands or other lands of the state, title to which is vested in the Board of Trustees of the Internal Improvement Trust Fund, the permittee must receive all necessary approvals and authorizations under Chapters 253 and 258, F.S. Written authorization that requires formal execution by the Board of Trustees of the Internal Improvement Trust Fund shall not be considered received until it has been fully executed.
 11. The permittee shall hold and save the Agency harmless from any and all damages, claims, or liabilities that may arise by reason of the construction, alteration, operation, maintenance, removal, abandonment or use of any project authorized by the permit.
 12. The permittee shall notify the Agency in writing:
 - a. Immediately if any previously submitted information is discovered to be inaccurate; and
 - b. Within 30 days of any conveyance or division of ownership or control of the property or the system, other than conveyance via a long-term lease, and the new owner shall request transfer of the permit in accordance with Rule 62-330.340, F.A.C. This does not apply to the sale of lots or units in residential or commercial subdivisions or condominiums where the stormwater management system has been completed and converted to the operation phase.
 13. Upon reasonable notice to the permittee, Agency staff with proper identification shall have permission to enter, inspect, sample and test the project or activities to ensure conformity with the plans and specifications authorized in the permit.
 14. If any prehistoric or historic artifacts, such as pottery or ceramics, stone tools or metal implements, dugout canoes, or any other physical remains that could be associated with Native American cultures, or early colonial or American settlement are encountered at any time within the project site area, work involving subsurface disturbance in the immediate vicinity of such discoveries shall cease. The permittee or other designee shall contact the Florida Department of State, Division of Historical Resources, Compliance and Review Section, at (850) 245-6333 or (800) 847-7278, as well as the appropriate permitting agency office. Such subsurface work shall not resume without verbal or written authorization from the Division of Historical Resources. If unmarked human remains are encountered, all work shall stop immediately and notification shall be provided in accordance with Section 872.05, F.S.
 15. Any delineation of the extent of a wetland or other surface water submitted as part of the permit application, including plans or other supporting documentation, shall not be considered binding unless a specific condition of this permit or a formal determination under Rule 62-330.201, F.A.C., provides otherwise.
 16. The permittee shall provide routine maintenance of all components of the stormwater management system to remove trapped sediments and debris. Removed materials shall be disposed of in a landfill or other uplands in a manner that does not require a permit under Chapter 62-330, F.A.C., or cause violations of state water quality standards.
 17. This permit is issued based on the applicant's submitted information that reasonably demonstrates that adverse water resource-related impacts will not be caused by the completed permit activity. If any adverse impacts result, the Agency will require the permittee to eliminate the cause, obtain any necessary permit modification, and take any necessary corrective actions to resolve the adverse impacts.
 18. A complete copy of this permit shall be kept at the work site of the permitted activity during the construction phase, and shall be available for review at the work site upon request by the Agency staff. The permittee shall require the contractor to review the complete permit prior to beginning construction.

**FINAL APPROVED BY
EXECUTIVE DIRECTOR
DECEMBER 15, 2014**

Last Date For Agency Action: December 23, 2014

INDIVIDUAL ENVIRONMENTAL RESOURCE PERMIT STAFF REPORT

Project Name: I-95 Express Lanes Phase 3a

Permit No.: 06-01465-S

Application No.: 140516-1 **Associated File:** 141028-5 ERP Concurrent

Application Type: Environmental Resource (Conceptual Approval Modification)

Location: Broward County, S4,9,16,17/T50S/R42E
S2,10,11,15,21,22,28,33/T49S/R42E
S34,35/T48S/R42E

Permittee : Florida Department Of Transportation

Operating Entity : Permittee

Project Area: 993.78 acres

Permit Area: 993.78 acres

Project Land Use: Highway

Receiving Body: C-13, C-14, and North and South Fork of the New River **Class:** CLASS III

Special Drainage District: NA

Total Acres Wetland Onsite: .28
Total Acres Impacted Onsite : .28
Offsite Mitigation Credits-Mit.Bank: .04 Loxahatchee Mitigation Bank
Conservation Easement To District : No
Sovereign Submerged Lands: No

PROJECT PURPOSE:

This application is a request for modification of an Environmental Resource Permit to authorize the conceptual approval of a 993.78 acre roadway project known as I-95 Express Lanes Phase 3A.

PROJECT EVALUATION:**PROJECT SITE DESCRIPTION:**

The project extends from south of Broward Boulevard to SW 10th Street in Broward County. This project traverses the cities of Fort Lauderdale, Oakland Park, Pompano Beach, and Deerfield Beach.

PROPOSED PROJECT:

This application is a request for modification of Environmental Resource Permit Number 06-01465-S to authorize the conceptual approval of a 993.78 acre roadway project known as I-95 Express Lanes Phase 3A. The I-95 Express Lanes 3A project will convert the existing high occupancy vehicle (HOV) lanes to high occupancy toll (HOT) lanes, and include widening to accommodate the addition of a second HOT lane in each direction. New auxiliary lanes will be provided along I-95 northbound and southbound between Oakland Park Boulevard and Commercial Boulevard. The proposed stormwater management system will include detention ponds within the existing major interchanges, in conjunction with linear dry detention swales along the outside of the roadway and exfiltration trench. The dry detention swales and ponds will be interconnected and provide water quality treatment and attenuation prior to discharge into the South Fork of the New River, North Fork of the New River, C-13 Canal, and C-14 Canal. A summary table addressing existing and proposed water quality treatment, design storm elevations and discharges, and control structure description is attached as Exhibit 3.

LAND USE:**Construction
Project:**

	Total Project	
Impervious	542.76	acres
Pervious	427.93	acres
Wet Detention	23.09	acres
Total:	993.78	

WATER QUANTITY :**Discharge Rate :**

The engineer has submitted calculations to demonstrate that post-development discharge for the 25-year, 3-day design event will be less than existing conditions.

Road Design :

As shown in the conceptual plans (Exhibits 2A-D) and the Summary Table (Exhibit 3) minimum road center lines have been set at or above the calculated design storm flood elevations.

Control Elevation :

Basin	Area (Acres)	Ctrl Elev (ft, NAVD 88)	WSWT Ctrl Elev (ft, NAVD 88)	Method Of Determination
Site	993.78	.42	.42	Adjacent Canal Control Elevation

WATER QUALITY :

Water quality treatment will be provided within dry and wet detention and exfiltration trench (see Exhibit 3, Summary Table). To maintain water quality standards, the applicant proposes to utilize best management practices during all roadway construction activities and to monitor water quality during construction within local canals per Exhibit 2.

WETLANDS:

Three different wetland types are present within the I-95 Express Lanes Phase 3A corridor. These include mangrove shoreline wetlands, submerged tape grass resources, and freshwater forested wetlands (Exhibit 3). Each of these wetland habitats has been degraded as a result of the close proximity of local transportation corridors (boat/train/automobile). Due to the engineering constraints associated with the design of the I-95 Express Lanes and the associated bridge improvements, opportunities for reduction and elimination of wetland impacts were limited.

Mangrove Shoreline Wetlands

The total acreage of mangrove shoreline wetlands within the project is 0.27 acre. These wetlands are narrow, discontinuous fringes of small trees growing at the shoreline interface. The mangroves are currently being outcompeted by invasive exotic species including tropical almond (*Terminalia cattapa*), Brazilian pepper (*Schinus terebinthifolius*) and seaside mahoe (*Thespesia polpunea*).

The total acreage of direct impacts to mangrove shorelines is 0.14 acre. Given the proximity of the existing highway to these wetlands, secondary impacts were calculated to extend 25' beyond bridge construction direct impacts. The resulting acreage of secondary impacts was determined to be 0.07 acre.

Submerged Tape Grass Wetlands

The shallow areas on the north and south banks of the South Fork of the Middle River (C-13 Canal) and the C-14 Canal contain tape grass (*Vallisneria americana*). The total acreage of areas containing tape grass is 0.09 acres. Direct impacts to tape grass areas will result from the widening of bridges and the installation of shoreline stabilization measures. The total acreage of direct impacts to submerged tape grass resources is 0.08 acre. Based on field reviews, the north-south orientation of the bridges allows sufficient sunlight to reach the bottom of the canal/water bodies and allows tape grass to grow to the outer edges of the bridge. Therefore, no secondary impacts due to shading were assessed.

Forested Freshwater Wetlands

Wetland 38 is a freshwater forested wetland located north of Sunrise Boulevard. It is proposed to be partially impacted by roadway improvements. Wetland trees including cypress (*Taxodium distichum*), red maple (*Acer rubrum*), and dahoon holly (*Ilex cassine*) are present with an herbaceous understory dominated by various native ferns. There are 0.06 acres of direct impacts proposed to this jurisdictional area. Given the proximity of the existing highway to these wetlands, secondary impacts were calculated to extend 25' beyond direct impacts. The acreage of resulting secondary impacts was calculated as 0.16 acre.

Mitigation Proposal:

To offset 0.21 acre of impacts to mangrove wetlands and 0.08 acre of submerged tape grass resources, previously permitted offsite mitigation within West Lake Park is proposed by the applicant (Exhibit 3). This offsite mitigation area (Segment 2) is located directly north of Sheridan Street in central Broward County. Per the provisions of District Permit No. 06-05891-P, a comprehensive wetland restoration program has been authorized for implementation by the Florida Department of Transportation within Segment 2 of West Lake Park.

Based on Chapter 62-345 of the Florida Administrative Code, a UMAM assessment (Uniform Mitigation Assessment Method) of both the proposed impact site and offsite mitigation plan was conducted (see permit file). Based on this assessment, the proposed wetland impacts associated with the roadway project will be offset by 0.098 functional unit.

Environmental Resource Permit Application No. 141028-5 to modify District Permit No. 06-05891-P has been submitted concurrently with the I-95 Express Lane Phase 3A application. This concurrent permit modification serves to deduct the 0.098 functional unit proposed as wetland mitigation for the current project from the 1.2 functional units provided by Segment 2 of West Lake Park. The remaining 0.251 tidal wetland functional unit generated by Segment 2 will be available for future use by the Florida Department of Transportation for projects within Broward County.

Mitigation to offset the impacts to freshwater forested wetlands associated with Wetland 38 will entail the purchase of credits from the Loxahatchee Mitigation Bank. Based on a modified Wetland Rapid Assessment Procedure (m-WRAP) functional analysis, the anticipated number of credits required to offset 0.06 acre of direct and 0.16 acre of secondary impacts to freshwater forested wetlands is 0.04 credit.

Although the Loxahatchee Mitigation Bank is outside the New River Mitigation Basin, the project is located within the permitted service area for this mitigation bank and the proposed linear wetland impacts will not result in unacceptable negative cumulative impacts to this basin.

No additional wetland impacts and/or construction activities are authorized under this permit

Wetland Inventory :

CONSTRUCTION MOD -I-95 EXPRESS LANES PHASE 3A

Site Id	Site Type	Pre-Development				Post-Development						
		Pre Fluc cs	AA Type	Acreage (Acres)	Current Wo Pres	With Project	Time Lag (Yrs)	Risk Factor	Pres. Adj. Factor	Post Fluccs	Adj Delta	Functional Gain / Loss
D	OFF 612	Secondary	.07	.43	.37							
E	OFF 610	Secondary	.16									
A	ON 610	Direct	.06									
B	ON 612	Direct	.14	.43								
C	ON 645	Direct	.08	.43								
Total:			.51									

<u>Fluccs Code</u>	<u>Description</u>
610	Wetland Hardwood Forests
612	Mangrove Swamps
645	Submergent Aquatic Vegetation

MITBANK		LOXAHATCHEE MITIGATION BANK	
Type Of Credits		Number Of Credits	
		Mitigation Bank Cr Used	
Fresh Water Forested		.04	
Total:		.04	

Wildlife Issues:

While no comments were received from the Florida Fish and Wildlife Conservation Commission, there is the potential for the West Indian manatee (*Trichechus manatus*) to be present in the North Fork of the New River and in the South Fork of the Middle River (C-13) adjacent to the project limits. Therefore, the Standard Manatee Conditions will be followed with respect to any in-water construction activities. Drainage detail sheets also contain specifications of manatee exclusion devices for all existing and proposed outfall pipes located in areas accessible to manatees. There is also the potential for the presence of the smalltooth sawfish (*Pristis pectinata*) in these areas as well. Because of the small size and degraded nature of the mangrove areas affected by the project, the value provided to the smalltooth sawfish is limited. However, given the potential for smalltooth sawfish access, the Smalltooth Sawfish Construction Conditions will be followed with respect to any in-water construction activities. This permit does not relieve the applicant from complying with all applicable rules and any other agencies' requirements if, in the future, additional endangered/threatened species or species of special concern are discovered on the site.

STAFF RECOMMENDATION TO EXECUTIVE DIRECTOR:

The Staff recommends that the following be issued :

Modification for the conceptual approval of a 993.78 acre roadway project known as I-95 Express Lanes Phase 3A.

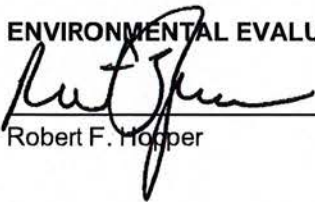
Based on the information provided, District rules have been adhered to.

Staff recommendation is for approval subject to the attached General and Special Conditions.

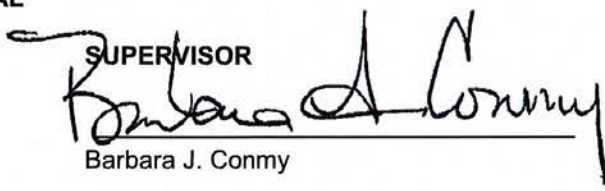
STAFF REVIEW:

NATURAL RESOURCE MANAGEMENT APPROVAL

ENVIRONMENTAL EVALUATION



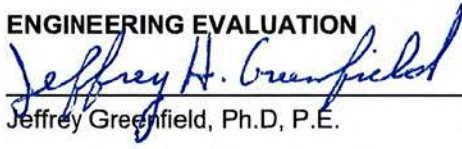
Robert F. Hopper

SUPERVISOR


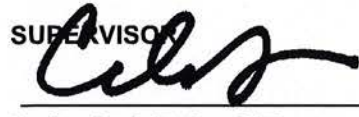
Barbara J. Conmy

SURFACE WATER MANAGEMENT APPROVAL

ENGINEERING EVALUATION

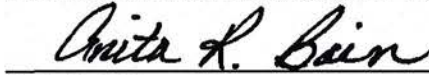


Jeffrey Greenfield, Ph.D, P.E.

SUPERVISOR


Carlos A. de Rojas, P.E.

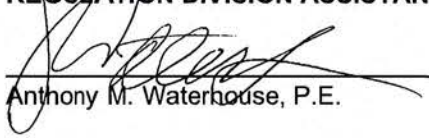
ENVIRONMENTAL RESOURCE PERMITTING BUREAU CHIEF :



Anita R. Bain

DATE: 10-Dec-2014

REGULATION DIVISION ASSISTANT DIRECTOR :



Anthony M. Waterhouse, P.E.

DATE: 12/15/14

DEPARTMENT OF THE ARMY PERMIT

Permittee: Florida Department of Transportation District 4
Attention: James Poole
3400 West Commercial Blvd
Ft. Lauderdale, Florida 33309

Permit No: SAJ-2014-01584(SP-GGL)

Issuing Office: U.S. Army Engineer District, Jacksonville

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below:

Project Description: The authorization includes filling 26.13 acres of waters of the United States, including 24.98 acres of swales, 0.14 acres of mangroves, 0.08 acres of tape grass, and 0.93 acres of open water in order to improve I-95 by creating additional travel lanes and improving the existing drainage system. Impacts requiring compensatory mitigation include the following: 0.14 acres of mangroves, 0.08 acres of tape grass, and 0.71 acres of forested wetland swales. Compensatory mitigation requirements include mangrove restoration at West Lake Park, and purchasing 0.31 federal herbaceous mitigation bank credits from Loxahatchee Mitigation Bank. The FDOT project number 433108-4.

The work described above is to be completed in accordance with the 32 pages of drawings [and 4 attachments] affixed at the end of this permit instrument.

Project Location: The name of the project is State Road 9/Interstate-95 (I-95) Express Lanes Phase 3A, and it is located in jurisdictional waters including estuarine and palustrine wetlands along Interstate 95 from south of Davie Boulevard to north of SW 10th Street. The project is approximately 14.7 miles in length and within Broward County, Florida. (Sections 4,9,16,17 Township 50S Range 42E; Sections 2,10,11,15,21,22,28,33 Township 49S Range 42E; and Sections 34,35 Township 48S Range 42E). The C-14 canal is part of the Central and Southern Florida Flood control facility.

Directions to site: Directions to the site are as follows: From I-95 in Broward County. Find the SW 10th Street Interchange and proceed south until reaching Davie Boulevard.

Special Conditions:

1. Fill Material: The Permittee shall use only clean fill material for this project. The fill material shall be free from items such as trash, debris, automotive parts, asphalt, construction materials, concrete block with exposed reinforcement bars, and soils contaminated with any toxic substance, in toxic amounts in accordance with Section 307 of the Clean Water Act. The placement of loose sediments, fill or dredged material occurring other than as designed for the project within any aquatic resource is specifically prohibited by this authorization.

2. Permittee Responsible Compensatory Mitigation:

a. In order to fully offset the adverse effects associated with the authorized impacts to 0.14 acres of mangroves, and 0.08 acres of tape grass with an anticipated functional loss of 0.096 UMAM units, the permittee shall restore approximately 0.177 acres of estuarine mangrove at West Lake Park. The restoration shall occur at areas #19 and #42, and has been previously constructed. The restored wetland mitigation areas shall be preserved as wetlands and protected in perpetuity. All information regarding the mitigation shall be sent to: U.S. Army Corps of Engineers, Palm Beach Gardens Enforcement Section, at: CESAJ-complyDocs@usace.army.mil. All correspondences shall reference the following file number: SAJ-2014-01584(SP-GGL).

b. The compensatory mitigation at West Lake Park shall be monitored in accordance with the attached West Lake Park Segment 2 Mitigation Plan. The site shall be maintained in perpetuity as a preserve area.

