PRELIMINARY ENGINEERING REPORT

Florida Department of Transportation

Florida's Turnpike Enterprise

PD&E Study to Widen Florida's Turnpike

From North of SR 70 to North of SR 60 (MP 152-193)

St. Lucie, Indian River, Okeechobee and Osceola Counties, Florida

Financial Project ID Number: 423374-2-22-01

ETDM Number: 14425

June 2025

PROFESSIONAL ENGINEER CERTIFICATION

PRELIMINARY ENGINEERING REPORT

Project: PD&E Study to Widen Florida's Turnpike

ETDM Number: 14425

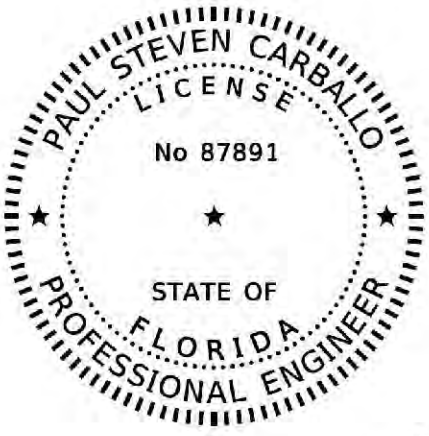
Financial Project ID: 423374-2-22-01

Federal Aid Project Number: N/A

This preliminary engineering report contains engineering information that fulfills the purpose and need for the Turnpike Widening Project Development & Environment Study from north of SR 70 to north of SR 60 (MP 152-193) in St. Lucie, Indian River, Okeechobee and Osceola Counties, Florida.

I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of transportation engineering as applied through professional judgment and experience.

I hereby certify that I am a registered professional engineer in the State of Florida practicing with Metric Engineering, Inc. and that I have prepared or approved the evaluation, findings, opinions, conclusions or technical advice for this project.



This item has been digitally signed and sealed by Paul Carballo, P.E. on the date adjacent to the seal.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Paul Carballo

Digitally signed by Paul Carballo
Date: 2025.06.20 11:27:16 -04'00'

Table of Contents

1 PROJECT SUMMARY 1-1
1.1 Project Description 1-2
1.2 Purpose and Need Statement 1-2
1.2.1 Capacity 1-2
1.2.2 Transportation Demand 1-3
1.2.3 Roadway Deficiencies 1-3
1.2.4 Safety 1-3
1.2.5 Project Status 1-4
1.3 Commitments 1-4
1.4 Alternatives Analysis Summary 1-6
1.5 Description of the Preferred Alternative 1-6
1.5.1 Turnpike Mainline Improvements 1-6
1.5.2 Access Improvements 1-7
1.5.3 Drainage 1-11
1.5.4 Right-of-way and Construction Cost 1-14
1.6 List of Technical Documents 1-15
2 EXISTING CONDITIONS 2-1
2.1 Previous Planning Studies 2-1
2.2 Existing Roadway Conditions 2-1
2.2.1 Roadway Typical Sections 2-1
2.2.2 Roadway Functional & Context Classifications 2-2
2.2.3 Access Management Classification 2-3
2.2.4 Right-of-Way 2-3
2.2.5 Adjacent Land Use 2-4
2.2.6 Pavement Type and Condition 2-4
2.2.7 Existing Design and Posted Speed 2-5
2.2.8 Horizontal Alignment 2-5
2.2.9 Vertical Alignment 2-5
2.2.10 Multi-modal Facilities 2-5
2.2.10.1 Bicycle Facilities 2-5
2.2.10.2 Transit Facilities 2-5
2.2.11 Interchanges/Cross Streets 2-7
2.2.11.1 SR 60 Interchange 2-7

2.2.12 Physical or Operational Restrictions 2-7
2.2.13 Traffic Data 2-8
2.2.14 Roadway Operational Conditions 2-11
2.2.14.1 Freeway Segment Analysis 2-11
2.2.14.2 Ramp Capacity Analysis 2-12
2.2.14.3 Intersection Analysis 2-13
2.2.15 Managed lanes 2-15
2.2.16 Crash Data 2-15
2.2.16.1 SR 91 Mainline Crash Analysis 2-15
2.2.16.2 Yeehaw Junction (SR 60) Interchange Crash Analysis 2-16
2.2.17 Railroads Crossings 2-18
2.2.18 Drainage 2-18
2.2.18.1 Environmental Look Around 2-22
2.2.18.2 Hydrologic Features 2-23
2.2.18.3 Existing Culverts 2-25
2.2.18.4 Federal Emergency Management Agency (FEMA) Floodplains 2-26
2.2.19 Lighting 2-28
2.2.20 Utilities 2-28
2.2.21 Soils and Geotechnical Data 2-32
2.2.22 Aesthetics Features 2-32
2.2.23 Traffic Signs 2-33
2.2.24 Noise Walls and Perimeter Walls 2-33
2.2.25 Intelligent Transportation Systems (ITS)/Transportation System Management and Operations (TSM&O) 2-34
2.2.26 Existing Bridges and Structures 2-37
2.3 Existing Environmental Features 2-41
2.3.1 Socio-Economic 2-41
2.3.2 Parks and Recreational Facilities 2-45
2.3.3 Protected Species and Habitat 2-51
2.3.3.1 Essential Fish Habitat 2-52
2.3.4 Wetlands and Water Quality 2-52
2.3.5 Water Resources 2-54
2.3.6 Aquatic Preserves and Outstanding Florida Waters (OFW) 2-54
2.3.7 Potentially Contaminated Sites 2-54
2.3.8 Navigable Waterway 2-55

3 FUTURE CONDITIONS 3-1
3.1 Transportation Plan Review 3-1
3.2 Local Policies 3-2
3.3 Future Land Use 3-2
3.4 Future Context Classification and Target Speed 3-2
3.5 Design Traffic Volumes 3-2
4 DESIGN CONTROLS AND CRITERIA 4-1
4.1 Geometric Design Control and Criteria 4-1
4.2 Drainage Design Criteria 4-4
4.2.1 Water Quantity Criteria 4-4
4.2.2 Water Quality Criteria 4-5
5 ALTERNATIVES ANALYSIS 5-1
5.1 Alternatives Evaluation Process 5-1
5.2 Phase 1: Initial Evaluation 5-2
5.2.1 No-Build (No-Action) Alternative 5-2
5.2.1.1 No Build Design Year 2050 5-2
5.2.2 Transportation Systems Management and Operations Alternatives (TSM&O) 5-7
5.2.3 Multimodal Alternative 5-8
5.3 Phase 2: Build Alternative Development and Evaluation 5-8
5.3.1 Mainline Typical Section Analysis 5-8
5.3.2 SR 60 Interchange Analysis 5-13
5.3.2.1 Preliminary Interchange Evaluation 5-13
5.3.2.2 Final Interchange Evaluation 5-15
5.3.2.3 Build Alternative Operational Analysis 5-19
5.4 Phase 4: Alternative Refinement and Selection of the Preferred Alternative .. 5-24
6 AGENCY COORDINATION AND PUBLIC INVOLVEMENT 6-1
6.1 Public Involvement Plan 6-1
6.2 Agency Coordination 6-2
6.2.1 Advance Notification & Programming Screen Summary Report 6-2
6.2.2 Agency and Stakeholder Meetings 6-2
6.3 Public Meetings 6-3
6.3.1 Public Kick-Off Newsletter 6-3
6.3.2 Hybrid Alternatives Public Information Meeting 6-3

6.3.3 Public Hearing *6-4*

7 PREFERRED ALTERNATIVE 7-1

7.1 Typical Sections 7-1
7.2 Access Management 7-1
7.3 Right-of-Way 7-2
7.4 Horizontal and Vertical Geometry 7-3
7.5 Design Variations and Design Exceptions 7-3
7.6 Multimodal Accommodations 7-3
7.7 Intersection/ Interchange Concepts and Signal Analysis 7-3
7.8 Tolled Projects 7-6
7.9 Intelligent Transportation System and TSM&O Strategies 7-6
7.9.1 Long Term Deployment Strategies *7-7*
7.10 Landscape 7-11
7.11 Lighting 7-11
7.12 Wildlife Crossing 7-12
7.13 Permits 7-14
7.14 Drainage and Stormwater Management Facilities 7-15
7.14.1 Stormwater *7-15*
7.14.2 Cross Drains / Culverts *7-21*
7.15 Floodplain Analysis 7-22
7.16 Bridge and Structure Analysis 7-25
7.16.1 AASHTO / Proposed FIB Bridges *7-26*
7.16.2 Sonovoid / Prestressed Slab Units / Proposed FSB Bridges *7-27*
7.16.3 Bridge Culverts *7-28*
7.16.4 Box Culverts *7-28*
7.16.5 Wildlife Crossings *7-29*
7.17 Transportation Management Plan 7-31
7.18 Constructability 7-35
7.19 Construction Impacts 7-36
7.20 Special Features 7-37
7.21 Utilities 7-37
7.22 Cost Estimates 7-41
7.23 Value Engineering 7-41
7.24 Summary of Environmental Impacts 7-42

7.24.1 Future Land Use *7-42*
7.24.2 Recreational Resources/Section 4(f) *7-42*
7.24.3 Cultural Resources *7-43*
7.24.4 Aesthetics/ Socio-Economic *7-44*
7.24.5 Wetlands and Water Quality *7-45*
7.24.6 Water Resources *7-45*
7.24.7 Aquatic Preserves/Outstanding Florida Waters (OFW) *7-46*
7.24.8 Protected Species and Habitat *7-46*
7.24.9 Essential Fish Habitat *7-49*
7.24.10 Highway Traffic Noise *7-49*
7.24.11 Contamination *7-52*
7.24.12 Navigable Waterway *7-52*

List of Figures

Figure 1-1: Project Location Map 1-1
Figure 1-2: Preferred Typical Section Alternative (Looking North) 1-7
Figure 1-3: Improvements at the SR 60 Interchange 1-9
Figure 1-4: SR 60 Access Modifications 1-10
Figure 1-5: Osowou Road Emergency Access Modifications 1-10
Figure 2-1: Existing Conditions and Evaluation Analysis Flowchart 2-1
Figure 2-2 Existing Typical Section (Looking North) 2-2
Figure 2-3: SR 60 Interchange 2-8
Figure 2-4: 2020 Peak Hour Volumes 2-10
Figure 2-5: Existing Conservation Lands 2-48
Figure 2-6: Sensitive Environmental Features (1 of 2) 2-49
Figure 2-7: Sensitive Environmental Features (2 of 2) 2-50
Figure 3-1: 2050 Design Hour Volumes 3-4
Figure 5-1: No Build Lane Geometry 5-3
Figure 5-2: Typical Section Alternative 1 (Looking North) 5-9
Figure 5-3: Typical Section Alternative 2 (Looking North) 5-9
Figure 5-4: Typical Section Alternative 3 (Looking North) 5-10
Figure 5-5: SR 60 Alternative A 5-17
Figure 5-6: SR 60 Alternative B 5-18
Figure 5-7: Preferred Typical Section Alternative (Looking North) 5-24
Figure 7-1: Preferred Typical Section Alternative (Looking North) 7-1
Figure 7-2: SR 60 Access Modifications 7-2
Figure 7-3: Improvements at the SR 60 Interchange 7-5
Figure 7-4 SR 91 Mainline Conceptual MOT 7-33
Figure 7-5 SR 91 Mainline Bridge Construction Phasing – Option 2 7-35
Figure 7-6 Proposed Construction Segments 7-36
Figure 7-7: Osowou Road Emergency Access Modifications 7-37

Figure 7-8: Potential Noise Barrier 7-50

List of Tables

Table 1-1: Preferred Stormwater Management Facility (SMF) Alternatives and Anticipated ROW Requirement 1-11
Table 1-2: Cost Estimate 1-15
Table 2-1: Existing ROW 2-3
Table 2-2: Pavement Condition forecast 2024 2-4
Table 2-3: Existing Horizontal Curve Information 2-6
Table 2-4: 2022 Average Annual Daily Traffic (AADT) and Peak Hour Volumes 2-9
Table 2-5: 2022 (Existing) AM Peak Hour Freeway Mainline Operations 2-11
Table 2-6: 2022 (Existing) PM Peak Hour Freeway Mainline Operations 2-12
Table 2-7: 2020 (Existing) Peak Hour Ramp Roadway Capacity Analysis 2-12
Table 2-8: 2022 (Existing) AM and PM Peak Hour Intersection Performance 2-14
Table 2-9: Number of Mainline Crashes by Crash Severity 2-15
Table 2-10: Number of Mainline Crashes by Crash Severity and Year 2-15
Table 2-11: Mainline Crash Rates and Safety Ratios (2017-2022) 2-16
Table 2-12: Number of Crashes (Yeehaw Junction Area) by Crash Severity and Year 2-17
Table 2-13: Number of Crashes by Location and Year (Yeehaw Junction Area) 2-17
Table 2-14: SR 60 Interchange Area Crash Rates and Safety Ratios (2017-2022) 2-18
Table 2-15: Existing Drainage Basin Characteristics 2-19
Table 2-16: Existing Permits 2-22
Table 2-17: Existing Bridge Crossings over Chanels 2-24
Table 2-18: Existing Culverts 2-25
Table 2-19: Existing Bridge Culverts 2-26
Table 2-20: FEMA FIRMs Information 2-28
Table 2-21: Existing Utility Agency Owners and Contact Information 2-29
Table 2-22: Overhead Signage Within Study Area 2-33
Table 2-23: Existing Bridges 2-39
Table 2-24: Existing Bridge Box Culverts 2-39
Table 2-25: Existing Box Culverts 2-40
Table 2-26: Total Population in Each County 2-41
Table 2-27: Poverty Levels in SCE Study Area Census Block Groups 2-42
Table 2-28: Race and Ethnicity as Percent of Population by Census Block Group 2-43
Table 2-29: Population Disabled and 65 and Older by Census Block Group 2-44
Table 2-30: Community and Emergency Services in the Study Area 2-45
Table 2-31: Listed Wildlife Species Potentially Occurring in Project Area 2-51
Table 2-32:Existing Wells 2-54
Table 2-33: Potentially Contaminated Sites 2-56
Table 3-1: Future Traffic Volumes 3-3
Table 3-2: Freeway Mainline (LOS C) and Ramp Capacity (LOS E) Lane Requirements 3-6
Table 4-1: Geometric Design Criteria 4-1
Table 4-2: Airports within Give Miles of the Project 4-7

Table 5-1: 2050 No-Build AM Design Hour Freeway Mainline Traffic Operations.....5-4
Table 5-2: 2050 No-Build AM Design Hour Freeway Mainline Traffic Operations.....5-5
Table 5-3: 2050 No-Build AM Design Hour Intersection Performance 5-6
Table 5-4: 2050 No-Build PM Design Hour Intersection Performance.....5-6
Table 5-5 - Evaluation of TSM&O Alternatives.....5-7
Table 5-6 – Typical Section Evaluation 5-12
Table 5-7 – Preliminary Interchange Evaluation.....5-14
Table 5-8 – Interchange Evaluation 5-16
Table 5-9 – 2050 Build AM Design Hour Freeway Mainline Traffic Operations 5-19
Table 5-10 – 2050 Build PM Design Hour Freeway Mainline Traffic Operations 5-20
Table 5-11 2050 Future Network Travel Time 5-22
Table 5-12 – 2050 Build AM Design Hour Intersection Performance 5-23
Table 5-13 – 2050 Build PM Design Hour Intersection Performance.....5-23
Table 6-1 - Agency/Stakeholder Coordination.....6-2
Table 7-1 - Approximate Costs of Wildlife Crossing System 7-14
Table 7-2: Preferred Stormwater Management Facility (SMF) Alternatives and Anticipated ROW Requirement 7-18
Table 7-3: Proposed Culvert Modifications 7-21
Table 7-4: Floodplain Impact Analysis.....7-24
Table 7-5: Proposed Bridge Improvements 7-25
Table 7-6: AASHTO Bridges Structural Analysis.....7-27
Table 7-7: Sonovoid Bridge Structural Analysis 7-28
Table 7-8:Wildlife Crossing Recommendations for Bridges.....7-30
Table 7-9: Utility Impacts and Relocation Costs 7-38
Table 7-10: Cost Estimate.....7-41
Table 7-11: Summary of Value Engineering Recommendations 7-42
Table 7-12: Effect Determinations.....7-47
Table 7-13: Noise Barrier Evaluation Summary 7-51
Table 7-14: Summary of Potentially Contaminated Sites 7-52

List of Appendices

Appendix A – Detailed Project Figures

Appendix B – Existing Drainage Maps

Appendix C – FEMA FIRM Maps

Appendix D – Advanced Notification Package

Appendix E – Concept Plans and Typical Section Package

Appendix F – Proposed Drainage Maps

1 PROJECT SUMMARY

Florida's Turnpike Enterprise (FTE) is conducting a Project Development and Environment (PD&E) study to evaluate capacity improvements to the existing Florida's Turnpike (State Road (SR) 91)(herein referred to as Turnpike) corridor in St. Lucie, Indian River, Okeechobee and Osceola Counties. The project limits extend from north of SR 70 (Fort Pierce/Okeechobee Road) at Milepost (MP) 152 to SR 60 (Yeehaw Junction) at MP 193, a distance of approximately 41 miles, as shown in **Figure 1-1.** This Preliminary Engineering Report (PER) documents the project's purpose and need, the alternatives developed, the process of selecting the preferred alternative, and presents the preliminary design analysis for the preferred alternative.

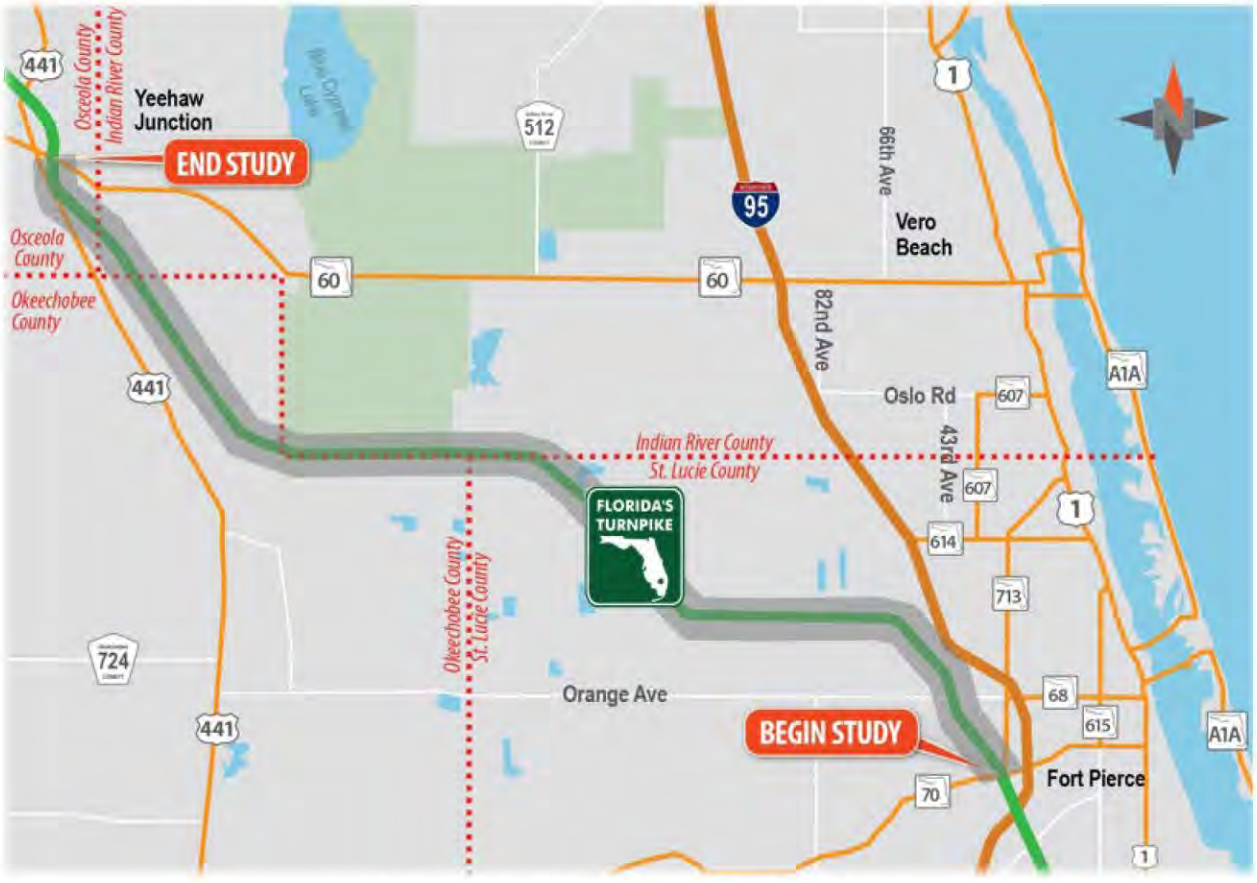


Figure 1-1: Project Location Map

1.1 Project Description

The Turnpike (SR 91) mainline extends approximately 265 miles from its southern terminus at an interchange with I-95 in Miami Gardens, FL to an interchange with I-75 in Wildwood, FL. The limits of this project extend approximately 41 miles from north of SR 70 (Fort Pierce/Okeechobee Road) at Milepost (MP) 152 in St. Lucie County to just north SR 60 (Yeehaw Junction) (MP 193) in Osceola County. Within the limits of the project, the Turnpike is a four-lane limited access toll facility with 12-foot lanes, a 40-foot grassed median, 12-foot shoulders and roadside swales. There is one interchange, the SR 91 interchange with SR 60 (MP 193) in Osceola County, and one service plaza, the Fort Drum Service Plaza is located at MP 184, in the project study area. The project is proposing to widen the Turnpike mainline from 4 to 6 lanes as well as provide improvements to the SR 60 interchange.

1.2 Purpose and Need Statement

The purpose of this project is to increase capacity, meet existing and future travel demands, and address roadway deficiencies for the segment of the Turnpike (SR 91) from north of SR 70 at approximately MP 152 to north of SR 60 at approximately MP 193. This project will include improvements at the SR 60 interchange. Improvements to the SR 70 interchange are being addressed by a separate project (FPID: 446580-1). The project will also evaluate potential new and/or modified interchange locations.

1.2.1 Capacity

Travel demand on the Turnpike has increased significantly. According to the 2024 Project Traffic Analysis Report (PTAR), the forecasted traffic data shows that Average Annual Daily Traffic (AADT) is anticipated to increase from 36,700 vehicles per day (vpd) in year 2022 to 67,200 vpd, an 83 % increase, by year 2050. A freeway mainline capacity evaluation determined that the Turnpike will require three lanes in each direction by year 2036 in order to maintain LOS C, the LOS target during peak travel outside of urbanized areas. By the year 2050, most of the mainline segments along SR 91 are expected to operate at an unacceptable LOS D or worse. Increase in demand has the potential to result in increased rear end and off-road crashes associated with congestion.

1.2.2 Transportation Demand

The Turnpike serves regional, but also local trips, particularly for commuters traveling to/from residential and employment centers and has therefore become a critical component of local transportation networks. Population in the study area is expected to increase from 464,298 (2019) to 634,600 by the design year (2050), a 1% annual growth. Similarly, employment in the study area is anticipated to increase from 213,645 (2019) to 332,386 by the design year (2050), a 1.44% annual growth. As demand for local access increases, traffic volumes at the SR 70 and SR 60 interchanges will result in future congestion. At just over 40 miles with only two existing access points, there is a need to evaluate new and/or modified access points to provide for emergency evacuation, incident management and population and employment growth. Additionally, the Turnpike is part of the Strategic Intermodal System (SIS) and is a designated evacuation route by the Florida Division of Emergency Management, which provides access for the largest metropolitan areas in South Florida such as West Palm Beach, Fort Lauderdale, Miami and Homestead. The Turnpike is critical in facilitating traffic movement during emergency response and evacuation periods.

1.2.3 Roadway Deficiencies

The project will address existing roadway deficiencies, such as horizontal and vertical geometrics, for both the Florida Turnpike mainline and the SR 60 interchanges; clear zone requirements; inside and outside shoulder widths; and structural deficiencies. . Most of the bridges and bridge culverts within the limits of the project are functionally obsolete and reaching their end of their useful life. The project will also consider inadequate soil types which would cause a reduction in base clearance.

1.2.4 Safety

A total of 1,469 crashes were reported along the mainline within the project's area of influence in the five-year period from 2017 through 2021. The predominant crash types along the Turnpike Mainline / SR 91 were off-road (38.9%), rear-end (21.5%), sideswipe (12.5%) and single vehicle crashes (11.4%). Most of the crashes resulted in property damage only (75.5%), injury crashes accounted for 23.3%, while fatality was approximately 1.3% (20 crashes) of the total crashes along the Turnpike Mainline. Six

crashes were reported along the Fort Drum Service Plaza ramps and 10 crashes reported in the Fort Drum Service Plaza parking lot.

Of the 357 crashes that occurred within the SR 60 area of influence, 37% (132) occurred along the mainline, 20% (70) along SR 60, 32% (116) at the intersections, and 11% (39) along the ramps. Of those reported crashes, 110 (31%) resulted in injury and two (1%) resulted in fatalities. The analysis shows that within the area of influence of the SR 60 interchange, actual crash rates are overall higher than the critical crash rates. When looking at the total number of crashes, safety ratios are above 1 for the mainline, ramps and along SR 60.

1.2.5 Project Status

The next phases of the project, including design, are not listed in the Long Range Transportation Plans (LRTPs) or Transportation Improvement Programs (TIPs) for the four Metropolitan/Transportation Planning Organizations (MPO/TPO) in the study area (St Lucie TPO, Heartland Regional TPO, Indian River MPO, and MetroPlan Orlando). The next phases are also not included in the State Transportation Improvement Program (STIP) or the SIS Long Range Cost Feasible Plan. This project was screened in the Efficient Transportation Decision Making (ETDM) system as ETDM #14425.

1.3 Commitments

- One potentially feasible and reasonable noise barrier system has been identified for this project. FTE is committed to perform more detailed noise and cost analyses as well as public outreach during the final design phase of the project. FTE is committed to the construction of feasible and reasonable noise abatement measures.
- FTE will provide improvements to the existing Osowou Road emergency access.
- The most recent version of the USFWS Standard Protection Measures for the Eastern Indigo Snake will be utilized during construction.
- FTE will require contractors to remove garbage daily from the construction site or use bear proof containers for securing of food and other debris from the project work area to prevent these items from becoming an attractant for the

Florida black bear (Ursus americanus floridanus). Any interaction with nuisance bears will be reported to the FWC Wildlife Alert hotline 888-404-FWCC (3922).

- Prior to demolition of bridges 940057 and 940073 (over Angle Road and Belcher Canal), bat exclusion must be completed to comply with Florida Administrative Code rule 68A-4.001 General Prohibitions; and rule 68A-9.010 Taking Nuisance Wildlife. Per the regulations, exclusion is not permitted during bat maternity season April 15 through August 15. Exclusion devices must be left up for a minimum of four nights and the low temperature must be forecasted to remain above 50 degrees Fahrenheit during that time period.
- FTE will continue to evaluate the inclusion of wildlife crossings and/or habitat connectivity enhancements during design phase.
- A survey will be conducted for Audubon's crested caracara and Everglade snail kite, per USFWS protocol during the design phase.
- A survey will be conducted for the Florida bonneted bat within the limits of construction activities that are within the Florida bonneted bat Consultation Area. If any signs of the Florida bonneted bat are observed (e.g., tree cavities, new potential man-made roosting habitat), the FTE is committed to coordinating with USFWS regarding the most updated relocation protocols for the Florida bonneted bat.
- If the Monarch butterfly (Danaus plexippus) is listed by USFWS as Threatened or Endangered and the project may affect the species, FTE commits to re-initiating consultation with USFWS to determine appropriate avoidance and minimization measures for protection of the newly listed species.
- If the Tricolored bat is listed by USFWS as Threatened or Endangered and the project may affect the species, FTE commits to re-initiating consultation with USFWS to determine appropriate avoidance and minimization measures for protection of the newly listed species.

1.4 Alternatives Analysis Summary

The following alternatives were evaluated during the study:

- 'No-Build' Alternative
- Transportation Systems Management and Operations (TSM&O)

  TSM&O solutions alone would not address the purpose and needs of the project.

- Construction ('Build') Alternatives

  The build alternative consists of widening the Turnpike from four to six lanes as well as improvements to the SR 60 interchange. The study evaluated a range of typical sections including inside widening and outside widening of the existing roadway as well as full reconstruction. The build alternative analysis included the evaluation of different interchange configurations for the SR 60 interchange as well as different possible locations for a potential new interchange along the study corridor. The study also evaluated Transportation System Management and Operations (TSMO) and multimodal improvements.

1.5 Description of the Preferred Alternative

1.5.1 Turnpike Mainline Improvements

The Preferred Alternative is Typical Section Alternative 3 which consists of widening the Turnpike mainline from four to six lanes to the outside, widening the inside shoulder to 12 feet and maintaining the existing 40-foot median with a guardrail. The preferred alternative is shown on **Figure 1-2.**

The Preferred Alternative has a design speed of 70-miles per hour (mph) and consists of three (3) 12-foot travel lanes in each direction separated by a 40-foot median with a guardrail and 12-foot inside and outside shoulders. The Preferred Alternative will be constructed within the existing right-of-way (ROW) width of 300-feet to 400-feet.



Figure 1-2: Preferred Typical Section Alternative (Looking North)

1.5.2 Access Improvements

The Preferred Alternative will also implement improvements at the SR 60 interchange, emergency access, and truck parking opportunities. Below is a description of improvements,.

- SR 60 Interchange:
    - Alternative B: Partial Cloverleaf (shown on **Figure 1-3**) - This option will provide new ramps at the NE quadrant of the interchange. This interchange separates the northbound (NB) and southbound (SB) traffic via two different intersections. Southbound on/off traffic will continue to utilize the existing intersection at SR 60. Northbound on/off traffic will be provided via a new intersection to the east along SR 60. Dual right turn lanes will be provided at the off-ramps. The partial cloverleaf alternative does require approximately 13.46 acres of ROW acquisition west of Palm Avenue.

      Additional SR 60 improvements include widening SR 60 between US 441 and the Turnpike and dual eastbound (EB) left turn lanes at the intersections for both interchange ramps. This will result in widening the SR 60 EB bridge to accommodate the turn lanes. A dedicated westbound (WB) right turn lane to NB US 441 will also be provided. In addition, access modifications are proposed for the abutting properties on the north side of SR 60 just west of the ramp intersection, as shown on **Figure 1-4**. There are currently no restrictions for these properties. The following changes are proposed: no lefts out of the eastern Pilot driveway to

continue EB (will continue to be allowed out of the western driveway), only right-in and right-out movements at the eastern BP driveway (left-in and left-out will continue to be allowed at the western driveway), only right-in and right-out movements for the property east of the BP gas station. In addition, the change from ROW to Limited Access (LA) ROW will restrict access directly to SR 60 for the corner property just next to the Turnpike ramp (owned by Pilot).

(This space was left blank intentionally)



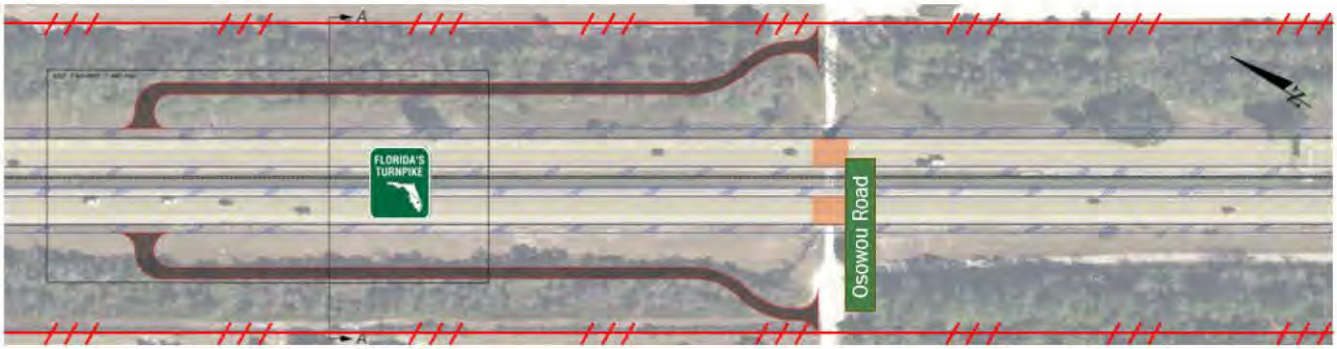
Figure 1-3: Improvements at the SR 60 Interchange

Figure 1-4: SR 60 Access Modifications



- Osowou Road Emergency Access – Improvements to the existing Osowou emergency access includes replacement of the existing culvert and construction of a new 40-foot long bridge with 16'6" vertical clearance over Osowou Road and construction of a new northbound slip ramp (see **Figure 1-5**). This will require raising the existing Turnpike Profile Approximately 5'6" for a distance of approximately 3,500 feet.

Figure 1-5: Osowou Road Emergency Access Modifications



- Truck Parking - This study included consideration of truck parking opportunities adjacent to the SR 60 interchange. A 7.1 acre vacant parcel located immediately west of the SR 60 ramps was evaluated to consider the viability of a truck parking lot. Due to the previously mentioned SR 60 interchange and SR 60 access improvements, access for this site would be required through adjacent parcels in order for this location to be a feasible truck parking opportunity. Preliminary

coordination and analysis determined this truck parking facility to be feasible and is recommended for future consideration once funding becomes available. Continued coordination is recommended with all property owners.

1.5.3 Drainage

Table 1-1 summarizes the recommended stormwater management facility (SMF) alternatives per basin and anticipated ROW requirements for any offsite ponds recommended within the project. See **Appendix F** for proposed drainage maps. Roadside treatment swales are the most feasible SMF alternative for most of the project. Preferred ponds sites were selected where the basins did not have sufficient area to provide roadside swale treatment.

Table 1-1: Preferred Stormwater Management Facility (SMF) Alternatives and Anticipated ROW Requirement

Basin	Basin Area (ac)	Required Water Quality for Swale Treatment (ac-ft)	Provided Water Quality Swale Treatment (ac-ft)	Required Water Quality Offsite Pond (ac-ft)	Provided Water Quality Offsite Pond (ac-ft)	Required Offsite Pond (ac)	Preferred SMF	Req. ROW (ac)
1	8.01	0.57	0.46	0.76	0.76	1.58	Roadside Swale	N/A
2	28.97	2.13	1.72	2.85	2.85	3.78	Roadside Swale	N/A
3	29.12	2.18	1.76	2.91	2.91	3.84	Roadside Swale	N/A
4	30.98	2.26	1.82	3.01	3.01	4.51	Roadside Swale	N/A
5	26.92	1.97	1.59	2.62	2.62	4.08	Roadside Swale	N/A
6	25.20	1.79	1.44	2.39	2.39	3.34	Roadside Swale	N/A
7	75.74	4.76	3.84	6.34	6.34	6.92	Roadside Swale	N/A
8	32.91	1.99	1.92	2.65	2.65	4.83	SMF8-1	4.83
9	74.91	4.46	4.31	5.95	5.95	9.10	SMF9-1	9.10
10	24.40	1.17	1.17	1.55	1.55	3.28	Roadside Swale	N/A
11	49.29	2.39	2.39	3.19	3.19	4.70	Roadside Swale	N/A
12	38.25	1.85	1.85	2.47	2.47	3.89	Roadside Swale	N/A
13	22.24	1.08	1.08	1.44	1.44	2.66	Roadside Swale	N/A
14	86.18	4.18	4.18	5.58	5.58	7.22	Roadside Swale	N/A
15	49.25	2.39	2.39	3.18	3.18	4.69	Roadside Swale	N/A

Table 1-1: Preferred Stormwater Management Facility (SMF) Alternatives and Anticipated ROW Requirement

Basin	Basin Area (ac)	Required Water Quality for Swale Treatment (ac-ft)	Provided Water Quality Swale Treatment (ac-ft)	Required Water Quality Offsite Pond (ac-ft)	Provided Water Quality Offsite Pond (ac-ft)	Required Offsite Pond (ac)	Preferred SMF	Req. ROW (ac)
16	69.69	3.45	3.45	4.60	4.60	6.20	Roadside Swale	N/A
17	63.34	4.00	4.00	5.34	5.34	Conservation Easement	Roadside Swale	N/A
18	36.83	2.22	2.22	2.97	2.97	6.07	Roadside Swale	N/A
19*	36.73	2.22	2.22	2.97	2.97	317.38	Roadside Swale	N/A
20*	35.25	2.13	2.13	2.85	2.85	305.10	Roadside Swale	N/A
21*	48.05	2.86	2.86	3.81	3.81	404.65	Roadside Swale	N/A
22	56.69	2.51	2.51	3.35	3.35	6.67	Roadside Swale	N/A
23	46.36	2.40	2.40	3.20	3.20	5.58	Roadside Swale	N/A
24	16.90	0.85	0.85	1.13	1.13	2.99	Roadside Swale	N/A
25	45.57	2.18	2.18	2.90	2.90	5.97	Roadside Swale	N/A
26	40.64	1.75	1.75	2.33	2.33	1.48	Roadside Swale	N/A
27	49.11	2.25	2.25	3.00	3.00	1.72	Roadside Swale	N/A
28	43.35	2.31	2.31	3.08	3.08	5.42	Roadside Swale	N/A
29	16.25	0.90	0.90	1.20	1.20	2.74	Roadside Swale	N/A
30	33.18	1.76	1.76	2.35	2.35	4.11	Roadside Swale	N/A
31	31.46	1.53	1.53	2.04	2.04	3.72 ac	Roadside Swale	N/A
32	54.03	2.60	2.60	3.47	3.47	Conservation Land	Roadside Swale	N/A
33	19.47	0.95	0.95	1.26	1.26	Conservation Land	Roadside Swale	N/A
34	58.95	2.82	2.82	3.75	3.75	Conservation Land	Roadside Swale	N/A
35	21.99	1.11	1.11	1.48	1.48	Conservation Land	Roadside Swale	N/A
36	13.87	0.67	0.67	0.90	0.90	2.26	Roadside Swale	N/A
37	14.45	0.70	0.70	0.93	0.93	Conservation Land	Roadside Swale	N/A
38	23.48	1.28	1.28	1.71	1.71	Conservation Land	Roadside Swale	N/A
39	25.05	1.51	1.51	2.01	2.01	Conservation Land	Roadside Swale	N/A
40	36.71	1.78	1.78	2.38	2.38	Conservation Land	Roadside Swale	N/A

Table 1-1: Preferred Stormwater Management Facility (SMF) Alternatives and Anticipated ROW Requirement

Basin	Basin Area (ac)	Required Water Quality for Swale Treatment (ac-ft)	Provided Water Quality Swale Treatment (ac-ft)	Required Water Quality Offsite Pond (ac-ft)	Provided Water Quality Offsite Pond (ac-ft)	Required Offsite Pond (ac)	Preferred SMF	Req. ROW (ac)
41	27.35	1.32	1.32	1.76	1.76	Conservation Land	Roadside Swale	N/A
42	14.86	0.72	0.72	0.96	0.96	Conservation Land	Roadside Swale	N/A
43	54.93	2.58	2.58	3.44	3.44	5.89	Roadside Swale	N/A
44	12.29	0.58	0.58	0.77	0.77	2.05	Roadside Swale	N/A
45	22.73	1.10	1.10	1.46	1.46	1.73	Roadside Swale	N/A
46	36.07	1.75	1.75	2.33	2.33	2.32	Roadside Swale	N/A
47	27.61	1.33	1.33	1.78	1.78	1.95	Roadside Swale	N/A
48	23.88	1.16	1.16	1.54	1.54	3.26	Roadside Swale	N/A
49	43.93	2.13	2.13	2.83	2.83	5.08	Roadside Swale	N/A
50	29.54	1.44	1.44	1.92	1.92	Conservation Land	Roadside Swale	N/A
51	32.40	1.55	1.55	2.07	2.07	Conservation Land	Roadside Swale	N/A
52	81.03	3.75	3.14	5.00	5.00	4.24	SMF 52-1 & SMF 52-2	Infield Ponds
53*	21.55	1.02	1.02	1.36	1.36	150.24	Roadside Swale	N/A
54*	30.82	1.45	1.45	1.93	1.93	210.00	Roadside Swale	N/A

*The pond area highlighted in green indicates that the depth to the groundwater elevation is almost 0 ft, and water is at the ground surface. This situation is not suitable for constructing a pond, which will require significantly large pond areas, which are not feasible.

During the design phase it is recommended that some, or all, of the following be evaluated to potentially reduce the size of the proposed ponds once additional survey, geotechnical evaluations, and roadway design are available:

1. SMF sized to treat only net new impervious areas.
2. Use the existing borrow ditch as a stormwater management facility. A survey, geotechnical investigation, coordination with the water management districts, and field reviews will be necessary to determine if a borrow ditch is suitable to be converted into a treatment facility.

3. It is Turnpike's preference to avoid impacting, wetlands, floodplain, contaminated sites, and listed species when selecting the pond sites.
4. Use compensatory treatment - three major drainage basins are presented in the project corridor: Upper St. Johns in the north, Indian River Lagoon, C25- in the middle, and St Lucie-Loxahatchee in the south. Compensatory treatment is conditional and should be provided within the same receiving basin. For example, dry swale to treat the existing pavement to compensate for the new pavement in the areas where dry swale is not feasible.
5. Use alternative methods of treatment and attenuation found during the Environmental Look Around (ELA) process. Grove Land Reservoir and stormwater area is an ELA opportunity identified by SJRWMD & SFWMD (see Appendix G)
6. From the beginning of the project to station 2000+00, the Turnpike runs parallel to and borders Florida Gas and Transmission (FGT) until the gas line veers off eastward along Rock Road. Stormwater management designs that are acceptable with FGT, should be considered during design.
7. FPL transmission lines that run along the project corridor. Pond sites located within the FPL easements should be coordinated during design.

1.5.4 Right-of-way and Construction Cost

SR 91 has an existing ROW that generally varies from 300 - 400 feet, with wider ROW along some segments of the mainline and at the Fort Drum Service Plaza and SR 60 interchange. The SR 91 mainline has ample ROW to accommodate the Preferred Alternative. Approximately 13.46 acres of ROW acquisition from twenty parcels will be required to accommodate the SR 60 interchange improvements. In addition, four (4) parcels will require a take as a result of extension of the limited access ROW line along SR 60 both to the east and west. Some additional ROW acquisition may be required for offsite ponds. No residential or business relocations are anticipated as a result of this project. See **Table 1-2** for cost estimate.

Table 1-2: Cost Estimate

	Cost
Construction	$762,513,000
Contingency (25%)	$190,629,000
ROW	$10,265,348
Utility Relocation	$97,100,000
Sub Total	$1.061B
Design (15%)	$159,076,000
CEI (15%)	$159,076,000
Wildlife Crossing System	$10,510,000
Total Estimated Project Cost	$1.49B

1.6 List of Technical Documents

The following is a list of all supplemental documents to this Preliminary Engineering Report.

- Engineering
  - Location Hydraulics Report (LHR) – March 2025
  - Pond Siting Report (PSR) – March 2025
  - Geotechnical Report – October 2024
  - Project Traffic Forecast Memorandum (PTFM) – April 2022
  - Project Traffic Analysis Report (PTAR) – April 2025
  - Interchange Modification Report (IMR) – April 2025
  - Bridge Analysis Report – March 2025
  - Value Engineering (VE) Study Report - September 2024
  - Utility Assessment Package (UAP) – November 2024
- Environmental
  - State Environmental Impact Report (SEIR) – June 2025
  - Natural Resources Evaluation (NRE) - March 2025
  - Cultural Resources Assessment Survey (CRAS) – October 2024

- Contamination Screening Evaluation Report (CSER) - March 2025
- Noise Study Report (NSR) – June 2025
- Sociocultural Effects Evaluation Report (SCE) - March 2025
- Water Quality Impact Evaluation (WQIE) - March 2025

- Public Involvement
  - Public Involvement Plan (PIP) – April 2024
  - Comments and Coordination Report (C&C) – June 2025

2 EXISTING CONDITIONS

The existing conditions and evaluation performed for the Turnpike corridor from north of SR 70 to north of SR 60 consisted of three basic phases: data gathering, data analysis, and conclusions. **Figure 2-1** contains a flowchart detailing the process utilized for this project.

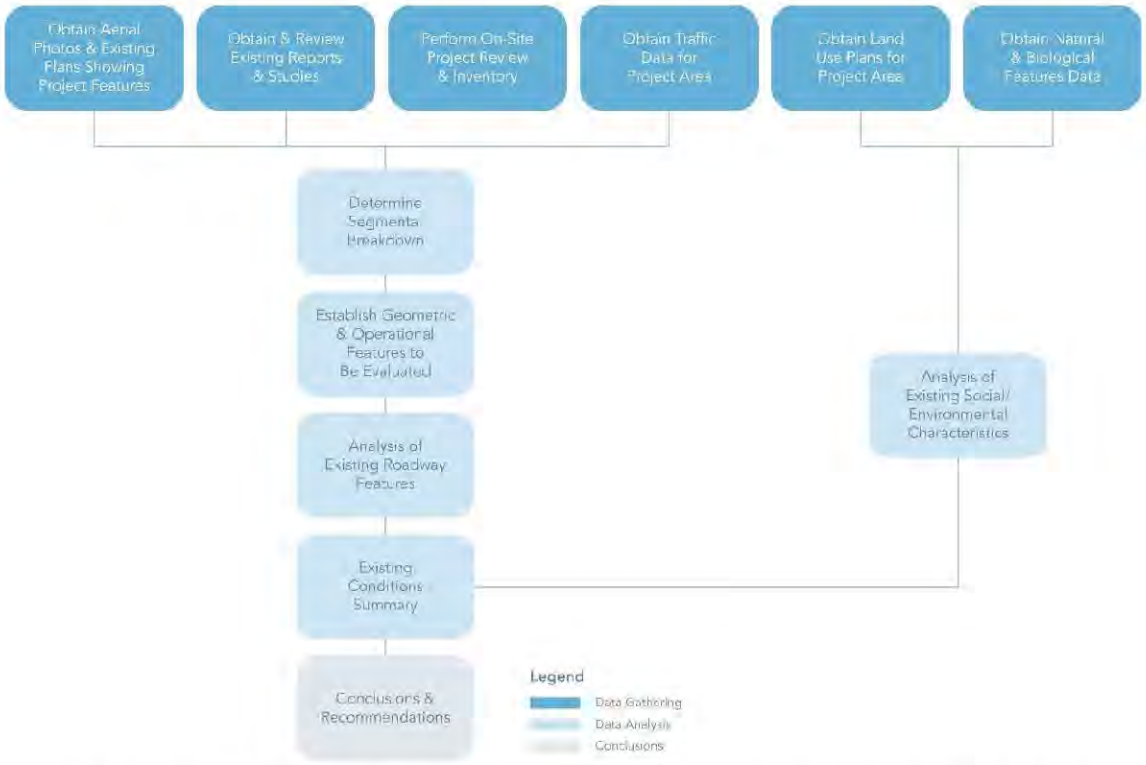


Figure 2-1: Existing Conditions and Evaluation Analysis Flowchart

2.1 Previous Planning Studies

No previous studies were performed.

2.2 Existing Roadway Conditions

2.2.1 Roadway Typical Sections

The existing roadway typical section along the entire project segment generally includes two 12-foot travel lanes in each direction, 12-foot paved outside shoulders and a 40-foot median. The inside shoulders are generally 8 feet with 4-foot paved and guardrail is present along the inside shoulder on the southbound side. Existing canals and/or

ditches run along either the south or north sides or along both sides of the road for much of the project. Guardrail runs intermittently along the outside shoulder in both directions.



Figure 2-2 Existing Typical Section (Looking North)

2.2.2 Roadway Functional & Context Classifications

The Turnpike (SR 91) is functionally classified as a Rural Principal Arterial Expressway within the limits of the study. The Turnpike is a Limited Access facility and a SIS Highway Corridor. SIS Highway corridors and connectors, including the Turnpike, traverse varying context classifications. The study corridor traverses mostly C-1- Natural, C2-Rural, C2T-Rural Town, and C3R- Suburban Residential areas. Given the purpose and intent of the SIS, the requirements of a particular context classification may not always align with the function of the SIS highway. The SIS Policy Plan outlines that SIS improvements should consider the context, needs, and values of the communities serviced by the SIS, which may include flexibility in design and operational standards. Most importantly, communication with all parties involved is key to determining the best solution to realize the intent of both the SIS and a context-based approach within a community.

SR 60 within the limits of the project is functionally classified as a Rural Principal Arterial other. In terms of context classification, SR 60 is within C3R-Suburban Residential which distinguishes mostly residential uses within large blocks and a disconnected or sparse roadway network. East of the Turnpike, SR 60 has mostly vacant land with mainly residential land use to the north and natural lands to the south. West of the Turnpike SR 60 has mostly commercial land uses to the north and the DeLuca Preserve to the south.

2.2.3 Access Management Classification

In terms of access management, SR 91 is currently classified Access Class 1. These are roadways that do not provide direct property connections. These roadways provide for high speed and high-volume traffic movements serving interstate, interregional, and intercity. Per FAC Rule 14-97 and Federal Highway Administration (FHWA), the minimum spacing between interchanges is six miles in rural areas. The existing interchanges, SR 70 and SR 60, are located at MP 152 and MP 193, respectively, approximately 41 miles apart. Additionally, access to the Fort Drum Service Plaza within the median of the Turnpike is provided for both northbound and southbound traffic at MP 184.

Within the limits of the project, SR 60 is currently classified as Access Class 3. These roadways are controlled access facilities where direct access to abutting land is controlled to maximize the operation of the through traffic movement. The land adjacent to these roadways is generally not extensively developed and/or the probability of significant land use change exists. These roadways are distinguished by existing or planned restrictive medians. Currently SR 60 has a 60-foot sodded median east of the SR 91 ramp; west of the SR 91 ramp, SR 60 has an extended painted two-way-left-turn lane in the median from the SR 91 ramp to US 441.

2.2.4 Right-of-Way

Existing ROW information was obtained from available as-builts and ROW maps. The existing ROW width along the Turnpike corridor is generally 400 feet. The ROW widths appear to vary in some areas, particularly in Okeechobee and Indian River Counties approximately between mileposts 166 and 180 where the existing ROW meanders from as little as 300 feet to as much as 463 feet wide. Available ROW increases to as much as 1,000 feet at the interchanges and service plaza.

Table 2-1: Existing ROW

Facility	Segment Limits		Right-of-way (Ft)
SR 91	Approx MP 152	Approx MP 166	300-400′
	Approx MP 166	Approx. MP 180	Varies 300′-463′
	At Ft. Drum Service Plaza	-	Maximum ~1,000′
	Ft. Drum Service Plaza	North of SR 60	400′-415′
SR 60	US 441	West of SR 91 ramp	100′

2.2.5 Adjacent Land Use

The project is located in St. Lucie, Indian River, Okeechobee and Osceola Counties. The existing land use surrounding the corridor, is predominantly agricultural or natural unimproved land. In the Osceola, Indian River, and Okeechobee County portions of the corridor, the land uses are primarily rural, low intensity, and low density comprised of mostly agricultural land uses. In St. Lucie County, the land use is generally rural and low density north of SR 70. South of SR 70, the land use intensifies, as the more dense and urbanized land uses in the city of Port St. Lucie become more apparent. Details of the land use including land use codes present within the study corridor along with maps are included in **Appendix A**.

2.2.6 Pavement Type and Condition

According to the FDOT's Pavement Condition History and Forecast reports the pavement is in generally good condition with most cracking and rideability scores above 8.2. Each section of pavement is rated for cracking and rideability on a 0-10 scale with 0 being the worst and 10 the best. Any crack rating of 6.4 or less is considered deficient pavement. For speed limits greater than or equal to 50 MPH, a ride rating of 6.4 or less is considered deficient. The table below summarizes 2024 pavement conditions by roadway section and milepost.

Table 2-2: Pavement Condition forecast 2024

County	Roadway ID	BMP	EMP	Cracking	Ride
St. Lucie	94470000 R	7.3	31.2	10.0	8.6
	94470000 R	31.2	34.9	7.5*	8.7
	94470000 L	31.2	34.9	4.5*	8.2
	94470000 L	7.3	31.2	10.0	8.7
Indian River	88470000 R	0	5.2	6.5*	8.4
	88470000L	0	5.2	6.5*	8.4
	88470000 R	5.2	7.99	10.0	9.0
	88470000 L	5.2	7.99	10.0	9.1
	88470000 R	15.464	17.452	10.0	8.9
	88470000 L	15.464	17.452	10.0	8.9
Okeechobee	91470000 R	0	7.472	10.0	8.9
	91470000 L	0	7.472	10.0	8.9

Table 2-2: Pavement Condition forecast 2024

County	Roadway ID	BMP	EMP	Cracking	Ride
Osceola	92470000 R	0	8.0	10.0	8.5
	92470000 L	0	8.0	10.0	8.4

Red* indicates pavement that is currently deficient, * Indicates that pavement is forecasted to be deficient by 2029

2.2.7 Existing Design and Posted Speed

The Design speed along the Turnpike within the limits of the study is 70 mph, based on available as-built data. The posted speed along the Turnpike mainline is 70 mph. At the interchange of SR 60/ Yeehaw Junction the ramps have the following posted speeds: northbound exit ramp has an advisory posted speed sign of 25 mph and increases to 30 mph after the bridge over the mainline; the northbound entrance ramp, southbound exit ramp and southbound entrance ramp have advisory posted speed signs of 25 mph.

2.2.8 Horizontal Alignment

Existing horizontal curve information within the limits of the project was gathered from existing and available as-builts and summarized in **Table 2-3**. As shown in Table 2-3, all existing curves meet FDOT Design Manual (FDM) criteria for curve length, two curves do not meet required superelevation requirements based on the existing degree of curvature.

2.2.9 Vertical Alignment

Limited existing vertical alignment information was available from available as-builts and survey. The existing vertical alignment is generally flat throughout the limits of the project, with minor changes in grade and elevation. Generally minor changes in vertical grades occur at existing culverts and bridges. There are no notable vertical curves within the limits of the project except for the ramps at the SR 60 interchange over the Turnpike.

2.2.10 Multi-modal Facilities

2.2.10.1 Bicycle Facilities

There are no existing bicycle or pedestrian facilities along the Turnpike nor along SR 60.

2.2.10.2 Transit Facilities

There is no transit service along the Turnpike nor SR 60.

(This space was intentionally left blank)

Table 2-3: Existing Horizontal Curve Information

County	PC (PDE Baseline)	PT (PDE Baseline)	MP	Design Speed (MPH)	Degree of Curvature	Radius (feet)	Curve Length (FT)	FDOT Desirable Curve Length (FT)	FDOT Minimum Curve Length (FT)	Existing e	Required e	Between Roads
St. Lucie	1955+54.56	1966+96.31	153.07-153.29	70	0.45	7639.44	2387.0262	2100	1050	0.028	0.028	SR 70/PICOS RD
St. Lucie	2080+91.09	2103+30.54	155.44-155.87	70	1.0	5729.59	2234.8603	2100	1050	0.037	0.037	PICOS RD/ORANGE AVE
St. Lucie	2134+65.55	2171+21.31	156.46-157.15	70	0.45	7639.44	3724.2045	2100	1050	0.028	0.028	ORANGE AVE/ANGLE RD
St. Lucie	2259+64.37	2306+49.31	158.83-159.72	70	1	5729.59	4697.6494	2100	1050	0.037	0.037	ANGLE RD/MINUTE MAID RD
St. Lucie	2609+94.04	2662+80.40	165.46-166.46	70	1	5729.59	5287.85	2100	1050	0.037	0.037	MINUTE MAID RD/REDEBAUGH RD
St. Lucie	2827+04.81	2855+82.35	169.57-170.12	70	0.3	11459.16	2944.89	2100	1050	0.020	RC	MINUTE MAID RD/REDEBAUGH RD
St. Lucie	2894+12.29	3025+74.47	170.85-173.34	70	1	5729.58	3852.03	2100	1050	0.030	0.037	REDEBAUGH RD/CORRIGAN RD
Indian River	3391+29.97	3418+01.13	180.26-180.77	70	0.45	7639.44	2655.56	2100	1050	0.028	0.028	CORRIGAN RD/OSOWOU RD
Okeechobee	3479+84.80	3528+77.15	181.94-182.87	70	0.45	7639.44	4891.11	2100	1050	0.020	0.028	CORRIGAN RD/OSOWOU RD
Okeechobee	10+00.00	21+18.02	184.65	70	1	5729.58	1200	2100	1050	0.037	0.037	FORT DRUM NORTH
Okeechobee	24.74.31	48+87.59	185	70	1	5729.58	1200	2100	1050	0.037	0.037	FORT DRUM NORTH
Okeechobee	52+98.38	64+88.76	185.55	70	1	5729.58	2400	2100	1050	0.037	0.037	FORT DRUM NORTH
Okeechobee	10+00.00	20+99.95	184.58	70	1	5729.58	1200	2100	1050	0.037	0.037	FORT DRUM SOUTH
Okeechobee	24+89.37	48+94.22	185	70	1	5729.58	2400	2100	1050	0.037	0.037	FORT DRUM SOUTH
Okeechobee	53+04.10	65+01.62	185.55	70	1	5729.58	4550	2100	1050	0.037	0.037	FORT DRUM SOUTH
Okeechobee /Indian River	3876+03.19	3892+44.83	189.44-189.75	70	1	7639.44	1688.89	2100	1050	0.020	0.037	FORT DRUM/SR 60
Osceola	4024+97.07	4047+30.56	192.26-192.69	70	1	5729.58	4550	2100	1050	0.370	0.037	FORT DRUM/SR 60
Osceola	4125+74.15	4147+43.87	194.17-194.58	70	1	5729.58	4384.19	2100	1050	0.370	0.037	US 441/SR 60

Note: Green text signifies it meets FDOT FDM criteria, Red text signifies it does not meet FDM criteria

2.2.11 Interchanges/Cross Streets

Within the limits of the study, the only existing interchange is located at SR 60 (MP 193). An emergency-use-only southbound on-ramp is provided at Osowou Road (north of MP 184), where the Fort Drum Service Plaza is located to the north. The SR 70 interchange is located just south of the limits of the project at MP 152. US 441 intersects with SR 60 approximately 2,000 feet west of the SR 60 ramp.

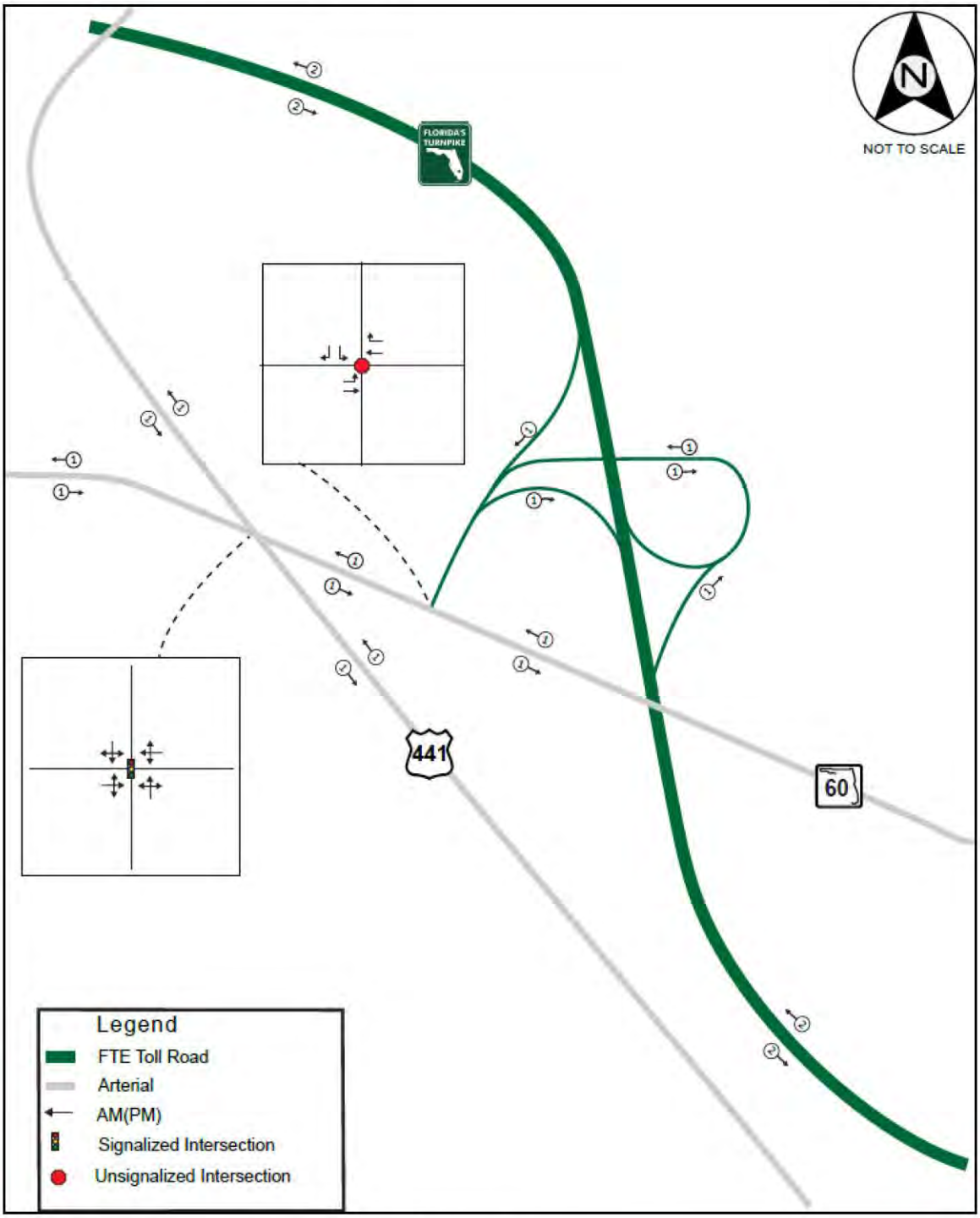
2.2.11.1 SR 60 Interchange

SR 60 is a divided principal arterial with four lanes to the east of the SR 91 ramp intersection and an undivided principal arterial with two lanes to the west of the interchange. The SR 60 interchange currently features a trumpet interchange and is located in Osceola County at approximately MP 193. All access to/from the Turnpike at SR 60 is provided via an intersection with SR 60 just west of the Turnpike. The northbound ramps are provided via ramps over the Turnpike. The lane configuration of the SR 60 interchange is shown on **Figure 2-3**.

2.2.12 Physical or Operational Restrictions

SR 91 is a tolled, limited access facility. Within the limits of the study, SR 91 is surrounded by a network of conservation and the Florida Wildlife Corridor with several sensitive environmental features, as discussed in Section 2.4.3. Additionally, a network of canals parallel the SR 91 mainline for portions of the project.

(This space was intentionally left blank)



Source: April 2022 Preliminary Traffic Forecasting Memorandum

Figure 2-3: SR 60 Interchange

2.2.13 Traffic Data

The following sections were summarized from the April 2025 PTAR and April 2025 Interchange Modification Report (IMR) are available.

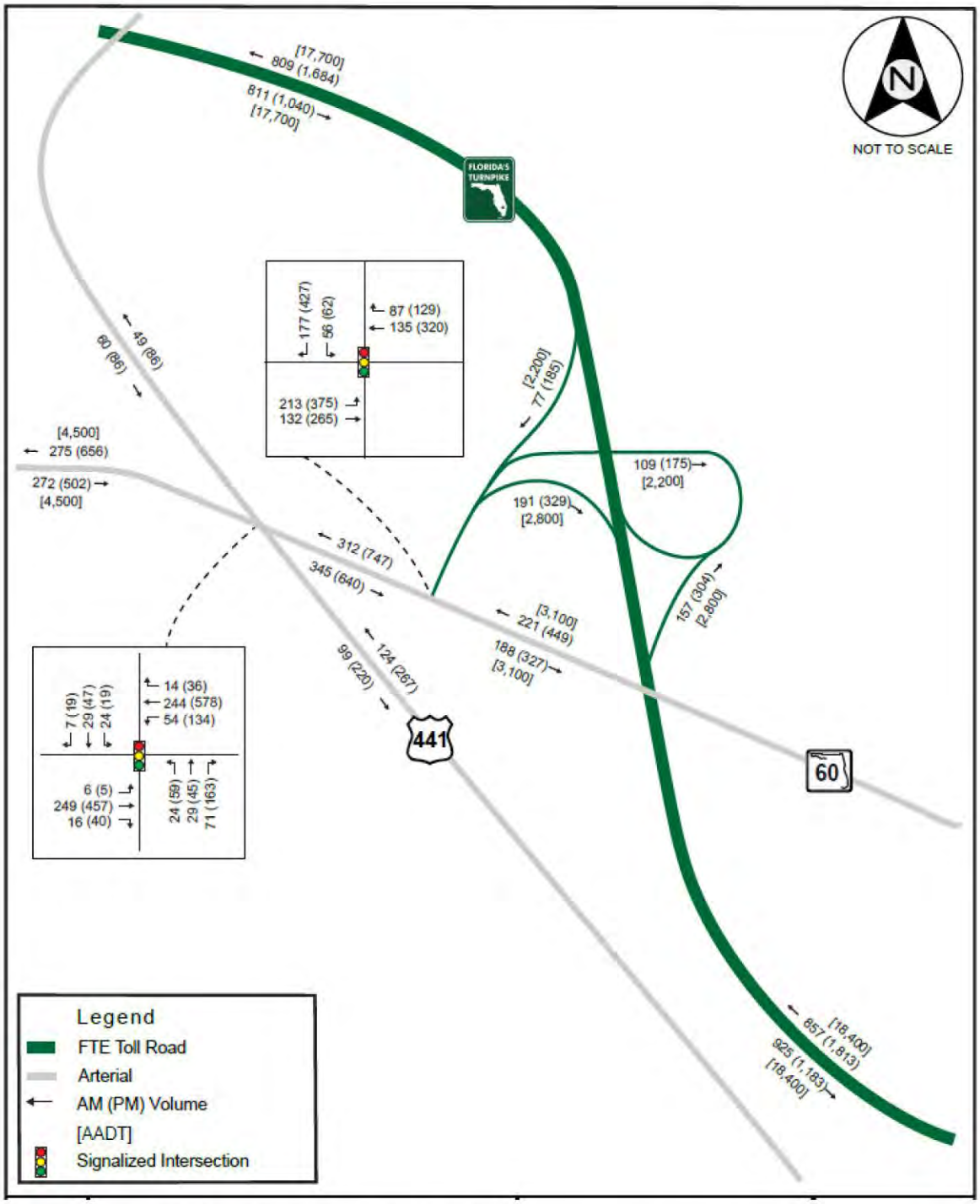
To calculate existing (2022) AADT and peak hour volumes, an analysis was conducted for the daily counts and the four highest consecutive 15-minute periods in the morning and evening. Seasonal and axle adjustment factors were applied to the data where necessary. The data were then aggregated and balanced for continuity of flow and consistency.

