

Location Hydraulics Report

Florida Department of Transportation

District 2

SR 16 PD&E Study

From International Golf Parkway to I-95

St. Johns County, Florida

Financial Management Number: 210447-5-32-01

ETDM Number: 14535

July 2025

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

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## **SR 16 Project Development and Environment (PD&E) Study**

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## 1.0 Project Summary

### 1.1 Project Description

This Project Development and Environment (PD&E) Study involves a 5.9-mile segment of State Road (SR) 16 from International Golf Parkway (IGP) to I-95 in St. Johns County, Florida. A map of the project limits is shown in **Figure 1.2.1**. Within the study limits, SR 16 is functionally classified as a rural principal arterial-other. Between IGP and the St. Augustine Outlet Mall, approximately 5.1 miles, SR 16 is a two-lane undivided roadway with sporadic left turn lanes and no pedestrian or bicycle features. **Figure 1.1.1** shows the existing typical section for this segment. From the St. Augustine Outlet Mall to I-95, approximately 0.8 miles, SR 16 is a four-lane divided roadway with a sidewalk located on both sides of the road for approximately 0.5 miles, from the southern entrance of the St. Augustine Outlet Mall to I-95. **Figure 1.1.2** shows the existing typical section for this segment.

**Figure 1.1.1: Existing Typical Section**

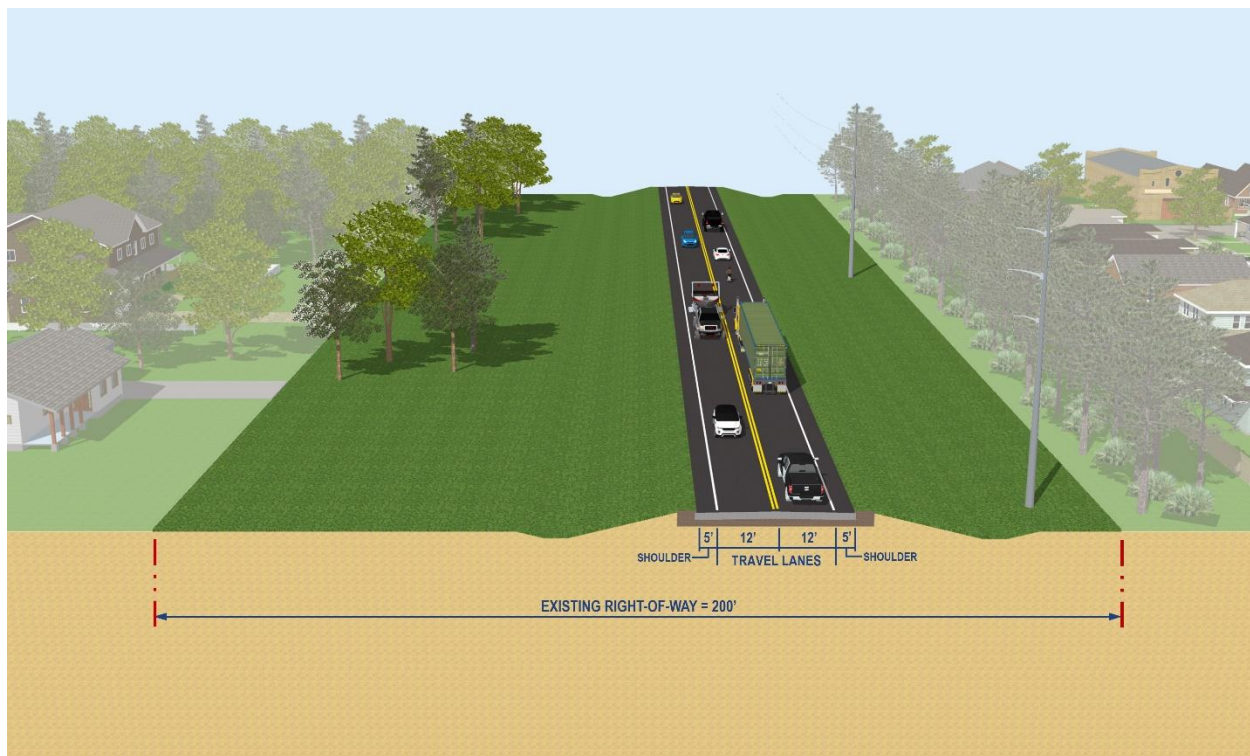
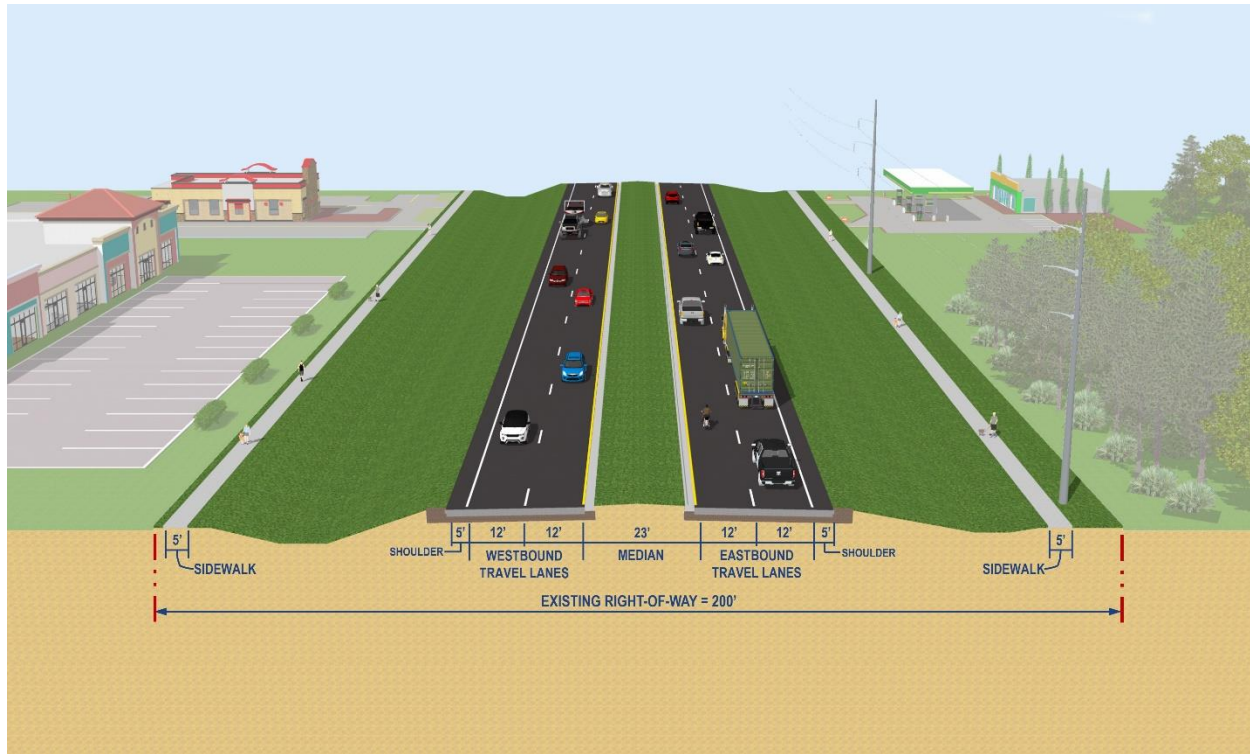


Figure 1.1.2: Existing Typical Section



This study will evaluate widening the existing two-lane rural undivided roadway to a four-lane divided rural roadway. In addition, multi-modal transportation improvements including continuous bicycle and pedestrian facilities will be evaluated. SR 16 has one existing bridge (bridge number 780064) over Turnbull Creek. The structural integrity and functionality of this bridge will be evaluated.

## 1.2 Purpose & Need

The purpose of this project is to improve traffic mobility, reduce congestion, and address safety on SR 16 from IGP to I-95.

The project is needed to address traffic congestion and safety concerns. A secondary need for the project is to accommodate planned developments.



Figure 1.2.1: Project Location Map

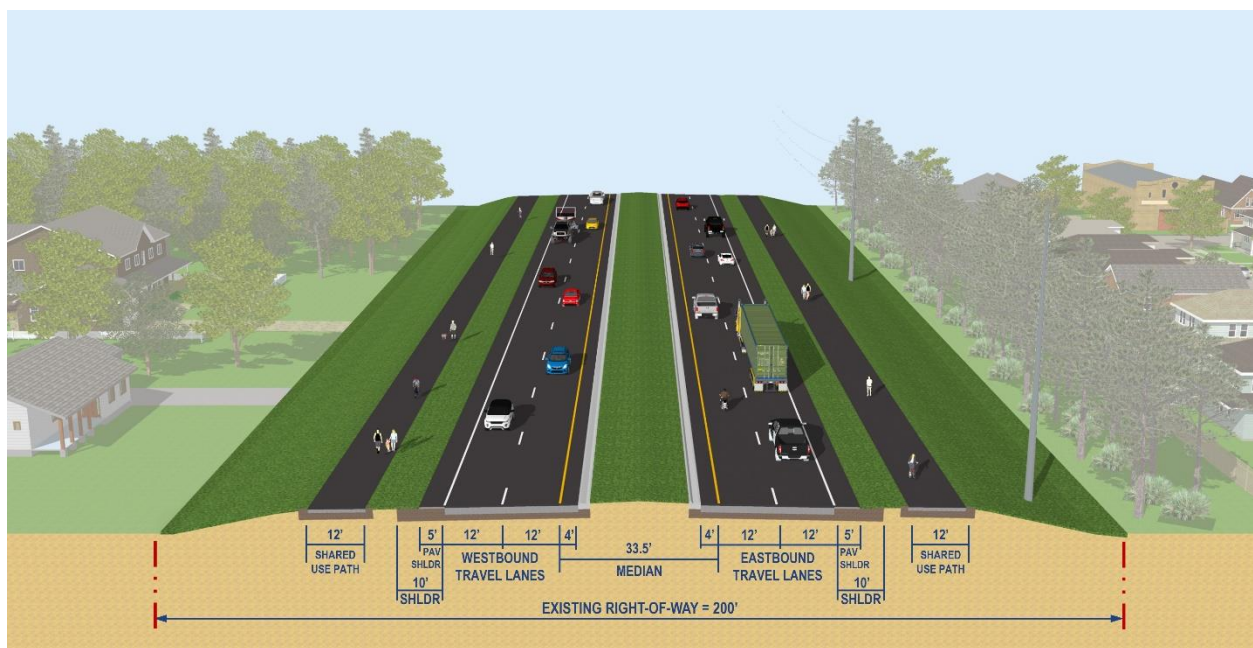


### 1.3 Alternatives Analysis

SR 16 is divided into two segments: Segment 1: IGP to the St. Augustine Outlet Mall, and Segment 2: St. Augustine Outlet Mall to I-95. St. Johns County is upgrading the portion of SR 16 between IGP and the proposed CR 2209, approximately 0.75 miles. The proposed improvements described below will tie into the County's project.