3. Compensatory Mitigation: In order to fully offset the adverse effects associated with filling 0.71 acres of palustrine non-herbaceous wetland swales, the permittee shall purchase 0.31 federal herbaceous mitigation bank credits from Loxahatchee Mitigation Bank (SAJ-1997-07816). The credits shall be purchased prior to construction commencement. All information regarding the mitigation shall be sent to: U.S. Army Corps of Engineers, Palm Beach Gardens Enforcement Section, at: CESAJ-complyDocs@usace.army.mil. All correspondences shall reference the following file number: SAJ-2014-01584(SP-GGL).

4. Erosion Control: Prior to the initiation of any work authorized by this permit, the Permittee shall install erosion control measures along the perimeter of all work areas to prevent the displacement of fill material outside the work area. Immediately after completion of the final grading of the land surface, all slopes, land surfaces, and filled areas shall be stabilized using sod, degradable mats, barriers, or a combination of similar stabilizing materials to prevent erosion. The erosion control measures shall remain in place and be maintained until all authorized work has been completed and the site has been stabilized.

PERMIT NUMBER: SAJ-2014-01584(SP-GGL)

PERMITTEE: FDOT District 4/Interstate-95/Davie Blvd to SW 10th Street

PAGE 4 of 11

5. Turbidity Barriers: Prior to the initiation of any of the work authorized by this permit the Permittee shall install floating turbidity barriers with weighted skirts that extend to within one foot of the bottom around all work areas that are in, or adjacent to, surface waters. The turbidity barriers shall remain in place and be maintained until the authorized work has been completed and all erodible materials have been stabilized.

6. As-Built Certification: Within 60 days of completion of the work authorized by this permit, the Permittee shall submit as-built drawings of the authorized work and a completed "As-Built Certification By Professional Engineer" form to the Corps. Mail the completed form to the Regulatory Division, Enforcement Section, at: CESAJ-complyDocs@usace.army.mil. The as-built drawings shall be signed and sealed by a registered professional engineer and include the following:

a. A plan view drawing of the location of the authorized work footprint, as shown on the permit drawings, with transparent overlay of the work as constructed in the same scale as the permit drawings on 8½-inch by 11-inch sheets. The plan view drawing should show all "earth disturbance," including aquatic resource impacts and water management structures.

b. A list of any deviations between the work authorized by this permit and the work as constructed. In the event that the completed work deviates, in any manner, from the authorized work, describe on the attached "As-Built Certification By Professional Engineer" form the deviations between the work authorized by this permit and the work as constructed. Clearly indicate on the as-built drawings any deviations that have been listed. Please note that the depiction and/or description of any deviations on the drawings and/or "As-Built Certification By Professional Engineer" form does not constitute approval of any deviations by the Corps.

c. Include the Department of the Army permit number on all sheets submitted.

7. Endangered Species: The Permittee shall comply with the *Standard Protection Measures for the Eastern Indigo Snake* provided in this permit. All gopher tortoise burrows, active or inactive, will be evacuated prior to site manipulation in the vicinity of the burrows. If an indigo snake is encountered, the snake must be allowed to vacate the area prior to additional site manipulation in the vicinity.

8. Endangered Species: The permittee must inspect all holes, cavities, and snake refugia other than gopher tortoise burrows each morning before planned site manipulation of a particular area, and, if occupied by an indigo snake, no work will commence until the snake has vacated the vicinity of proposed work. If excavating potentially occupied burrows, active or inactive, individuals must first obtain state authorization via a FWC Authorized Gopher Tortoise Agent permit. The excavation method selected should also minimize the potential for injury of an indigo snake.

PERMIT NUMBER: SAJ-2014-01584(SP-GGL)
PERMITTEE: FDOT District 4/Interstate-95/Davie Blvd to SW 10th Street
PAGE 5 of 11

Applicants should follow the excavation guidance provided within the most current Gopher Tortoise Permitting Guidelines found at: <http://myfwc.com/gophertortoise>

9. Endangered Species-Manatee: The Permittee shall comply with the “Standard Manatee Conditions for In-Water Work – 2011”

10. Endangered Species-Sawfish and Swimming Sea Turtles: The Permittee shall comply with National Marine Fisheries Service's “Sea Turtle and Smalltooth Sawfish Construction Conditions” dated March 23, 2006.

11. Wetland Avoidance: The Permittee shall conduct a pre-construction meeting with all in-house staff, field crews, contractors, subcontractors, and all persons involved in the construction prior to commencement in order to notify responsible parties of the conditions of this permit. The Permittee shall inform staff members and contractors of the construction area boundaries as shown on the attached permit drawings. Copies of the permit and specific conditions shall be available at the construction site.

12. Cultural Resources/Historic Properties: The historic North Woodlawn Cemetery (8BD4879) is located immediately adjacent to the Right-of-Way, to avoid impacts to the Cemetery and any unmarked burials, no utility relocation shall occur within the area of the Cemetery until prior written authorization is provided by the State Historic Preservation Officer (SHPO). Additionally, no staging in the shoulder area adjacent to the Cemetery, and archaeological monitoring will occur during all subsurface activities conducted within 250 feet of the Cemetery.

13. Cultural Resources/Historic Properties: No structure or work shall adversely affect impact or disturb properties listed in the National Register of Historic Places (NRHP) or those eligible for inclusion in the NRHP.

b. If during the ground disturbing activities and construction work within the permit area, there are archaeological/cultural materials encountered which were not the subject of a previous cultural resources assessment survey (and which shall include, but not be limited to: pottery, modified shell, flora, fauna, human remains, ceramics, stone tools or metal implements, dugout canoes, evidence of structures or any other physical remains that could be associated with Native American cultures or early colonial or American settlement), the Permittee shall immediately stop all work in the vicinity and notify the Corps. The Corps shall then notify the Florida SHPO and the appropriate Tribal Historic Preservation Officer(s) (THPO(s)) to assess the significance of the discovery and devise appropriate actions.

c. A cultural resources assessment may be required of the permit area, if deemed necessary by the SHPO, THPO(s), or Corps, in accordance with 36 CFR 800 or 33 CFR 325, Appendix C (5). Based, on the circumstances of the discovery, equity to all parties,

PERMIT NUMBER: SAJ-2014-01584(SP-GGL)

PERMITTEE: FDOT District 4/Interstate-95/Davie Blvd to SW 10th Street

PAGE 6 of 11

and considerations of the public interest, the Corps may modify, suspend or revoke the permit in accordance with 33 CFR Part 325.7. Such activity shall not resume on non-federal lands without written authorization from the SHPO and the Corps.

d. In the unlikely event that unmarked human remains are identified on non-federal lands, they will be treated in accordance with Section 872.05 Florida Statutes. All work in the vicinity shall immediately cease and the Permittee shall immediately notify the medical examiner, Corps, and State Archeologist. The Corps shall then notify the appropriate SHPO and THPO(s). Based, on the circumstances of the discovery, equity to all parties, and considerations of the public interest, the Corps may modify, suspend or revoke the permit in accordance with 33 CFR Part 325.7. Such activity shall not resume without written authorization from the State Archeologist, SHPO and the Corps.

e. In the unlikely event that human remains are encountered on federal or tribal lands, or in situations where Archaeological Resources Protection Act of 1979, or Native American Graves Protection Repatriation Act of 1990 applies, all work in the vicinity shall immediately cease and the Permittee immediately notify the Corps. The Corps shall then notify the appropriate THPO(s) and SHPO. Based, on the circumstances of the discovery, equity to all parties, and considerations of the public interest, the Corps may modify, suspend or revoke the permit in accordance with 33 CFR Part 325.7. After such notification, project activities on federal lands shall not resume without written authorization from the Corps, and/or appropriate THPO(s), SHPO, and federal manager. After such notification, project activities on tribal lands shall not resume without written authorization from the appropriate THPO(s) and the Corps.

14. Permit On-Site: The Permittee shall ensure that all contractors, sub-contractors, and entities associated with the implementation of the project review, understand, and comply with the approved plans and special conditions made part of this permit. The Permittee shall inform all parties associated with the activity of the construction area boundaries and any adjacent wetland areas to be avoided. Complete copies of the permit and approved plans shall be available at the construction site at all times. Failure to comply with the approved plans and permit special conditions may subject the Permittee to enforcement action. Prior to construction commencement, the permittee shall have a pre-construction meeting with all project construction personnel to review this permit and the special conditions, and the requirements to avoid offsite wetlands.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

(X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

PERMIT NUMBER: SAJ-2014-01584(SP-GGL)
PERMITTEE: FDOT District 4/Interstate-95/Davie Blvd to SW 10th Street
PAGE 7 of 11

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

() Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal projects.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision: This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

PERMIT NUMBER: SAJ-2014-01584(SP-GGL)

PERMITTEE: FDOT District 4/Interstate-95/Davie Blvd to SW 10th Street

PAGE 8 of 11

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (see 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions: General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

PERMIT NUMBER: SAJ-2014-01584(SP-GGL)
PERMITTEE: FDOT District 4/Interstate-95/Davie Blvd to SW 10th Street
PAGE 9 of 11

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.



(PERMITTEE)

03/02/2015

(DATE)

Binod Basnet, Drainage Engineer, FDOT District 4
(PERMITTEE NAME-PRINTED)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

(DISTRICT ENGINEER)

(DATE)

for: Alan M. Dodd
Colonel, U.S. Army
District Commander

PERMIT NUMBER: SAJ-2014-01584(SP-GGL)
PERMITTEE: FDOT District 4/Interstate-95/Davie Blvd to SW 10th Street
PAGE 10 of 11

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFEREE-SIGNATURE)

(DATE)

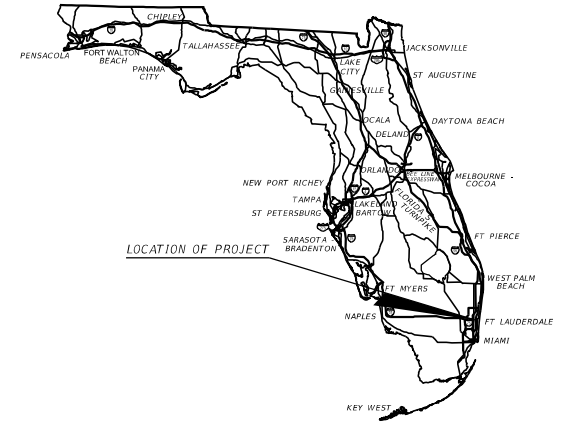
(NAME-PRINTED)

(ADDRESS)

(CITY, STATE, AND ZIP CODE)

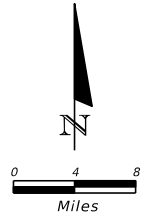
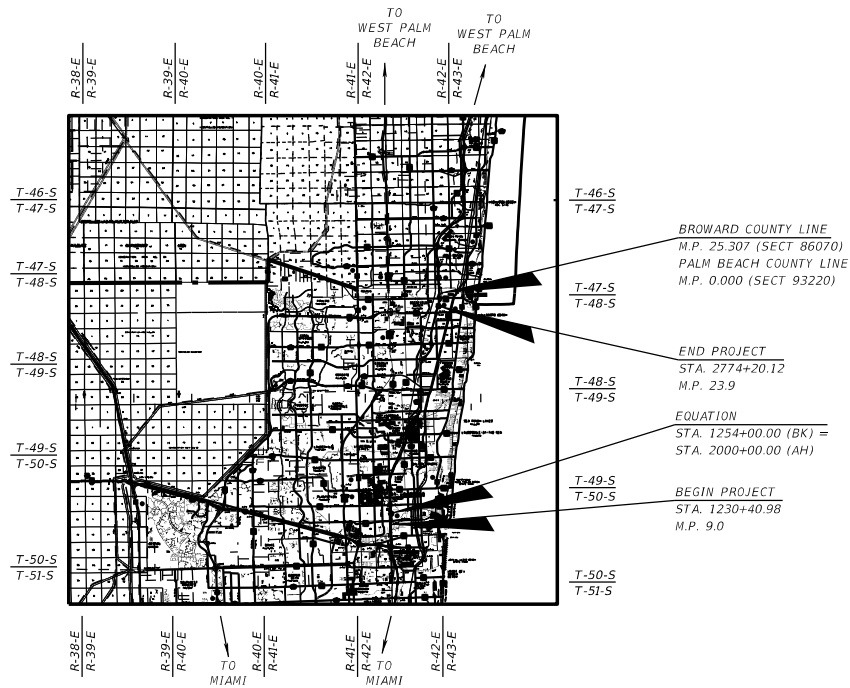
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
**USACE DREDGE AND FILL
PERMIT SKETCHES**

FINANCIAL PROJECT ID 433108-4-52-01
BROWARD COUNTY (86070)
STATE ROAD NO. 9 (I-95)
I-95 EXPRESS PHASE 3A



INDEX OF PERMIT SKETCHES

SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
2 - 7	PROJECT LAYOUT
8 - 70	ROADWAY PLANS
71 - 74	SUMMARY TABLES



SKETCHES PREPARED BY:
STANTEC CONSULTING SERVICES, INC.
901 PONCE DE LEON BOULEVARD - SUITE 900
CORAL GABLES, FL 33134-3070
TEL: (305) 445-2900
FAX: (305) 445-3367
VENDOR NO. 650039493001
FL. CERTIFICATE NO. C-9723

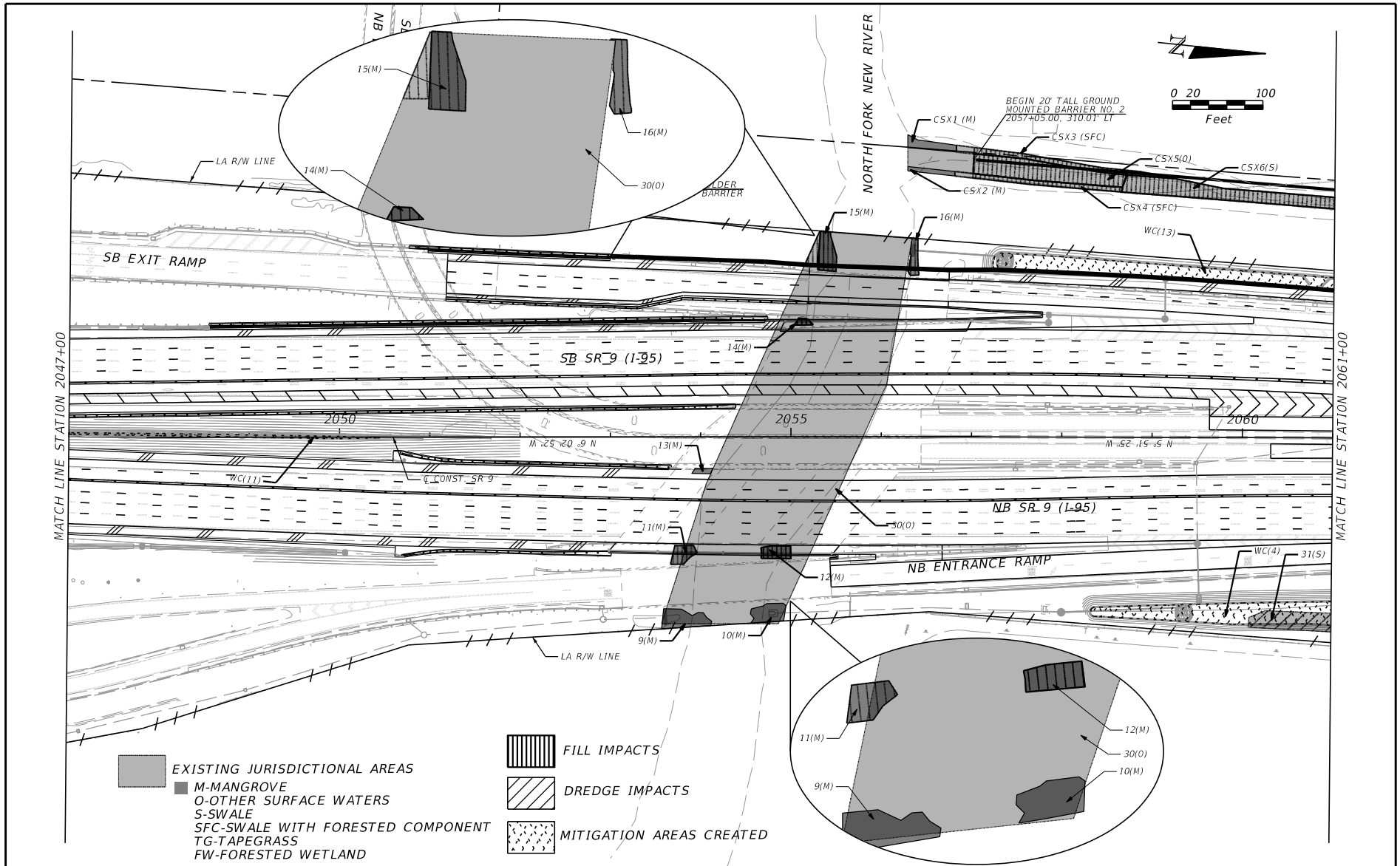
NOTE: THE SCALE OF THESE PLANS MAY HAVE CHANGED DUE TO REPRODUCTION.

NOTE:
THESE PERMIT SKETCHES HAVE BEEN PREPARED FOR THE SPECIFIC USE BY THE USACE FOR ILLUSTRATION OF THE PROPOSED IMPACTS TO WETLANDS AND OTHER SURFACE WATERS.

PERMIT SKETCH
ENGINEER OF RECORD: ALEYMA DE LA CRUZ, P.E.