Final 2022 AADT and directional design hour volumes (DDHV) for Turnpike Mainline / SR 91 and Yeehaw Junction / SR 60 interchange ramps are summarized in **Table 2-4**. The data show that traffic on Turnpike Mainline / SR 91 peaks in the northbound direction during the PM peak and in the southbound direction during the AM peak. The 2022 AM and PM peak hour volumes are shown on **Figure 2-4.** For more information, please refer to the PTAR and IMR.

Table 2-4: 2022 Average Annual Daily Traffic (AADT) and Peak Hour Volumes

Location	Turnpike Mainline / SR 91	2022				
		AADT	AM - DDHV		PM - DDHV	
			SB	NB	SB	NB
		35,400	**810**	**810**	**1,040**	**1,680**
Yeehaw Junction / US 441 / SR 60 (MP 193)		4,300	80	110	190	180
		5,600	190	160	330	300
		36,700	**920**	**860**	**1,180**	**1,800**
Fort Drum Service Plaza (MP 184)		**36,700**	**920**	**860**	**1,180**	**1,800**

(This space was intentionally left blank)



Source: April 2025 SR 60 Interchange Modification Report

Figure 2-4: 2020 Peak Hour Volumes

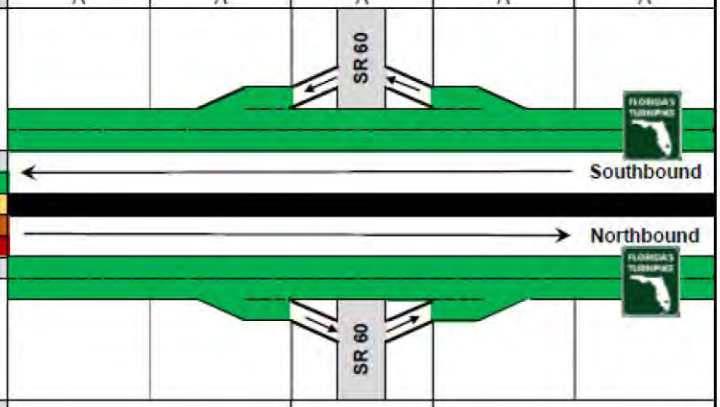
2.2.14 Roadway Operational Conditions

2.2.14.1 Freeway Segment Analysis

The SR 91 mainline segments (basic, merge/diverge, and weave) within the study limits were evaluated using HCS software Version 7.8.5. As shown in **Table 2-5** and **Table 2-6**, freeway segments in the northbound and southbound directions operated at or close to the posted speed of 70 mph and at LOS C or better during the AM and PM peak hours.

Table 2-5: 2022 (Existing) AM Peak Hour Freeway Mainline Operations

Segment Description	Downstream of SR 60		SR 60	Upstream of SR 60	
Segment Type	Basic	Merge	Basic	Diverge	Basic
Segment Length (ft)	5,280	1,500	1,530	1,500	5,280
Mainline Demand (vph)	920	730	730	810	810
Ramp Demand (vph)	-	190	-	80	-
Density (pcpmpl)	8	6	6	9	7
LOS	A	A	A	A	A

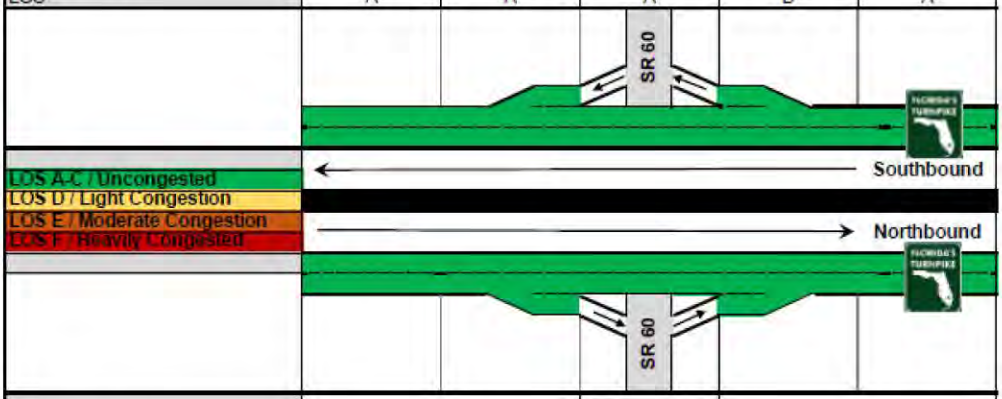


LOS A-C / Uncongested
LOS D / Light Congestion
LOS E / Moderate Congestion
LOS F / Heavily Congested

Segment Description	Upstream of SR 60		SR 60	Downstream of SR 60	
Segment Type	Basic	Diverge	Basic	Merge	Basic
Segment Length (ft)	5,280	1,500	1,270	1,500	5,280
Mainline Demand (vph)	860	860	700	700	810
Ramp Demand (vph)	-	160	-	110	-
Density (pcpmpl)	7	4	6	7	8
LOS	A	A	A	A	A

Table 2-6: 2022 (Existing) PM Peak Hour Freeway Mainline Operations

Segment Description	Downstream of SR 60		SR 60	Upstream of SR 60	
Segment Type	Basic	Merge	Basic	Diverge	Basic
Segment Length (ft)	5,280	1,500	1,530	1,500	5,280
Mainline Demand (vph)	1,180	850	850	1,040	1,040
Ramp Demand (vph)	-	330	-	190	-
Density (pcpmpl)	9	7	7	11	8
LOS	A	A	A	B	A



Segment Description	Upstream of SR 60		SR 60	Downstream of SR 60	
Segment Type	Basic	Diverge	Basic	Merge	Basic
Segment Length (ft)	5,280	1,500	1,270	1,500	5,280
Mainline Demand (vph)	1,800	1,800	1,500	1,500	1,680
Ramp Demand (vph)	-	300	-	180	-
Density (pcpmpl)	14	13	12	14	13
LOS	B	B	B	B	B

2.2.14.2 Ramp Capacity Analysis

Capacity on ramp roadways was assessed by comparing it with existing demand. Capacity analysis used the FDOT capacity targets adjusted for local conditions and truck involvement. The ramp Volume to Capacity (V/C) analysis is summarized in **Table 2-7**. Results show that the highest V/C is 0.2, indicating that the ramps had a considerable amount of unused capacity during both 2022 AM and PM peak hours.

Table 2-7: 2020 (Existing) Peak Hour Ramp Roadway Capacity Analysis

Interchange	Ramp	Lanes	Volume (vph)		Capacity (vph)	V/C	
			AM	PM		AM	PM
SR 60	Northbound Off-ramp	1	160	300	1,720	0.1	0.2
	Southbound On-ramp	1	190	330	1,720	0.1	0.2
	Northbound On-ramp	1	110	180	1,720	0.1	0.1
	Southbound Off-ramp	1	80	190	1,720	0.1	0.1

2.2.14.3 Intersection Analysis

Performance of the Turnpike Mainline / SR 91 ramp terminal and the SR 60 and US 441 intersection are presented in **Table 2-8**. Both intersections operated at LOS C or better during 2022 AM and PM peak hours. Most movements at the two intersections operated at LOS D or better except for the southbound left-turn movement at the Turnpike Mainline / SR 91 ramp terminal intersection which operated at LOS E during both AM and PM peak hours and the northbound movements at the US 441 intersection, which operated at LOS E during the PM peak hour.

No ramp backup events were observed at Yeehaw Junction / SR 60 off-ramps in 2022. Available storage length along off-ramp roadways was calculated from the stop bar at the ramp terminal intersection to the gore location at Turnpike Mainline / SR 91. Existing storage length at NB and SB off-ramps are 3700 ft and 2350 ft, respectively.

(This section was intentionally left blank)

Table 2-8: 2022 (Existing) AM and PM Peak Hour Intersection Performance

2022 AM Peak Hour Intersection Performance

Intersection	Measure of Effectiveness (MOE)	Level	Northbound			Southbound			Eastbound			Westbound			Intersection LOS (Delay (sec))
			Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
Turnpike Mainline / SR 91 Ramp Terminal	LOS (Delay (sec))	Movement				**E (62.1)**		A (7.8)	A (5.6)	A (4.4)			B (10.7)	A (0.9)	B (10.3)
		Approach					C (21.1)			A (5.1)			A (6.9)		
	Queue Length 95th (ft)	Movement				90		47	68	46			92	12	
US 441 and SR 60	LOS (Delay (sec))	Movement		D (45.4)			D (53.7)			B (14.5)		A (7.8)	A (9.4)		C (20.4)
		Approach		D (45.4)			D (53.7)			B (14.5)			A (9.2)		
	Queue Length 95th (ft)	Movement		120			83			203		42	170		

Synchro 11 used for Signalized Intersections.
LOS notes:
Delay is in sec/veh

Queue notes:
~: Volume exceeds capacity, queue is theoretically infinite

:Level Of Service (LOS) E reflecting at-capacity oper #: 95th percentile volume exceeds capacity
:Level Of Service (LOS) F reflecting over-capacity opm: Upstream metering is in effect

* Storage length for right- and left-turn movements at the ramp terminal is 1000 ft.

2022 PM Peak Hour Intersection Performance

Intersection	Measure of Effectiveness (MOE)	Level	Northbound			Southbound			Eastbound			Westbound			Intersection LOS (Delay (sec))
			Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
Turnpike Mainline / SR 91 Ramp Terminal	LOS (Delay (sec))	Movement				**E (60.7)**		C (30.2)	A (7.7)	A (3.8)			B (19.3)	A (1.8)	B (17.1)
		Approach					C (34.1)			A (6.1)			B (14.2)		
	Queue Length 95th (ft)	Movement				93		280	110	71			266	24	
US 441 and SR 60	LOS (Delay (sec))	Movement		**E (56.9)**			D (36.5)			C (25.2)		B (10.6)	B (15.6)		C (26.2)
		Approach		**E (56.9)**			D (36.5)			C (25.2)			B (14.7)		
	Queue Length 95th (ft)	Movement		269			99			461		m78	378		

Synchro 11 used for Signalized Intersections.
LOS notes:
Delay is in sec/veh

Queue notes:
~: Volume exceeds capacity, queue is theoretically infinite

:Level Of Service (LOS) E reflecting at-capacity oper #: 95th percentile volume exceeds capacity
:Level Of Service (LOS) F reflecting over-capacity opm: Upstream metering is in effect

* Storage length for right- and left-turn movements at the ramp terminal is 1000 ft.

2.2.15 Managed lanes

There are no managed lanes, existing or planned, within the limits of the project.

2.2.16 Crash Data

Crash data was obtained from Signal Four Analytics database, from 2017 through 2021.

2.2.16.1 SR 91 Mainline Crash Analysis

Mainline crashes (not including crashes from MP 192 to MP 194) during the five-year study period from 2017 through 2022 are summarized in **Table 2-11** and **Table 2-12**. A total of 1,469 crashes were reported along Turnpike Mainline, six crashes were reported along the Fort Drum Service Plaza ramps and 10 crashes reported in the Fort Drum Service Plaza parking lot. Approximately 75.5% of the total crashes resulted in property damage only, about 23.2% resulted in injury, and 1.3% (20 crashes) resulted in fatality along the Turnpike Mainline for the study period. Locations with high crash density can be observed north and south of the Fort Drum Service Plaza within the ramp merge and diverge freeway influence areas near the entrance and exit of the plaza.

Table 2-9: Number of Mainline Crashes by Crash Severity

Facility	Crash Severity			
	Fatality	Injury	Property Damage Only	Total
Turnpike Mainline / SR 91	20	342	1107	1,469
Service Plaza Ramps	0	1	5	6
Service Plaza Parking Lot	0	1	9	10
Total	20	342	1121	1,485
Proportion of Total Crashes	1.3%	23.2%	75.5%	100%

Table 2-10: Number of Mainline Crashes by Crash Severity and Year

Crash Severity	2017	2018	2019	2020	2021	Total	Proportion
Turnpike Mainline	310	352	309	213	285	1,469	98.9%
Service Plaza Ramps	1	5	0	0	0	6	0.4%
Service Plaza Parking Lot	0	4	4	1	1	10	0.7%
Total	311	362	313	214	286	1,732	100%

Actual crash rates were computed and compared with average crash rates for the Turnpike mainline utilizing the statewide five-year average crash rates (2018-2022) to

assess the safety condition within the study area. Critical crash rates and safety ratios were also estimated. Crash rates for the freeway mainline were estimated as crashes per Million Vehicle Miles Traveled (MVMT). The critical crash rate is based on the average crash rate for a similar facility adjusted by vehicle exposure and a probability constant. The safety ratio represents the actual crash rate divided by the critical crash rate. If a segment has an actual crash rate higher than the critical crash rate (i.e., safety ratio > 1.0), it may have a safety deficiency. The crash rates are listed in **Table 2-11**. The analysis shows that the SR 91 mainline within the study area had actual crash rates lower than but close to the critical crash rates (i.e., safety ratio > 1.0). Results show that the Turnpike Mainline within the limits of the study has a safety ratio of 0.98 and 0.89 in the northbound and southbound directions, respectively.

Table 2-11: Mainline Crash Rates and Safety Ratios (2017-2022)

Segment	Total Crashes	Crash Rate			Safety Ratio
		Actual	Average *	Critical	
Turnpike Northbound	765	0.67	0.5753	0.69	0.98
Turnpike Southbound	704	0.62	0.5753	0.69	0.89
Both directions	1469	0.64	0.5753	0.66	0.97

* FDOT Turnpike, St. Lucie, Indian River, Okeechobee and Osceola counties in FDOT Districts 1, 4 & 5, 5-year Average Crash Rate Average of Crash Rate for Individual County
Turnpike Mainline / SR 91: Toll Road Rural

2.2.16.2 Yeehaw Junction (SR 60) Interchange Crash Analysis

A total of 357 crashes were reported within the interchange area during the five-year study period from 2017 through 2021, as presented in **Table 2-12**. Most of the crashes resulted in injury (31%) and property damage only (69%). **Table 2-13** summarizes the crashes based on location. Thirty-seven percent of the crashes occurred along the SR 91 mainline, 11% along the SR 60 interchange ramps, 20% along the SR 60, and 32% at the intersections within the project limits. A total of two fatal crashes were reported, one occurred along SR 91 mainline north of SR 60, and one along SR 60 east of US 441.

Table 2-12: Number of Crashes (Yeehaw Junction Area) by Crash Severity and Year

Crash Severity	2017	2018	2019	2020	2021	Total	Proportion
Fatality	1	0	0	0	1	2	1%
Injury	24	12	22	27	25	110	31%
Property Damage Only	48	35	48	41	73	245	69%
Total	73	47	70	68	99	357	100%

Table 2-13: Number of Crashes by Location and Year (Yeehaw Junction Area)

Segment	2017	2018	2019	2020	2021	Total	Proportion
Turnpike Mainline (MP 192-194)	23	16	21	29	43	132	37%
SR 60 Interchange Ramps	17	8	5	7	2	39	11%
SR 60	15	6	25	12	12	70	20%
Intersections	18	17	19	20	42	116	32%
Total	73	47	70	68	99	357	100%

Actual crash rates were computed and compared with average crash rates for similar facilities within Osceola County utilizing the statewide five-year average crash rates (2015-2019) to assess the safety condition within the study area. Crash rates were estimated as crashes per Million Vehicle Miles Traveled (MVMT) for segments and as crashes per Million Entering Vehicles (MEV) for intersections. The crash rates are listed in **Table 2-14**. The analysis shows that all segments and intersections within the influence of the SR 60 interchange have critical crash rates higher than averaging resulting in safety ratios higher than 1. This includes the Turnpike mainline within the influence of the SR 60 interchange, the SR 60 interchange ramps, SR 60 segments, and the SR 60 intersections with US 441 and the Turnpike ramps.

Table 2-14: SR 60 Interchange Area Crash Rates and Safety Ratios (2017-2022)

Segment	Total Crashes	Crash Rate			Safety Ratio
		Actual	Average	Critical	
SR 91 Mainline (MP 192-194)	132	0.97	0.4658	0.79	1.23
SR 60 Interchange Ramps	39	5.09	0.4658	2.07	2.45
SR 60 (Segment)	70	13.32	0.6888	3.05	4.37
Intersections					
SR 60/US 441 Intersection	58	2.60	0.1721	0.74	3.51
SR 60/SR 91 Ramp Intersection	58	2.30	1.0878	2.27	1.02

2.2.17 Railroads Crossings

There are no railroad crossings within the study limits.

2.2.18 Drainage

The project is in the jurisdictional areas of the South Florida Water Management District (SFWMD) in the south, and in the St. Johns River Water Management District (SJRWMD) in the north. The project is also located in two local water districts: the North St. Lucie River Water Control District (NSLRWCD) (basins 1, 2, 3, 4, 5, 6 and 7) and the Fort Piece Farms Water Control District (FPFWCD) (basin 8). The project is divided into 54 sub-basins, as summarized in **Table 2-15** and shown in **Appendix B**, based on the existing roadway profile, roadside ditch profiles, and cross drain locations. Roadway runoff from the 4-lane configuration is collected in roadside ditches (borrow ditch) adjacent to the north and southbound lanes. The roadside ditches ultimately discharge offsite via cross drains into canals. The construction of the current roadway configuration predates the adaptation of the Environmental Protection Agency (EPA) stormwater rules. All basins within the project limits are open basins. Based on the SFWMD and SJRWMD permit records, there are three existing permits within the project corridor that include the SR 60 interchange, the service plaza, for the bridges, and for the canal protection, see **Table 2-16**. In addition, there is one Drainage Connection Permit. Please refer to the Pond Siting Report (PSR) for further details.

Table 2-15: Existing Drainage Basin Characteristics

Basin	Begin STA	End STA	Total Area (ac)	Receiving Water Body	Receiving Water Classification System	Existing Stormwater Management System	Existing Water Quality Provided	Ultimate Outfall
1	1980+00	1988+50	8.01	Tenmile Creek	Class III, Impaired - Fecal Coliform, WBID 3194A	Roadside Ditches	None	N Fork St. Lucie River
2	1988+50	2020+50	28.97	Tenmile Creek	Class III, Impaired - Fecal Coliform, WBID 3194A	Roadside Ditches	None	N Fork St. Lucie River
3	2020+50	2053+20	29.12	Tenmile Creek	Class III, Impaired - Fecal Coliform, WBID 3194A	Roadside Ditches	None	N Fork St. Lucie River
4	2053+20	2087+00	30.98	Tenmile Creek	Class III, Impaired - Fecal Coliform, WBID 3194A	Roadside Ditches	None	N Fork St. Lucie River
5	2087+00	2116+50	26.92	Tenmile Creek	Class III, Impaired - Fecal Coliform, WBID 3194A	Roadside Ditches	None	N Fork St. Lucie River
6	2116+50	2143+40	25.2	Tenmile Creek	Class III, Impaired - Fecal Coliform, WBID 3194A	Roadside Ditches	None	N Fork St. Lucie River
7	2143+40	2214+70	75.74	Tenmile Creek	Class III, Impaired - Fecal Coliform, WBID 3194A	Roadside Ditches	None	N Fork St. Lucie River
8	2214+70	2250+50	32.91	Canal C-25 East Segment	Class III, Impaired - Total Phosphorus and Dissolved Oxygen, WBID 3163B	Roadside Ditches	None	Indian River Lagoon
9	2250+50	2330+80	74.91	Fort Pierce Farm Canal (Belcher Canal/Taylor Creek)	Class III, Impaired - Macrophytes and Total Phosphorus, WBID 3163	Roadside Ditches	None	Indian River Lagoon
10	2330+80	2357+00	24.4	C-25 Canal West (St Johns Marsh)	Class III, Impaired - Dissolved Oxygen, WBID 3160	Roadside Ditches	None	Indian River Lagoon
11	2357+00	2410+80	49.29		Class III, Impaired - Dissolved Oxygen, WBID 3161	Roadside Ditches	None	Indian River Lagoon
12	2410+80	2452+50	38.25		Class III, Impaired - Dissolved Oxygen, WBID 3162	Roadside Ditches	None	Indian River Lagoon
13	2452+50	2476+75	22.24		Class III, Impaired - Dissolved Oxygen, WBID 3163	Roadside Ditches	None	Indian River Lagoon
14	2476+75	2570+80	86.18		Class III, Impaired - Dissolved Oxygen, WBID 3164	Roadside Ditches	None	Indian River Lagoon
15	2570+80	2624+50	49.25		Class III, Impaired - Dissolved Oxygen, WBID 3165	Roadside Ditches	None	Indian River Lagoon
16	2624+50	2702+00	69.69		Class III, Impaired - Dissolved Oxygen, WBID 3166	Roadside Ditches	None	Indian River Lagoon
17	2702+00	2792+00	63.34		Class III, Impaired - Dissolved Oxygen, WBID 3167	Roadside Ditches	None	Indian River Lagoon

Table 2-15: Existing Drainage Basin Characteristics

Basin	Begin STA	End STA	Total Area (ac)	Receiving Water Body	Receiving Water Classification System	Existing Stormwater Management System	Existing Water Quality Provided	Ultimate Outfall
18	2792+00	2842+00	36.83	C-25 Canal West (St Johns Marsh)	Class III, Impaired - Dissolved Oxygen, WBID 3168	Roadside Ditches	None	Indian River Lagoon
19	2842+00	2892+00	36.73		Class III, Impaired - Dissolved Oxygen, WBID 3169	Roadside Ditches	None	Indian River Lagoon
20	2892+00	2940+00	35.25		Class III, Impaired - Dissolved Oxygen, WBID 3170	Roadside Ditches	None	Indian River Lagoon
21	2940+00	3004+25	48.05		Class III, Impaired - Dissolved Oxygen, WBID 3171	Roadside Ditches	None	Indian River Lagoon
22	3004+25	3060+75	56.69		Class III, Impaired - Dissolved Oxygen, WBID 3172	Roadside Ditches	None	Indian River Lagoon
23	3060+75	3114+75	46.36		Class III, Impaired - Dissolved Oxygen, WBID 3173	Roadside Ditches	None	Indian River Lagoon
24	3114+75	3133+80	16.9		Class III, Impaired - Dissolved Oxygen, WBID 3174	Roadside Ditches	None	Indian River Lagoon
25	3133+80	3182+75	45.57		Class III, Impaired - Dissolved Oxygen, WBID 3175	Roadside Ditches	None	Indian River Lagoon
26	3182+75	3222+00	40.64		Class III, Impaired - Dissolved Oxygen, WBID 3176	Roadside Ditches	None	Indian River Lagoon
27	3222+00	3272+60	49.11		Class III, Impaired - Dissolved Oxygen, WBID 3177	Roadside Ditches	None	Indian River Lagoon
28	3272+60	3324+60	43.35		Class III, Impaired - Dissolved Oxygen, WBID 3178	Roadside Ditches	None	Indian River Lagoon
29	3324+60	3344+80	16.25		Class III, Impaired - Dissolved Oxygen, WBID 3179	Roadside Ditches	None	Indian River Lagoon
30	3344+80	3384+40	33.18		Class III, Impaired - Dissolved Oxygen, WBID 3180	Roadside Ditches	None	Indian River Lagoon
31	3384+40	3418+80	31.46		Class III, Impaired - Dissolved Oxygen, WBID 3181	Roadside Ditches	None	Indian River Lagoon
32	3418+80	3477+25	54.03	Fort Drum Creek	Class III, Impaired - Fecal Coliform, WBID 3154A	Roadside Ditches	None	Upper St. John's River
33	3477+25	3498+50	19.47	Fort Drum Creek	Class III, Impaired - Fecal Coliform, WBID 3154A	Roadside Ditches	None	Upper St. John's River
34	3498+50	3561+80	58.95	Jim Green Creek	N/A	Roadside Ditches	None	Upper St. John's River
35	3561+80	3586+80	21.99	Jim Green Creek	N/A	Roadside Ditches	None	Upper St. John's River

Table 2-15: Existing Drainage Basin Characteristics

Basin	Begin STA	End STA	Total Area (ac)	Receiving Water Body	Receiving Water Classification System	Existing Stormwater Management System	Existing Water Quality Provided	Ultimate Outfall
36	3586+80	3601+90	13.87	Jim Green Creek	N/A	Roadside Ditches	None	Upper St. John's River
37	3601+90	3617+60	14.45	Jim Green Creek	N/A	Roadside Ditches	None	Upper St. John's River
38	3617+60	3643+60	23.48	Jim Green Creek	N/A	Roadside Ditches	None	Upper St. John's River
39	3643+60	3674+75	25.05	Jim Green Creek	N/A	Roadside Ditches	None	Upper St. John's River
40	3674+75	3714+80	36.71	Jim Green Creek	N/A	Roadside Ditches	None	Upper St. John's River
41	3714+80	3744+50	27.35	Jim Green Creek	N/A	Roadside Ditches	None	Upper St. John's River
42	3744+50	3760+75	14.86	Jim Green Creek	N/A	Roadside Ditches	None	Upper St. John's River
43	3760+75	3818+80	54.93	Padgett Branch	N/A	Roadside Ditches	None	Upper St. John's River
44	3818+80	3831+80	12.29	Padgett Branch	N/A	Roadside Ditches	None	Upper St. John's River
45	3831+80	3856+50	22.73	Padgett Branch	N/A	Roadside Ditches	None	Upper St. John's River
46	3856+50	3895+80	36.07	Padgett Branch	N/A	Roadside Ditches	None	Upper St. John's River
47	3895+80	3925+80	27.61	Padgett Branch	N/A	Roadside Ditches	None	Upper St. John's River
48	3925+80	3951+80	23.88	Padgett Branch	N/A	Roadside Ditches	None	Upper St. John's River
49	3951+80	3999+60	43.93	Cow Log Branch	N/A	Roadside Ditches	None	Upper St. John's River
50	3999+60	4031+90	29.54	Cow Log Branch	N/A	Roadside Ditches	None	Upper St. John's River
51	4031+90	4065+40	32.40	Cow Log Branch	N/A	Roadside Ditches	None	Upper St. John's River
52	4065+40	4090+60	81.03	Cow Log Branch	N/A	Roadside Ditches	Infield Pond	Upper St. John's River
53	4090+60	4115+30	21.55	Cow Log Branch	N/A	Roadside Ditches	None	Upper St. John's River

Table 2-15: Existing Drainage Basin Characteristics

Basin	Begin STA	End STA	Total Area (ac)	Receiving Water Body	Receiving Water Classification System	Existing Stormwater Management System	Existing Water Quality Provided	Ultimate Outfall
54	4115+30	4150+00	30.82	Cow Log Branch	N/A	Roadside Ditches	None	Upper St. John's River

Table 2-16: Existing Permits

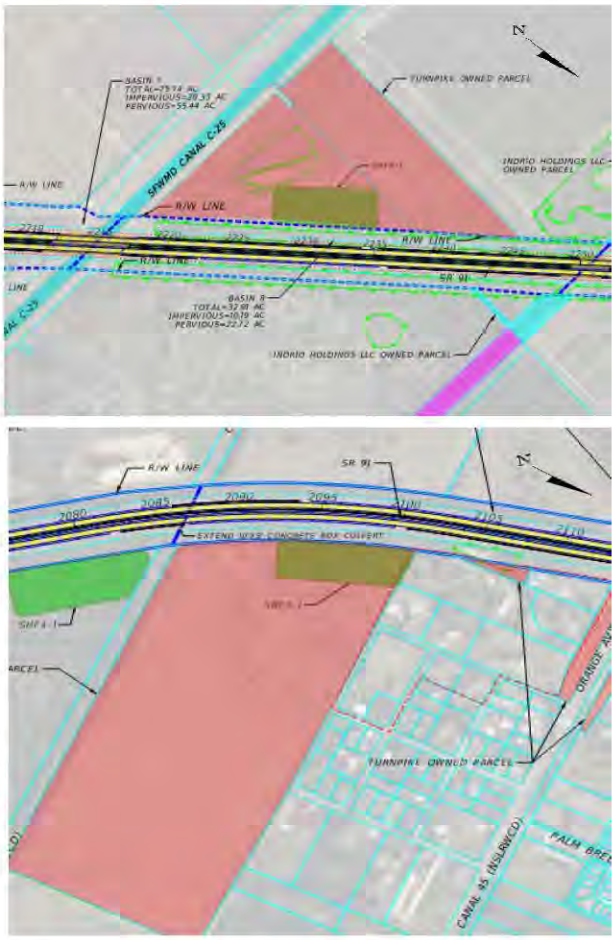
Permit Name or Area	Approx. STA	Permit Number
SR 91/SR 70 Interchange to Canal L-20	1979+94 to 2245+56	56-00085-W (SFWMD)
Fort Drum Service Plaza, AEC	3636+25 to 3649+89	44221-4 (exp 11/2023) (SJRWMD)
SR 60 and Turnpike Interchange	4068+07 to 4069+57	18845-10 (SJRWMD)
Premier Citrus	North of SFWMD permits STA 2357+44 to 2410+76 Basin 11 (MP 161.14)	TP-94-S-001-02 56-00406-W (SFWMD)

Based on correspondence with FTE, there is no known history of flooding or current flooding issues within the project limits. Based on the limited survey information, as-built plans and field review, the project generally does not collect offsite runoff areas into the roadside ditch except for Basin-11. Based on our preliminary evaluations, the offsite runoff is mainly intercepted by agricultural canals and routed to existing cross drains. During the field review, we noticed access roads and ditch berms separating the offsite runoff from draining to the FTE borrow ditches. Therefore, we understand that the project borrow ditch does not collect offsite runoff. Due to the preliminary nature of this study, the offsite drainage pattern needs to be verified during the design phase.

2.2.18.1 Environmental Look Around

Through the Environmental Look Around (ELA) process, we have coordinated with SFWMD, NSLRWCD, FPFWCD, St. Lucie County, Indian River County, Okeechobee County, and Osceola County. The purpose of the coordination was to explore watershed-wide stormwater needs and alternative permitting approaches based on regional stormwater needs and opportunities. Opportunities identified include use of FTE owned parcel as a larger regional pond facility (shown top right) and use of land

owned by St. Lucie County as a regional pond facility (shown bottom right below). Additionally, SFWMD and SJRWMD are negotiating a plan to treat water from SFWMD before discharging it to the Upper St. Johns River Basin (Refer to Appendix E Meeting Minutes Dated 10-3-2024). The project in works is Evans Grove (Grove Land Reservoir). Additional information for this project needs to be coordinated with SJRWMD. Opportunity for stormwater harvesting to be used for agricultural should be explored during the design. Other ELA opportunities should be investigated during design.



2.2.18.2 Hydrologic Features

The study area is underlain by the Surficial Aquifer System (SAS), which is characterized by high porosity sands and limestone which typically allows rapid infiltration of rainfall and surface runoff, and the deeper Floridan Aquifer System (FAS), which is separated by a confining layer of soil. In this part of the state, the SAS ranges from approximately 100-300 inches thick and acts as an important source-sink layer for temporary storage of groundwater that may ultimately recharge the FAS. There is no Intermediate Aquifer System (IAS) within the vicinity of the project area.

The groundwater surface generally follows the ground surface, moving laterally (east) from higher elevations inland towards the lower elevations along the coast, flowing into Indian River and ultimately the Atlantic Ocean. Groundwater is found at a depth that ranges from approximately 3 to 8 feet below ground surface throughout the project area. Flow rates are estimated to be between 0.000001-0.0006 feet per day in the SAS or 0-3 inches per year in the upper portions of the FAS.

There are several surface water bodies which occur within the immediate project area, including several canals, stormwater/relief ditches, surface water collection basins, and wetlands. **Table 2-17** provides information on the existing channels and canals with bridge crossings along the project corridor. Indian River is approximately 7.5 miles east of the southern project limits and is generally considered outside any possible zone of influence. The project spans drainage basins and portions flow south toward the Everglades while other areas flow north as part of the St. John's River Basin. Existing surface drainage is relatively flat, relying primarily on infiltration for removal.

Table 2-17: Existing Bridge Crossings over Chanels

Description	Approx. Mile Post	Approx. STA	Turnpike Structure Number	Waterbody ID	Channel Width	Channel Depth
Belcher Canal	157.9	2215+00	NB: 940073 SB: 940057	3163B	175'	15.8'
L-20 Canal	158.6	2250+50	NB: 940083 SB: 940058	3163	60'	3.5'
C-25 Canal West	175.4	3134+00	NB: 880065 SB: 880057	3160	57'	13.9'
Fort Drum Marsh	178	3272+70	NB: 880066 SB: 880058	2893S	180'	10'
Fort Drum Marsh	180.2	3384+50	NB: 880067 SB: 880059	2893S	64'	5.3'
Fort Drum Creek	182.3	3499+00	NB: 910058 SB: 910056	3154A	292'	11.1'
Jim Green Creek	184.6	3617+70	NB: 910060 SB: 910059	3156	128'	7.5'
Jim Green Creek	186.5	3714+70	NB: 910064 SB: 910062	3156	66'	2.6'
Padgett Branch Creek	189.1	3856+50	NB: 880068 SB: 880060	3152B	126'	7.0'
Cow Log Branch Canal	190.9	3952+00	NB: 920124 SB: 920055	3149	86'	7.3'
Unamed Tributary to Cow log branch	192.4	4032+00	NB: 920125 SB: 920056	3151	113'	6.5'

2.2.18.3 Existing Culverts

There are 27 existing culverts and 4 existing bridge culverts within the project limits.

Table 2-18 provides a summary of the existing culverts;

Table 2-19 provides a summary of the existing bridge culverts. Additionally, SR 91 crosses 11 waterbodies, see Section 2.3 for information on the existing bridges.

Table 2-18: Existing Culverts

Basin	Approx Mile Post	Approx. STA	Cross Culvert Size	Existing Length (ft)	# of Barrels	Turnpike Structure Number	Water-body ID	Waterbody Name
North St. Lucie River WCD	154.9	2053+00	12'x6'	175	1	94Q009	3194A	Ten Mile Creek
	155.5	2087+00	12'x5'	182	1	94Q010	3194A	Ten Mile Creek
	156.1	2116+50	10'x5'	160	1	94Q011	3194A	Ten Mile Creek
C-25	160.1	2330+80	12'x6'	181	1	94Q012	3163	Belcher Canal
	160.6	2357+00	12'x13'	110	1	94Q013	3160	C-25 Canal West
	161.6	2411+00	6'x5'	153	1	94Q014	3160	C-25 Canal West
	162.4	2452+50	9'x5'	174	1	94Q015	3160	C-25 Canal West
	162.9	2476+70	9'x9'	184	1	94Q016	3160	C-25 Canal West
	162.9	2477+50	12'x13'	109	1	94Q017	3160	C-25 Canal West
	164.7	2570+80	12'x6'	151	1	94Q018	3160	C-25 Canal West
	165.7	2624+50	10'x10'	164	1	94Q019	3160	C-25 Canal West
	168.9	2792+00	54"	164	1	94Q020	3160	C-25 Canal West
	169.8	2842+10	10'x5'	147	1	94Q021	3160	C-25 Canal West
	170.8	2892+10	12'x5'	149	1	94Q022	3160	C-25 Canal West
	171.8	2940+10	12'x5'	152	1	94Q023	3160	C-25 Canal West
	172.9	3004+30	12'x5'	144	1	94Q024	3160	C-25 Canal West
	174	3060+70	10'x10'	117	1	88Q001	3160	C-25 Canal West
	175	3114+70	10'x10'	118	2	88Q002	3160	C-25 Canal West
Fort Drum	176.4	3182+70	10'x10'	118	1	88Q003	2893S	Fort Drum Marsh
	177.1	3222+10	10'x10'	118	1	88Q004	2893S	Fort Drum Marsh
	179	3324+50	12'x13'	109	1	88Q005	2893S	Fort Drum Marsh
	183.5	3562+70	4'x4'	148	1	91Q003	3156	Jim Green Creek
	183.9	3586+70	4'x4'	149	1	91Q004	3156	Jim Green Creek
	184.3	3601+80	12'x13.5'	111	1	91Q001	3156	Jim Green Creek
Yeehaw Junction	185.7	3674+80	6'x4'	149	1	91Q002	3156	Jim Green Creek
	188.6	3831+80	12'x13'	107	1	88Q007	3152B	Padgett Branch
	190.4	3925+80	10'x10'	109	1	88Q008	3149	Cow Log Branch

Table 2-19: Existing Bridge Culverts

Basin	Mile Post	STA	Structure Number	Existing Length (ft)	Number of Barrels	Culvert Size	Waterbody ID / Name	
North St. Lucie River Water Control District	153.7	1988+60	940064	188	2	8'x5'	3194A	Ten Mile Creek
	154.3	2020+40	940110	188	2	10'x5'	3194A	Ten Mile Creek
	156.6	2143+50	940065	170	2	10'x5'	3194A	Ten Mile Creek
C-25	167.2	2702+00	940066	145	2	10'x6'	3160	C-25 Canal West

2.2.18.4 Federal Emergency Management Agency (FEMA) Floodplains

The FEMA Flood Insurance Rate Maps (FIRMs) that cover the project limits and are shown in **Appendix C** and summarized in

Table 2-20. There are no regulatory floodways and four Flood Insurance Studies (FIS) for the counties encompassing the project limits. The flood insurance studies are the St. Lucie County FIS 12011CV001B - 12011CV003B (effective 07/31/2024), Indian River County FIS 12061CV001B - 12061CV006B (effective 01/26/2023), Okeechobee County FIS 12093CV000A (effective 07/16/2015), and Osceola County FIS 12097CV000A (effective 06/18/2013). Most of the project is located within Zone X. From MP 172.9 to MP 175.4, the Turnpike ROW and north of the roadway lies within Zone A (within Indian River County, SJRWD and part of the C-25 Canal Basin Floodplain). From MP 175.4 to MP 180.8 and at MP 182.4, the project lies within Zone A (within SJRWMD and part of the Fort Drum Basin Floodplain). A portion of the roadway at MP 185.7 lies within Zone A (within SJRWMD and part of the Jim Green Creek Floodplain). From MP 188.4 to MP 193 the roadway lies within both Zones A and X (within SJRWMD and part of the Padgett and Cow Log Branch Floodplain).

Table 2-20: FEMA FIRMs Information

FEMA Panel Name	FEMA Panel Number	Effective Date
FIRM St. Lucie County, Florida And Incorporated Areas	12111C0167J	February 16, 2012
FIRM St. Lucie County, Florida And Incorporated Areas	12111C0160J	February 16, 2012
FIRM St. Lucie County, Florida And Incorporated Areas	12111C0170J	February 16, 2012
FIRM St. Lucie County, Florida And Incorporated Areas	12111C0155J	February 16, 2012
FIRM St. Lucie County, Florida And Incorporated Areas	12111C0150J	February 16, 2012
FIRM St. Lucie & Indian River County, Florida And Incorporated Areas	12111C0050J	February 16, 2012
FIRM St. Lucie County, Indian River & Okeechobee Florida And Incorporated Areas	12111C0025J	February 16, 2012
FIRM St. Lucie County, Indian River & Okeechobee Florida And Incorporated Areas	12061C0325H	December 04, 2012
FIRM Indian River & Okeechobee Florida And Incorporated Areas	12061C0300H	December 04, 2012
FIRM Indian River & Okeechobee Florida And Incorporated Areas	12093C0195C	July 16, 2015
FIRM Indian River & Okeechobee Florida And Incorporated Areas	12093C0185C	July 16, 2015
FIRM Okeechobee County, Florida And Incorporated Areas	12093C0180C	July 16, 2015
FIRM Indian River & Okeechobee Florida And Incorporated Areas	12093C0100C	July 16, 2015
FIRM Indian River & Osceola Florida And Incorporated Areas	12097C0875G	June 18, 2013

2.2.19 Lighting

Lighting is provided along the inside shoulder of the northbound and southbound entrance and exit ramps to/from the Fort Drum Service Plaza and are spaced approximately every 200 feet. These features are aluminum standard poles. Lighting is also provided along the outside shoulders at the SR 60 interchange, both along the mainline and interchange ramps, and are spaced approximately every 200 feet. No lighting is provided along the mainline of the Turnpike outside of these areas. Lighting is provided along SR 60 west of the turnpike. Most of these features are aluminum poles with some exception of underdeck lighting and vary between high pressure sodium and light emitting diode bulb types.

2.2.20 Utilities

A list of existing utility companies within the project limits was obtained from Sunshine 811. They are listed in **Table 2-21** along with their respective contact information. Preliminary utility coordination with the Utility Agency/Owners (UAO) was initiated

through written correspondence. The correspondence informed the UAO of the PD&E study and requested that they provide documentation showing existing and proposed facilities within the limits of the project. They were also requested to submit any general concerns and/or comments that would be useful in the FDOT's evaluation process. Utility companies have responded with as-builts, marked plans, GIS system maps or a letter indicating they have no facilities in the area. A summary of the existing utilities in the area is included below. Please refer to the Utility Assessment Package (UAP) prepared for this project.

Table 2-21: Existing Utility Agency Owners and Contact Information

Utility Agency / Owner	Facility Type	Contact Person	Phone	Email
AT&T Distribution	Communications	Luke Folkerts	(321) 953-6172	lf2490@att.com
AT&T Transmission / ATT Corp (PEA, Inc.)	Communications	Stefan Eriksson	(407) 578-8000	seriksson@pea-inc.net
AT&T Transmission / TCG-TCA (TREC)	Communications	Martin Shaw	(610) 328-6465 x242	martin@trecgroup.com
Lumen/Centurylink	Communications	Leslie Dingman	(850) 599-1444	leslie.dingman@lumen.com
City of Fort Pierce	Stormwater/Traffic	Alicia Forbis	(772) 467-3777	aforbis@cityoffortpierce.com
Comcast	Communications	Tony Springsteel	(772) 321-3425	anthony_springsteel@cable.comcast.com
Crown Castle Fiber	Communications	Danny Haskett	(786) 246-7827	danny.haskett@crowncastle.com
Florida Gas Transmission	Gas	Joseph Sanchez	(407) 838-7171	joseph.e.sanchez@energytransfer.com
Florida Power and Light (FP&L) Distribution	Electric	Rob Morris	(772) 223-4215	rob.morris@FP&L.com
FP&L Transmission	Electric	Tom Colucci	(315) 219-7458	thomas.colucci@FP&L.com
Florida Southeast Connection, LLC	Gas	James Moore	(855) 327-2660	james.moore@nexteraenergy.com
Fort Pierce Utilities Authority	Gas/Electric/Fiber	Thierry Sydne	(772) 466-1600 x3472	tsydne@fpua.com
Fort Pierce Utilities Authority	WateROWastewater	Shane Ostrander	(772) 466-1600 x34984	sostrander@fpua.com
Peace River Electric Cooperative, Inc.	Electric	Jeff Hanshaw	(863) 767-4655	jeff.hanshaw@preco.coop
St. Lucie County Utilities	WateROWastewater	Ray Murankus	(772) 462-5221	murankusr@stlucieco.org

AT&T Distribution owns the following facilities within the project's study limits:

- (12) 4" polyvinyl chloride (PVC) ducts crossing Turnpike at SR-70
- 48-count buried fiber optic cable crossing Turnpike at Picos Road

- 144-count and 60-count buried fiber optic cable crossing at Orange Avenue
- 600-count copper crossing at Orange Avenue
- 24-count buried fiber optic cable and 100 copper crossing at W. Angle Road
- Buried fiber optic cable crossing Turnpike at SR-60
- 30-count buried fiber optic cable along US-441 near SR-60

AT&T Transmission / AT&T Corp. (PEA, Inc.) owns the following facilities within the project's

study limits:

- High-capacity buried fiber optic cable within a 10-ft AT&T Corp. easement and associated manhole access structures located generally along the median/inside shoulder of the Turnpike.

Centurylink owns the following facilities within the project's study limits:

- 96-count buried fiber optic cable along US-441 crossing SR-60
- 216-count buried fiber optic cable along US-441 crossing SR-60

Crown Castle Fiber owns the following facilities within the project's study limits:

- Buried fiber optic cable crossing Turnpike at W Angle Road and along the FP&L Transmission corridor crossing Turnpike north of W. Angle Road
- Buried fiber optic cable crossing at SR-60

Florida Gas Transmission owns the following facilities within the project's study limits:

- 24-inch and 30-inch steel pipelines containing natural gas running parallel to one another along the east ROW of Turnpike from south of SR-70 and exiting the Turnpike ROW at a point approx. 3,500-ft north of SR-70
- 18-inch steel pipeline containing natural gas crossing SR-70 at SR-713/Kings Hwy.

Florida Power & Light owns the following distribution facilities within the project's study limits:

- 13kV 3-phase Overhead Electric (OE) crossing Turnpike approx. 2,600-ft north of SR-70
- 13kV 3-phase Buried Electric (BE) contained in (1) 6" PVC crossing at Picos Road

- 13kV BE crossing at Orange Avenue
- 23kV 3-phase OE crossing Turnpike approx. 5.3 miles east of Minute Maid Road
- 13kV 3-phase OE crossing at Minute Maid Road
- 13kV single phase OE running along the Turnpike south ROW from a point 10.8 miles east of the Fort Drum service plaza to a point 9.2 miles east of the Fort Drum service plaza
- 23kV 3-phase BE within (1) 6" HDPE conduit with associated splice boxes running along the west ROW of Turnpike and into the Fort Drum service plaza

Florida Power & Light owns the following transmission facilities within the project's study limits:

- Multiple 230kV OE lines within an FP&L transmission corridor crossing Turnpike north of W. Angle Road
- Multiple 500kV OE lines running parallel to the Turnpike within an FP&L transmission corridor located outside of the Turnpike ROW south of the Fort Drum service plaza with a crossing of the Turnpike approx. 11 miles south and east of the Fort Drum service plaza

Florida Southeast Connection, LLC owns the following facilities within the project's study limits:

- 36-inch natural gas pipeline along US-441 crossing SR-60
- 20-inch natural gas pipeline crossing Turnpike approx. 3.1 miles north of the Fort Drum service plaza

Fort Pierce Utility Authority owns the following facilities within the project's study limits:

- 12-inch PVC potable water main (WM) along S. Rock Road and east along the north side of SR-70
- 6-inch Ductile Iron Pipe (DIP) sewer force main (FM) along S. Rock Road and east along the north side of SR-70
- 8-inch PVC sewer FM crossing SR-70 at a point 160-ft east of S Rock Road and west along the south ROW of SR-70

Peace River Electric Cooperative owns the following facilities within the project's study limits:

- 14.4kV OE distribution line along US-441 crossing SR-60 and Turnpike

St. Lucie County Utilities owns the following facilities within the project's study limits:

- 12-inch water main (WM) along the north side of SR-70
- 8-inch force main (FM) along the south side of SR-70

2.2.21 Soils and Geotechnical Data

A review of available existing geotechnical data was performed and summarized in the Geotechnical Services Memorandum prepared for this study. Research included review of the U.S. Department of Agriculture (USDA), Soil Conservation Service (SCS) Soil Survey of St Lucie, Okeechobee, Indian River and Osceola Counties as well as soil boring information available from previous projects within the limits of this study. Based on existing information, the project corridor is chiefly underlain by mineral soils (i.e., A-3, A-2-4, A-2-6). Organic/unsuitable soils were encountered at some isolated locations along the project corridor. It is anticipated that the proposed improvements will not encounter major organic/unsuitable subsoil deposits. The existing subsoils have moderate to high capacity to transmit water. Maps showing soil information are included in **Appendix A**.

2.2.22 Aesthetics Features

The aesthetic character of the study area is predominantly rural and undeveloped. FTE has emphasized the importance of aesthetics on their facilities and created the "Landscape Program Master Plan" as a guide for future installations. FTE has been investing in upgrading the aesthetic and user experience along SR 91. The Fort Drum Service Plaza received a significant upgrade including landscaping, new parking lots, pet park, and buildings. The All Electronic Tolling (AET) gantry at MP 154 also recently received landscaping improvements consistent with the Landscape Program Master Plan. Although the SR 60 interchange received landscaping improvements in the past, many trees seem to have been removed or are in poor health.

The Fort Drum Service Plaza and Yeehaw Junction are the only two places for a vehicle to stop along the entire project corridor, and there are no known scenic vistas or views.

There are no wildflower areas or special highway designations, and no specimen trees were identified in the project corridor.

2.2.23 Traffic Signs

Within the project limits there are 417 single post signs, 69 double post signs and three (3) multi-post signs. Additionally, there are 4 overhead sign structures that are half span, seven (7) overhead sign structures with Dynamic Message Signs (DMS) that are either full span across both northbound and southbound lanes or span only the northbound or southbound lanes, and 1 overhead electronic tolling structure. There are 349 signs located on the shoulder and 151 signs located within the median. The location of the overhead signs within the limits of the project are listed in **Table 2-22.**

Table 2-22: Overhead Signage Within Study Area

Location	Direction of Travel	Mile Post	Sign Type
NB Exit 152	NB	152 (just south of project limits)	Overhead guide sign (cantilever)
SB Exit 152	SB	153.2	Overhead guide sign (cantilever)
Turnpike Mainline	NB/SB	154	Overhead Toll by Plate
Turnpike Mainline	SB	155	Overhead DMS (Half span)
Turnpike Mainline	NB/SB	165.5	Overhead DMS (full span)
Turnpike Mainline	NB/SB	175	Overhead DMS (full span)
Turnpike Mainline	NB	184	Overhead DMS (Half span)
Exit to Service Plaza	NB	184.5	Overhead guide sign (cantilever)
Exit to Service Plaza	SB	185.5	Overhead guide sign (cantilever)
Turnpike Mainline	NB/SB	186	Overhead DMS (full span)
Turnpike Mainline	NB/SB	191	Overhead DMS (full span)
SR 60	WB	East of bridge over Turnpike	Overhead guide sign (cantilever)
Turnpike Mainline	SB	195.5 (just north of project limits)	Overhead DMS (Half span)

2.2.24 Noise Walls and Perimeter Walls

There are no existing noise walls or perimeter walls present within the limits of the study.

2.2.25 Intelligent Transportation Systems (ITS)/Transportation System Management and Operations (TSM&O)

FTE has deployed extensive ITS infrastructure throughout their entire system, including within the limits of this study. FTE operates their infrastructure from two FTE Traffic Management Centers (TMC) located at the Turkey Lake Service Plaza and the Pompano Beach Service Plaza and use the statewide SunGuide® Software to monitor and control the ITS field devices. The existing ITS system is maintained by FTE maintenance personnel. Existing ITS infrastructure includes:

- Communications:

  Throughout the project corridor, there is a 96 count Fiber Optic Cable (FOC) backbone. One small stretch of FOC backbone from MP 153.1 to MP 155 was upgraded to 144 count as part of the All Electronic Tolling (AET) 8 project. FOC drops to Local Hubs (LHUBs) consist of 12 and 24 count (current FTE standard). The FTE tolls network also utilizes the FOC backbone. All tolling infrastructure utilizes the red and black buffers on the FOC backbone with 48 count drop cables to AET sites.

- Closed Circuit Television (CCTV) Cameras:

  CCTV cameras are used for monitoring the roadways to support incident detection, verification, and incident clearance verification. FTE also uses the CCTVs to verify messages on the DMS. There are 44 existing CCTV cameras located approximately every mile throughout the study corridor. The CCTV cameras that are High-Definition (HD), provide full coverage and support full Pan-Tilt-Zoom (PTZ) capability. The TMC operators are able to view CCTV feeds from both a video wall in the TMCs as well as their individual workstations.

- Dynamic Message Signs (DMS):

  There are 7 DMS signs located throughout the corridor (see **Table 2-22**) that provide TMC operators with the ability to disseminate traffic conditions to motorists such as poor weather conditions, incidents, travel time information and other pertinent operational information to motorists. They vary in size and

structure support type throughout the corridor. All DMS messages are verified by TMC operators through the use of nearby CCTVs.

- Vehicle Detection System:

  Eighty-two (82) Microwave Vehicle Detection System (MVDS) sensors are located at approximately half-mile increments throughout the study corridor and are used to monitor traffic operations and collect real-time traffic flow data including volume, speed, and occupancy. TMC operators are able to view this data at their workstations. The data is also used to support the traffic management functions such as detecting incidents, determining toll strategies, and archiving traffic data for transportation planning purposes. MVDS are typically collocated on ITS CCTV poles to minimize the amount of additional infrastructure required.

  Seven (7) Bluetooth (BT) Automatic Vehicle Identification (AVI) sensors are placed at strategic locations to collect travel time data. This data is used to generate travel times that are displayed on the DMS. Similar to MVDS, BT AVI detectors are typically collocated on ITS infrastructure to minimize the amount of additional infrastructure required.

- Road Weather Information System (RWIS)

  RWIS are used to detect weather conditions that may need to be monitored by TMC staff and communicated to motorists through DMS. Eleven (11) RWIS sensors along the corridor\ are used to collect information such as atmospheric data, pavement conditions, and water levels. This data can also be used for long term planning purposes by collecting pertinent data for roadways such as flood-prone areas that may need mitigation.

- Arterial Dynamic Message Sign (ADMS)

  FTE has currently deployed ADMS on SR 60 in both directions in advance of SR 91 and on the off-ramp entrances to the Fort Drum Service Plaza to provide travelers with roadway information. These DMS are essential as they provide motorists with roadway conditions at critical route choice decision points in advance of SR 91. The existing signs are monochrome and current FTE standard

is to utilize full color DMS. It is recommended that these signs be upgraded to full color to bring them in line with current FTE preferences and that verification CCTVs be installed as the signs are currently without.

- Wrong Way Vehicle Detection System (WWVDS)

  A new WWVDS system is currently being installed at the SR 91 off ramps to SR 60 in Yeehaw Junction. The WWVDS will be a system of static Manual on Uniform Traffic Control Devices (MUTCD) signs, dynamic Light-Emitting Diode (LED) highlighted WRONG WAY signs, and vehicle detecting sensors that acts an effective countermeasure to wrong way drivers. The WWVDS will utilize the dynamic LED highlighted WRONG WAY signs to catch the attention of the errant motorist. The WWVDS will send alerts to the FTE Turkey Lake Service Plaza and Pompano Beach Service Plaza TMCs and in turn the TMCs will notify other motorists and law enforcement of the wrong way event. The TMCs will be able to view any potential wrong way drivers through the integrated cameras installed as part of the WWVDS to confirm any incidents and monitor the wrong way drivers to see if they correct course.

- Emergency Generators

  FTE has installed 3 permanent generator backup locations at MM 152 (servicing devices from MM 151.9 to MM 153.1), MM 155 (servicing devices from MM 154.6 to MM 155.5), and MM 184 (servicing devices from MM 183.1 to MM 184.5). These generators can supply large amounts of backup power with less need for fuel refill as they can contain large fuel tanks. In addition, they are installed at the panel board of the power distribution service points, allowing for all ITS circuits containing multiple ITS LHUBs with backup power rather than needing to hook up a generator at each LHUB location.

- Emergency Response Access Locations (ERALs)

  A project to improve access for emergency vehicles at the existing Osowou Rd emergency access location is currently undergoing design and scheduled to be let in September 2025. Automatic gate access will be available for emergency

services and FTE maintenance. Infrastructure to be constructed will include an electronic gate, sensors for automatic emergency vehicle detection and vehicle presence detection, keypad gate operations, a verification CCTV for gate monitoring, ITS cabinet, and all associated communications and power infrastructure.

- Power Infrastructure

  To provide power to the ITS devices within the project corridor, FTE has installed extensive power infrastructure. This includes power service drops from power companies, meters, disconnects, transformers (stepping up the power to 480V or 600V depending on the site), service wires in dedicated conduits, Uninterruptible Power Supply (UPS) battery backups, and emergency generators.

  As some infrastructure is older within the project limits, not all ITS cabinets currently have UPS backup power capabilities. Also as mentioned previously, some circuits may have been stepped up to 600V, which is no longer acceptable per FDM section 233.3 which requires that 480V not be exceeded. Finally, there are several gaps in electrical service within the corridor.

- Highway Advisory Radio (HAR)

  HAR provides timely traffic and travel condition information en route to motorists. One HAR is located within the project limits in the vicinity of MM 158.

2.2.26 Existing Bridges and Structures

The Turnpike crosses over several creeks and canals. The water crossings include C-25 Canal, L-20 Canal, Outfall Slough, Fort Drum Creek, Jim Creek, and many unnamed drainage canals. Included within the project limits are 6 overpass locations: Picos Road, Orange Ave, Minute Maid Road, Radebaugh Road, and two locations at the SR 60 interchange. There are 29 existing bridges within the project limits; 8 in St. Lucie County, 8 in Indian River County, 6 in Okeechobee County, and 7 in Osceola County. Existing bridge information was obtained from existing plans and bridge inspections reports and is summarized in **Table 2-23**. Three of the bridges in Osceola County pertain to the SR 60 Interchange. There are also 31 structures classified as box culverts, four of which are

above 20' in span length and are considered bridge culverts. They cross over various farm access roads, drainage ditches or canals. See **Table 2-24** existing bridge culverts and **Table 2-25** for existing box culverts. These culverts are all single- or double-barrel concrete box culverts.

The superstructures of the existing SR-91 mainline bridges consist of precast-prestressed concrete beams and cast-in-place and precast culverts. Most of the 29 precast-prestressed concrete beam type bridges use Sonovoids or Prestressed Slab Units, with the exception of 11 AASHTO beam bridges. The superstructures of the existing overpasses are all AASHTO type beams. Existing bridge plans and inspection reports were obtained from the FDOT for the purpose of evaluating the conditions of the existing structures. These plans were reviewed, and pertinent information is summarized in **Table 2-23.** More information can be found in the Bridge Analysis Report (BAR) prepared for this study. No indication of scour concerns was found for structures within the project limits. Information on existing channels and waterways is shown in **Table 2-17**.

It should be noted that there has been a recurring sedimentation issue between and underneath the Turnpike Mainline bridges at MP 178 (Bridges 880066 and 880058). The waterway alignment in the vicinity of the bridges (i.e. zig-zag) appears to be a contributing factor. Excessive amounts of sedimentation are deposited below and in between the bridges which requires continual excavation and clearing over time to ensure proper function of the waterway and to avoid potential erosion at the bridge abutments. A similar silt/sedimentation issue is occurring at MP 163 Culvert 94Q016 (9' by 9' Box Culvert). It is recommended that a hydraulic analysis be performed during final design to determine the appropriate course of action and implement a solution which will mitigate the occurrence of excessive sedimentation at these locations in the future.

Table 2-23: Existing Bridges

County	Roadway	Facility Crossed	Bridge No.(s)	Direction	Length (ft)	MP	No. Spans	Bridge Width (ft)	Vertical Clearance (VC)	Superstructure type	Year Built	Sufficiency Rating	Health Index
St Lucie	Picos Road	SR 91	940055	E-W	227' - 1 1/2"	154.9	4	34'-1"	15'-7"	AASHTO Type III	1964	74	84.92
St Lucie	Orange Ave	SR 91	940056	E-W	191' - 0 3/4"	156.1	4	34'-1"	16.2'	AASHTO Type III	1964	80.4	98.73
St Lucie	SR 91	C-25 Canal / Angle Road	940057/ 940073	NW-SE	486' - 7 3/4"	157.9	8	42' - 11"	15.8'	AASHTO Type III (w/ scuppers)	1964	92.5	95.96/ 94.65
St Lucie	SR 91	L-20 Canal	940058/ 940083	NW-SE	291' - 4 1/2"	158.6	5	42'-10"	15'-3 ¾" over the berm	AASHTO Type III (w/ scuppers)	1963	93.5	97.69/ 98.06
St Lucie	Minute Maid Road	SR 91	940059	N-S	398'-1"	165.4	7	34'-1"	15.8'	AASHTO Type III (w/ scuppers)	1964	67	94.91
St Lucie	Radebaugh Road	SR 91	940060	NE-SW	393' - 3"	170.1	7	26' - 1"	15.7'	AASHTO Type III (w/ scuppers)	1964	94.9	93.59
Indian River	SR 91	Canal	880057/ 880065	E-W	140	175.4	5	40'-0"	12.55'	Sonovoid (w/ scuppers)	1963	98.6	98.1/ 98.43
Indian River	SR 91	Canal	880058/ 880066	E-W	196	178	5	42'- 11"	VC is met	Slab Units	1963	97.4/ 92.3	95.59/ 95.71
Indian River	SR 91	Canal	880059/ 880067	E-W	81	180.2	3	40'-0"	VC is met	Sonovoid (w/ scuppers)	1963	98.6	92.91/ 96.45
Okeechobee	SR 91	Fort Drum Creek	910056/ 910058	NW-SE	310	182.3	8	42'-11"	2.7' above DHW	Slab Units	1963	92.8/ 98.1	99.76/ 99.81
Okeechobee	SR 91	Jim Green Creek	910059/ 910060	NW-SE	150	184.6	5	40'-0"	2'-0" above DHW	Sonovoid (w/ scuppers)	1962	93.5/ 98.6	92.29/ 92.88
Okeechobee	SR 91	Canal	910062/ 910064	NW-SE	81'-0"	186.5	3	40'-0"	2'-2" above DHW	Sonovoid (w/ scuppers)	1962	98.6/ 93.5	95.69/ 95.65
Indian River	SR 91	Outfall Slough	880060/ 880068	NW-SE	140	189.1	5	40'-0"	4.9' above DHW	Sonovoid (w/ scuppers)	1962	93.5/ 98.6	94.92/ 95.18
Osceola	SR 91	Cow Log Branch Canal	920055/ 920124	NW-SE	112'-0"	190.9	4	40'-0"	2'-8" above DHW	Sonovoid (w/ scuppers)	1963	98.9	99.3/ 99.22
Osceola	SR 91	Canal	920056/ 920125	N-S	132'-6"	192.4	5	40'-0"	2.7' above DHW	Sonovoid (w/ scuppers)	1963	98.6/ 99.1	99.25/ 99.5
Osceola	SR 60	SR 91	920199/ 920200	NW-SE	220'-6"	193.1	2	42'-6"	17.1'	AASHTO Type V	2008	97.6	99.37
Osceola	SR 60 Ramp	SR 91	920057	E-W	197' - 1"	197'-1"	2	42'-1"	-	AASHTO Type V	-	-	-

Table 2-24: Existing Bridge Box Culverts

County	Bridge No.	MP	Length (ft)	Number of Barrels	Barrel Width (ft)	Barrel Height (ft)	Sufficiency Rating	Health Index	Load Ratings	Year Build
St Lucie	940064	153.7	190.5	2	8	5	85	99.3	1.9 inv & 2.8 op	1963
St Lucie	940110	154.3	216.5	2	10	5	85	99.94	1.2 inv & 2.0 op	1963
St Lucie	940065	156.6	170.0	2	11.5	7	85	99.98	1.2 inv & 2.0 op	1963
St Lucie	940066	167.2	149.5	2	10	6	85	71.85	2.1 inv & 2.8 op	1957

Table 2-25: Existing Box Culverts

Facility Crossing	Structure No.	MP	Sufficiency Rating	Health Index	Age	Span	Existing Adjacent Slope	Shoulder to Headwall Distance	Clearance Shoulder to Culvert	Number of Barrels	Barrel Width (ft)	Barrel Height (ft)
Creek	94Q009	154.9	85	97.36	68	12	6:1	8	4	1	12	6
Ditch	94Q010	155.5	70	96.87	61	14	6:1	19	5	1	12	5
Canal	94Q011	156.1	84	99.92	68	10	6:1	22	4	1	10	5
Canal	94Q012	160.1	85	67.7	68	12	6:1	35	6	1	12	6
Farm Road	94Q013	160.6	100	98.08	61	12	-	0	0	1	12	13
Canal	94Q014	161.6	84.2	66.39	68	6	4:1	25	6	1	5	6
Ditch	94Q015	162.4	85	99.96	68	4.5	4:1	37	9.5	1	4.5' Dia	-
Canal	94Q016	162.9	83.4	68.25	60	9	4:1	37	16.5	1	9	9
Farm Road	94Q017	162.9	85	86.25	60	12	-	0	0	1	12	13
Canal	94Q018	164.7	85	66.91	67	12	4:1	24	6	1	12	6
Canal	94Q019	165.7	74	65.68	67	4	4:1	13	4.5	1	10	10
Canal	94Q020	168.9	100	99.95	60	4	4:1	17	4.5	1	4.5' Dia	-
Canal	94Q021	169.8	85	67.76	67	10	-	20	4.5	1	10	5
Canal	94Q022	170.8	100	67.83	60	11.9167	-	16	5	1	12	5
Canal	94Q023	171.8	65	64.82	60	10	-	16	4	1	12	5
Canal	94Q024	172.9	85	66.6	67	12	-	13	5	1	12	5
Ditch	88Q001	174	85	69.76	61	10	-	2	1	1	10	10
Canal	88Q002	175	83.2	61.78	61	10	-	2	2	1	10	10
Canal	88Q003	176.4	74	66.41	61	10	-	3	1.5	1	10	10
Canal	88Q004	177.1	82.2	68.92	61	10	-	4	1.5	1	10	10
Ditch	88Q005	179	99	93.51	61	12	-	0	0	1	12	13
Ditch	88Q007	188.6	100	98.44	61	12	-	16	-	1	12	13
Farm Access	88Q008	190.4	74	97.95	60	10	-	-	-	1	10	10
Ditch	91Q003	183.5	100	67.26	61	4	-	18	2.5	1	4	4
Ditch	91Q004	183.9	100	66.4	61	4	-	17	0	1	4	4
Farm Access	91Q001	184.3	85	94.3	61	12	-	0	0	1	12	13.5
Ditch	91Q002	185.7	84.3	87.81	-	-	-	15	0	1	6	4

2.3 Existing Environmental Features

2.3.1 Socio-Economic

Demographics

The City of Fort Pierce, near the southern project terminus, is the closest metropolitan area to the proposed project. It had a population of approximately 47,153 in 2022 and approximately 25 percent of the population was Hispanic or Latino. The study area is predominantly rural, with relatively few residences and no municipalities. Near the southern project terminus, by Angle Road, there are some low density, rural residences. The project then passes through expansive agricultural areas with little to no social resources.

A review of the St. Lucie, Indian River, Okeechobee, and Osceola Co unties census data was conducted. Each county serves as a comparison population for the census block groups in that county. Information was obtained from the U.S. Census Bureau (2022: American Community Survey [ACS] 5-Year Census in Florida) The Census Block Groups that intersect the ¼ mile buffer area around the project have a total population of 19,989 with 7,898 households. The percent population below the poverty level for each County are provided below in **Table 2-26**. As seen in highlighted cells in **Table 2-27**, there are five Census Block Groups within the project study area that have higher poverty levels than the county average.