Segment 1 will require milling, resurfacing, and widening to the existing SR 16 lanes (future eastbound lanes), along with constructing additional westbound lanes. The proposed typical section features a four-lane divided high-speed arterial with curb and gutter in the median and flush outside shoulders. The roadway consists of two 12-foot-wide lanes in each direction with a four-foot-wide paved inside shoulder and a 10-foot-wide outside shoulder (five-foot paved). The opposing lanes are divided by a 33.5-foot-wide raised grassed median (including the inside four-foot-wide shoulder width). A 12-foot-wide shared use path is proposed on both sides of SR 16. The existing right-of-way is approximately 200 feet, and no additional right-of-way is required to accommodate the proposed typical section. **Figure 1.3.1** shows the proposed typical section for Segment 1.

**Figure 1.3.1: Proposed Typical Section**



The proposed design speed is 45 miles per hour (mph) from IGP to CR 2209, 55 mph from east of CR 2209 to west of the St. Augustine Outlet Mall, then from St. Augustine Outlet Mall to I-95 is 45 mph.

SR 16 is currently a two-lane undivided roadway, which is classified as non-restrictive, meaning there are no median openings. Upgrading Segment 1 to a four-lane divided facility will require the implementation of access management. The proposed access management classification is Class 3, which states directional median openings may be spaced at 1,320 feet and full median openings or signals may be spaced every 2,640 feet.

Segment 2 is already four lanes in the existing condition. Segment 2 is anticipated to meet the target LOS of D with proposed intersection improvements, so no additional capacity is recommended within this segment. The shared use paths from Segment 1 will be extended and will tie into the existing sidewalk. Safety and operational improvements are being evaluated within this segment of SR 16, including the improvements to the Toms Road intersection. The Toms Road intersection features a through-cut intersection to better direct vehicles through the intersection and reduce the risk of head-on and left-turn crashes. Segment 2 will maintain its access management classification of Class 3.



## 2.0 Existing Conditions

### 2.1 General Drainage Conditions

The project is located along the existing SR 16 roadway corridor between International Golf Parkway and I-95 within the limits of the Sixmile Creek basin contributing to the Lower St. Johns River basin. The majority of the corridor drains to Turnbull Creek, while the western portion drains to Mill Creek, both tributaries ultimately drain to Sixmile Creek. The area along the corridor is generally flat and consists of undeveloped and developed upland areas draining towards lower wetland areas. The existing SR 16 road base was generally constructed at grade and is slightly elevated above the surrounding areas. Stormwater runoff sheds from the roadway pavement and collects in a series of roadside ditches, and is conveyed to Turnbull Creek, which crosses the corridor near the center of the project limits. Areas at the western end of the project are conveyed towards the IGP intersection towards Mill Creek.

### 2.2 Drainage Basins

As mentioned above, most of the corridor drains to Turnbull Creek, a named tributary of Sixmile Creek, while the western portion drains to Mill Creek, also a named tributary of Sixmile Creek. The basin divide is just east of the Mura Bella Community based on the U.S. Geological Survey (USGS) LiDAR data. West of the basin divide, stormwater runoff is collected and conveyed in roadside stormwater ditches west toward IGP and ultimately reaches Mill Creek. East of the basin divide, stormwater runoff is collected and conveyed in roadside stormwater ditches directly into Turnbull Creek. At the eastern end of the project, stormwater runoff is collected and conveyed in roadside stormwater ditches to a channel that eventually outfalls at the northern limits of Turnbull Creek. Both Mill Creek and Sixmile Creek are considered open basins that eventually outfall into the St. Johns River and the Atlantic Ocean. Within the project limits, the existing roadway basins total approximately 101 acres in area measured along the SR 16 corridor from IGP to I-95.

### 2.3 Receiving Waterbodies

Turnbull Creek is part of the Sixmile Creek Water Body Identification (WBID# 2411). Sixmile Creek is a class 3F water body and is not a verified impaired basin through the Florida Department of



Environmental Protection (FDEP)'s Total Maximum Daily Load (TMDL) Program. Mill Creek (WBID# 2460) is also a class 3F water body; however, it is a verified impaired basin for Fecal Coliform, Dissolved Oxygen, and Nutrients.

## 2.4 Cross Culverts

There are multiple existing culverts within the project limits that convey runoff from one side of the corridor to the other. Table 2-1: Summary of Existing Cross Drains provides a summary of the existing culverts. See **Appendix D – Straight Line Diagrams** for additional information regarding the existing cross drains along SR-16.

**Table 2-1: Summary of Existing Cross Drains**

Station	Mile Post	Cross Drain Size	Length (ft)	Stream Name
<b>102+58.72</b>	9.549	2 - 24"	102	Unnamed Tributary to Turnbull Creek
<b>157+86.88</b>	10.596	1 - 24"	82	Unnamed Tributary to Turnbull Creek
<b>189+76.00</b>	11.2	2 - 24"	86	Unnamed Tributary to Turnbull Creek
<b>233+58.40</b>	12.03	1 - 24"	94	Unnamed Tributary to Turnbull Creek
<b>266+84.80</b>	12.66	3 - 36"	86	Unnamed Tributary to Turnbull Creek
<b>361+36.00</b>	14.45	1 - 24"	106	Unnamed Tributary to Turnbull Creek
<b>400+48.48</b>	15.191	1 - 30"	121	Unnamed Tributary to Turnbull Creek

## 2.5 Bridge Structures

Today, there is a single bridge crossing over (Turnbull Creek, #780064) within the project limits. This bridge structure was constructed in 1962 and was later reconstructed in 1971. The bridge is approximately 111 feet long and spans over the limits of the Turnbull Creek FEMA Floodway. A new proposed bridge structure will be constructed for both the eastbound and westbound lanes and will fully span the Turnbull Creek floodway.

## 2.6 Base Flood Elevation

The base flood elevation of Turnbull Creek at the existing SR 16 bridge crossing has been identified as elevation 23.0' from the FEMA Flood Insurance Study (12109CV001D). Upstream from this crossing, Turnbull Creek flows parallel along the northside of the SR 16 corridor with

base flood elevations ranging from 23.0' to 26.0'. Further east along the corridor, small pockets of floodplains feature base flood elevations of 27.5' (Park Wetland A) and 29.5' (Park Wetland B). See **Appendix B – FEMA FIRM Panels** for additional information.

## **2.7 Existing Deficiencies**

The roadside ditches along SR 16 were observed to be generally wet, and due to the flat terrain, contain stagnant runoff water throughout the year. Due to the presence of water and wet conditions, the ditches appear to be unmaintainable during the wettest times of the year. Trash and other debris collect where ditches are unmaintainable. Although the roadside ditches are generally wet, there have been no records of significant flooding or roadway overtopping. With the SR 16 road base constructed at existing grade, and due to the presence of flat areas with stagnant water conditions, the roadway base presents substandard clearances above the water table along the low segments of the corridor.

No scour or other erosion problems were observed at the bridge crossing over Turnbull Creek.

## 3.0 Project Evaluation

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### 3.1 Project Classification

The floodplain areas within the project limits are in low-density residential areas; however, **the encroachment areas are classified as minimal, and not significant.** Minimal encroachments on a floodplain occur when there is floodplain involvement but the impacts on human life, transportation facilities, and natural and beneficial floodplain values are not significant and can be resolved with minimal efforts. Normally, these minimal efforts to address the impacts will consist of applying FDOT's drainage design standards and following the St. Johns River Water Management Districts' procedures to prevent adverse impacts and will not increase or significantly change the flood elevations and/or limits.

### 3.2 Risk Assessment

For minimal encroachments, it is required to perform a risk assessment for each encroachment. As noted in Section 2.5, there is one bridge crossing along the project at Turnbull Creek. As shown below in **Figure 3.2.1** Turnbull Creek is a FEMA-regulated Floodway. The only design alternative being studied for this crossing is a full bridge replacement, thus a risk assessment is not warranted for the crossing. With the full bridge replacement, the proposed structure will be higher than the existing crossing. Therefore, a No-Rise certification will be provided which demonstrates that the backwater created by the bridge structure will be consistent with Flood Insurance Study requirements at this location.

### Figure 3.2.1 Turnbull Creek Crossing



Additionally, the proposed roadway improvements will require full replacements or extensions to the upstream and downstream ends of the existing cross drains along SR 16. Since this project is located along an existing alignment, any necessary replacements of cross drains for this project are limited to hydraulically equivalent structures, which are not expected to increase the backwater surface elevations. The limitations to the hydraulic equivalency proposed are due to restrictions imposed by the geometrics of design, existing development, cost feasibility, or practicability. Alternative encroachment locations have not been considered since it does not meet the project's purpose and need or is economically unfeasible.

Furthermore, the project will not affect existing floodplain elevations. There will be no significant change in the potential for interruption or termination of emergency service or emergency evacuation routes as the result of construction of this project. The proposed roadway is higher than the floodplain elevation, therefore the risk of overtopping is insignificant and there should not be any impacts to emergency services or evacuation.

### 3.3 Floodplains & Floodways

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) for St. Johns County were reviewed to determine the extents of the FEMA floodplains within the project limits. A FEMA floodplain graphic are provided in **Appendix A – Figures** and FEMA FIRMs are provided in **Appendix B – FEMA FIRM Panels**.

The anticipated floodplain impacts due to the proposed roadway construction were estimated to determine potential impacts to the 100-year floodplains and necessary compensation volumes. The exact impact volume from the proposed roadway construction will need to be assessed during the design phase, when survey, geotechnical data, and proposed cross-sections are available.

**The project will impact the 100-year floodplain through both longitudinal and transverse encroachments.** The longitudinal impacts result from filling within floodplain areas associated with proposed roadway widening along the project. Transverse impacts result from roadway widening occurring at cross drain locations along the corridor. To minimize impacts, Floodplain Compensation Areas (FPCAs) or cut ditch sections will be considered for practicability and feasibility. Each FPCA site would provide compensation adjacent to the same encroachment location as the corresponding impact.

The floodplain impact volumes were calculated using the United States Geological Survey (USGS) LiDAR data and the 100- year FEMA floodplain. See **Table 3-1** below for the flood impact volume calculated using this method. These impact shapes are also depicted in **Appendix C – Impact Maps**.

**Table 3-1: Summary of Flood Impact Volumes**

Area	Location	Volume (ac-ft)	Total Volume (ac-ft)
<b>1</b>	Pond Alternative 2A	4.06	23.77
	Pond Alternative 2B	2.45	
	Pond Alternative 3A	0.07	
	Pond Alternative 3B	2.54	
	Pond Alternative 3C	12.51*	
	Pond Alternative 4A	5.68	
	Roadway R/W at Turnbull	11.26*	
<b>2</b>	Roadway R/W West of Downs Corner Rd	1.84	1.84
<b>3</b>	Roadway R/W East of Downs Corner Rd	1.90	1.90

\*Values used for Area 1 total volume based on roadway and preferred pond impacts.

During the design phase, the roadway geometry should be optimized within the right-of-way to minimize the allowable floodplain impact volume to reduce the need for FPCA sites. Additionally, stormwater management facilities should be used to demonstrate floodplain compensation. Since the roadway design is still conceptual, FPCA sites will be conservatively sized to compensate for the entire floodplain impact per encroachment area.

Further coordination with FEMA and local agencies shall occur throughout the PD&E study to determine the requirements for the project.