P.E. NO.: 65500

FISCAL YEAR	SHEET NO.
15	1



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STANTEC
 901 PONCE DE LEON BLVD
 SUITE 900
 CORAL GABLES, FL 33134
 305-445-2900
 VENDOR NO. 650039493001
 FL CERTIFICATION NO. C-9723
 ALEYMA DE LA CRUZ, P.E. NO. 65500

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	BROWARD	433108-4-52-01

ROADWAY PLAN

SHEET NO.
14

SUMMARY OF USACE AREA IMPACTS			
JURISDICTIONAL ID	EXISTING AREA (AC)	PERMANENT IMPACTS (AC)	IMPACT CODE
1(TG)	0.01	<0.01	F
2(TG)	0.02	0.01	F
3(TG)	0.02	0.02	F
4(TG)	0.01	0.01	F
5(TG)	0.01	0.01	F
6(TG)	0.01	0.01	F
7(TG)	0.01	0.01	F
9(M)	0.02	-	-
10(M)	0.02	-	-
11(M)	0.01	0.01	F
12(M)	0.01	0.01	F
13(M)	0.003	0.003	-
14(M)	0.003	0.000	F
15(M)	0.02	0.02	F
16(M)	0.01	0.01	F
17(M)	0.11	0.05	F
18(M)	0.02	0.02	F
19(M)	0.02	0.02	F
25(S)	1.04	1.04	D
26(S)	0.41	0.41	D/F
27(S)	0.31	0.31	D/F
28(S)	0.07	0.07	D
29(S)	0.08	0.08	D
30(O)	1.23	0.01	D
31(S)	0.54	0.54	D
32(S)	0.21	0.21	D
33(S)	0.19	-	-
34(S)	0.10	-	-
35(S)	0.03	-	-
36(O)	2.76	-	-
36(S)	0.56	-	-
37(S)	0.27	-	-
38(SFC)	1.00	0.06	F
39(S)	1.65	1.65	D/F
40(O)	0.78	0.08	F
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42(S)	0.14	-	-
43(S)	0.20	-	-
44(S)	0.19	-	-
45(O)	7.60	-	-
46(S)	0.16	0.16	D/F
47(S)	0.27	0.27	D/F
48(S)	0.02	0.02	D

SUMMARY OF USACE AREA IMPACTS			
JURISDICTIONAL ID	EXISTING AREA (AC)	PERMANENT IMPACTS (AC)	IMPACT CODE
49(S)	1.04	1.04	F
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51(S)	0.01	0.01	D
52(S)	0.11	0.11	F
53(S)	0.33	0.33	F
54(S)	0.10	-	-
55(S)	0.13	0.13	D
56(S)	0.64	0.64	D
57(O)	0.53	-	-
58(SFC)	0.26	0.26	D
59(SFC)	0.19	0.19	D
60(S)	0.10	-	-
61(O)	1.05	-	-
62(S)	4.91	4.91	F
63(S)	0.71	0.71	F
64(S)	0.36	-	-
65(S)	1.37	-	-
66(S)	1.36	1.36	F
67(S)	0.36	-	-
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69(FW)	2.32	-	-
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79(S)	< 0.01	-	-
80(S)	0.01	-	-
81(S)	< 0.01	-	-
82(S)	0.01	-	-
83(S)	0.11	-	-
84(S)	0.02	-	-
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86(S)	0.02	-	-
87(S)	0.09	0.09	D
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89(S)	1.96	1.96	D
90(S)	1.53	-	-

SUMMARY OF USACE AREA IMPACTS			
JURISDICTIONAL ID	EXISTING AREA (AC)	PERMANENT IMPACTS (AC)	IMPACT CODE
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107(S)	0.92	-	-
108(S)	0.14	-	-
109(S)	0.15	-	-
110(S)	0.01	-	-
111(S)	0.02	-	-
112(S)	0.14	0.14	D
113(S)	0.03	0.03	D
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122(S)	0.03	-	-
CSX1(M)	0.01	-	F
CSX2(M)	0.01	-	F
CSX3(SFC)	0.02	0.02	F
CSX4(SFC)	0.02	0.02	F
CSX5(O)	0.11	0.07	F
CSX6(S)	0.14	0.14	F

F- FILL
D- DREDGE
TG-TAPEGRASS
M-MANGROVE
S-SWALE
FW-FORESTED WETLAND

O-OTHER SURFACE WATERS
SFC-SWALE WITH FORESTED COMPONENT
W-WETLAND

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STANTEC
901 PONCE DE LEON BLVD
SUITE 900
CORAL GABLES, FL 33134
305-445-2900
VENDOR NO. 650039493001
FL CERTIFICATION NO. C-9723
ALEYNA DE LA CRUZ, P.E. NO. 65500

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	BROWARD	433108-4-52-01

SUMMARY OF TOTALS	
DATE	SHEET NO.
	70

**ENVIRONMENTAL CONSIDERATIONS
REPORT**

**State Road No. 9 (I-95)
I-95 Express Phase 3A
From South of Broward Boulevard to SW 10th Street**

**BROWARD COUNTY, FLORIDA
FPID No. 433108-4-52-01**

Prepared for:

**Florida Department of Transportation
District IV
3400 West Commercial Boulevard,
Ft. Lauderdale, Florida 33309**



**Prepared by:
Stantec
901 Ponce de Leon Boulevard, Suite 901
Coral Gables, FL 33134**

August, 2014

TABLE OF CONTENTS

<u>Sections</u>	<u>Page</u>
1.0 Introduction.....	1
2.0 Existing Conditions.....	1
2.1 Jurisdictional Areas.....	1
2.2 Soils	5
2.3 Listed Species	5
3.0 Project Impacts and Mitigation.....	6
3.1 SFWMD Impacts and Mitigation.....	7
3.2 USACE Impacts and Mitigation	7
3.3 Cumulative Impacts	9

Tables

Table 1 – Impact Summary Table.....	4
Table 2 – Soil Types	5
Table 3 – Off-site Estuarine Mitigation for Mangroves and Tapegrass (SFWMD and USACE).....	8
Table 4 – Off-site Freshwater Mitigation for Swales with Forested Components (SFWMD)	8
Table 5 – Off-site Freshwater Mitigation for Swales with Forested Components (USACE)	9
Table 6 – On-site Mitigation (USACE)	9

Appendices

Appendix A: Vegetation List	
Appendix B: Jurisdictional Area Location Maps	
Appendix C: Photos of Jurisdictional Areas	
Appendix D: Functional Analysis (UMAM and MWRAP)	
Appendix E: Protected Species Database Search Results	
Appendix F: Standard Manatee Conditions for In-Water Work	
Appendix G: Standard Protection Measures for the Eastern Indigo Snake	
Appendix H: USFWS Concurrence Letters from PD&E Studies	
Appendix I: Standard Smalltooth Sawfish Conditions	
Appendix J: Cumulative Impact Figures	

ENVIRONMENTAL CONSIDERATIONS

I-95 EXPRESS LANES

1.0 INTRODUCTION

This section includes a description of United States Army Corps of Engineers (USACE) and South Florida Water Management District (SFWMD) jurisdictional areas within the I-95 corridor proposed to be impacted, a discussion of the proposed wetland mitigation plan for each agency, as well as an identification of potential protected species that may be present within the I-95 project corridor from south of Broward Boulevard to SW 10th Street in Broward County, Florida.

2.0 EXISTING CONDITIONS

The existing I-95 corridor consists of land that has previously been filled to create the current highway system consisting of travel lanes, shoulders, recovery zones, and stormwater management system.

2.1 Jurisdictional Areas

Based on previous coordination with USACE staff, jurisdictional areas within the proposed corridor include: swales with hydrophytic vegetation; swales/drainage features with forested vegetation component; mangroves; tapegrass in waterways; and surface waters. The SFWMD has claimed jurisdiction over the most of the same habitat types as the USACE except for the swales with hydrophytic vegetation. The site investigations to evaluate the extent of jurisdictional areas within the I-95 corridor were conducted in September, 2013. The limits for some of the jurisdictional areas identified were adjusted based on the existing conditions and found to be slightly greater than those identified in the Wetland Evaluation Reports during the PD&E investigations for the corridor. This discrepancy is likely due to the timing of the assessment, during the wet season, as well as slightly above average rainfall during the summer of 2013.

Swales with hydrophytic vegetation (USACE):

Swales with hydrophytic vegetation consist of man-made drainage features with a hydrologic regime that has resulted in a dominance of wetland vegetation and the development of hydric soils. These areas consist entirely of linear man-made features adjacent to and parallel with the highway, which are designed to be approximately one foot above the seasonal high water table. A map showing the locations of swales with hydrophytic vegetation is included in Appendix A. These features are regularly maintained and support herbaceous vegetation that is adapted to frequent disturbance including but not limited to torpedo grass (*Panicum repens*), beak sedges (*Rhynchospora* spp.), flatsedges (*Cyperus* spp.), smallfruit primrosewillow (*Ludwigia microcarpa*), herb-of-grace (*Bacopa monnieri*), largeleaf marshpennywort (*Hydrocotyle bonariensis*), bulltongue arrowhead (*Sagittaria lancifolia*), and creeping primrosewillow (*Ludwigia repens*). In some locations, woody vegetation occurs within these swales. Woody vegetation includes Carolina willow (*Salix carolinensis*), primrose willow and Brazilian pepper (*Schinus terebinthifolius*). These woody species generally occur around the edges of the swales, but in some cases may extend throughout the entire swale. Woody vegetation constitutes less

than 25% of the overall vegetative cover in the swales. A typical view of a swale in this section of I-95 is shown in Photo 13 of Appendix C. A complete list of herbaceous species found in these swales is included in Appendix A.

The hydrology in the swales is entirely dependent on stormwater runoff input from the adjacent roadways. The swales remain dry for most of the year. These swale features provide limited foraging habitat for wading birds and other wetland-dependent species such as frogs and aquatic macro-invertebrates. The overall wildlife habitat quality of these features is marginal due to its proximity to a heavily traveled highway in an urban environment.

There are approximately 40.87 acres of swales with hydrophytic vegetation within the project limits. The total acreage of unavoidable impacts to swales with hydrophytic vegetation is 24.43 acres. All areas of swales that are proposed to be impacted are contained within the I-95 right-of-way. Since there are no wetlands adjacent to the swales outside of the right-of-way where impacts are proposed, secondary impacts as a result of the proposed road construction activities are not anticipated.

Swales/Drainage Features with Forested Component (USACE/SFWMD)

Swales/drainage features with a forested vegetation component occupy deeper pockets of the stormwater management system below the elevation of the seasonal high groundwater table. These swales/drainage features support wetland vegetation consisting of planted wetland trees including cypress (*Taxodium distichum*), red maple (*Acer rubrum*) and dahoon holly (*Ilex cassine*) with an herbaceous understory that is dominated by ferns. Three assessment areas meeting these characteristics were identified within the project corridor. They are located within the interchanges at Sunrise, Cypress Creek and SW 10th Street and identified as features 38, 58, 59, 115 and 117 (See Appendix A). In addition, there is a ditch in the railroad right of way north of the North Fork of the New River on the west side of I-95 that has forested vegetation along each bank of the ditch (C3X3 and C3X4). These two forested areas are only jurisdictional to the USACE. These forested areas will be impacted to allow the installation of the proposed ground mounted sound barrier. A typical photo of this jurisdictional type is shown in Photo 12 in Appendix C. Hydric soil indicators observed in these areas include presence of mucky mineral soils (A7), and stripped matrix (S6). The hydrology is driven by stormwater runoff input from the adjacent roadway ramps. Overall wildlife habitat quality of these features is marginal due to its proximity to a heavily traveled highway in an urban environment. The total acreage of this jurisdictional type is 1.19 acres for the SFWMD and 1.68 acres for the USACE. Jurisdictional areas 58 and 59 are proposed to be impacted to construct the stormwater management system but since these two areas are part of an approved stormwater management system, they are jurisdictional to the USACE only. Jurisdictional area 38 just north of Sunrise Boulevard is another swale with forested features that is proposed to be partially impacted. This area is jurisdictional for both the USACE and the SFWMD. There are approximately 0.06 acres of impacts to this jurisdictional area. Since this area is only partially impacted, there are also secondary impacts associated with the proposed construction. The amount of secondary impacts to area 38 is estimated to be 0.16 acres. This area of secondary impacts is based on a distance of 25' from the edge of direct impacts. There is an additional 0.49 acres of impacts to SFC areas for the USACE (58, 59, CSX3 and CSX4). There are no proposed secondary impacts to areas 115 and 117.

Forested Wetlands (USACE/SFMWD)

Assessment area 69 is the only natural wetland feature identified within the limits of this project and is located to the west of I-95, just south of the Cypress Creek Canal (C-14). The area can be described as a forested system with a canopy comprised on native and exotic vegetation pond apple (*Annona glabra*), Brazilian-pepper (*Schinus terebinthifolius*), bishopwood (*Bischofia javanica*), pond-cypress (*Taxodium ascendens*), and red maple. Standing water was observed throughout the portion of system adjacent to the roadway. Hydrology is influenced by both groundwater fluctuations and stormwater runoff input from the road. The area provides marginal to moderate quality habitat for wetland-dependent species due to the heavy exotic infestation as well as its close proximity to the highway. The total acreage of forested wetlands within the project boundary is 2.32 acres. This community type will not be impacted by the proposed project. Secondary impacts as a result of the proposed road construction activities are not anticipated.

Mangroves (USACE/SFWMD)

There are two crossings of estuarine channels at the North Fork of the New River and the South Fork of the Middle River (also known as the C-13 Canal) within the limits of this project where mangroves occur along the river shoreline. The locations of these mangrove areas and extent of these mangrove areas are depicted in Appendix A. The mangrove areas within the I-95 corridor can be described as a narrow, discontinuous fringe of small trees growing at the shoreline interface. The mangroves are stunted and are being outcompeted by invasive exotic species including tropical almond (*Terminalia cattapa*), Brazilian pepper (*Schinus terebinthifolius*) and seaside mahoe (*Thespesia polpunea*). The presence of these exotic species is indicative that the mangrove locations are at the upper end of the saltwater tidal influence. The total acreage of mangrove shoreline within the project limits is 0.27 acres. Photos of mangrove shorelines adjacent to the bridge crossings are shown in Appendix C (Photos 5 – 10). Impacts to mangrove wetlands include direct impacts associated with the placement of shoreline protection and shading resulting from the widening of the existing bridges. The total acreage of impacts to mangrove shorelines resulting from the road improvements is 0.14 acres. Field observations indicated that mangroves are growing to the vertical extension of the outer edge of the bridge crossings projected to ground (i.e. there is no existing shading effect on mangrove shorelines outside of the bridge footprint). Secondary impacts to mangrove areas as a result of the proposed bridge construction were calculated as follows:

1. West of the bridge over the North Fork of the New River- 0 acres of secondary impacts since all mangroves between the existing bridge and the railroad track located to the west of the bridge have been included as direct impacts. The railroad bridge provides an effective barrier to any additional secondary impacts further to the west.
2. East of the bridge over the North Fork of the New River – 0 acres of secondary impacts since the outer bridge along this crossing will not be part of any construction activities. Thus there will be no secondary impacts to the east of the existing outer bridge.
3. West of the bridge over the C-13 Canal – 0 acres of secondary impacts; the mangroves and Brazilian pepper adjacent to the west side of this crossing are counted as direct impacts; the canal is well maintained beyond the existing narrow band of mangrove/pepper and contains only upland ruderal vegetation.

4. East of the bridge over the C-13 - 0.065 acres; the banks of the C-13 east of the bridge are dominated by Brazilian pepper with only a very limited number of remnant white mangroves (another indication of the low salinity at this location). The secondary impacts to these pepper dominated systems were assumed to extend 25' beyond the end of the direct impacts associated with bridge construction. The size of the impacts was determined to be 0.015 acres on the north side of the canal and 0.05 acres on the south side of the canal.
5. The C-14 canal is steep sided and well maintained with no jurisdictional areas on either the north or south banks so there are no direct or secondary impacts at this crossing.

Tapegrass (USACE/SFWMD)

Because of the prevalence of freshwater flow in the waterways within the project limits, the shallow areas on the north and south banks of the South Fork of the Middle River (C-13 Canal) and the C-14 Canal contain tape grass (*Vallisneria americana*). Pictures of the tape grass in these waterbodies are shown in the photos of the bridge crossings contained in Appendix C (photos 2 and 3). The total acreage of areas containing tape grass is 0.09 acres. Anticipated impacts to these areas with tape grass resulting from construction activity include direct shading of the widening of the bridges and installation of shoreline stabilization measures. The north-south orientation of the bridge allows sufficient sunlight to reach the bottom of the canal/water bodies allowing tape grass to grow right up to the outer edges of the bridge on either side of the bridge. The total acreage of impacts to jurisdictional areas with tape grass resulting from the proposed construction activities is 0.08 acres.

Surface Waters/Other Surface Waters (USACE/SFMWD)

The areas of other surface waters (OSW) consist primarily of ditches which are regularly maintained, have steep slopes and support little or no hydrophytic vegetation. Also included within this category are the Cypress Creek Canal (C-14), the North Fork of the New River and the South Fork of the Middle River (C-13). A typical view of an OSW along this corridor is shown in Photos 1 and 11 in Appendix C. The location of OSWs within the project corridor is depicted in Appendix A. The total area of OSW within the project limits is 21.48 acres for the USACE and 18.19 for the SFWMD. A total of 0.93 acres impacts to OSW's are proposed as part of this project.

Table 1 summarizes the proposed impacts to jurisdictional areas within the I-95 corridor.

Table 1: Impact Summary Table

Jurisdictional Area	Acres within ROW (SFWMD)	Acres of Impacts (SFWMD)	Acres within ROW (USACE)	Acres of Impact (USACE)
Swales with hydrophytic vegetation	N/A	N/A	40.87	24.43
Swales with forested components	1.19	0.06	1.68	0.55
Forested Wetlands	2.32	0.00	2.32	0.00
Mangroves	0.27	0.14	0.27	0.14
Tapegrass	0.09	0.08	0.09	0.08
OSW	18.19	0.93	21.48	0.93

2.2 Soils

Based on a review of the U.S. Department of Agriculture (USDA), Natural resources Conservation Service (NRCS) Web Soil Survey, there are only two soil types within the project area (see Figure 2 Soils Map). The soil types that were found within the project area are shown in Table 4.

Table 2: Soil Types

Soil Unit	Hydric (Y/N)	Description
Udorthents	N	This soil consists of areas of unconsolidated or heterogeneous geologic material removed in the excavation of ditches, canals, lakes and ponds.
Urban Land	N	Urban land consists of soils covered more than 85% by shopping centers, parking lots, streets, sidewalks, airports, large buildings, houses and other structures. The natural soil cannot be observed. These soils generally have been transported, reworked, and leveled by earthmoving equipment or have been covered with about 18 inches of extremely stony, loamy fill material. Urban land is not a hydric soil.