Table 2-26: Total Population in Each County

County Name	Total Population	Percent Population Below Poverty Level
Indian River	160,986	11.43%
Okeechobee	39,870	19.21%
Osceola	393,745	13.43%
St. Lucie	334,682	12.48%

Table 2-27: Poverty Levels in SCE Study Area Census Block Groups

Block Group	Percent Population Below Poverty Level
Indian River County	
120610509082	18.21%
Okeechobee County	
120939101011	31.94%
120939101021	22.45%
Osceola County	
120970438021	10.12%
120970438022	40.45%
120970438023	18.74%
St. Lucie County	
121113808001	11.11%
121113808002	2.6%
121113814021	12.09%
121113822012	5.35%
121113822021	11.33%
121113822022	9.8%

Minority groups with proportions of populations that were above the comparison populations of county data include Black or African American, making up 15.88 percent of the study area compared to 13.74 percent of the SCE Study Area Counties, and Two or More Races, making up 12.67 percent of the study area compared 12.22 percent of the SCE Study Area Counties. Minority populations in the overall study area are not meaningfully different than the surrounding counties. However, minority populations in eight Census block groups in the study area do differ substantially from county levels. Those Census block groups are highlighted in **Table 2-28**.

Table 2-28: Race and Ethnicity as Percent of Population by Census Block Group

Block Group	White Alone	Black or African American Alone	American Indian or Eskimo Alone	Asian Alone	Native Hawaiian and other Pacific Islander Alone	Some Other Race Alone	Two or More Races
Indian River County	-79.32%	-8.17%	-0.46%	-1.54%	-0.03%	-2.76%	-7.72%
120610509082	71.58%	0.29%	0.00%	5.96%	0.00%	7.91%	14.26%
Okeechobee County	-75.33%	-8.13%	-0.15%	-0.96%	-0.03%	-8.02%	-7.38%
120939101011	58.34%	27.47%	0.18%	0.69%	0.21%	2.48%	10.64%
120939101021	97.86%	1.56%	0.00%	0.24%	0.00%	0.00%	0.34%
Osceola County	-49.65%	-10.90%	-0.38%	(2,74%)	-0.06%	-19.63%	-16.63%
120970438021	85.42%	0.00%	0.00%	0.00%	0.00%	0.00%	14.58%
120970438022	46.07%	0.00%	0.00%	0.00%	0.00%	0.00%	53.93%
120970438023	77.93%	0.92%	0.00%	1.19%	0.00%	1.19%	18.77%
St. Lucie County	-63.12%	-20.43%	-0.34%	-2.00%	-0.05%	-4.27%	-9.78%
121113808001	54.26%	27.53%	0.00%	0.00%	0.00%	1.40%	16.82%
121113808002	61.82%	1.30%	0.00%	0.00%	0.00%	10.91%	25.97%
121113814021	66.26%	19.42%	0.00%	0.00%	0.00%	3.73%	10.59%
121113822012	92.71%	0.16%	0.62%	0.00%	0.00%	1.01%	5.51%
121113822021	53.96%	32.18%	1.07%	0.42%	0.00%	0.00%	12.36%
121113822022	96.54%	0.00%	0.00%	0.00%	0.00%	0.00%	3.46%
Study Area	69.28%	15.88%	0.19%	0.28%	0.04%	1.68%	12.67%

Although two census blocks (120970438022 and 121113808002) do have a limited English proficiency (LEP) of greater than 5% (with main language Spanish), the study area does not and thus LEP services were not provided for this study.

Within the Block Groups that intersect the study area, persons aged 65 and over comprise 18.07 percent of the population and 16.37 percent of the population are disabled. Blue highlighted cells in **Table 2-29** indicate block groups where the percent of the population is greater than the community in comparison (the county that encompasses that block group).

Table 2-29: Population Disabled and 65 and Older by Census Block Group

Block Group	65 and older	Percent Disabled Population
Indian River County		
120610509082	21.68%	11.43%
Okeechobee County		
120939101011	7.35%	10.01%
120939101021	26.23%	14.36%
Osceola County		
120970438021	22.77%	27.68%
120970438022	13.11%	13.98%
120970438023	11.40%	21.87%
St. Lucie County		
121113808001	22.23%	10.29%
121113808002	12.99%	15.32%
121113814021	10.06%	15.98%
121113822012	27.93%	29.09%
121113822021	25.14%	22.06%
121113822022	17.31%	22.38%

Community and Emergency Services

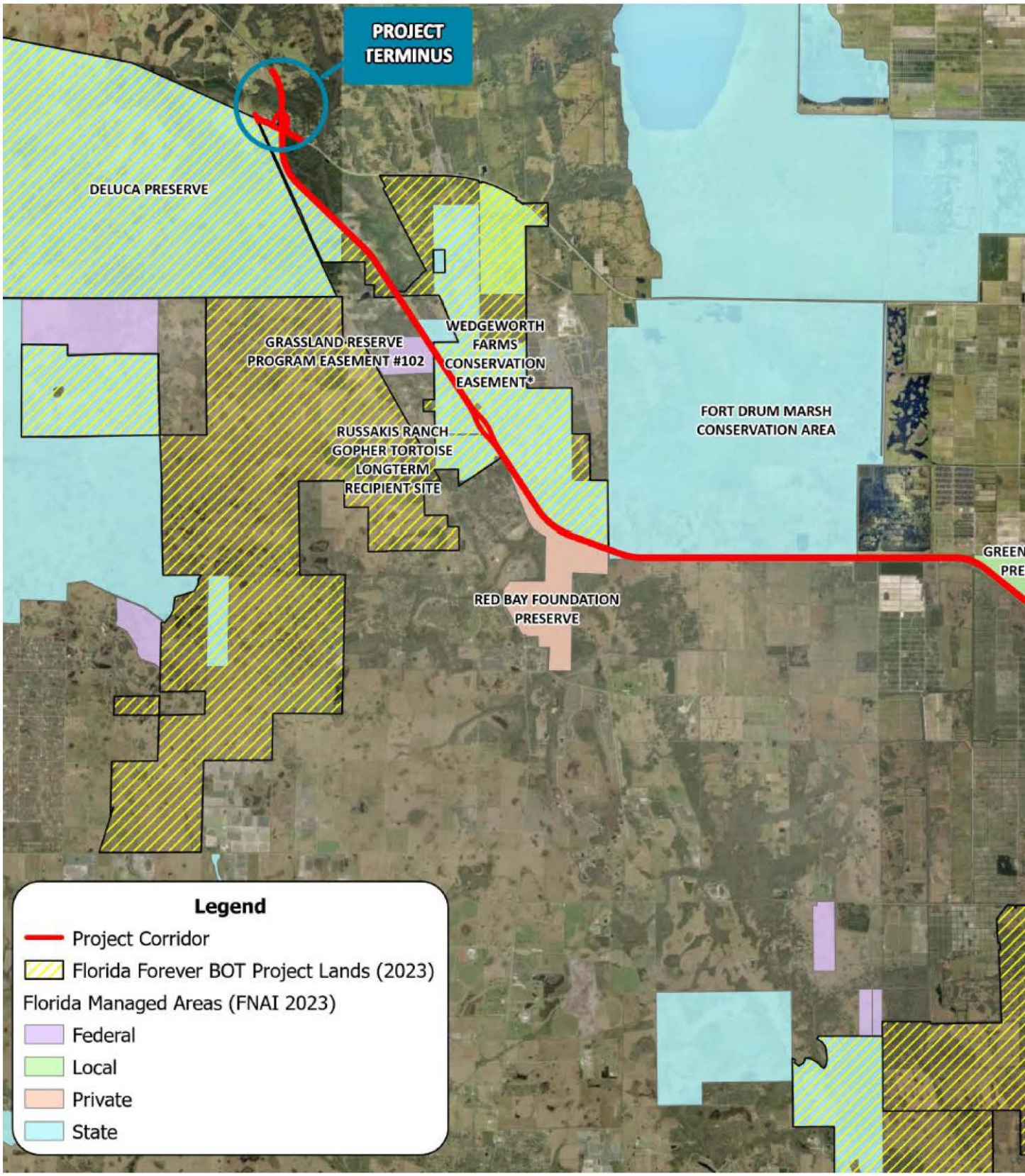
Community facilities are any public or private places where members of a community gather or are relied upon for goods or services. Parks, churches, emergency services, and community organizations are just some of the facilities that may be important to the residents of a community. Community facilities located along the project limits are listed in **Table 2-30**. Emergency services are an essential part of daily traffic usage along any major corridor. **Table 2-30** lists these services and their locations. These emergency services are located outside of the SCE Study Area.

Table 2-30: Community and Emergency Services in the Study Area

Facility Type	Address
Community Center	
Holiday Inn Express Hotel and Suites Fort Pierce West	7151 Okeechobee Road
Park and Recreational Facilities	
Ten Mile Creek	Gordy Road, Fort Pierce
Fort Drum Wildlife Management Area	North of Turnpike, South of SR 60
Green Swamp Preserve	146th Avenue Southwest
Fire Stations	
Okeechobee County Fire Department and Rescue Station 3	31500 US Highway 441 North
Police Stations	
St. Lucie County Sheriff's Office	4700 West Midway Road

2.3.2 Parks and Recreational Facilities

The Green Swamp Preserve is located immediately north of the project at MP 172. At the Fort Drum Marsh Wildlife Management Area (WMA) (MP 176) the project begins to pass by multiple conservation lands, shown on **Figure 2-5: Existing Conservation Lands**



, including the Red Bay Stronghold Foundation Preserve, the Russakis Ranch, the Wedgeworth Farms Conservation Easement, Grassland Reserve Program Easement

#102, and the DeLuca Preserve. These areas are considered under long-term conservation use, and are protected under various easements, ownership, and state conservation programs. The northern portion of the project also crosses the Florida Wildlife Corridor, shown on **Figure 2-6** and **Figure 2-7**, and the neighboring conservation lands link with the larger conservation land system in the region, including Kissimmee Prairie Preserve State Park, the DeLuca Preserve, the Kissimmee-St. Johns River Connector Area, and the Blue Cypress Conservation Area.

Figure 2-5: Existing Conservation Lands

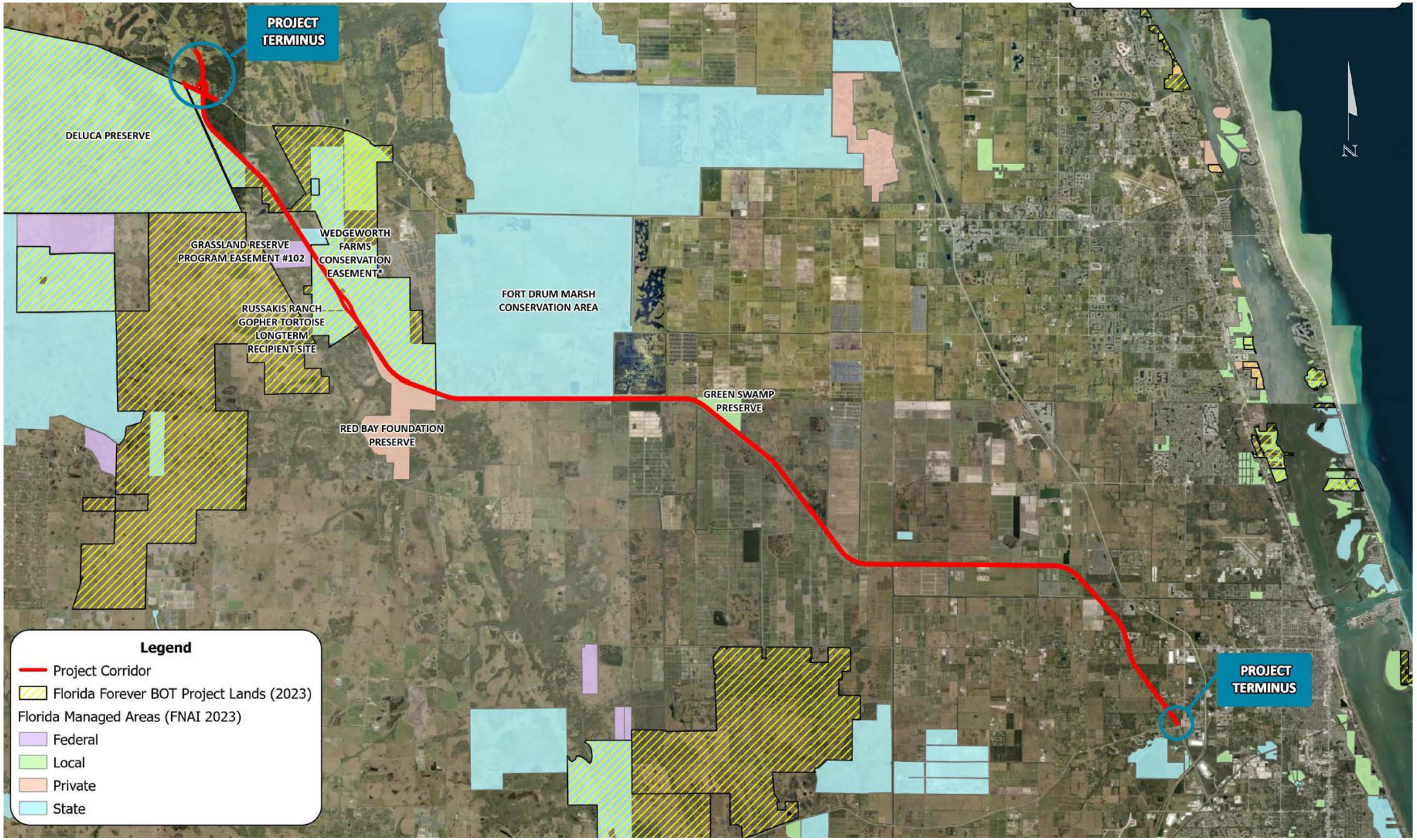


Figure 2-6: Sensitive Environmental Features (1 of 2)

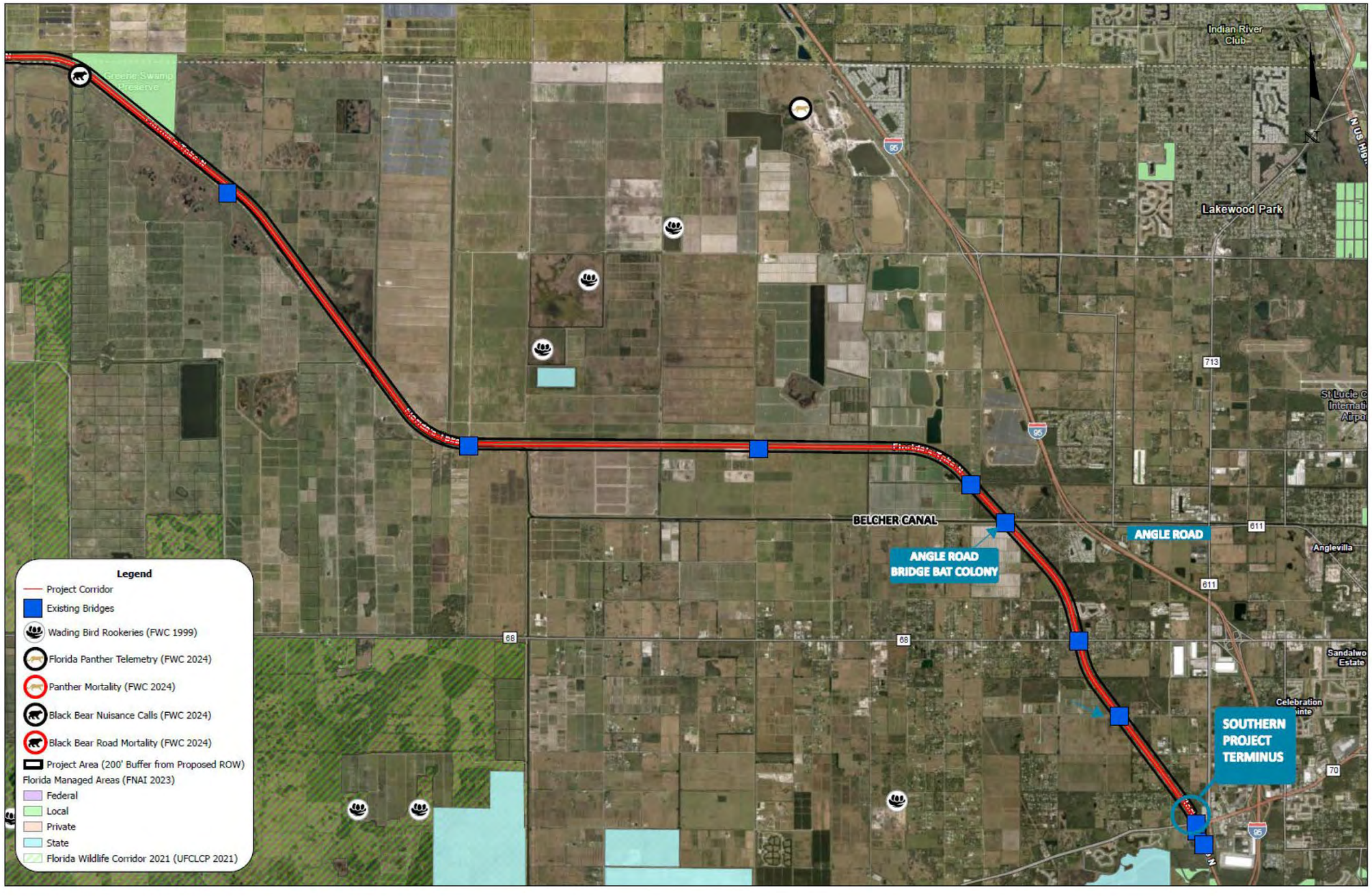
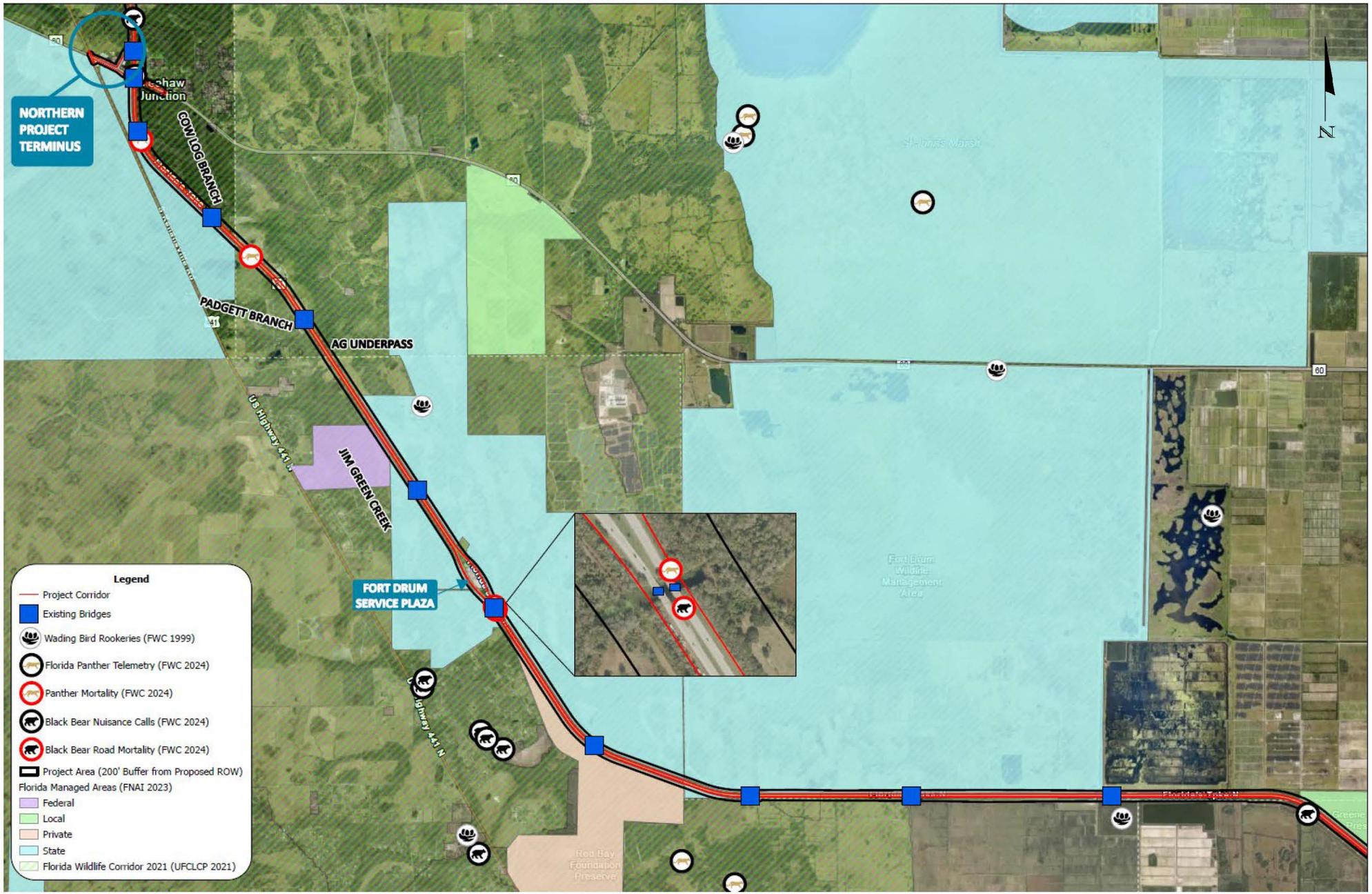


Figure 2-7: Sensitive Environmental Features (2 of 2)



2.3.3 Protected Species and Habitat

This project was evaluated for the potential presence of protected plant and animal species and their habitats in accordance with the FDOT's PD&E Manual, Part 2, Chapter 16, Protected Species and Habitat. Federal and state listed species, listed in **Table 2-31**. with potential to occur in the project corridor were identified through coordination with USFWS and FWC, particularly through the ETDM process, as well as review of existing habitat, species ranges, dispersal ability and ecology. Field reviews were also conducted, including spot checks of habitat areas and major water crossings. No surveys for specific species were conducted.

Table 2-31: Listed Wildlife Species Potentially Occurring in Project Area

Common Name	Scientific Name	Federal Status	State Status	Occurrence Potential in Project Area
American alligator	*Alligator mississippiensis*	FTSA	-	High
Audubon's crested caracara	*Polyborus plancus*	FT	-	High
Eastern indigo snake	*Drymarchon corais couperi*	FT	-	Low
Everglade snail kite	*Rostrhamus sociabilis plumbeus*	FE	-	Medium
Florida bonneted bat	*Eumops floridanus*	FE	-	High
Florida burrowing owl	*Athene cunicularia*	-	ST	Low
Florida sandhill crane	*Grus canadensis*	-	ST	High
Florida scrub-jay	*Aphelocoma coerulescens*	FT	-	Low
Florida grasshopper sparrow	*Ammodramus savannarum*	FE	-	Low
Florida panther	*Puma concolor coryi*	FE	-	High
Florida pine snake	*Pituophis melanoleucus mugitus*	-	ST	Medium
Gopher tortoise	*Gopherus polyphemus*	-	ST	High
Little blue heron	*Egretta caerulea*	-	ST	High
Monarch butterfly	*Danaus plexippus*	FC	-	High

Table 2-31: Listed Wildlife Species Potentially Occurring in Project Area

Common Name	Scientific Name	Federal Status	State Status	Occurrence Potential in Project Area
Red-cockaded woodpecker	*Picoides borealis*	FT	-	Low
Roseate spoonbill	*Platalea ajaja*	-	ST	Low
Southeastern American kestrel	*Falco sparverius paulus*	-	ST	Unlikely
Tricolored heron	*Egretta tricolor*	-	ST	High
Tricolored bat	*Perimyotis subflavus*	PE	-	High
Wood stork	*Mycteria americana*	FT	-	High

The project is within the USFWS consultation area for Audubon's crested caracara (Polyborus plancus), Florida bonneted bat (Eumops floridanus), grasshopper sparrow (Ammodramus savannarum), Lakes Wales Ridge plants, Florida scrub-jay (Aphelocoma coerulescens), Everglade snail kite (Rostrhamus sociabilis plumbeus). The only portion of the project that overlaps a Core Foraging Area is in St. Lucie County, where the Cypress Creek Bluefield Road and the North Fork St. Lucie River wood stork nesting colonies occur. No designated Critical Habitat occurs in or adjacent to the project area. the project passes through multiple conservation lands with suitable habitats where there is a high probability of listed species occurring. The Florida panther and Florida black bear have both have been struck by vehicles on the FTE mainline within the project limits (shown on **Figure 2-6** and **Figure 2-7**).

2.3.3.1 Essential Fish Habitat

The project area is entirely inland and does include any Essential Fish Habitat. The NMFS noted through comments in the ETDM system that Essential Fish Habitat will not be impacted by the project. For these reasons, no involvement with Essential Fish Habitat is anticipated.

2.3.4 Wetlands and Water Quality

Wetlands and Other Surface Waters in the project area were initially mapped using land use data from the SFWMD and SJRWMD and map data from the USFWS National Wetlands Inventory (NWI) (**Appendix A**). This information was supplemented with field

observations and analysis of aerial imagery. Wetland boundaries were determined in the field primarily using three parameters as indicators: presence of hydrophytic vegetation, hydric soils, and hydrology, utilizing methodologies consistent with the US Army Corps of Engineers Federal Manual for Identifying and Delineating Jurisdictional Wetlands (1987), the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (2010), Chapter 62-340, Florida Administrative Code, and the Florida Wetlands Delineation Manual (Gilbert et. Al. 2011). Wetland delineation is anticipated during design and permitting to determine the precise areas of jurisdictional wetland impacts as well as the wetland type, quality, and function following the Uniform Mitigation Assessment Method.

Wetlands and Other Surface Waters in the project area mapped by the USFWS NWI are shown in **Appendix A** and include Freshwater Emergent Wetland, Freshwater Forested/Shrub Wetland, Freshwater Pond, and Riverine. The canals and ditches depicted on the NWI Wetlands maps are Other Surface Waters and not jurisdictional wetlands.

Natural surface waterbody crossings along the FTE mainline are bridged at Fort Drum Creek (MP 182), Jim Green Creek (MP 184.5), the Padgett Branch (MP 190), the Cow Log Branch (MP 191), and an unnamed tributary of the Cow Log Branch (MP 192). These waterbodies are predominantly Other Surface Waters, but areas along the margins that are below the high-water mark and that contain wetland vegetation are considered wetlands. These freshwater emergent wetlands occur in narrow strips within FDOT right-of-way at the five natural water crossings.

A patch of Freshwater Emergent and Freshwater Forested/Shrub Wetlands is located immediately north of the truck parking alternative. These wetlands are outside the footprint of the project and would not be directly impacted.

The Belcher/C-25 Canal (MP 158) and L20 Canal (MP 159) are large, man-made canals that are bridged by the FTE mainline and are considered Other Surface Waters. The Belcher/C-25 Canal is under the jurisdiction of the US Army Corps of Engineers. Borrow areas that are full of water and are considered Other Surface Waters parallel much of the FTE mainline within FTE ROW, and lakes, reservoirs, and other water collection areas

occur in multiple locations around the project. Other more minor drainages, canals and ditches occur in the project area, many of which are associated with adjacent agricultural operations.

2.3.5 Water Resources

The Biscayne Aquifer, a Sole Source Aquifer, underlays a portion of the study area. The project discharges into multiple bodies of water as discussed in **Section 2.2.18**. Information available on the FDEP Map Direct website for public and private water supply wells was reviewed and wells within 1000 feet offset from the Turnpike baseline are documented in **Table 2-32**.

Table 2-32:Existing Wells

Well Name	Location (Approx. Station)	Approx. Offset & Side (LT/RT)	Well Type
Unnamed	3646+13.44	LT	Public Water Supply
Well 10	3648+09.29	RT	Public Water Supply
Stuckey's	4080+41.78	LT	Public Water Supply
6-inch Well	4081+64.49	LT	Public Water Supply

Five specific locations within the project area have been identified as public water supply wells which are afforded a wellfield protection zone. Three wells are located on SR 60 between US 441 and the Turnpike's mainline. The other two are located at the Fort Drum service plaza.

2.3.6 Aquatic Preserves and Outstanding Florida Waters (OFW)

The first seven basins of this project discharges into tributary that eventually discharges into the Indian River-Vero Beach to Ft. Pierce Aquatic Preserve and the North Fork St. Lucie River Aquatic Preserve, which are listed as OFW. However, the OFW-designated areas are more than 7 to 10 miles downstream of the project; therefore, it is not a direct discharge.

2.3.7 Potentially Contaminated Sites

A total of 30 sites of potential contamination risk were identified. Those include 0 High Risk, 12 Medium Risk, and 18 Low Risk sites. Potentially contaminated sites are listed in **Table 2-33**. and shown on figures in **Appendix A**. Of these sites, five Low Risk sites, two

Medium Risk sites, and zero High Risk sites overlap existing ROW within the project limits. These sites that overlap the existing ROW include the Buckhead/Beef Diesel Spill (Site #6, Low), Groundwater Contamination Zone #56263577 (Site #7, Medium), Florida's Turnpike Spill #2006-2I-6915Z (Site #11, Low), Fort Drum Service Plaza (Site #13, Medium), Forward Air Diesel Discharge (Site #14, Low), Yeehaw Junction Toll (Site #15, Low), and US Food Service Spill (Site #17, Low).

2.3.8 Navigable Waterway

Not Applicable to this project.

Table 2-33: Potentially Contaminated Sites

Site No.	Facility Name	Address	Facility ID (FDEP/RCRA)	Source/Databases	Site Description	Concerns	Approximate Distance from Project	Assigned Risk Rating
1	AT&T	2290 S Rock Rd, Saint Lucie, Fl 34945	8945061	PCTS, STCM	Fuel user/non-retail	Petroleum	Adjacent	Low
2	Univ of Fl-irrec	2199 South Rock Road, Fort Pierce, Fl 34945	8734447	PCTS, STCM	Agricultural, fuel user/non-retail	Hazardous waste, Petroleum	Approximately 250' east	Low
3	US Horticultural Research Laboratory	2001 S Rock Rd, Saint Lucie, Fl 34945	FLR000113076	CHAZ	Agricultural	Hazardous Waste	Adjacent	Low
4	USDA Horticultural Farm Site A	10000 Picos Rd, Saint Lucie, Fl 34945	9801192	STCM	Agricultural, fuel user/ non-retail	Petroleum	Adjacent	Low
5	OLC 400	Old Angle Rd, Fort Pierce, 34947	8518614	PCTS, STCM	Former fuel retail	Petroleum	Approximately 500' east	Low
6	Buckhead Beef Diesel Spill 05-21-0026	Turnpike SB, MM159, Fort Pierce	ERIC_12034, 9807341	ERIC, Ground Water Contamination Areas, DEP Cleanup Site, STCM	Fuel discharge/spill site	Petroleum	Spill reported within ROW	Low
7	St. Lucie County Groundwater Contamination Zone #56263577	Just north of Turnpike	Zone ID 56263577	Ground Water Contamination Areas	Agricultural, fuel user/non-retail	Petroleum	Reported within ROW	Medium
8	Indian River Exchange Packers Inc.	Minute Maid Road, Fort Pierce, Fl 34945	8945240	STCM	Agricultural, fuel user/non-retail	Petroleum	Adjacent	Low
9	Vero Producers Inc, Grove #1	Minute Maid Road, Fort Pierce, 34945	9816926	STCM	Agricultural, fuel user/non-retail	Petroleum	Adjacent	Medium
10	Evans Grove Land LLC-Grove Scott #6000	27200 NE 48th Ave, Okeechobee, Fl 34972	75791640, 8731942	DEP Cleanup Sites, PCTS, STCM	Agricultural, fuel user/non-retail	Petroleum	Adjacent	Medium
11	Turnpike 2006-2I-6915Z	Florida's Turnpike MM 182, Yeehaw Junction, Fl 34972	9808586	PCTS, STCM	Fuel discharge/spill site	Petroleum	Spill reported within ROW	Low
12	Wedgworth Farms Inc-Ft Drum	Osowou Rd & Florida's Turnpike, Fort Drum, Fl 33472	8519927	STCM	Agricultural, fuel user/non-retail	Petroleum	Adjacent to the east	Low
13	FL Dept of Transportation-Turnpike MP 184/Fort Drum Service Plaza	184 Florida's Turnpike, Okeechobee, Fl 33313	75816872, 8519985, 8519986	DEP CLEANUP SITES, PCTS, STCM	Fuel user/non-retail (service plaza), fuel discharge/spill site	Petroleum	Located within ROW	Medium
14	Forward Air Diesel Discharge FLA Turnpike MM 191.5	Florida's Turnpike MM 191.5, Yeehaw Junction, Fl 34972	ERIC_11035	ERIC	Fuel discharge/spill site	Petroleum	Spill reported within ROW	Low
15	Fl Dept Of Transportation Yeehaw Junction	MP 193 Florida's Turnpike, Yeehaw Junction, Fl 34972	9500018, 8622660, 9401968	PCTS, STCM	Fuel user/non-retail	Petroleum	Located within ROW	Low
16	Texaco Station-Latt Maxcy Corp	SR 60 & Florida's Turnpike, Yeehaw Junction, Fl 33472	8944509	PCTS, STCM	Retail fuel user	Petroleum	Adjacent to the south	Low
17	US Food Service 02-1I-3049	SR 60 & Florida's Turnpike, Yeehaw Junction, Fl 34972	9805607	STCM, PCTS	Fuel discharge/spill site	Petroleum	Spill reported within ROW	Low
18	Tony's Auto Parts & Car Care Inc	3097 E SR 60, Okeechobee, Fl 34972	9045620	PCTS	Fuel discharge/spill site	Petroleum	Adjacent to the north	Low
19	Fina-Budget Bed & Breakfast	3095 HWY 60, Yeehaw Junction	8513666	PCTS	Former fuel retail user, fuel discharge/spill site	Petroleum	Adjacent to the north	Low
20	Sunshine Food Mart #12	3055 E SR 60, Okeechobee	75813538, 8513747	DEP Cleanup Sites, PCTS, STCM	Active fuel retail user, fuel discharge/spill site	Petroleum	Adjacent to the north	Medium
21	Pilot Travel Center #096	3051 SR 60, Okeechobee	75813476, 8732826, ERIC_7132, ERIC_7136, 8512547	DEP Cleanup Sites, PCTS, ERIC	Active fuel retail user, fuel discharge/spill site	Petroleum	Adjacent to the north	Medium
22	RACETRAC #2609	3010 E State Rd 60 2970 State Rd 60 2970 State Rd 60, Okeechobee, Fl 34972	9819118, 8513694	STCM, PCTS	Active fuel retail user, fuel discharge/spill site	Petroleum	Adjacent to the south	Low

Table 2-33: Potentially Contaminated Sites

Site No.	Facility Name	Address	Facility ID (FDEP/RCRA)	Source/Databases	Site Description	Concerns	Approximate Distance from Project	Assigned Risk Rating
23	Amoco Station #238	US HWY 441 & SR 60, Yeehaw Junction	75813658, 9101481	DEP Cleanup Sites, PCTS	Retail fuel user, fuel discharge/spill site	Petroleum	Adjacent to the south	Medium
24	Latt Maxcy Property	5801 S Kenansville Rd, Okeechobee, Fl 34972	8513768	PCTS, STCM	Fuel user/non-retail	Petroleum	Adjacent to the south	Low
25	Desert Inn	5570 S Kenansville Rd, Yeehaw Junction, Fl 34972	9601211	DEP Cleanup Sites, PCTS, STCM	Former retail fuel user	Petroleum	Adjacent to the west	Medium
26	Yeehaw Junction Dump	2687 East SR 60, Yeehaw Junction, Fl 34972	ERIC_15075	ERIC	Former solid waste facility	Solid Waste	Approximately 500' to the west	Low
27	Row Crops	Throughout project corridor	N/A	N/A	Historic agricultural land	Fertilizer /Pesticides/Herbicides	Adjacent throughout project corridor	Medium
28	Groves (Citrus and Abandoned)	Throughout project corridor	N/A	N/A	Historic agricultural land	Fertilizers/Pesticides/Herbicides	Adjacent throughout project corridor	Medium
29	Nurseries - Ornamentals	Throughout project corridor	N/A	N/A	Historic agricultural land	Fertilizers/Pesticides/Herbicides	Adjacent throughout project corridor	Medium
30	Fallow Cropland	Throughout project corridor	N/A	N/A	Historic agricultural land	Fertilizers/Pesticides/Herbicides	Adjacent throughout project corridor	Medium

STCM - Storage Tank and Petroleum Contamination/Cleanup Monitoring, PCTS - Petroleum Contamination Monitoring, CHAZ - Compliance and Enforcement Tracking for Hazardous Facilities, ERIC - Environmental Restoration Integrated Cleanup, Columns denoted with "-" denotes that no data was available

3 FUTURE CONDITIONS

3.1 Transportation Plan Review

- FPID: 423374-1 – Widen Turnpike from Jupiter to Ft. Pierce (MP 116-152) PD&E Study - Completed in June 2021
    - This project has been broken up into multiple segments for final design. The most northern section that ties into this PD&E study is FPID 446580-1 – Widen Turnpike from S of Midway Road to N of SR 70 (MP 149 to 154)
- Treasure Coast Airport Connector - In February of 2021, FDOT District 4 in collaboration with St. Lucie County, completed the Treasure Coast Airport Connector Feasibility Study which evaluated the western extension of St. Lucie Boulevard to I-95 in conjunction with the Northern Connector (a developer funded project) between I-95 and the Turnpike.
    - The Northern Connector is a private developer project currently unfunded that, along with a new development, would construct new interchanges at I-95 and the Turnpike with a new roadway connecting the two new interchanges. As part of this PD&E Study, it was determined that the new interchange with the Turnpike at the proposed Northern Connector is feasible and constructable. The planned interchange will be further evaluated as part of a future project once the private development is funded and further in development.
- FDOT D5 SR 60 Widening PD&E (FPID 452574-1) from Prairie Lake Road to SR 91 (the Turnpike) – eastern limits overlap with the limits of this project. The PD&E study will begin in early 2025. Continued coordination is recommended.
- FPID: 423374-3 – Widen Turnpike from N of SR 60 to Clay Whaley Road (MP 193-238.5) - PD&E Study on-going.

3.2 Local Policies

Okeechobee County has expressed concerns regarding existing emergency access and response times. They have requested improvements at the existing Osowou Road emergency access to include higher vertical clearance at the bridge culvert and a new northbound ramp for improved access and emergency response times to the Fort Drum Service Plaza and other emergencies in the area.

3.3 Future Land Use

Future land use maps are shown in **Appendix A**. Future land use is generally expected to remain similar to existing land use. West of the Turnpike and north of SR 60 in is an area designated as the Yeehaw Junction Transportation Distribution Center by Osceola to encourage the development of transportation related distribution centers. There are also planned developments and new interchanges near Angle Road in St. Lucie County.

3.4 Future Context Classification and Target Speed

In terms of context classification, the Turnpike is a Limited Access facility and a SIS Highway Corridor. SIS Highway corridors and connectors traverse varying context classifications. Given the purpose and intent of the SIS, the requirements of a particular context classification may not always align with the function of the SIS highway. The SIS Policy Plan outlines that SIS improvements should consider the context, needs, and values of the communities serviced by the SIS, which may include flexibility in design and operational standards. Most importantly, communication with all parties involved is key to determining the best solution to realize the intent of both the SIS and a context-based approach within a community. After coordination with FTE, it was determined to maintain the design and posted speed at 70 mph.

3.5 Design Traffic Volumes

Project forecast traffic was produced for each of the future years modeled. The model Annual Average Daily Traffic (AADT) forecasts were adjusted following the National Cooperative Highway Research Program (NCHRP) 765 methodology. The final mainline and ramps AADT and the corresponding Directional Design Hour Volumes (DDHV) for

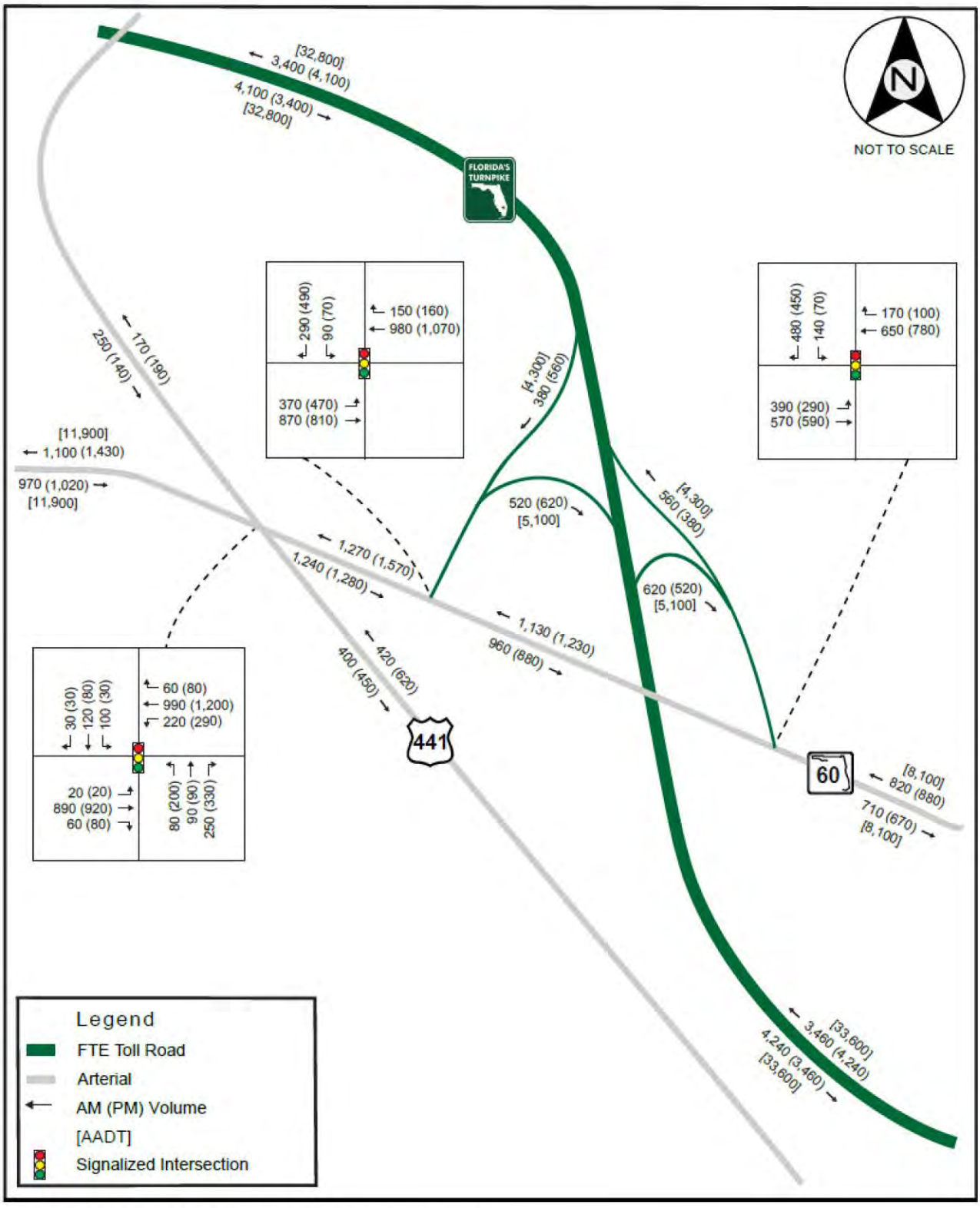
year 2050 is provided in **Table 3-1**. The bold values represent the mainline volumes, and the non-bold values represent ramp volumes. Future year turn movement volumes for ramp terminal intersections were developed using the projected ramp DDHVs. Cross street through movements and adjacent intersections traffic were developed using growth rates estimated from historical data and verified with the forecast model. The 2050 design hour volumes are presented on **Figure 3-1**.

Table 3-1: Future Traffic Volumes

Location	Florida's Turnpike	2050				
		AADT	AM DDHV		PM DDHV	
			SB	NB	SB	NB
		65,600	**4,100**	**3,400**	**3,400**	**4,140**
Yeehaw Junction/US 441/SR 60		8,600	380	560	560	380
		10,200	520	620	620	520
		67,200	**4,240**	**3,460**	**3,460**	**4,280**
		7,800				
		7,800				
Fort Drum Service Plaza		**67,200**	**4,240**	**3,460**	**3,460**	**4,280**

Note: Values in RED indicate PEAK direction and values in BLUE indicate OFF-PEAK direction
BOLD: Mainline AADT, Non-Bold: Ramp AADT

(This section was intentionally left blank)



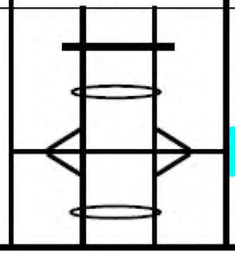
Source: 2025 SR 60 Interchange Modification Report

Figure 3-1: 2050 Design Hour Volumes

Future lane requirements were evaluated to provide an estimated timeline for the onset of capacity deficiencies along the freeway mainline and ramp roadways. The level of service target for state roads during design travel hours is "C" in rural areas, per the State Highway System Policy No. 000-525-006c, effective April 19, 2017. **Table 3-2** shows the detailed color-coded future lane requirements for the freeway mainline corresponding to LOS C (maximum service volume). The LOS C analysis shows that the Turnpike Mainline / SR 91 will require three travel lanes in each direction south and north of Yeehaw Junction / SR 60 interchange by years 2035 and 2036, respectively.

(This section was intentionally left blank)

Table 3-2: Freeway Mainline (LOS C) and Ramp Capacity (LOS E) Lane Requirements

Location	Turnpike Mainline / SR 91	Model	Interpolated Volumes																			Model
		2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Three Lakes Mainline Toll Plaza (MP 236)		2,250	2,350	2,440	2,540	2,630	2,730	2,820	2,920	3,010	3,110	3,200	3,290	3,390	3,480	3,580	3,670	3,760	3,860	3,950	4,050	4,140
Canoe Creek Service Plaza (MP 230)		2,250	2,350	2,440	2,540	2,630	2,730	2,820	2,920	3,010	3,110	3,200	3,290	3,390	3,480	3,580	3,670	3,760	3,860	3,950	4,050	4,140
Yeehaw Junction / US 441 / SR 60 (MP 193)		340 410	350 420	360 430	370 440	380 450	400 470	410 480	420 490	430 500	440 510	450 520	460 530	470 540	480 550	490 560	510 570	520 580	530 590	540 600	550 610	560 620
Fort Drum Service Plaza (MP 184)		2,360	2,460	2,550	2,650	2,740	2,840	2,940	3,030	3,130	3,220	3,320	3,420	3,510	3,610	3,700	3,800	3,900	3,990	4,090	4,180	4,280

Inputs	
Truck % (t_r)	8.0%
Free Flow Speed (mph)	75
Peak Hour Factor (PHF)	0.95

Freeway LOS	
Lanes	LOS C
2	2,900
3	4,350
4	5,800

Ramp Capacity	
Lanes	LOS E
1	1,770
2	3,540

Speed - 40 to 50 MPH

Ramp Capacity	
Lanes	LOS E
1	1,720
2	3,440

Speed 25 MPH

4 DESIGN CONTROLS AND CRITERIA

Design controls and criteria must be established prior to the formulation of design alternatives to ensure an adequate, safe, functional and operational roadway. These criteria are needed to develop typical sections, horizontal and vertical alignments, and other design features such as drainage, aesthetics, landscaping, and multimodal facilities. The controls and standards are those specified by the FDOT for state roadways. In addition, the consideration of the facility's Context Classification strives to ensure that "state roadways are supportive of safe and comfortable travel for their anticipated users".

4.1 Geometric Design Control and Criteria

The design criteria used in the project area are based on the 2025 Florida Department of Transportation Design Manual (FDM) publication. **Table 4-1** shows the Roadway Design Criteria. Pedestrian and bicycle requirements are not applicable to this project.

Table 4-1: Geometric Design Criteria

DESIGN ELEMENT	DESIGN CRITERIA	SOURCE
General		
Design Year	2050	Traffic Team
Functional Classification	Rural Principal Arterial Expressway	Straight Line Diagram
Design Control	Interstate / SIS	FDM 211.1
Access Classification	Class Area 1	FDM Table 201.4.1
Design Vehicle	WB-62FL (Tandem Tractor Trailer WB-109D for Tandem Truck Routes & Service Plaza)	FDM Section 201.6
Target LOS (max service volume/ capacity)	C / D	2020 FDOT Quality & LOS Handbook
Typical Section		
Design/Posted Speed - Mainline	70 MPH / 70 MPH	As-Built Plans, FDM Table 201.5.1
Design Speed - Ramps	30 MPH Loop/Semi Direct, 35 MPH Outer Cloverleaf, 50 MPH Direct Connection, 40 MPH Intermediate Portions of Long Ramps	FDM Table 201.5.2
Number of Through Lanes per Direction, Mainline	3	Scope of Services
Ramp Terminal (Entrance & Exit)	Parallel	FDM Section 211.13
Travel Lane Widths	Mainline: 12' Ramps: 15' One Lane, 24' Two Lanes	FDM Section 211.2
Cross Slopes - Mainline	2 Inside Lanes Sloped at 0.02'/'. Outside Lanes Sloped to Outside at 0.02 or 0.03'/', depending on alterative.	As presented and accepted by FTE to enable future widening and reduce initial construction costs. General compliance with FDM Figure 211.2.1.

Table 4-1: Geometric Design Criteria

DESIGN ELEMENT		DESIGN CRITERIA	SOURCE
Cross Slopes - Ramps		0.02'/' for One & Two Lanes 0.03'/' for 2 Lane Ramp in Gore Areas	FDM Figure 211.2.1
Median Widths		26' (Includes 2' Barrier) or 40' (existing), or 60' for reconstruction, depending on alterative.	FDM Table 211.3.1
Shoulders	Mainline Outside	12' Full/10' Paved (12' Paved for sections with High Volume AADT or greater than 10% trucks), Slope at 0.06'/'	FDM Table 211.4.1, Section 211.4.2
	Mainline Inside	12' Full/10' Paved (12' Paved for sections with High Volume AADT or greater than 10% trucks), Slope at 0.05 or 0.06'/' depending on slope of adjacent lane for that alternative	FDM Table 211.4.1, Section 211.4.2
	One Lane Ramp - Outside	6' Full / 4' Paved, at 0.06'/'	FDM Table 211.4.1, Section 211.4.2
	One Lane Ramp - Inside	6' Full / 2' Paved, at 0.05'/'	FDM Table 211.4.1, Section 211.4.2
	2 or more Lane Ramp - Outside	12' Full / 10' Paved, at 0.06'/'	FDM Table 211.4.1, Section 211.4.2
	2 or more Lane Ramp - Inside	8' Full / 4' Paved, at 0.05'/'	FDM Table 211.4.1, Section 211.4.2
Shoulders	Mainline Structure	10' Inside & Outside (12' where truck DDHV exceeds 250. Maintain approach roadway paved shoulder width)	FDM Figure 260.1.1
	One Lane Ramp Structure	6' Inside & Outside	FDM Figure 260.1.1
	2 or more Lane Ramp Structure	6' Inside / 10' Outside	FDM Figure 260.1.1
Maximum Algebraic Difference in Cross Slope at Turning Roadway Terminals		5%	FDM Table 211.2.2
Maximum Change in Cross Slope between Adjacent Travel Lanes		4%	FDM Figure 211.2.1
Maximum Shoulder "Roll-Over"		7%	FDM Figure 211.4.1
Clear Zone	Mainline	36'	FDM Table 215.2.1
	Ramps: 30 MPH	10' Single Lane / 12' Multilane	FDM Table 215.2.1
	Ramps: 35 MPH	10' Single Lane / 14' Multilane	FDM Table 215.2.1
	Ramps: 40 MPH	10' Single Lane / 18' Multilane	FDM Table 215.2.1
	Ramps: 50 MPH	14' Single Lane / 24' Multilane	FDM Table 215.2.1
Minimum Lateral Offset Criteria: Light Poles		20' from Travel Lane, 14' from Aux. Lane, or Clear Zone width, whichever is less	FDM Table 215.2.2
Other elements ITS Poles, Trees, Above ground Utilities, Overhead Sign Structures, Bridge Piers & Abutments		Outside Clear Zone	FDM Table 215.2.2
Lateral Offset Criteria for Canal Hazards		60' from Edge of Travel Lane, aux. lane, or ramp	FDM Figure 215.3.1
Border Width - Mainline		94'	FDM Section 211.6
Border Width - Ramps		Larger of: Clear Zone, Lateral Offset, Maintenance Access	FDM Section 211.6
Border Width - Cross Roads		8'	FDM Table 210.7.1

Table 4-1: Geometric Design Criteria

DESIGN ELEMENT		DESIGN CRITERIA	SOURCE
Roadside Slopes		1:6 (for 0' to 5'), 1:6 to CZ then 1:4 (for 5'-10'), 1:6 to CZ then 1:3 (for 10'-20'), 1:2 with Guardrail (>20' fill height)	FDM Table 215.2.3
Back Slopes		1:4 or 1:3 with Std. Width Trapezoidal Ditch & 1:6 Front Slope (for all fill heights)	FDM Table 215.2.3
HORIZONTAL			
Minimum Stopping Sight Distance		Mainline: 820' Ramps: 200' (30MPH), 250' (35 MPH), 305' (40 MPH), 425' (50 MPH)	FDM Table 211.10.1, Table 211.10.2
Decision Sight Distance		Mainline: 1445' Ramps: 620' (30MPH), 720' (35MPH), 825' (40MPH), 1030' (50MPH)	2011 AASHTO, Table 3-3
Maximum Deflection Without Curve		Mainline: 0°45'00" Ramps: 0°45'00" (>=45 MPH), 2° 00' 00" (<=40 MPH)	FDM Section 211.7.1
Length of Horizontal Curve:	Mainline (Desirable/Min.)	2100' / 1050'	FDM Table 211.7.1
	Ramps (Desirable/Min.)	450'/400' (30 MPH), 525'/400' (35 MPH) 600'/400' (40 MPH), 1500'/750' (50 MPH)	FDM Table 211.7.1
Maximum Degree of Curve / Min. Radius	Mainline	3° 00' / 1,910'	Interstate Criteria - FDM Table 210.9.1
	Ramps	24° 45'/232' (30 MPH), 17° 45'/323' (35 MPH), 13° 15'/432' (40 MPH), 8° 15'/695' (50 MPH)	FDM Table 210.9.1
Superelevation Transition: On Tangent On Curve		80% 20%	FDM Section 210.9.1
Superelevation Transition Rate		Mainline: 1:190 Ramps: 1:175 (<= 40MPH), 1:200 (50MPH)	FDM Table 210.9.3
Maximum Superelevation Rate		10%	FDM Section 210.9
Maximum Curvature without Superelevation (Min. Radii)		Mainline: 14,714' Ramps: 3,349' (30MPH), 4,384' (35MPH), 5,560' (40MPH), 8,337' (50MPH)	FDM Table 210.9.1
VERTICAL			
Minimum K value for Crest Vertical Curves		Mainline: 506 Ramps: 31 (30MPH), 47 (35MPH), 70 (40MPH), 136 (50MPH)	FDM Table 211.9.2
Minimum Lengths of Crest Vertical Curves		Mainline: 1000' Open Highway (1,800' in Interchange) Ramps: 90' (30MPH), 105' (35MPH), 120' (40MPH), 300' (50MPH)	FDM Table 211.9.3
Minimum K value for Sag Vertical Curves		Mainline: 206 Ramps: 37 (30MPH), 49 (35MPH), 64 (40MPH), 96 (50MPH)	FDM Table 211.9.2
Minimum Lengths of Sag Vertical Curves		Mainline: 800' Ramps: 90' (30MPH), 105' (35MPH), 120' (40MPH), 200' (50MPH)	FDM Table 211.9.3
Maximum Profile Grade		Mainline: 3% Ramps: 7% (30MPH), 6% (35MPH), 6% (40MPH), 5% (50MPH)	FDM Table 211.9.1

Table 4-1: Geometric Design Criteria

DESIGN ELEMENT	DESIGN CRITERIA	SOURCE
Maximum change w/o Vert. Curve	Mainline: 0.2% Ramps: 1.0% (30MPH), 0.9% (35MPH), 0.8% (40MPH), 0.6% (50MPH)	FDM Table 210.10.2
Minimum Base Clearance	Mainline=3' above DHW Ramps: 2' (1' in Low Points at Cross Rds)	FDM Section 210.10.3
Minimum Vertical Clearance for Bridges over SR 91	16.5'	FDM Table 260.6.1
Minimum Vertical Clearance for Bridges over RR	23.5'	FDM Table 260.6.1
Minimum Vertical Clearances for OH Sign Structure	17.5'	FDM Section 210.10.3
Minimum Vertical Clearances for Overhead Dynamic Message Signs (DMS)	19.5'	FDM Section 210.10.3
CROSS ROADS	**Design Speed (Posted Speed), MPH**	**Applicable Design Manual**
SR 60	40 (35) Proposed, (45) Existing	FDOT Design Manual (FDM), SLD
US 441	55 (45)	FDOT Design Manual (FDM), SLD
Northern Connector	45 (35 - 45)	Assumed
SR 70 (Okeechobee Road)	45 (45)	FDOT Design Manual (FDM)
Picos Road	35 Existing	FDOT Design Manual (FDM)
Orange Avenue	45 Existing	FDOT Design Manual (FDM)
Radebaugh Road	30 Existing	FDOT Design Manual (FDM)
Minute Maid Road	45 Existing	FDOT Design Manual (FDM)
Angle Road	35 Existing	FDOT Design Manual (FDM)
STRUCTURES		
Channel clear opening	29' clear opening at center span	SFWMD
	20' minimum clearance at approach bents	SFWMD
Vertical Clearance	6' from seasonal high optimum, 2' from DWH	SFWMD

4.2 Drainage Design Criteria

The project pond siting and sizing design are governed by the rules and regulations set forth by the Florida Department of Environmental Protection (FDEP) and adopted by the SFWMD, SJRWMD and stipulated in the referenced FTE and FDOT design documents.

4.2.1 Water Quantity Criteria

SFWMD requires the use of the 25-year- 72-hour rainfall for pre-post development attenuation assessment. SJRWMD Applicant Handbook Volume 2 (effective December 22, 2020) requires the evaluation of the 25-year- 24hour rainfall for pre-post development attenuation assessment. All basins within the project location are considered open basins. The SFWMD C-25 allowable discharge criteria is applicable, but it may not be feasible and is currently under review. During final design, where

meeting the SFWMD C-25 allowable discharge criteria is not feasible, application to use pre-post criteria should be considered. NSLRWCD and FPFWCD allow roadway projects to utilize pre versus post discharge criteria.

4.2.2 Water Quality Criteria

For water quality purposes, the required treatment volumes are based on: Two and a half (2.5) inches over new impervious in areas of reconstruction and widening. A Pre-Application Meeting was held with SFWMD on August 15th, 2024. Per the meeting with the district, water quality treatment is required for reconstruction and widening areas only (new impervious). SFWMD and SJRWMD did not object to not providing water quality treatment for the median shoulder widening, since median shoulders do not contribute to pollutant loading.

New Stormwater Rule Started on June 28, 2024.

The project is not subject to the new rule, which takes into consideration nutrient loading when considering stormwater management facilities, that began in June 2024. When the application is made to the District, Section 3.1.2 of the Applicant Handbook Volume-1 details the grandfathering criteria that need to be followed.

Outstanding Florida Waters (OFW)

The project does not discharge directly into an OFW. FDOT does not provide OFW additional treatment unless direct discharge to the OFW occurs. The first seven basins of this project discharges into tributary that eventually discharges into the Indian River-Vero Beach to Ft. Pierce Aquatic Preserve and the North Fork St. Lucie River Aquatic Preserve, which are listed as OFW. However, the OFW-designated areas are more than 7 to 10 miles downstream of the project; therefore, it is not a direct discharge.

Nutrient Loading

To accommodate the FDEP's future stormwater regulation on TMDL, FDOT practice is to increase treatment volume by 25 percent of the volume required above (Water Quality and Quantity) in nutrient impaired basins. Actual pre-post nutrient loading analysis will be required in the design phase of the project (the additional 25% was chosen based on engineering judgement and was used for the pond sizing approach on this project; it's

not a WMD/FDEP rule). During the Pre-Application Meeting, SFWMD confirmed that nutrient loading calculations are required for discharge to impaired water bodies (basins) that are impaired for nutrients, specifically total nitrogen (TN) or total phosphorus (TP). Water body identification number (WBID) 3163 Belcher Canal and 3163B C-25 East Segment are impaired for TN. According to SFWMD, the project is subject to impaired water rules as long as the discharge point is within the basin, which has adopted TMDL and BMAP criteria. This rule applies even if the discharge point is far from the receiving water body. The study limits fall within several other WBIDs; however, they are not currently impaired for TN or TP.

Basin Management Action Plan (BMAPs) within the Project Corridor

There are two adopted BMAPS within the project limits, Indian River Lagon and St. Lucie-Loxahatchee BMAPS.

Roadway Base Clearance

The project should maintain a base clearance of 3.0 feet above Design High Water. The Base Clearance Water Elevation (BCWE) is considered the long-term standing water which could negatively affect the structural integrity of the roadway base. For roadside ditches, where the design storm high water stages within the ditch, set the BCWE at the 24-hour stage of the design storm's high-water elevation (FDOT Drainage Manual Chapter 5.4.1.5)

FAA Recommendations

There are several airports within 5 miles of the project (see **Table 4-2**). Coordination with FAA and the airports should be considered during the design phase to determine if consideration needs to be provided for additional features such as steeper slopes, deeper ponds, or rubble side slopes to minimize hazardous wildlife attractants.

Table 4-2: Airports within Give Miles of the Project

Airport Name	Approx. Distance to Turnpike Corridor (miles)
Treasure Coast Airport	4.22
Falcon Ridge Airpark	2.50
Fly In (PVT)/ Wee Be Sky Ranch	1.88
Recreation Corporation Airport	1.16
Indian Hammock Airstrip	1.58

(This section was intentionally left blank)

5 ALTERNATIVES ANALYSIS

The need for the proposed widening of this corridor was previously described in Section 1.2 of this document and existing conditions detailed in Section 2.

Several alternatives were evaluated to determine if they meet the purpose and need of this project. These alternatives are described in the following sections and include the following:

- 'No-Build' Alternative
- Transportation Systems Management and Operations (TSM&O)
- Multimodal Alternative
- Construction ('Build') Alternatives were evaluated in the following components
    - Mainline Improvements
    - Interchange Improvements

5.1 Alternatives Evaluation Process

Previous sections of this report thoroughly document the project area's existing deficiencies, needs and conditions. Based on these factors and also public/agency input, a comprehensive alternative development and evaluation process was initiated and conducted for the proposed project improvements as documented herein.

The alternatives analysis and selection process for the proposed project essentially consisted of three phases. Phase 1, Initial Evaluation, consisted of a high-level evaluation of Transportation System Management and Operations (TSM&O) as well as conceptual build alternatives. Phase 2, Build Alternative Development and Evaluation, which included an evaluation of mainline typical section alternatives, and interchange alternatives at the SR 60 interchange. Phase 3, Final Alternatives Analysis, consisted of a final refinement of alternatives and implementation of public comments and Value Engineering recommendations. Those alternative options found most feasible, which merited further development and evaluation, are shown in yellow in the various evaluation tables. A discussion of each of the different phases follows.

5.2 Phase 1: Initial Evaluation

5.2.1 No-Build (No-Action) Alternative

The "No-Build" alternative is an alternative solution used in PD&E studies that assumes the retainment of existing conditions and includes planned projects in the study area. The "No Build" Alternative is a viable alternative that is considered all the way through the project. This provides a comparison of existing conditions related to implementing the proposed improvements and those incurred by continuing to use the existing facility. The "No-Build" alternative eliminates costs related to ROW acquisition and construction, traffic delays caused by construction, and impacts to the natural and social environments. However, the "No Build" alternative would entail the retainage of the existing conditions within the project limits with its present operational, multimodal, and safety deficiencies. The existing facility within the project confines is inadequate in terms of future capacity. It is evident that because of the reasons previously discussed in this document, adoption of this alternative would not address the project's purpose and need. However, the "No-Build" alternative will be maintained as a viable option providing an effective yardstick or baseline condition by which other project alternatives will be compared throughout the project alternative selection process.

5.2.1.1 No Build Design Year 2050

The SR 91 widening project study evaluated future No-Build conditions that did not include improvements on SR 91 but included recently completed improvements along SR 60 as well as at the SR 91 and SR 60 and the SR 60 and US 441 intersections. The improvements include signalizing the SR 91 and SR 60 intersection and adding a dedicated westbound left-turn lane at the SR 60 and US 441 intersection. The 2050 No Build lane geometry and configurations are presented on **Figure 5-1**.

The freeway segment performance results for the design year 2050 are summarized in **Table 5-5** and **Table 5-6** for No-Build conditions. Under the No-Build conditions, most Turnpike Mainline / SR 91 segments are expected to exceed capacity, indicating the need for widening. In the AM design hour, northbound segments are expected to operate at LOS D or better, while southbound segments are expected to operate at LOS E or worse. During the PM design hour, the northbound segments are expected to

operate at LOS D or LOS E, whereas southbound segments would operate at LOS D or better. Therefore, the No-Build Alternative does not meet FDOT's LOS C target in rural areas.