## 4.0 Conclusion

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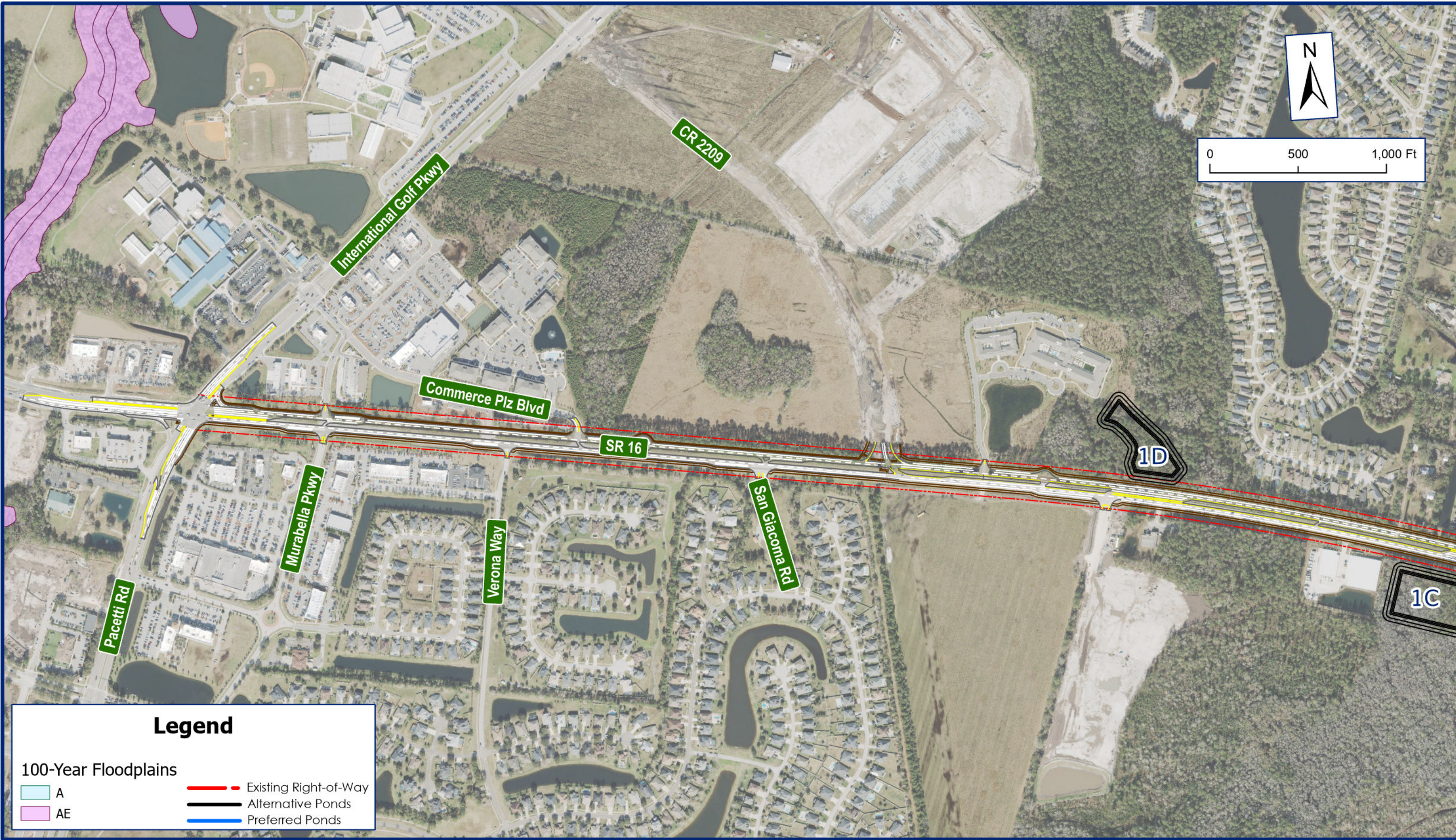
Roadway widening and construction of the additional westbound lanes will result in impacts to the adjacent FEMA floodplains. The anticipated floodplain impacts due to the proposed roadway improvements were calculated and FPCA alternatives were identified. The floodplain impact calculations are conservative and should be revised during design when survey, geotechnical data, and proposed cross sections are available. Floodplain compensation should be provided in roadside ditches and stormwater management facilities as the preferred alternative. Treatment and attenuation volumes provided in the stormwater management facilities should be used to demonstrate no adverse impact to the FEMA floodplain.

The FPCA sites will be evaluated based on several factors, including wetland impacts, habitat and environmental impacts, and hydraulic connectivity to the FEMA flood zones. Further analysis is required to evaluate the total cost of each alternative, and maintenance needs.

## Appendix A – Figures

Figure 1: FEMA Floodplain





**Legend**

100-Year Floodplains

- A
- AE

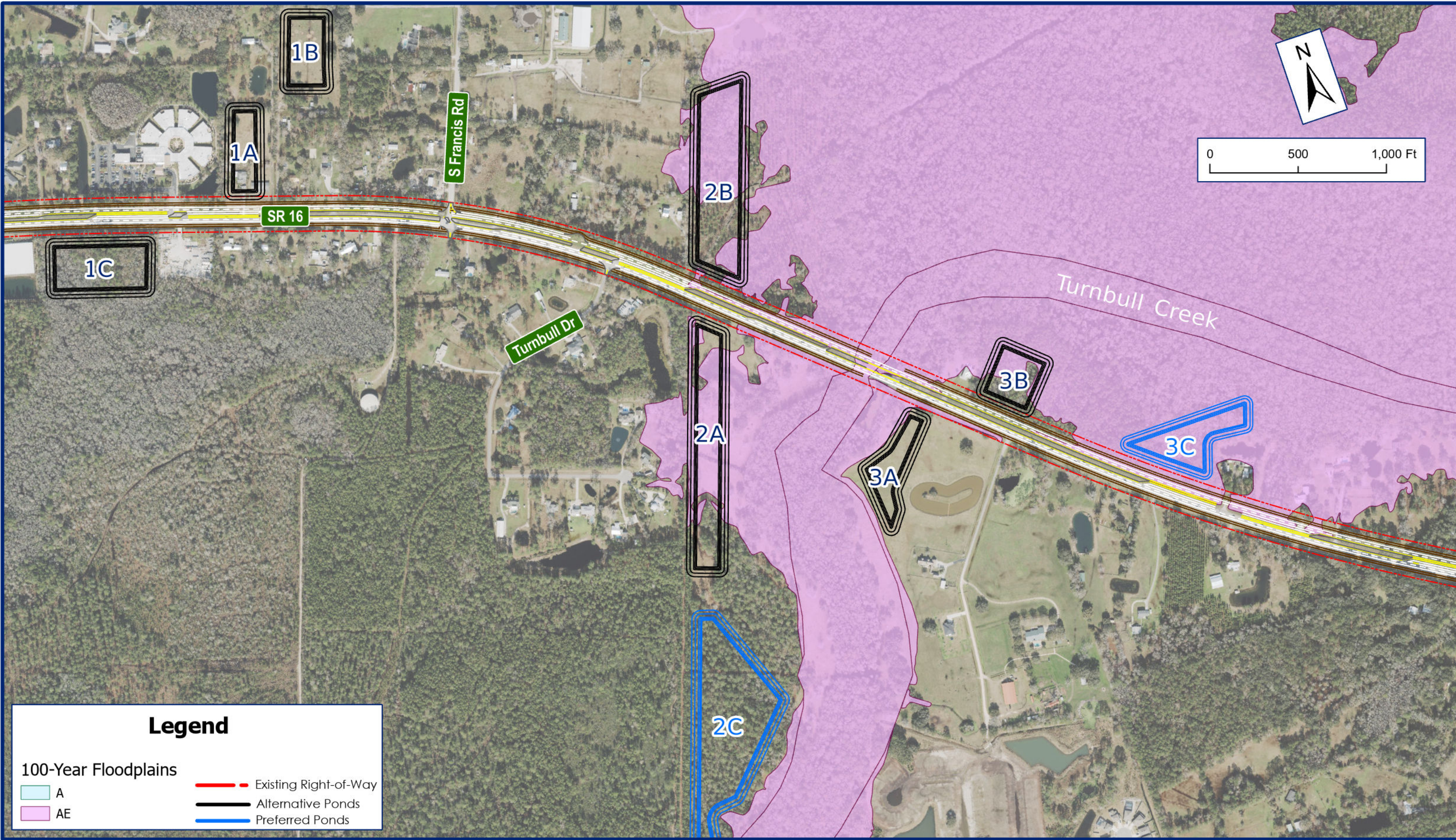
- Existing Right-of-Way
- Alternative Ponds
- Preferred Ponds