2.3 Listed Species

A search of the following databases was conducted to collect information on the potential presence of state or federally listed species within the project area:

- The USFWS IPaC (Information, Planning and Conservation System) website (<http://ecos.fws/ipac>) for federally listed species within Broward County, Florida; and
- The Florida Natural Areas Inventory (FNAI) database (<http://www.fnai.org>) for state listed species within Miami-Dade County.

The results of the data searches are included in Appendix E (federally listed species).

The proposed project is located within a highly urbanized area of Broward County; therefore, there is very little listed species habitat. Permits were issued for the more recent alterations to the system and mitigation required where appropriate. As a result of the previous development of the Interstate system, the proposed project will have minimal impact to any Federal or State Listed species. The corridor is not within any critical habitat of any listed species.

Based on a review of the USFWS database, the project area is not within the core foraging area (CFA) of any wood stork (*Mycteria americana*) active nest. The project falls within the CFA for two wood stork nests; however, according USFWS records, the nests have been inactive since 2009 and therefore, the wood stork forage loss calculations are not being provided at this time. If these calculations are determined to be required, they will be made available.

There is a potential for the West Indian manatee (*Trichechus manatus*) to be present in the North Fork of the New River and in the South Fork of the Middle River (C-13) adjacent to the project limits. Therefore, the Standard Manatee Conditions will be followed with respect to any in-water construction activities. A copy of the Standard Manatee Conditions for In-Water Work is included in Appendix F.

Since there is the potential for the presence of the Eastern Indigo snake with the road corridor, the FTE will implement the standard protection measures for the indigo snake during all construction activities. A copy of the Standard Protection Measures for the Eastern Indigo Snake is included in Appendix G.

Coordination was conducted with the USFWS during the PD&E study for I-95 in Broward County for the wood stork, manatee and the indigo snake. The USFWS determined that the proposed project “may affect, but is not likely to adversely affect” these three species for I-95 in Broward County. The road corridor included within this project includes portions of two different PD&E studies (one for the section between Stirling Road and Oakland Park Boulevard and one for the section from Oakland Park Boulevard to Glades Road). The concurrence letter from the USFWS for each segment is included in Appendix G.

There is potential for the presence of the smalltooth sawfish (*Pristis pectinata*) in the North Fork of the New River and in the South Fork of the Middle River (C-13) adjacent to the project limits. Limited mangrove habitat is present along the shorelines of both of the I-95 crossings of these tidal flowways. Because of the impacted nature of these shorelines and the prevalence of invasive plant species within the mangrove habitat, the value provided to the smalltooth sawfish is minimal. In addition, the presence of freshwater vegetative species such as tropical almond mixed in with the mangroves (at the North Fork of the New River) and the occurrence of tapegrass in the South Fork of the Middle River is a strong indication that the project is located at the western limits of tidal influence at both locations. It is therefore not likely that the proposed project will adversely affect the smalltooth sawfish or its habitat. However, given the potential for access to the site for the smalltooth sawfish, the Smalltooth Sawfish Construction Conditions will be followed with respect to any in-water construction activities. A copy of the Standard Smalltooth Sawfish Conditions for In-Water Work is included in Appendix H.

No other impacts to listed federal or state listed species are anticipated as a result of this road improvement project.

3.0 PROJECT IMPACTS AND MITIGATION

State and federal regulations require compensatory mitigation for unavoidable impacts to wetlands and surface waters. As previously indicated the SFWMD and USACE have claimed jurisdiction over different areas along the project corridor, namely, the USACE has claimed jurisdiction over existing swales with hydrophytic vegetation in addition to those areas claimed by the SFWMD. As a result, mitigation requirements for the agencies are different; therefore, the impacts and mitigation discussion will be separated in this document.

3.1 South Florida Water Management District (SFWMD):

The impacts to SFWMD jurisdictional areas resulting from the proposed road improvement project consist of the following:

1. 0.14 acres of existing mangroves along the river/canal shorelines;
2. 0.08 acres of tapegrass resulting from the proposed bridge widening; and
3. 0.06 acres of swales with forested components resulting from construction of the stormwater management system.

Bridge impacts include the installation of shoreline stabilization and increased shading from bridge widening. The proposed mitigation for the unavoidable loss of the mangrove wetlands consists of the designation of credits at the West Lake mitigation bank in Broward County. Based on a UMAM functional analysis, the anticipated number of credits required to offset the anticipated direct mangrove impacts is 0.060 credits (see Table 3: Off-site Estuarine Mitigation Table on the following page; UMAM assessments are included in Appendix D). An additional 0.004 credits are proposed to offset the 0.07 acres of secondary impacts to mangrove habitats at the bridge crossings. Currently, there are sufficient credits remaining at West Lake Park to provide these credits for mangrove habitat impacts (0.064 credits total).

Historically, the SFWMD and the USACE has accepted the use of mangrove credits to offset the loss of tapegrass areas resulting from FDOT projects. In the absence of mitigation efforts designed to restore tapegrass, FDOT is proposing to offset the loss of tapegrass with the use of mangrove credits at West Lake Park. Based on a UMAM analysis, the number of credits required to offset the loss of tape grass areas is 0.032 credits (see Table 3: Off-site Estuarine Mitigation Table on the following pages, UMAM assessments are included in Appendix D). Again, there are sufficient credits remaining at West Lake Park to provide these credits.

The proposed mitigation to offset the impacts to swales with forested components consists of the purchase of credits at the Loxahatchee Mitigation Bank. Based on an MWRAP functional analysis, the anticipated number of credits required to offset the 0.06 acres of swales with forested components is 0.03 credits (see Table 4: Off-site Freshwater Mitigation Table on the following page; UMAM assessments are included in Appendix D). An additional 0.013 credits are proposed to offset the 0.16 acres of secondary impacts to forested habitat adjacent to jurisdictional area 38 (total of 0.043 freshwater forested credits). FDOT District 4 has previously purchased 1.0 forested credit at the Loxahatchee Mitigation Bank for this project.

All other impacts to areas jurisdictional for the SFWMD are to artificial excavated water bodies (Other Surface Waters) for which mitigation requirements are not anticipated.

3.2 United States Army Corps of Engineers (USACE)

Mitigation for impacts to the mangrove and tapegrass areas described in the previous section is the same as that proposed for the SFWMD – 0.060 credits to offset mangrove impacts and 0.032 credits to offset impacts to tapegrass from West lake Park (see Table 3: Off-site Estuarine Mitigation Table on the following page; UMAM assessments are included in Appendix D). An

additional 0.004 credits are proposed to offset secondary impacts to mangrove habitats adjacent to the bridge construction area.

The proposed mitigation to offset the impacts to swales with forested components for the USACE consists of the purchase of credits at the Loxahatchee Mitigation Bank. Based on an MWRAP functional analysis, the anticipated number of credits required to offset the 0.55 acres of direct impacts to swales with forested components is 0.297 credits (see Table 5: Off-site Freshwater Mitigation Table on the following page; UMAM assessments are included in Appendix D). An additional 0.013 credits are proposed to offset the 0.16 acres of secondary impacts to forested habitat adjacent to jurisdictional area 38 (total of 0.310 freshwater forested credits). FDOT District 4 has previously purchased 1.0 forested credit at the Loxahatchee Mitigation Bank for this project.

In addition to these areas, the USACE also claimed jurisdiction over 24.43 acres of impacts to swales with hydrophytic vegetation resulting from the proposed road improvements. Swale impacts will be offset through the creation of approximately 48.24 acres of swales and will be part of the I-95 stormwater management system. Similarly, there are 0.93 acres of other surface waters that are proposed to be impacted. These impacts will be also be offset through the creation of swales as part of the stormwater management system.

In summary, the proposed mitigation plan consists of the designation of credits at West Lake Park to offset the loss the mangrove and tape grass habitats (off-site mitigation), the purchase of credits at the Loxahatchee Mitigation Bank to offset the loss of swales with forested components and the creation of swales and other surface waters on-site to compensate for the loss of swales with hydrophytic vegetation and other surface waters for the USACE. The proposed mitigation is summarized in Tables 3, 4, 5 and 6, as follows.

Table 3: Off-Site Estuarine Mitigation (USACE & SFWMD)

Jurisdictional Area	Acres of Impact	UMAM Score	Mitigation Credits Required at West Lake Park
Mangroves	0.14	0.43	0.060
Tape grass	0.08	0.43	0.032
Mangrove Secondary Impacts	0.07	0.06*	0.004
Total	0.30	--	0.096

* = pre and post UMAM differential

Table 4: Off-Site Freshwater Mitigation (SFWMD)

Jurisdictional Area	Acres of Impact	MWRAP Score	Multiplier	Mitigation Credits Required at Loxahatchee Mitigation Bank
Swales with forested components (SFC)	0.06	0.47	1.15	0.030
SFC Secondary Impacts	0.16	0.07*	1.15	0.013
Total	0.22	-	-	0.043

* = pre and post MWRAP differential

Table 5: Off-Site Freshwater Mitigation (USACE)

Jurisdictional Area	Acres of Impact	MWRAP Score	Multiplier	Mitigation Credits Required at Loxahatchee Mitigation Bank
Swales with forested components (SFC)	0.55	0.47	1.15	0.297
SFC Secondary Impacts	0.16	0.07*	1.15	0.013
Total	0.71	-	-	0.310

* = pre and post MWRAP differential

Table 6: On-Site Mitigation (USACE Only)

Jurisdictional Area	Impact Acreage	Acres Created (on-site)
Swales with Hydrophytic Vegetation and Other Surface Waters	24.43	48.24

3.3 Cumulative Impacts

Review of cumulative impacts for the USACE and the SFWMD occurs within defined watersheds (USACE, hydrologic cataloguing unit) or mitigation basins (SFWMD). The proposed project is located within the boundaries of the Florida Southeast Coast Cataloguing Unit (HUC 03090206) and the SFWMD New River Mitigation Basins (30). A map depicting the boundaries of the HUC and SFWMD Mitigation Basins is included in Appendix J. The FDOT of Transportation proposes to offset unavoidable impacts to jurisdictional areas through the purchase of mitigation credits from the Loxahatchee Mitigation Bank (LMB). Cumulative impacts are not anticipated for impacts to USACE jurisdictional areas since the mitigation is being provided within the limits of the Florida Southeast Coast Cataloguing Unit. Although the LMB is outside the New River Mitigation Basin the proposed impacts to forested swales (0.06 acres) will not result in significant cumulative impact to existing resources (<0.000001%).

Appendix A - Vegetation List

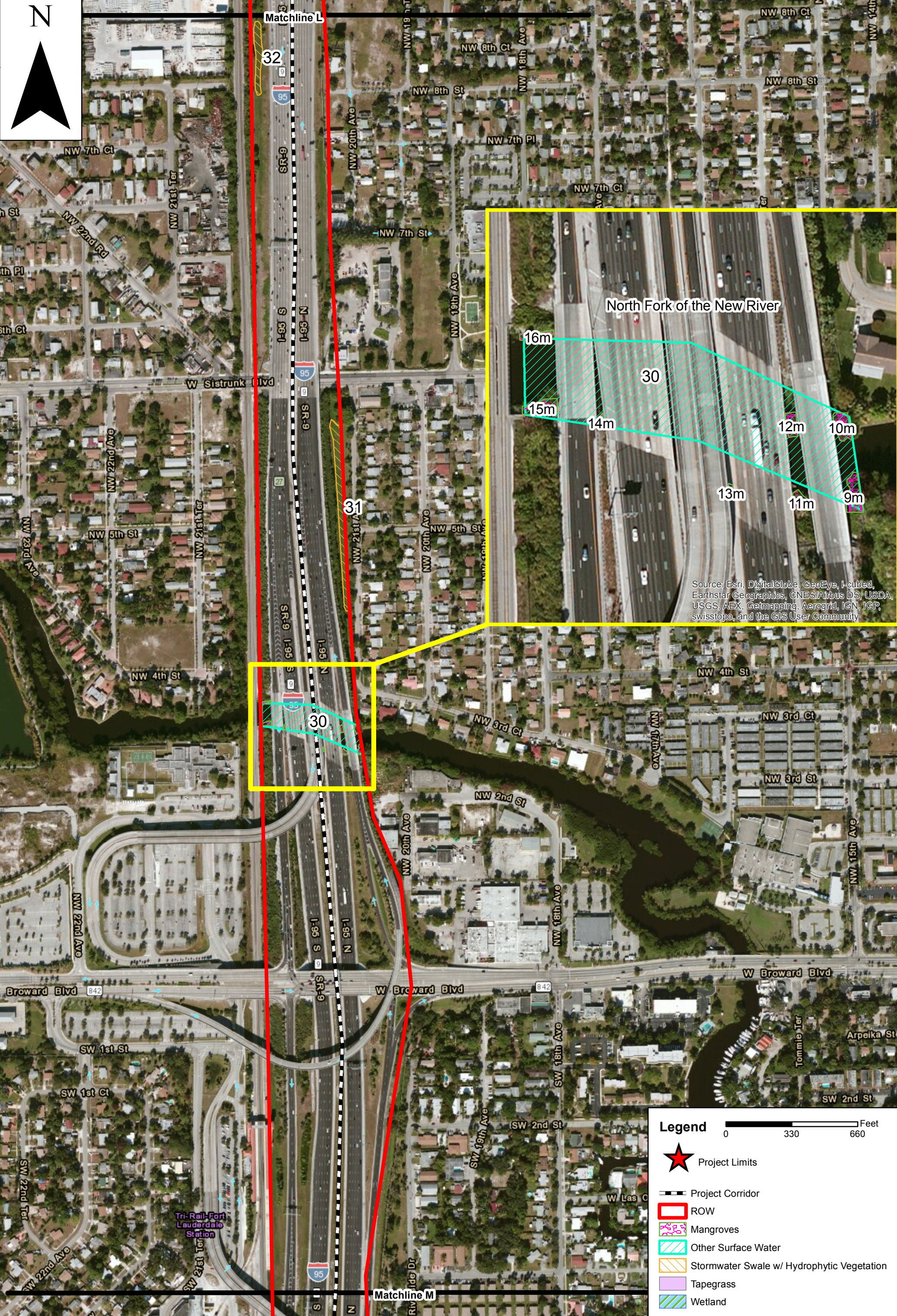
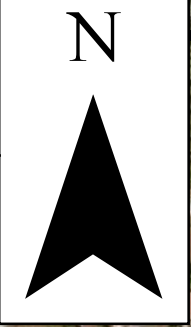
APPENDIX A
Vegetation List

Common Name	Scientific Name	Status	Status
Earleaf acacia	<i>Acacia auriculiformis</i>		Not-Native
Red maple	<i>Acer rubrum</i>	FACW	Native
Leather fern	<i>Acrostichum danaeifolium</i>	OBL	Native
Joyweed	<i>Alternanthera flavescens</i>	n/a	Native
Ragweed	<i>Ambrosia artemisiifolia</i>	n/a	Native
Toothcup	<i>Ammania latifolia</i>	OBL	Native
Pond Apple	<i>Anona glabra</i>	OBL	Native
Broomsedge	<i>Andropogon virginicus</i>	FAC	Native
Black mangrove	<i>Avicennia germinans</i>	OBL	Native
Herb-of-grace	<i>Bacopa monnieri</i>	OBL	Native
Beggarticks	<i>Bidens alba</i>	FAC	native
Bishopwood	<i>Bischoffia javanica</i>	n/a	Native
Swamp fern	<i>Blechnum serrulatum</i>	FACW	Native
Bog hemp	<i>Boehmeria cylindrica</i>	OBL	Native
American bluehearts	<i>Buchnera americana</i>	n/a	Native
Yellow canna	<i>Canna flaccida</i>	OBL	Native
Sedge	<i>Carex spp</i>	OBL	Native
Long's sedge	<i>Carex longii</i>	FACW	Native
Spadeleaf	<i>Centella asiatica</i>	FACW	Native
Southern sandbur	<i>Cenchrus echinatus</i>	n/a	Native
Buttonbush	<i>Cephalanthus occidentalis</i>	OBL	Native
Coontail	<i>Ceratophyllum demersum</i>	n/a	Native
Coco plum	<i>Chrysobalanus icaco</i>	FACW	Native
Dayflower	<i>Commelina diffusa</i>	FACW	Native
Mist flower	<i>Conoclinium coelestinum</i>	FAC	Native
String-lily	<i>Crinum americanum</i>	OBL	Native
Baldwin's flatsedge	<i>Cyperus croceus</i>	FAC	Native
Swamp flatsedge	<i>Cyperus distinctus</i>	OBL	Native
Yellow nutgrass	<i>Cyperus esculentus</i>	FAC	Not-native
Flat sedge	<i>Cyperus haspan</i>	OBL	Native
Leconte's flatsedge	<i>Cyperus lecontei</i>	FACW	Native
Swamp flatsedge	<i>Cyperus ligularis</i>	FACW	Native
Fragrant flatsedge	<i>Cyperus odoratus</i>	FACW	Native
Pinebarren flatsedge	<i>Cyperus ovatus</i>	FAC	Native
Many-spike flatsedge	<i>Cyperus polystachyos</i>	FACW	Native
Tropical flatsedge	<i>Cyperus surinamensis</i>	FACW	Native
Bermudagrass	<i>Cynodon dactylon</i>	n/a	Not-native
Coin vine	<i>Dalbergia ecastaphyllum</i>	FACW	Native
Crowfootgrass	<i>Dactyloctenium aegyptium</i>	n/a	Non-native
Zarabacoa	<i>Desmodium incanum</i>	n/a	Not-native
Pony's foot	<i>Dichondra carolinensis</i>	FAC	Native
Asian crabgrass	<i>Digitaria bicornis</i>	n/a	Not-native
Virginia buttonweed	<i>Diodia virginiana</i>	FAC	Native
Barnyardgrass	<i>Echinochloa crus-galli</i>	FACW	Not-native
Spikerush	<i>Eleocharis geniculata</i>	OBL	Native
Spikerush	<i>Eleocharis interstincta</i>	OBL	Native
Red tasselflower	<i>Emilia forbergii</i>	n/a	Not-native
Whitetop fleabane	<i>Erigeron vernus</i>	FACW	Native
Pinewood fingergrass	<i>Eustachys petrea</i>	FAC	Native
Strangler Fig	<i>Ficus aurea</i>	FAC	Native
Saltmarsh umbrellasedge	<i>Fuirena breviseta</i>	OBL	Native
Stiff marsh bedstraw	<i>Galium tinctorium</i>	FACW	Native
Hydrilla	<i>Hydrilla verticillata</i>	n/a	Not -native
Pennywort	<i>Hydrocotyle sp.</i>	OBL	Native
Four-petal St. John's wort	<i>Hypericum tetrapetalum</i>	FAC	Native
Dahoon holly	<i>Ilex cassine</i>	OBL	Native
Grassleaf rush	<i>Juncus marginatus</i>	FAC	Native
Bighead rush	<i>Juncus megacephalus</i>	OBL	Native