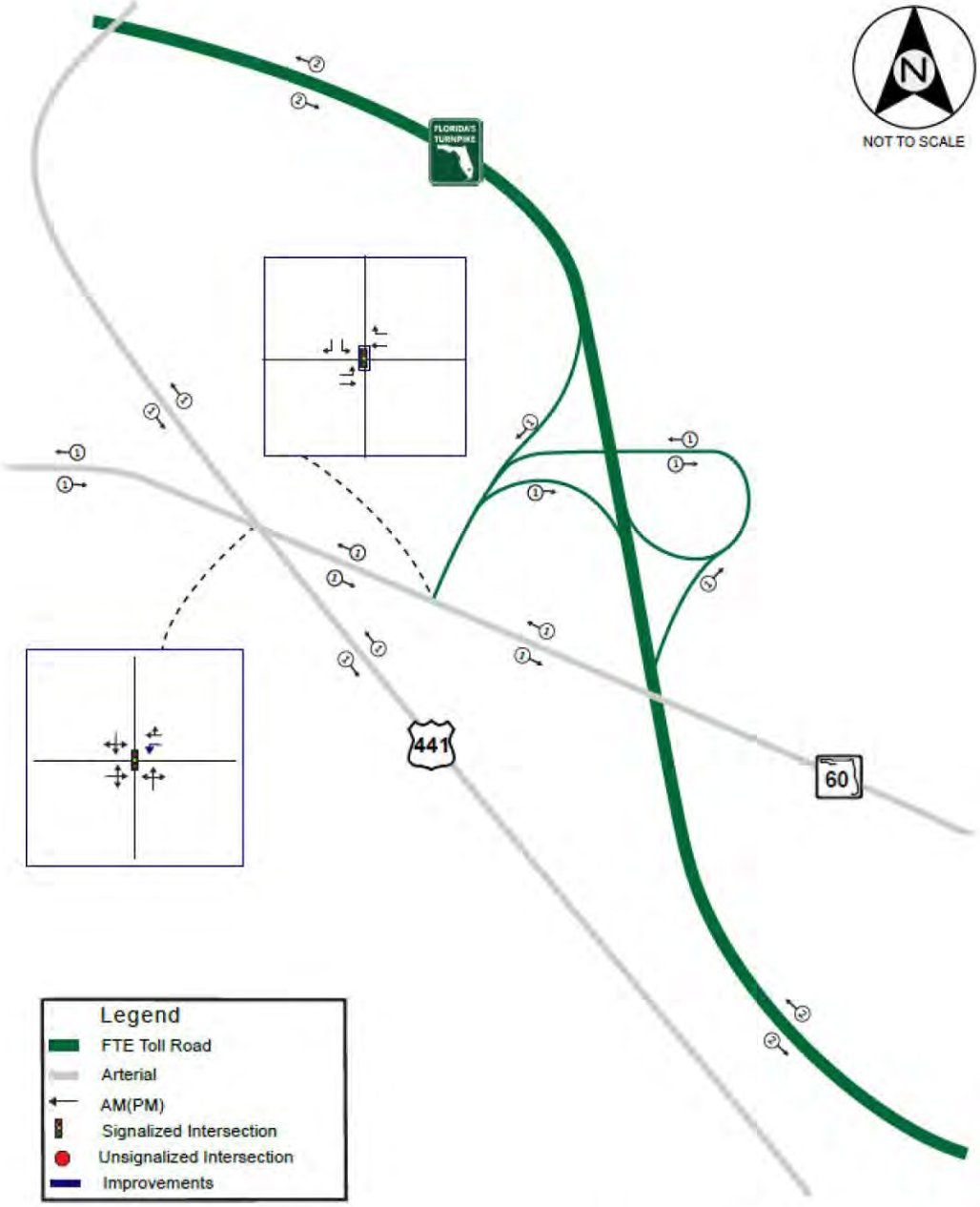
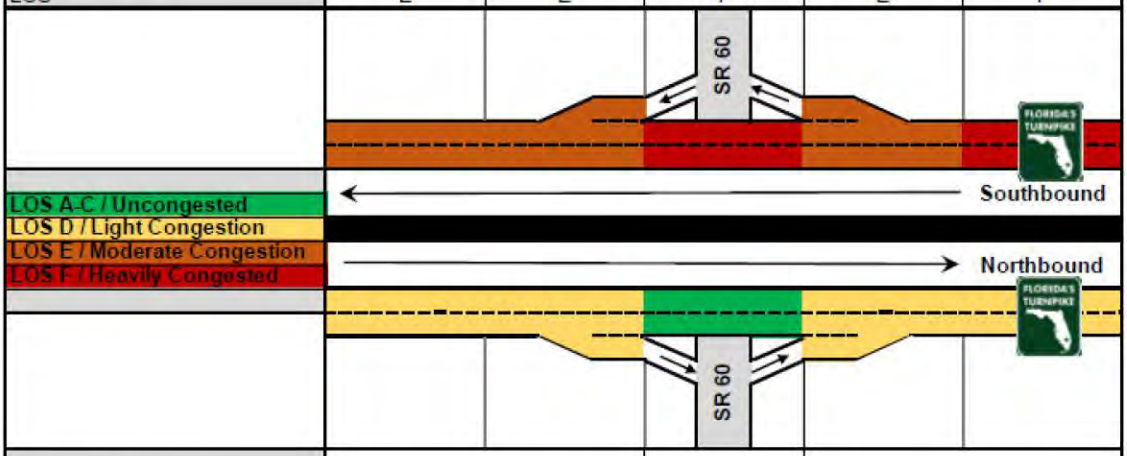


Figure 5-1: No Build Lane Geometry

Table 5-1: 2050 No-Build AM Design Hour Freeway Mainline Traffic Operations

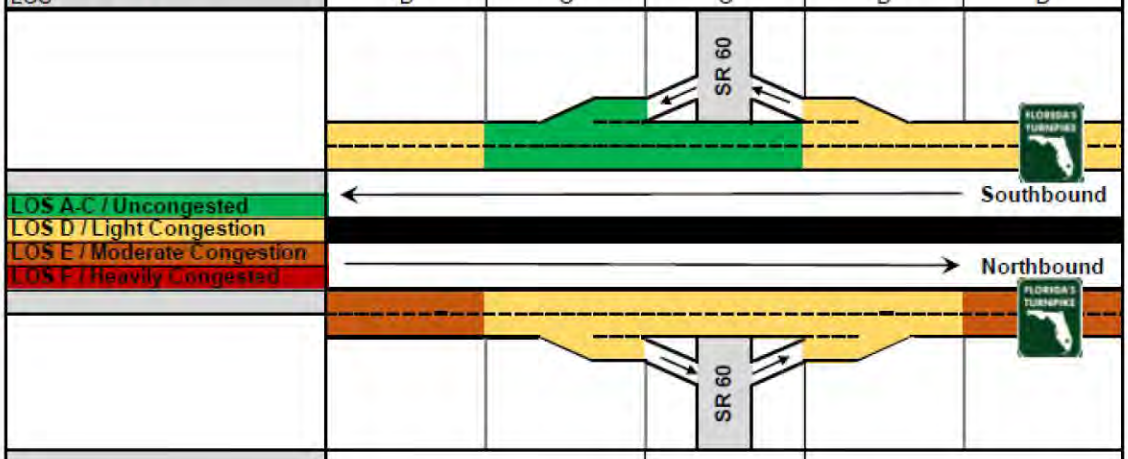
Segment Description	Downstream of SR 60		SR 60	Upstream of SR 60	
Segment Type	Basic	Merge	Basic	Diverge	Basic
Segment Length (ft)	5,280	1,500	1,530	1,500	5,280
Mainline Demand (vph)	4,240	3,720	3,720	4,100	4,100
Ramp Demand (vph)	-	520	-	380	-
Density (pcpmpl)	38	35	72	41	56
LOS	E	E	F	E	F



Segment Description	Upstream of SR 60		SR 60	Downstream of SR 60	
Segment Type	Basic	Diverge	Basic	Merge	Basic
Segment Length (ft)	5,280	1,500	1,270	1,500	5,280
Mainline Demand (vph)	3,460	3,460	2,840	2,840	3,400
Ramp Demand (vph)	-	620	-	560	-
Density (pcpmpl)	32	29	24	30	31
LOS	D	D	C	D	D

Table 5-2: 2050 No-Build AM Design Hour Freeway Mainline Traffic Operations

Segment Description	Downstream of SR 60		SR 60	Upstream of SR 60	
Segment Type	Basic	Merge	Basic	Diverge	Basic
Segment Length (ft)	5,280	1,500	1,530	1,500	5,280
Mainline Demand (vph)	3,460	2,840	2,840	3,400	3,400
Ramp Demand (vph)	-	620	-	560	-
Density (pcpmpl)	32	27	24	34	31
LOS	D	C	C	D	D



Segment Description	Upstream of SR 60		SR 60	Downstream of SR 60	
Segment Type	Basic	Diverge	Basic	Merge	Basic
Segment Length (ft)	5,280	1,500	1,270	1,500	5,280
Mainline Demand (vph)	4,280	4,280	3,760	3,760	4,140
Ramp Demand (vph)	-	520	-	380	-
Density (pcpmpl)	45	35	33	34	41
LOS	E	D	D	D	E

Under the No-Build conditions, the Turnpike Mainline / SR 91 ramp terminal and SR 60 and US 441 intersection are anticipated to operate at LOS D or better during both AM and PM design hours. Most movements at the two intersections are anticipated to operate at LOS D or better, except for the southbound left-turn movement at the Turnpike Mainline / SR 91 ramp terminal and the northbound movements at the SR 60 and US 441 intersection, which are anticipated to operate at LOS E during both AM and PM design hours. Additionally, the southbound movements at the SR 60 and US 441 intersection are anticipated to operate at LOS F during the AM design hour.

Table 5-3: 2050 No-Build AM Design Hour Intersection Performance

Intersection	Measure of Effectiveness (MOE)	Level	Northbound			Southbound			Eastbound			Westbound			Intersection LOS (Delay (sec))
			Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
Turnpike Mainline / SR 91 Ramp Terminal	LOS (Delay (sec))	Movement				F (174.7)		F (89.7)	F (177.0)	A (9.1)			F (131.7)	C (20.2)	F (104.7)
		Approach				F (109.2)			F (112.0)			F (88.2)			
	Queue Length 95th (ft)	Movement				#526		#1276	m379	m104			#956	255	
US 441 and SR 60	LOS (Delay (sec))	Movement		F (305.5)			F (406.6)			F (410.0)		C (23.7)	F (80.6)		F (246.6)
		Approach		F (305.5)			F (406.6)			F (410.0)			E (70.8)		
	Queue Length 95th (ft)	Movement		#936			#660			#2098		m73	m#1252		

Synchro 11 used for Signalized Intersections.

LOS notes:
Delay is in sec/veh
:Level Of Service (LOS) E reflecting at-capacity oper
:Level Of Service (LOS) F reflecting over-capacity op

Queue notes:
~: Volume exceeds capacity, queue is theoretically infinite
#: 95th percentile volume exceeds capacity
m: Upstream metering is in effect

* Storage length for right- and left-turn movements at the ramp terminal is 1000 ft.

Table 5-4: 2050 No-Build PM Design Hour Intersection Performance

Intersection	Measure of Effectiveness (MOE)	Level	Northbound			Southbound			Eastbound			Westbound			Intersection LOS (Delay (sec))
			Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
Turnpike Mainline / SR 91 Ramp Terminal	LOS (Delay (sec))	Movement				F (239.5)		F (136.7)	E (60.8)	A (4.0)			F (105.4)	B (14.8)	F (86.4)
		Approach				F (150.0)			D (37.3)			E (79.7)			
	Queue Length 95th (ft)	Movement				#349		#1487	m156	m41			#1016	155	
US 441 and SR 60	LOS (Delay (sec))	Movement		F (454.6)			D (54.5)			F (> 900)		E (59.0)	F (124.1)		F (442.8)
		Approach		F (454.6)			D (54.5)			F (> 900)			F (112.1)		
	Queue Length 95th (ft)	Movement		#1277			204			#1886		m95	m#1335		

Synchro 11 used for Signalized Intersections.

LOS notes:
Delay is in sec/veh
:Level Of Service (LOS) E reflecting at-capacity oper
:Level Of Service (LOS) F reflecting over-capacity op

Queue notes:
~: Volume exceeds capacity, queue is theoretically infinite
#: 95th percentile volume exceeds capacity
m: Upstream metering is in effect

* Storage length for right- and left-turn movements at the ramp terminal is 1000 ft.

5.2.2 Transportation Systems Management and Operations Alternatives (TSM&O)

The Transportation Systems Management and Operations (TSM&O) alternatives are low capital cost improvements comprised of minor improvement options that are usually generated to alleviate specific traffic congestion/safety problems, or to obtain maximum utilization out of the existing facility by improving operational efficiency. These alternatives do not serve as a benchmark point of reference function but rather they ensure that a wide range of realistic alternatives are considered by decision makers. Applicable TSM&O alternatives for limited access facilities were investigated for the study corridor and the SR 60 interchange (see **Table 5-5**). As indicated in the table, it is expected that these TSM&O improvements alone will not alleviate all of the existing corridor deficiencies nor will they suffice to meet future travel demand and regional mobility needs due to population growth. It was therefore concluded that in addition to the TSM&O solutions, major reconstruction alternatives (e.g. corridor widening, interchange improvements) would be required to provide the effective improvement of the existing facility. In summary, even though some beneficial effects can be obtained through the exclusive use of low-cost improvements, the overall capacity restriction of maintaining the existing roadway section precludes the attainment of any substantial improvement in the overall project LOS. It is because of this fact that these alternatives were considered to have only marginal value. However, they will be further considered as valuable components of an integrated final solution.

Table 5-5 - Evaluation of TSM&O Alternatives

TSM&O Alternatives	Consequences of Implementation	Remains Viable?
Intelligent Transportation System Enhancements/ Improvements	FTE has recently invested in ITS infrastructure improvements along the corridor (including AET conversion, increased DMS signs, upgrade fiber, etc.) and is committed to continue to improve on the existing ITS system. Although these improvements can improve traffic flow, this does not address the need for additional capacity in the future.	Yes
Widening of parallel arterials	No major parallel arterials exist (except I-95), this alternative would not alleviate anticipated congestion along SR 91.	No
Ride Sharing Programs	Although ride sharing programs will remain part of the overall strategy along Florida's highways, this program is not anticipated to contribute to a significant decrease in demand.	Yes
High Occupancy Vehicle Lanes	Some improvements attainable to manage mobility in select lanes, but does not add additional capacity needed.	Yes
Reversible Flow Roadway System	Traffic analysis shows there is no significant shift in the direction of traffic during peak hours and thus is not anticipated to be cost effective.	No

Table 5-5 - Evaluation of TSM&O Alternatives

TSM&O Alternatives	Consequences of Implementation	Remains Viable?
Transit Improvements	Planned improvements in transit options (including Amtrak and Brightline) by others.	Yes
Improvements to signing, marking, and roadway lighting	These improvements are anticipated to improve safety and mobility but do not add additional capacity.	Yes

5.2.3 Multimodal Alternative

This study analyses the opportunity to increase capacity, meet existing and future travel demands, and address roadway deficiencies. Any multimodal alternative will not meet the purpose and need of this study. Therefore, this alternative will not move forward.

5.3 Phase 2: Build Alternative Development and Evaluation

5.3.1 Mainline Typical Section Analysis

Three different typical section alternatives were evaluated for the SR 91 mainline. All of the typical sections consisted of three 12-foot lanes in each direction, and 12-foot inside and outside shoulders. Below is a description of each of the alternatives evaluated. All three alternatives fit within the existing ROW.

Typical Section Alternative 1 (**Figure 5-2**) – Consists of widening to both the inside and outside to provide 6 lanes, a closed, bifurcated median with barrier wall and median drainage. This alternative maximizes use of the existing pavement and minimizes impacts to the existing roadside ditches and existing wetlands. The main disadvantages of this option include the need for cross drains to outfall the water from the median trunk line, costly barrier wall for 42 miles, potential need to reduce the median shoulder width at sign structure locations and bridge locations, as well as roadway profile concerns (overbuild, shoulder rocking).

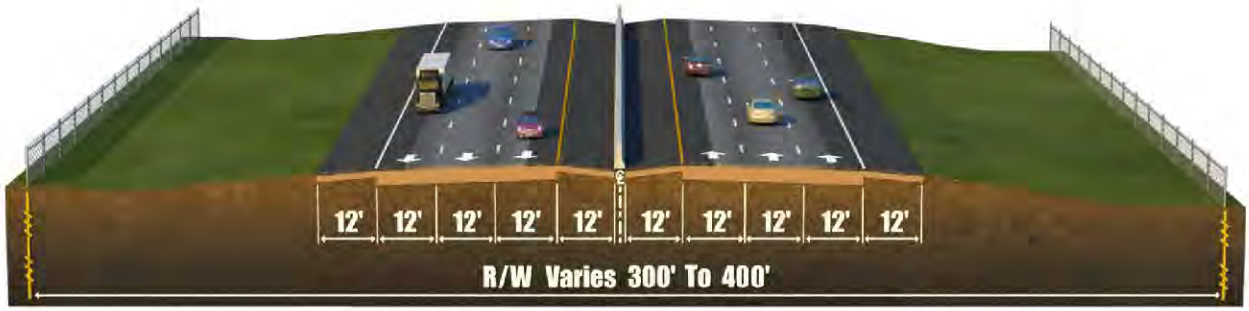


Figure 5-2: Typical Section Alternative 1 (Looking North)

Typical Section Alternative 2 (**Figure 5-3**) – Consists of widening to both the inside and outside to provide 6 lanes, a closed, bifurcated median with barrier wall and all lanes sloped to the outside. This alternative maximizes use of the existing pavement and minimizes impacts to the existing roadside ditches and existing wetlands. This alternative also minimizes the need for median inlets and trunk line, thus minimizing maintenance requirements as compared to alternative 1. The main disadvantages of this option include the need for costly barrier wall for 42 miles, inside shoulder cross slope does not meet FDM criteria, potential need to reduce the median shoulder width at sign structure locations and bridge locations, as well as roadway profile concerns (overbuild, base clearance).

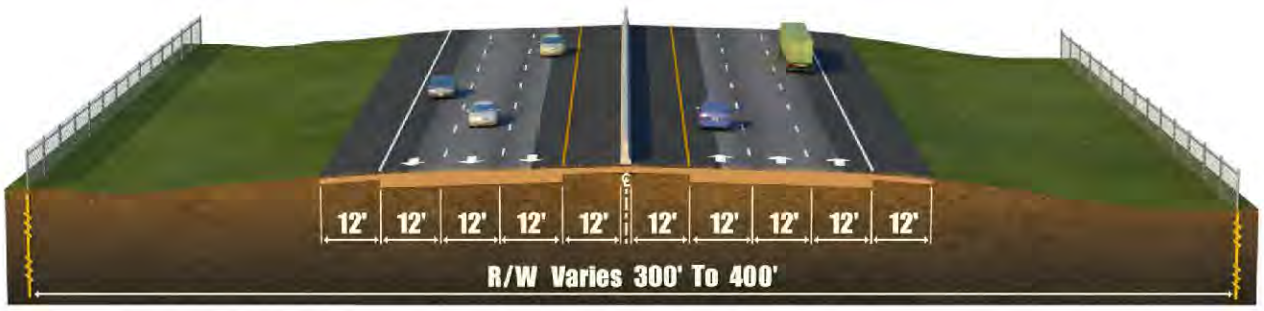


Figure 5-3: Typical Section Alternative 2 (Looking North)

Typical Section Alternative 3 (**Figure 5-4**) – Consists of widening to the outside to provide 6 lanes and maintain the existing 40-foot median. This alternative reduces

construction in the median and eliminates need for overbuild and barrier wall. The main disadvantages of this alternative include substantial impacts to existing roadside ditches.



Figure 5-4: Typical Section Alternative 3 (Looking North)

Table 5-6 is a numerical/descriptive matrix which illustrates, describes and evaluates the features of all generated typical section alternatives. The evaluation used involved the generation of a weighting scheme for each of the evaluation parameters. Thirteen different evaluation parameters including engineering, social & economic, environmental and cost factors were used. The evaluation parameters for this evaluation were selected based on applicability to this project as well as parameters that would best help to differentiate between the alternatives. Additional parameters (such as landscaping/aesthetic, access management, permitting, utilities, etc.) were excluded from the evaluation because potential impacts do not significantly differ between the alternatives. Each parameter was assigned a weight ranging from 5 to 11 depending on its degree of importance. These parameter weightings were developed from the average of individual weighting sets prepared by members of the team reflecting a broad range of professional backgrounds. In addition, the alternative performance with respect to each parameter was compared based on both the overall effect on the specified parameter and/or the relative effect between the competing configuration alternatives. The overall effect received a score of 1 to 5, with 1 being a generally negative effect and 5 being a generally positive effect. Each score indicated on the table is the result of multiplying individual score for the alternative times the relative weight for that parameter. For example, Alternative 1 under the "safety" parameter was given 3

points (because it has reduced recovery area for out-of-control vehicles and emergency stops from inside lanes). The points were then multiplied by the relative weight of the "safety" parameter (11) resulting in an overall score of 33. Items that were not analyzed during the development of the build alternatives due to their applicability to the mainline corridor include: complete streets, pedestrian and bicycle accommodations, managed lanes (corridor will not experience significant congestion in future years), access management, lane repurposing, lighting, and sea level rise.

According to the results obtained in **Table 5-6**, Alternative 3 scored the highest with 293 overall points, and is thus recommended for further evaluation.

(This section was intentionally left blank)

Table 5-6 – Typical Section Evaluation

LEGEND	POINT
SUBSTANTIALLY POSITIVE EFFECT OR BEST	5
GENERALLY POSITIVE EFFECT OR GOOD	4
GENERALLY NO EFFECT OR MODERATE	3
GENERALLY NEGATIVE EFFECT OR	2
GENERALLY NEGATIVE EFFECT OR WORST	1

FEATURES / PARAMETERS / ALTERNATIVES		ENGINEERING 39				ENVIRONMENTAL 24			SOCIO-ECONOMIC 19			COST 18			RANK (TOTAL SCORE)
		TRAFFIC SERVICE	SAFETY	GEOMETRIC ISSUES	CONSTRUCTABILITY	WATER QUALITY	DRAINAGE IMPACTS	WETLAND IMPACTS	HURRICANE EVACUATION / EMERGENCY RESPONSE	RELOCATION POTENTIAL	CONTROVERSY POTENTIAL	CONSTRUCTION	MEDIAN MAINTENANCE	RIGHT-OF-WAY	
		Weight: 10	Weight: 11	Weight: 9	Weight: 9	Weight: 7	Weight: 10	Weight: 7	Weight: 6	Weight: 6	Weight: 7	Weight: 8	Weight: 5	Weight: 5	
		Divided 6 lane typical section provides improved traffic service.	Generally safe typical section for vehicles but has reduced recovery area for out-of-control vehicles and emergency stops from inside lanes.	Spot reductions in median shoulder will be required to accommodate sign structures and median bridge piers.	Requires both inside and outside widening where there may be some conflicts during construction. In addition overbuild will be required to meet cross slopes without impacting the existing pavement. Requires open cut and/or some type of jack & bore operation.	Water quality and attenuation will need to be provided in the roadside ditch.	Minimizes impacts to existing roadway ditches but cross drains will be required to outfall the water from the median trunk line to the ditches on the outside.	Minor potential wetland and other surface waters impacts.	Additional capacity and high design speed facilitates emergency response and evacuation.	No relocations anticipated due to turnpike widening.	Minimum controversy anticipated.	Highest cost due to the median barrier wall with median drainage (Approx. $552M).	The cost of maintenance of barrier wall with median drainage for a 25 year life cycle is approximately $5.2M.	Additional offsite right-of-way may be necessary for potential ponds.	2
		Points: 4	Points: 3	Points: 2	Points: 2	Points: 2	Points: 2	Points: 3	Points: 4	Points: 4	Points: 3	Points: 1	Points: 2	Points: 3	
Closed Median with Median Drainage	**Alternative 1**	Score 40.0	Score 33.0	Score 18.0	Score 18.0	Score 14.0	Score 20.0	Score 21.0	Score 24.0	Score 24.0	Score 21.0	Score 8.0	Score 10.0	Score 15.0	**266.0**
		Divided 6 lane typical section provides improved traffic service.	Generally safe typical section for vehicles but has reduced recovery area for out-of-control vehicles and emergency stops from inside lines. Potential concerns with hydroplaning.	Inside shoulder cross slope does not meet standards. Spot reductions in median shoulder will be required to accommodate sign structures and median bridge piers. In addition potential concerns with vertical clearance.	Requires both inside and outside widening where there may be some conflicts during construction. In addition overbuild will be required to meet cross slopes without impacting the existing pavement.	Water quality and attenuation will need to be provided in the roadside ditch.	Minimizes impacts to existing roadway ditches and eliminates the need for median inlets and trunk line for collection of inside shoulder runoff.	Minor potential wetland and other surface waters impacts.	Additional capacity and high design speed facilitates emergency response and evacuation.	No relocations anticipated due to turnpike widening.	Minimum controversy anticipated.	Slightly higher cost than Alternative 3 due to the median barrier wall (Approx. $518M).	The cost of maintenance of barrier wall with no median drainage for a 25 year life cycle is approximately $230K	Additional offsite right-of-way may be necessary for potential ponds.	3
		Points: 4	Points: 2	Points: 1	Points: 2	Points: 2	Points: 1	Points: 3	Points: 4	Points: 4	Points: 3	Points: 2	Points: 4	Points: 3	
Closed Median without Median Drainage	**Alternative 2**	Score 40.0	Score 22.0	Score 9.0	Score 18.0	Score 14.0	Score 10.0	Score 21.0	Score 24.0	Score 24.0	Score 21.0	Score 16.0	Score 20.0	Score 15.0	**254.0**
		Divided 6 lane typical section provides improved traffic service.	Generally safe typical section with recovery area for out-of-control vehicles and emergency stops. But poses a safety concern for maintenance workers mowing the grass in the median.	Potential concerns with the vertical clearance and outside widening impacts to the structures.	Although requires both inside and outside widening where there may be some conflicts during construction not as many conflicts as Alternatives 1 and 2. In addition, potential concerns with the existing piers for the overpass bridges.	Minimal impact quality can be provided in the median	Minimizes median drainage structures. However, there are significant impacts to existing roadside swales due to the largest width of outside widening.	Minor potential wetland and other surface waters impacts.	Additional capacity and high design speed facilitates emergency response and evacuation.	No relocations anticipated due to turnpike widening.	Minimum controversy anticipated.	Generally moderate cost (Approx. $487M).	The cost of guardrail maintenance for a 25 year life cycle is approximately $7.8M.	Additional offsite right-of-way may be necessary for potential ponds.	1
		Points: 4	Points: 3	Points: 2	Points: 3	Points: 3	Points: 2	Points: 3	Points: 4	Points: 4	Points: 3	Points: 3	Points: 1	Points: 3	
Outside Widening	**Alternative 3**	Score 40.0	Score 33.0	Score 18.0	Score 27.0	Score 21.0	Score 20.0	Score 21.0	Score 24.0	Score 24.0	Score 21.0	Score 24.0	Score 5.0	Score 15.0	**293.0**

5.3.2 SR 60 Interchange Analysis

5.3.2.1 Preliminary Interchange Evaluation

A preliminary analysis was performed to consider possible interchange configurations for the Turnpike interchange at SR 60 utilizing the FDOT Intersection Control Evaluation (ICE) CAP-X Analysis worksheets. The analysis results recommended the following interchange configurations to be considered at SR 60: diverging diamond interchange, partial cloverleaf, diamond and bowtie.

These interchange configurations were then evaluated in terms of engineering considerations and their potential impacts to the natural, physical and social environment. A summary of the evaluation of the potential interchange configurations at the SR 60 interchange is included on **Table 5-7**. The main objective of this task was to screen out all non-viable (inferior) interchange configurations and thus identify at an early stage what configuration(s) would work best at this location. Several options, such as the partial cloverleaf, bowtie, diamond and diverging diamond interchange configurations were eliminated due to their impacts to sensitive environmental features located south of SR 60 including the DeLuca Preserve and Native American lands. A tight diamond configuration was also considered; however, it was eliminated from further evaluation because it may require design exceptions or variations in order to avoid impacts to the sensitive environmental lands located south of SR 60. It also provides undesirable geometric and operational conditions for the high truck traffic and potential for future traffic demand. The results of the evaluation indicated that the modified trumpet and the NE/NW partial cloverleaf continue to be viable alternatives and were selected for further screening.

(This space intentionally left blank)

Table 5-7 – Preliminary Interchange Evaluation

Legend	
Generally positive	3
Moderate impacts or performance	2
Greater impacts or poor performance	1
Generally negative or Fatally Flawed	0








EVALUATION PARAMETERS (WEIGHT)	No Build	Points	Score	Modified Trumpet (Continuous Green T Intersection)	Points	Score	DIAMOND/ TIGHT DIAMOND	Points	Score	PARTIAL CLOVERLEAF	Points	Score	DIVERGING DIAMOND	Points	Score	NE/NW PARTIAL CLOVERLEAF	Points	Score	BOWTIE	Points	Score
Meet the Purpose and Need 12	Does not address needs of the project	0	0	Meets the project's purpose and need	3	36	Meets the project's purpose and need	3	36	Meets the project's purpose and need	3	36	Meets the project's purpose and need	3	36	Meets the project's purpose and need	3	36	Meets the project's purpose and need	3	36
Geometric/ Operational Features 10	Maintains existing geometric and operational issues	0	0	Although weaving is improved compared to existing, weaving condition is substandard	1	10	Tight diamond would require DE/DV to avoid impacts - not desirable in rural setting	1	10	Addresses existing geometric and operations concerns	3	30	Addresses existing geometric and operations concerns	3	30	Addresses existing geometric and operations concerns	3	30	High percent of truck traffic makes this geometry less desirable	2	20
Traffic Service 12	LOS F by design year 2050	0	0	Anticipated to meet target LOS by design year	3	36	Anticipated to meet target LOS by design year	3	36	Anticipated to meet target LOS by design year	3	36	Anticipated to meet target LOS by design year	3	36	Provides longest design life, well beyond design year 2050	3	36	Not anticipated to meet target LOS by design year	2	24
Safety 12	Does not address any of the existing safety concerns of the area	0	0	Improves conditions and addresses safety concerns	3	36	Improves conditions and addresses safety concerns	3	36	Improves conditions and addresses safety concerns	3	36	Improves conditions and addresses safety concerns	3	36	Improves conditions and addresses safety concerns	3	36	Improves conditions and addresses safety concerns	3	36
Constructability 10	No major constructability concerns	3	30	No major constructability concerns	3	30	Constructability concerns in order to avoid environmentally sensitive lands	2	20	No major constructability concerns	3	30	No major constructability concerns	3	30	No major constructability concerns	3	30	No major constructability concerns	3	30
Impacts to Sensitive Sites 12	Avoids impacts to Deluca Preserve and Native American lands	3	36	Avoids impacts to Deluca Preserve and Native American lands	3	36	Although a tight diamond would avoid impacts to Deluca Preserve and Native American lands, configuration is less desirable due to rural conditions and would result in shorter design life in terms of traffic service	2	24	Would impact Deluca Preserve and Native American lands	0	0	Would impact Deluca Preserve and Native American lands	0	0	Avoids impacts to Deluca Preserve and Native American lands	3	36	Would impact Deluca Preserve and Native American lands	0	0
Environmental Impacts 10	Avoids impacts to existing wetlands and habitat	3	30	Avoids impacts to existing wetlands and habitat	3	30	Reduces impacts to wetlands and habitat	2	20	Impacts existing habitat including wetlands and Deluca Preserve	1	10	Impacts existing habitat including wetlands and Deluca Preserve	1	10	Minimizes impacts to existing wetlands and habitat	3	30	Impacts existing habitat including wetlands and Deluca Preserve	1	10
Construction Cost 11	No construction cost, Maintenance costs would be increased	3	33	Moderate construction cost	2	22	Moderate construction cost	2	22	Highest construction cost	1	11	Highest construction cost	1	11	Moderate construction cost	2	22	Moderate construction cost	2	22
ROW & Relocation Impacts 11	No ROW impacts anticipated	3	33	No ROW impacts anticipated	3	33	Some ROW impacts anticipated	2	22	Substantial ROW impacts anticipated	0	0	Substantial ROW impacts anticipated	0	0	Some ROW impacts anticipated	2	22	Substantial ROW impacts anticipated	0	0
Summary Remarks	Although it does not address any of the existing deficiencies, this alternative remains viable throughout the life of the project			Generally maintains existing footprint while improving existing conditions			A traditional diamond would be fatally flawed due to its impacts to Deluca Preserve and Native American lands, the tight diamond would be an inferior alternative that would require DE/DV, limiting design life and truck traffic operations			Fatally flawed due to impacts to Deluca Preserve and Native American lands			Fatally flawed due to impacts to Deluca Preserve and Native American lands			Offers the greatest design life in terms of traffic while minimizing impacts			Fatally flawed due to impacts to Deluca Preserve and Native American lands		
Total Score	162			269			226			189			189			278			178		
Remains Viable?	Yes			Yes			No			No			No			Yes			No		

5.3.2.2 Final Interchange Evaluation

Table 5-8 evaluates the advantages and disadvantages of the two interchange alternatives, the modified trumpet and the NE/NW partial cloverleaf, shown on **Figure 5-4** and **Figure 5-5**, respectively. The result of the evaluation shows that although both alternatives meet the future traffic demand and address safety concerns, the modified trumpet has substandard weaving conditions for the on ramp. Additionally, the NE/NW partial cloverleaf provides the longest design life and received the greatest support at the public meeting.

(This space was intentionally left blank)

Table 5-8 – Interchange Evaluation

	EVALUATION PARAMETERS	WEIGHT	NO BUILD	Points	Score	 ALTERNATIVE A MODIFIED TRUMPET	Points	Score	 ALTERNATIVE B NE/NW PARTIAL CLOVERLEAF	Points	Score
ENGINEERING	Traffic Operation (Year 2050)	9	Does not meet design year 2050 traffic	1	**9**	Meets design year Target LOS	5	**45**	Meets design year Target LOS	5	**45**
	Construction Complexity	7	None/No Change	5	**35**	No major construction complexities anticipat	5	**35**	No major construction complexities anticipated	5	**35**
	Safety	8	Does not address safety concerns	1	**8**	Consolidation of interchange movements to single interchange (9 conflict points)	5	**40**	Two intersections with left turn crossing conflict points (18 conflict points)	4	**32**
	Weaving/Geometry	8	existing weaving issues	1	**8**	Although weaving is improved compared to existing, weaving condition is substandard	2	**16**	No Issues, no DE/DV anticipated	5	**40**
	Impacts to Traffic Patterns	7	None/No Change	5	**35**	Minor	5	**35**	Minor	5	**35**
ENVIRONMENTAL	Wetland Impacts	7	None/No Change	5	**35**	None	5	**35**	None	5	**35**
	Upland Impacts	7	None/No Change	5	**35**	None	5	**35**	Total upland habitat impacts: 11.6 acres	3	**21**
	Impacts to Sensitive Sites	9	None/No Change	5	**45**	None	5	**45**	None	5	**45**
	Estimated Residential & Business Relocations	8	None/No Change	5	**40**	None	5	**40**	None	5	**40**
COST	Construction	7	None/No Change	5	**35**	$29.1M	3	**21**	$25.3M	3	**21**
	Right of Way	7	None/No Change	5	**35**	None	5	**35**	15 vacant parcels are impacted	3	**21**
OTHER CONSIDERATIONS	Service Life	8	Nearing serivce life	1	**8**	Although it meets LOS target for design year 2050, LOS falls bellow target shortly after	3	**24**	Provides longest service life with acceptable LOS well beyond design year traffic volumes	5	**40**
	Public Input	8	Not supported	2	**16**	Received less support than Alternative B	3	**24**	Received majority support at the APIM	5	**40**
Rank (Total Score)			3		344	2		430	1		450

Legend	
Score	**Points**
Best	5
Good	4
Moderate	3
Inferior	2
Worst	1

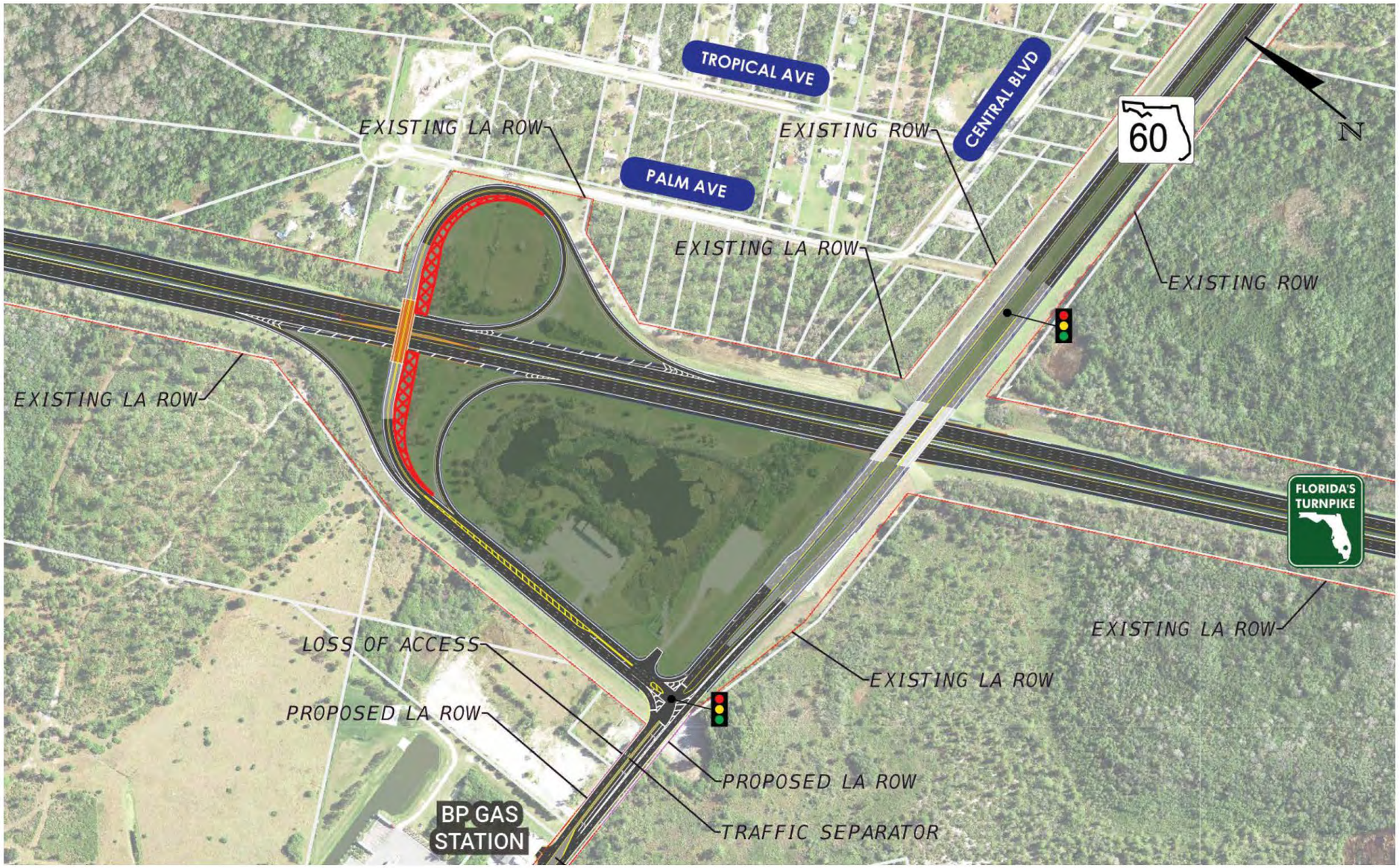


Figure 5-5: SR 60 Alternative A

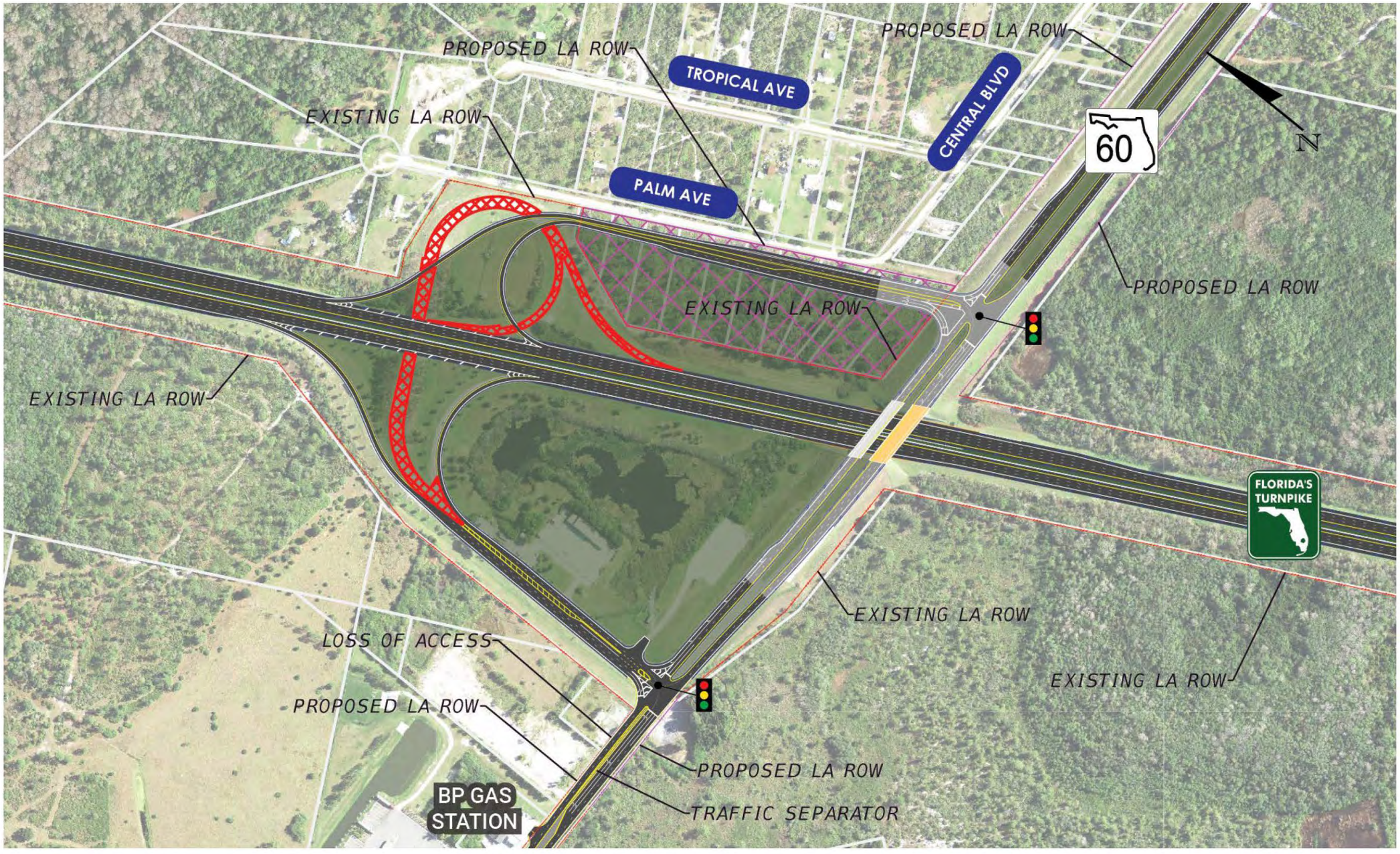


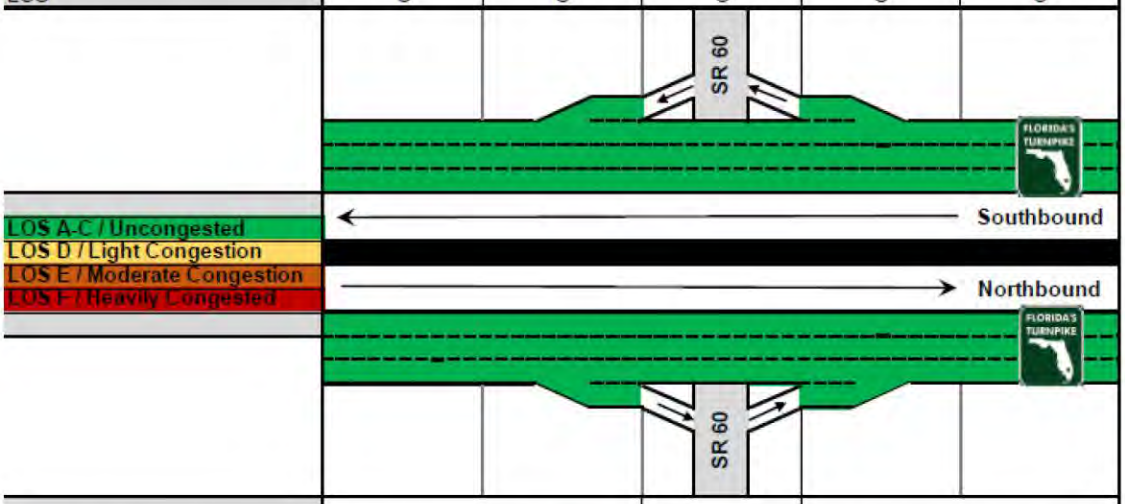
Figure 5-6: SR 60 Alternative B

5.3.2.3 Build Alternative Operational Analysis

The freeway segment performance results for the design year 2050 are summarized in **Table 5-9** and **Table 5-10**. Under the 2050 Build conditions, the Turnpike Mainline / SR 91 segments in both the northbound and southbound directions are anticipated to operate at LOS C or better during both AM and PM design hours, aligning with the target LOS C for rural areas.

Table 5-9 – 2050 Build AM Design Hour Freeway Mainline Traffic Operations

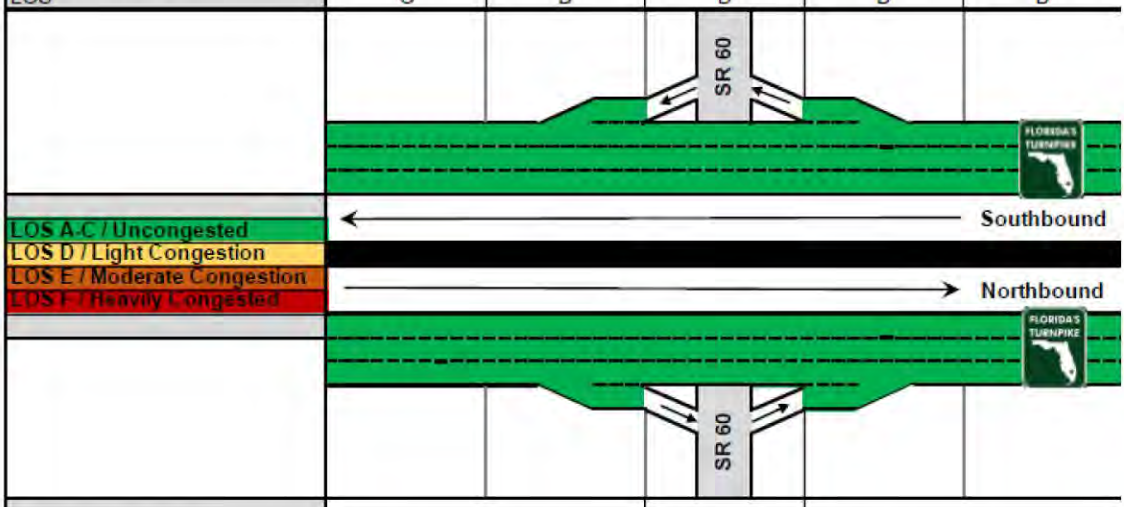
Segment Description	Downstream of SR 60		SR 60	Upstream of SR 60	
Segment Type	Basic	Merge	Basic	Diverge	Basic
Segment Length (ft)	5,280	1,600	1,080	1,500	5,280
Mainline Demand (vph)	4,240	3,720	3,720	4,100	4,100
Ramp Demand (vph)	-	520	-	380	-
Density (pcpmpl)	23	24	20	21	22
LOS	C	C	C	C	C



Segment Description	Upstream of SR 60		SR 60	Downstream of SR 60	
Segment Type	Basic	Diverge	Basic	Merge	Basic
Segment Length (ft)	5,280	2,300	820	1,580	5,280
Mainline Demand (vph)	3,460	3,460	2,840	2,840	3,400
Ramp Demand (vph)	-	620	-	560	-
Density (pcpmpl)	18	18	15	19	18
LOS	C	B	B	B	B

Table 5-10 – 2050 Build PM Design Hour Freeway Mainline Traffic Operations

Segment Description	Downstream of SR 60		SR 60	Upstream of SR 60	
Segment Type	Basic	Merge	Basic	Diverge	Basic
Segment Length (ft)	5,280	1,600	1,080	1,500	5,280
Mainline Demand (vph)	3,460	2,840	2,840	3,400	3,400
Ramp Demand (vph)	-	620	-	560	-
Density (pcpmpl)	18	18	15	17	18
LOS	C	B	B	B	B



Segment Description	Upstream of SR 60		SR 60	Downstream of SR 60	
Segment Type	Basic	Diverge	Basic	Merge	Basic
Segment Length (ft)	5,280	2,300	820	1,580	5,280
Mainline Demand (vph)	4,280	4,280	3,760	3,760	4,140
Ramp Demand (vph)	-	520	-	380	-
Density (pcpmpl)	24	24	20	23	23
LOS	C	C	C	C	C

Under the Build conditions, overall performance improves, the Turnpike Mainline / SR 91 ramp terminal and the SR 60 and US 441 intersection are anticipated to operate at LOS C or better during both AM and PM design hours. Most movements at the two intersections are anticipated to operate at LOS D or better except the southbound left-turn movement at Turnpike Mainline / SR 91 southbound ramp terminal intersection (LOS E) during both AM and PM design hours. The southbound left-turn movement at the Turnpike Mainline / SR 91 northbound ramp terminal intersection and the northbound through movement at the SR 60 and US 441 intersection are anticipated to operate at LOS E during the AM design hour. The eastbound left-turn movement at the Turnpike Mainline / SR 91 northbound ramp terminal intersection is also anticipated to operate at LOS E during the PM design hour.

In 2050, it is anticipated that Turnpike Mainline / SR 91 ramp terminal and SR 60 and US 441 intersections will be over capacity during both AM and PM design hours under the No-Build conditions. Key deficiencies of the intersections in the No-Build Alternative are long delays and queues which are expected to propagate onto the Turnpike Mainline / SR 91. The two intersections are expected to operate at LOS F during both AM and PM design hours. Most movements at the two intersections are also anticipated to operate at LOS F. Only a few movements are anticipated to operate at LOS E or better. However, under the Build condition, the Turnpike Mainline / SR 91 ramp terminal and the SR 60 and US 441 intersection are anticipated to operate at LOC C or better during both AM and PM design hours. Most movements at the two intersections are anticipated to operate at LOS D or better except the southbound left-turn movement at the Turnpike Mainline / SR 91 southbound ramp terminal intersection, the eastbound left-turn movement at the Turnpike Mainline / SR 91 northbound ramp terminal intersection, and the southbound through movement at the SR 60 and US 441 intersection, which they are anticipated to operate at LOC E or better during both AM and PM design hours. The northbound through and westbound left-turn movements at the SR 60 and US 441 intersection are also anticipated to operate at LOS E during AM and PM design hours. SimTraffic was employed to evaluate ramp backup events and estimate network travel time. Available storage length along off-ramp roadways was calculated from the stop bar at the ramp terminal intersection to the gore location at Turnpike Mainline / SR 91. Existing storage length at NB and SB off-ramps are 3,700 ft and 2,350 ft, respectively. Backup events are expected to be observed at the northbound off and southbound off-ramps by 2050 under the No-Build condition. Off-ramp queue lengths are anticipated to be well below the storage lengths and queues are not expected to back into the Turnpike Mainline / SR 91 under the Build condition.

Network travel time for No-Build and preferred Build alternatives during AM and PM design hours is shown in **Table 5-11**. Results based on an average of five runs. The preferred Build Alternative is expected to reduce network travel time by about 20% and 80% in 2030 and 2050, respectively.

Intersection performance results for the design year 2050 are summarized in **Table 5-12** and **Table 5-13**.

Table 5-11 2050 Future Network Travel Time

Time Period	Total Travel Time		**Reduction**
	No Build	Build	
AM	1,817	357	80%
PM	1,981	435	78%
Total	**3,798**	**792**	**79%**

(This space was left blank intentionally)

Table 5-12 – 2050 Build AM Design Hour Intersection Performance

Intersection	Measure of Effectiveness (MOE)	Level	Northbound			Southbound			Eastbound			Westbound			Intersection LOS (Delay (sec))
			Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
Turnpike Mainline / SR 91 NB Ramp Terminal	LOS (Delay (sec))	Movement				D (51.8)		C (25.5)	**E (58.5)**	A (5.5)			C (29.3)	A (3.2)	C (27.1)
		Approach					C (31.5)			C (27.0)			C (23.8)		
	Queue Length 95th (ft)	Movement				173		199	187	86			288	41	
	Storage Length (ft)					600		900	300					400	
Turnpike Mainline / SR 91 SB Ramp Terminal	LOS (Delay (sec))	Movement				**E (74.8)**		C (30.1)	D (45.6)	A (6.5)			B (19.9)	A (2.9)	C (21.1)
		Approach					D (40.8)			B (18.2)			B (17.6)		
	Queue Length 95th (ft)	Movement				#139		142	m161	m173			245	31	
	Storage Length (ft)					1,000		1,000	500					600	
US 441 and SR 60	LOS (Delay (sec))	Movement	D (50.2)	**E (59.6)**	C (23.2)	D (54.0)	**E (64.0)**		B (10.2)	D (39.7)		D (53.6)	B (11.0)		C (31.4)
		Approach		D (36.2)			**E (60.0)**			D (39.1)			B (18.4)		
	Queue Length 95th (ft)	Movement	101	127	178	122	#225		15	#512		m#198	202		
	Storage Length (ft)		500		500	550			400			350			

Synchro 11 used for Signalized Intersections.

LOS notes:
Delay is in sec/veh
:Level Of Service (LOS) E reflecting at-capacity oper
:Level Of Service (LOS) F reflecting over-capacity op

Queue notes:
~: Volume exceeds capacity, queue is theoretically infinite
#: 95th percentile volume exceeds capacity
m: Upstream metering is in effect

Table 5-13 – 2050 Build PM Design Hour Intersection Performance

Intersection	Measure of Effectiveness (MOE)	Level	Northbound			Southbound			Eastbound			Westbound			Intersection LOS (Delay (sec))
			Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
Turnpike Mainline / SR 91 NB Ramp Terminal	LOS (Delay (sec))	Movement				D (44.6)		C (29.3)	**E (63.5)**	A (2.8)			C (22.3)	A (1.3)	C (23.6)
		Approach					C (31.4)			C (22.8)			B (19.9)		
	Queue Length 95th (ft)	Movement				95		193	141	47			304	17	
	Storage Length (ft)					600		900	300					400	
Turnpike Mainline / SR 91 SB Ramp Terminal	LOS (Delay (sec))	Movement				**E (59.9)**		C (30.5)	C (32.5)	A (3.8)			B (19.9)	A (3.9)	B (19.4)
		Approach					C (34.2)			B (14.4)			B (17.8)		
	Queue Length 95th (ft)	Movement				104		226	m182	100			247	46	
	Storage Length (ft)					1,000		1,000	500					600	
US 441 and SR 60	LOS (Delay (sec))	Movement	D (49.3)	D (44.7)	B (19.5)	C (34.3)	**E (62.0)**		B (12.7)	D (40.8)		**E (65.4)**	B (14.8)		C (32.0)
		Approach		C (32.8)			**E (56.0)**			D (40.3)			C (24.2)		
	Queue Length 95th (ft)	Movement	212	119	224	44	#152		16	#502		#318	301		
	Storage Length (ft)		500		500	550			400			350			

Synchro 11 used for Signalized Intersections.

LOS notes:
Delay is in sec/veh
:Level Of Service (LOS) E reflecting at-capacity oper
:Level Of Service (LOS) F reflecting over-capacity op

Queue notes:
~: Volume exceeds capacity, queue is theoretically infinite
#: 95th percentile volume exceeds capacity
m: Upstream metering is in effect

5.4 Phase 4: Alternative Refinement and Selection of the Preferred Alternative

Based on the evaluation of different typical section alternatives and interchange improvements, the preferred alternative for the widening of the Turnpike from north of SR 70 to north of SR 60 Interchange (MP 152-193) is typical section Alternative 3 (outside widening) and Alternative B (the NE/NW partial cloverleaf) at the SR 60 interchange. Final refinements to the preferred alterative that resulted from the Cost Risk Assessment and Value Engineering (CRAVE) study and the Public Hearing are summarized in Section 7 of this report.

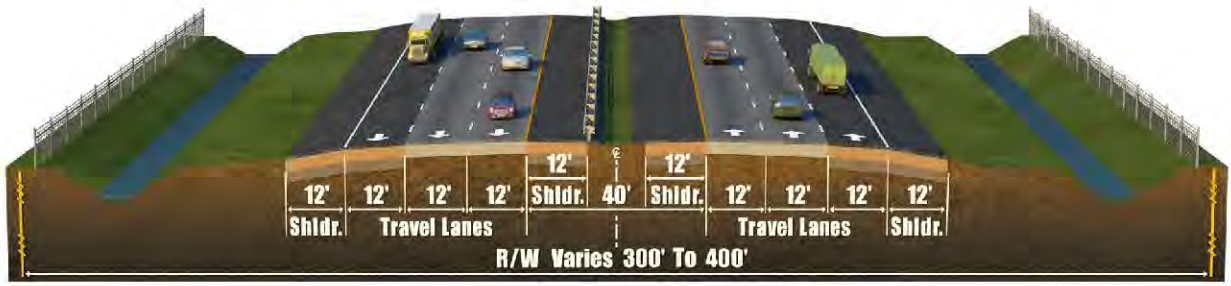


Figure 5-7: Preferred Typical Section Alternative (Looking North)

(Space was intentionally left blank)

6 AGENCY COORDINATION AND PUBLIC INVOLVEMENT

The purpose of the Turnpike Widening PD&E outreach program is to: (1) share project information with the individuals who work and live in this area; (2) listen to ideas and concerns; and (3) incorporate this input into the study process. The outreach program includes agency coordination, communication tools, small group meetings, and community-wide meetings (Alternatives Public Information Meeting and a Public Hearing).

Public involvement activities were integrated into the PD&E study process providing the opportunity for property owners, residents, businesses, government entities and agencies to share their concerns and ideas with FTE. The summary of the outreach efforts and meetings conducted to date, as well as selected detailed descriptions of specific activities are also provided in the following sections. A complete summary of the meetings, including meeting notifications, presentations, display materials, comments, sign-in sheets and media coverage is provided in the Comments and Coordination Report, available separately.

6.1 Public Involvement Plan

A Public Involvement Plan (PIP) has been developed and is being carried out as an integral part of the project and provides an overview of the outreach approach for the PD&E Study. The PIP was signed in May 2024. The purpose of the PIP was to guide the public outreach process in establishing and maintaining communication with the public throughout the study and incorporating public input during the alternative evaluation.

Public involvement activities began when the project started in early 2022 and continued throughout the study process. All input received served as valuable information that was taken into consideration for the refinement of the alternatives and the development of the recommended alternative. Representatives from FTE were available at each meeting to discuss the project and answer questions.

6.2 Agency Coordination

6.2.1 Advance Notification & Programming Screen Summary Report

An Advance Notification Package was prepared and sent to the Florida State Clearinghouse on May 15, 2020, where it was then distributed to the appropriate state agencies for review. The Advance Notification was also distributed to appropriate non-state agencies and tribal nations. A copy of the Advance Notification Package is provided in **Appendix D**.

In addition, a Programming Screen Summary Report was published on August 2020 for the Turnpike Widening PD&E Study. The purpose of this report is to summarize the results of the ETAT Programming Screen review of the project; providing details concerning agency comments about potential effects to natural, cultural, and community resources; and provide additional documentation of activities related to the Programming Phase of this project. The environmental screening during these processes resulted in summary degrees of effect (DOE) of mostly moderate or lower for all topics. A copy of the Programming Screen Summary Report is provided in **Appendix D**.

6.2.2 Agency and Stakeholder Meetings

A key aspect of the PIP for this project included meetings with interested parties other than the Federal and State environmental, permit and review agencies. These include representatives of public agencies and project stakeholders. **Table 6-1** summarizes the various agency and stakeholders meetings conducted to date.

Table 6-1 - Agency/Stakeholder Coordination

Date	Stakeholder/Government Agency	Topic
10-28-2022	St. Lucie County	Study Introduction – obtain existing and planned information
11-17-2022	Northern Connector Project	Project status coordination
12-02-2022	Osceola County	Study Introduction – obtain existing and planned information
12-14-2022	Okeechobee County	Study Introduction – obtain existing and planned information
03-15-2023	FDOT District 5	Project Coordination

Table 6-1 - Agency/Stakeholder Coordination

Date	Stakeholder/Government Agency	Topic
03-22-2023	North St Lucie River Water Control District (NSLRWCD)	Preliminary findings
05-05-2023	St. Lucie County / Northern Connector Interchange	Northern Connector Interchange Status
03-04-2024	Okeechobee County	Osowou Road Emergency Access
04-04-2024	St. Lucie County and TPO	Alternatives
07-09-2024	Pilot Gas Station	Alternatives
07-30-2024	Pilot Gas Corporate Office	Truck Parking Alternatives
08-15-2024	South Florida Water Management District (SFWMD)	Pre-Application
10-22-2024	Pilot Gas Corporate Office	Alternatives, Truck Parking

6.3 Public Meetings

6.3.1 Public Kick-Off Newsletter

An Informational Kick-Off Newsletter was sent in August 2022 in lieu of a Kick-Off Meeting. The kickoff newsletter was printed in English. The newsletter was mailed to 450 property owners, businesses, and current residents within 300 feet of the study corridor, 54 elected officials, 252 agency officials, and 10 Native American Tribes members.

6.3.2 Hybrid Alternatives Public Information Meeting

A virtual/online Alternatives Public Information Meeting (APIM) was held on May 1, 2024 at 5:30 p.m. online via GoToWebinar. Two in person APIM were held, the first on Tuesday, May 7, 2024 at the Indian River State College Treasure Coast Public Safety Training Complex in Fort Pierce, and the second on May 9, 2024 at the Intergenerational Recreation Center in Vero Beach. These meetings provided an opportunity for property owners, residents, businesses, elected officials, stakeholders and other interested parties to view project alternatives and ask questions of the study team and provide comments. Public meeting notices were sent via mail to elected officials, agencies, stakeholders, and property owners. Letters were sent to the following entities: 264 elected and appointed officials, federal, state, and regional agency representatives, 30 ETAT members, 10 Native American Tribes, and 1 interested person. Letters were mailed to 1,563 property owners and tenants adjacent to the study area. The public was asked to go to the project website to register and choose an option for attendance. Newspaper

ads were published in English in the Osceola News Gazette, on Thursday, April 11, 2024, and the Treasure Coast Palm, on Sunday, April 14, 2024. An advertisement was also published in The Florida Administrative Register (FAR) on April 17, 2024. FTE distributed a press release to local media on April 24, 2024, and notices were posted on the project website at www.TurnpikeSR70toSR60.com and the FDOT Central Office public notices website. Nine (9) people signed in for the in-person meeting including Town of Indian River Shores Councilman Bob Auwaerter. There were 30 FTE and FDOT staff members, FHP, project consultants, and sub-consultants at the public meeting. Thirty (30) people attended the virtual public meeting. A newsletter and comment form were given to each attendee as they signed in to the in-person meeting. Online attendees were able to download a copy of the presentation and comment form. All materials and the presentation were loaded onto the study website at www.TurnpikeSR70toSR60.com. Individuals could provide their input by submitting a completed comment form at the in-person meeting or by mailing or emailing it at a later date. At the in-person venue, several project display boards were available for review in an open house format with a presentation playing on a loop.

Twenty-five comments were received either online, via email, or at the APIM meetings. Overall, comments focused on:

- Concerns about potential wildlife impacts due to the widening
- Access along SR 60
- Multiple concerns over an increase in traffic noise for residential areas west of the Turnpike near SR 70
- Interests in a future additional interchange

A summary of the meeting including the comments and more information are available in the Comments and Coordination Repot, a companion document to this report.

6.3.3 Public Hearing

A Public Hearing was held on Tuesday, February 18, 2025 (virtual via GoToWebinar) and on Thursday, February 20, 2025 (in-person) at the Intergenerational Recreation Center.

The hearing was held to give interested persons an opportunity to express their views concerning the location, conceptual design, and social, economic, and environmental effects of the proposed improvements. The in-person meeting began at 5:30 p.m. as an open house, and the project presentation starting at 6 p.m during both meetings. After the presentation, individuals had the opportunity to make verbal comments. Letters were emailed to 175 elected and appointed officials were emailed on January 27, 2025 and to 71 ETAT members received the public hearing notification on January 28, 2025. Notifications were distributed by mail and email to approximately 1,500 property/business owners with the project newsletter attached. The Public Hearing was advertised in the Treasure Coast Newspapers on February 2, and February 11, 2025, and in the Osceola News Gazette on February 7, and February 13, 2025. The Public Hearing was also advertised in the Florida Administrative Register on February 18, 2025 and again on March 6, 2025, Vol. 51/45 to announce the extension of the Public Hearing comment period. A board notifying of the public hearing was also put on display at the Fort Drum Service Plaza. The Public Hearing was also announced on the project website at www.TurnpikeSR70toSR60.com. Florida's Turnpike Enterprise distributed a press release on February 13, 2025, to local media. Draft study documents were available for review from January 28, 2025 through February 20, 2025 at the Indian River County Main Library the Kenansville Branch Library, and on the study website at www.TurnpikeSR70toSR60.com.

The Public Hearing virtual format started at 6 p.m. A total of 16 people signed into the Virtual Public Hearing, excluding staff members. Afterwards, attendees were invited to verbally share their comments. Two individuals provided verbal comments during the virtual public hearing. Responses to those written comments were provided after the Public Hearing.

The Public Hearing in-person format began at 5:30 p.m. as an open house. A total of 16 people signed into the in-person Public Hearing, excluding staff members and including one elected official. As individuals signed in, they could pick up copies of: comment form and Newsletter. Speaker cards were also available for those individuals who wanted to speak during the public comment part of the hearing. Between 5:30 p.m. and 6 p.m.,

individuals could review the display boards (same ones posted on the study website and at the Virtual Public Hearing). Study team members were available to answer questions and to hold "one-on-one" conversations with the hearing participants. The project presentation began at 6 p.m. Afterwards, attendees were invited to verbally share their comments. Four people spoke during the public comment part of the public hearing. Two comment forms were submitted at the Public Hearing.

During the Public Hearing comment period (from May 20, 2024 through July 1, 2024), a total of 4 comments were received, two written comments at the virtual Public Hearing, and two comments were emailed.

A summary of comments is summarized below: Written responses were sent after the public hearing.

- Multiple concerns about the noise getting worse due to the widening.
- A request that FTE seriously consider robust wildlife crossings for the project and the project to the north.
- Three people opposed the widening due to concerns about impacts to tribal lands, habitat, natural lands, endangered species and noise.

7 PREFERRED ALTERNATIVE

The results of the Alternative Selection Process, as seen in Section 5, indicate that the Preferred Alternative is typical section Alternative 3, outside widening to six lanes, along with Alternative B, a Partial Cloverleaf, at the SR 60 interchange. The preferred alternative concept plans can be found in **Appendix E**.

7.1 Typical Sections

After a comprehensive alternative generation and evaluation process, one (1) alternative was selected as being the most effective option throughout the project corridor. The Preferred Alternative is Typical Section Alternative 3 which consists of widening the Turnpike mainline from four to six lanes to the outside, widening the inside shoulder to 12 feet and maintaining the existing 40-foot median with a guardrail. The preferred alternative typical section is shown on **Figure 7-1** and **Appendix E.**

The Preferred Alternative has a design speed of 70-miles per hour (mph) and consists of three (3) 12-foot travel lanes in each direction separated by a 40-foot median with a guardrail and 12-foot inside and outside shoulders. The Preferred Alternative will be constructed within the existing ROW width of 300 to 400-feet.