**SR 16 from International Golf Parkway to I-95 PD&E Study**  
**FPID: 210447-5-32-01**

**Figure 1: FEMA Floodplains**





### Legend

100-Year Floodplains

A  
AE

Existing Right-of-Way  
Alternative Ponds  
Preferred Ponds

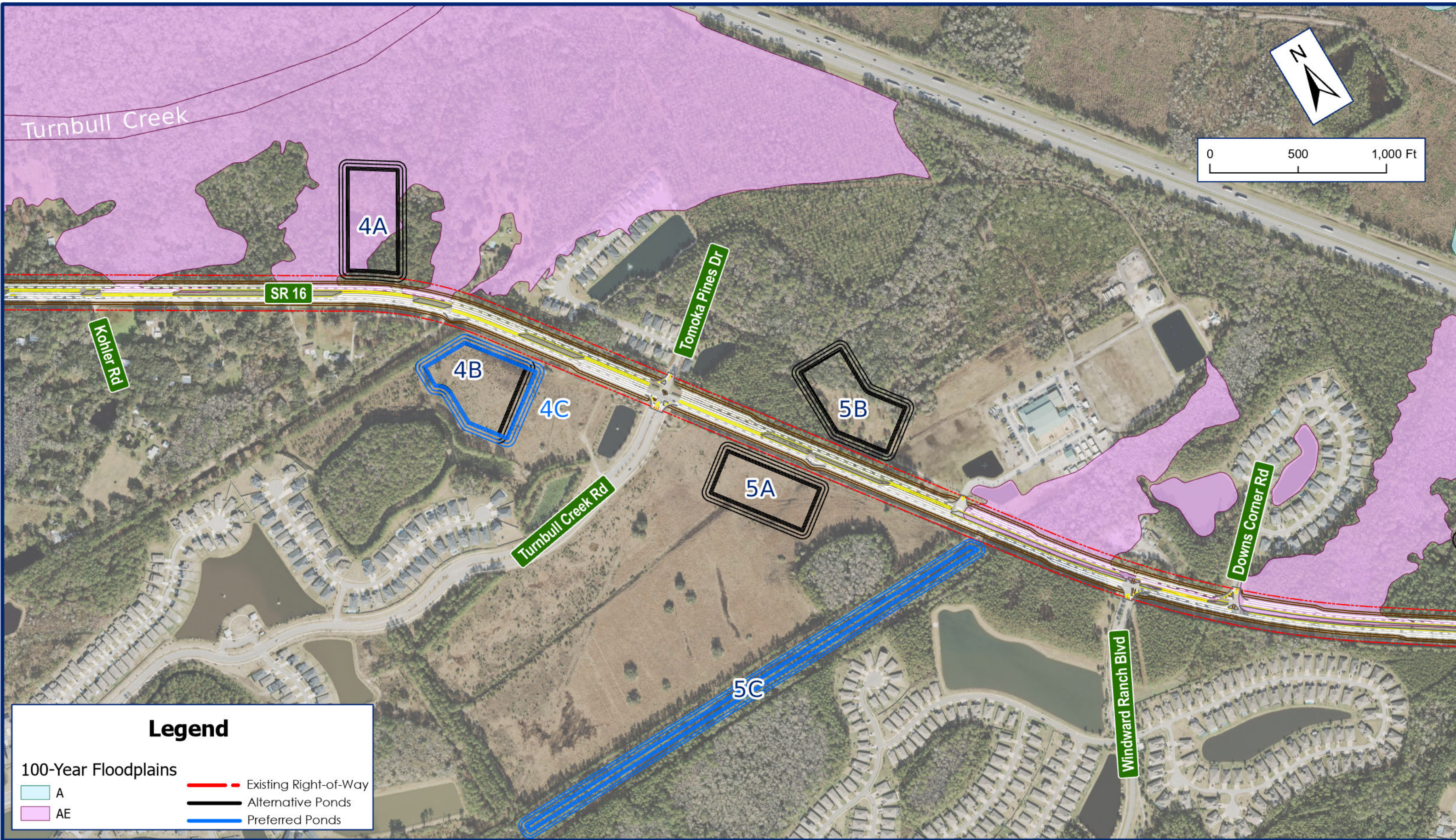


SR 16 from International Golf Parkway to I-95 PD&E Study  
FPID: 210447-5-32-01

Figure 1: FEMA Floodplains


Page No.  
2 of 4





### Legend

#### 100-Year Floodplains

- |   |   |
|---|---|
|  A  |  Existing Right-of-Way |
|  AE |  Alternative Ponds     |
|   |  Preferred Ponds       |





**Legend**

100-Year Floodplains

- A
- AE

- Existing Right-of-Way
- Alternative Ponds
- Preferred Ponds



**SR 16 from International Golf Parkway to I-95 PD&E Study**  
**FPID: 210447-5-32-01**

**Figure 1: FEMA Floodplains**



## Appendix B – FEMA FIRM Panels







FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT  
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT [HTTP://MSC.FEMA.GOV](http://msc.fema.gov)

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A.V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
OTHER AREAS OF FLOOD HAZARD		Regulatory Floodway
		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
OTHER AREAS		Area with Reduced Flood Risk due to Levee See Notes Zone X
		NO SCREEN Area of Minimal Flood Hazard Zone X
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
OTHER FEATURES		Levee, Dike, or Floodwall
		Cross Sections with 1% Annual Chance Water Surface Elevation
		Coastal Transect
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
OTHER FEATURES		Base Flood Elevation Line (BFE)
		Limit of Study
OTHER FEATURES		Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information Exchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at <http://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on the FIRM was provided in digital format by the St. Johns County GIS Department, dated 2009, 2013 and 2014; the U.S. Census Bureau, dated 2014; the U.S. Fish and Wildlife Service, dated 2015; the U.S. Department of Agriculture Farm Service Agency, dated 2013, and FEMA, dated 2011.

SCALE

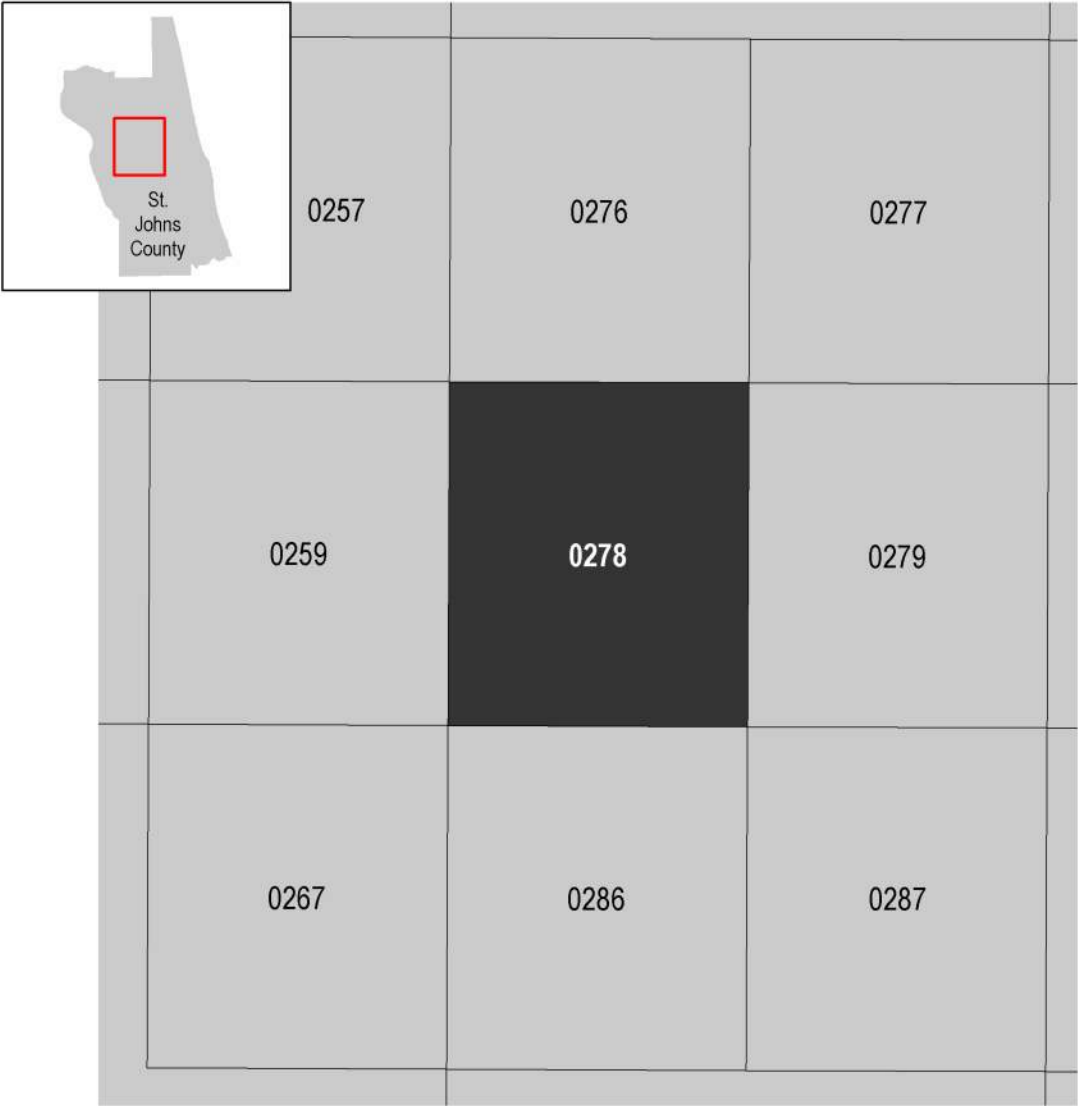
Map Projection:  
State Plane Transverse Mercator, Florida East Zone 0901;  
North American Datum 1983; Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 500 feet 1:6,000

0 250 500 750 1,000 2,000 feet

0 125 250 500 meters

PANEL LOCATOR



National Flood Insurance Program

**NATIONAL FLOOD INSURANCE PROGRAM**  
FLOOD INSURANCE RATE MAP

**ST. JOHNS COUNTY, FLORIDA**  
and Incorporated Areas

PANEL 278 OF 560

Panel Contains:  
COMMUNITY ST. JOHNS COUNTY

NUMBER 125147

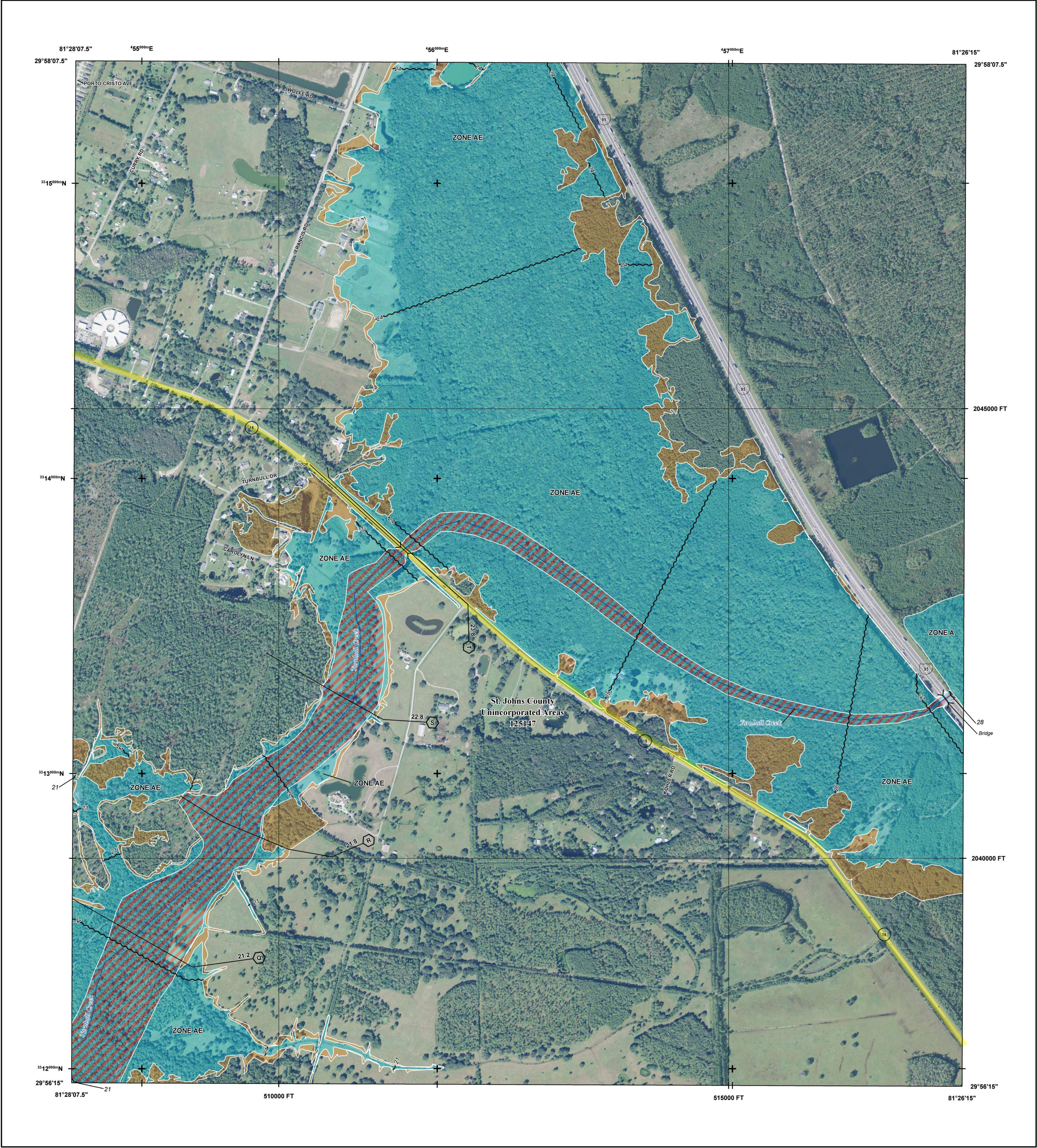
SUFFIX 0278 J

VERSION NUMBER 2.3.3.2

MAP NUMBER 12109C0278J

MAP REVISED DECEMBER 7, 2018





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OTHER AREAS OF FLOOD HAZARD		Regulatory Floodway
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	Limit of Study	
	Jurisdiction Boundary	