APPENDIX A
Vegetation List

Common Name	Scientific Name	Status	Status
Shortleaf spikerush	<i>Kyllinga brevifolia</i>	FACW	Native
White mangrove	<i>Laguncularia racemosa</i>	OBL	Native
Anglestem primrosewillow	<i>Ludwigia leptocarpa</i>	OBL	Native
Water primrose	<i>Ludwigia octovalvis</i>	OBL	Native
Primrose willow	<i>Ludwigia peruviana</i>	OBL	Native
Creeping primrosewillow	<i>Ludwigia repens</i>	OBL	Native
Melaleuca	<i>Melaleuca quinquenervia</i>	FAC	Non-native
Climbing hempvine	<i>Mikania scandens</i>	n/a	Native
Wax myrtle	<i>Myrica cerifera</i>	FAC	Native
Swamp hornpod	<i>Mitreola sessilifolia</i>	FACW	Native
Myrsine	<i>Myrsine cubana</i>	FAC	Native
Royal fern	<i>Ormunda regalis var. spectabilis</i>	OBL	Native
Torpedo grass	<i>Panicum repens</i>	FACW	Non-native
Bahiagrass	<i>Paspalum notatum</i>	n/a	Non-native
Thin paspalum	<i>Paspalum setaceum</i>	n/a	Native
Common reed	<i>Phragmites australis</i>	OBL	Native
Frogfruit	<i>Phyla nodiflora</i>	FAC	Native
Slash pine	<i>Pinus elliottii</i>	UPL	Native
Marsh fleabane	<i>Pluchea baccharis</i>	FACW	Native
Showy milkwort	<i>Polygala violacea</i>	FACW	Native
Smartweed	<i>Polygonum punctatum</i>	OBL	Native
Pickernelweed	<i>Pontederia cordata</i>	OBL	Native
Illinois pondweed	<i>Potamogeton illionensis</i>	n/a	Native
Mexican clover	<i>Rhicardia grandiflora</i>	n/a	Not-native
Red mangrove	<i>Rhizophora mangle</i>	OBL	Native
Starrush whitetop sedge	<i>Rhynchospora colorata</i>	OBL	Native
Spreading beaksedge	<i>Rhynchospora divergens</i>	OBL	Native
Southern beaksedge	<i>Rhynchospora microcarpa</i>	OBL	Native
Cabbage palm	<i>Sabal palmetto</i>	FAC	Native
Arrowhead	<i>Sagittaria lancifolia</i>	OBL	Native
Carolina willow	<i>Salix caroliniana</i>	OBL	Native
Scaevola	<i>Scaevola taccada</i>	n/a	Native
Brazilian pepper	<i>Schinus terebinthifolia</i>	FAC	Native
Giant bulrush	<i>Schoenopectus californicus</i>	OBL	Native
Rattle-bush	<i>Sesbania herbacea</i>	FAC	Native
Foxtail grass	<i>Setaria geniculata</i>	OBL	Native
Common wireweed	<i>Sida ulmifolia</i>	n/a	Native
greenbrier	<i>Smilax spp.</i>	n/a	Native
Shrubby false buttonweed	<i>Spermacoce verticillata</i>	n/a	Not-native
St. Augustinegrass	<i>Stenotaphrum secundatum</i>	n/a	Native
Mahoe	<i>Talipariti tiliaceum</i>	FAC	Non-native
Bald cypress	<i>Taxodium distichum</i>	OBL	Native
Tropical almond	<i>Terminalia catappa</i>	n/a	Non-native
Shield fern	<i>Thelypteris kunthii</i>	FACW	Native
Cattail	<i>Typha sp.</i>	OBL	Native
Caesarweed	<i>Urena lobata</i>	na	Non-native
Paragrass	<i>Urochloa mutica</i>	n/a	Non-native
Tapegrass	<i>Vallisneria americana</i>	n/a	Native
Muscadine	<i>Vitis rotundifolia</i>	n/a	Native

Appendix B - Jurisdictional Areas Location Maps

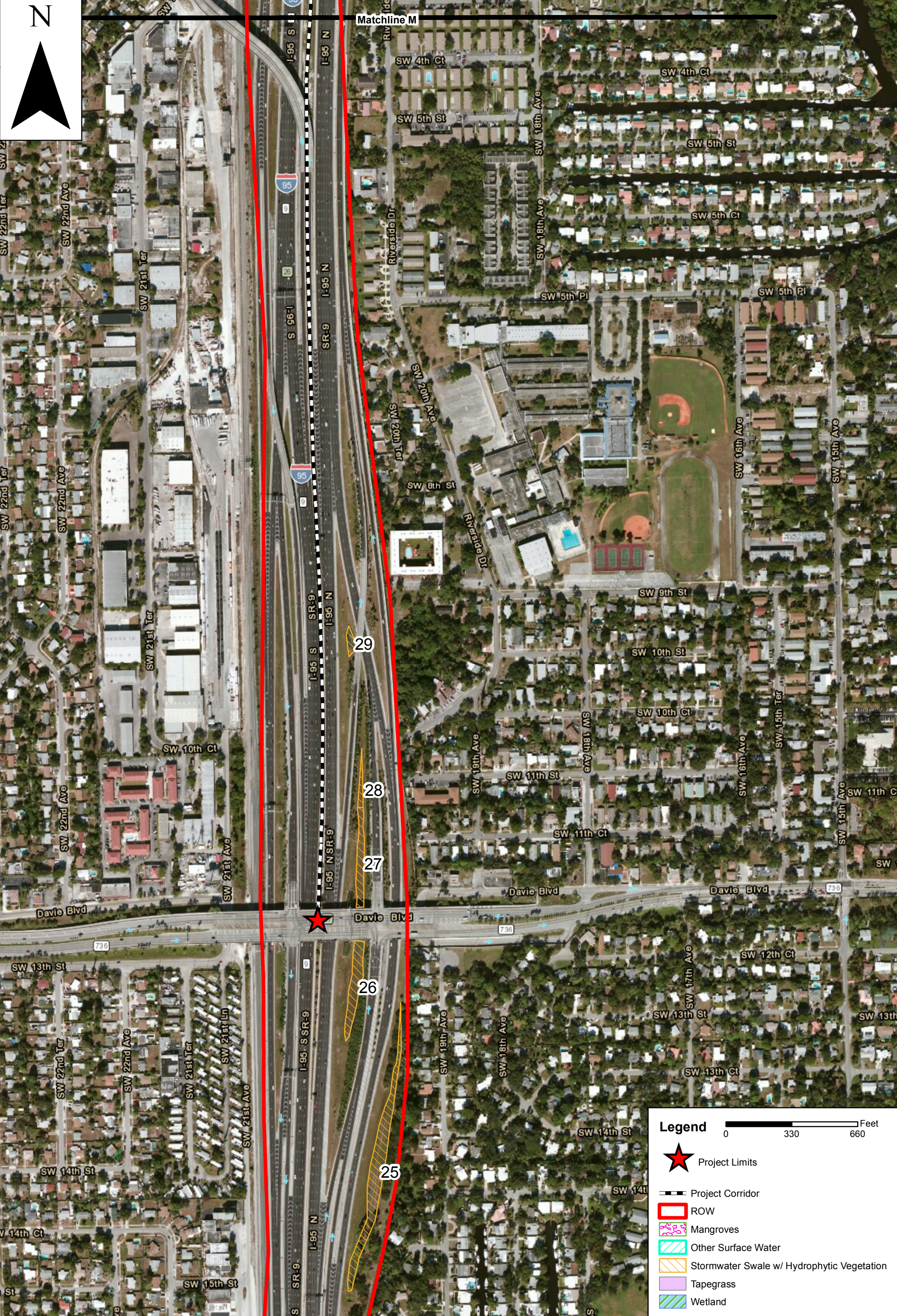
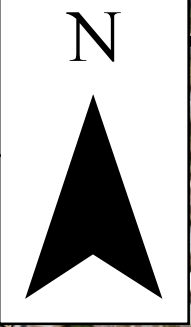


Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

0 330 660 Feet

- Project Limits
- Project Corridor
- ROW
- Mangroves
- Other Surface Water
- Stormwater Swale w/ Hydrophytic Vegetation
- Tapegrass
- Wetland



Legend

0 330 660 Feet

- Project Limits
- Project Corridor
- ROW
- Mangroves
- Other Surface Water
- Stormwater Swale w/ Hydrophytic Vegetation
- Tapegrass
- Wetland

Appendix C - Jurisdictional Area Photographs



Photo 7. South Bank of the South Fork of the Middle River (C-13 Canal) east of I-95.



Photo 8. South bank of the North Fork of the New River. No impacts are proposed at this location



Photo 9. South bank of the North Fork of the New River between the mainline Bridge for the northbound lanes and the entrance ramp



Photo 10. North bank of the North Fork of the New River east of I-95. No impacts are proposed at this location.

***Appendix D - UMAM and MWRAP Functional
Analysis***

**PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)**

Site/Project Name I-95 Express Lanes		Application Number		Assessment Area Name or Number Mangrove Fringe along Tidal Canals-Typical	
FLUCCs code 612		Further classification (optional)		Impact or Mitigation Site? Impact	
Assessment Area Size		Basin/Watershed Name/Number All tidal rivers/canals flow to the ICW		Affected Waterbody (Class) Class III	
				Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) N/A	
<p>Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands</p> <p>The AA is located along the banks of six tidal canals crossing underneath I-95 in Palm Beach and Broward Counties. Specifically, the crossings over the Dania Cut-Off Canal, North and South Fork of the New River, South Fork of the Middle River (C-13 Canal), Hillsboro Canal, and the C-15 are involved. Red, white and black mangroves are present along the banks in the vicinity of these crossings. These canals are tidal both</p>					
<p>Assessment area description</p> <p>Red, white, and black mangroves are located along the canal banks of these tidal canals. Nuisance species such as Brazilian pepper, tropical almond and mahoe were also observed within and adjacent to this crossings and minimal littoral shelf is available for wildlife use. Reference wetland - tidal canal with gradual sloping littoral area starting from the top of bank and extending into the deeper canal section and the mangroves transitioning from white/blacks to reds as the water deepens.</p>					
<p>Significant nearby features</p> <p>I-95, marinas on both sides of the Dania Cut-Off Canal and the South Fork of the New River, the crossings are located in a urbanized corridor. The low level bridge at Broward Boulevard stops navigation east/downstream of the North Fork. A low level bridge downstream/east of the C-13 crossing stops navigation along this canal. A salinity control structure is located approximately 1.3 miles upstream of the I-95 crossing over the C-13 Canal.</p>			<p>Uniqueness (considering the relative rarity in relation to the regional landscape.)</p> <p align="center">N/A</p>		
<p>Functions</p> <p>Soil stabilization of canal bank, water quality, minimal wildlife nesting/foraging. Reference: water quality, wildlife foraging, use by listed species such as: wading birds (including wood storks), sawfish, manatees.</p>			<p>Mitigation for previous permit/other historic use</p> <p align="center">N/A</p>		
<p>Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)</p> <p>Wading birds, including wood stork, nesting and roosting, manatee travel and forage, smalltooth sawfish refuge, American crocodile, American alligator, Everglades mink</p>			<p>Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)</p> <p>Wading birds roosting and manatee travel only. Benthic surveys revealed little foraging opportunities for manatees and nesting was not observed or anticipated due to the urban nature of the corridor. The project area is not located within the CFA of active wood stork nests. Less than 0.01 acres of tape grass was observed in the C-13/Middle River Canal. The AA is located outside the consultation area for the American crocodile.</p>		
<p>Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):</p> <p align="center">None observed.</p>					
<p>Additional relevant factors:</p> <p>As previously stated, the corridor is heavily developed. Wildlife use was not observed within the corridor during the PD&E field reviews.</p>					
<p>Assessment conducted by:</p> <p>Ken Huntington, George Burke</p>			<p>Assessment date(s):</p> <p>Sep-13</p>		

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name I-95 Express Lanes	Application Number	Assessment Area Name or Number Mangrove Fringe along Tidal Canals-Typical
Impact or Mitigation Impact	Assessment conducted by: M. Clark	Assessment date: August and October 2012

Scoring Guidance The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

<p>.500(6)(a) Location and Landscape Support</p> <p>w/o pres or current with</p> <p>3 </p>	<p>The I-95 crossings are located within an urban corridor with little natural habitat remaining. Marinas, residential, roads, and surface water management features are located adjacent to these canals. Mills Pond Park is located in the vicinity of the C-13 Canal and one vacant parcel is located southeast of the Dania Cut-Off Canal. Existing roads and development inhibit travel/use by terrestrial wildlife. Manatee travel is possible and the South Fork of the New River provides manatees access to an Important Manatee Area (IMA) located south of I-595 and west of I-95. No change to criterion score.</p>
<p>.500(6)(b)Water Environment (n/a for uplands)</p> <p>w/o pres or current with</p> <p>6 </p>	<p>The hydrology for the mangroves in the AA is based on tidal exchange/fluctuation. The crossings are located upstream of the Intracoastal Waterway so distance influences tidal exchange. Drainage system will comply with SFWMD criteria, but some decrease in water quality directly adjacent to the crossings is anticipated. Flushing by tidal exchange minimizes this degradation.</p>
<p>.500(6)(c)Community structure</p> <p>1. Vegetation and/or 2. Benthic Community</p> <p>w/o pres or current with</p> <p>4 </p>	<p>White, black, and red mangroves were observed along the canal banks. In addition, nuisance species such as Brazilian pepper, Tropical Almond and cattail were also observed within and adjacent to these mangroves and for the most part dominated the shoreline community. Potential for nuisance species to increase slightly should water quality decrease.</p>

Score = sum of above scores/30 (if uplands, divide by 20)
current or w/o pres with
0.43

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres =

Delta = [with-current]

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

**PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)**

Site/Project Name I-95 Express Lanes		Application Number		Assessment Area Name or Number Mangrove Fringe along Tidal Canals-Typical	
FLUCCs code 612		Further classification (optional)		Impact or Mitigation Site? Secondary Impact	
Assessment Area Size		Basin/Watershed Name/Number All tidal rivers/canals flow to the ICW		Affected Waterbody (Class) Class III	
				Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) N/A	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands The AA is located along the banks of six tidal canals crossing underneath I-95 in Palm Beach and Broward Counties. Specifically, the crossings over the Dania Cut-Off Canal, North and South Fork of the New River, South Fork of the Middle River (C-13 Canal), Hillsboro Canal, and the C-15 are involved. Red, white and black mangroves are present along the banks in the vicinity of these crossings. These canals are tidal both					
Assessment area description Red, white, and black mangroves are located along the canal banks of these tidal canals. Nuisance species such as Brazilian pepper, tropical almond and mahoe were also observed within and adjacent to this crossings and minimal littoral shelf is available for wildlife use. Reference wetland - tidal canal with gradual sloping littoral area starting from the top of bank and extending into the deeper canal section and the mangroves transitioning from white/blacks to reds as the water deepens.					
Significant nearby features I-95, marinas on both sides of the Dania Cut-Off Canal and the South Fork of the New River, the crossings are located in a urbanized corridor. The low level bridge at Broward Boulevard stops navigation east/downstream of the North Fork. A low level bridge downstream/east of the C-13 crossing stops navigation along this canal. A salinity control structure is located approximately 1.3 miles upstream of the I-95 crossing over the C-13 Canal.			Uniqueness (considering the relative rarity in relation to the regional landscape.) N/A		
Functions Soil stabilization of canal bank, water quality, minimal wildlife nesting/foraging. Reference: water quality, wildlife foraging, use by listed species such as: wading birds (including wood storks), sawfish, manatees.			Mitigation for previous permit/other historic use N/A		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Wading birds, including wood stork, nesting and roosting, manatee travel and forage, smalltooth sawfish refuge, American crocodile, American alligator, Everglades mink			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Wading birds roosting and manatee travel only. Benthic surveys revealed little foraging opportunities for manatees and nesting was not observed or anticipated due to the urban nature of the corridor. The project area is not located within the CFA of active wood stork nests. Less than 0.01 acres of tape grass was observed in the C-13/Middle River Canal. The AA is located outside the consultation area for the American crocodile.		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): None observed.					
Additional relevant factors: As previously stated, the corridor is heavily developed. Wildlife use was not observed within the corridor during the PD&E field reviews.					
Assessment conducted by: Ken Huntington, George Burke			Assessment date(s): Sep-13		



UNITED STATES DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office

263 13th Avenue South

St. Petersburg, Florida 33701-5505

<http://sero.nmfs.noaa.gov>

F/SER31:JBH
SER-2014-14907

Mr. David Bogardus
Senior Environmental Specialist
Florida Department of Transportation, District 4
3400 West Commercial Boulevard
Fort Lauderdale, Florida 33309

FEB 04 2015

Ref.: Florida Department of Transportation, Financial Project ID 433108-4-52-01, Interstate 95
Bridges over the North Fork of the New River and the C-13 Canal, Broward County,
Florida

Dear Mr. Bogardus:

This letter responds to your August 8, 2014, letter, with Section 7 Checklist and construction plans, to the National Marine Fisheries Service (NMFS) for the above-referenced bridges expansion project. The Federal Highway Administration designated the Florida Department of Transportation (FDOT) to act on its behalf as the designated non-federal representative (50 CFR 402.08) for this action, for purposes of Endangered Species Act Section 7 consultation with NMFS. You requested NMFS's concurrence with your project-effect determinations under Section 7 of the ESA for the referenced construction project. You determined the project may affect, but is not likely to adversely affect, smalltooth sawfish. Additional information regarding the mitigation plan and impacts to mangroves was received by email dated October 20, 2014, and consultation was initiated. Our findings on the project's potential effects are based on the project description in this response. Changes to the proposed action may negate our findings and may require reinitiation of consultation.