Figure 7-1: Preferred Typical Section Alternative (Looking North)

7.2 Access Management

No new access points/interchanges are proposed along SR 91 as a result of this project. The preferred alternative is proposing modifications to the existing access along SR 60 west of the SR 91 ramp. Currently, a two-way left-turn lane is provided along the length of SR 60 within the limits of improvements. The proposed improvements recommend

implementing a combination of a raised median or striped median from US 441 to the SR 91 ramp, as shown on **Figure 7-2**. These changes would only allow left-in or left-out maneuvers from the western entrances for both the Pilot and the BP gas stations and restrict access for their respective eastern entrances. With the proposed improvements, only right-in and right-out movements will be allowed at the entrances to these properties with the exception of the Pilot Gas Station westernmost driveway which will allow eastbound left turns. Additionally, the limited access ROW line would be extended along SR 60 for approximately 380 feet west of the SR 91 ramp, as shown on the figure, which will restrict access directly to SR 60 for the corner property just next to the Turnpike ramp and will adjust partial access to the parcel to the west of the corner property.

Figure 7-2: SR 60 Access Modifications



7.3 Right-of-Way

The partial cloverleaf alternative requires ROW acquisition by approximately 13.46 acres from twenty parcels. In addition four (4) parcels will require a take as a result of extension of the limited access ROW line along SR 60 both to the east and west. No residential or business relocations are anticipated as a result of this project. The total cost of ROW acquisition has been estimated at $10,265,348.

7.4 Horizontal and Vertical Geometry

Based on limited survey data available, the proposed vertical profile is anticipated to generally remain similar to the existing profile with some variations for drainage. Further analysis is recommended to be completed during final design regarding the profile especially at the locations of bridge widening and bridge replacements.

At Osowou Road, the roadway profile will be raised in order to accommodate future Osowou Road improvements under the Turnpike. The proposed profile will need to be raised approximately 5.5-ft which will result in changing the profile a total length of 3,500-ft.

7.5 Design Variations and Design Exceptions

At this time there are no design variations or exceptions.

7.6 Multimodal Accommodations

There are no proposed multimodal accommodations as part of this project.

7.7 Intersection/ Interchange Concepts and Signal Analysis

At the SR 60 interchange, Alternative B: Partial Cloverleaf, is the preferred alternative, see **Figure 7-3**. This option will provide new ramps at the NE quadrant of the interchange. This interchange separates the northbound and southbound traffic via two different intersections. Southbound on/off traffic will continue to utilize the existing intersection at SR 60. Northbound on/off traffic will be provided via a new intersection to the east along SR 60. Operational improvements along SR 60 include an additional travel lane along SR 60, dual eastbound left turn lanes at both intersections which will widen the SR 60 EB bridge to accommodate the turn lanes. In addition, dual right turn lanes will be provided at the off-ramps. As a result of input from the CRAVE study, the proposed ramps were shifted further south to reduce costs. The proposed improvements include a new signal at the northbound ramp termini. No signalization updates are being proposed at the US 441 intersection.

The Northern Connector is a private developer project currently unfunded that, along with a new development, would construct new interchanges at I-95 and the Turnpike

with a new roadway connecting the two new interchanges. As part of this PD&E Study, it was determined that the new interchange with the Turnpike at the proposed Northern Connector is feasible and constructable. The planned interchange will be further evaluated as part of a future project once the private development is funded and further in development.



Figure 7-3: Improvements at the SR 60 Interchange

7.8 Tolled Projects

There is currently one AET site located on the SR 91 mainline at the South end of the project limits. The original design of the gantry utilized an accessible gantry that accommodated a four lane interim typical section and an eight lane ultimate typical. During construction a Cost Savings Initiative (CSI) was approved to redesign the gantry to a non-accessible structure; this CSI also reduced the ultimate typical section from eight lanes to six but maintained the gantry span length. As discussed below, the 48 count Single Mode Fiber Optic Connector drop to the AET site will be replaced. No new tolling locations are proposed.

7.9 Intelligent Transportation System and TSM&O Strategies

The proposed improvements will necessitate the reconstruction of all existing ITS infrastructure. Please refer to the Future ITS Needs Memorandum, Concept of Operations, and Project Systems Engineering Management Plan prepared for this study for additional information. In addition to the reconstruction and or replacement of all existing ITS infrastructure, the following long-term solutions shall be evaluated during final design.

- A new 144 count Single Mode (SM) FOC communications backbone. The new communications infrastructure will include conduits, pull boxes, and splices boxes.
- A new Closed Circuit Television system (CCTV) will be designed and installed to accommodate changes in roadway geometry. The CCTV cameras will be strategically placed to ensure 100% coverage of all segments of the project limits.
- There are currently two gaps in DMS roadway coverage: SR 91 SB from MM 155.0 to MM 175.1, and SR 91 NB from MM 165.4 to MM 184.0. There is currently a DMS servicing SR 91 NB at MM 165.4 on a full span structure, as well as a DMS servicing SR 91 SB at MM 175.1 also on a full span structure. It is recommended that new DMS for the directions of travel not currently serviced be installed on these full span structures. This would fill in the gaps in coverage, allowing FTE to have

approximately 10 mile DMS spacing for both directions of travel through the project limits.

- The existing ADMS signs are monochrome and current FTE standard is to utilize full color DMS. It is recommended that these signs be upgraded to full color to bring them in line with current FTE preferences and that verification CCTVs be installed as the signs are currently without.
- A new Wrong Way Vehicle Detection System (WWVDS) is being installed on the off ramps to SR 60 within the project limits. However, this system will utilize solar power and cellular communications. It is recommended that this WWVDS be upgraded to have AC power and fiber optic communications. It is further recommended that a WWVDS be installed at off-ramps entrances to the Fort Drum Service Plaza.
- New Microwave Vehicle Detection System (MVDS) sites will be added to improve coverage if necessary. In addition, MVDS will be placed to cover all ramp exits/entrances within the project limits. All MVDS and ITS poles with MVDS will be replaced to accommodate the change in roadway geometry. The MVDS will be spaced at approximately one mile as this project is through a rural area and will be collocated on CCTV camera poles, when possible, to minimize the amount of ITS poles needed.
- All Bluetooth (BT) Automatic Vehicle Identification (AVI) detectors and ITS poles with BT AVI detectors will be replaced to accommodate the change in roadway geometry and new BT AVI will be added as needed to enhance data collection and information dissemination capabilities.

7.9.1 Long Term Deployment Strategies

Reconstruction of all existing ITS infrastructure will allow FTE to have infrastructure at the beginning of its service life, including 144 count FOC backbone. This larger backbone FOC will allow for future expansion of ITS devices connected to the FTE ITS network. Below is a summary of recommended infrastructure and ITS services that should be considered in future phases.

- Mainline/Ramp Safety Applications – The following CV technologies relay messages to motorists with physical signage and beacons to alert them of unsafe conditions and can be installed as stand-alone projects if the roadway within the project limits is not CV ready
    - Curve Speed Warning - This application utilizes sensors to detect speeds of motorists as they approach off ramp curves and warn them if their speed is excessive. Vehicles without OBUs will still receive warnings in the form of physical signs mounted along the curves that either flash or have beacons that flash when the Curve Speed Warning application is activated.
    - Queue Warning - This application utilizes sensors to detect if a queue for off ramps has backed up to a certain point on the off ramp and warn motorists existing the mainline if they are approaching a stopped queue. Vehicles outfitted with OBUs will receive targeted messages warning them of stopped vehicles ahead. Vehicles without OBUs will still receive warnings in the form of physical signs mounted along the ramp that either flash or have beacons that flash when the Queue Warning application is activated.
- Connected Vehicle Expansion: FTE has already installed CV technologies as part of the CV Deployment Project (FPID 442627-1). It is recommended that FTE, while designing the replacement of the ITS, make the system ready for future CV infrastructure. This will include Road-Side Units (RSUs) and various applications that would make use of the RSUs.
    - RSU: RSUs are devices that are able to communicate various types of messages (travel times, Traffic Incident Management (TIM) messages, etc.) with On-Board Units (OBUs) within individual vehicles. These devices communicate utilizing 5G communications through Cellular-Vehicle to Anything (C-V2X) communications to transmit and receive CV messages. They are built to withstand outdoor weather conditions and should be built according to the USDOT Federal Highway Administration (FHWA) 4.1 Specifications. RSUs communicate in a line of sight fashion. Due to this, spacing considerations are critical to ensure that there are no

communications interruptions between RSUs and OBUs. Current industry signal strengths allow for RSU spacing every mile in areas with clear line of sight or every half mile for areas where roadway geometry or presence of roadway elements such as overpasses, noise walls, or vegetation may interfere with signal coverage areas. As CCTVs and MVDS will be placed at every mile, it is recommended that RSUs be collocated with ITS poles as much as possible, lessening the need for additional poles and LHUBs.

- CV Applications: FTE is currently developing the Connected Vehicles Smartphones as a Sensor Surrogate (CV-SaaSS) safety application hat aims to emulate OBU data utilizing smartphone data to detect unsafe driving conditions and generate system-wide and user-based alerts in near real-time. In addition, the smartphone application (which at the time of this writing is not available to the general public) will use audible alerts to minimize driver distraction). It is recommended that the items below be installed at the SR 60 off ramp in Yeehaw Junction which is currently the only planned interchange within the project limits. For more information for each application and vendors, please refer to the CV Readiness Plan prepared for FTE. Some of the warning applications include:
    - Wrong-way Warning - As a CV application, vehicles outfitted with OBUs will receive targeted messages warning them of the wrong way vehicles. This is achievable either through the IVP hub or a special module provided by the wrong way manufacturer.
    - Spot Weather Impact Warning (SWIW) - This application utilizes available technologies that are able to alert drivers of unsafe conditions or roadway closure due to high winds, fog, or flood.
    - Reduced Speed/Work Zone Warning (RSWZW) - his application utilizes a portable RSU to notify road users downstream of an approaching construction zone and providing notifications such as "reduce speed", "change lanes", "lane closures", and notify motorists of lane shifts and of workers present or vehicle/truck entering

mainline, allowing oncoming travelers advanced notification or warnings.

- Power Infrastructure Improvements: There are currently the following gaps without power service within the project limits (MMs are approximate): MM 156.1 – MM 160.4, MM 160.4 – MM 165.7, MM 165.7 – MM 173.9, MM 175.6 – MM 184.3, and MM 185.1 – MM 193.2. It is recommended that new power service from the appropriate utility companies be installed in these gaps with transformers placed at strategic spots to allow for new power services for ITS devices. This will allow for both plentiful power for expanded ITS capabilities and for the upgrade of existing circuits that have been stepped up to 600V to account for the voltage drop through these gaps back down to at most the 480V allowed by the FDM. While newer ITS cabinets that have been installed more recently have UPS battery backup, some older cabinets are currently without. It is recommended that all locations are upgraded to have UPS installed to bring them in line with current FDM standards and FTE practices. The existing generators currently only supply backup power to a limited number of devices in their vicinity. It is recommended that these generator sites either be modified in the future to provide power to all devices in the corridor, or additional generator locations be added to ensure that all ITS devices in the corridor are connected to a backup generator.

- Additional ERALs – In addition to the planned improvements at Osowou Road, it is recommended that FTE evaluate other potential sites for ERALs within this project corridor. As the project traverses extended rural areas without many roads traveling either parallel or across FTE ROW, potential new ERAL locations are somewhat sparse. The sites that are viable for additional ERALs are Orange Ave and Angle Rd., which although are near to SR 70, could prove to be serviceable spots for an ERAL.

- Roadway Safety Detection Using Artificial Intelligence (AI) - As edge computing capabilities of CCTVs increase, there is an opportunity to place additional CCTVs on ITS poles to perform real-time safety analytics. It should be noted that as these applications utilize AI, FTE would have to implement these technologies in

accordance with the FDOT AI Policy 010-325-065. Due to the ever-changing landscape of AI technology changes, the exact form of detection (static cameras, LiDAR, etc.) utilized for these applications should be evaluated at the time of design/construction.

7.10 Landscape

For most of this study area, landscape buffers for commercial or residential uses are not a major consideration; however, certain interchanges and features create ample opportunities to enhance the traveler's experience. At Yeehaw Junction the size of the proposed pond area is significant and offers the potential of desired views. There is an opportunity to provide unique landscape features at this interchange that should be further explored during design, especially to obstruct the view of existing maintenance buildings.

A detailed review of plant health is suggested for the Fort Drum service plaza, especially at the ingresses and egresses.

The new plantings at the AET gantry are anticipated to be impacted by the project and are recommended to be replaced consistent with the Landscape Program Master Plan. No impacts to landscaping at the Fort Drum Service Plaza is anticipated.

Additionally, the proposed ponds need to be sized slightly larger to have a sufficient footprint to incorporate landscaping and room for maintenance. The landscape setback criteria posted on the Turnpike website need to be followed to incorporate landscaping.

7.11 Lighting

A lighting analysis and design will be performed for the SR 60 interchange during the final design for this project. No additional lighting is planned for the SR 91 mainline due to the majority of crashes occurring during the daytime. However, existing roadway lighting should be analyzed during the final design phase to verify whether the illumination levels meet FDM lighting criteria.

7.12 Wildlife Crossing

A Wildlife Crossing System Technical Memorandum was prepared for this project to address potential wildlife crossings and wildlife-friendly designs that can be incorporated along the FTE mainline within the project limits. The goal of these recommendations is to create a comprehensive wildlife crossing system that protects motorists and wildlife while facilitating key wildlife movements across the FTE corridor.

This portion of the project crosses the Florida Wildlife Corridor and the neighboring conservation lands link with the larger conservation land system in the region, including Kissimmee Prairie Preserve State Park, the Deluca Preserve, the Kissimmee-St. Johns River Connector Area, and the Blue Cypress Conservation Area. The project is outside the USFWS Panther Consultation Area; however, telemetry data and documented mortality demonstrate that panthers and black bears occur in the area and have been struck by vehicles along the project corridor, representing both a hazard to motorists and to high-value wildlife species. A panther and a bear were both struck by vehicles in separate incidents where FTE bridges Jim Green Creek, immediately south of the Fort Drum Service Plaza (MP 185). A cluster of bear nuisance calls is also documented just south of this area. These occurrences coincide with the Florida Wildlife Corridor and are near conservation lands. The portion of the project corridor north of (MP 176), from the Fort Drum Marsh WMA to Yeehaw Junction, has the greatest conservation need for a wildlife crossing system. This area crosses the Florida Wildlife Corridor, links conservation lands, and shows documented occurrences and vehicle strikes of protected species. However, the southern portion of the project borders or is near undeveloped land that also supports wildlife. Deer, wild hogs, alligators, and other wildlife have been observed throughout the project corridor and a wildlife crossing system established here will reduce the potential for wildlife-vehicle strikes.

Opportunities exist along the project corridor to establish a wildlife crossing system that will protect motorists and wildlife. All existing bridges along the project corridor will require replacement and offer opportunities to incorporate wildlife-friendly designs and fencing to also serve as wildlife crossings. New culverts can similarly be made to serve as wildlife crossing st/ructures. Priority for a wildlife crossing system should be given to

areas of the project corridor that overlap the Florida Wildlife Corridor and link conservation lands. Additional upland wildlife culverts are also proposed and will be considered primary wildlife crossings.

Stand-alone wildlife underpasses are not recommended; however, culverts are recommended in uplands for wildlife where there are no other nearby primary wildlife crossings. There are a total of 26 proposed upland culverts.

Fencing is recommended throughout the project to enhance safety by preventing wildlife from entering the roadway. There is a heightened need for fencing in the northern portion of the project due to the presence of the Florida Wildlife Corridor, conservation lands, and records of wildlife occurrence (bears and panthers). Fencing should be at least ten feet high and will require gates for access.

There are 14 drainage culverts that will be replaced by the project, and each is recommended for wildlife friendly design so they may act as primary wildlife crossings. This will generally involve providing a shelf for wildlife to traverse and/or upsizing each culvert (without raising the roadway profile). The wildlife shelves will ideally be above seasonal high water and should maximize vertical clearance to promote use by larger wildlife. Additional data on water levels will be necessary during design to determine the best placement of wildlife shelves and sizing of culverts. Some existing culverts, particularly in the southern half of the project, connect large canals and exhibit relatively stable and high-water levels. The high water leaves little clearance for wildlife and makes these culverts less suitable as wildlife crossings. Six culverts in the northern half of the project are higher priority candidates for primary wildlife crossing structures because they have greater vertical clearance above water and occur in an area near conservation lands and the Florida Wildlife Corridor.

Seven bridges along the project are recommended as primary wildlife crossing structures, primarily by providing a wildlife shelf beneath each bridge. No bridges will require lengthening or raising because of wildlife crossing needs. **Table 7-1** provides a high-level cost estimate of implementation of a Wildlife Crossing System throughout the project corridor. More detailed information on the recommendations for bridges and

culverts is presented in Section 7.16.5 and in the Wildlife Crossing System Technical Memorandum prepared for this study.

Table 7-1 - Approximate Costs of Wildlife Crossing System

Wildlife Crossing System Element	Cost*
Wildlife Fencing (less cost of traditional ROW fencing	$8.82 mil
14 Drainage Culvert Modifications	$1.2 mil
26 Upland Culverts for Wildlife	$350,000
7 Bridge Modifications (shelf for wildlife)	$140,000
Total for Wildlife Crossing System	**$10.51 Million**
Percent of Total Project Cost ($1.84 billion)	0.6 % of Total Project Cost

* All costs are approximations and high-level estimates

Specific wildlife crossing systems (type, size, location) should be determined in coordination with FTE, USFWS and FWC. According to the FDOT Wildlife Crossing Guidelines (2023), wildlife crossings cannot compromise any safety criteria or FDOT design requirements. The wildlife crossing cannot negatively impact neighboring properties and must maintain ingress/egress and drainage. A system of barrier fencing/walls/embankments is typically required to increase utilization of wildlife crossings and materials and components associated with the crossings must be accessible for maintenance. Maintenance considerations include vegetation management to ensure crossing structures are clear and accessible to wildlife, providing access gates, maintaining and repairing fencing, and cleaning/maintaining wildlife structures as needed (e.g. culverts, cattle-guards, signage, etc.).

7.13 Permits

The study area lies within the jurisdiction of the SFWMD and the SJRWMD. It is anticipated that the project will require the following permits and approvals:

- ACOE – S404 Permit
- USFWS – Technical Assistance
- SFWMD – Individual Environmental Resource Permit

- SFWMD – Right-of-Way Occupancy Permit
- SJRWMD – Individual Environmental Resource Permit
- FDEP – National Pollutant Discharge Elimination System
- FWC – Gopher Tortoise Relocation Permit
- FWC – Potentiel Incidental Take Permit
- NSLRWCD- Use pre-versus post discharge criteria : Permits required
    - Drainage Connection Permit
    - Culvert Replacement Permit
- The project is not subject to the new rule, which takes into consideration nutrient loading when considering stormwater management facilities, that began in June 2024. When the application is made to the District, Section 3.1.2 of the Applicant Handbook Volume-1 details the grandfathering criteria that need to be followed. Therefore, the project will be subject to Appendix E of the prior Volume-II, which addresses impaired water, TMDL, BMAP, water quality, and quantity rules.

7.14 Drainage and Stormwater Management Facilities

7.14.1 Stormwater

A Pond Siting Report (PSR) was prepared as part of this study and is available for more information. Although water quality treatment is only required for new impervious area, this study conservatively estimated the volume required to provide treatment of the total impervious area to size the pond. This conservative estimate can offset potential increases in pond sizes in final design due to current unknowns such as geotechnical findings and survey. Attenuation will be provided for both existing and new impervious areas. It is anticipated that the final design will use a less conservative approach based on survey, geotechnical, proposed typical and hydraulics.

Two stormwater management facility (SMF) alternatives were identified for each basin between MP) 152 and MP 193. Alternative-1 utilizes a linear swale treatment within the

ROW, and Alternative-2 utilizes offsite treatment ponds. The existing borrow ditch can be converted into a treatment facility (wet detention or dry retention-based on ground water elevations) provided the borrow ditch is not collecting offsite runoff (closed -off-ditch) and not connected to existing cross drains. In areas with conservation land on both sides of the roadway, hardship can be claimed, and both roadside linear treatment swale and existing borrow ditches can be used for treatment and attenuation. Further evaluation should be done to use the existing borrow ditch as a stormwater management facility.

Roadside Linear Treatment Swales (Alternative-1): Based on the existing as-built plans Soil Profile the existing groundwater along the roadway is on average 6 ft below the pavement surface therefore, the shallow swale will be at least 1 ft above the existing groundwater elevation. The treatment swales are to outfall into the existing roadside ditches (borrow ditch) through control structures. The existing borrow ditches will be partially filled upon construction of the dry retention roadside swales. Minimal storage loss is expected in the borrow ditch, since some of the roadway runoff will be intercepted in the proposed dry retention swales. Based on the existing as-built plans, the existing roadside ditches are within the Turnpike ROW. This needs to be verified during design. The median runoff will be collected in a series of inlets and discharges into the proposed dry detention swale if elevation permits, otherwise it will discharge into the borrow ditch. Median drainage is for conveyance only. The Turnpike drainage ditch should be kept separate from the adjacent agricultural ditch to prevent agricultural runoff from mixing with Turnpike runoff.

Offsite Ponds (Alternative 2): Given the seasonal high groundwater table (SHGWT) throughout the project corridor, wet detention ponds are recommended. The project runoff will be conveyed by roadside borrow ditch to a proposed wet detention pond adjacent to the project. The pond will be designed to detain the required attenuation volume, and treatment volume, along with additional volume if discharging into Impaired Water Bodies. The FTE Maintenance Department prefers to move proposed offsite ponds closer to the ROW and reroute the existing agricultural canals around the pond. The rerouted agricultural canal will be handed back to the property owners for

them to maintain. When there is no opportunity to place an offsite pond due to a major canal running on both sides of the roadway, an offsite pond is not a viable solution. Additionally, when both sides of the roadway are constrained with conservation land or other environmentally sensitive features, offsite ponds are not feasible and roadside linear treatment swales are the only viable option. Swale treatment will then be the preferred alternative. Compensatory treatment/attenuation is also a viable solution for these areas. Infield ponds are recommended for the SR 60 Interchange.

An additional 25% of water quality treatment volume was added to Basins 8 and 9 to account for pollutant loading. Both basins are located within nutrient impaired water bodies (WBID 3163 and WBID 3163B).

Forty-two offsites ponds were evaluated for this project. The pond sites were evaluated based on several factors, including, right of way cost, impact to existing agricultural canal, FEMA flood zone, wetland impact, maintenance issue, habitat, contamination and environmental impact, as well as ease of hydraulic connectivity to the pond sites. The preferred ponds sites were selected, when the basins did not have sufficient area to provide roadside swale treatment. It is Turnpike's preference to avoid pond locations within wetland, floodplain, listed species, and contaminated sites.

Roadside treatment swales are the most feasible alternatives. Maintenance will be needed for roadside treatment swales, however, the maintenance cost long term is minimal compared to acquiring an offsite pond and associated hydraulic connections. The existing borrow ditch can be utilized as a potential treatment facility provided further evaluations such as survey, geotechnical, WMD coordination permitting, and field review are conducted during design to determine the suitability of the existing borrow ditch. The borrow ditch treatment facility should not impact offsite discharge from existing agricultural ditch. Maintainability of the treatment swales should be taken into consideration during design. During the design phase the linear swale alternatives should utilize the existing borrow ditch. Double ditch should not be used where possible, provided this approach does not impact offsite runoff. **Table 7-2** summarizes the recommended SWF anticipated ROW requirements for all offsite ponds within the project. See **Appendix F** for proposed drainage maps.

Table 7-2: Preferred Stormwater Management Facility (SMF) Alternatives and Anticipated ROW Requirement

Basin	Basin Area (ac)	Required Water Quality for Swale Treatment (ac-ft)	Provided Water Quality Swale Treatment (ac-ft)	Required Water Quality Offsite Pond(ac-ft)	Provided Water Quality Offsite Pond (ac-ft)	Required Offsite Pond (ac)	Preferred SMF	Required ROW (ac)
1	8.01	0.57	0.46	0.76	0.76	1.58	Roadside Swale	N/A
2	28.97	2.13	1.72	2.85	2.85	3.78	Roadside Swale	N/A
3	29.12	2.18	1.76	2.91	2.91	3.84	Roadside Swale	N/A
4	30.98	2.26	1.82	3.01	3.01	4.51	Roadside Swale	N/A
5	26.92	1.97	1.59	2.62	2.62	4.08	Roadside Swale	N/A
6	25.20	1.79	1.44	2.39	2.39	3.34	Roadside Swale	N/A
7	75.74	4.76	3.84	6.34	6.34	6.92	Roadside Swale	N/A
8	32.91	1.99	1.92	2.65	2.65	4.83	SMF8-1	4.83
9	74.91	4.46	4.31	5.95	5.95	9.10	SMF9-1	9.10
10	24.40	1.17	1.17	1.55	1.55	3.28	Roadside Swale	N/A
11	49.29	2.39	2.39	3.19	3.19	4.70	Roadside Swale	N/A
12	38.25	1.85	1.85	2.47	2.47	3.89	Roadside Swale	N/A
13	22.24	1.08	1.08	1.44	1.44	2.66	Roadside Swale	N/A
14	86.18	4.18	4.18	5.58	5.58	7.22	Roadside Swale	N/A
15	49.25	2.39	2.39	3.18	3.18	4.69	Roadside Swale	N/A
16	69.69	3.45	3.45	4.60	4.60	6.20	Roadside Swale	N/A
17	63.34	4.00	4.00	5.34	5.34	Conservation Easement	Roadside Swale	N/A
18	36.83	2.22	2.22	2.97	2.97	6.07	Roadside Swale	N/A
19*	36.73	2.22	2.22	2.97	2.97	317.38	Roadside Swale	N/A
20*	35.25	2.13	2.13	2.85	2.85	305.10	Roadside Swale	N/A
21*	48.05	2.86	2.86	3.81	3.81	404.65	Roadside Swale	N/A
22	56.69	2.51	2.51	3.35	3.35	6.67	Roadside Swale	N/A
23	46.36	2.40	2.40	3.20	3.20	5.58	Roadside Swale	N/A
24	16.90	0.85	0.85	1.13	1.13	2.99	Roadside Swale	N/A
25	45.57	2.18	2.18	2.90	2.90	5.97	Roadside Swale	N/A
26	40.64	1.75	1.75	2.33	2.33	1.48	Roadside Swale	N/A

Table 7-2: Preferred Stormwater Management Facility (SMF) Alternatives and Anticipated ROW Requirement

Basin	Basin Area (ac)	Required Water Quality for Swale Treatment (ac-ft)	Provided Water Quality Swale Treatment (ac-ft)	Required Water Quality Offsite Pond(ac-ft)	Provided Water Quality Offsite Pond (ac-ft)	Required Offsite Pond (ac)	Preferred SMF	Required ROW (ac)
27	49.11	2.25	2.25	3.00	3.00	1.72	Roadside Swale	N/A
28	43.35	2.31	2.31	3.08	3.08	5.42	Roadside Swale	N/A
29	16.25	0.90	0.90	1.20	1.20	2.74	Roadside Swale	N/A
30	33.18	1.76	1.76	2.35	2.35	4.11	Roadside Swale	N/A
31	31.46	1.53	1.53	2.04	2.04	3.72 ac	Roadside Swale	N/A
32	54.03	2.60	2.60	3.47	3.47	Conservation Land	Roadside Swale	N/A
33	19.47	0.95	0.95	1.26	1.26	Conservation Land	Roadside Swale	N/A
34	58.95	2.82	2.82	3.75	3.75	Conservation Land	Roadside Swale	N/A
35	21.99	1.11	1.11	1.48	1.48	Conservation Land	Roadside Swale	N/A
36	13.87	0.67	0.67	0.90	0.90	2.26	Roadside Swale	N/A
37	14.45	0.70	0.70	0.93	0.93	Conservation Land	Roadside Swale	N/A
38	23.48	1.28	1.28	1.71	1.71	Conservation Land	Roadside Swale	N/A
39	25.05	1.51	1.51	2.01	2.01	Conservation Land	Roadside Swale	N/A
40	36.71	1.78	1.78	2.38	2.38	Conservation Land	Roadside Swale	N/A
41	27.35	1.32	1.32	1.76	1.76	Conservation Land	Roadside Swale	N/A
42	14.86	0.72	0.72	0.96	0.96	Conservation Land	Roadside Swale	N/A
43	54.93	2.58	2.58	3.44	3.44	5.89	Roadside Swale	N/A
44	12.29	0.58	0.58	0.77	0.77	2.05	Roadside Swale	N/A
45	22.73	1.10	1.10	1.46	1.46	1.73	Roadside Swale	N/A
46	36.07	1.75	1.75	2.33	2.33	2.32	Roadside Swale	N/A
47	27.61	1.33	1.33	1.78	1.78	1.95	Roadside Swale	N/A
48	23.88	1.16	1.16	1.54	1.54	3.26	Roadside Swale	N/A
49	43.93	2.13	2.13	2.83	2.83	5.08	Roadside Swale	N/A
50	29.54	1.44	1.44	1.92	1.92	Conservation Land	Roadside Swale	N/A
51	32.40	1.55	1.55	2.07	2.07	Conservation Land	Roadside Swale	N/A
52	81.03	3.75	3.14	5.00	5.00	4.24	SMF 52-1 & SMF 52-2	Infield Ponds

Table 7-2: Preferred Stormwater Management Facility (SMF) Alternatives and Anticipated ROW Requirement

Basin	Basin Area (ac)	Required Water Quality for Swale Treatment (ac-ft)	Provided Water Quality Swale Treatment (ac-ft)	Required Water Quality Offsite Pond(ac-ft)	Provided Water Quality Offsite Pond (ac-ft)	Required Offsite Pond (ac)	Preferred SMF	Required ROW (ac)
53*	21.55	1.02	1.02	1.36	1.36	150.24	Roadside Swale	N/A
54*	30.82	1.45	1.45	1.93	1.93	210.00	Roadside Swale	N/A

*The pond area highlighted in green indicates that the depth to the groundwater elevation is almost 0 ft, and water is at the ground surface. This situation is not suitable for constructing a pond, which will require significantly large pond areas, which are not feasible.

During the design phase it is recommended that some, or all, of the following be evaluated to potentially reduce the size of the proposed ponds once additional survey, geotechnical evaluations, and roadway design are available:

1. SMF sized to treat only net new impervious areas.
2. Use the existing borrow ditch as a stormwater management facility. A survey, geotechnical investigation, coordination with the WMD, and field review will be necessary to determine if a borrow ditch is suitable to be converted into a treatment facility.
3. It is Turnpike's preference to avoid impacting, wetlands, floodplain, contaminated sites, and listed species when selecting the pond sites.
4. Use compensatory treatment - three major drainage basins are presented in the project corridor: Upper St. Johns in the north, Indian River Lagoon, C25- in the middle, and St Lucie-Loxahatchee in the south. Compensatory treatment is conditional and should be provided within the same receiving basin. For example, dry swale to treat the existing pavement to compensate for the new pavement in the areas where dry swale is not feasible.
5. Use alternative methods of treatment and attenuation found during the Environmental Look Around (ELA) process. Grove Land Reservoir and stormwater area is an ELA opportunity identified by SJRWMD & SFWMD (see Appendix G)
6. From the beginning of the project to station 2000+00, the Turnpike runs parallel to and borders Florida Gas and Transmission (FGT) until the gas line veers off

eastward along Rock Road. Stormwater management designs that are acceptable with FGT, should be considered during design.

7. FPL transmission lines that run along the project corridor. Pond sites located within the FPL easements should be coordinated during design.
8. The use of pond liners should be further analyzed in the design phase with adequate geotechnical investigations in order to accurately determine the effectiveness to reduce the zone of influence.

7.14.2 Cross Drains / Culverts

The proposed widening of SR 91 will require extension of most existing cross drains along the mainline. Three culverts were placed out of service to accommodate a proposed reservoir adjacent to the project. The proposed improvements of each culvert is shown in **Table 7-3**. A culvert inspection assessment was performed to analyze the condition of the existing culverts within the project limits and can be found in the Bridge Analysis Report. These culvert extensions should be analyzed further during the design phase to ensure the extension or replacement does not result in significant changes to the headwater elevations.

Table 7-3: Proposed Culvert Modifications

Approx. Mile Post	Approx. STA	Turnpike Structure Number	Cross Culvert Size	Number of Barrels	Existing Length (ft)	Approx. Proposed extension or replacement (ft)	Proposed improvement or modification
154.9	2053+00	94Q009	12'x6'	1	175	77	Extension
155.5	2087+00	94Q010	12'x5'	1	182	30	Extension
156.1	2116+50	94Q011	10'x5'	1	160	18	Extension
160.1	2330+80	94Q012	12'x6'	1	181	3	Extension
160.6	2357+00	94Q013	12'x13'	1	110	N/A	Placed out of service
161.6	2411+00	94Q014	6'x5'	1	153	N/A	Placed out of service
162.4	2452+50	94Q015	9'x5'	1	174	N/A	Placed out of service
162.9	2476+70	94Q016	9'x9'	1	184	0	Extension
162.9	2477+50	94Q017	12'x13'	1	109	76	Extension
164.7	2570+80	94Q018	12'x6'	1	151	34	Extension
165.7	2624+50	94Q019	10'x10'	1	164	20	Extension
168.9	2792+00	94Q020	54"	1	164	21	Extension

Table 7-3: Proposed Culvert Modifications

Approx. Mile Post	Approx. STA	Turnpike Structure Number	Cross Culvert Size	Number of Barrels	Existing Length (ft)	Approx. Proposed extension or replacement (ft)	Proposed improvement or modification
169.8	2842+10	94Q021	10'x5'	1	147	37	Extension
170.8	2892+10	94Q022	12'x5'	1	149	35	Extension
171.8	2940+10	94Q023	12'x5'	1	152	32	Extension
172.9	3004+30	94Q024	12'x5'	1	144	41	Extension
174	3060+70	88Q001	10'x10'	1	117	67	Extension
175	3114+70	88Q002	10'x10'	2	118	67	Extension
176.4	3182+70	88Q003	10'x10'	1	118	67	Extension
177.1	3222+10	88Q004	10'x10'	1	118	67	Extension
179	3324+50	88Q005	12'x13'	1	109	76	Extension
183.5	3562+70	91Q003	4'x4'	1	148	37	Extension
183.9	3586+70	91Q004	4'x4'	1	149	36	Extension
184.3	3601+80	91Q001	12'x13.5'	1	111	74	Extension
185.7	3674+80	91Q002	6'x4'	1	149	38	Extension
188.6	3831+80	88Q007	12'x13'	1	107	76	Extension
190.4	3925+80	88Q008	10'x10'	1	109	76	Extension

7.15 Floodplain Analysis

The Project traverses several Special Flood Hazard Areas (SFHA) boundary areas identified as Zone "A", all within SJRWMD jurisdiction. Floodplain impacts are expected to be minimal with the proposed construction to occur on existing embankment. Most offsite stormwater ponds are expected to be constructed outside and adjacent to the flood prone areas, except for ponds SMF23-1, SMF-24-1, SMF 25-1, and SMF27-1 which need to be located within the floodplain. Where feasible, the ponds will need to be placed strategically to avoid adverse environmental impacts. Impact and compensation will need to be assessed based on the "de minimis" principles when compensation is too trivial or minor to merit compensation in areas of single ownership and/ or in large floodplains.

Most floodplain maps, in general, were developed as part of the National Flood Insurance Program (NFIP) and based on U.S. Geological Survey quadrangle maps with 5- or 10-foot contour intervals. Zone A areas could therefore be at a much lower risk of

flooding or higher and may justify amending the maps with a Letter of Map Amendment (LOMA) through FEMA in the design Phase of the project.

To approximate potential impacts and associated compensation in the PD&E phase, lidar data was used to create 1.0 ft contours to approximate the Base Flood Elevation (BFE). This is in accordance with the procedures outlined in the FEMA "Guide to Approximate Zone A areas," using the contour interpolation method. An estimated average BFE elevation of 26.0 ft. appeared to be consistent with Zone "A" flood prone areas as depicted on the relevant FEMA panels. The average SHGWT was estimated to be 2-3 ft. below the BFE in the SJRWMD region of the project. The roadway elevations at the locations showing roadways within FEMAs floodplain are 35-ft. Therefore, we assumed that the proposed roadway widening will not impact the floodplain. Stormwater ponds SMF23-1, SMF-24-1, SMF 25-1 and SMF27-1 are located in Flood prone zone "A". Total estimated impacts resulting from construction of the maintenance berms are +/- 22.7 ac-ft. Compensation for the impacts can be partially provided in the referenced ponds and in two regional floodplain compensation areas FPC1A and FPC1B of +/- 6 ac each. The proposed regional floodplain compensation ponds are next to existing floodplains. Since the entire floodplain is contiguous, FPC1A and FPC1B can compensate for the ponds that are located in a floodplain. The Floodplain Compensation (FPC) areas are tentatively sized for the total impacts. **Table 7-4** list the approximate floodplain impacts along the project.

Table 7-4: Floodplain Impact Analysis

Basin	Pond	Floodplain	WMD	Est. Impact	Pond Length	Pond Width	Est. Maint. Access Drive Length	Est. Floodplain Impacts
22	SMF22-1	N/A						
23	SMF23-1	Zone "A"	SJRWMD	121.50 sf	747.0 ft	186.7 ft	50.00 ft	5.3 ac-ft
24	SMF24-1	Zone "A"	SJRWMD	176.00 sf	487.0 ft	121.7 ft	50.00 ft	5.1 ac-ft
25	SMF25-1	Zone "A"	SJRWMD	121.50 sf	1348.0 ft	337.0 ft	50.00 ft	9.5 ac-ft
26	SMF21-1	Zone "A"	SJRWMD	74.00 sf	317.1 ft	79.3 ft	50.00 ft	1.4 ac-ft
27	SMF28-1	Zone "A"	SJRWMD					
28	SMF29-1	Zone "A"	SJRWMD					
29	SMF30-1	Zone "A"	SJRWMD					
30	SMF31-1	Zone "A"	SJRWMD					
31	N/A	N/A						

Floodplain compensation - Floodplain compensation will be provided in FPC (Floodplain Compensation) areas that are hydraulically connected and adjacent to the floodplain. The average effective depth of these areas, measured from the BFE to the local SHW is estimated at 2ft (sloping terrain). Assuming 2 sites, the required size of the areas, excluding creation within the stormwater ponds is therefore estimated at (+/- 22.7ac-ft/2ft depth/2 sites +/- 6ac) acres sites each.

The floodplain areas within the project limits are mainly wetlands, rural residential, cropland and pastureland, mixed forests, and marshes. The floodplain encroachment resulting from the proposed improvements is classified as minimal. The impact on human life, transportation facilities, and natural floodplain values are not significant and will require minimal effort to resolve encroachment. To not significantly affect any flood elevations or limits, the FDOT's drainage design standards and water management districts procedures will be utilized throughout the project's lifespan. A preliminary hydraulic analysis was conducted on the cross drains and it was determined that any extensions or replacement of the cross drains with hydraulically equivalent structures showed no impact of these changes on headwaters. The proposed structures will perform hydraulically in a manner equal to or greater than the existing structure, and backwater surface elevations are not expected to increase. Thus, there will be no significant adverse impacts on natural and beneficial floodplain values. There will be no significant change in flood risk, and there will not be a significant change in the potential for interruption or termination of emergency service or emergency evacuation routes. Therefore, it has been determined that this encroachment is not significant.

7.16 Bridge and Structure Analysis

The widening or reconstruction of the existing bridge structures are recommended to improve existing vertical clearance, accommodate future plans, meet current design criteria, and address other outstanding issues. A summary of recommended improvements is included below and summarized in **Table 7-5** and depicted in Appendix E.

Table 7-5: Proposed Bridge Improvements

Location	Bridge Number	Roadway	Proposed Improvement	Cost of Improvement
3	940055	Picos Road	Replacement	$2,712,867
4	940056	Orange Ave	Replacement	$2,248,972
5	940057/940073	SR-91 over Angle Road	Replacement	$14,761,594
6	940058/940083	SR-91 over L-20 Canal	Replacement	$8,877,209
7	940059	Minute Maid Road	Replacement	$3,348,028
8	940060	Radebaugh Road	Replacement	$3,121,472
9	880057/880065	SR-91	Replacement	$6,305,763
10	880058/880066	SR-91	Replacement	$8,757,250
11	880059/880067	SR-91	Replacement	$3,804,256
13	910056/910058	SR-91	Replacement	$13,635,558
14	910059/910060	SR-91	Replacement	$7,296,531
15	910062/910064	SR-91	Replacement	$3,804,256
12	880060/880068	SR-91	Replacement	$6,305,763
16	920055/920124	SR-91	Replacement	$5,118,607
17	920056/920125	SR-91	Replacement	$5,987,775
18	920200	SR-60	Widening	$1,419,984
19	TBD	Osowou Road	Replacement	$1,641,229
BC1	940064	SR-91	Replacement	$1,450,262
BC2	940110	SR-91	Replacement	$1,548,358
BC3	940065	SR-91	Replacement	$1,346,399
BC4	940066	SR-91	Replacement	$1,424,492

7.16.1 AASHTO / Proposed FIB Bridges

There are 8 bridges with AASHTO prestressed concrete beams within the scope of this project that are recommended for replacement and one that is recommended for widening.

At the SR 60 interchange, the existing bridge that currently carries the SR 60 Ramp over SR 91 (920057) is to be removed as the ramp has been redesigned. The SR 60 bridges over SR 91 (WB 920199 and EB 920200) are to remain. The SR 60 Westbound bridge, 920199, will receive no improvements. The SR 60 Eastbound bridge, 920200, will be widened to accommodate an additional lane. This bridge will be widened on the North side so as to not interfere with vertical clearance over SR 91.

The four overpass locations, excluding SR 60, will be replaced to accommodate the widening of the Turnpike. Due to substandard shoulder widths, as well as the future 8 lane condition, the existing pier or support placement must be changed. These criteria are such that they necessitate a full replacement of these bridges and thus widening is not considered an option to analyze.

At Minute Maid Road and Radebaugh Avenue, canal horizontal clearance was considered when locating piers. Cost estimates will include an extra 20% for phase construction and an extra 3% for construction over canals.

To help with the determination of replacement or widening, a point system with the following categories will be used. These categories are Geometry, Cost, Maintenance, Canal, and Load Rating. In terms of geometry, the existing bridges are now substandard in many aspects. The slabs are 7 ¼", below the standard 8 ½" deck size. The vertical clearances below the bridges at Angle Road and at L-20 Canal are 15'-9" and 15' – 3" respectively, below the required 16' – 6". The widening option can use a thicker slab and newer barriers but will lower the vertical clearance even further. A Life Cycle Cost Analysis shows that the cost of widening compared to replacement are somewhat similar, with replacement being less expensive when considering that these bridges will require replacement in the near future. These bridges require more maintenance than a new bridge would, meaning an increased maintenance cost for the remainder of its lifetime. Although canal bridges meet existing criteria, existing piers are located in the

center which is not desirable for debris. A replacement could relocate them completely, creating the necessary clearances within the canals. Lastly, in terms of the load rating, the existing bridges were designed with a design load HS20-S-16, which is lower than current standards. As shown in **Table 7-6**, all AASHTO bridges are recommended for replacement, except for the SR 60 eastbound bridge over SR 91.

Table 7-6: AASHTO Bridges Structural Analysis

	Weight	Widening	Replacement	Widening	Replacement
Geometry	20%	3	5	0.60	1.0
Cost	40%	4	5	1.60	2.0
Maintenance	30%	3	5	0.90	1.5
Canal Improvements	5%	2	4	0.10	0.2
Load Rating Values	5%	4	5	0.20	0.3
	100%			**3.4**	**4.95**

7.16.2 Sonovoid / Prestressed Slab Units / Proposed FSB Bridges

There are seven pairs of mainline concrete sonovoid and slab unit bridges carrying the Turnpike over various canals, creeks, and farm access roads. They were all built between 1962 and 1964 and widened or repaired in 1990. These bridges are over 60 years old, close to their design life and nearing time to be replaced. A cost analysis was performed to determine if these bridges should be widened or replaced. The cost analysis considered 5 different categories and scored each category from 1 to 5. In terms of geometry, due to their age, these bridges are substandard in many aspects, particularly with the barrier walls and shoulder widths. When considering the cost of widening, the analysis not only considered widening but also a full replacement in a near future due to the age of the bridges. It was determined that widening would be only slightly less expensive than replacement. If the bridges are maintained, existing and future maintenance issues will continue to recur, incurring significant costs. Although the existing bridges meet criteria for vertical clearance over the canal seasonal and design high water levels, replacement bridges could relocate the piers and create more clearance within the canals using larger spans. Lastly, in terms of the load rating, the existing bridges were designed with a design load HS20-S-16, which is lower than current standards. As shown in **Table 7-7**, all sonovoid bridges are recommended for replacement.

Table 7-7: Sonovoid Bridge Structural Analysis

	Weight	Widening	Replacement	Widening	Replacement
Geometry	20%	3	5	0.60	1.0
Cost	40%	4	4	1.60	1.6
Maintenance	30%	1	4	0.30	1.2
Canal Improvements	5%	4	5	0.20	0.3
Load Rating Values	5%	3	5	0.15	0.3
	100%			**2.85**	**4.3**

It should be noted that there has been a recurring sedimentation issue between and underneath the Turnpike Mainline bridges at MP 178 (Bridges 880066 and 880058). The waterway alignment in the vicinity of the bridges (i.e. zig-zag) appears to be a contributing factor. Excessive amounts of sedimentation are deposited below and in between the bridges which requires continual excavation and clearing over time to ensure proper function of the waterway and to avoid potential erosion at the bridge abutments. A similar silt/sedimentation issue is occurring at MP 163 Culvert 94Q016 (9' by 9' Box Culvert). It is recommended that a hydraulic analysis be performed during final design to determine the appropriate course of action and implement a solution which will mitigate the occurrence of excessive sedimentation at these locations in the future.

An analysis should also be performed during final design to determine the potential impacts to the vertical profile of the Turnpike when providing longer spans in order to improve canal horizontal clearances.

7.16.3 Bridge Culverts

The existing bridge culverts have a very high health index, except 940066, which has a health index of 71.85. They also have load ratings above the minimum recommended inventory rating of 36 tons and high sufficiency ratings. Because of this, it is recommended to widen these bridges, as that will be more cost effective than a full replacement.

7.16.4 Box Culverts

After considering costs, environmental impacts, Maintenance of Traffic, and the condition of the existing culverts, it was determined that full reconstruction was not

necessary. Instead, the preferred approach will be to extend the culverts where needed and repair the existing structures. These culverts should be reassessed during final design. See Section 7.14.2 for more information.

7.16.5 Wildlife Crossings

All bridges in the project corridor will require replacement and were assessed for opportunities to also function as primary wildlife crossings. Those bridges are listed in **Table 7-8**. All of the bridges provide sufficient horizontal clearance (greater than 10 feet) for all wildlife species. Seasonal high-water levels should be further identified during design so that they can inform the precise elevation of wildlife shelves beneath bridges. These shelves should be at least 3 feet wide and ideally will have 6.5 feet of vertical clearance and be located above seasonal high water. If such vertical clearance is not achievable, a shelf for wildlife is still recommended and may be useful during dry periods or even while inundated. Shelves with less than 6.5 feet of vertical clearance may also be used by smaller wildlife even if larger wildlife like deer are inhibited by low vertical clearance. The shelves must be free of riprap and lead to pathways along bridge embankments and the surrounding landscape so that wildlife have a continuous path they can traverse. Where canals parallel the roadway and no nearby land bridges or pathways for wildlife exist, consideration should be given to constructing a wildlife bridge across the canal. Adjacent land uses and canal maintenance are important factors when considering constructing a bridge solely for wildlife.

Table 7-8:Wildlife Crossing Recommendations for Bridges

Bridge Number and Location	Approximate Milepost	In Florida Wildlife Corridor?	Conservation Lands on Both Sides?	Recommended as Primary Wildlife Crossing?	Are Bridge Modifications Recommended for Wildlife?	Notes
940055 Picos Road over FTE Mainline	155	No	No	No	No	Because Pico Road spans FTE a wildlife crossing is not recommended at this location; FDEP owns lands immediately north of Pico Road on both sides of FTE for Ag Extension and Research
940056 Orange Avenue over FTE Mainline	156	No	No	No	No	Because of surrounding residential development and Orange Ave spanning FTE a wildlife crossing is not recommended at this location
940057 & 940073 Over Angle Road and Belcher Canal	158	No	No	No	No	Belcher Canal is a likely movement corridor for wildlife. The north side of the Belcher Canal is protected from traffic and provides sufficient clearance and a wildlife path above likely MWH without additional design elements. A bat colony roosts under this bridge. Not recommended as primary wildlife crossing because of a lack of conservation lands and wildlife occurrences, and b/c no need for modifications to make this crossing more wildlife friendly.
940058 & 940083 Over L20 Canal	159	No	No	No	No	This canal is a likely wildlife movement corridor. This proposed bridge has sufficient clearance and space for a path for wildlife. A dirt road passes beneath the bridge on the north bank of the canal. Not recommended as primary wildlife crossing because of a lack of conservation lands and wildlife occurrences, and b/c no need for modifications to make this crossing more wildlife friendly.
940059 Minute Made Road Over L20 Canal and FTE Mainline	166	No	No	No	No	Because Minute Maid Rd spans FTE a wildlife crossing is not recommended at this location
940060 & 940060 Radebaugh Road Over L20 Canal and FTE Mainline	170	No	No	No	No	Because Radebaugh Rd spans FTE a wildlife crossing is not recommended at this location
880057 & 880065 Over Farm Access and Canal	175	Yes	No	Yes	No	Farm access road can act as secondary wildlife crossing. Opportunity for shelf under east side of bridges. Location near Fort Drum Marsh WMA.
880058 & 880066 Over Canal	178	Yes	No (one side)	Yes	Shelf needed	Embankment will be excavated and could likely accommodate a shelf; Full 6.5 feet vertical clearance may not be attainable; Fort Drum Marsh WMA is to the north
880059 & 880067 Over Canal	180	Yes	No (one side)	Yes	Shelf needed	Embankment will be excavated and will likely accommodate a shelf; Fort Drum Marsh WMA is to the north and a sliver to the west south of FTE, this site almost has conservation lands on both sides of FTE.
910056 & 910058 Fort Drum Creek	182	Yes	Yes	Yes	Shelf recommended	High priority site with records of bears and panthers nearby, along natural drainage with continuous habitat; excavation of embankment likely allow for easy incorporation of wildlife shelf; Records of panther and bears nearby.
Over Osowou Road	184	Yes	Yes	No	No	This bridge/culvert allows a dirt road to pass beneath the FTE mainline. It is 1,500 feet south of Jim Green Creek, where a panther and a bear were reportedly struck by vehicles. Because it is large enough to accommodate vehicles, it is large enough for all wildlife and no shelves or wildlife friendly design is needed.
910059 & 910060 Jim Green Creek	184.5	Yes	Yes	Yes	Shelf needed across current concrete block substrate	High Priority Site, Excavation of embankment likely allows for easy incorporation of wildlife shelf across concrete block substrate; Panther and bear vehicle strikes reported at this location.
910062 & 910064 Over Canal	186	Yes	Yes	Yes	Shelf Recommended	This bridge is along a natural drainage that is a likely movement corridor for wildlife. Full 6.5 ft vertical clearance may not be possible above wildlife shelf, the proposed embankment involves excavation of existing ground so a shelf could likely be incorporated.
880060 & 880068 Over Outfall Slough (Padget Branch)	190	Yes	No (one side)	Yes	Shelf on Embankment	The existing embankment will be excavated, allowing for a wildlife shelf. A panther-vehicle strike is recorded nearby on the FTE mainline.
920055 & 920124 Over Canal/Cow Log Branch	191	Yes	No (one side)	Yes	Minimal	This site is located along the Cow Log Branch and appears to have a natural shelf of land that sits above a canal channel and may not require any additional design to function as a wildlife crossing. A panther-vehicle strike is recorded nearby on the FTE mainline.
920056 & 920125 Over Creek	192	Yes	No (one side)	Yes	Yes (Shelf on Embankment)	This site is along a natural drainage and is a likely movement corridor for wildlife. A panther-vehicle strike is reported near this location.
920199 & 920200 SR 60 Over Mainline	193	Yes	No	No	No	This is a major highway interchange at Yeehaw Junction and due to the level of development and traffic it is not a candidate for a wildlife crossing.

7.17 Transportation Management Plan

A Transportation Management Plan (TMP) is required for minimizing activity-related traffic delay and crashes. The goal is to reduce congestion during construction by managing traffic through the project area. Maintenance of Traffic (MOT) construction plans are necessary in order to demonstrate the ability to properly and safely implement the proposed improvement while maintaining the facility open to traffic. The project will be able to adhere to the FDOT Design Manual and Standard Plans.

SR 91 Mainline

The conceptual construction sequencing has been divided into three different phases.

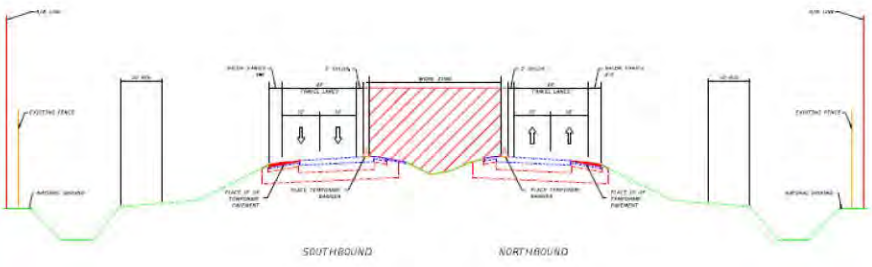
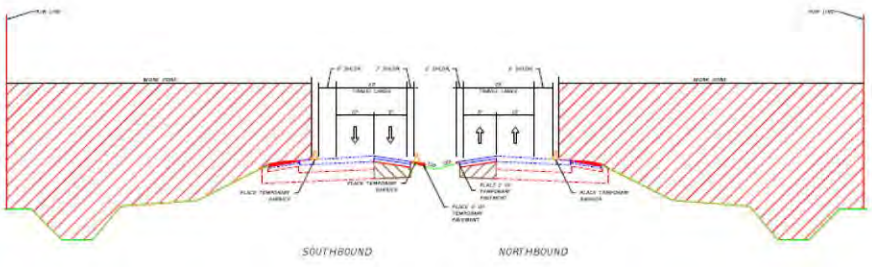
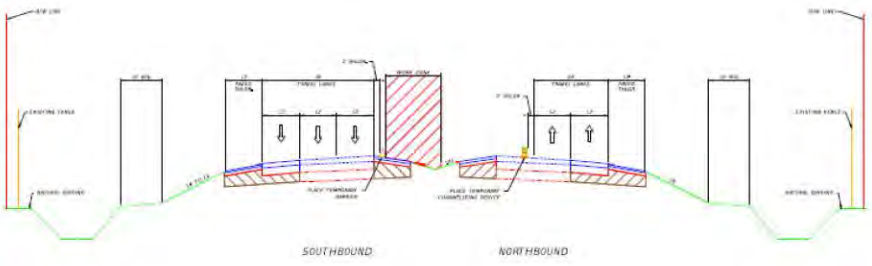
PHASE I TYPICAL SECTION		**PHASE I DETAILS** 1. CONSTRUCT TEMPORARY PAVEMENT ON EXISTING OUTSIDE SHOULDER 2. SHIFT TRAFFIC TOWARDS THE OUTSIDE OF EXISTING SECTION. 3. CONSTRUCT PROPOSED INSIDE SHOULDER RECONSTRUCTION. 4. CONSTRUCTION TEMPORARY PAVEMENT ON NEW MEDIAN AREA FOR THE NEXT PHASE. USE FDOT INDEX 102-100, 102-600, 102-602, 102-613
PHASE II TYPICAL SECTION		**PHASE II DETAILS** 1. SHIFT TRAFFIC TOWARDS THE INSIDE OF THE SECTION. 2. CONSTRUCT PROPOSED OUTSIDE WIDENING. USE FDOT INDEX 102-100, 102-600, 102-602, 102-613
PHASE III TYPICAL SECTION		**PHASE III DETAILS** 1. SHIFT NORTHBOUND TRAFFIC TO THE OUTSIDE LANES. 2. CONSTRUCT PROPOSED GUARDRAIL. USE FDOT INDEX 102-100, 102-600, 102-602, 102-613

Figure 7-4 depicts the conceptual construction sequence schemes along the SR 91 mainline for the preferred alternative. Phase 1 will shift the existing traffic slightly to the outside of the existing section to construct the proposed inside widening and drainage. Then Phase 2 will shift over the traffic towards the inside while using the newly constructed inside widening and construct the new outside lane and shoulder. Then in Phase 3 the traffic will shift over to the recently constructed outside widening to construct the median and guardrail. Once Phase 3 is completed all three traffic lanes can now be utilized.

Structures

- For construction of each overpass bridge, the bridges will be fully demolished and rebuilt in place. Two options have been evaluated to accomplish this.
    - Our first option is the use of FDOT Standard Plans 102-201 Temporary Detour Bridge Series 700. This Standard Plans provides details for a temporary prefabricated bridge that can be used for continuous traffic while constructing the proposed bridge. The use of a 36' wide Temporary ACROW bridge along the outside of the existing bridge will allow demolition and the construction of the proposed bridge in the same location as the existing.

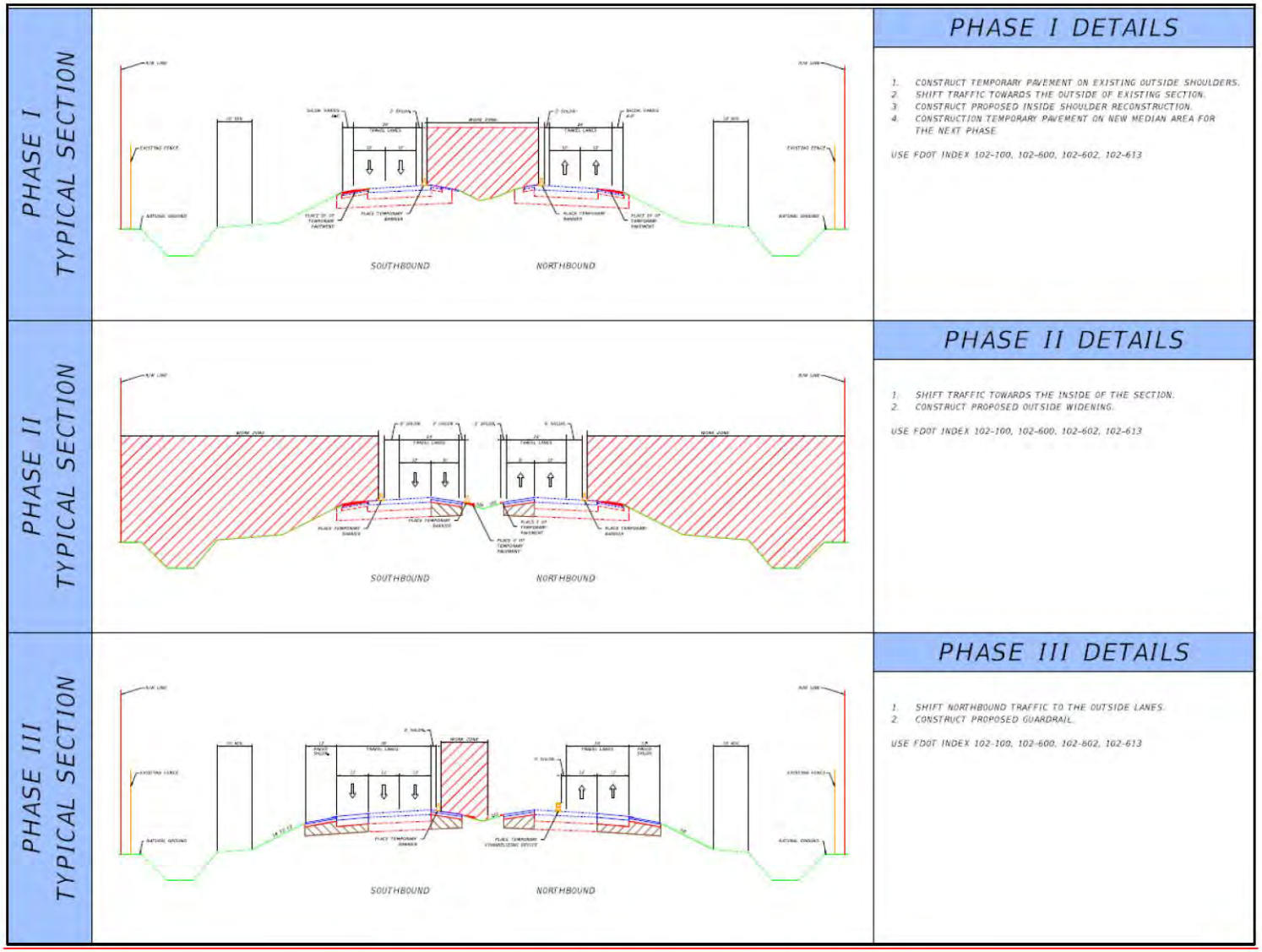


Figure 7-4 SR 91 Mainline Conceptual MOT

  - Another option evaluated is to construct a portion of the proposed bridge offset from the proposed alignment. This will minimize environmental impact and roadway alignment impact instead of building the complete proposed bridge outside the envelope of the existing. The phasing of these bridges was organized in such a way that they would be built as close as possible to their original locations.

- Replacement of sonovoid bridges carrying SR 91 mainline can be constructed in one of two ways, as described below. During final design, once more detailed information is available, each bridge location should be evaluated on a case-by-case basis to determine the most appropriate construction method based on engineering, environmental, and cost factors.

  - The first option is the use of FDOT Standard Plans 102-201 Temporary Detour Bridge Series 700. This Standard Plans provides details for a temporary prefabricated bridge that can be used for continuous traffic while constructing the proposed bridge. The use of a 36' wide Temporary ACROW bridge along the outside of the existing bridge will allow demolition and the construction of the proposed bridge in the same location as the existing.

  - A second option, which was recommended as part of the Value Engineering (VE) Study, is to partially shift the alignment as follows: In phase 1, one new bridge (either NB or SB) will be partially constructed next to the existing bridge. In phase 2, once one new bridge (either NB or SB) has been partially constructed, traffic will be shifted onto the new bridge and traffic from the opposite direction will be shifted onto the existing bridge. The opposite direction bridge will then be demolished and rebuilt in place. In Phase 3, traffic can then be shifted back to the new bridge, allowing for the final demolition of the existing bridge and the completion of the first new bridge. This will result in the permanent partial realignment of a portion of the SR 91 mainline in one direction as it transitions (approaches) each bridge.

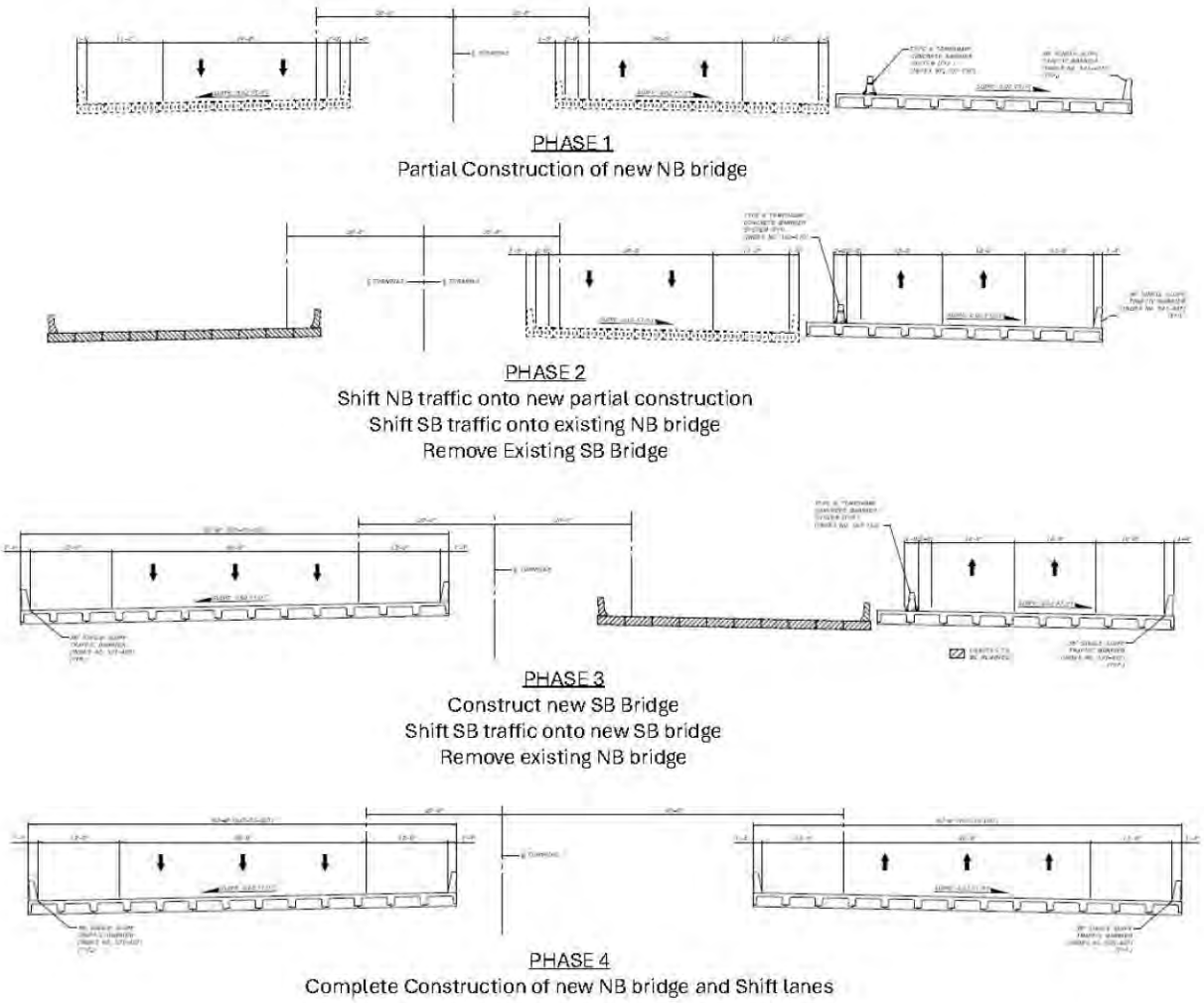


Figure 7-5 SR 91 Mainline Bridge Construction Phasing – Option 2

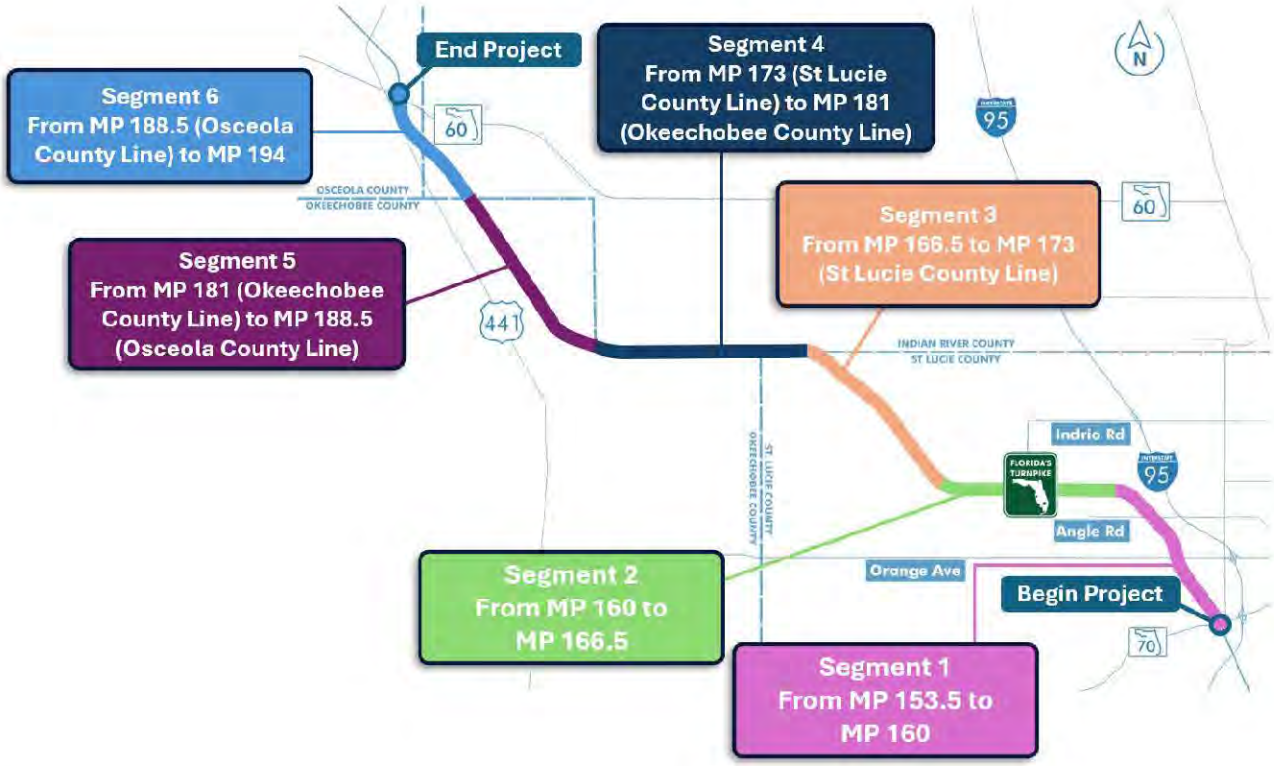
7.18 Constructability

No major constructability issues are anticipated. Due to the limited number of access points along the 42-mile corridor, U-turn access points for contractors will be evaluated as part of the TTCP. It is also recommended to coordinate with FDOT D5 and the SR 60 Widening PD&E (FPID 452574-1) to minimize throwaway and maximize efficiency regarding the improvements along SR 60.