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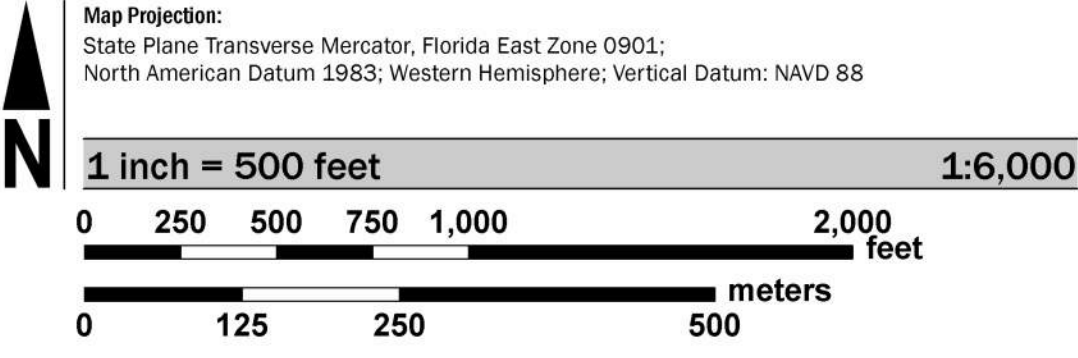
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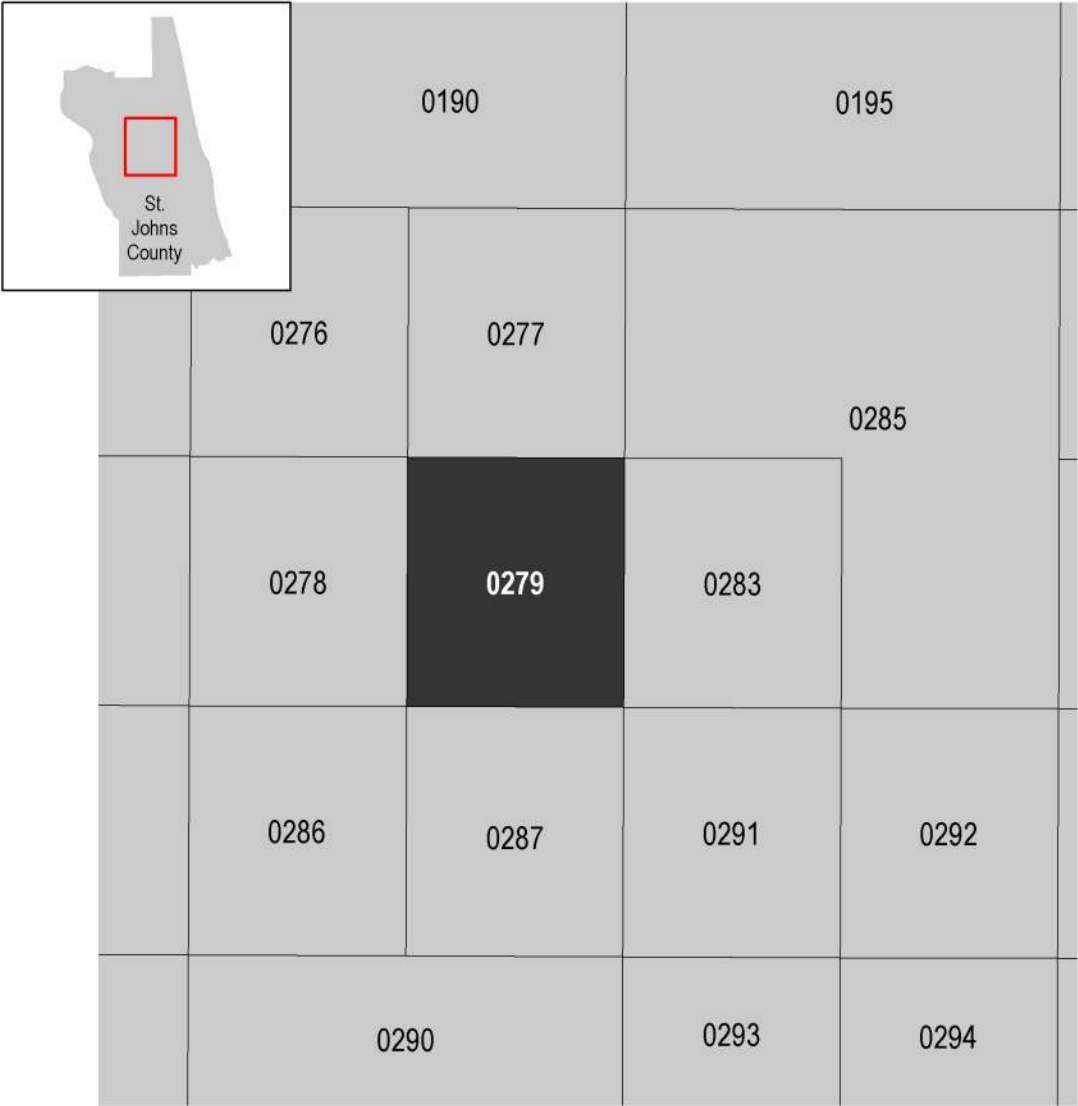
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SCALE