FDOT proposes to expand Interstate 95 (I-95) between Atlantic Boulevard and Broward Boulevard. The expansion will require modification of bridges at the north fork of the New River (NFNR) and the C-13 Canal. The crossing of the C-13 Canal is located at 26.162306°N, 80.162381°W (North American Datum 1983), and the crossing of the NFNR at 26.124936°N, 80.169109°W (North American Datum 1983) in Broward County, Florida (Figures 1, 2, and 3). The applicant proposes to widen the bridges to accommodate an additional lane in each direction. Construction will be performed with cranes, and a diesel hammer staged in the uplands. Small boats will be necessary to place and remove turbidity curtains. FDOT will drive a total of 51 piles to support the 2 bridge structures with 26 being driven in the water. The bridge expansion at the NFNR will require the in-water driving of 10 pre-stressed, 18-inch (in) by 18-in concrete piles. The bridge expansion at the C-13 Canal will require the in-water driving of 16 pre-stressed 20-in by 20-in concrete piles.

NMFS visited the site on July 28, 2011, and again on October 3, 2014. A total of 0.13 acre (ac) of mangroves will be impacted by the proposed project due to shading. The bridge expansion at the NFNR will impact 0.05 ac, and expansion at the C-13 Canal will impact 0.08 ac. The



mangrove wetlands have been evaluated using the Uniform Mitigation Assessment Method and the estimated functional loss associated with this impact is 0.112 units.¹ Compensatory mitigation for these impacts will be provided at Broward County's West Lake Park mitigation area. There is no seagrass or corals within the project limits, but 0.08 ac of tape grass (*Vallisneria americana*) will be shaded by the bridge expansion. Floating turbidity barriers will be used to isolate small areas of the construction site where piles are being driven. The applicant will comply with NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*, dated March 23, 2006 (enclosed). The pile driving is expected to take 36 days at the NFNR and 30 days at the C-13 Canal.

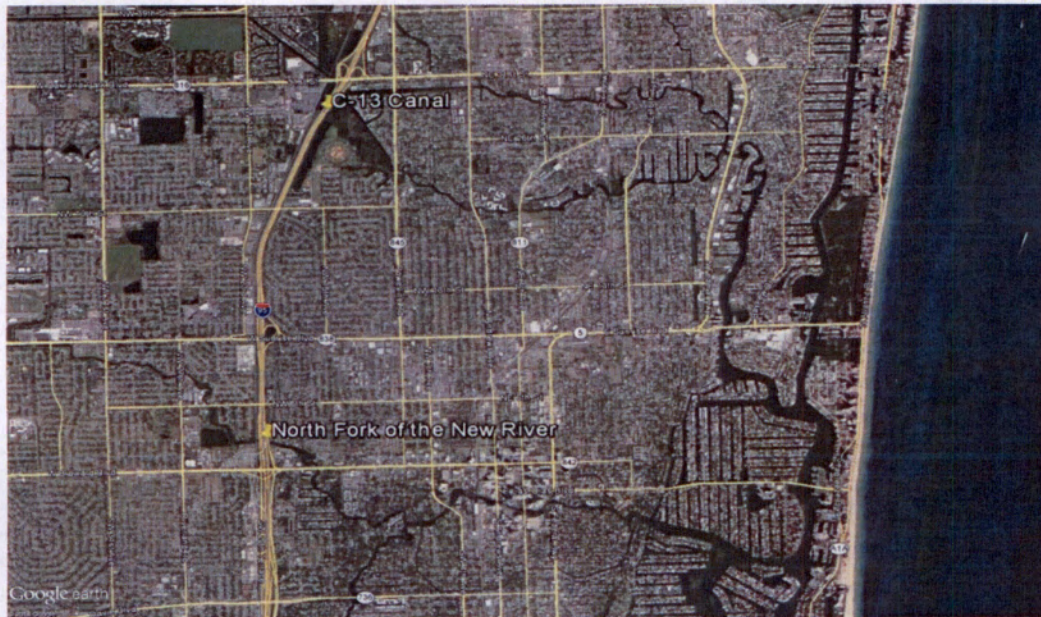


Figure 1. Project site viewed from an altitude of 32,598 feet (ft) (©2014 Google)

¹ Florida Department of Environmental Protection. 2005. Chapter 62-345 FAC. The Uniform Mitigation Assessment Method (UMAM) is used to determine the functional value of aquatic resources for mitigation purposes.

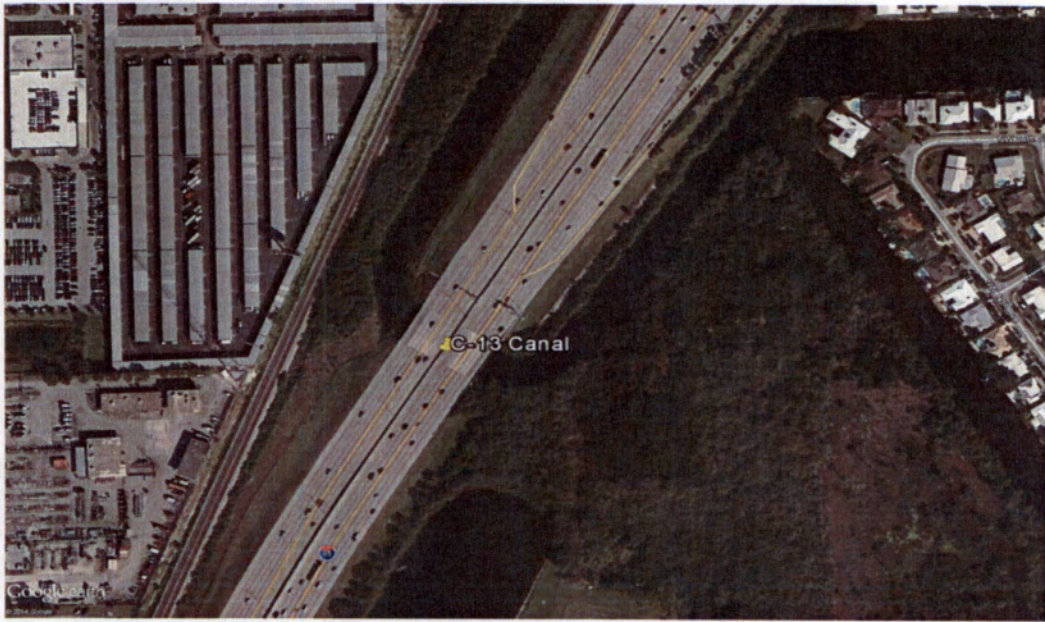


Figure 2. I-95 at the C-13 Canal viewed from an altitude of 2,089 ft (©2014 Google)

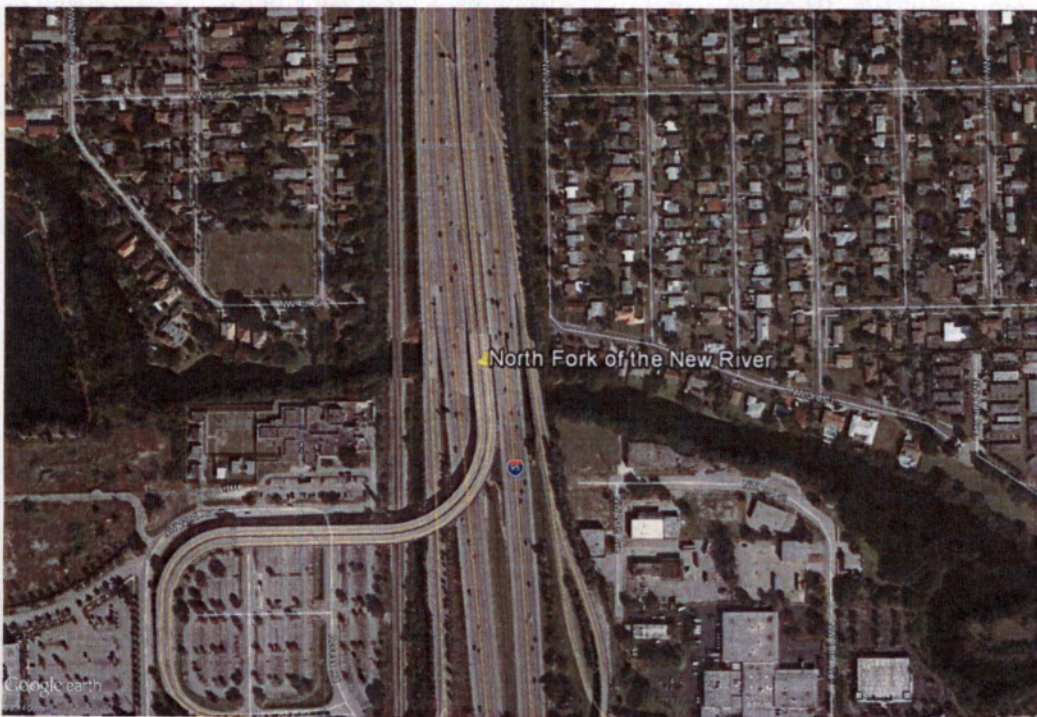


Figure 3. I-95 at the NFNR viewed from an altitude of 2823 ft (©2014 Google)

Smalltooth sawfish can be found in or near the action area and may be affected by the project. NMFS has identified the following potential effects to smalltooth sawfish and concluded the species is not likely to be adversely affected by the proposed action. Possible effects include the risk of injury from construction (small boat operation), which will be discountable due to the species' mobility. Also, the requirement to use turbidity curtains provides a barrier to species' presence. There is no critical habitat or proposed critical habitat under NMFS's purview in the project area.

Smalltooth sawfish use red mangrove prop roots for shelter and nursery habitat, and could be affected by their loss. However, the permanent loss of 0.13 ac of fringe mangrove community is minimal as it is located in 2 different waterbodies and only a portion of it is red mangroves. Potential foraging and refuge areas exist east and west of the bridge sites as seen in Figures 1, 2, and 3. Therefore, the effects of the loss of 0.13 ac of mangroves will be insignificant.

The impact driving of piles has the potential to result in both injury and behavioral effects if source levels exceed injury thresholds. The applicant will use an impact hammer to install concrete piles. Injury can occur from a single strike or from cumulative noise exposure. Sawfish may be affected by pile-driving noise, but we believe this effect will be discountable or insignificant, as explained below.

Single-strike injury effects: Injurious decibel (dB) levels are expressed in units of sound exposure level (SEL or sSEL for a single pile-driving strike). Acoustics data is not available for the driving of 20-in by 20-in concrete piles, but is available for driving 24-in by 24-in concrete piles, which will produce slightly higher dB levels. Therefore, this noise analysis will be conservative. The sSEL source level caused by a single strike to an 18-in by 18-in concrete pile using an impact hammer is 175 dB (sSEL), and the sSEL source level caused by a single strike to a 24-in by 24-in concrete pile using an impact hammer is 170 dB sSEL.² These source levels do not exceed the noise threshold for causing injury (187 dB [sSEL]) to smalltooth sawfish. There will be no risk of injury from the noise of a single pile-driving strike. As a precautionary measure, construction crews will use the “ramp up” method (i.e., pile driving starts at a very low force [and in-water noise level] and gradually builds up to full force), and FDOT will follow NMFS’s *Sea Turtle and Smalltooth Sawfish Construction Conditions*, which require construction to cease should a sawfish come within 50 ft of construction activities.

Daily cumulative noise exposure:

Daily cumulative noise exposure (cSEL) is the exposure to pile-driving noise over time. The exposure zone is the area between the source noise (pile installation) and the onset of injury. Injury can result if daily cumulative noise exposure levels from pile driving exceed injury threshold levels and animals remain in the exposure zone during the entire installation process.

The cSEL threshold noise level associated with injury is 187 dB. The 2 bridge expansions are located within a tidal creek and a canal which could block sawfish from escaping the area to avoid noise during pile-driving activities. The applicant has agreed to limit construction activities to daylight-only hours and only install 3 piles daily. It will take 4 days to complete pile driving at the NFNR, and 6 days at the C-13 Canal. Based on calculations derived from CALTRANS 2009,¹ restricting the number of piles of these types to no more than 3 per day would result in the source level exceeding the injury threshold level at a distance extending 17 ft (5 m) from the source. The protected smalltooth sawfish would need to remain within the injury zone for the entire day to receive injury. We believe the risk of this occurring is discountable, due to the animal’s natural avoidance behavior and mobility, the ramp up procedures, and the

² CALTRANS. Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish. Final Report prepared by ICF Jones & Stokes and Illingworth & Rodkin, Inc. February 2009.

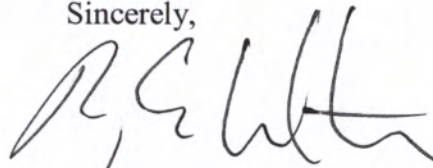
implementation of NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*, which require construction to cease should a sawfish come within 50 ft of construction activities. This distance is greater than the 17-ft impact zone. Therefore, there will likely be no impact to sawfish from cumulative noise exposure.

Behavioral response: Animal hearing is characterized by the root mean square (RMS) dB level and is the measure used to assess behavioral or non-injury responses of organisms to sound (e.g., changes in feeding or sheltering). The RMS source level generated by driving 18-in by 18-in concrete piles with an impact hammer is 185 dB (RMS), by driving 24-in by 24-in concrete piles is 190 dB (RMS). The RMS threshold level at which a behavioral response is elicited from this activity is 150 dB for sawfish. The source level exceeds the threshold for smalltooth sawfish and we believe that sawfish would have a behavioral response within a straight-line distance of 71 ft (22 m). We would expect sawfish to swim away from the construction noise and remain outside those radii of a pile during installation operations. Although this noise could result in disruptions to feeding and sheltering due to the expected avoidance of project noise and activity, we believe this effect will be insignificant because the action areas are small and there is similar habitat to support foraging and sheltering nearby.

In summary, we conclude that smalltooth sawfish are not likely to be adversely affected by any project-related activities, and concur with your project-effect determinations. This concludes your consultation responsibilities under the ESA for species under our purview. Consultation must be reinitiated if a take occurs or new information reveals effects of the action not previously considered, or the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat in a manner or to an extent not previously considered, or if a new species is listed or critical habitat designated that may be affected by the identified action.

Additional relevant information is enclosed for your review. We look forward to further cooperation with you on other projects to ensure the conservation of our threatened and endangered marine species and designated critical habitat. If you have any questions about this consultation, please contact Brandon Howard, Fishery Biologist, at (561) 249-1652, or by email at Brandon.Howard@noaa.gov.

Sincerely,



Roy E. Crabtree, Ph.D.
Regional Administrator

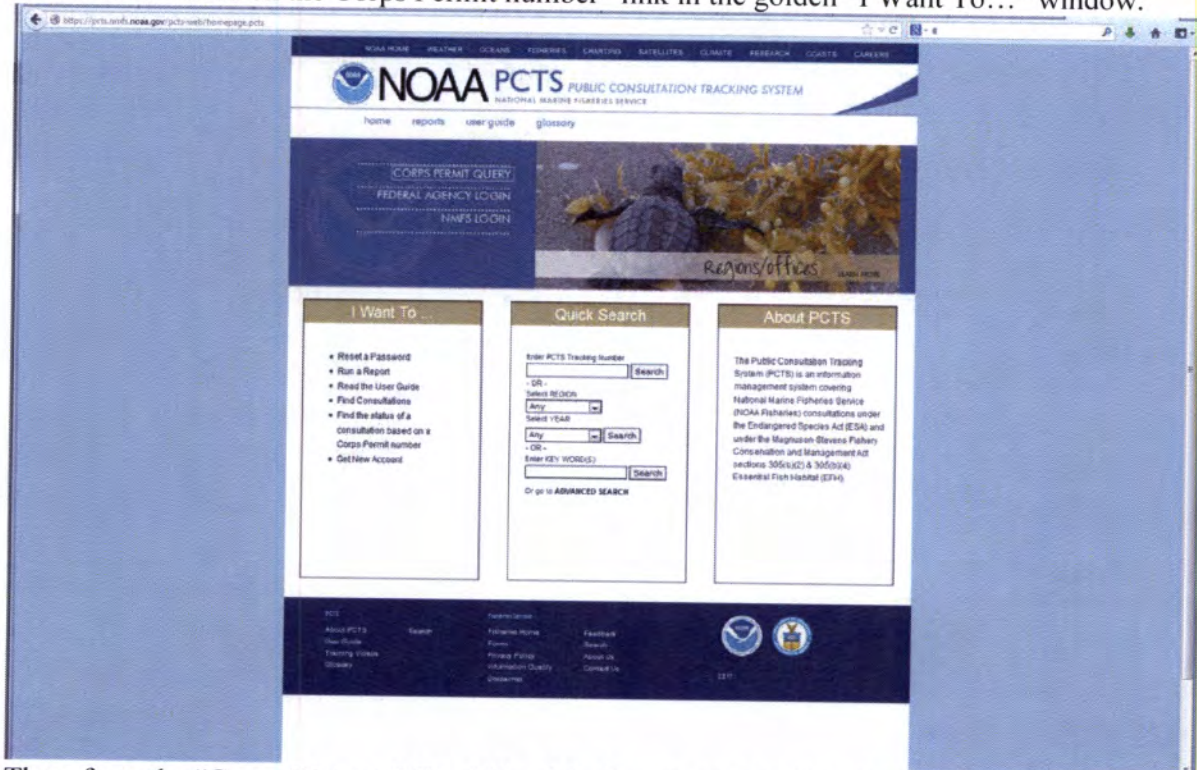
- Enc.: 1. *PCTS Access and Additional Considerations for ESA Section 7 Consultations*
(Revised June 11, 2013)
2. *Sea Turtle and Smalltooth Sawfish Construction Conditions* (Revised March 23, 2006)

File: 1514-22.L.4

PCTS Access and Additional Considerations for ESA Section 7 Consultations (Revised 6-11-2013)

Public Consultation Tracking System (PCTS) Guidance: PCTS is a Web-based query system at <https://pcts.nmfs.noaa.gov/> that allows all federal agencies (e.g., U.S. Army Corps of Engineers - USACE), project managers, permit applicants, consultants, and the general public to find the current status of NMFS's Endangered Species Act (ESA) and Essential Fish Habitat (EFH) consultations which are being conducted (or have been completed) pursuant to ESA Section 7 and the Magnuson-Stevens Fishery Conservation and Management Act's (MSA) Sections 305(b)2 and 305(b)(4). Basic information including access to documents is available to all.