It is recommended that the project be divided into six different construction segments as detailed in **Figure 7-6**. This segmentation uses the county and water management district boundaries to simplify permitting. It should be noted that as part of the Value

Engineering (VE) Study, construction segments divided by direction (3 in the northbound and 3 in the southbound) were recommended to be evaluated during the design phase.

Figure 7-6 Proposed Construction Segments



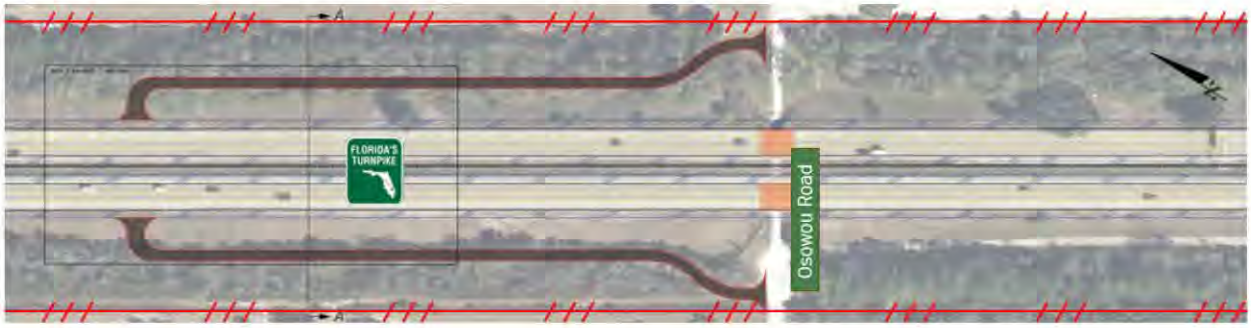
7.19 Construction Impacts

Minor impacts from construction are anticipated. Potential impacts include delays associated with maintenance of traffic activities, especially during bridge construction. This includes potential detours during construction of bridge overpasses over SR 91. No temporary construction easements are anticipated at this time. Due to the proposed TMP and construction sequences, there are no anticipated impacts associated with the construction of the preferred alternative.

7.20 Special Features

This project will include improvements at the Osowou Road emergency access including replacement of the bridge culvert in order to improve vertical clearance **(See Figure 7-7**).

Figure 7-7: Osowou Road Emergency Access Modifications



7.21 Utilities

Table 7-9 summarizes the anticipated utility impacts and associated costs. The estimated utility relocation costs are intended to serve as a rough order of magnitude (ROM) per linear foot based on assumed build impacts that would typically be identified during final design. Recent utility relocation costs provided by UAOs for similar scope-of-work were used for development of the ROM. The costs that are presented assume the relocated utilities would be placed back in the FDOT ROW by permit and do not include additional costs that would be incurred relating to acquisition of easements by UAOs for either relocation purposes and/or future operations and maintenance needs.

Table 7-9: Utility Impacts and Relocation Costs

DESCRIPTION	GENERAL LOCATION	CONFLICT LENGTH (LF)	UNIT COST ($)	TOTAL ($)
AT&T DISTRIBUTION				
(12) 4" PVC Ducts	SR-70 crossing	500	$ 300	$ 150,000
48-ct buried FOC	Picos Road crossing	500	$ 125	$ 62,500
144-ct buried FOC	Orange Avenue crossing	500	$ 130	$ 65,000
60-ct buried FOC	Orange Avenue crossing	500	$ 125	$ 62,500
600 Copper Cable	Orange Avenue crossing	500	$ 75	$ 37,500
24-ct buried FOC	W. Angle Road crossing	660	$ 120	$ 82,500
100 Copper Cable	W. Angle Road crossing	660	$ 75	$ 49,500
Buried FOC	SR-60 crossing	2500	$ 125	$ 312,500
30-ct buried FOC	Along US-441 near SR-60	800	$ 125	$ 100,000
6-ct FOC	SR-60 crossing	2500	$ 125	$ 312,500
ESTIMATED RELOCATION COST:				$ 922,000
AT&T TRANSMISSION				
High Capacity FOC w/ MH access structures	Median/inside shoulder of Turnpike mainline	184800	$ 108	$ 19,958,400
ESTIMATED RELOCATION COST:				$ 19,958,400
CENTURYLINK				
96-count FOC	Along US-441 crossing SR- 60	800	$ 125	$ 100,000
216-count FOC	Along US-441 crossing SR- 60	800	$ 130	$ 104,000
ESTIMATED RELOCATION COST:				$ 204,000
CROWN CASTLE FIBER				
Buried FOC	W. Angle Road crossing	660	$ 150	$ 99,000
Buried FOC	Along FP&L Transmission corridor crossing Turnpike north of W. Angle Road	400	$ 150	$ 60,000
Buried FOC	SR-60 crossing	2500	$ 150	$ 375,000
ESTIMATED RELOCATION COST:				$ 534,000
FLORIDA GAS TRANSMISSION				
18" Steel / Natural Gas Transmisison Pipeline	SR-70 crossing at SR-713/Kings Highway	800	$ 4,950.00	$ 3,960,000
24" Steel / Natural Gas Transmisison Pipeline	Along east ROW of Turnpike from south of SR-70 to S. Rock Road	4000	$ 6,600	$ 26,400,000
30" Steel / Natural Gas Transmisison Pipeline	Along east ROW of Turnpike from south of SR-70 to S. Rock Road	4000	$ 8,250	$ 33,000,000
ESTIMATED RELOCATION COST:				$ 63,360,000

Table 7-9: Utility Impacts and Relocation Costs

DESCRIPTION	GENERAL LOCATION	CONFLICT LENGTH (LF)	UNIT COST ($)	TOTAL ($)
FLORIDA POWER & LIGHT - DISTRIBUTION				
13kV 3-phase OE	Crossing north of SR-70	700	$ 200	$ 140,000
13kV 3-phase BE in (1) 6" PVC	Picos Road crossing	700	$ 220	$ 154,000
13kV BE	Orange Avenue crossing	500	$ 220	$ 110,000
23kV 3-phase OE	Crossing Turnpike east of Minute Maid Road	400	$ 200	$ 80,000
13kV 3-phase OE	Minute Maid Road crossing	350	$ 200	$ 70,000
13kV single phase OE	Along Turnpike ROW east of Fort Drum Service Plaza	9504	$ 200	$ 1,900,800
23kV 3-phase BE in (1) 6" HDPE & splice boxes	Along west ROW of Turnpike and into Fort Drum Service Plaza	5000	$ 220	$ 1,100,000
ESTIMATED RELOCATION COST:				$ 3,554,800
FLORIDA POWER & LIGHT - TRANSMISSION				
230kV OE	Turnpike crossing north of W. Angle Road	700	$ 1,500	$ 1,050,000
500kV OE	Turnpike crossing south/east of Fort Drum Service Plaza	1800	$ 1,500	$ 2,700,000
ESTIMATED RELOCATION COST:				$ 3,750,000
FLORIDA SOUTHEAST CONNECTION, LLC				
20" Steel / Natural Gas Transmisison Pipeline	Along US-441 crossing SR-60	800	$ 5,445	$ 4,356,000
36" Steel / Natural Gas Transmisison Pipeline	Turnpike crossing north of Fort Drum Service Plaza	300	$ 9,900	$ 2,970,000
ESTIMATED RELOCATION COST:				$ 4,356,000
FORT PIERCE UTILITY AUTHORITY				
12" PVC Potable WM	Along S. Rock Road and east along north side SR-70	100	$ 300	$ 30,000
6" DIP Sanitary Sewer FM	Along S. Rock Road and east along north side SR-70	100	$ 200	$ 20,000
8" PVC Sanitary Sewer FM	Along south side of SR-70 crossing Turnpike	400	$ 270	$ 108,000
ESTIMATED RELOCATION COST:				$ 158,000
PEACE RIVER ELECTRIC COOPERATIVE				
14.4kV OE	Along US-441 crossing SR-60	800	$ 200	$ 160,000
ESTIMATED RELOCATION COST:				$ 160,000
ST. LUCIE COUNTY UTILITIES				
12" WM	Along north side of SR-70	400	$ 180	$ 72,000
8" FM	Along south side of SR-70	400	$ 145	$ 58,000
ESTIMATED RELOCATION COST:				$ 130,000

Conflict mitigation strategies should include the following:

- Subsurface Utility Engineering (SUE) for verified vertical and horizontal (Vvh) information on existing underground utilities to confirm conflicts. Obtaining Vvh information will also help guide the final design phase and ensure that informed decisions are made where practical to reduce potential utility relocations.
- Accurate location of all aerial utility facilities to confirm conflicts with the project final design, temporary work, MOT, and constructability of project improvements.
- Consideration of final design location to maintain Occupational Safety and Health Administration (OSHA) and National Electric Safety Code (NESC) final and temporary clearance requirements from energized overhead powerlines.
- Implementation of Utility Work by Highway Contractor Agreement (UWHCA) for any necessary relocation of water and sewer facilities.
- Completion of utility relocation work prior to the start of roadway construction activities.
- Most UAOs have the capability to adjust their facilities without causing major inconvenience to their customers. Mitigation measures to minimize service disruptions should include the following:
    - Installation and activation of new facilities prior to removal of existing.
    - Allowing service disruptions only during periods of minimum usage.
    - Limiting the duration of service disruptions.
    - Evaluation of innovative approaches to maintaining utility services in temporary work areas.

7.22 Cost Estimates

Table 7-10: Cost Estimate

	Cost
Construction	$762,513,000
Contingency (25%)	$190,629,000
ROW	$10,265,348
Utility Relocation	$97,100,000
Sub Total	$1.061B
Design (15%)	$159,076,000
CEI (15%)	$159,076,000
Wildlife Crossing System	$10,510,000
Total Estimated Project Cost	$1.49B

7.23 Value Engineering

A Cost Risk Assessment and Value Engineering (CRAVE) Study was conducted July 29 to August 2, 2024. The primary objectives of the CRAVE study were to:

- Verify or improve on the various design concepts for the project.
- Identify high risk areas in delivering the project.
- Improve the value of the project through innovative measures aimed at improving the performance while reducing costs of the project.
- Perform a cost risk assessment on both the baseline design and the VE recommendations.

The CRAVE team generated 65 ideas for the project. These concepts were compared against the baseline developed by the project team. The concepts that resulted in improved performance were further developed by the CRAVE team and resulted in 16 recommendations. A summary of the recommendations is shown on **Table 7-11**. The preferred alternative was refined based on the accepted recommendations.

Table 7-11: Summary of Value Engineering Recommendations

VE Alternative		Recommendation
1	Modify ramp configuration at SR 60	Not Accepted
2	Modify SR 60 WB left access at RaceTrac	Not Accepted
3	Use internally illuminated RPMs	Deferred to Design Phase
4	Complete geotechnical investigation prior to design phase	Deferred to Design Phase
5	Provide additional access points	Deferred to Design Phase
6	Shift NB Par Clo ramps south	Accepted
7	Construct new bridges offset from mainline alignment	Accepted
8	Bifurcate median at bridge locations	Not Accepted
9	Revise construction segmentation	Deferred to Design Phase
10	Use extended lane closures during construction	Deferred to Design Phase
11	Use concrete pavement at intersections along SR 60	Not Accepted
12	Revise ponds to only treat additional impervious areas	Accepted
13	Construct dry swales within Turnpike Right-of- way	Accepted
14	Use canals for stormwater management	Deferred to Design Phase
15	Revised pond system approach	Deferred to Design Phase
16	Expand existing borrow canals	Deferred to Design Phase

7.24 Summary of Environmental Impacts

7.24.1 Future Land Use

Future Land Use designations are not expected to change drastically due to the proposed undertaking. The right-of-way acquisition related to the SR 60 interchange improvements will drive minor land use changes from rural residential to transportation use for approximately 12 acres throughout the entire 41 mile project.

7.24.2 Recreational Resources/Section 4(f)

No impacts are anticipated as a result of the preferred alternative to existing recreational resources including conservation easements such as the Green Swamp Preserve, the Fort Drum Marsh Wildlife Management Area (WMA), the Red Bay Stronghold Foundation Preserve, the Russakis Ranch, the Wedgeworth Farms Conservation Easement, Grassland Reserve Program, and the DeLuca Preserve. Section 4(f) does not apply to state funded projects.

7.24.3 Cultural Resources

A Cultural Resource Assessment Survey (CRAS), conducted in accordance with 36 CFR Part 800, was performed for the project in September 2024. The resources listed below were identified within the project Area of Potential Effect (APE). FDOT found that these resources do not meet the eligibility criteria for inclusion in the National Register of Historic Places (NRHP), and State Historic Preservation Officer (SHPO) concurred with this determination on 06/03/2024 Therefore, FDOT, in consultation with SHPO has determined that the proposed project will result in No Historic Properties Affected.

The defined archaeological area of potential effects (APE) includes the existing and proposed ROW where improvements are proposed. The architectural history APE included the existing and proposed ROW and was extended to a distance of no more than 100 meters (328 feet) from the ROW line. Evaluation of associated drainage (i.e., ponds) alternatives will be conducted during final design.

Archaeological Survey

The archaeological survey consisted of pedestrian survey and systematic subsurface testing of the APE. In total, 700 shovel tests were excavated within the APE. All tests were negative for cultural materials. One archaeological site (8SL00035) has been previously recorded within the APE. The site was recommended as ineligible for listing in the National Register of Historic Places (NRHP) by the State Historic Preservation Officer (SHPO) in 2022. Site 8SL00035 was not identified during the survey. Although the site has been previously recommended as ineligible for listing in the NRHP by SHPO, human remains were identified by the recording survey though the exact location is uncertain. Subsequential surveys of the site (FMSF Survey No. 24447, Fish et al. 2017; FMSF Survey No. 28386, Janus Research 2021) did not identify any cultural materials or human remains. Additionally, ineligible resources do not require consideration of effects per Section 267.061(2)(a), Florida Statutes, and the criteria of adverse effect are not applicable to ineligible resources per 36 CFR 800.5(a) and 36 CFR Part 800.16 (i and l).] In abundance of caution, it is recommended that, during construction, no staging or storing of materials occur within the limits of site 8SL00035 to avoid any potential intact deposits or further human remains. No artifacts were recovered, and no archaeological

sites or occurrences were identified within the APE. The results of the CRAS indicate that no further archaeological survey is required.

Architectural Survey

The architectural history survey resulted in the identification and evaluation of 25 historic resources within the APE, including 13 previously recorded resources and 12 newly recorded resources. The previously recorded resource includes one NRHP-listed building (8OS00099), five canals (8SL03116, 8SL03117, 8SL03120, 8SL03121, and 8SL03122), three roadways (8OS03001, 8SL01649, and 8SL01658), two historic districts (8IR01836 and 8SL03289), and two railroads (8OB00288 and 8OB00276). The newly recorded resources include 12 historic buildings (8OS03483, 8OS03484, and 8SL03406-8SL03415). The historic resources were evaluated to determine their significance and potential for listing in the NRHP. Resource 8OS00099 (Desert Inn) within the APE was listed in the NRHP but was demolished in 2024 after its partial destruction by a truck colliding with the building in 2019. Because the building has been demolished it no longer conveys eligibility under the NRHP criteria. It should be removed from the NRHP. Of the remaining 24 resources, 23 lack the architectural/engineering distinction and the significant historical associations necessary for listing in the NRHP and are recommended ineligible. One resource (8SL03409) is obscured from the ROW and could not be evaluated. The SHPO concurred with these determinations on is currently pending.

No historic properties were identified within the APE. No further work is required. For these reasons, no significant impacts to historic resources are anticipated.

7.24.4 Aesthetics/ Socio-Economic

The Preferred Alternative would replace existing bridges along the project corridor. Because these bridges are already existing and would be replaced with similar structures, no significant aesthetic impacts from bridges are anticipated. Because the project follows an existing transportation corridor with only minor new ROW and no relocations, there are no impacts anticipated to community cohesion, planned growth and land use patterns, or community setting. The rural character will not be significantly impacted, and the project is compatible with local land use plans and community values.

Sensitive areas, such as conservation lands and natural areas, public facilities, endangered species localities, noise sensitive sites, and cultural resources were identified during this study so that impacts could be avoided and minimized as much as possible. This was predominantly accomplished by limiting the footprint of the project to existing ROW, with only minor new ROW needed from undeveloped land by Yeehaw Junction.

7.24.5 Wetlands and Water Quality

Wetland impacts from the preferred alternative are limited to the existing FTE right-of-way where widened bridges will directly impact small slivers of freshwater emergent wetlands and increase the area of shading. These impacts to wetlands are anticipated to total less than one-half acre. In general, there are no existing permits within the project area. Unavoidable wetland impacts will require permitting. The area of the planned Truck Parking lacks wetlands, so there will be no wetland impacts from the planned Truck Parking. Wetland delineation is anticipated during design and permitting to determine the precise areas of jurisdictional wetland impacts as well as the wetland type, quality, and function following the Uniform Mitigation Assessment Method.

Potential short-term indirect impacts from the Preferred Alternative could result from the use of heavy equipment, staging or stockpiling of equipment and materials, or other activities that contribute to sedimentation and erosion from soil disturbance. BMPs typically associated with road construction projects will be implemented and maintained throughout all construction activities to minimize indirect impacts. Staging and stockpiling locations will be coordinated with the construction project manager and Florida's Turnpike Enterprise environmental staff and located outside of wetlands.

7.24.6 Water Resources

Water quality treatment is provided within the proposed stormwater management facilities for the contributing basins to the proposed stormwater management facility. No degradation of water quality is anticipated as a result of the proposed undertaking in conjunction with adherence to the Best Management Practices outlined in the FDOT *Standard Specifications for Road and Bridge Construction*.

7.24.7 Aquatic Preserves/Outstanding Florida Waters (OFW)

The Indian River and North Fork St. Lucie River Aquatic Preserve are classified as OFW that are located 7 to 10 miles downstream of the project. Since the project does not directly discharge into OFW, further treatment will not be provided for the first seven basins.

7.24.8 Protected Species and Habitat

The No-Build, Preferred Alternative, and Truck Parking Alternative were evaluated for potential impacts to protected species and habitats, wetlands, and Essential Fish Habitat using a review of existing literature and data, GIS resources, coordination with regulatory agencies, and field surveys. Effect determinations for protected species are reported in **Table 7-12**. No adverse impacts are anticipated to any listed species. The preferred alternative will impact 11.39 acres of Shrub and Brushland (FLUCFCS 3200) that form potential habitat for wildlife. Additional impacts to wildlife habitats are anticipated at each of five natural water crossings where bridges will be replaced and will total less than one-half acre. The area of proposed truck parking was previously developed and is mapped as Commercial and Services land use, so there is limited wildlife habitat value and low potential for impacts to protected species. However, because there are trees in the area of the proposed truck parking, additional surveys for Florida bonneted bat and Southeastern American kestrel are anticipated during design.

Table 7-12: Effect Determinations

Common Name	Scientific Name	Federal Status	State Status	Effect Determination
American alligator	*Alligator mississippiensis*	FTSA	-	No Effect
Audubon's crested caracara	*Polyborus plancus*	FT	-	MANLAA
Eastern indigo snake	*Drymarchon corais couperi*	FT	-	MANLAA
Everglade snail kite	*Rostrhamus sociabilis plumbeus*	FE	-	MANLAA
Florida bonneted bat	*Eumops floridanus*	FE	-	No Effect*
Florida burrowing owl	*Athene cunicularia*	-	ST	NAEA
Florida sandhill crane	*Grus canadensis*	-	ST	NAEA
Florida scrub-jay	*Aphelocoma coerulescens*	FT	-	MANLAA
Florida grasshopper sparrow	*Ammodramus savannarum*	FE	-	MANLAA
Florida panther	*Puma concolor coryi*	FE	-	MANLAA
Florida pine snake	*Pituophis melanoleucus mugitus*	-	ST	NAEA
Gopher tortoise	*Gopherus polyphemus*	-	ST	NAEA
Little blue heron	*Egretta caerulea*	-	ST	NAEA
Monarch butterfly	*Danaus plexippus*	FC	-	-
Red-cockaded woodpecker	*Picoides borealis*	FT	-	MANLAA
Roseate spoonbill	*Platalea ajaja*	-	ST	NAEA
Southeastern American kestrel	*Falco sparverius paulus*	-	ST	NAEA
Tricolored heron	*Egretta tricolor*	-	ST	NAEA
Tricolored bat	*Perimyotis subflavus*	PE	-	-
Wood stork	*Mycteria americana*	FT	-	No Effect

FE= Federally endangered; FT= Federally Threatened; FC= Federal Candidate for listing; FTSA= Federally Threatened Due to Similarity in Appearance; PE= Proposed for Federal Listing as Endangered; SE= State Endangered; ST= State Threatened; MANLAA= May Affect Not Likely to Adversely Affect; NAEA= No Adverse Effect Anticipated; *= Pending Surveys

Implementation measures are actions that FTE is required to take per procedure, standard specification, or other agency requirements and will be implemented at a later project phase.

- Surveys to update locations of bald eagle nest sites will be conducted during the design phase, and permits will be acquired if there will be unavoidable impacts during construction. Coordination with USFWS and FWC will take place as necessary.
- Surveys for the Florida burrowing owl will be conducted during the design phase. If it is determined individuals or nest areas are found and could be impacted by the project, FTE will coordinate with FWC to determine appropriate avoidance and minimization measures to apply during construction.
- Surveys for gopher tortoise burrows, as well as commensal species, will be conducted during the design phase and permits to relocate tortoises and commensals as appropriate will be obtained from the FWC.
- Surveys for the Southeastern American Kestrel will be conducted during the nesting season (May through August) in the design phase. If it is determined nest areas are found and could be impacted by the project, FTE will coordinate with FWC to determine appropriate avoidance and minimization measures to apply during construction.
- Surveys for Florida sandhill crane nest sites will be conducted during the design phase. If it is determined nest areas are found and could be impacted by the project, FTE will coordinate with FWC to determine appropriate avoidance and minimization measures to apply during construction.

7.24.9 Essential Fish Habitat

The project is located inland and there would be no involvement with Essential Fish Habitat.

7.24.10 Highway Traffic Noise

A Noise Study Report (NSR) was prepared to evaluate the noise impacts from the proposed improvements and potential noise abatement. For the proposed design, 218 receptor points were utilized to represent 673 residences and seven nonresidential sites. Noise levels at 67 residences are predicted to approach or exceed the Noise Abatement Criteria (NAC) [i.e., 66 dB(A) for Activity Category B] established by FHWA for the design year (2050) Build condition. The impacted residences are located primarily in the first and second building rows within the neighborhoods adjacent to Florida's Turnpike.

In addition to residences, Title 23 Code of Federal Regulations Part 772 specifies other Activity Categories addressing non-residential noise sensitive sites. Within the project limits, non-residential noise sensitive sites include outdoor use areas at a variety of locations including parks, playgrounds, and schools, and an interior use at a church. Noise levels are not predicted to approach or exceed the NAC for and of the non-residential.

Noise barriers were evaluated for the impacted noise sensitive sites. The results of the noise barrier evaluation conclude that noise barriers are a feasible and/or reasonable method to abate traffic related noise impacts for one noise sensitive area and will provide at least a 5 dB(A) benefit to 46 impacted residences. Details of the potential noise barrier are shown in **Figure 7-8** and **Table 7-13**.

- Final recommendations on the construction of abatement measures are determined during the project's final design and through the public involvement process;
- Detailed noise analyses during the final design process support the need, feasibility, and reasonableness of providing abatement;
- Cost analysis indicates that the cost of the noise barrier(s) will not exceed the cost reasonable criterion;

- Community input supporting types, heights, and locations of the noise barrier(s) is provided to FTE ; and
- Safety and engineering aspects have been reviewed and any conflicts or issues resolved.

A land use review will be performed during the design phase to identify all noise sensitive sites that may have received a building permit subsequent to the noise study but prior to the project's Date of Public Knowledge. The date that the State Environmental Impact Report is approved by FTE will be the Date of Public Knowledge. If the review identifies noise sensitive sites that have been permitted prior to the Date of Public Knowledge, then those sensitive sites will be evaluated during the design phase for traffic noise impacts and abatement considerations.

Figure 7-8: Potential Noise Barrier

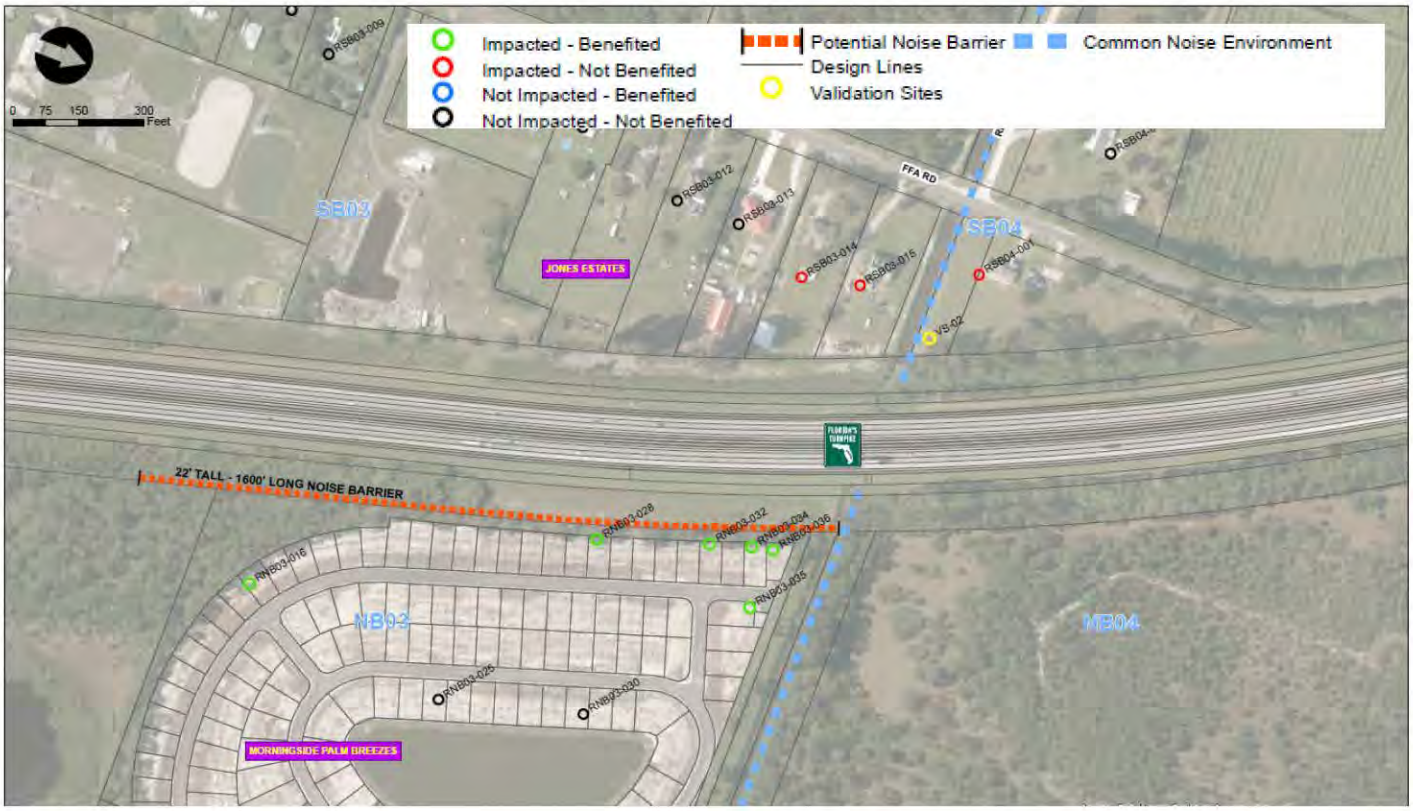


Table 7-13: Noise Barrier Evaluation Summary

Noise Sensitive Area	Number of Impacted Residences	Noise Barrier Approx. Begin Station	Noise Barrier Approx. End Station	Preliminary Noise Barrier Height (ft.)	Preliminary Noise Barrier Length (ft.)[1]	Preliminary Noise Barrier Location	Preliminary Noise Barrier Cost[2]	Number of Residences Potentially Benefited by a Noise Barrier[3]		Cost Per Benefited Residence
								Impacted	Total	
Morningside Palm Breezes and Single-Family Residences (CNE NB03)	46	2126+80	2142+80	22	1600	ROW[4]	$1,408,000	46	46	$30,609

[1] Full height is for length indicated. The length for any required taper in height at a shoulder noise barrier termination would be in addition to the length indicated.

[2] Unit cost of $40/ft^2 for all non-shoulder noise barriers.

[3] Total includes impacted/benefited residences and residences with a predicted noise level that does not approach or exceed 67 dBA but are incidentally benefited.

[4] ROW – Right of Way noise barrier on Florida's Turnpike

7.24.11 Contamination

A Contamination Screening Evaluation (Level 1) Report (CSER) was prepared to identify and rate potential contamination risks to the proposed project. This report identifies and evaluates known landfills, Comprehensive Environmental Response, Compensation, and Liability Act sites (CERCLA, also known as Superfund), and National Priorities List (NPL) sites within a one half-mile buffer of the project corridor. Known sites of petroleum contamination, dry cleaners, and non-petroleum contamination within a 500-foot buffer of the project corridor were identified and investigated, as were non-landfill solid waste sites within 1,000 feet of the project corridor. A total of 30 sites of potential contamination risk were identified. Those include zero High Risk, 12 Medium Risk, and 18 Low Risk sites. Of these sites, five Low Risk sites, two Medium Risk site, and zero High Risk site are currently located within the ROW, as summarized in **Table 7-14**.

Table 7-14: Summary of Potentially Contaminated Sites

RISK RATING	NUMBER OF SITES	NUMBER OF SITES WITHIN PROPOSED ROW
LOW	18	5
MEDIUM	12	2
HIGH	0	0

Level II Contamination Assessment investigations are recommended where new ROW would be acquired or where proposed dewatering or subsurface work would occur at or adjacent to any sites rated High or Medium Risk (e.g., pole foundations, drainage features, soil excavation, etc.). Through coordination with the District Structures Office, asbestos surveys have been completed for all of the bridges within the project corridor except for the bridges over Radebaugh Road and Osowou Road. Testing for Asbestos Containing Materials and Metal Based Coatings of the existing bridges is recommended, as appropriate. If dewatering is necessary during construction, an FDEP Dewatering Permit will be required.

7.24.12 Navigable Waterway

Not applicable to this project.

Appendix A

Detailed Project Figures

APPENDIX A: DETAILED PROJECT FIGURES

Figures- Conservation Lands

*THE WEDGEWORTH FARMS CONSERVATION EASEMENT IS FLORIDA FOREVER ACQUIRED LAND

0 2 4 8 Miles

N

NORTHERN PROJECT TERMINUS

DELUCA PRESERVE

GRASSLAND RESERVE PROGRAM EASEMENT #102

WEDGEWORTH FARMS CONSERVATION EASEMENT*

RUSSAKIS RANCH GOPHER TORTOISE LONGTERM RECIPIENT SITE

FORT DRUM MARSH CONSERVATION AREA

GREEN SWAMP PRESERVE

RED BAY FOUNDATION PRESERVE

SOUTHERN PROJECT TERMINUS

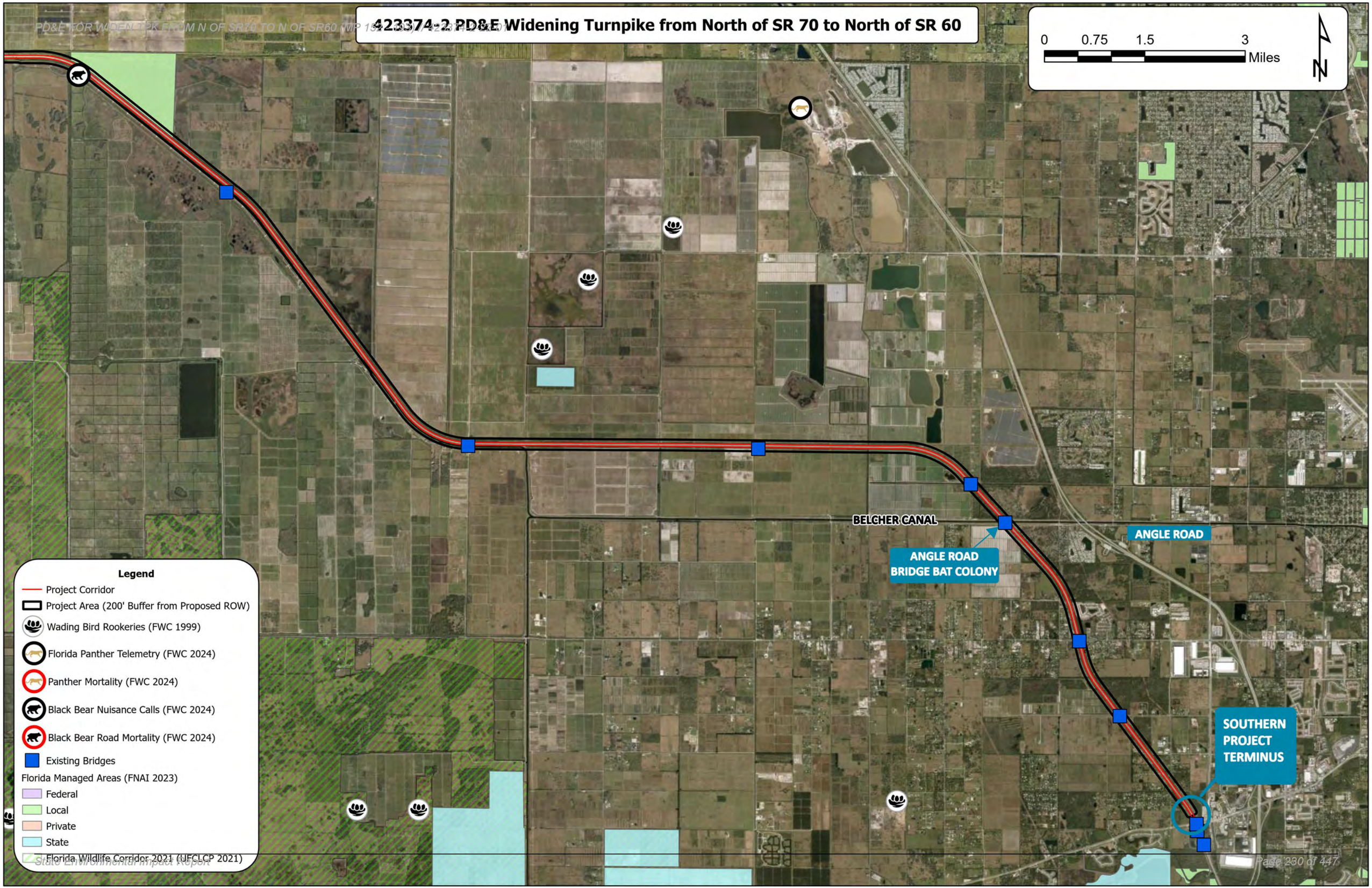
Legend

- Project Corridor
- Florida Forever BOT Projects Land (2023)

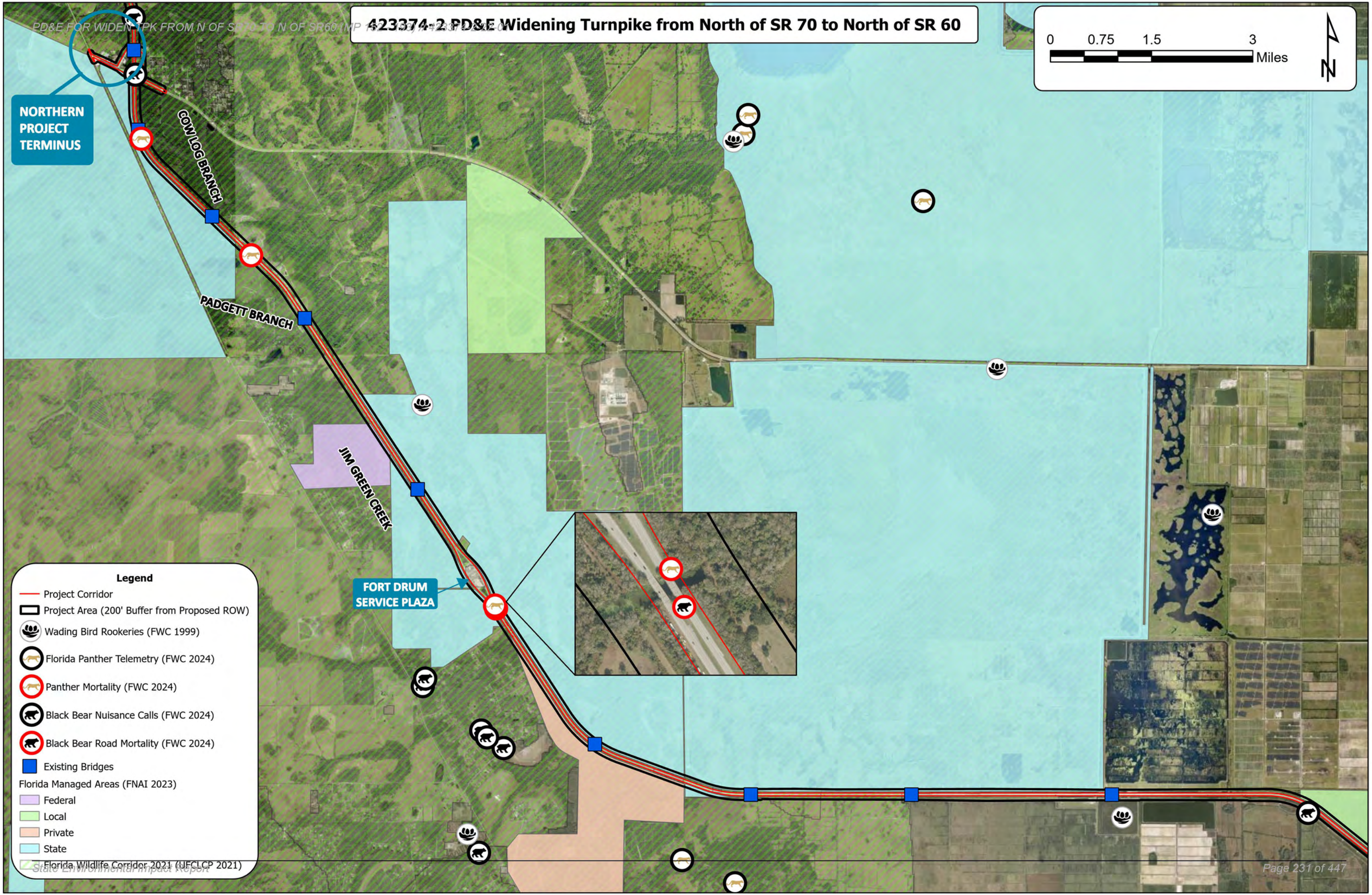
Florida Managed Areas (FNAI 2023)

- Federal
- Local
- Private
- State

Figures- Sensitive Environmental Features



423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60
0
0.75
1.5
3
Miles
N
BELCHER CANAL
ANGLE ROAD
ANGLE ROAD BRIDGE BAT COLONY
SOUTHERN PROJECT TERMINUS
Legend
Project Corridor
Project Area (200' Buffer from Proposed ROW)
Wading Bird Rookeries (FWC 1999)
Florida Panther Telemetry (FWC 2024)
Panther Mortality (FWC 2024)
Black Bear Nuisance Calls (FWC 2024)
Black Bear Road Mortality (FWC 2024)
Existing Bridges
Florida Managed Areas (FNAI 2023)
Federal
Local
Private
State
Florida Wildlife Corridor 2021 (UFCLCP 2021)



423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60
0
0.75
1.5
3
Miles
N
NORTHERN PROJECT TERMINUS
COW LOG BRANCH
PADGETT BRANCH
JIM GREEN CREEK
FORT DRUM SERVICE PLAZA
Legend
Project Corridor
Project Area (200' Buffer from Proposed ROW)
Wading Bird Rookeries (FWC 1999)
Florida Panther Telemetry (FWC 2024)
Panther Mortality (FWC 2024)
Black Bear Nuisance Calls (FWC 2024)
Black Bear Road Mortality (FWC 2024)
Existing Bridges
Florida Managed Areas (FNAI 2023)
Federal
Local
Private
State
Florida Wildlife Corridor 2021 (UFCLCP 2021)

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60

0 2 4 8 Miles

N

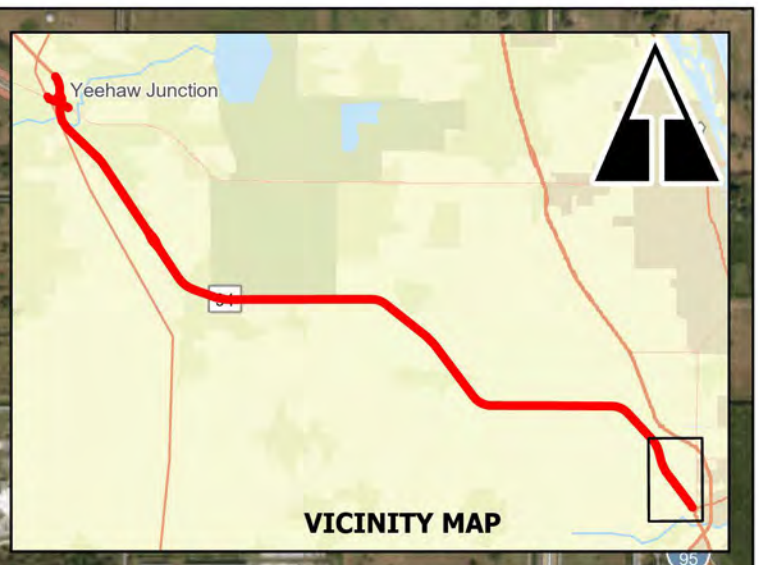
PROJECT TERMINUS

PROJECT TERMINUS

Legend

- Project Corridor
- Black Bear Road Mortality (FWC 2024)
- Florida Panther Telemetry (FWC 2024)
- Panther Mortality (FWC 2024)
- Black Bear Nuisance Calls (FWC 2024)
- National Wetlands Inventory (USFWS 2023)

Figures- Existing Land Use

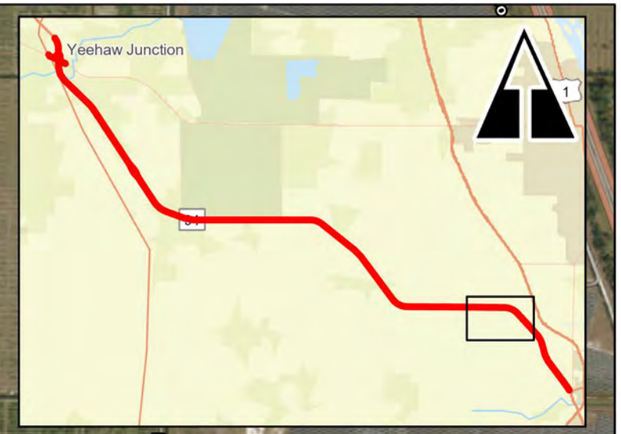


LEGEND

- Truck Parking Alternative
- Project Area (200' Buffer from Proposed ROW)
- 1110,Fixed Single Family Units
- 1180,Rural Residential
- 1850,Parks and Zoos
- 1900,Open Land
- 1920,Inactive Land with Street Pattern
- 2110,Improved Pastures
- 2120,Unimproved Pastures
- 2130,Woodland Pastures
- 2140,Row Crops
- 2210,Citrus Groves
- 2430,Ornamentals
- 2510,Horse Farms
- 3100,Herbaceous (Dry Prairie)
- 4110,Pine Flatwoods
- 4220,Brazilian Pepper
- 4340,Upland Mixed Coniferous / Hardwood
- 5120,Channelized Waterways, Canals
- 5300,Reservoirs
- 6172,Mixed Shrubs
- 6440,Emergent Aquatic Vegetation
- 7400,Disturbed Land
- 8140,Roads and Highways
- 8300,Utilities

0 0.25 0.5 Miles

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60



Florida's Tpke N

Indrio Rd

W Angle Rd

Wheeler Rd

Cody Ln

N Brocksmith

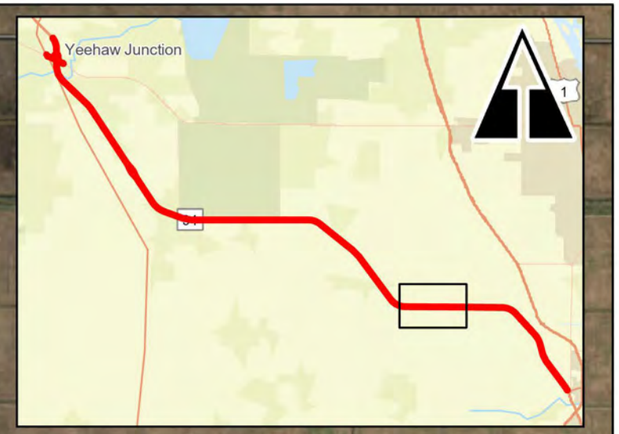
2210 6410 2610 2610 2210 8140 5120 2110 6172 2140 2210 5120 6410 3300 8140 6172 6440 2120 4110 5120 7470 2140 2130 8140

LEGEND

- Project Area (200' Buffer from Proposed ROW)
- 2110,Improved Pastures
- 2120,Unimproved Pastures
- 2130,Woodland Pastures
- 2140,Row Crops
- 2210,Citrus Groves
- 2610,Fallow Cropland
- 3300,Mixed Rangeland
- 4110,Pine Flatwoods
- 5120,Channelized Waterways, Canals
- 6172,Mixed Shrubs
- 6440,Emergent Aquatic Vegetation
- 7470,Dikes and Levees
- 8140,Roads and Highways

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60

0 0.25 0.5 Miles



Minute Maid Rd

Minute Maid Rd

Florida's Tpke N

Belcher Canal

Florida's Tpke N

Florida's Tpke N

Belcher Canal

Minute Maid Rd

N Rim Ditch Rd

N Rim Ditch Rd

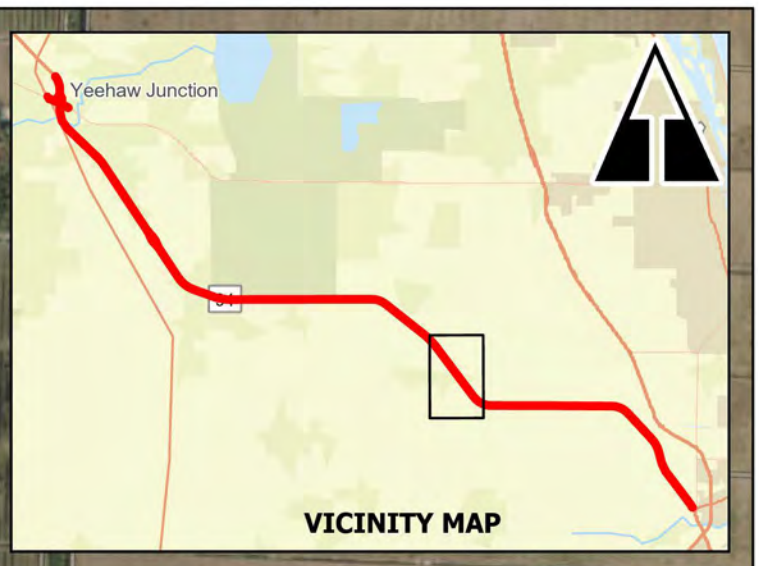
6172 6440 4200 2430 5120 7470 2210 3200 8140 2610 5120 2610 6410 5120 2210 6172 6410 2610

LEGEND

- Project Area (200' Buffer from Proposed ROW)
- 2210,Citrus Groves
- 2430,Ornamentals
- 2610,Fallow Cropland
- 3200,Upland Shrub and Brushland
- 4200,Upland Hardwood Forests
- 5120,Channelized Waterways, Canals
- 6172,Mixed Shrubs
- 6440,Emergent Aquatic Vegetation
- 7470,Dikes and Levees
- 8140,Roads and Highways

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60

0 0.25 0.5 Miles



2210
4220
6216
6410
3200
8140
7470
2610
5120
8300
3100
2210
8140
4200

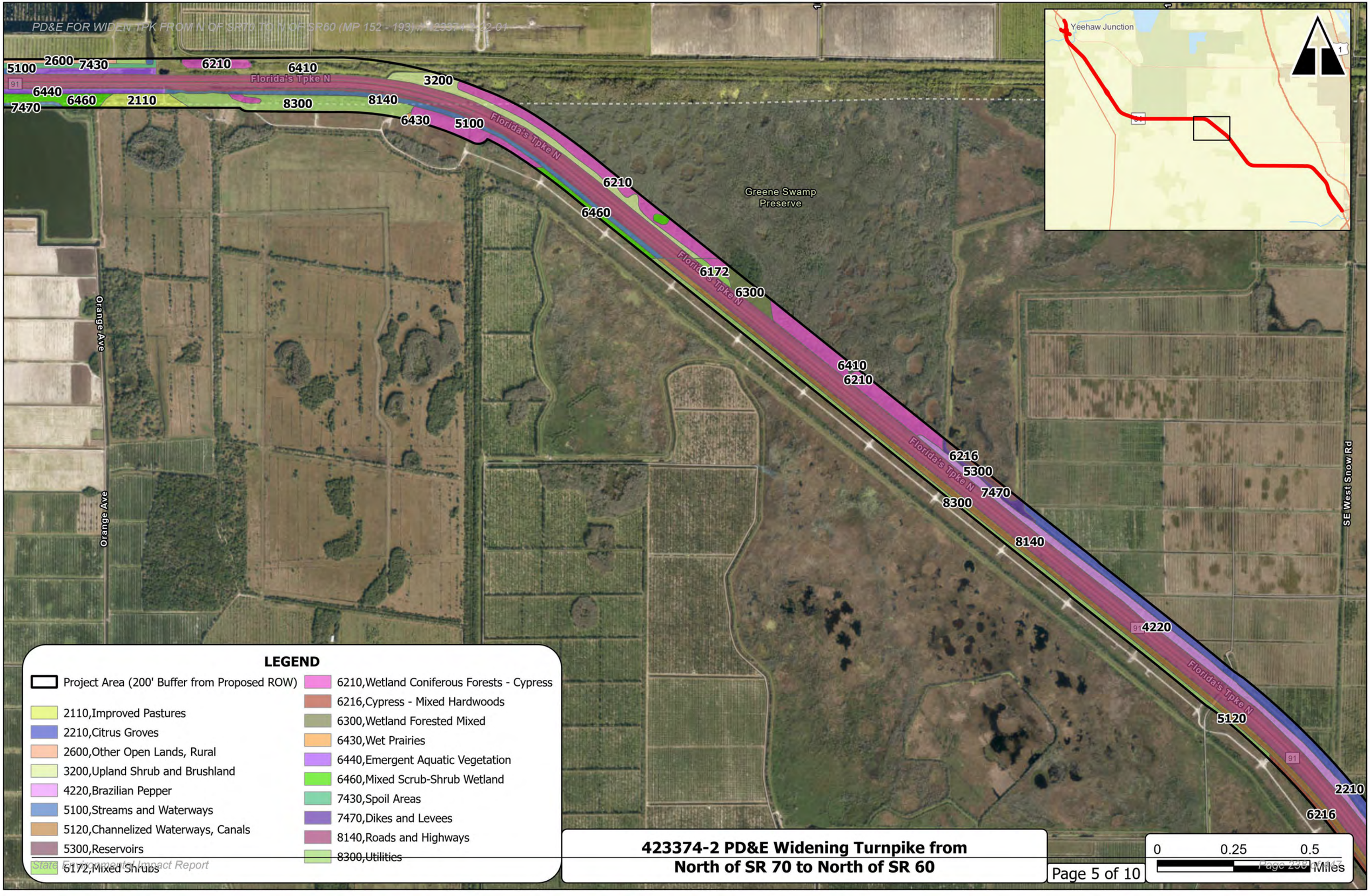
Florida's Tpke N
Orange Ave
91

LEGEND

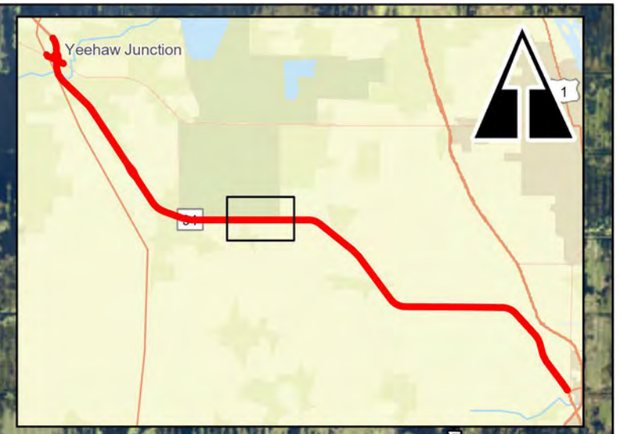
- Truck Parking Alternative
- Project Area (200' Buffer from Proposed ROW)
- 2210,Citrus Groves
- 2610,Fallow Cropland
- 3100,Herbaceous (Dry Prairie)
- 3200,Upland Shrub and Brushland
- 4200,Upland Hardwood Forests
- 4220,Brazilian Pepper
- 5120,Channelized Waterways, Canals
- 6216,Cypress - Mixed Hardwoods
- 7470,Dikes and Levees
- 8140,Roads and Highways
- 8300,Utilities

0 0.25 0.5 Miles

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60



423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60



6430 6440 5300 7430 2600 7430 5100
6410 5100 8140 6440 5100 8140 6440
6460 6460 6410 6440 6460
2120 2240 2210 6460 6460 6172 5120 5300 7430 6410 6460 4220 7470

Florida's Tpke N
91
NE 48th Ave
NE Th St
NE 48th Ave
NE 48th Ave
162nd Ave

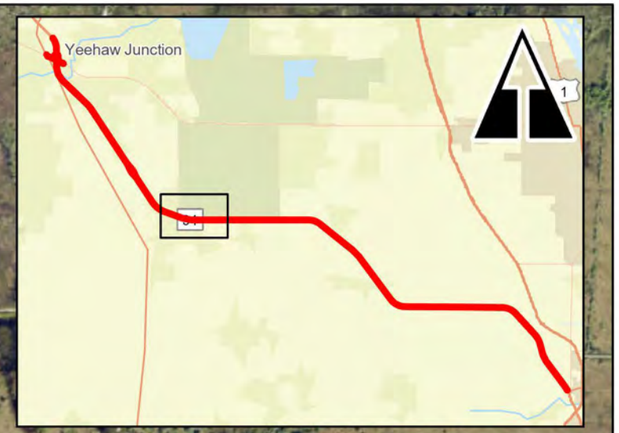
LEGEND

- Project Area (200' Buffer from Proposed ROW)
- 2110,Improved Pastures
- 2120,Unimproved Pastures
- 2210,Citrus Groves
- 2240,Abandoned Groves
- 2600,Other Open Lands, Rural
- 4220,Brazilian Pepper
- 5100,Streams and Waterways
- 5120,Channelized Waterways, Canals
- 5300,Reservoirs
- 6172,Mixed Shrubs
- 6430,Wet Prairies
- 6440,Emergent Aquatic Vegetation
- 6460,Mixed Scrub-Shrub Wetland
- 7430,Spoil Areas
- 7470,Dikes and Levees
- 8140,Roads and Highways

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60

0 0.25 0.5 Miles

Fort Drum Creek



6170 6410 6300 8140 4110 3300 2110 6181 6300 4340 3200 8140 3210 6410 8300 6430 3100 6460 6410 2120 6410 7430 3100 6410 3100 2110 6460 2110 2610 6460 2120

Florida's Tpke N

Sawgrass Bay

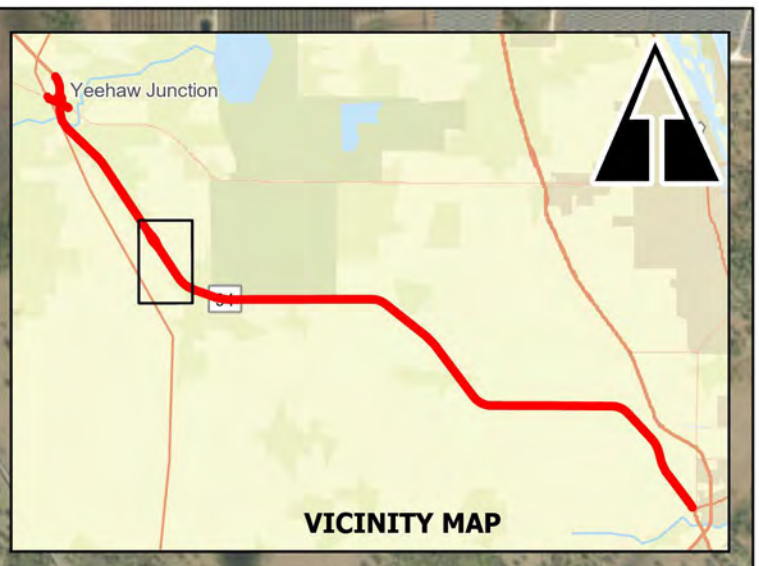
Quay Rd

LEGEND

- Project Area (200' Buffer from Proposed ROW)
- 2110,Improved Pastures
- 2120,Unimproved Pastures
- 2610,Fallow Cropland
- 3100,Herbaceous (Dry Prairie)
- 3200,Upland Shrub and Brushland
- 3210,Palmetto Prairies
- 3300,Mixed Rangeland
- 4110,Pine Flatwoods
- 4340,Upland Mixed Coniferous / Hardwood
- 6170,Mixed Wetland Hardwoods
- 6181,Cabbage Palm Hammock
- 6300,Wetland Forested Mixed
- 6430,Wet Prairies
- 6460,Mixed Scrub-Shrub Wetland
- 7430,Spoil Areas
- 8140,Roads and Highways
- 8300,Utilities

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60

0 0.25 0.5 Miles

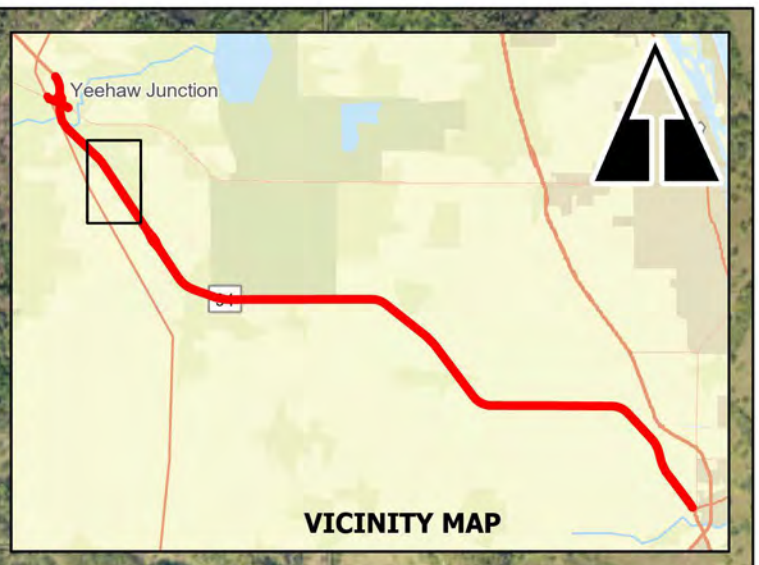


LEGEND

- Truck Parking Alternative
- Project Area (200' Buffer from Proposed ROW)
- 1400,Commercial
- 2110,Improved Pastures
- 2130,Woodland Pastures
- 3200,Upland Shrub and Brushland
- 4110,Pine Flatwoods
- 4130,Sand Pine
- 4340,Upland Mixed Coniferous / Hardwood
- 5300,Reservoirs
- 6170,Mixed Wetland Hardwoods
- 6300,Wetland Forested Mixed
- 6460,Mixed Scrub-Shrub Wetland
- 8140,Roads and Highways
- 8300,Utilities

0 0.25 0.5 Miles

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60



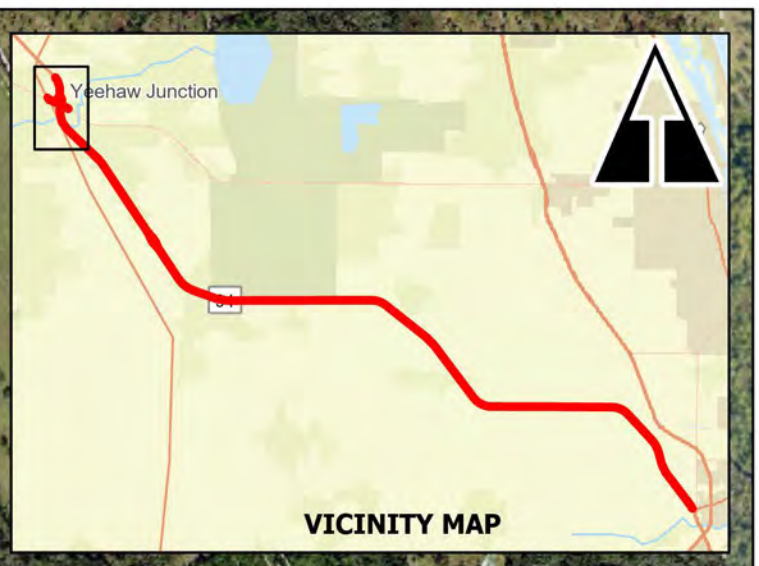
91
2120
3200
8140
6300
Florida's Tpke N
23rd Ave
6430
3200
4110
6170
23rd St
4410
6430
6460
NW 430th St
441
8140
6250
6410
2110
US Highway 441 N
Jim Green Creek
Ronald Reagan Tpke
2130
3200
2110
4110
6300
6460

LEGEND

- Truck Parking Alternative
- Project Area (200' Buffer from Proposed ROW)
- 2110,Improved Pastures
- 2120,Unimproved Pastures
- 2130,Woodland Pastures
- 3200,Upland Shrub and Brushland
- 4110,Pine Flatwoods
- 4410,Coniferous Pine
- 6170,Mixed Wetland Hardwoods
- 6250,Hydric Pine Flatwoods
- 6300,Wetland Forested Mixed
- 6430,Wet Prairies
- 6460,Mixed Scrub-Shrub Wetland
- 8140,Roads and Highways

0 0.25 0.5 Miles

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60



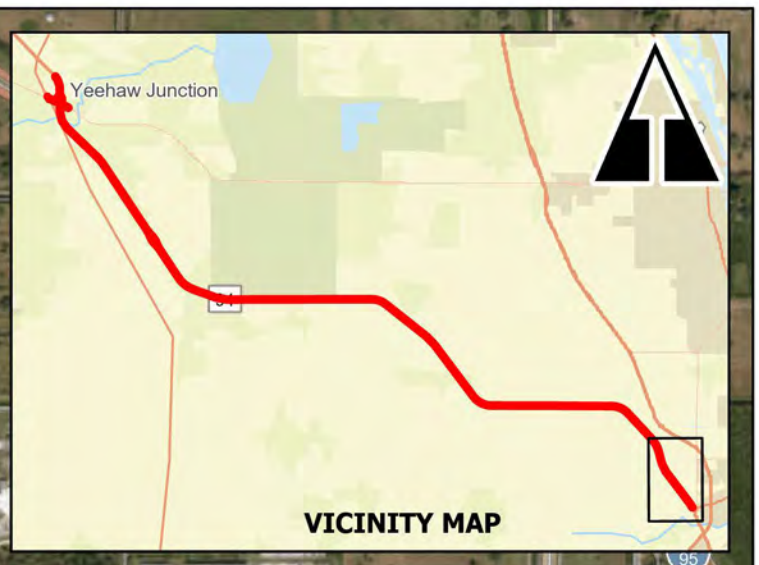
LEGEND

- Truck Parking Alternative
- Project Area (200' Buffer from Proposed ROW)
- 1100,Residential, Low Density
- 1180,Rural Residential
- 1400,Commercial
- 2110,Improved Pastures
- 2120,Unimproved Pastures
- 3200,Upland Shrub and Brushland
- 4110,Pine Flatwoods
- 4340,Upland Mixed Coniferous / Hardwood
- 6110,Bay Swamps
- 6170,Mixed Wetland Hardwoods
- 6210,Wetland Coniferous Forests - Cypress
- 6250,Hydric Pine Flatwoods
- 6300,Wetland Forested Mixed
- 6430,Wet Prairies
- 6460,Mixed Scrub-Shrub Wetland
- 8140,Roads and Highways