PANEL LOCATOR



National Flood Insurance Program

**NATIONAL FLOOD INSURANCE PROGRAM**  
FLOOD INSURANCE RATE MAP

**ST. JOHNS COUNTY, FLORIDA**  
and Incorporated Areas

PANEL 279 OF 560

Panel Contains:  
COMMUNITY ST. JOHNS COUNTY

NUMBER 125147

SUFFIX 0279 J

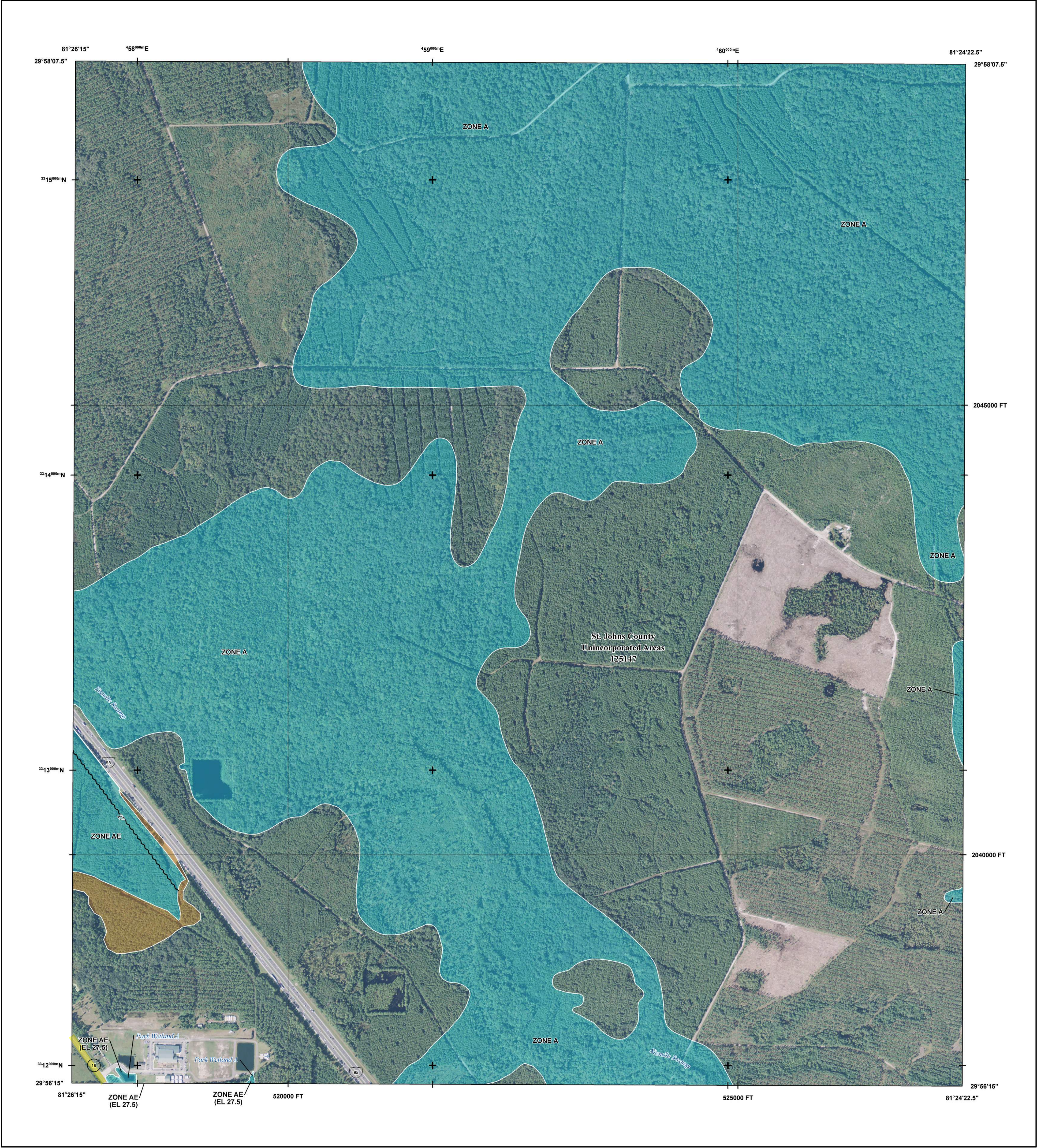
FEDERAL EMERGENCY MANAGEMENT AGENCY

VERSION NUMBER 2.3.3.2

MAP NUMBER 12109C0279J

MAP REVISED DECEMBER 7, 2018





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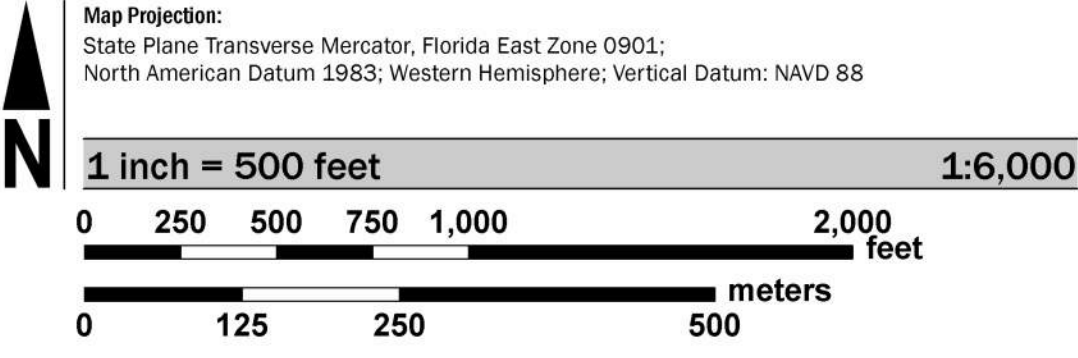
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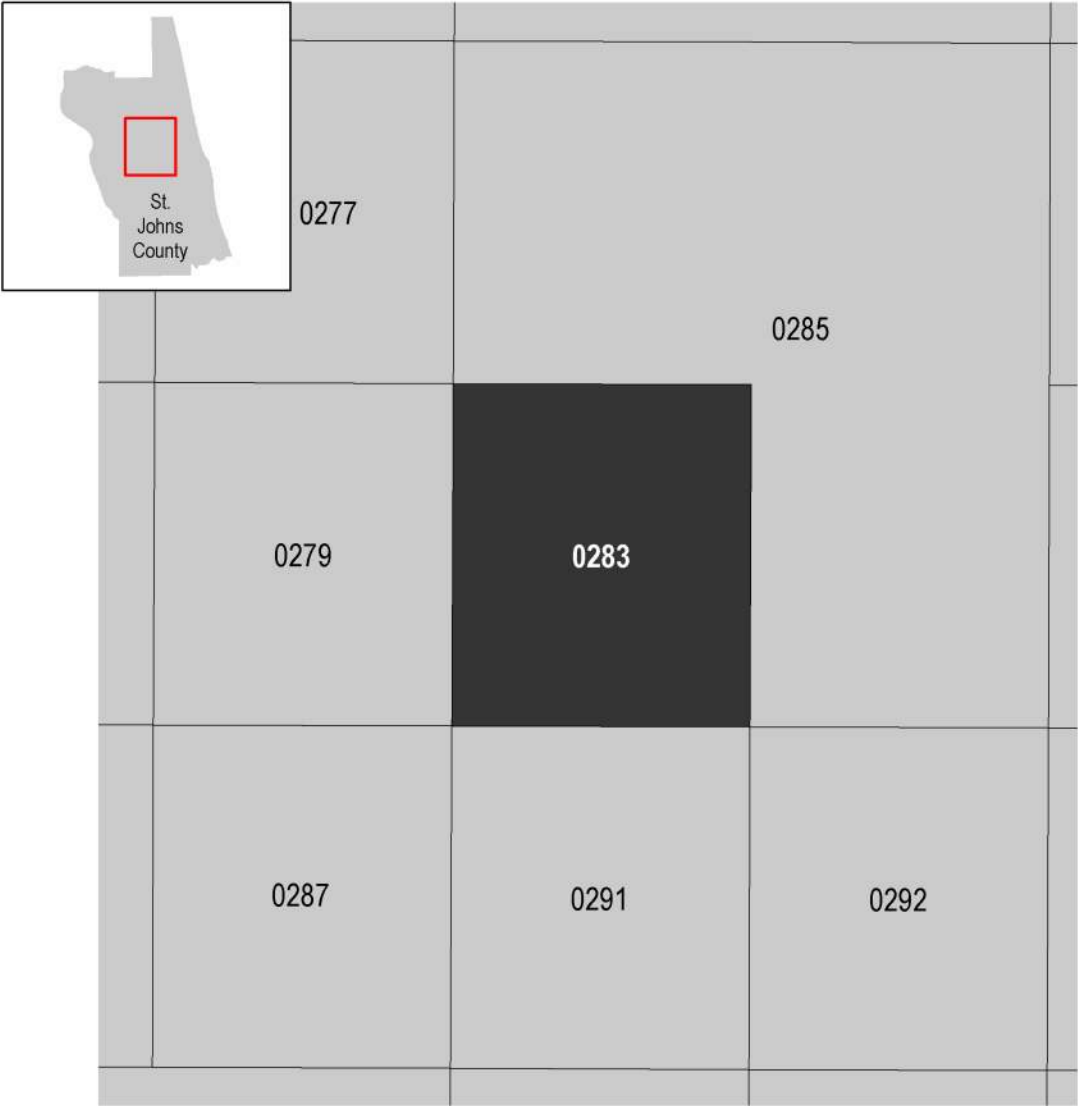
Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

Base map information shown on the FIRM was provided in digital format by the St. Johns County GIS Department, dated 2009, 2013 and 2014; the U.S. Census Bureau, dated 2014; the U.S. Fish and Wildlife Service, dated 2015; the U.S. Department of Agriculture Farm Service Agency, dated 2013; and FEMA, dated 2011.

SCALE



PANEL LOCATOR



**National Flood Insurance Program**

**NATIONAL FLOOD INSURANCE PROGRAM**  
FLOOD INSURANCE RATE MAP

**ST. JOHNS COUNTY, FLORIDA**  
and Incorporated Areas

PANEL 283 OF 560

Panel Contains:

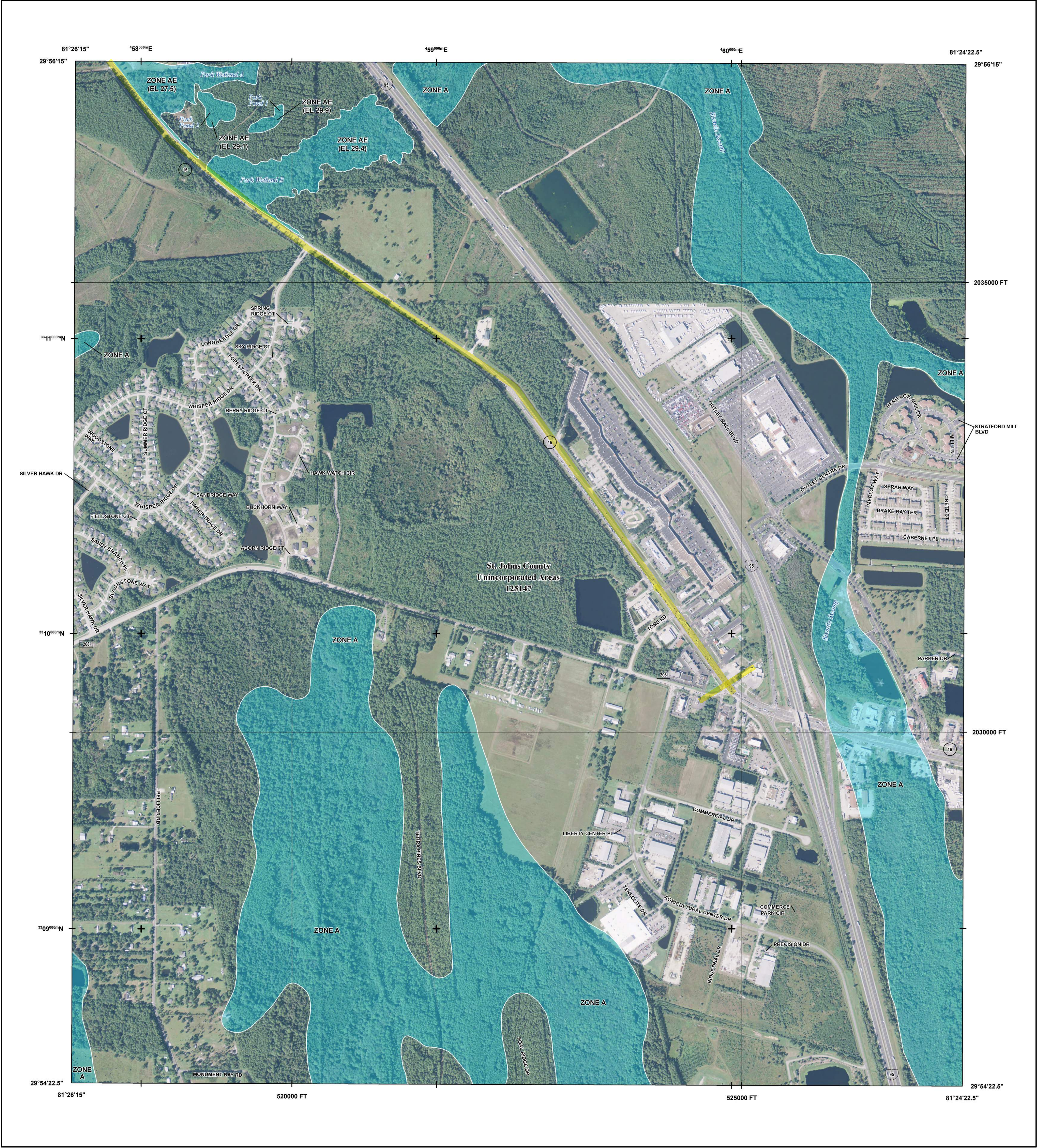
COMMUNITY	NUMBER	SUFFIX
ST. JOHNS COUNTY	125147	0283 J

VERSION NUMBER  
2.3.3.2

MAP NUMBER  
12109C0283J

MAP REVISED  
DECEMBER 7, 2018





FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT  
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT [HTTP://MSC.FEMA.GOV](http://msc.fema.gov)

**SPECIAL FLOOD HAZARD AREAS**

- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

**OTHER AREAS OF FLOOD HAZARD**

- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee See Notes Zone X
- NO SCREEN Area of Minimal Flood Hazard Zone X
- Area of Undetermined Flood Hazard Zone D

**OTHER AREAS**

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

**GENERAL STRUCTURES**

- Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- Base Flood Elevation Line (BFE)

**OTHER FEATURES**

- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information Exchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at <http://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

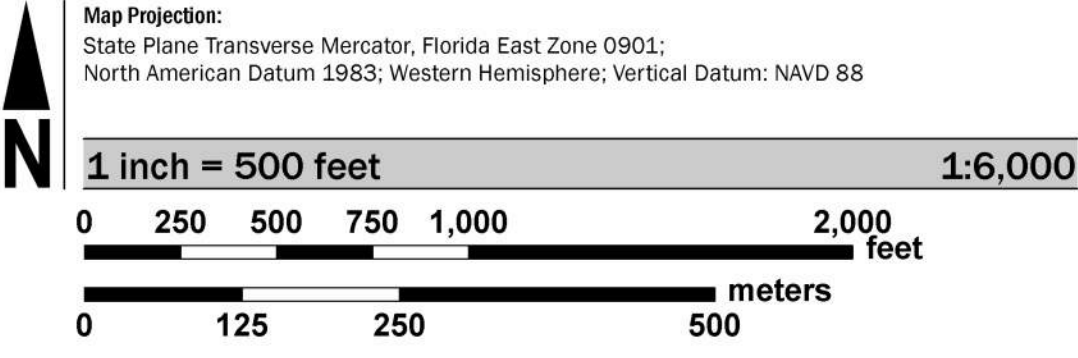
Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