The PCTS Home Page is shown below. For USACE-permitted projects, the easiest and quickest way to look up a project's status, or review completed ESA/EFH consultations, is to click on either the "Corps Permit Query" link (top left); or, below it, click the "Find the status of a consultation based on the Corps Permit number" link in the golden "I Want To..." window.



Then, from the "Corps District Office" list pick the appropriate USACE district. In the "Corps Permit #" box, type in the 9-digit USACE permit number identifier, with no hyphens or letters. Simply enter the year and the permit number, joined together, using preceding zeros if necessary after the year to obtain the necessary 9-digit (no more, no less) number. For example, the USACE Jacksonville District's issued permit number SAJ-2013-0235 (LP-CMW) must be typed in as 201300235 for PCTS to run a proper search and provide complete and accurate results. For querying permit applications submitted for ESA/EFH consultation by other USACE districts, the procedure is the same. For example, an inquiry on Mobile District's permit MVN201301412 is entered as 201301412 after selecting the Mobile District from the "Corps District Office" list. PCTS questions should be directed to Eric Hawk at Eric.Hawk@noaa.gov or (727) 551-5773.

EFH Recommendations: In addition to its protected species/critical habitat consultation requirements with NMFS' Protected Resources Division pursuant to Section 7 of the ESA, prior to proceeding with the proposed action the action agency must also consult with NMFS' Habitat Conservation Division (HCD) pursuant to the MSA requirements for EFH consultation (16 U.S.C. 1855 (b)(2) and 50 CFR 600.905-.930, subpart K). The action agency should also ensure that the applicant understands the ESA and EFH processes; that ESA and EFH consultations are separate, distinct, and guided by different statutes, goals, and time lines for responding to the action agency; and that the action agency will (and the applicant may) receive separate consultation correspondence on NMFS letterhead from HCD regarding their concerns and/or finalizing EFH consultation.

Marine Mammal Protection Act (MMPA) Recommendations: The ESA Section 7 process does not authorize incidental takes of listed or non-listed marine mammals. If such takes may occur an incidental take authorization under MMPA Section 101 (a)(5) is necessary. Please contact NMFS' Permits, Conservation, and Education Division at (301) 713-2322 for more information regarding MMPA permitting procedures.

SEA TURTLE AND SMALLTOOTH SAWFISH CONSTRUCTION CONDITIONS

The permittee shall comply with the following protected species construction conditions:

- a. The permittee shall instruct all personnel associated with the project of the potential presence of these species and the need to avoid collisions with sea turtles and smalltooth sawfish. All construction personnel are responsible for observing water-related activities for the presence of these species.
- b. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing sea turtles or smalltooth sawfish, which are protected under the Endangered Species Act of 1973.
- c. Siltation barriers shall be made of material in which a sea turtle or smalltooth sawfish cannot become entangled, be properly secured, and be regularly monitored to avoid protected species entrapment. Barriers may not block sea turtle or smalltooth sawfish entry to or exit from designated critical habitat without prior agreement from the National Marine Fisheries Service's Protected Resources Division, St. Petersburg, Florida.
- d. All vessels associated with the construction project shall operate at "no wake/idle" speeds at all times while in the construction area and while in water depths where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will preferentially follow deep-water routes (e.g., marked channels) whenever possible.
- e. If a sea turtle or smalltooth sawfish is seen within 100 yards of the active daily construction/dredging operation or vessel movement, all appropriate precautions shall be implemented to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 50 feet of a sea turtle or smalltooth sawfish. Operation of any mechanical construction equipment shall cease immediately if a sea turtle or smalltooth sawfish is seen within a 50-ft radius of the equipment. Activities may not resume until the protected species has departed the project area of its own volition.
- f. Any collision with and/or injury to a sea turtle or smalltooth sawfish shall be reported immediately to the National Marine Fisheries Service's Protected Resources Division (727-824-5312) and the local authorized sea turtle stranding/rescue organization.
- g. Any special construction conditions, required of your specific project, outside these general conditions, if applicable, will be addressed in the primary consultation.

Revised: March 23, 2006



UNITED STATES DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office

263 13th Avenue South

St. Petersburg, Florida 33701-5505

<http://sero.nmfs.noaa.gov>

October 24, 2014

F/SER47:BH/pw

(Sent via Electronic Mail)

Colonel Alan M. Dodd, Commander
Jacksonville District Corps of Engineers
Palm Beach Gardens Regulatory Field Office
4400 PGA Boulevard, Suite 500
Palm Beach Gardens, Florida 33410

Attention: Garret G. Lips

Dear Colonel Dodd:

NOAA's National Marine Fisheries Service (NMFS) reviewed Jacksonville District public notice SAJ-2014-01584 (SP-GGL), dated October 1, 2014. The Florida Department of Transportation, District 4 (FDOT), requests authorization from the Department of the Army to directly impact 24.98 acres of swales, 0.14 acre of mangroves, 0.08 acre of tape grass, 0.002 acre of sand/shell bottom, and 0.93 acre of open waters for the addition of express lanes along Interstate 95 (I-95) from south of Davie Boulevard to north of SW 10th Street in Broward County. The project would also indirectly impact 0.07 acre of mangroves. FDOT proposes mitigation for freshwater wetland impacts at the Loxahatchee Mitigation Bank and for estuarine wetland impacts at West Lake Park. The Jacksonville District's initial determination is the proposed road widening would not have a substantial adverse impact on essential fish habitat (EFH) or federally managed fishery species. As the nation's federal trustee for the conservation and management of marine, estuarine, and anadromous fishery resources, the following comments and recommendations are provided pursuant to authorities of the Fish and Wildlife Coordination Act and Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act).

Project History

NMFS provided FDOT with comments through the Environmental Screening Tool on August 10, 2011, recommending an EFH assessment be prepared. The EFH assessment was submitted by FDOT on May 13, 2013, and an EFH conservation recommendation requesting a complete mitigation plan was provided to FDOT by letter dated June 20, 2013. A response to the conservation recommendation was never received from FDOT. A meeting was attended by NMFS and FDOT on October 20, 2014, to finalize details in the mitigation plan.

Essential Fish Habitat within the Project Area

NMFS visited the project site on July 28, 2011, and October 3, 2014. Cypress Creek, the South Fork of the Middle River, and their associated wetlands are EFH. The South Atlantic Fishery Management Council (SAFMC) designates mangroves a HAPC for snappers and groupers with inshore life stages, including gray snapper (*Lutjanus griseus*), goliath grouper (*Epinephelus itajara*), and gag grouper (*Mycteroperca microlepis*). HAPCs are subsets of EFH that are rare, particularly susceptible to human-induced degradation, especially important ecologically, or located in an environmentally stressed area. Mangroves also stabilize shorelines and produce and export detritus (decaying organic material), which is an important component of marine and estuarine food chains. SAFMC designates sand/shell bottom and submerged aquatic vegetation (SAV) as EFH for inshore snappers and groupers, white shrimp (*Litopenaeus setiferus*), brown shrimp (*Farfantepenaeus aztecus*), and pink shrimp (*Farfantepenaeus*



duorarum). Sand/shell bottom, SAV, and mangroves directly benefit fishery resources by providing nursery and foraging habitat. SAFMC's *Fishery Ecosystem Plan of the South Atlantic Region* (available at www.safmc.net) provides further information about mangrove and sand bottom habitats and the support these habitats provide to fishery species.

Impacts to Essential Fish Habitat and Other Wetlands

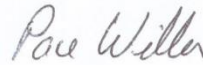
The project proposes impacts to EFH and to non-tidal freshwater wetlands. FDOT proposes compensatory mitigation at West Lake Park, Parcels 19 and 42, to offset impacts to mangroves; West Lake Park is in the same watershed as the impacts. NMFS agrees with the Uniform Mitigation Assessment Methodology (UMAM) scores provided, which show a loss of 0.112 UMAM functional units. This total would be debited from FDOT's remaining UMAM credits at West Lake Park. Mitigation for tape grass is being provided at a 1.5:1 ratio since the mitigation is out-of-kind (mangrove for tape grass). Impacts to sand/shell bottom would not require mitigation due to the *de minimis* size of the affected area (0.002 acre).

Other Wetlands: The remaining freshwater wetlands directly impacted by the roadway expansion are not EFH. NMFS believes the Loxahatchee Mitigation Bank is appropriate for offsetting the loss of the ecological services provided by these wetlands.

NMFS offers no conservation recommendations pursuant to the EFH provisions of the Magnuson-Stevens Act. Further consultation on this matter is not necessary unless modifications are proposed and FDOT concludes adverse impacts to EFH may result from the action.

We appreciate the opportunity to provide these comments. Questions should be directed to the attention of Mr. Brandon Howard in our West Palm Beach Field Office, located at 400 North Congress Avenue, Suite 120, West Palm Beach, FL 33401. He also may be reached by telephone at (561) 249-1652, or by email at Brandon.Howard@noaa.gov.

Sincerely,



/ for

Virginia M. Fay
Assistant Regional Administrator
Habitat Conservation Division

cc:

COE, Garett.G.Lips@usace.army.mil
FDOT, David.Bogardus@dot.state.fl.us
FWS, Ashleigh_Blackford@fws.gov
SAFMC, Roger.Pugliese@safmc.net
F/SER4, David.Dale@noaa.gov
F/SER47, Jocelyn.Karazsia@noaa.gov, Brandon.Howard@noaa.gov

APPENDIX H

Agency Coordination

- NMFS and USFWS Initial Coordination - Meeting Notes (February 23, 2018)
- NMFS Memorandum to File (March 27, 2018)
- USFWS ESA Section 7 Consultation / Concurrence Request Letter (May 2, 2018)

Meeting Notes

Project: I-95 at Broward Boulevard PD&E Study

Subject: NMFS and FWS Initial Coordination

Date: Friday, February 23, 2018

Location: Teleconference

Attendees:	Jennifer Schull, NMFS	John Wrublik, USFWS
	Ann Broadwell, FDOT	Lynn Kelley, FDOT
	Jeffrey Robbert, FDOT	Chris Jackson, RS&H
	Jimmy Mykytka, RS&H	Will Suero, HDR
	Jill Quigley, HDR	

The purpose of this meeting was to explain the I-95 at Broward Blvd. PD&E Study and its anticipated impacts to the natural habitat in the study area. Specifically, the purpose of the call was to determine if the potential impacts from the interchange improvements are already covered by the coordination completed and permits issued for the 95 Express Phase 3A-1 project. Ann Broadwell introduced the subject for the meeting and Will Suero provided an overview of the PD&E project. The following are the points that were discussed during the call.

- Jennifer asked about Smalltooth Sawfish and if there were going to be piles in the water and impacts. Ann explained that the new northbound ramp would have piles that are lined up with the existing piles and the same substructure as what is currently being permitted would be used. It was explained that a finding of “may affect but may not adversely affect” was being recommended. Ann asked if additional back up information would be required and Jennifer replied that she would get back to the Department about this.
- Jennifer noted that the scientific name of the Smalltooth Sawfish was misspelled in the document and needs to be corrected.
- John requested that all of the information shared during the call be put into a cover letter so that it was not necessary for the entire NRE to be reviewed. He stated that in his opinion as long as the Manatee Permit conditions were being followed, it should be fine.
- Jennifer raised the issue of Essential Fish Habitat. Jimmy explained that this was also accounted for with the permits for 95 Express 3A-1. Ann provided further explanation and asked if additional information was needed. Jennifer stated that she would speak with her supervisor and get back to the Department about this.

Action Items:

- PD&E Study team to prepare cover letters and official submittal to the agencies, which can be done electronically
- Jennifer Schull to follow up with the Department after consulting her supervisor
- Smalltooth Sawfish scientific name to be corrected in the report

Distribution: All attendees

MEMORANDUM TO FILE

Project: SR 9/I-95 (MP 9.310 to MP 11.282) @ SR 842/Broward Boulevard from West of SW 24th Avenue to East of NW/SW 18th Avenue (MP 4.886 to MP 5.392) Project Development & Environment (PD&E) Study

County: Broward County

ETDM No.: 14226

FPID: 435513-1-22-02

Date: March 27, 2018

Subject: National Marine Fisheries Service Coordination

The Florida Department of Transportation (FDOT), District Four, is currently conducting a Project Development and Environment (PD&E) Study that is evaluating potential improvements to the SR 9/I-95 at SR 842/Broward Boulevard Interchange in the City of Fort Lauderdale, Broward County, Florida. The proposed interchange improvements will be compatible with and is included within the limits of the I-95 Express Phase 3A project (FPID No. 433108-5-52-01) which began construction in mid-2016.

As part of the I-95 Broward Boulevard Interchange project, a Natural Resource Evaluation (NRE) was prepared. The NRE identified environmental features and listed species within the project limits and documented the potential impacts to wetlands, listed species, and Essential Fish Habitat (EFH). The NRE was prepared in accordance with:

- 50 CFR Part 402, the Endangered Species Act of 1973, as amended, and the FDOT PD&E Manual, Part 2 – Chapter 16 “Protected Species and Habitat” (June 14, 2017);
- FDOT PD&E Manual, Part 2 – Chapter 17 “Essential Fish Habitat” (June 14, 2017); and
- Executive Order 11990, Protection of Wetlands, dated May 23, 1977, US Department of Transportation Order 56601.A, Preservation of the Nation’s Wetlands, dated August 24, 1978, and the FDOT PD&E Manual, Part 2 - Chapter 9 “Wetlands and Other Surface Waters” (June 14, 2017).

Typically, as part of the PD&E Study process, the NRE is submitted to the appropriate regulatory agencies including the National Marine Fisheries Service (NMFS) for review. For this project, submittal of the NRE to the NMFS was not required based on preliminary coordination. The purpose of this Memorandum to File is to summarize the preliminary coordination with the NMFS documenting why no further consultation on this project is required.

The SR 9/I-95 at SR 842/Broward Boulevard Interchange project proposes widening of the southbound bridge over the North Fork of the New River. The southbound off ramp to Broward Boulevard is to be widened ~12-feet to the west beyond the widening of the I-95 Express Phase 3A project (See Bridge Widening Exhibit – **Appendix F** of the NRE). Widening of the bridge would result in 0.004 acre of impact to fringe mangroves. These fringe mangroves are within the I-95 Express Phase 3A project fill impact area as shown in the United States Army Corps of Engineers (USACE) Dredge and Fill Permit Sketches on Sheet 14 and within the existing I-95 limited access right-of-way. **Exhibit 1** (from the NRE) is Sheet 14 in the USACE Dredge and Fill Permit Sketches for the I-95 Express Phase 3A project and shows the extent of the fill impacts. **Exhibit 2** (from the NRE) shows the I-95 Express Phase 3A project’s permitted dredge and fill impacts overlaid with the proposed I-95 Broward Boulevard improvements. The mangroves

between the railroad right-of-way and I-95 southbound are identified as polygons 14M, 15M, and 16M. There are 0.05 acre of mangrove impacts (See Sheets 70 and 71 in USACE Permit Application below - from **Appendix G** in the NRE) at the North Fork of the New River (i.e. polygons 11M, 12M, 14M, 15M, and 16M), resulting in a total impact to mangroves of 0.14 acre from the I-95 Express 3A project.

Impacts to mangroves associated with the I-95 Broward Boulevard proposed improvements have already been identified as part of the I-95 Express Phase 3A project, authorized under South Florida Water Management District (SFWMD) Environmental Resource Permit No.06-01465-S and USACE Dredge & Fill Permit No. SAJ 2014-01584. In addition, the Environmental Considerations document (**See Appendix G** in the NRE) associated with these permits indicated that the “mangroves between the existing bridge and the railroad track located to the west of the bridge have been included as direct impacts.” Therefore, the project is not anticipated to impact any additional EFH or require additional mitigation. However, due to the additionally proposed pile driving activities in the open water portion of the North Fork of the New River and the potential use of the river by the Smalltooth sawfish, the NMFS *Sea Turtle and Smalltooth Sawfish Construction Conditions* will be followed with respect to any in-water construction activities (**Appendix E** in the NRE). With the implementation of these construction conditions to minimize potential impacts, the project “**may affect, not likely to adversely affect**” the Smalltooth sawfish. This determination is consistent with the NMFS Concurrence letter dated February 4, 2015 to the FDOT for the improvements associated with I-95 Express Phase 3A project within the North Fork of the New River (See **Appendix H** in the NRE). The February 4, 2015 letter concluded that the Smalltooth sawfish is not likely to be adversely affected by the proposed action.

Preliminary coordination with the NMFS was performed to discuss EFH consultation and ESA consultation for the Smalltooth sawfish. The following summarizes coordination between the NMFS and FDOT regarding consultation for this project.

On March 23, 2018, Jennifer Schull of the NMFS stated in email correspondence (Attachment 1) that EFH consultation will not be required based on the previous consultation for the I-95 Express Phase 3A project. In this email, it was stated that:

“During the consultation process for the I-95 Phase 3A project, the NMFS provided an essential fish habitat (EFH) consultation letter (SAJ-2014-01584, Oct 24, 2014). That consultation concurred with the FDOT's approach to avoid, minimize and mitigate the impacts to 0.14 acres of mangrove EFH within the project corridor. These impacts fully account for the impacts that will be incurred by the proposed widening over the NFNR (except for a negligible 0.004 ac of mangrove impacts). The NMFS will not require EFH consultation for the new widening project since EFH impacts have been accounted for during the I-95 Phase 3A project consultation process.”