0 0.25 0.5 Miles

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60

Figures- Soils



NETTLES
PEPPER
OLDSMAR
PINEDA
RIVIERA
ANKONA
WATER
WAVELAND
TANTILE
WINDER
CHOBEE
HILOLO
WABASSO

Relief Canal
Apollo Ave
Colbourn Rd
Millwood Dr
Orange Ave
Dees Ave
Picos Rd
Pruitt Research Center Rd
Andrews Ave
Hidden Pines Rd
Lonesome Pine Trl
Okeechobee Rd
Schwab Rd
Henrys Rd
N Ffa Rd
S Ffa Rd
Emerald Ave
Gentile Rd
S Rock Rd
S Kings Hwy

68
611
70
95

LEGEND

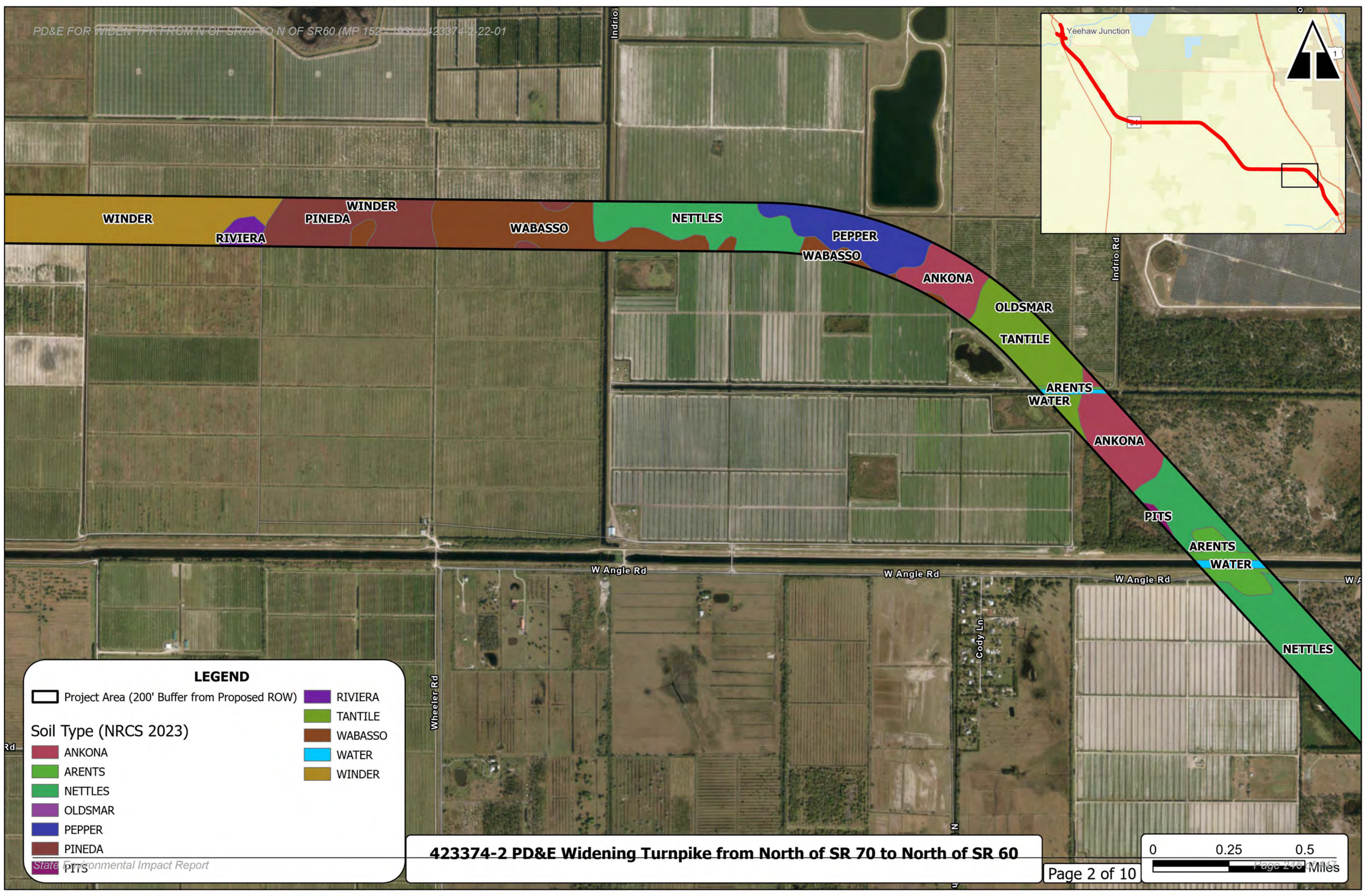
- Truck Parking Alternative
- Project Area (200' Buffer from Proposed ROW)

Soil Type (NRCS 2023)

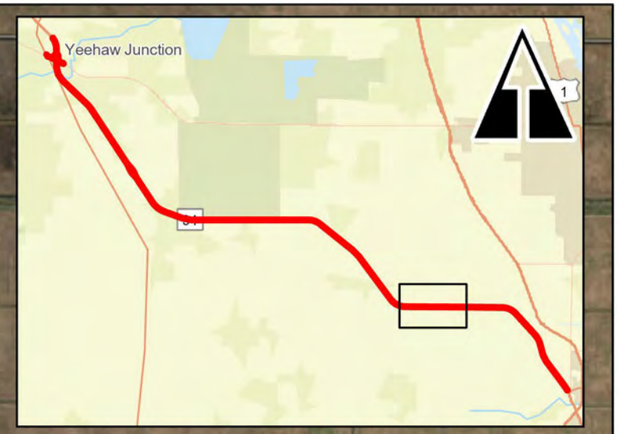
- ANKONA
- CHOBEE
- HILOLO
- NETTLES
- OLDSMAR
- PEPPER
- PINEDA
- RIVIERA
- TANTILE
- WABASSO
- WATER
- WAVELAND
- WINDER

0 0.25 0.5 Miles

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60



423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60



Minute Maid Rd

Minute Maid Rd

CHOBEE

WINDER

CHOBEE

CHOBEE

WINDER

RIVIERA

WATER

WINDER

ARENTS

RIVIERA

Minute Maid Rd

Belcher Canal

N Rim Ditch Rd

N Rim Ditch Rd

LEGEND

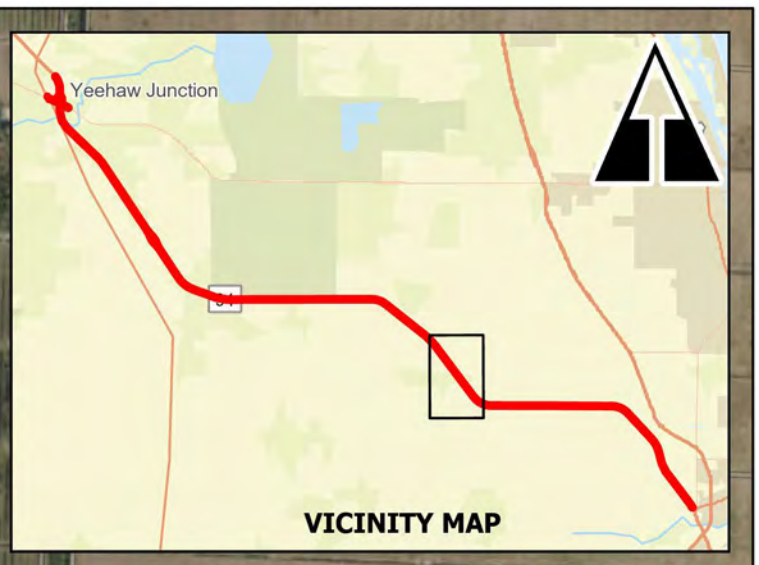
Project Area (200' Buffer from Proposed ROW)

Soil Type (NRCS 2023)

- ARENTS
- CHOBEE
- RIVIERA
- WATER
- WINDER

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60

0 0.25 0.5 Miles



WABASSO
RIVIERA
WABASSO
PINEDA
RIVIERA
PINEDA
RIVIERA
WABASSO
WATER
RIVIERA
PINEDA
WINDER
Orange Ave
Orange Ave

LEGEND

- Truck Parking Alternative
- Project Area (200' Buffer from Proposed ROW)

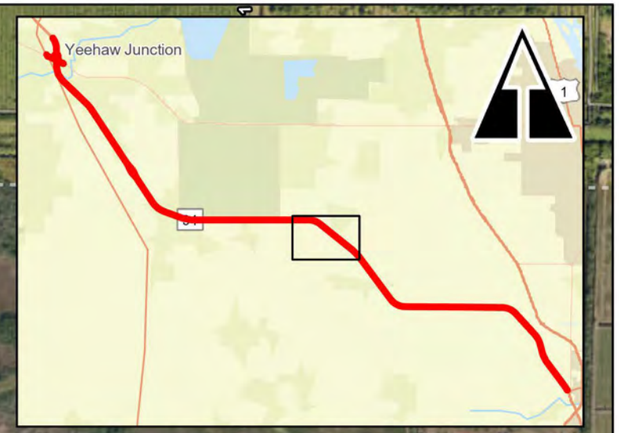
Soil Type (NRCS 2023)

- PINEDA
- RIVIERA
- WABASSO
- WATER
- WINDER

0 0.25 0.5 Miles

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60

MANATEE
WATER
JUPITER
ARENTS
CANOVA
PINEDA
WINDER
CHOBEE
WATER
RIVIERA
PINEDA
CHOBEE
RIVIERA
KALIGA
WINDER
Greene Swamp Preserve
RIVIERA
PINEDA
WATER
PINEDA
RIVIERA
WABASSO
WABASSO
RIVIERA
Orange Ave
Orange Ave
SE West Snow Rd



LEGEND

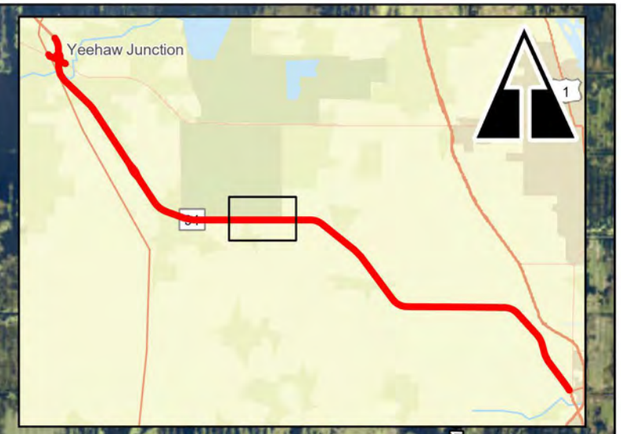
- Project Area (200' Buffer from Proposed ROW)

Soil Type (NRCS 2023)

- ARENTS
- CANOVA
- CHOBEE
- JUPITER
- KALIGA
- MANATEE
- PINEDA
- RIVIERA
- WABASSO
- WATER
- WINDER

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60

0 0.25 0.5 Miles



MYAKKA
PINEDA
OLDSMAR
WABASSO
HOLOPAW
EAUGALLIE
PINEDA
DELRAY
ARENTS
MANATEE
HOLOPAW
POMPANO
RIVIERA
MYAKKA
MALABAR
RIVIERA
WABASSO
RIVIERA
WATER
PINEDA
RIVIERA
RIVIERA
IMMOKALEE
BASINGER
POMPANO
BASINGER
PINEDA
MALABAR
VALKARIA

NE 48th Ave
NE 48th Ave
NE Th St
NE 48th Ave
NE 48th Ave
162nd Ave

LEGEND

Project Area (200' Buffer from Proposed ROW)

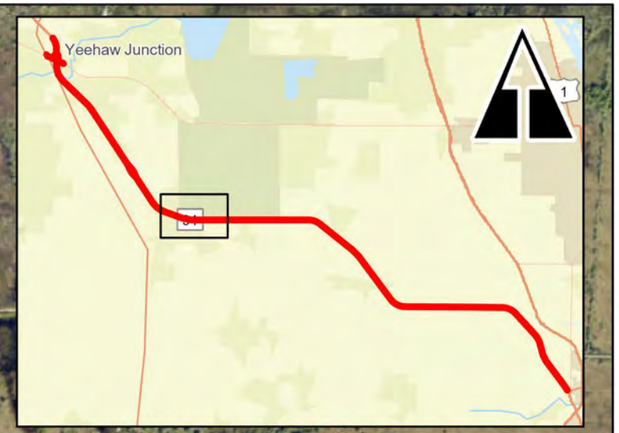
Soil Type (NRCS 2023)

- ARENTS
- BASINGER
- DELRAY
- EAUGALLIE
- HOLOPAW
- IMMOKALEE
- MALABAR
- MANATEE
- MYAKKA
- OLDSMAR
- PINEDA
- POMPANO
- RIVIERA
- VALKARIA
- WABASSO
- WATER

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60

0 0.25 0.5 Miles

Fort Drum Creek



FLORIDANA
BASINGER
IMMOKALEE
POMELLO
MYAKKA
FLORIDANA
ST. JOHNS
IMMOKALEE
MYAKKA
POMPANO
IMMOKALEE
MYAKKA
PINEDA
RIVIERA
BASINGER
EAUGALLIE
MYAKKA
RIVIERA
HOLOPAW
PINEDA
MYAKKA
POMPANO
BASINGER

Sawgrass Bay

Quay Rd

LEGEND

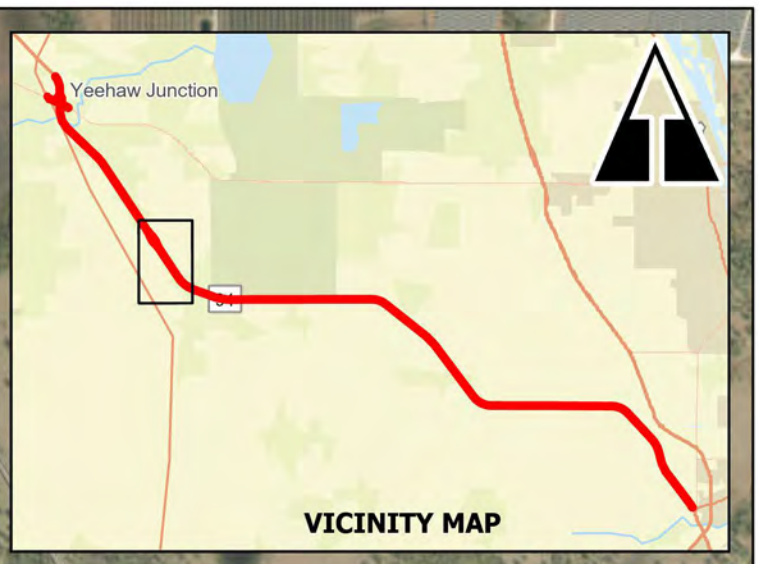
- Project Area (200' Buffer from Proposed ROW)

Soil Type (NRCS 2023)

- BASINGER
- EAUGALLIE
- FLORIDANA
- HOLOPAW
- IMMOKALEE
- MYAKKA
- PINEDA
- POMELLO
- POMPANO
- RIVIERA
- ST. JOHNS

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60

0 0.25 0.5 Miles



IMMOKALEE
FLORIDANA
MYAKKA
WATER
BASINGER
IMMOKALEE
POMELLO
WATER
BASINGER
MYAKKA
IMMOKALEE
MYAKKA
FLORIDANA
IMMOKALEE
BASINGER
NE 366th Trl
NE 366th Trl
NE 366th Trl
NW 366th Trl
NE 363rd Ct
NE 9th Dr
NE 365th Ln
NW 363rd Ct
NE 361st Ct
NE 10th Dr
NE 342nd Trl
NW 358th Blvd
NW 4th Dr
NW 353rd Blvd
NE 7th Dr
NE 8th Dr
NE 342nd Trl
Jim Green Creek
Jim Green Creek
Parker Slough
Boggy Branch
Dr
Highway 441 N

LEGEND

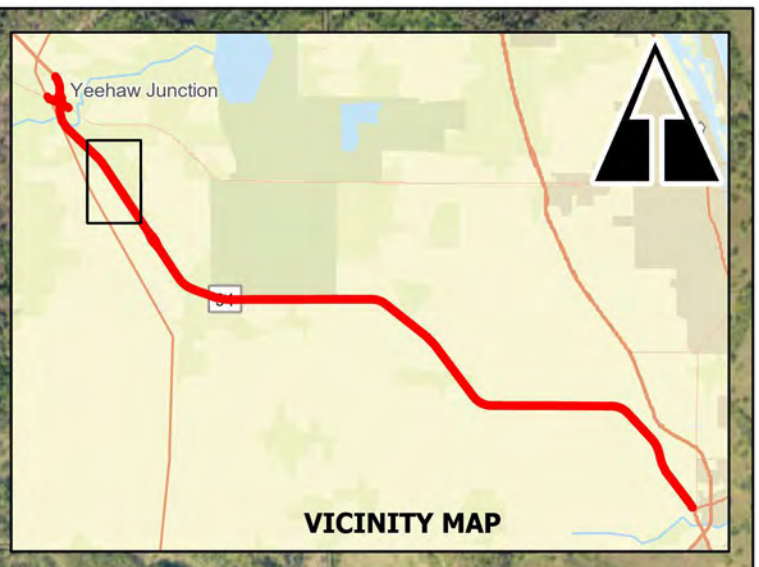
- Truck Parking Alternative
- Project Area (200' Buffer from Proposed ROW)

Soil Type (NRCS 2023)

- BASINGER
- FLORIDANA
- IMMOKALEE
- MYAKKA
- POMELLO
- WATER

0 0.25 0.5 Miles

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60



CASSIA
MYAKKA
POMELLO
MYAKKA
23rd Ave
SATELLITE
IMMOKALEE
MYAKKA
POMELLO
23rd St
23rd St
23rd St
NW 430th St
441
BASINGER
IMMOKALEE
US Highway 441 N
Jim Green Creek
MYAKKA
441
POMELLO
ST. JOHNS
FLORIDANA
Jim Green Creek

LEGEND

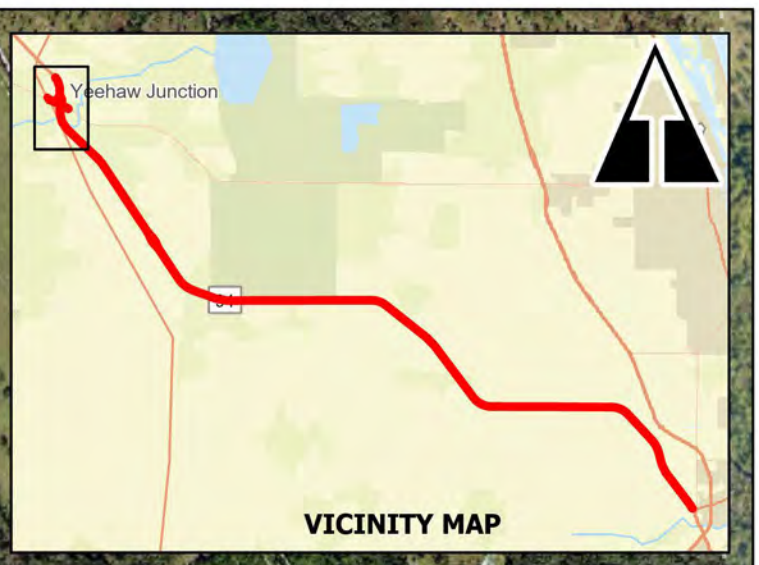
- Truck Parking Alternative
- Project Area (200' Buffer from Proposed ROW)

Soil Type (NRCS 2023)

- BASINGER
- CASSIA
- FLORIDANA
- IMMOKALEE
- MYAKKA
- POMELLO
- SATELLITE
- ST. JOHNS

0 0.25 0.5 Miles

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60



Florida's Tpke N
S Kenansville Rd
Albert Rd
91
SATELLITE
IMMOKALEE
PLACID
WATER
POMPANO
SAMSULA
State Road 60
CASSIA
SMYRNA
ARENTS
MYAKKA
Tropical Ave
Cow Log Branch
Sunshine Ave
Pine Ave
E Tangerine Ln
Grape Ave
Blue Cypress Creek
Magnolia Ct
Cypress Dr
Forest Dr
Magnolia Dr
Maple Dr
Geiger Dr
Hines Dr
Elm Dr
60
DELRAY
OLDSMAR
TAVARES

LEGEND

- Truck Parking Alternative
- Project Area (200' Buffer from Proposed ROW)

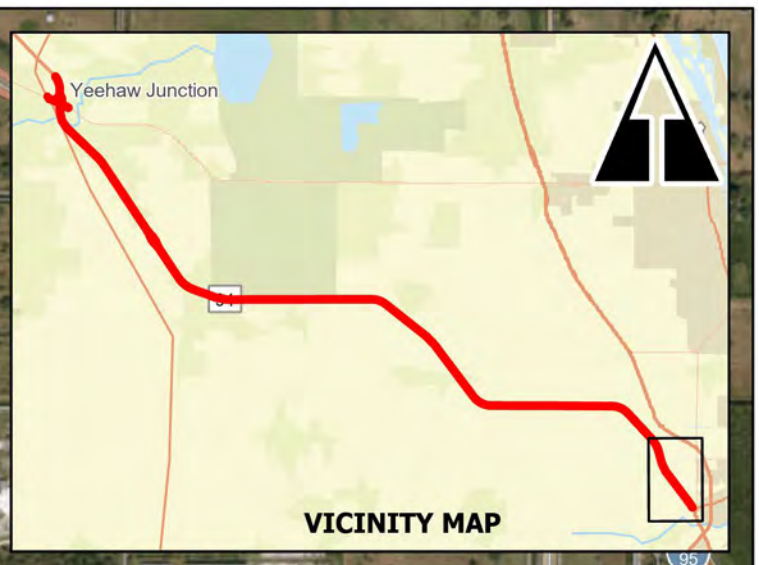
Soil Type (NRCS 2023)

- ARENTS
- CASSIA
- DELRAY
- IMMOKALEE
- MYAKKA
- OLDSMAR
- PLACID
- POMELLO
- POMPANO
- SAMSULA
- SATELLITE
- SMYRNA
- TAVARES
- WATER

0 0.25 0.5 Miles

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60

Figures- Wetlands



Relief Canal
Relief Canal
N Ffa Rd
Florida's Tpke N
Apollo Ave
Apollo Ave
Colbourn Rd
Seaspray Dr
Millwood Dr
Orange Ave
Orange Ave
Orange Ave
68
68
91
Dees Ave
611
Orange Ave
Emerald Ave
Florida's Tpke N
91
S Rock Rd
S Kings Hwy
611
Picos Rd
Picos Rd
Picos Rd
Picos Rd
S Ffa Rd
Florida's Tpke N
Florida's Tpke N
S Ffa Rd
Gentile Rd
S Rock Rd
Pruitt Research Center Rd
Henrys Rd
S Kings Hwy
Schwab Rd
Coolidge Rd
Heil Rd
Andrews Ave
Hidden Pines Rd
611
Pine Cone Ln
S Ffa Rd
Gentile Rd
Pine Needle Dr
Lonesome Pine Trl
Florida's Tpke N
Sugar Pine Dr
70
Okeechobee Rd
70

LEGEND

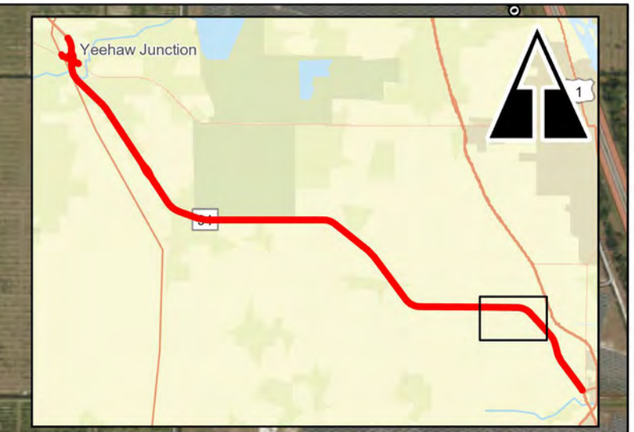
- Project Area (200' Buffer from Proposed ROW)

Wetland Type (USFWS NWI 2023)

- FRESHWATER EMERGENT WETLAND
- FRESHWATER FORESTED/SHRUB WETLAND
- FRESHWATER POND
- RIVERINE

0 0.25 0.5 Miles

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60



Florida's Tpke N
91
Florida's Tpke N
91
Florida's Tpke N
Indrio Rd
W Angle Rd
W Angle Rd
W Angle Rd
Wheeler Rd
Cody Ln
91

LEGEND

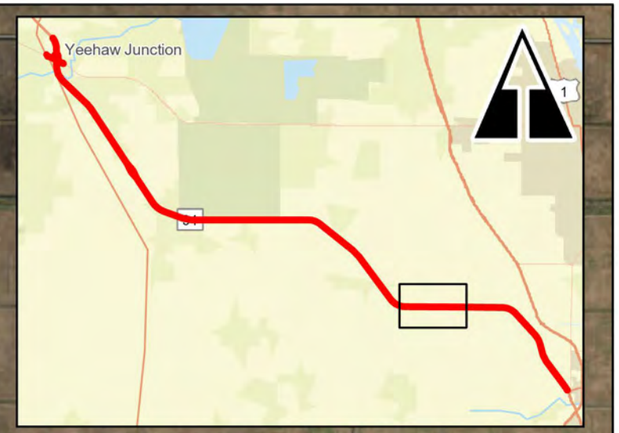
Project Area (200' Buffer from Proposed ROW)

Wetland Type (USFWS NWI 2023)

- FRESHWATER EMERGENT WETLAND
- FRESHWATER FORESTED/SHRUB WETLAND
- FRESHWATER POND
- RIVERINE

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60

0 0.25 0.5 Miles



Minute Maid Rd

Minute Maid Rd

Florida's Tpke N

91

Florida's Tpke N

91

Florida's Tpke N

91

Florida's Tpke N

91

91

Minute Maid Rd

Belcher Canal

N Rim Ditch Rd

N Rim Ditch Rd

LEGEND

Project Area (200' Buffer from Proposed ROW)

Wetland Type (USFWS NWI 2023)

FRESHWATER EMERGENT WETLAND

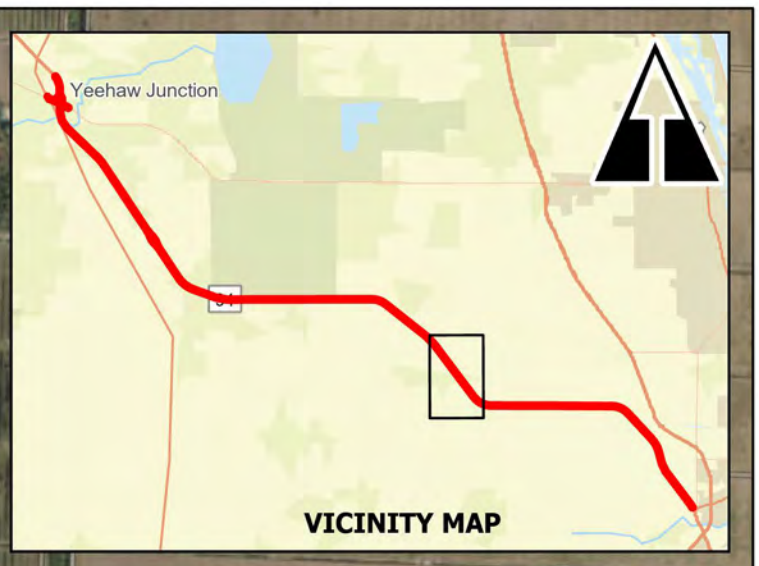
FRESHWATER FORESTED/SHRUB WETLAND

FRESHWATER POND

RIVERINE

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60

0 0.25 0.5 Miles



Florida's Tpke N

91

Orange Ave

LEGEND

Project Area (200' Buffer from Proposed ROW)

Wetland Type (USFWS NWI 2023)

- FRESHWATER EMERGENT WETLAND
- FRESHWATER FORESTED/SHRUB WETLAND
- FRESHWATER POND
- RIVERINE

0 0.25 0.5 Miles

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60

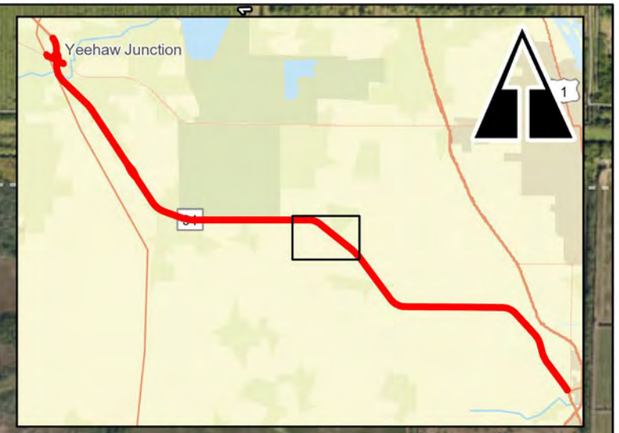
Florida's Tpke N

Greene Swamp Preserve

Orange Ave

SE West Snow Rd

91



LEGEND

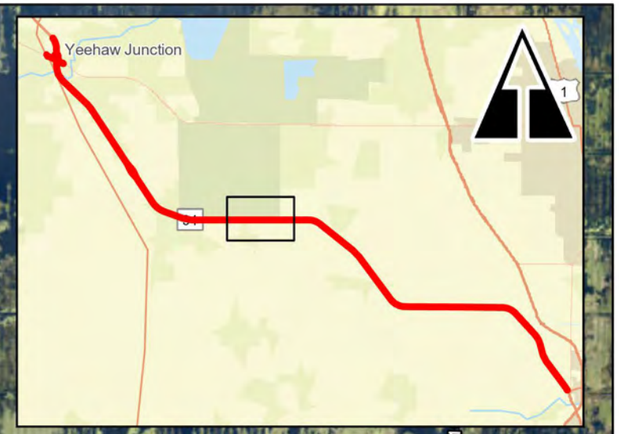
Project Area (200' Buffer from Proposed ROW)

Wetland Type (USFWS NWI 2023)

- FRESHWATER EMERGENT WETLAND
- FRESHWATER FORESTED/SHRUB WETLAND
- RIVERINE

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60

0 0.25 0.5 Miles



162nd Ave

Florida's Tpke N

NE 48th Ave

NE Th St

LEGEND

Project Area (200' Buffer from Proposed ROW)

Wetland Type (USFWS NWI 2023)

FRESHWATER EMERGENT WETLAND

RIVERINE

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60

0 0.25 0.5 Miles

Fort Drum Creek

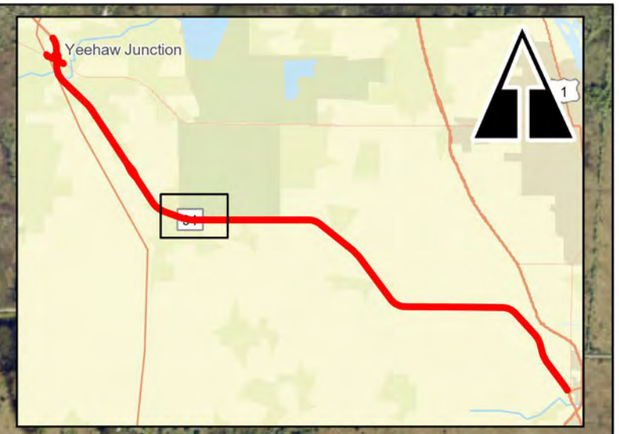
Florida's Tpke N

91

Sawgrass Bay

Quay Rd

Yeehaw Junction



LEGEND

Project Area (200' Buffer from Proposed ROW)

Wetland Type (USFWS NWI 2023)

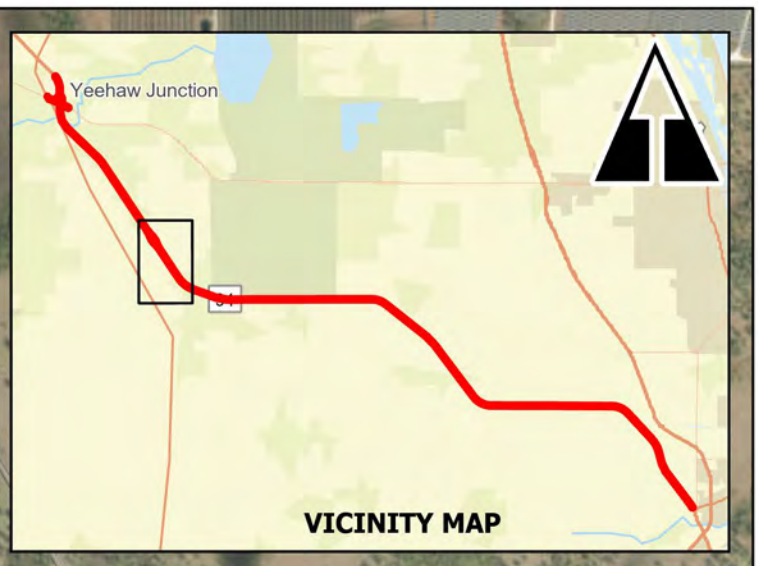
FRESHWATER EMERGENT WETLAND

FRESHWATER FORESTED/SHRUB WETLAND

RIVERINE

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60

0 0.25 0.5 Miles



Florida's Tpke N
91
NE 366th Trl
Fort Drum
Service Plaza
Jim Green Creek
NW 366th Trl
NE 363rd Ct
NE 9th Dr
NE 365th Ln
NW 363rd Ct
NE 361st Ct
NE 10th Dr
NE 342nd Trl
Parker Slough
NW 358th Blvd
NW 4th Dr
NW 353rd Blvd
NE 7th Dr
NE 8th Dr
NE 4th Dr
Boggy Branch

LEGEND

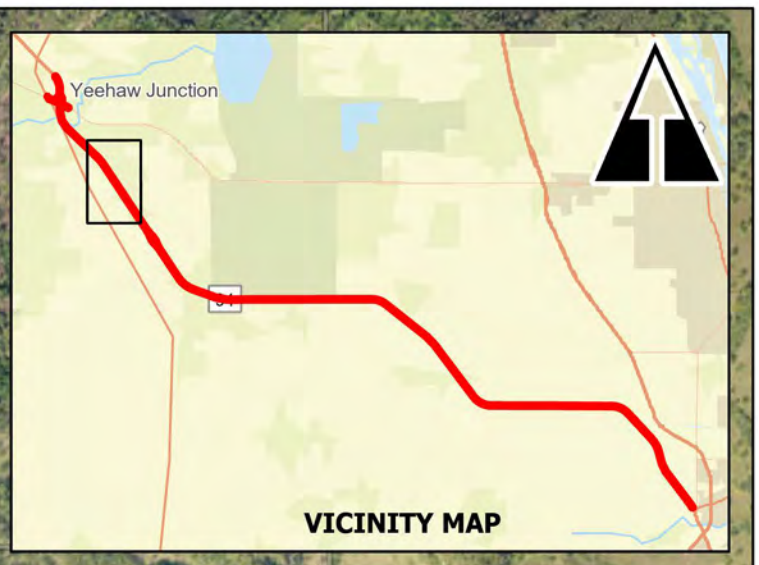
- Project Area (200' Buffer from Proposed ROW)

Wetland Type (USFWS NWI 2023)

- FRESHWATER EMERGENT WETLAND
- FRESHWATER FORESTED/SHRUB WETLAND
- FRESHWATER POND
- RIVERINE

0 0.25 0.5 Miles

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60



91
Florida's Tpke N
23rd Ave
23rd St
NW 430th St
441
US Highway 441 N
Jim Green Creek
Ronald Reagan Tpke

LEGEND

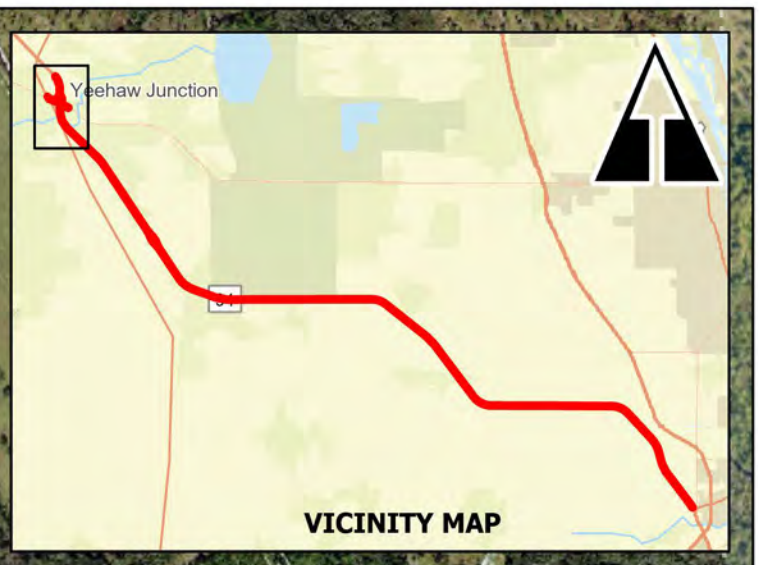
- Project Area (200' Buffer from Proposed ROW)

Wetland Type (USFWS NWI 2023)

- FRESHWATER EMERGENT WETLAND
- FRESHWATER FORESTED/SHRUB WETLAND
- FRESHWATER POND
- RIVERINE

0 0.25 0.5 Miles

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60



Florida's Tpke N
S Kenansville Rd
Albert Rd
91
State Road 60
Yeehaw Junction
Palm Ave
Tropical Ave
Sunshine Ave
Pine Ave
E Tangerine Ln
Cow Log Branch
Grape Ave
Blue Cypress Creek
Magnolia Ct
Cypress Dr
Forest Dr
Magnolia Dr
Maple Dr
Geiger Dr
Hines Dr
Elm Dr
60

LEGEND

- Truck Parking Alternative
- Project Area (200' Buffer from Proposed ROW)

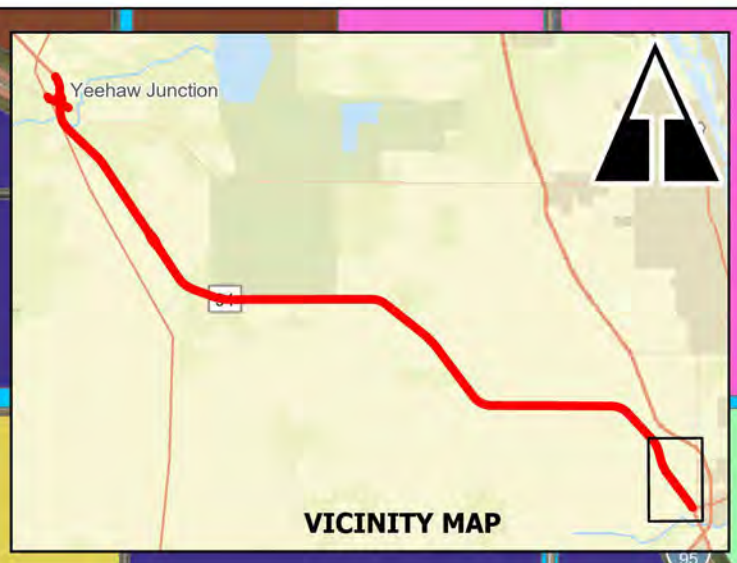
Wetland Type (USFWS NWI 2023)

- FRESHWATER EMERGENT WETLAND
- FRESHWATER FORESTED/SHRUB WETLAND
- FRESHWATER POND
- RIVERINE

0 0.25 0.5 Miles

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60

Figures- Future Land Use



Florida's Tpke N
Relief Canal
Orange Ave
91
68
Dupps Ave
Picos Rd
Coolidge Rd
Andrews Ave
Hidden Pines Rd
Lonesome Pine Trl
Okeechobee Rd
70
95

LEGEND

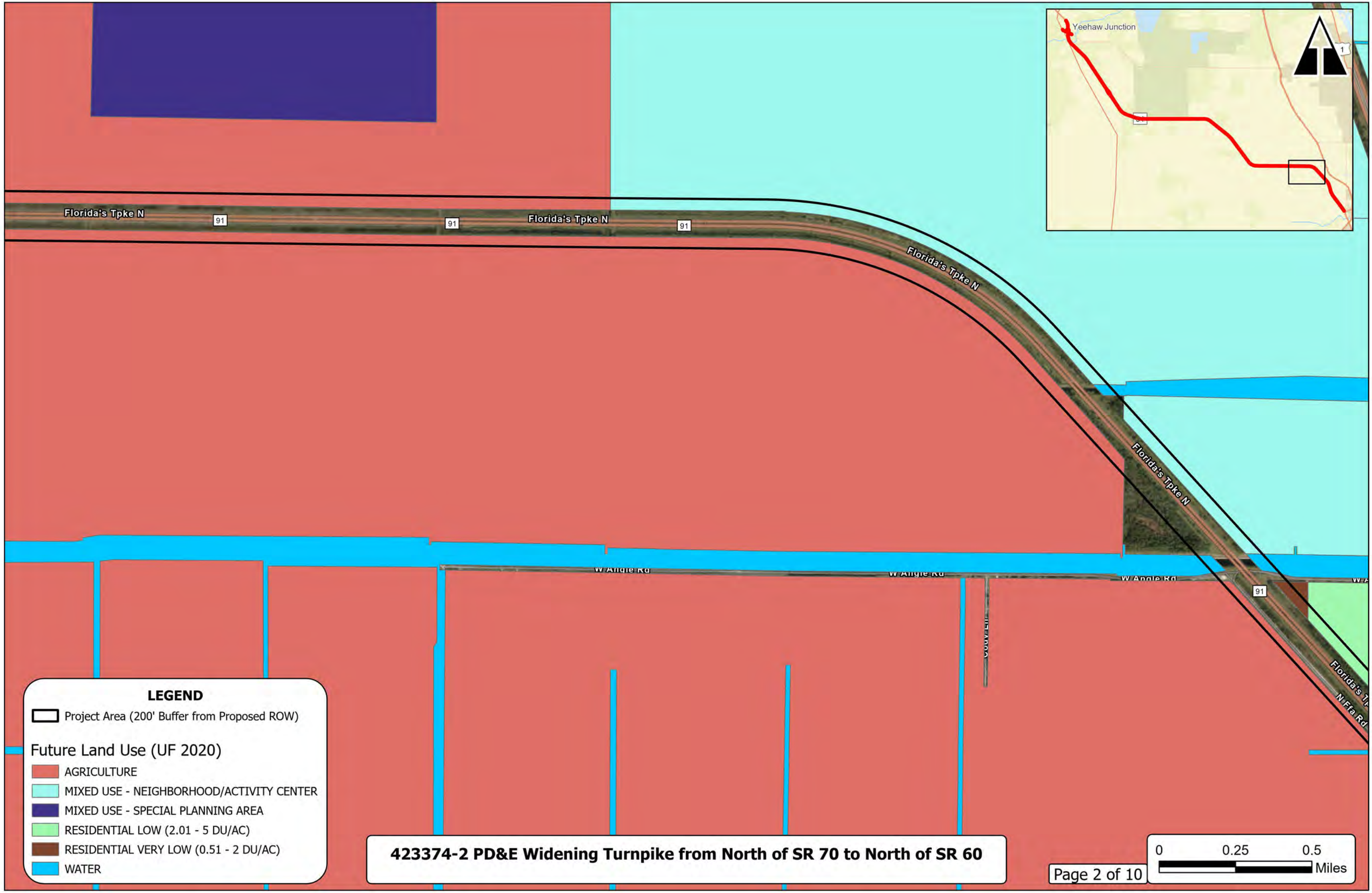
- Truck Parking Alternative
- Project Area (200' Buffer from Proposed ROW)

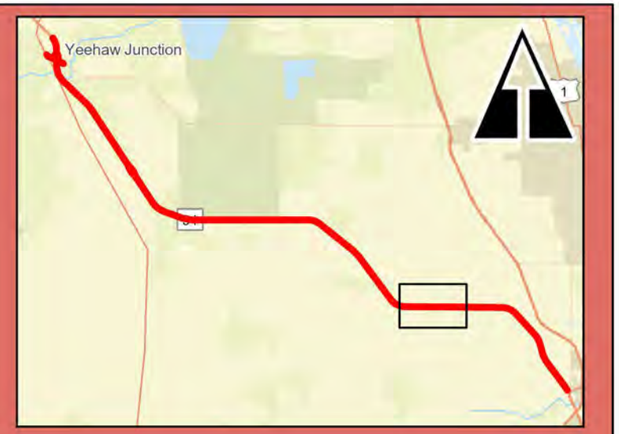
Future Land Use (UF 2020)

- AGRICULTURE
- COMMERCIAL
- CONSERVATION
- INDUSTRIAL
- INSTITUTIONAL
- MIXED USE - GENERAL
- MIXED USE - SPECIAL PLANNING AREA
- RESIDENTIAL LOW (2.01 - 5 DU/AC)
- RESIDENTIAL MEDIUM (5.01 - 12 DU/AC)
- RESIDENTIAL VERY LOW (0.51 - 2 DU/AC)
- TRANSPORTATION/UTILITIES
- WATER

0 0.25 0.5 Miles

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60


Yeehaw Junction
91
Florida's Tpke N
Florida's Tpke N
Florida's Tpke N
Florida's Tpke N
W Angle Rd
W Angle Rd
W Angle Rd
N Fta Rd
LEGEND
Project Area (200' Buffer from Proposed ROW)
Future Land Use (UF 2020)
AGRICULTURE
MIXED USE - NEIGHBORHOOD/ACTIVITY CENTER
MIXED USE - SPECIAL PLANNING AREA
RESIDENTIAL LOW (2.01 - 5 DU/AC)
RESIDENTIAL VERY LOW (0.51 - 2 DU/AC)
WATER
423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60
0
0.25
0.5
Miles



Florida's Tpke N 91 91 Florida's Tpke N 91 91 Florida's Tpke N 91 91

LEGEND

Project Area (200' Buffer from Proposed ROW)

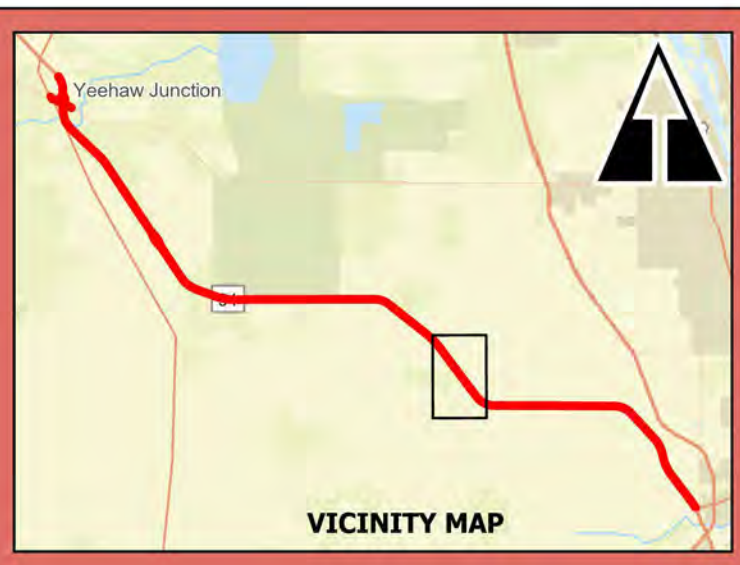
Future Land Use (UF 2020)

AGRICULTURE

WATER

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60

0 0.25 0.5 Miles



91

Florida's Tpke N

91

Florida's Tpke N

91

Florida's Tpke N

91

Florida's Tpke N

91

LEGEND

Truck Parking Alternative

Project Area (200' Buffer from Proposed ROW)

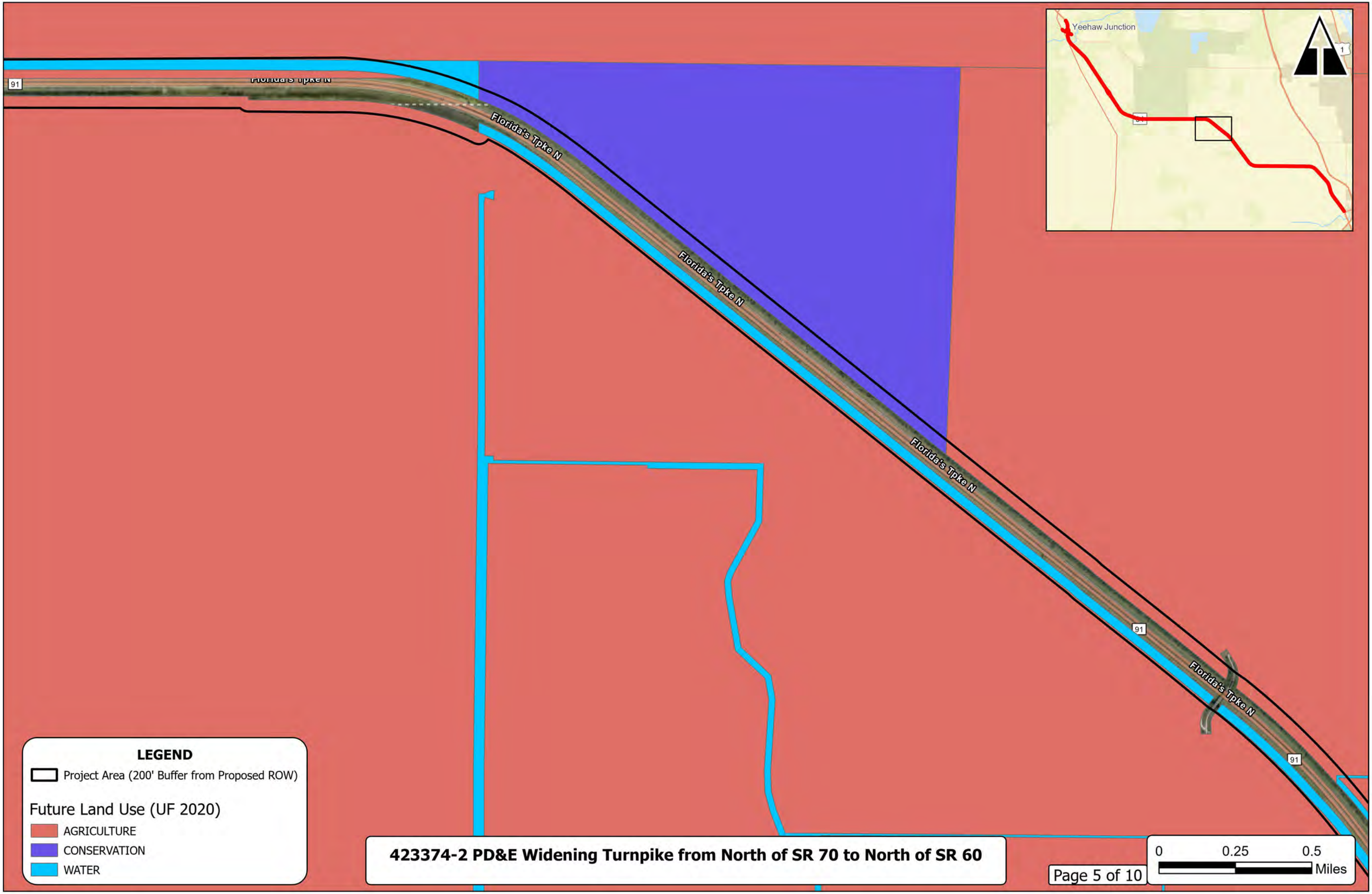
Future Land Use (UF 2020)

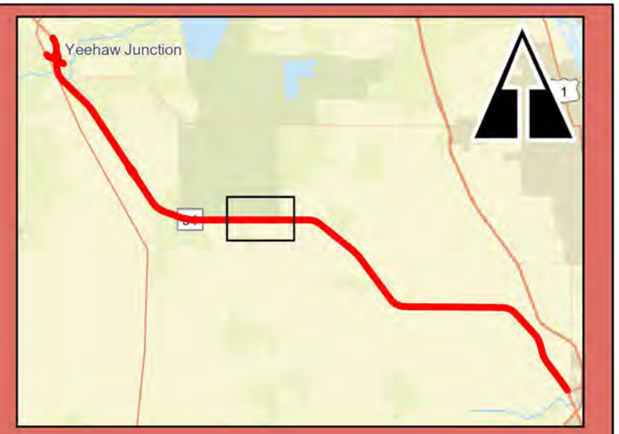
AGRICULTURE

WATER

0 0.25 0.5 Miles

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60


Yeehaw Junction
91
Florida's Tpke N
Florida's Tpke N
Florida's Tpke N
Florida's Tpke N
Florida's Tpke N
91
91
LEGEND
Project Area (200' Buffer from Proposed ROW)
Future Land Use (UF 2020)
AGRICULTURE
CONSERVATION
WATER
423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60
0
0.25
0.5
Miles



Florida's Tpke N

91

Florida's Tpke N

91

91

91

LEGEND

Project Area (200' Buffer from Proposed ROW)

Future Land Use (UF 2020)

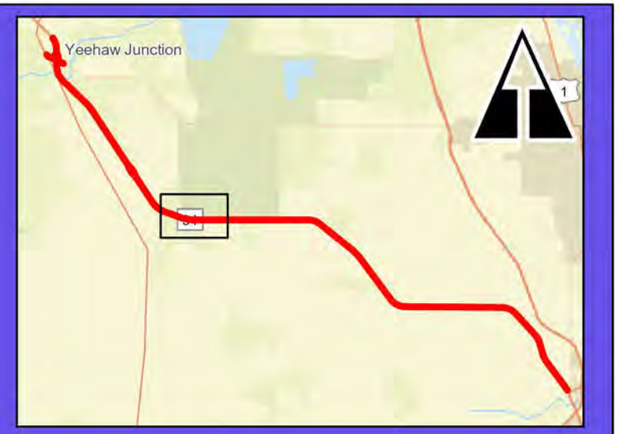
AGRICULTURE

CONSERVATION

WATER

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60

0 0.25 0.5 Miles



LEGEND

Project Area (200' Buffer from Proposed ROW)

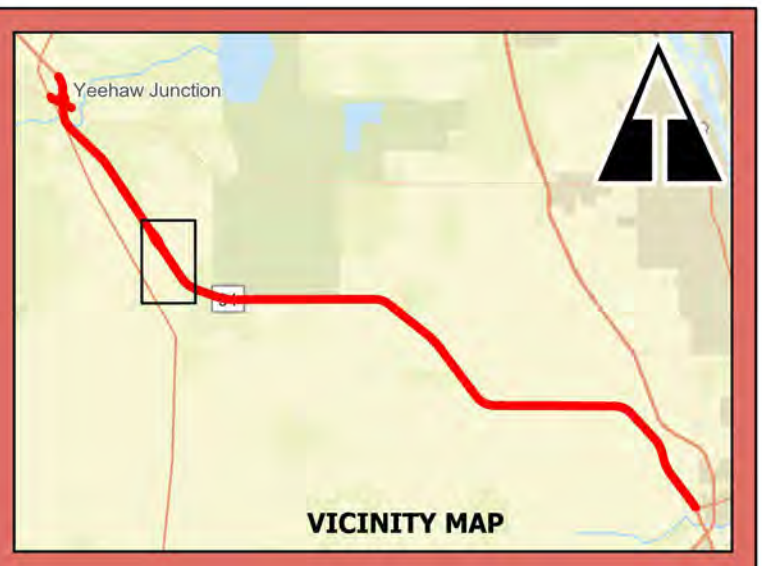
Future Land Use (UF 2020)

AGRICULTURE

CONSERVATION

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60

0 0.25 0.5 Miles



LEGEND

- Truck Parking Alternative
- Project Area (200' Buffer from Proposed ROW)

Future Land Use (UF 2020)

- AGRICULTURE
- MIXED USE - RURAL

0 0.25 0.5 Miles

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60



LEGEND

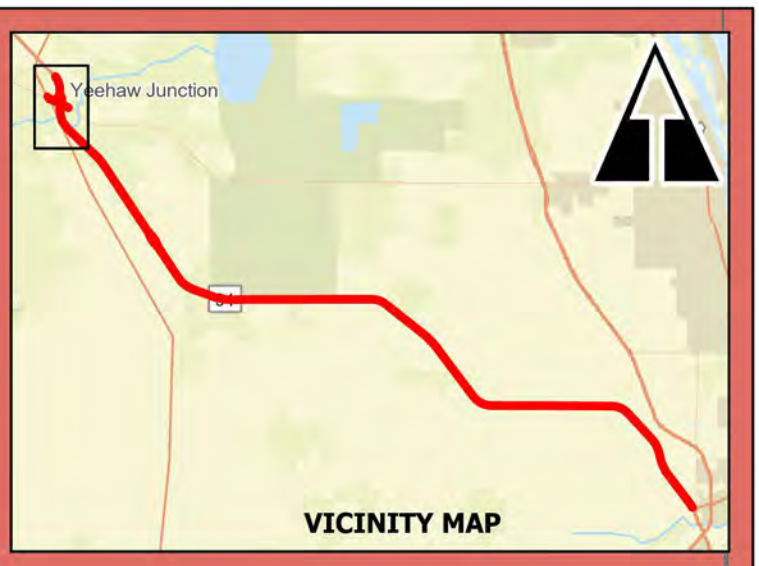
- Truck Parking Alternative
- Project Area (200' Buffer from Proposed ROW)

Future Land Use (UF 2020)

- AGRICULTURE
- TRANSPORTATION/UTILITIES

0 0.25 0.5 Miles

423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60



LEGEND

- Truck Parking Alternative
- Project Area (200' Buffer from Proposed ROW)

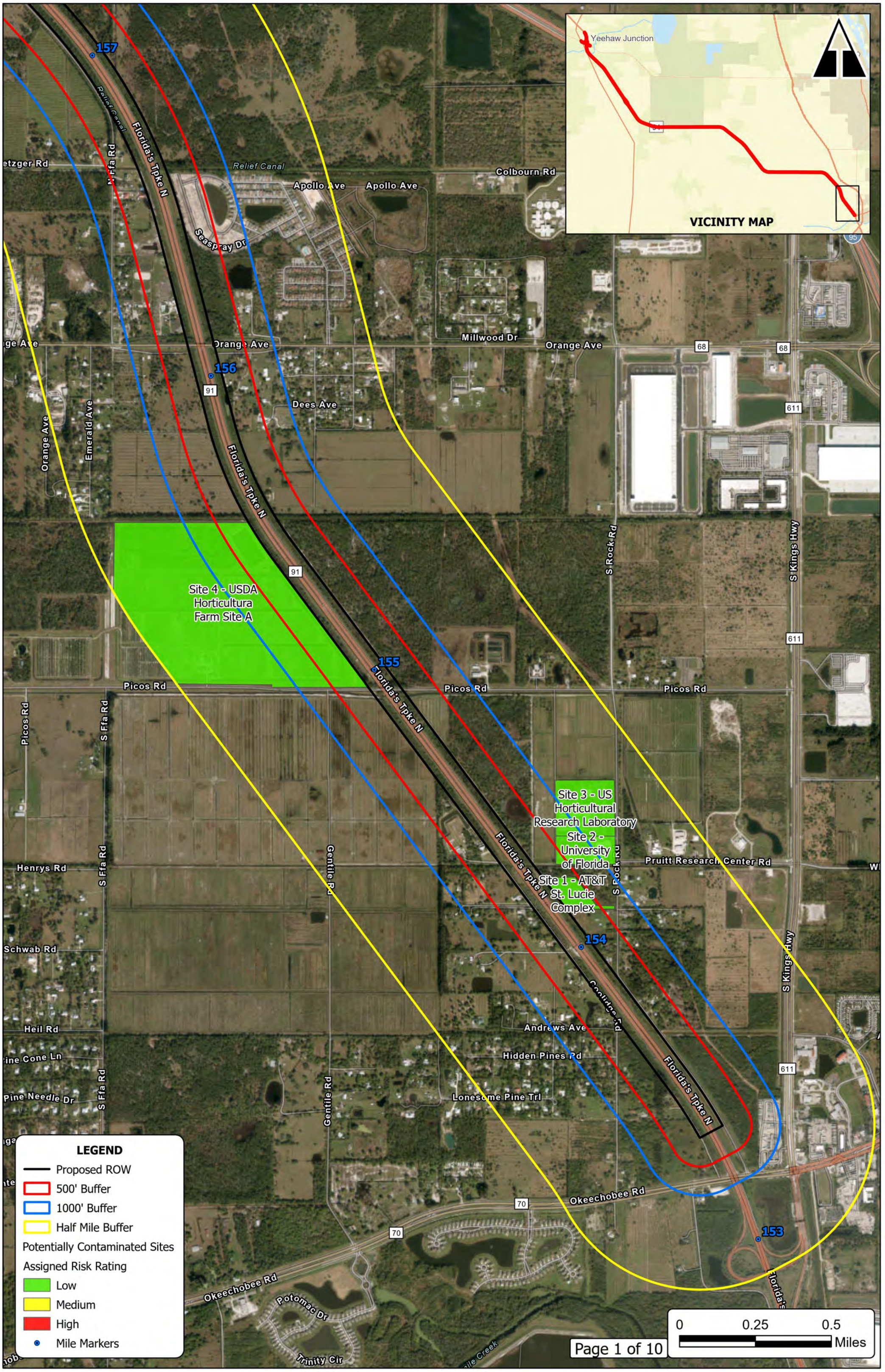
Future Land Use (UF 2020)