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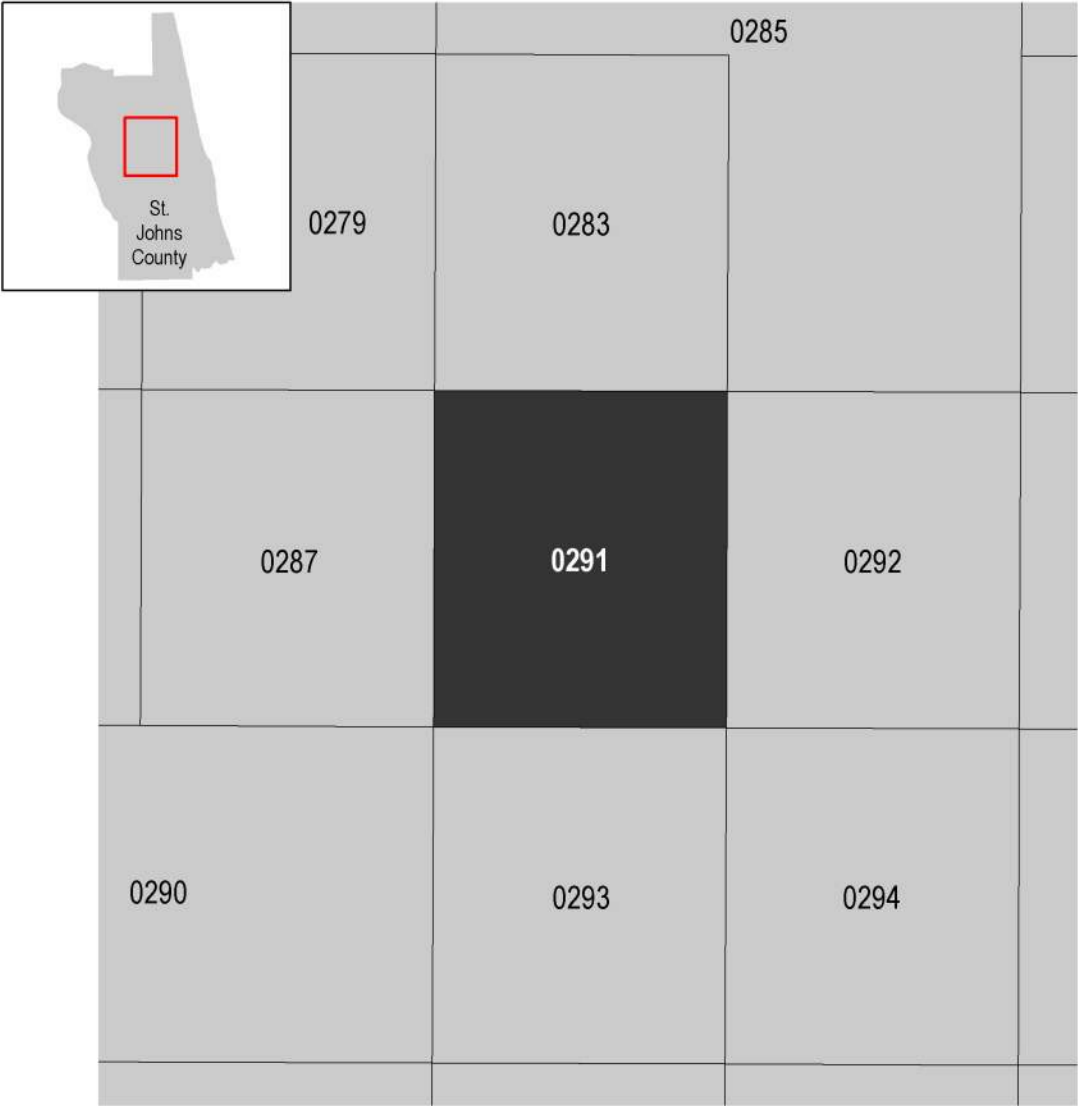
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SCALE



PANEL LOCATOR



**FEMA**  
National Flood Insurance Program

**NATIONAL FLOOD INSURANCE PROGRAM**  
FLOOD INSURANCE RATE MAP

**ST. JOHNS COUNTY, FLORIDA**  
and Incorporated Areas  
PANEL 291 OF 560

Panel Contains:  
COMMUNITY ST. JOHNS COUNTY  
NUMBER 125147  
PANEL 0291  
SUFFIX J

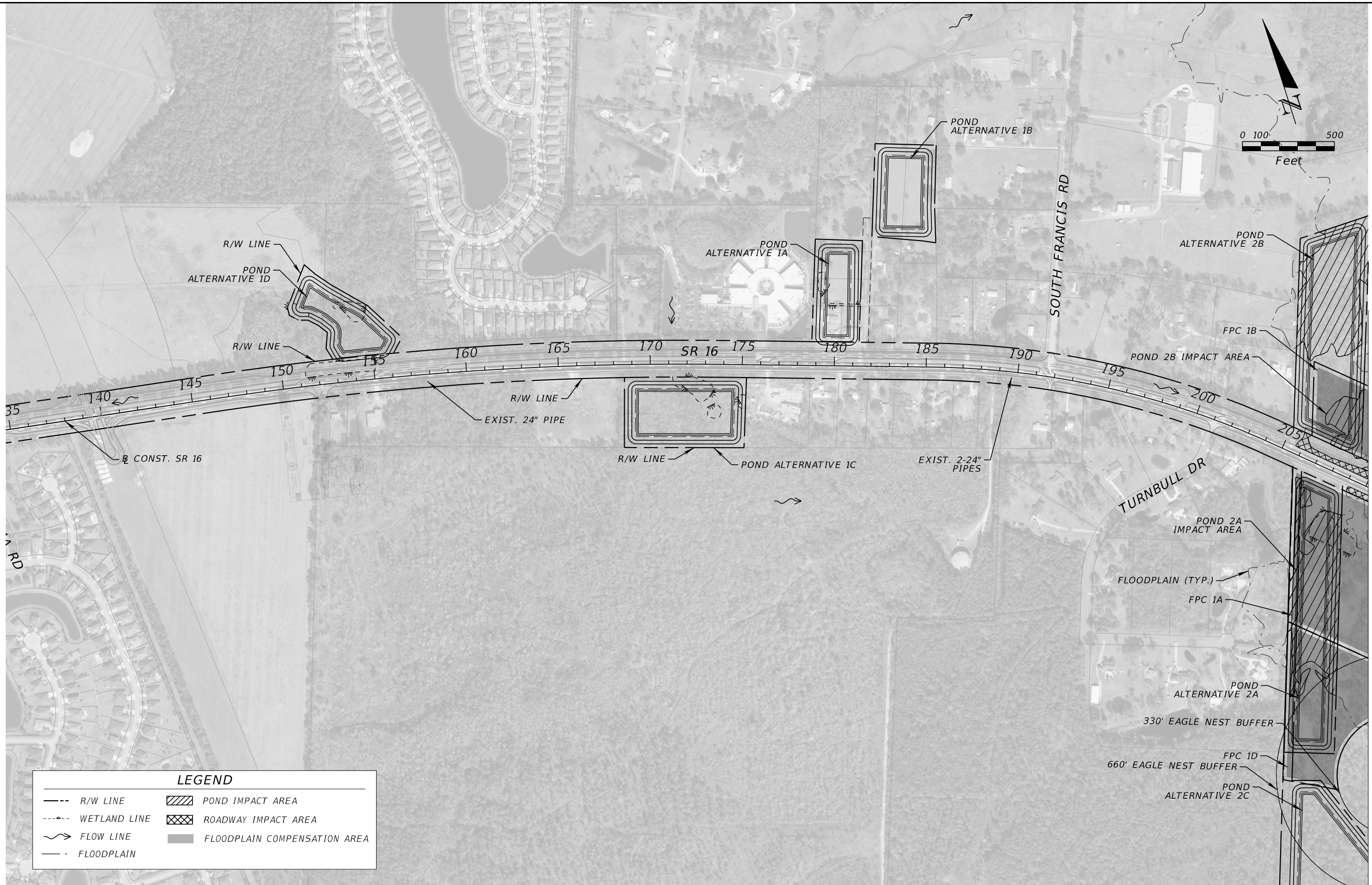
VERSION NUMBER 2.3.3.2  
MAP NUMBER 12109C0291J  
MAP REVISED DECEMBER 7, 2018



## Appendix C – Impact Maps



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LEGEND			
	R/W LINE		POND IMPACT AREA
	WETLAND LINE		ROADWAY IMPACT AREA
	FLOW LINE		FLOODPLAIN COMPENSATION AREA
	FLOODPLAIN		

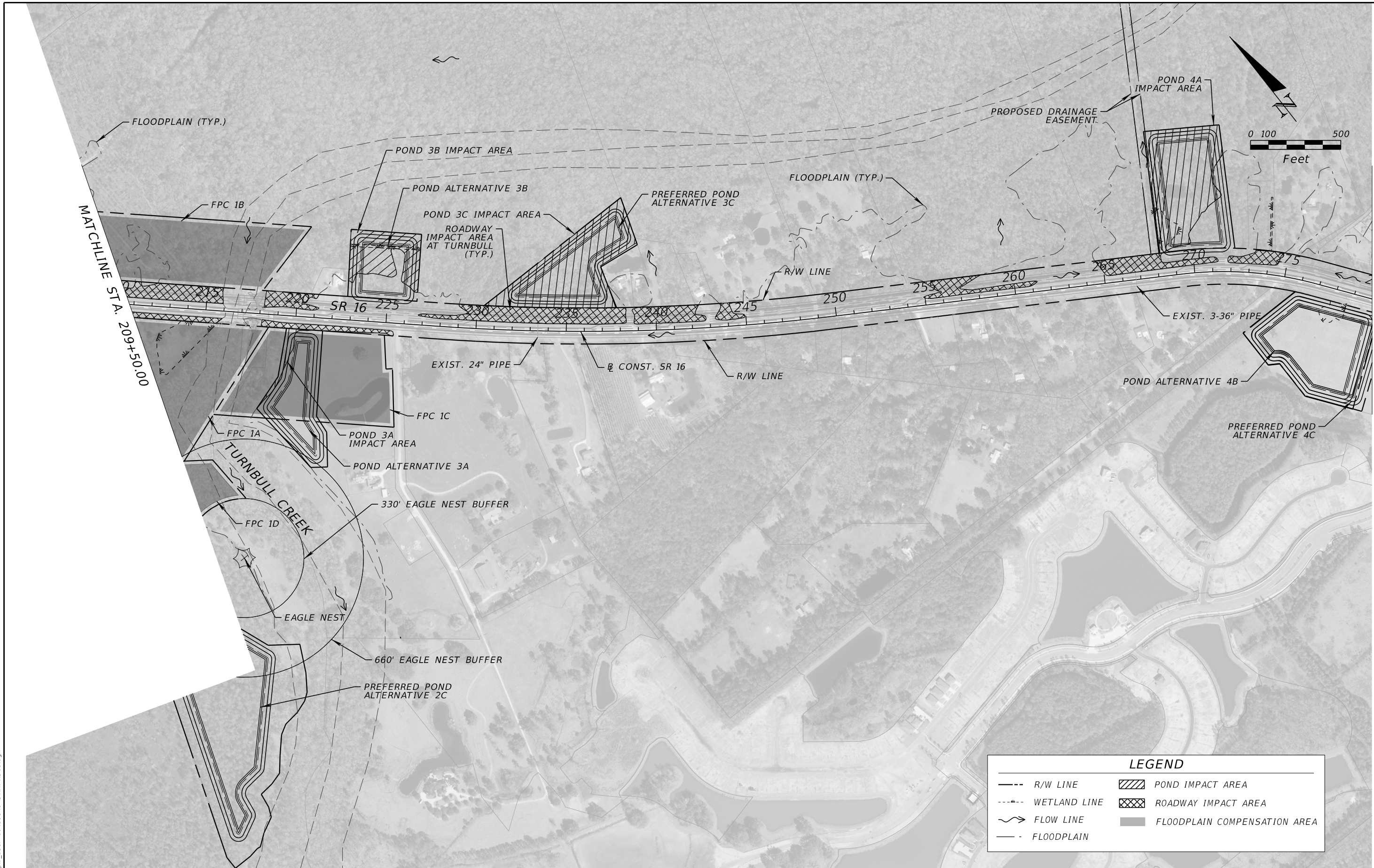
REVISIONS				ENGINEER OF RECORD			STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			FLOODPLAIN IMPACT AND COMPENSATION MAP (1)	SHEET NO.
DATE	DESCRIPTION		DATE	DESCRIPTION			ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
						SANOJ SHRESTHA, P.E. LICENSE NUMBER: 85716 RS&H, INC. 10748 DEERWOOD PARK BLVD. SOUTH JACKSONVILLE, FL 32256	SR 16	ST. JOHNS	21044753201		