In addition, a follow-up email from Jennifer Schull of the NMFS on March 26, 2018 (Attachment 2) indicated that ESA consultation for the Smalltooth sawfish will not require re-initiation if the means and methods for the proposed widening are the same as those used by the I-95 Phase 3A project. In this email, it was stated that:

“During the consultation process for the I-95 Phase 3A project, the NMFS provided an ESA consultation letter of concurrence (SER-2014-14907; 2/4/15) for smalltooth sawfish.

The original letter of concurrence contains the following statement regarding re-initiation of consultation: "consultation must be reinitiated if a take occurs or new information reveals effects of the action not previously considered, or the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat in a manner or to an extent not previously considered, or if a new species is listed or critical habitat designated that may be affected by the identified action. "

It is up to the action agency to ultimately decide, but it appears the proposed widening action, as described using the same means and methods as the previous project, may not meet the re-initiation criteria. If FDOT makes that determination, we suggest FDOT write a memo for their internal file describing the rationale for not re-initiating consultation and add it to FDOT records pertaining to the I-95 Phase 3A project."

The proposed I-95 Broward Boulevard project is anticipated to use the same construction means and methods as described in the I-95 Phase 3A project. Therefore, the bridge widening associated with this project does not meet the criteria to trigger re-initiation of consultation with the NMFS. As mentioned above, impacts to EFH are within the previously mitigated impact area and the potential impacts to the Smalltooth sawfish are within the extent previously considered by the I-95 Phase 3A project. Therefore, FDOT, will not re-initiate consultation and is retaining this "Memorandum to File" describing their rationale for the record as suggested by the NMFS.

I-95 Broward Boulevard Interchange PD&E Study, FM 435513-1-22-02, ETDM #14426
National Marine Fisheries Service Coordination
March 27, 2018

Attachment 1

From: Jennifer Schull of NMFS Regarding EFH Consultation (March 23, 2018)

From: Jennifer Schull - NOAA Federal [<mailto:jennifer.schull@noaa.gov>]
Sent: Friday, March 23, 2018 4:13 PM
To: Broadwell, Ann L <Ann.Broadwell@dot.state.fl.us>; Ascanio, Fernando <Fernando.Ascanio@dot.state.fl.us>; Kelley, Lynn <Lynn.Kelley@dot.state.fl.us>
Cc: Pace Wilber - NOAA Federal <pace.wilber@noaa.gov>; Jennifer Schull <jennifer.schull@noaa.gov>
Subject: Technical Assistance on EFH - I-95 and Broward Blvd Interchange PD&E

Dear Ann,

The NMFS has reviewed the documentation for the proposed widening of the southbound I-95 road and bridge over the North Fork of the New River (NFNR). The project will widen the bridge over the NFNR by approximately 12 feet and is a modification of the I-95 Phase 3A project. During the consultation process for the I-95 Phase 3A project, the NMFS provided an essential fish habitat (EFH) consultation letter (SAJ-2014-01584, Oct 24, 2014). That consultation concurred with the FDOT's approach to avoid, minimize and mitigate the impacts to 0.14 acres of mangrove EFH within the project corridor. These impacts fully account for the impacts that will be incurred by the proposed widening over the NFNR (except for a negligible 0.004 ac of mangrove impacts). The NMFS will not require EFH consultation for the new widening project since EFH impacts have been accounted for during the I-95 Phase 3A project consultation process. We appreciate the opportunity to provide these comments.

I will send a separate email regarding our evaluation of the need for an ESA consultation.

Sincerely,

Jennifer Schull

--

Jennifer Schull
NOAA Fisheries Southeast Regional Office
Habitat Conservation Division
400 N. Congress Avenue STE 110
West Palm Beach, FL 33401
561 249-1652

I-95 Broward Boulevard Interchange PD&E Study, FM 435513-1-22-02, ETDM #14426
National Marine Fisheries Service Coordination
March 27, 2018

Attachment 2

From: Jennifer Schull of NMFS Regarding ESA Consultation for the Smalltooth Sawfish (March 26, 2018)

From: Jennifer Schull - NOAA Federal [<mailto:jennifer.schull@noaa.gov>]

Sent: Monday, March 26, 2018 9:36 AM

To: Broadwell, Ann L <Ann.Broadwell@dot.state.fl.us>; Ascanio, Fernando <Fernando.Ascanio@dot.state.fl.us>; Kelley, Lynn <Lynn.Kelley@dot.state.fl.us>; Quigley, Jill <jill.quigley@hdrinc.com>; Suero, Will <Will.Suero@hdrinc.com>

Cc: Pace Wilber - NOAA Federal <pace.wilber@noaa.gov>; Jennifer Schull <jennifer.schull@gmail.com>

Subject: Technical Assistance on ESA - I-95 and Broward Blvd Interchange

Dear Ann,

The NMFS has reviewed the documentation for the proposed widening of the southbound I-95 road and bridge over the North Fork of the New River (NFNR). The project will widen the bridge over the NFNR by approximately 12 feet and is a modification of the I-95 Phase 3A project. During the consultation process for the I-95 Phase 3A project, the NMFS provided an ESA consultation letter of concurrence ([SER-2014-14907; 2/4/15](#)) for smalltooth sawfish.

The original letter of concurrence contains the following statement regarding re-initiation of consultation: "consultation must be reinitiated if a take occurs or new information reveals effects of the action not previously considered, or the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat in a manner or to an extent not previously considered, or if a new species is listed or critical habitat designated that may be affected by the identified action."

It is up to the action agency to ultimately decide, but it appears the proposed widening action, as described using the same means and methods as the previous project, may not meet the re-initiation criteria. If FDOT makes that determination, we suggest FDOT write a memo for their internal file describing the rationale for not re-initiating consultation and add it to FDOT records pertaining to the I-95 Phase 3A project.

We appreciate the opportunity to provide these comments. Any additional questions or concerns can be addressed to Jennifer Schull (jennifer.schull@noaa.gov, [561-249-1652](tel:561-249-1652)).

--

Jennifer Schull
NOAA Fisheries Southeast Regional Office
Habitat Conservation Division
400 N. Congress Avenue STE 110
West Palm Beach, FL 33401
[561 249-1652](tel:561-249-1652)

2015-CPA-0321
Broward



Florida Department of Transportation
3400 West Commerce Street
Fort Lauderdale, FL 33309

RICK SCOTT
GOVERNOR



U.S. Fish and Wildlife Service
1339 20th Street
Vero Beach, Florida 32960
772-562-3909 Fax 772-562-4288

FWS Log No. 2015-I-0321

March 23, 2018

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

Roxanna Hinzman, Field Supervisor
South Florida Ecological Services Office
United States Fish and Wildlife Service
1339 20th Street
Vero Beach, FL 32960-3559

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


Roxanna Hinzman, Field Supervisor Date 5/2/2018

Attn: John Wrublik

Subject: ESA Section 7 Consultation / Concurrence Request
Project Name: SR 9/I-95 (MP 9.310 to MP 11.282) @ SR 842/Broward Boulevard from West of SW 24th Avenue to East of NW/SW 18th Avenue (MP 4.886 to MP 5.392) Project Development & Environment (PD&E) Study
County: Broward County
ETDM No. 14226
Financial Project Identification Number: 435513-1-22-02

Dear Mr. Wrublik,

The Florida Department of Transportation (FDOT), District Four, is currently conducting a Project Development and Environment (PD&E) Study that is evaluating potential improvements to the SR 9/I-95 and SR-842/Broward Boulevard Interchange in the City of Fort Lauderdale, Broward County, Florida. The PD&E study limits extend along SR 9/I-95, from just south of Davie Boulevard to just south of Sunrise Boulevard, a distance of approximately two miles, and along Broward Boulevard from NW 24th Avenue to SW 18th Avenue, a distance of approximately one half mile. The primary purpose of this study is to develop and evaluate design concepts that will improve traffic flow to and from I-95, as well as along Broward Boulevard, increase connectivity between the I-95 Express Lanes and Broward Boulevard, and improve intermodal connectivity. The improved connectivity and traffic flow will be achieved via widening along Broward Boulevard and I-95, new ramps to connect the I-95 Express Lanes, and the re-alignment of existing ramps.

As part of this project and in accordance with 50 CFR Part 402, the Endangered Species Act of 1973, as amended, and the FDOT PD&E Manual, Part 2 – Chapter 16 “Protected Species and Habitat” (June 14, 2017), an assessment of federally protected wildlife and plant species involvement was conducted. The objectives of this assessment were to determine if any protected species inhabit the project site, to determine if any protected species present would be adversely impacted by the proposed project, and if necessary, develop recommendations for avoidance and minimization of potential impacts. The assessment of listed species can be found in the attached

Natural Resource Evaluation (NRE) for the USFWS review. The following summarizes the effects determinations and request for concurrence for the federally-listed species with the potential to occur in the project area or be impacted by the project.

Description of Project Area

The project is located in a highly urbanized area of Broward County. The project area consists of developed parcels and properties, such as residential, institutional, commercial, industrial and light industrial, and transportation, as well as recreational areas. The project area contains less than eight acres of potential habitat including 3.6 acres of Open (urban) Land (FLUCFCS: 190), 2.1 acres of Upland Hardwood Forests (FLUCFCS: 420), and 5.6 acres of Water (FLUCFCS: 510 & 530) within a 500-foot buffer of the project area. Xeric habitats were not observed during the field reviews. Upland swales and parcels of open land occur throughout the project limits. These are typically planted with sod and appear to be routinely maintained.

One wetland exists within the project areas as disturbed, fringe mangroves along the banks of the North Fork of the New River. Six surface waters exist within the project area, including the North Fork of the New River and five permitted stormwater management areas containing hydrophytic vegetation. The proposed build alternatives will encroach upon the existing fringe mangrove wetland, the North Fork of the New River, and two of the stormwater management areas. However, these areas were identified for impacts by the I-95 Express Phase 3A-1 project (FPID No. 433108-5-52-01) and were mitigated under the South Florida Water Management District (SFWMD) Environmental Resource Permit No.06-01465-S and United States Army Corps of Engineers (USACE) Dredge & Fill Permit No. SAJ 2014-01584. The remaining surface waters are also being impacted by the I-95 Express Phase 3A-1 project and will be mitigated through offsetting stormwater management areas to be constructed as part of the proposed build alternative.

Protected Species that May Be Present

The USFWS County Listed Species, FDOT Environmental Screening Tool (EST), and environmental comments in the Programming Screen Summary Report (Project #14226 – SR-9/I-95 and SR 842/Broward Boulevard Interchange) were reviewed to develop a list of species and critical habitat that “may be present” within the project area. The federally-listed species that have a potential to occur in the project corridor are the wood stork, Smalltooth sawfish, West Indian manatee, Eastern indigo snake, Everglades snail kite, American crocodile, Hawksbill, Leatherback, Green, and Loggerhead sea turtles, Beach jacquemontia, and tiny polygala.

Wood Stork: The project is located within the Core Foraging Area (CFA) of two nesting wood stork colonies: “Sawgrass Ford” and “Emerald Estates 1 and 2 Griffin”. Both colonies were active as of 2016. The stormwater swales may provide potential Suitable Foraging Habitat (SFH), although their location within, or adjacent to, I-95 and/or the South Florida Rail Corridor decreases their suitability. The proposed project will potentially impact less than one-half acre of SFH for the wood stork. While the surface waters provide foraging habitat, potential for nesting by these species is low due to the close proximity to a roadway and highly developed urban setting. Individuals, or nests, of this species were not observed during the field reviews. Any impacts to SFH occurring within stormwater management areas are anticipated to be mitigated through offsetting stormwater management areas, similar to the I-95 Express Phase 3A-1 project. To protect individual wood storks during construction, Technical Special Provisions (TSPs) will be

incorporated into the construction plans and bid documents. Since SFH occurs within the project area, although minimal in value, and the project is within two wood stork CFA's, based on the key from the USFWS South Florida Programmatic Concurrence letter (May 18, 2010), the project "**may affect, not likely to adversely affect**" the wood stork.

Smalltooth Sawfish: The project area encompassing the North Fork of the New River includes mangroves which serve as Essential Fish Habitat (EFH) for the Smalltooth sawfish. Within the project area west of I-95, mangrove habitat is low quality due to the presence of invasive species and limited, discontinuous fringes of mangroves present along the shorelines of the I-95 crossing of the tidal flow way. The project is not located within designated critical habitat for this species.

The proposed improvements will result in a total of 0.004 acre of fill impacts to the existing fringe mangrove wetlands along the banks of the North Fork of the New River and 0.02 acre of shading impacts to the open water portion of the North Fork of the New River. As mentioned above, the existing mangroves are already planned to be fully impacted by the I-95 Express Phase 3A-1 project (FPID No. 433108-5-52-01) and were mitigated under the SFWMD Environmental Resource Permit No.06-01465-S and USACE Dredge & Fill Permit No. SAJ 2014-01584. Therefore, the project is not anticipated to impact any additional EFH or require additional mitigation. However, due to the additionally proposed pile driving activities in the open water portion of the North Fork of the New River and the potential use of the river by the Smalltooth sawfish, the NMFS *Sea Turtle and Smalltooth Sawfish Construction Conditions* (March, 2006) will be followed with respect to any in-water construction activities. With the implementation of these construction conditions to minimize potential impacts, the project "**may affect, not likely to adversely affect**" the Smalltooth sawfish. This determination is consistent with the NMFS Concurrence letter dated February 4, 2015 to the FDOT for the improvements associated with I-95 Express Phase 3A-1 within the North Fork of the New River. The February 4, 2015 letter concluded that the Smalltooth sawfish is not likely to be adversely affected by the proposed action. On March 12, 2018, Jennifer Schull of NMFS agreed that based on the previous consultation for the I-95 Express Phase 3A-1 project, no consultation for this project is required.

West Indian Manatee: The USFWS has designated critical habitat for the West Indian manatee in the North Fork of the New River. The North Fork of the New River provides potential manatee access to the waterways crossing underneath I-95. Manatee Protection Zones, enforced by the Florida Fish and Wildlife Commission (FWC), apply to this river and begin east and extend west of I-95 at the river crossing. Due to limited/absence of foraging opportunities within the tidal river, manatees, if present, are traveling through this area on a transient basis. Individuals of this species were not observed during the field reviews. To avoid potential impacts to this species, the FDOT agrees to follow the the *Standard Manatee Conditions for In-Water Work* (FWC, 2013) during implementation of the project, and TSPs) will be incorporated into the contractor's bid documents. Due to the limited impact on low quality mangrove habitat and nature of the project, based on the USACE State of Florida Effect Determination Key for the Manatee in Florida (April 2013) the project "**may affect, not likely to adversely affect**" the West Indian manatee.

Eastern Indigo Snake: The Eastern indigo snake has a low potential of occurrence within the project corridor due to the urbanized nature of the project area and limited suitable habitat. These snakes often inhabit gopher tortoise burrows. Xeric habitats, gopher tortoise burrows, and/or

Eastern indigo snakes were not observed during the field reviews. Any dry upland retention areas are located within the right-of-way of I-95 and are components of the road's drainage system. To avoid potential impacts to this species, the FDOT agrees to follow the *Standard Protection Measures for the Eastern Indigo Snake* (USFWS 2013) during implementation of the project. Due to the limited low quality habitat and minimal impact, based on the Eastern Indigo Snake Programmatic Effect Determination Key (USFWS 2017) the project "*may affect, not likely to adversely affect*" the Eastern indigo snake.

Everglade Snail Kite: The FDOT EST identifies the project limits as being within the USFWS Consultation Area for this species, but not within any areas of critical habitat for this species. The project does not impact their preferred habitat including large, open, shallow freshwater marshes and lakes. Due to the lack of suitable habitat within the project area, the project will have "*no effect*" on the Everglades snail kite.

American Crocodile: The project area is not located within a consultation area of the American crocodile. The North Fork of the New River is located within, and adjacent to, the I-95 right-of-way. The potential for this species to be found within or adjacent to the project area is low. Due to the urbanized environment and the limited impact on suitable habitat, the project will have "*no effect*" on the American crocodile.

Hawksbill, Leatherback, Green, and Loggerhead Sea Turtles: The North Fork of the New River can provide sea turtle access to the project corridor; however, this is highly unlikely. No nesting habitats or individuals of these species were observed during the project's field reviews. To minimize any potential for adverse effects to these species, the NMFS *Sea Turtle and Smalltooth Saw Fish Construction Conditions* (March, 2006) will be adhered to for any in-water work during the construction phase of this project. Due to the lack of suitable nesting habitat and minimal impact on useable habitat, the project will have "*no effect*" on the Hawksbill, Leatherback, Green, and Loggerhead sea turtles.

Beach Jacquemontia: The vegetative communities where this species occurs including the lee side of stable, vegetated dunes, disturbed openings in maritime hammock, coastal strand, and coastal scrub were not identified within, or adjacent to, the project area. Individuals of this species were not observed during the project area field reviews. Based on the lack of suitable habitat and low potential for impacts, the project will have "*no effect*" on the Beach jacquemontia.

Tiny Polygala: The vegetative communities where this species occurs including open sand and pine rockland, scrub, sandhill, and open coastal spoil pile habitats with little, to no organic litter, were not identified within, or adjacent to, the project area. Individuals of this species were not observed during the project area field reviews. Based on the lack of suitable habitat and low potential for impacts, the project will have "*no effect*" on the tiny polygala.

We request that USFWS concur with the determinations that the project will have "*no effect*" on the Everglade snail kite, American crocodile, Hawksbill, Leatherback, Green, and Loggerhead sea turtles, Beach jacquemontia, and tiny polygala and with the determination that the project "*may affect, but is not likely to adversely affect*" the wood stork, Smalltooth sawfish, West Indian manatee, and Eastern indigo snake. Additional information regarding these species are included in

*SR 9/I-95 at SR 842/Broward Boulevard Interchange PD&E Study
FM 435513-1-22-02*

the attached NRE for your review. If you have any questions about this project or require further information, please contact me at (954) 777-4325 or via email at Ann.Broadwell@dot.state.fl.us.

Sincerely,



Ann Broadwell
Environmental Administrator
FDOT – District 4