MATCHLINE STA. 209+50.00

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



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LEGEND			
	R/W LINE		POND IMPACT AREA
	WETLAND LINE		ROADWAY IMPACT AREA
	FLOW LINE		FLOODPLAIN COMPENSATION AREA
	FLOODPLAIN		

REVISIONS				ENGINEER OF RECORD		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		FLOODPLAIN IMPACT AND COMPENSATION MAP (2)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	SANJO SHRESTHA, P.E. LICENSE NUMBER: 85716 RS&H, INC. 10748 DEERWOOD PARK BLVD. SOUTH JACKSONVILLE, FL 32256		ROAD NO.	COUNTY		
						SR 16	ST. JOHNS	21044753201	

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



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MATCHLINE STA. 355+00.00

LEGEND			
---	R/W LINE		POND IMPACT AREA
---	WETLAND LINE		ROADWAY IMPACT AREA
---	FLOW LINE		FLOODPLAIN COMPENSATION AREA
---	FLOODPLAIN		

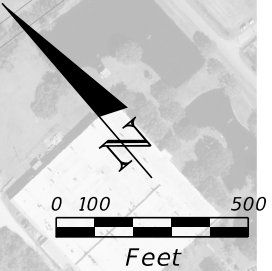
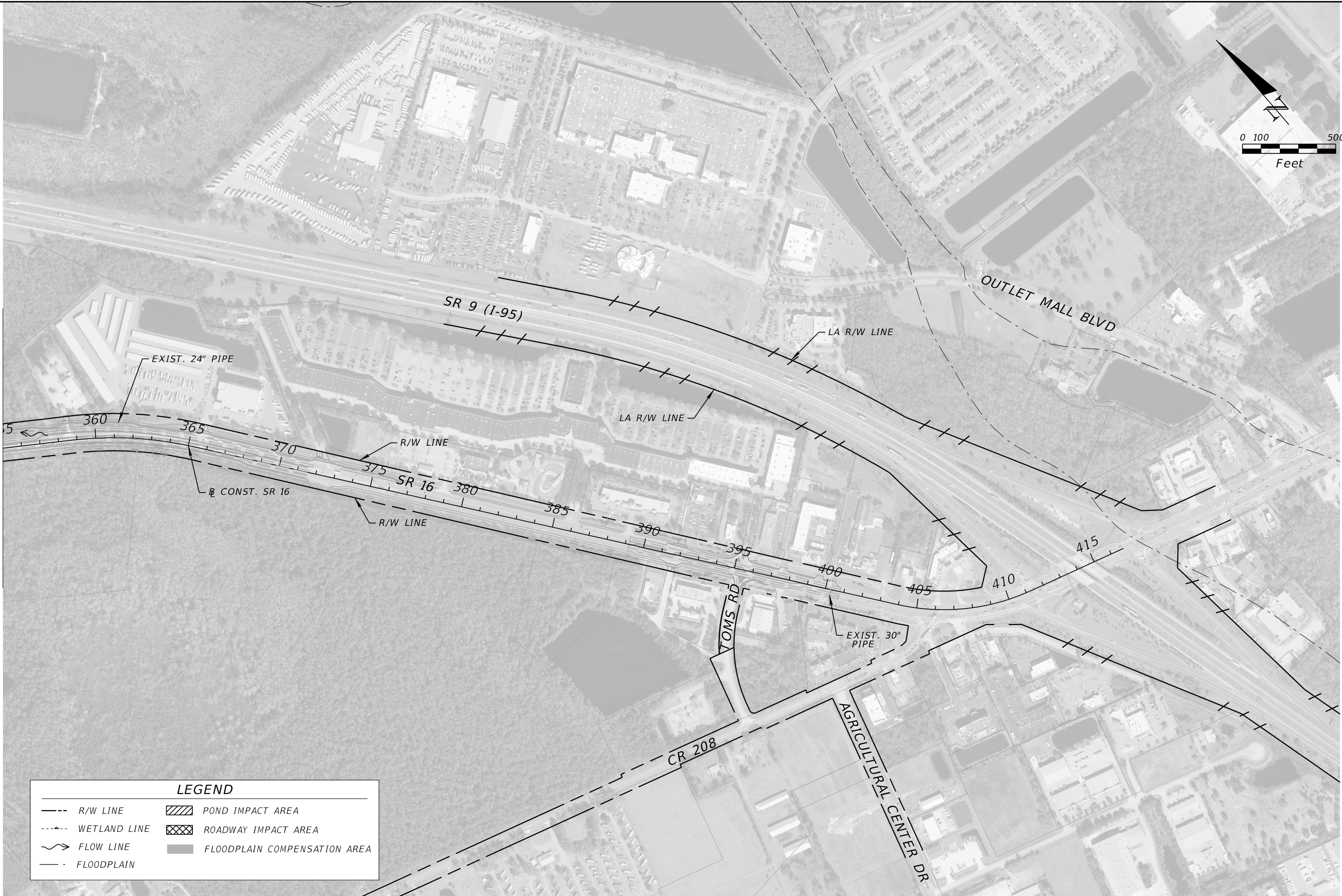
REVISIONS				ENGINEER OF RECORD		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			FLOODPLAIN IMPACT AND COMPENSATION MAP (3)		SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	SANUJ SHRESTHA, P.E. LICENSE NUMBER: 85716 RS&H, INC. 10748 DEERWOOD PARK BLVD. SOUTH JACKSONVILLE, FL 32256		ROAD NO.	COUNTY	FINANCIAL PROJECT ID			
						SR 16	ST. JOHNS	21044753201			

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD
SANOJ SHRESTHA, P.E. LICENSE NUMBER: 85716 RS&H, INC. 10748 DEERWOOD PARK BLVD. SOUTH JACKSONVILLE, FL 32256

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 16	ST. JOHNS	21044753201

FLOODPLAIN IMPACT AND COMPENSATION MAP (4)	SHEET NO.

## Appendix D – Straight Line Diagrams







	5 YR INV	SLD REV	BMP	EMP	INV	SLD REV	FLORIDA DEPARTMENT OF TRANSPORTATION FDOT	SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
DATE	10/13/2020	10/21/2020	6.312	6.312	01/28/2021 FDOT	02/17/2021 METRIC								
BY	PECS	PECS						02		SR 16	ST. JOHNS	02	78060000	4 OF 6

12.0	12.000	OUTSIDE CITY & URBAN 1<=SR-16 1<SR 16													13.0
ROADWAY								UNDESIGNED 13.045			SCHOOL ENT 13.390			DOWNNS CORNER 13.701	
FEATURES											WINDWARD BRANCH BLVD 13.593				WHISPER RIDGE DR 13.986
LANE WIDTHS ARE AVERAGED															
	12.000	54.0' - 24.0' 2 - 12.0' RDWY 2 - 5.0' PVD SHLD1 2 - 10.0' LWN SHLD2								67.0' - 24.0' 2 - 12.0' RDWY 13.245 13.0 PVD MED 2 - 5.0' PVD SHLD1 2 - 10.0' LWN SHLD2					
ROADWAY COMPOSITION	12.000	28/FC-12.5						13.245	28/FC-12.5	28/FC-12.5					
HORIZONTAL		CURVE DATA NOT FIELD VERIFIED													
ALIGNMENT							PC=12.698 PI=12.769 PT=12.838 Δ=22°08'45.00" D=3°00'					Δ=19°21'15.00" D=1°00' PC=13.490 PI=13.675 PT=13.857			
STRUCTURE DESCRIPTION							B=538°48'50"E								B=556°01'20"E
DISTRICT USE															
SIS															
FUN CLASS	12.000	RURAL PRIN ART OTHER													
SPEED LIMIT	12.000	60MPH													
AC MAN CLS	12.000	ACCESS CLASS04													

14.0	14.000	OUTSIDE CITY & URBAN 1<=SR-16 1<SR 16													15.0
ROADWAY															16.0
FEATURES															
LANE WIDTHS ARE AVERAGED															
	14.000	67.0' - 24.0' 2 - 12.0' RDWY 13.0 PVD MED 2 - 5.0' PVD SHLD1 2 - 10.0' LWN SHLD2	14.204	54.0' - 24.0' 2 - 12.0' RDWY 2 - 5.0' PVD SHLD1 2 - 10.0' LWN SHLD2	14.402	72.0' - 24.0' 2 - 12.0' RDWY 26.0 PVD MED 2 - 5.0' PVD SHLD1 2 - 6.0' LWN SHLD2	14.516	81.0' - 12.0'L+24.0'R 1 - 12.0'L + 2 - 12.0'R RDWY 23.0 CB&VEG MED 2 - 2.0' C&G INSHLD1 2 - 5.0' PVD SHLD1 2 - 6.0' LWN SHLD2	14.653	93.0' - 48.0' 4 - 12.0' RDWY 23.0 CB&VEG MED 2 - 2.0' C&G INSHLD1 2 - 5.0' PVD SHLD1 2 - 6.0' LWN SHLD2					
ROADWAY COMPOSITION	14.000	28/FC-12.5	14.204	28/FC-12.5	14.402	28/FC-12.5	28/FC-12.5								
HORIZONTAL		CURVE DATA NOT FIELD VERIFIED													
ALIGNMENT							PC=14.391 PI=14.454 PT=14.516 Δ=19°46'45.00" D=3°00'				Δ=37°42'00.00" D=5°00' PC=15.253 PI=15.320 PT=15.396			Δ=3°07'00.00" D=1°00' PC=15.604 PI=15.634 PT=15.663	
STRUCTURE DESCRIPTION							B=536°14'35"E								B=576°59'50"E
DISTRICT USE															
SIS															
FUN CLASS	14.000	RURAL PRIN ART OTHER													
SPEED LIMIT	14.000	60MPH	14.241	55MPH	14.426	45MPH					15.108	45MPH		15.500	45MPH
AC MAN CLS	14.000	ACCESS CLASS04			ACCESS CLASS04	ACCESS CLASS03									

[illegible][illegible]