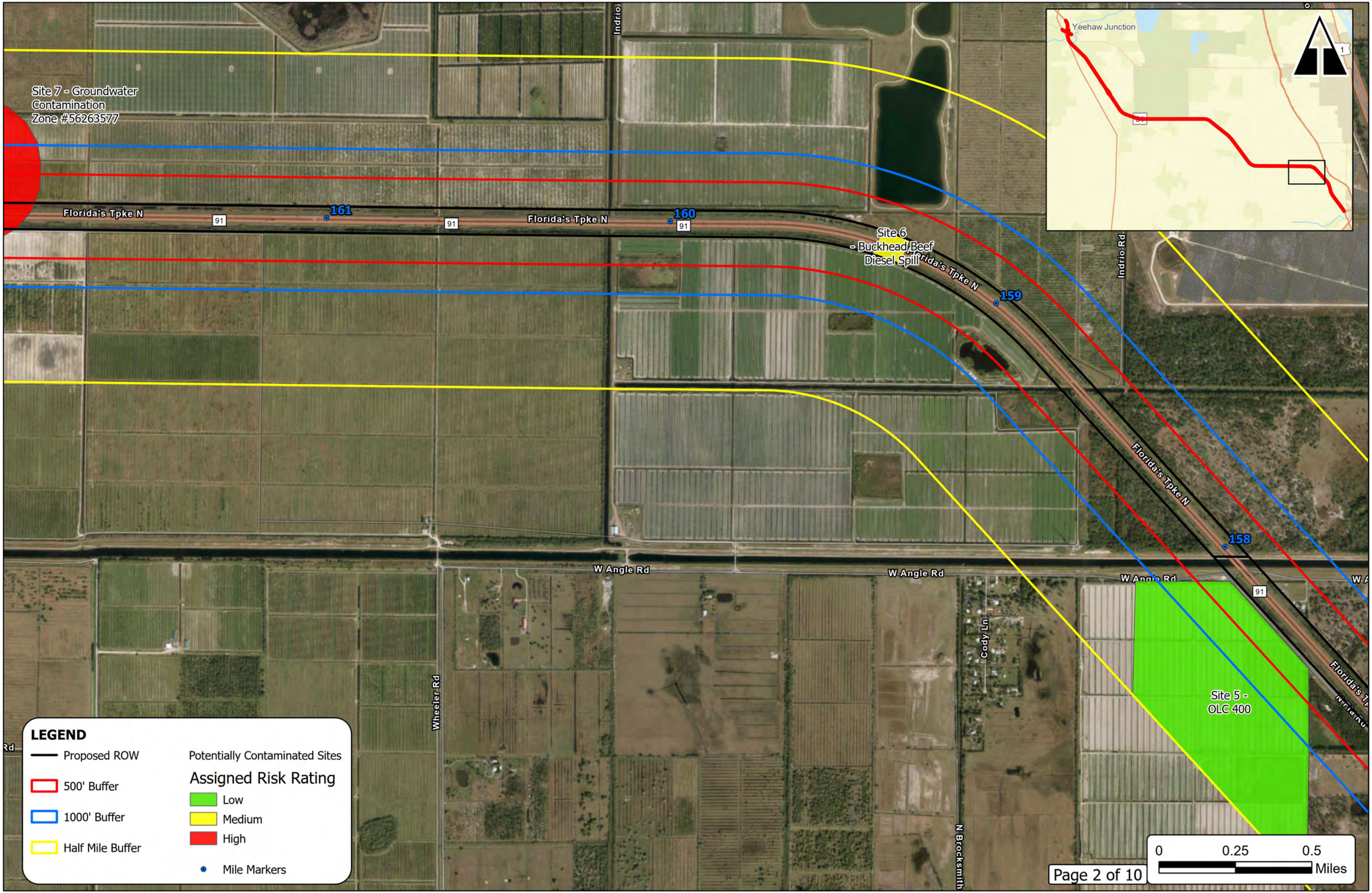
- AGRICULTURE
- COMMERCIAL
- MIXED USE - GENERAL
- TRANSPORTATION/UTILITIES

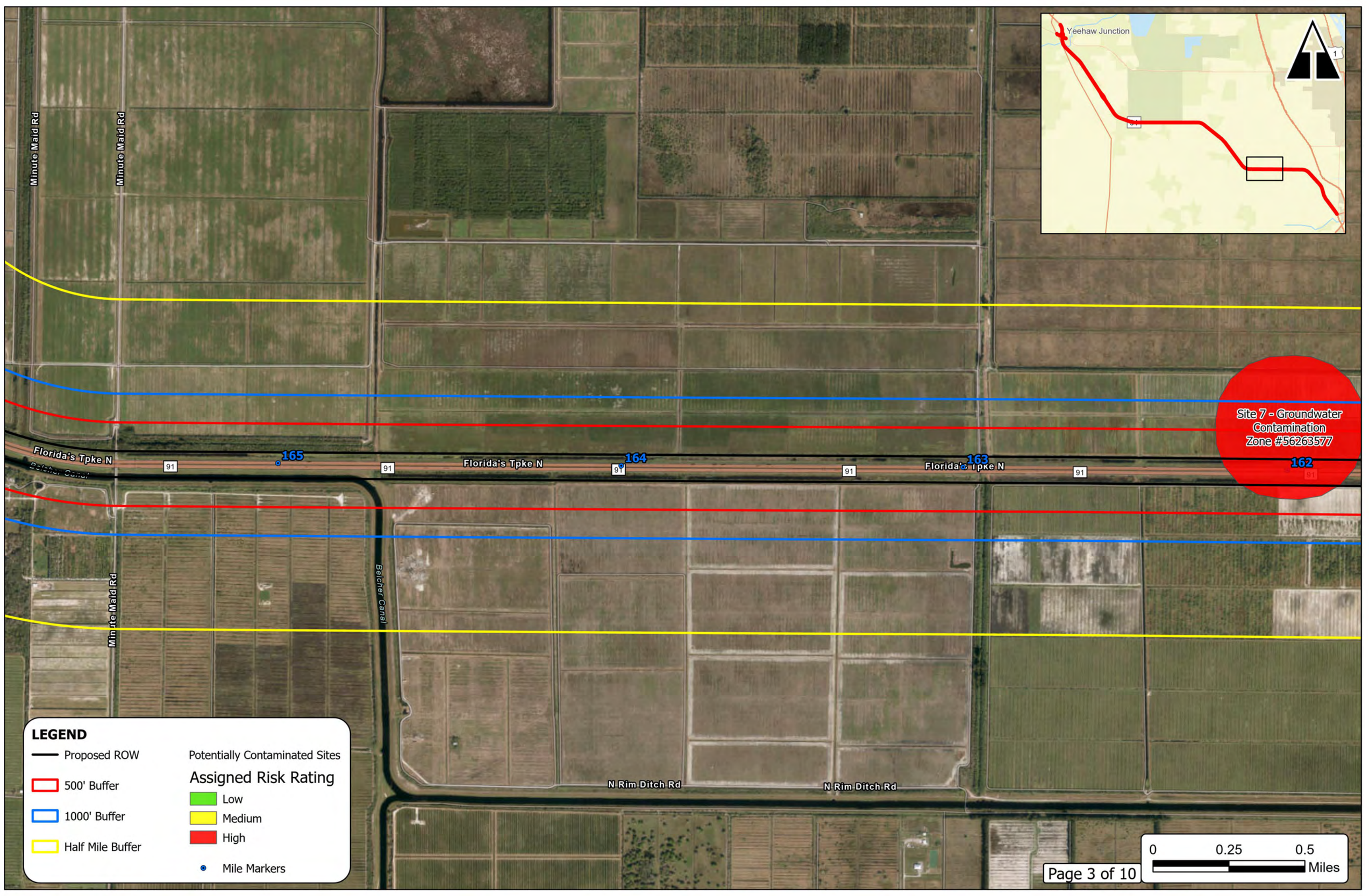
0 0.25 0.5 Miles

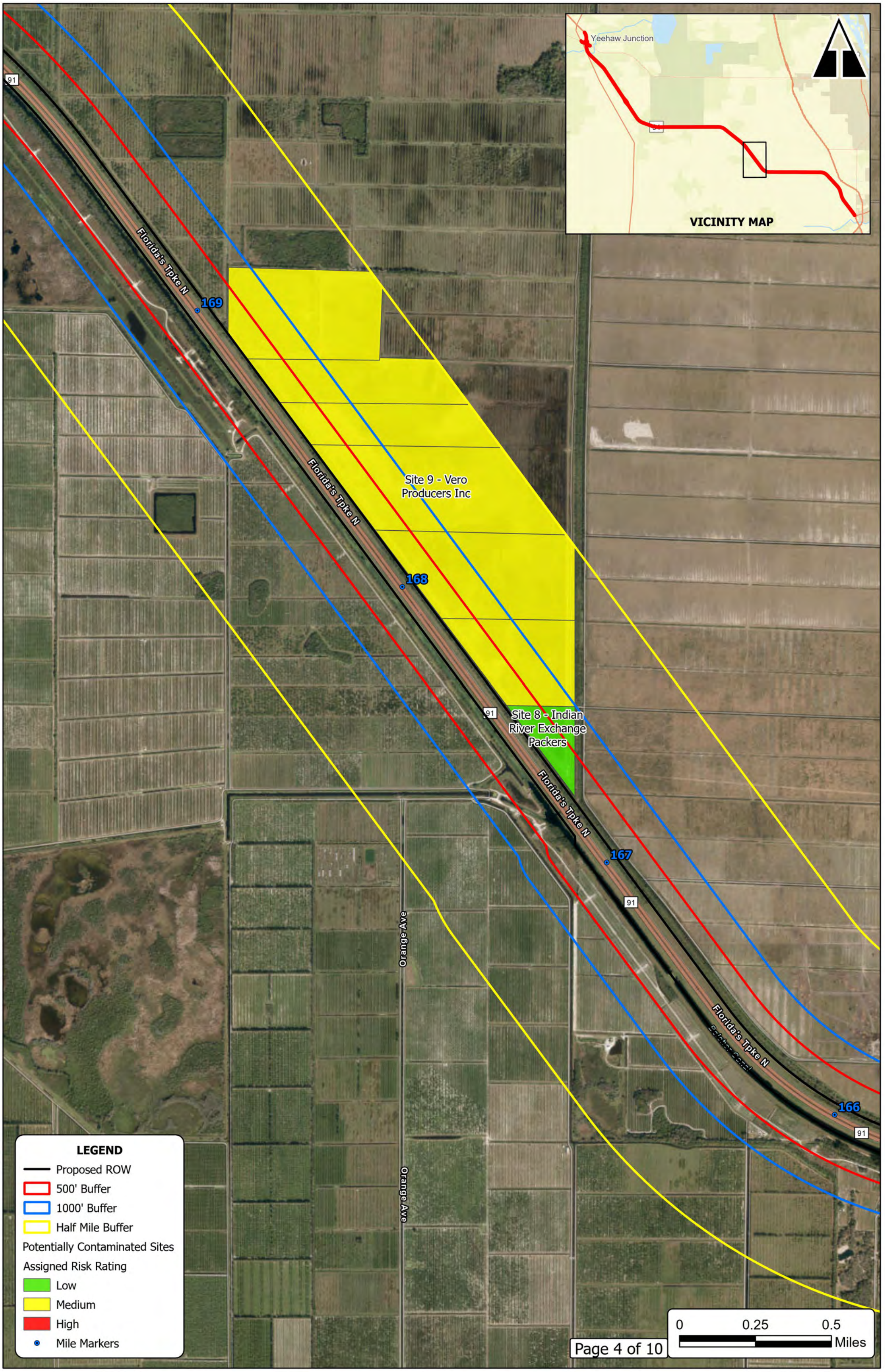
423374-2 PD&E Widening Turnpike from North of SR 70 to North of SR 60

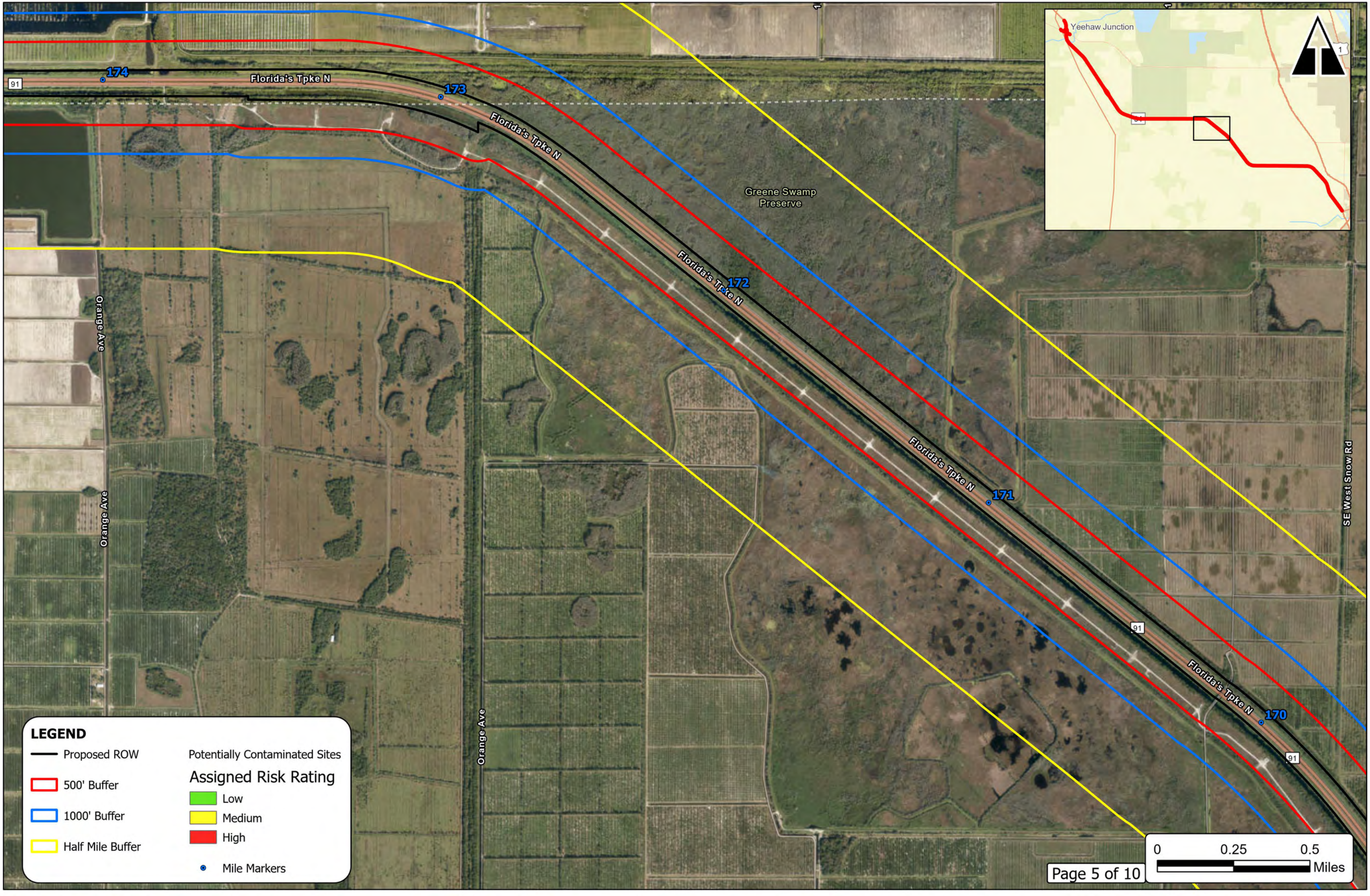
Figures- Potentially Contaminated Sites

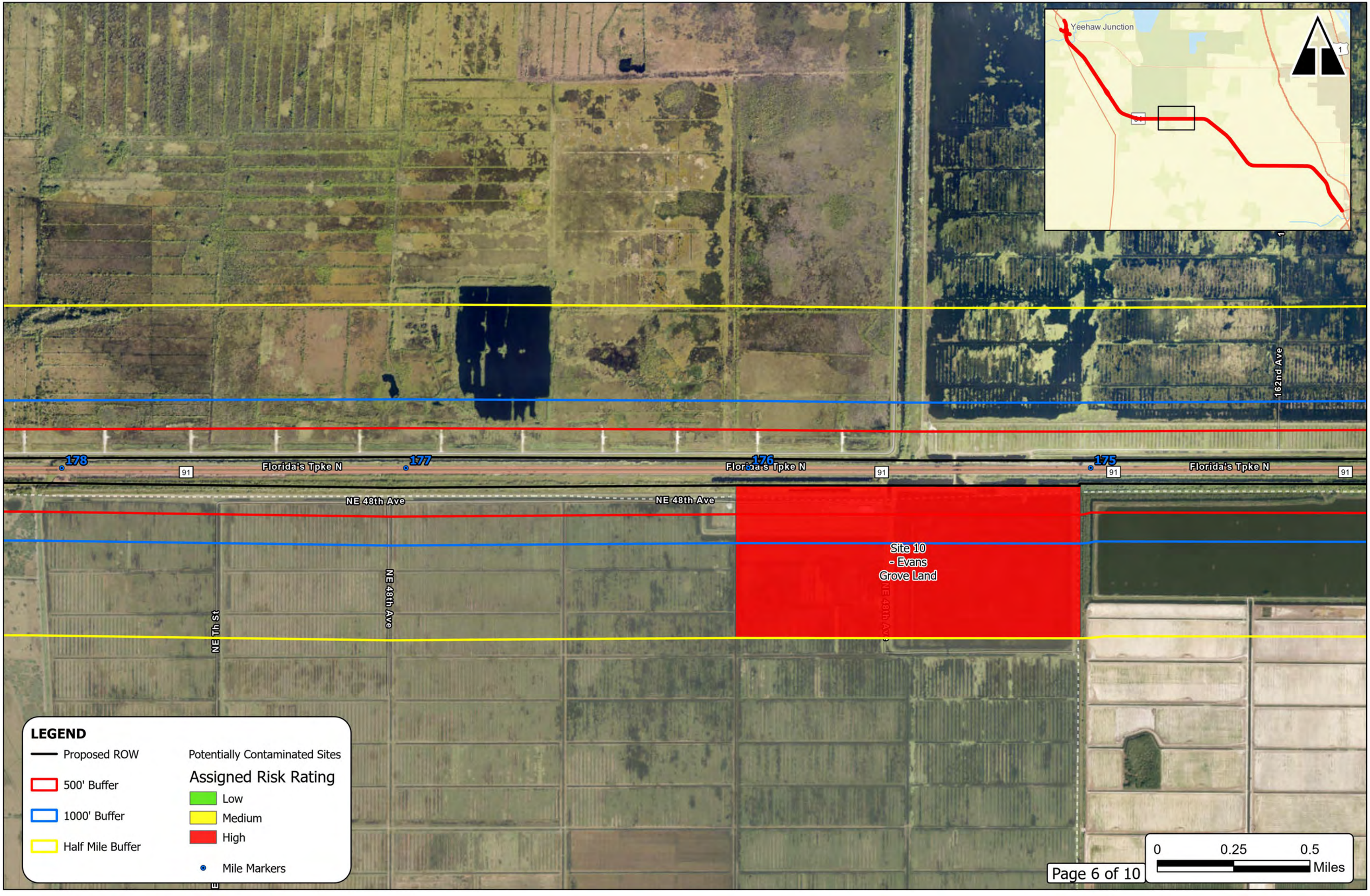

Yeehaw Junction
VICINITY MAP
157
156
155
154
153
Relief Canal
Florida's Tpke N
Colbourn Rd
Apollo Ave
Seaspray Dr
Millwood Dr
Orange Ave
Dees Ave
Emerald Ave
S Ffa Rd
S Rock Rd
S Kings Hwy
Pruitt Research Center Rd
Picos Rd
Gentile Rd
Coolidge Rd
Andrews Ave
Hidden Pines Rd
Lonesome Pine Trl
Okeechobee Rd
Potomac Dr
Trinity Cir
Henrys Rd
Schwab Rd
Heil Rd
Site 4 - USDA Horticultura Farm Site A
Site 3 - US Horticultural Research Laboratory
Site 2 - University of Florida
Site 1 - AT&T St. Lucie Complex
91
68
611
70
95
LEGEND
Proposed ROW
500' Buffer
1000' Buffer
Half Mile Buffer
Potentially Contaminated Sites
Assigned Risk Rating
Low
Medium
High
Mile Markers
0
0.25
0.5
Miles
Page 1 of 10

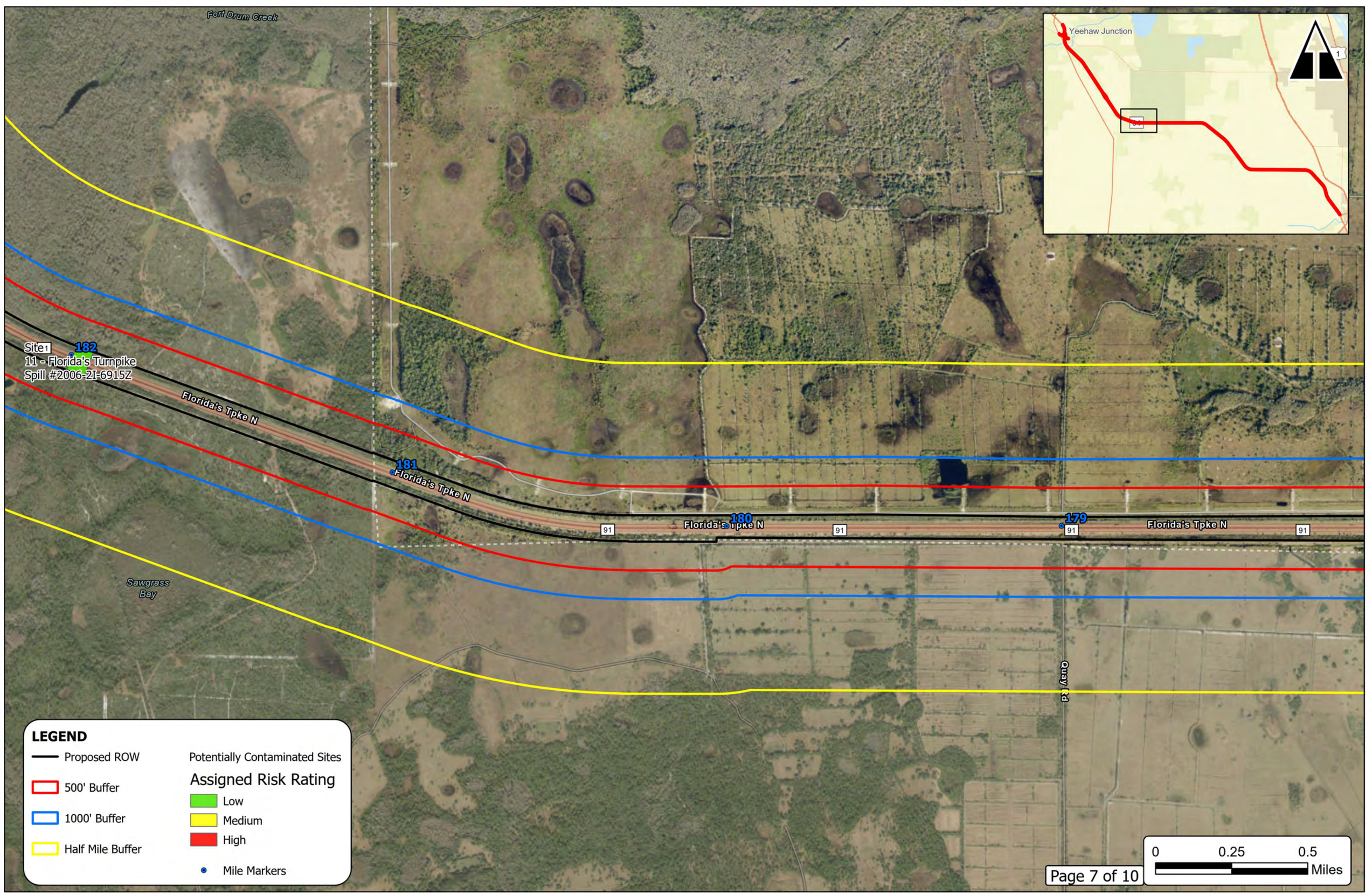

Site 7 - Groundwater Contamination Zone #56263577
Florida's Tpke N
91
161
160
159
158
Site 6 - Buckhead Beef Diesel Spill
Site 5 - OLC 400
Indrio Rd
W Angle Rd
Wheeler Rd
Cody Ln
N Brocksmith
Yeehaw Junction
LEGEND
Proposed ROW
500' Buffer
1000' Buffer
Half Mile Buffer
Potentially Contaminated Sites
Assigned Risk Rating
Low
Medium
High
Mile Markers
0
0.25
0.5
Miles

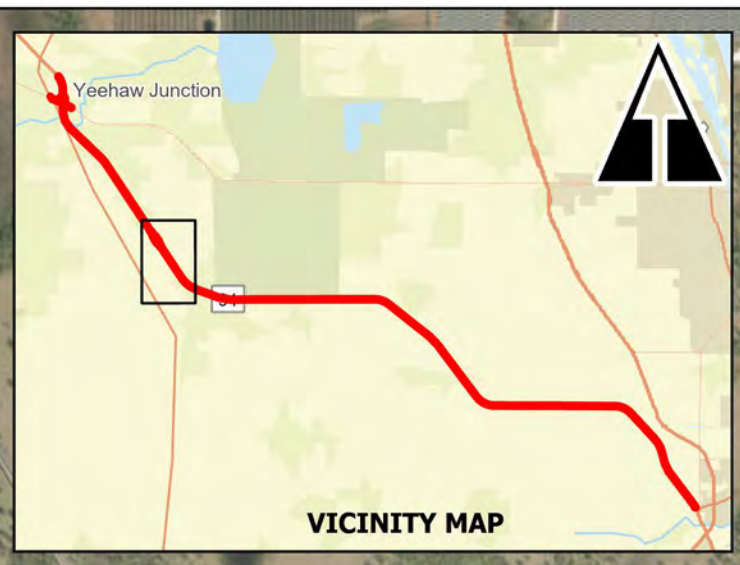

Yeehaw Junction
91
Minute Maid Rd
Minute Maid Rd
Florida's Tpke N
Belcher Canal
165
91
Florida's Tpke N
164
91
Florida's Tpke N
163
91
162
91
Minute Maid Rd
Belcher Canal
N Rim Ditch Rd
N Rim Ditch Rd
Site 7 - Groundwater Contamination Zone #56263577
LEGEND
Proposed ROW
500' Buffer
1000' Buffer
Half Mile Buffer
Potentially Contaminated Sites
Assigned Risk Rating
Low
Medium
High
Mile Markers
0
0.25
0.5
Miles


Yeehaw Junction
VICINITY MAP
91
Florida's Tpke N
169
Site 9 - Vero
Producers Inc
168
Site 8 - Indian
River Exchange
Packers
167
Orange Ave
166
LEGEND
Proposed ROW
500' Buffer
1000' Buffer
Half Mile Buffer
Potentially Contaminated Sites
Assigned Risk Rating
Low
Medium
High
Mile Markers
0
0.25
0.5
Miles


Yeehaw Junction
91
174
173
172
171
170
Florida's Tpke N
Florida's Tpke N
Florida's Tpke N
Florida's Tpke N
Florida's Tpke N
Greene Swamp
Preserve
Orange Ave
Orange Ave
Orange Ave
SE West Snow Rd
LEGEND
Proposed ROW
500' Buffer
1000' Buffer
Half Mile Buffer
Potentially Contaminated Sites
Assigned Risk Rating
Low
Medium
High
Mile Markers
0
0.25
0.5
Miles


Yeehaw Junction
91
178
177
176
175
Florida's Tpke N
NE 48th Ave
NE 48th Ave
NE 7th St
NE 48th Ave
Site 10
- Evans
Grove Land
162nd Ave
LEGEND
Proposed ROW
500' Buffer
1000' Buffer
Half Mile Buffer
Potentially Contaminated Sites
Assigned Risk Rating
Low
Medium
High
Mile Markers
0
0.25
0.5
Miles


Fort Drum Creek
Yeehaw Junction
91
Site1
182
11 - Florida's Turnpike
Spill #2006-2I-6915Z
Florida's Tpke N
181
Florida's Tpke N
180
Florida's Tpke N
179
Florida's Tpke N
Sawgrass Bay
Quay Rd
LEGEND
Proposed ROW
500' Buffer
1000' Buffer
Half Mile Buffer
Potentially Contaminated Sites
Assigned Risk Rating
Low
Medium
High
Mile Markers
0
0.25
0.5
Miles



Site 13 - Fort Drum Service Plaza/Florida's Turnpike MP 184

Site 12 - Wedgworth Farms Inc - Fort Drum

Florida's Tpke N

186

185

184

183

91

NE 366th Trl

NE 363rd Ct

NE 365th Ln

NE 361st Ct

NE 10th Dr

NE 342nd Trl

NE 7th Dr

NE 8th Dr

NE 4th Dr

NW 366th Trl

NW 363rd Ct

NW 358th Blvd

NW 4th Dr

NW 353rd Blvd

Jim Green Creek

Parker Slough

Boggy Branch

LEGEND

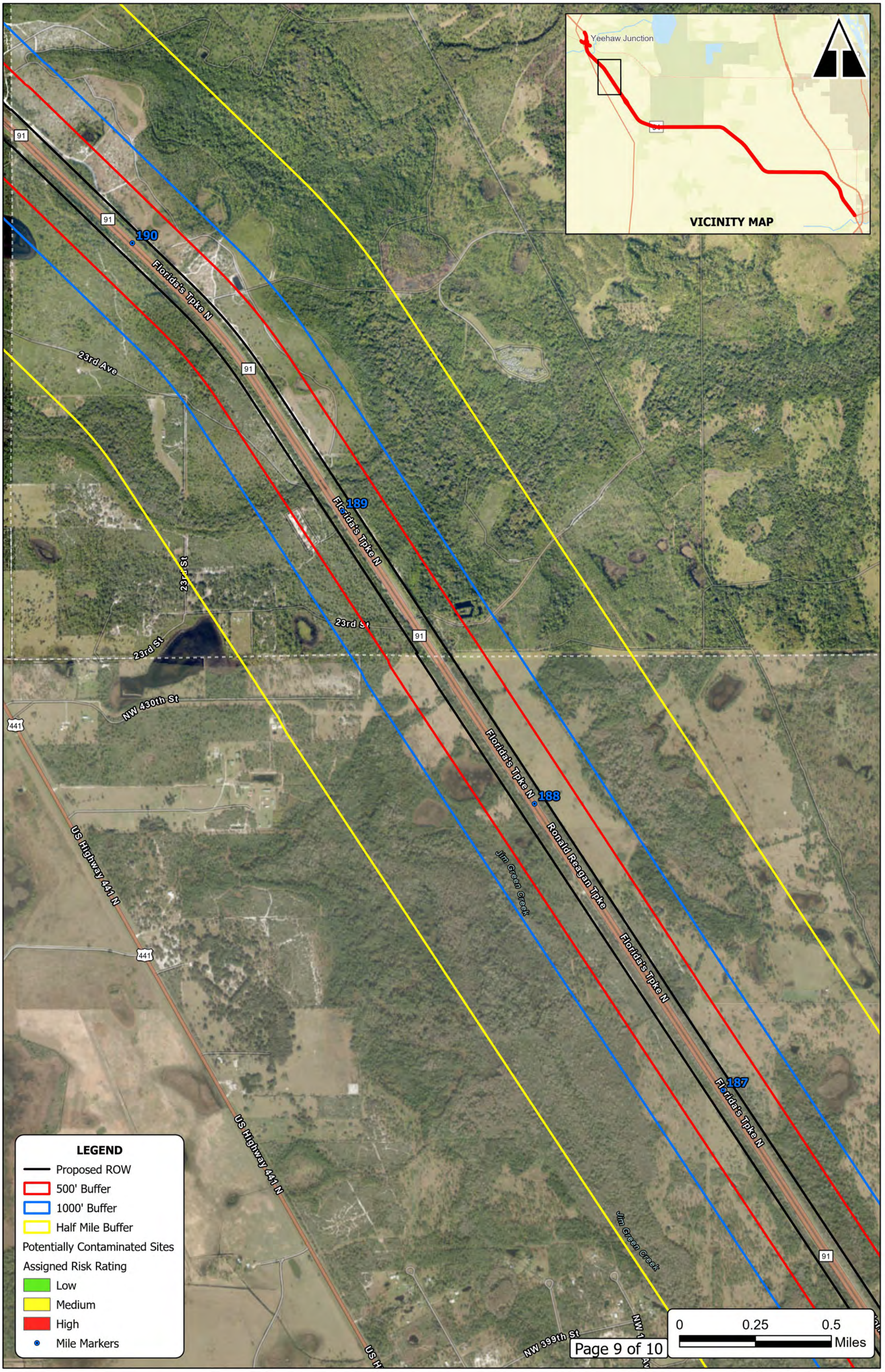
- Proposed ROW
- 500' Buffer
- 1000' Buffer
- Half Mile Buffer

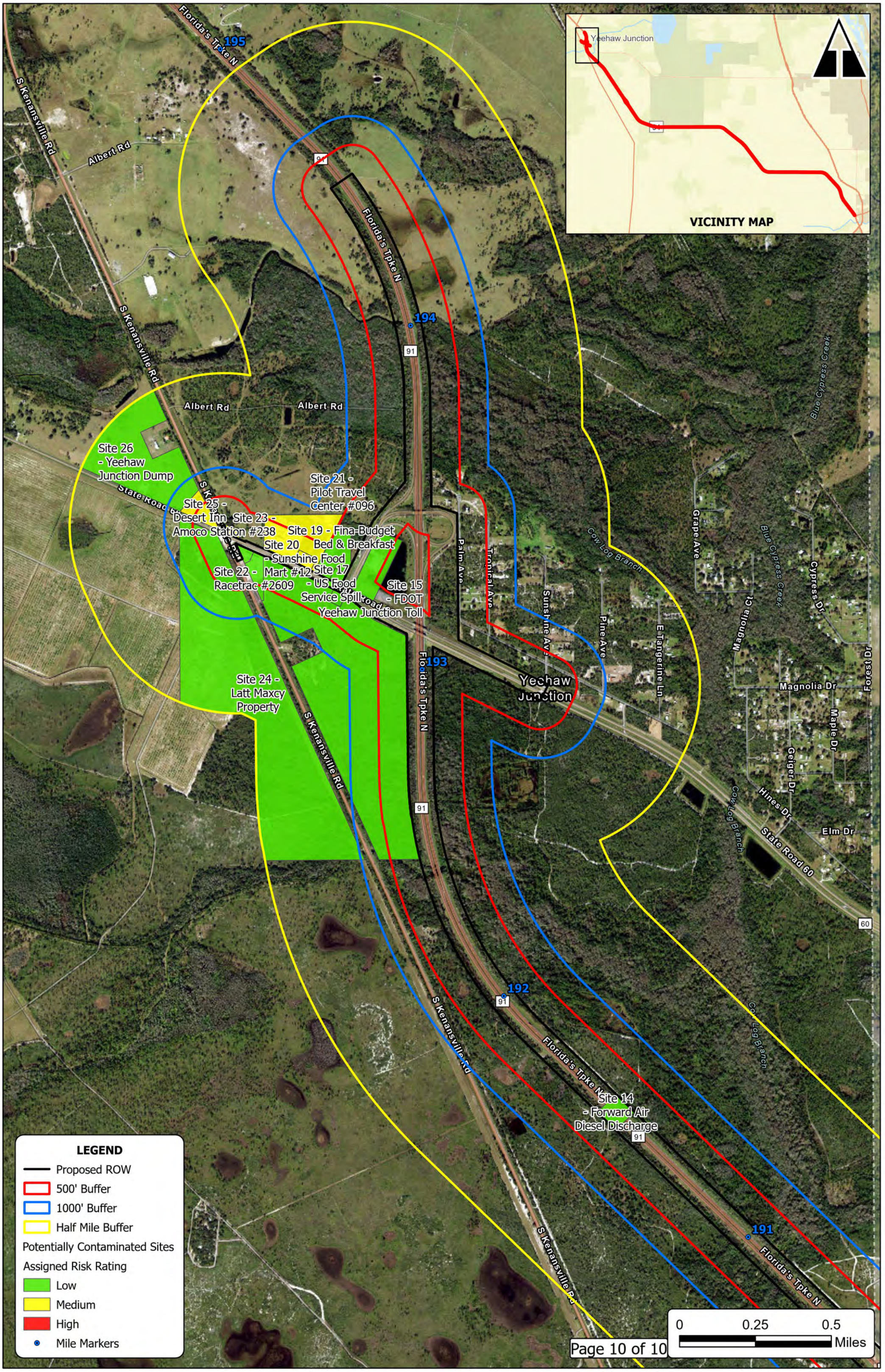
Potentially Contaminated Sites

Assigned Risk Rating

- Low
- Medium
- High
- Mile Markers

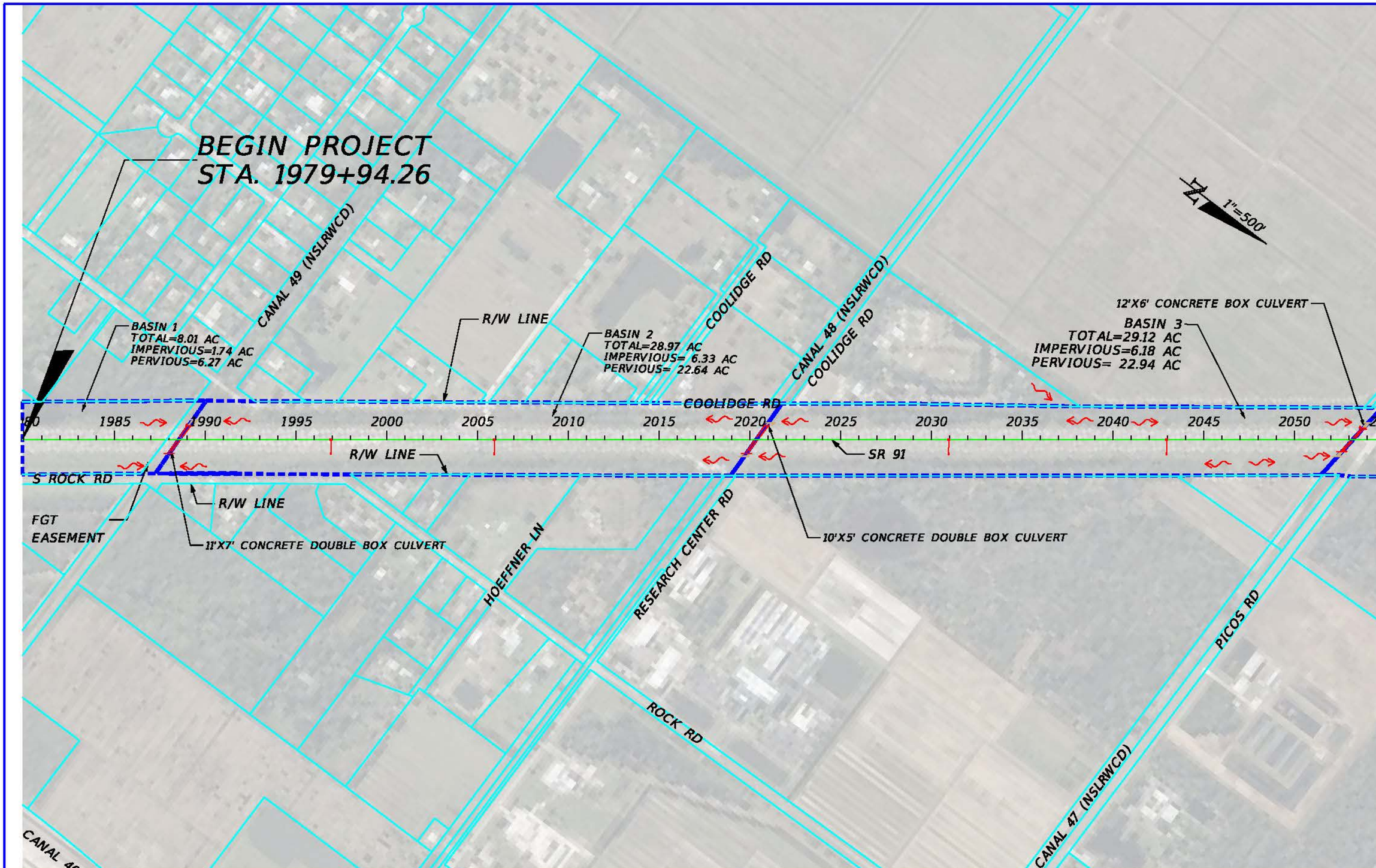
0 0.25 0.5 Miles


Yeehaw Junction
VICINITY MAP
91
190
189
188
187
Florida's Tpke N
23rd Ave
23rd St
NW 430th St
441
US Highway 441 N
Jim Green Creek
Ronald Reagan Tpke
NW 399th St
LEGEND
Proposed ROW
500' Buffer
1000' Buffer
Half Mile Buffer
Potentially Contaminated Sites
Assigned Risk Rating
Low
Medium
High
Mile Markers
0
0.25
0.5
Miles


VICINITY MAP
Yeehaw Junction
91
Florida's Tpke N
195
194
193
192
191
S Kenansville Rd
Albert Rd
Site 26 - Yeehaw Junction Dump
Site 25 - Desert Inn Amoco Station #238
Site 23 - Site 20 - Sunshine Food Mart #12
Site 22 - Racetrac #2609
Site 21 - Pilot Travel Center #096
Site 19 - Fina-Budget Bed & Breakfast
Site 17 - US Food Service Spill
Site 15 - FDOT Yeehaw Junction Toll
Site 24 - Latt Maxcy Property
Site 14 - Forward Air Diesel Discharge
State Road 60
Cow Log Branch
Blue Cypress Creek
Grape Ave
Palm Ave
Tropical Ave
Sunshine Ave
Pine Ave
E Tangerine Ln
Magnolia Ct
Magnolia Dr
Cypress Dr
Forest Dr
Maple Dr
Geiger Dr
Hines Dr
Elm Dr
LEGEND
Proposed ROW
500' Buffer
1000' Buffer
Half Mile Buffer
Potentially Contaminated Sites
Assigned Risk Rating
Low
Medium
High
Mile Markers
0
0.25
0.5
Miles

Appendix B

Existing Drainage Maps



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

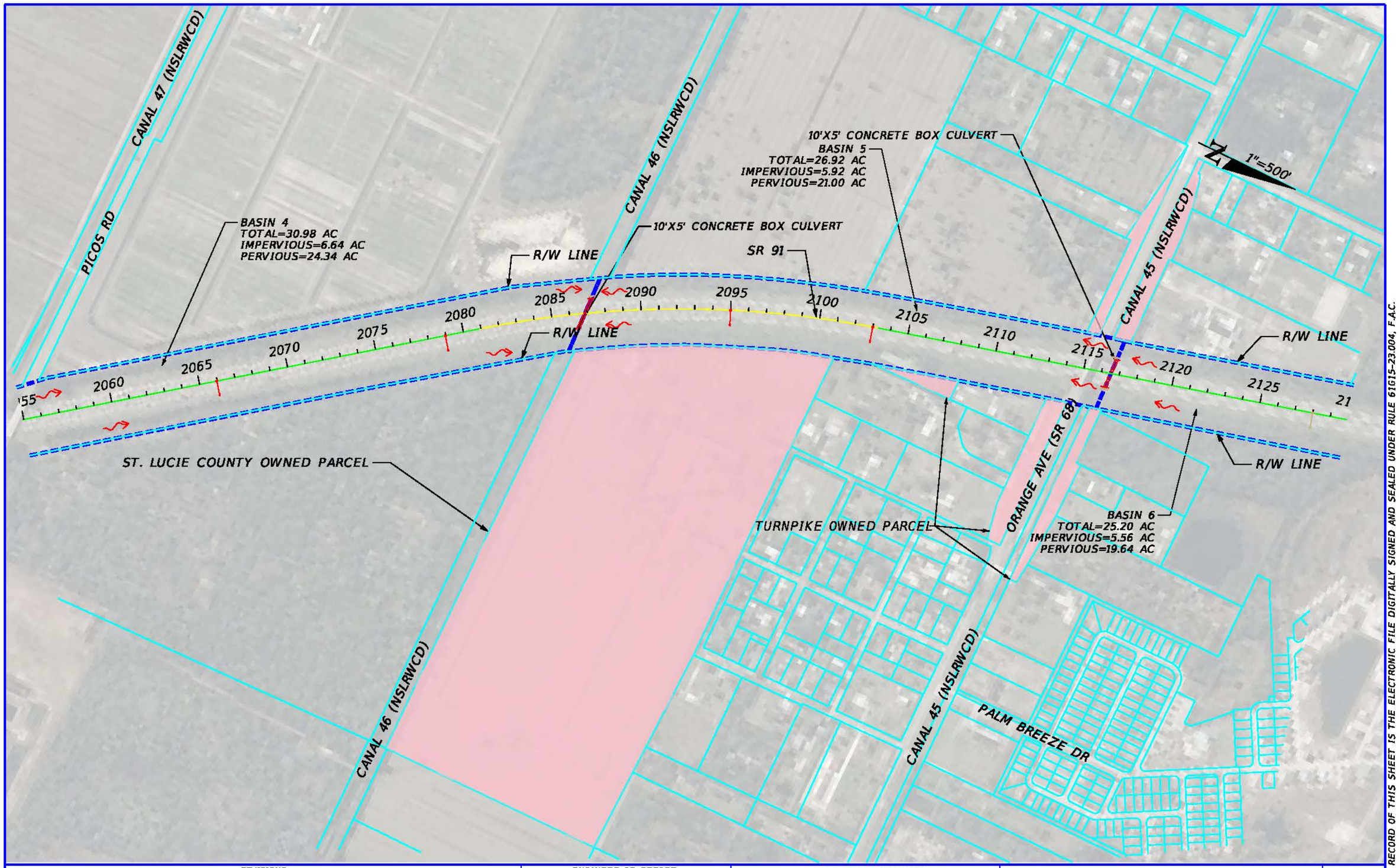
DRAINAGE MAP PRE-DEVELOPMENT

SHEET NO. 1

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

C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn : PRE DEVELOPMENT (SHEET)
RoshanM 5/19/2025 4:10:12 PM

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

DRAINAGE MAP
PRE-DEVELOPMENT

SHEET NO.
2

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

C:\Users\RoshanR\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn : PRE DEVELOPMENT-1 (SHEET)
RoshanR 5/19/2025 4:06:45 PM

BASIN 6
TOTAL=25.20 AC
IMPERVIOUS=5.56 AC
PERVIOUS=19.64 AC

CANAL 44 (NSLRWCD)

N FFA RD

10'X5' CONCRETE DOUBLE BRIDGE CULVERT

R/W LINE

R/W LINE

R/W LINE

R/W LINE

CANAL 44 (NSLRWCD)

CANAL 43 (NSLRWCD)

BASIN 7
TOTAL=75.74 AC
IMPERVIOUS=14.43 AC
PERVIOUS=61.31 AC

SR 91

R/W LINE

OLD FFA RD

SFWMD CANAL C-25

30 2135 2140 2145 2150 2155 2160 2165 2170 2175 2180 2185 2190 2195 2200 22

N

1"=500'

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

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD
CHANDRA S. RAMAN, P.E
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704
JACKSONVILLE, FLORIDA 32256

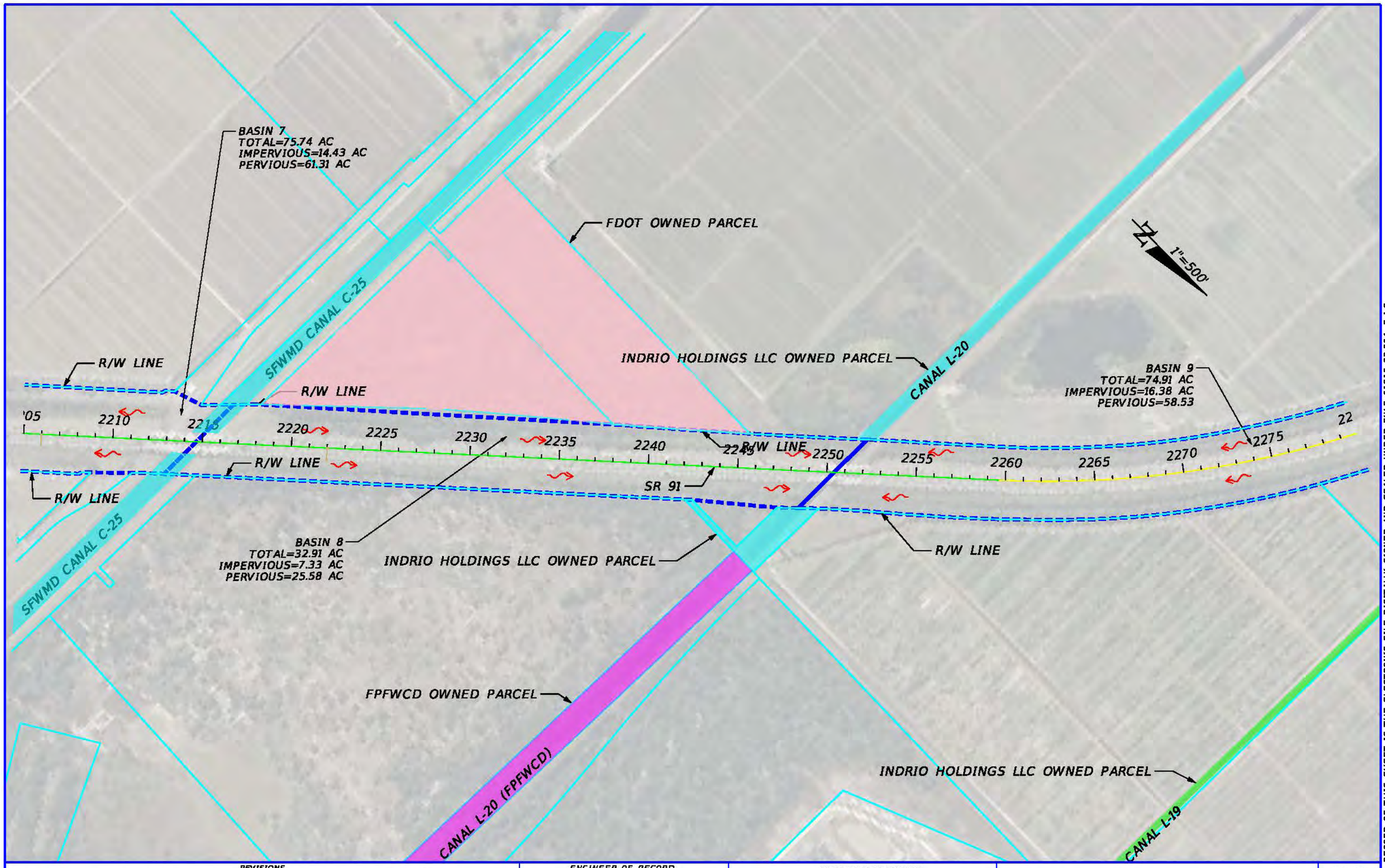
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

DRAINAGE MAP
PRE-DEVELOPMENT

SHEET NO. 3

C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn : PRE DEVELOPMENT-2 [SHEET]
RoshanM 5/19/2025 4:06:50 PM



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

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704
JACKSONVILLE, FLORIDA 32256

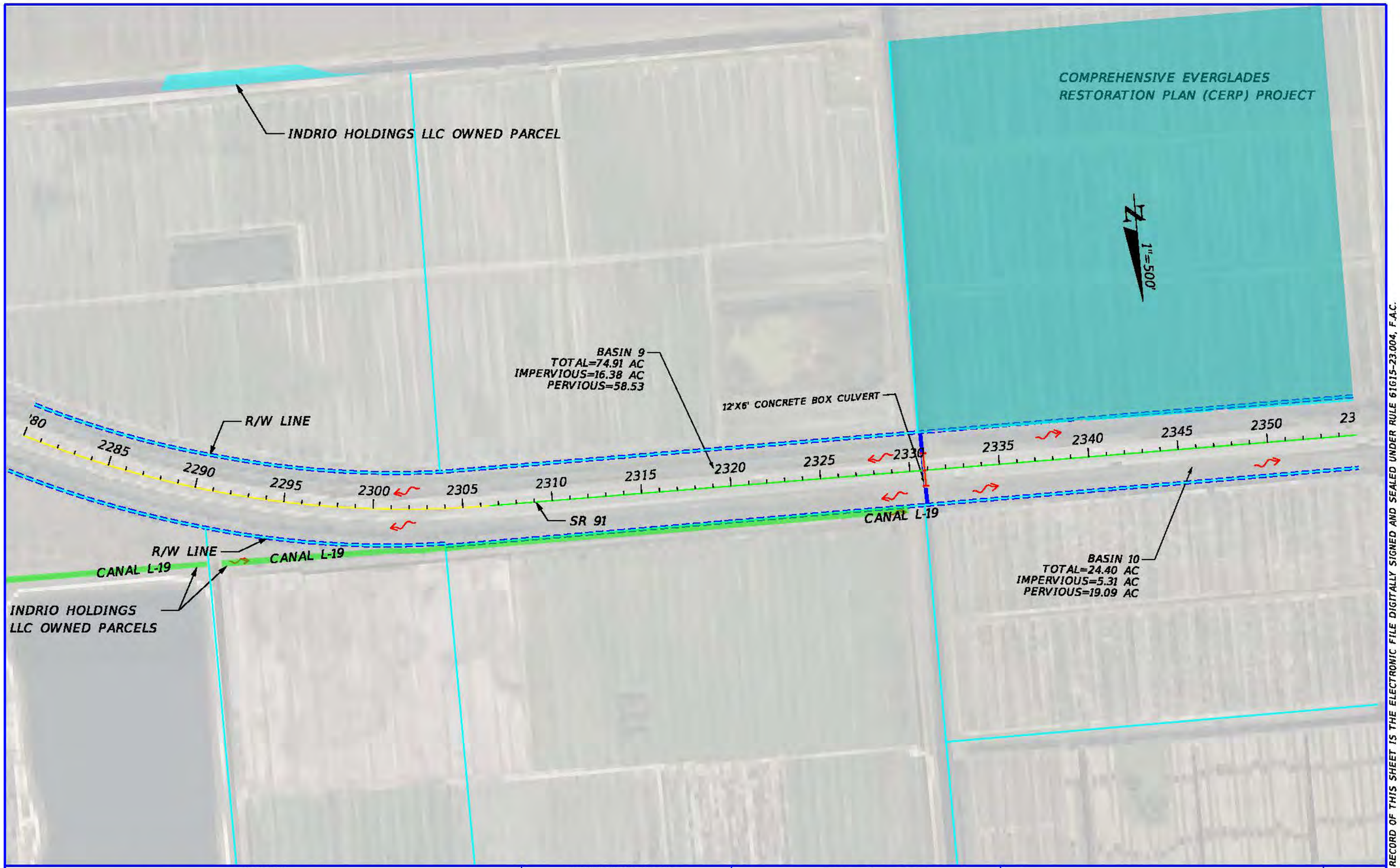
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

DRAINAGE MAP PRE-DEVELOPMENT

SHEET NO. 4

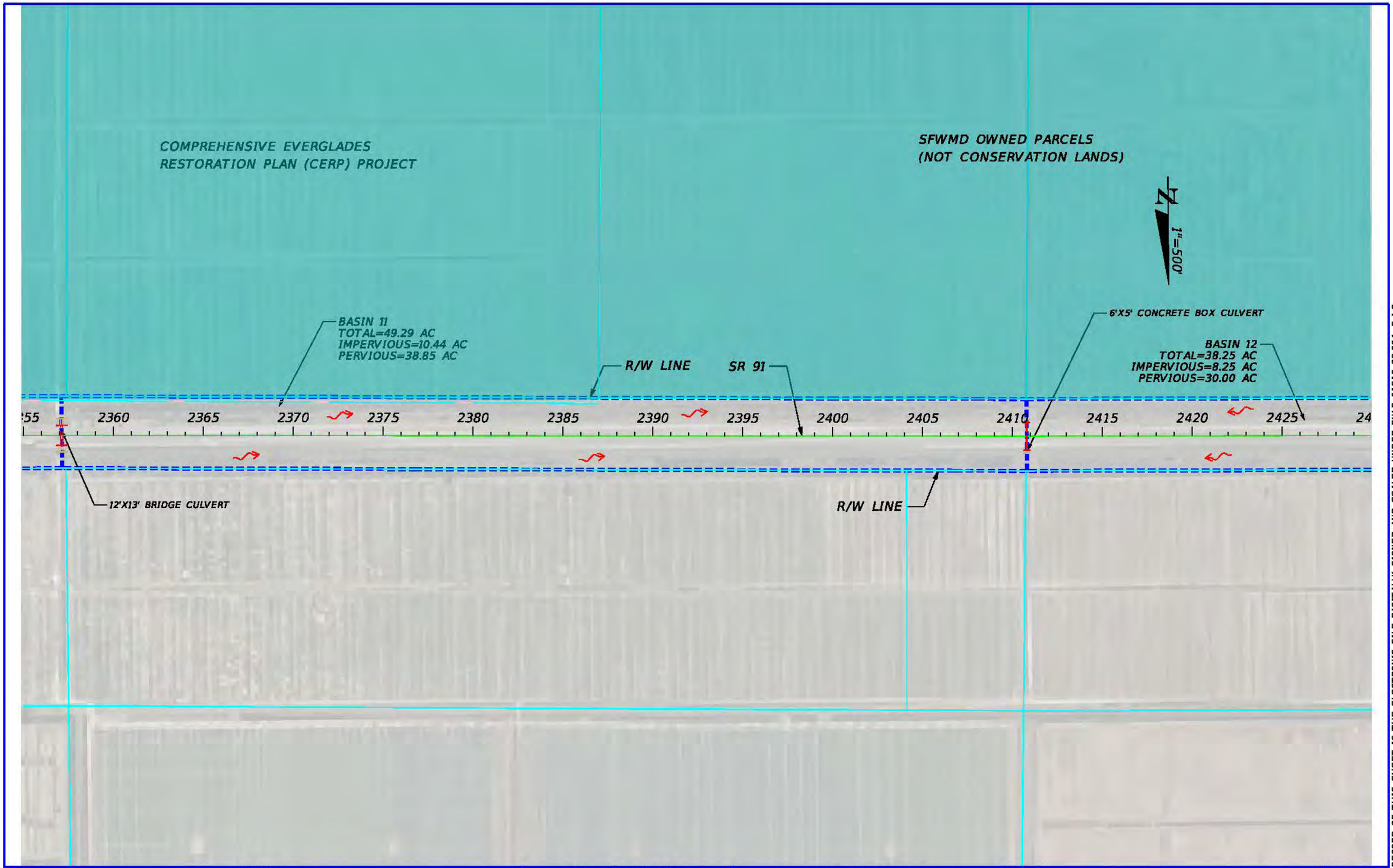
C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn : PRE DEVELOPMENT-3 [SHEET]
RoshanM 5/19/2025 4:06:57 PM



REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	CHANDRA S. RAMAN, P.E LICENSE NUMBER: 58740 APEX ENGINEERS, INC. 10175 FORTUNE PARKWAY, UNIT 704 JACKSONVILLE, FLORIDA 32256	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	DRAINAGE MAP PRE-DEVELOPMENT	5
					SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01		

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

C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn : PRE DEVELOPMENT-4 (SHEET)
Roshan M 5/19/2025 4:07:02 PM
C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

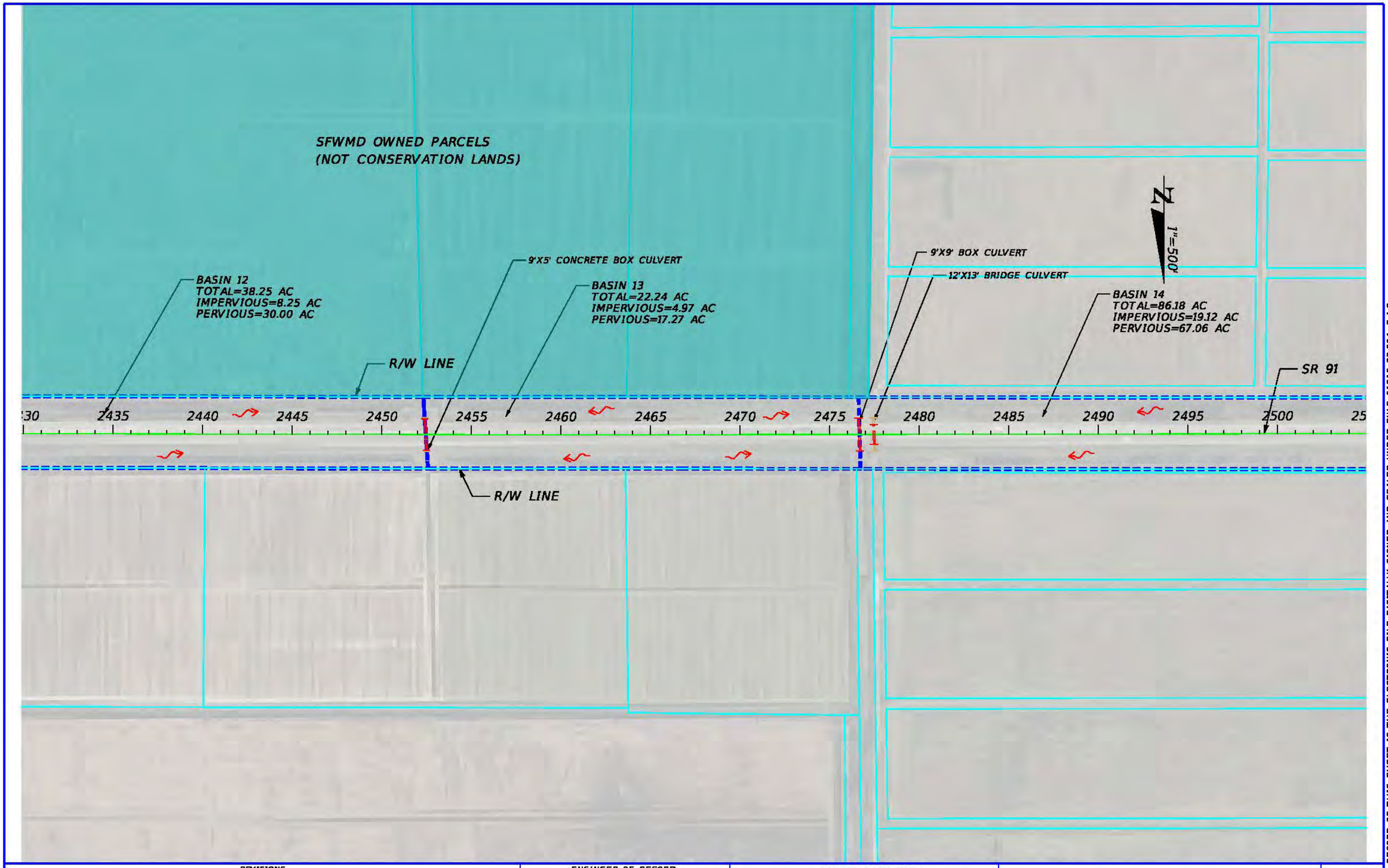
DRAINAGE MAP PRE-DEVELOPMENT

SHEET NO. 6

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

C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn : PRE DEVELOPMENT-5 [SHEET]
RoshanM 5/19/2025 4:07:08 PM

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS

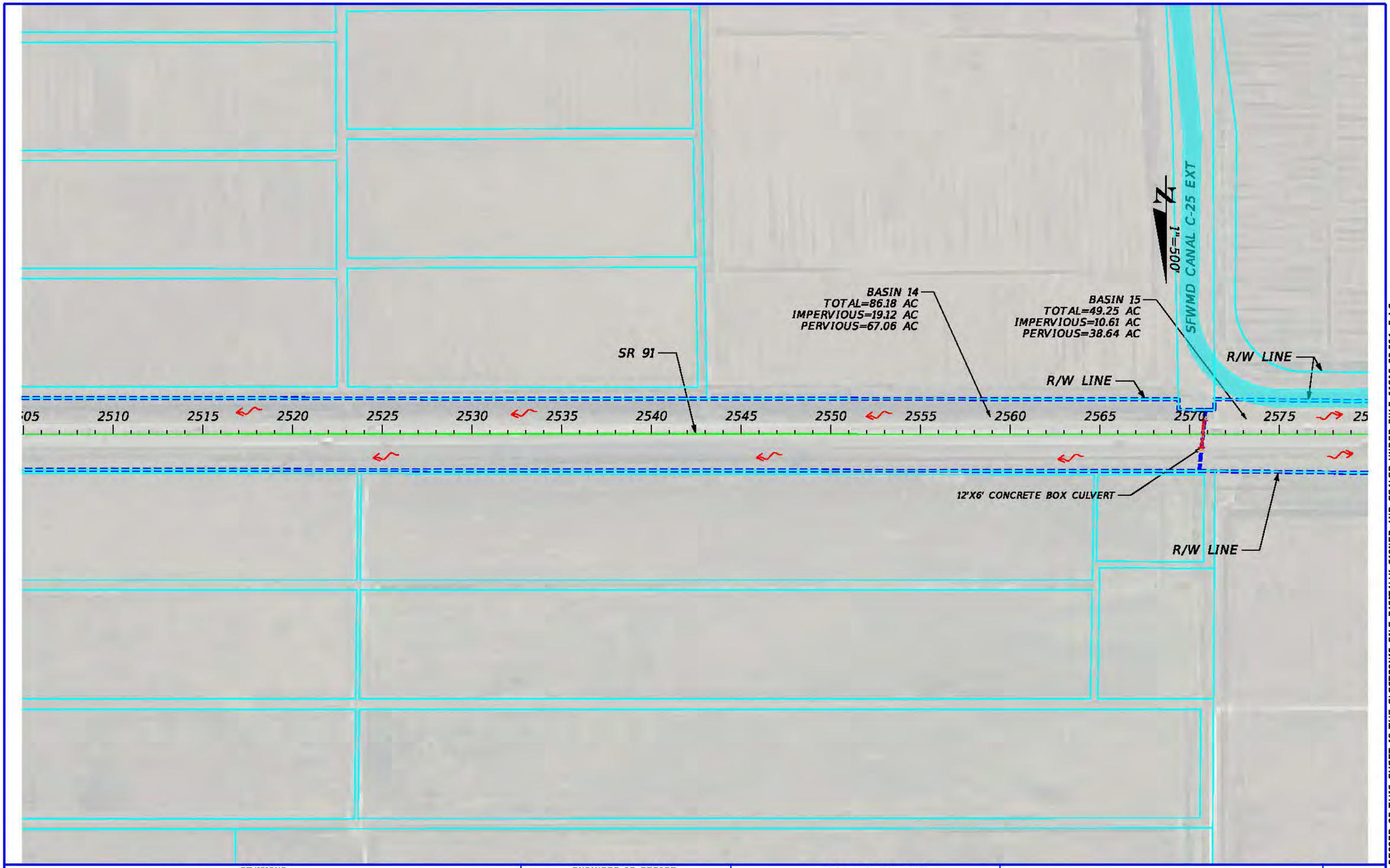


REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	CHANDRA S. RAMAN, P.E LICENSE NUMBER: 58740 APEX ENGINEERS, INC. 10175 FORTUNE PARKWAY, UNIT 704 JACKSONVILLE, FLORIDA 32256	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	DRAINAGE MAP PRE-DEVELOPMENT	7
					SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01		

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

C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn : PRE DEVELOPMENT-6 [SHEET]

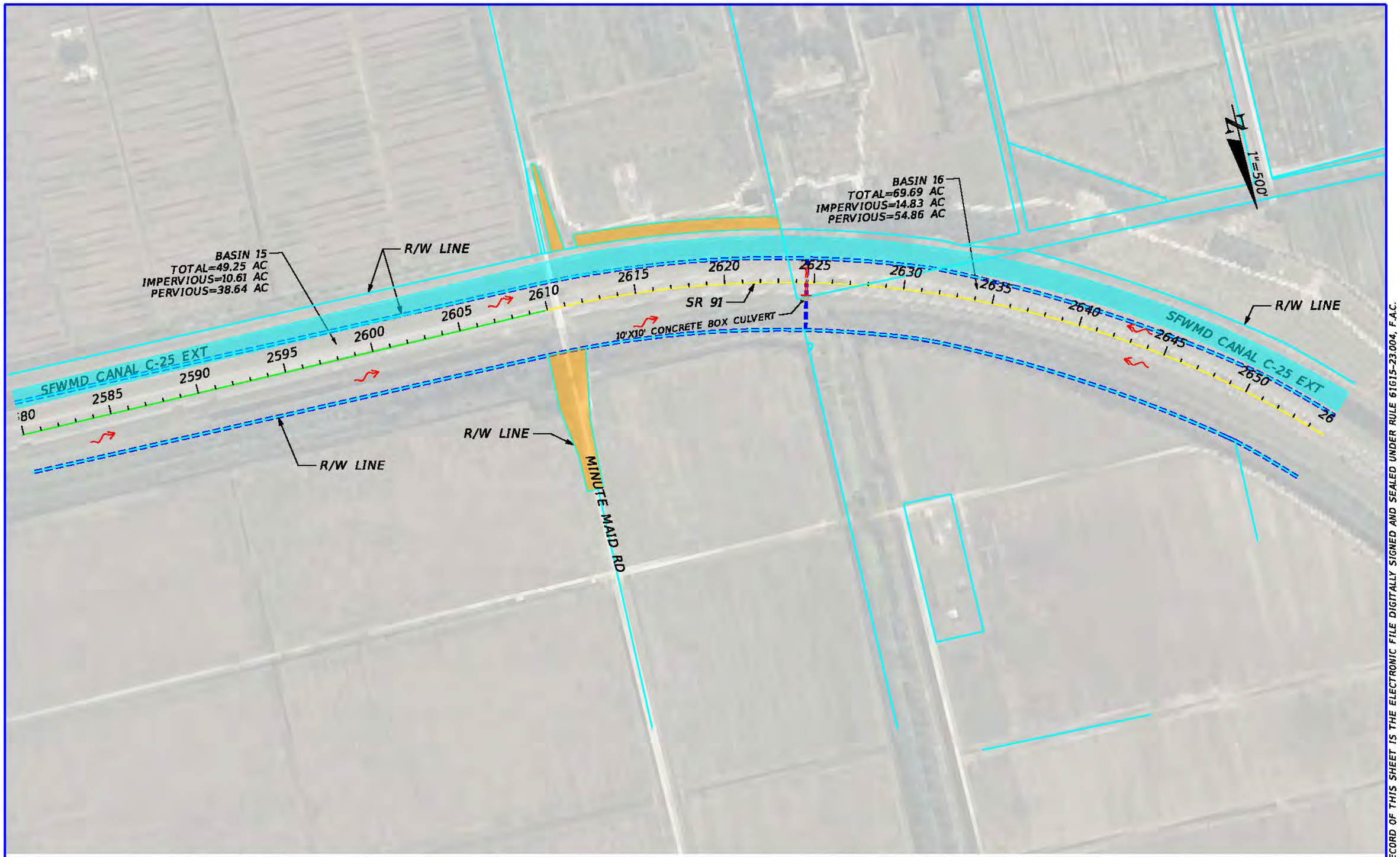
RoshanM 5/19/2025 4:07:14 PM



REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	CHANDRA S. RAMAN, P.E LICENSE NUMBER: 58740 APEX ENGINEERS, INC. 10175 FORTUNE PARKWAY, UNIT 704 JACKSONVILLE, FLORIDA 32256	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	DRAINAGE MAP PRE-DEVELOPMENT	8
					SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01		

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

C:\Users\RoshanR\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn : PRE DEVELOPMENT-7 (SHEET)
RoshanR 5/19/2025 4:07:19 PM



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

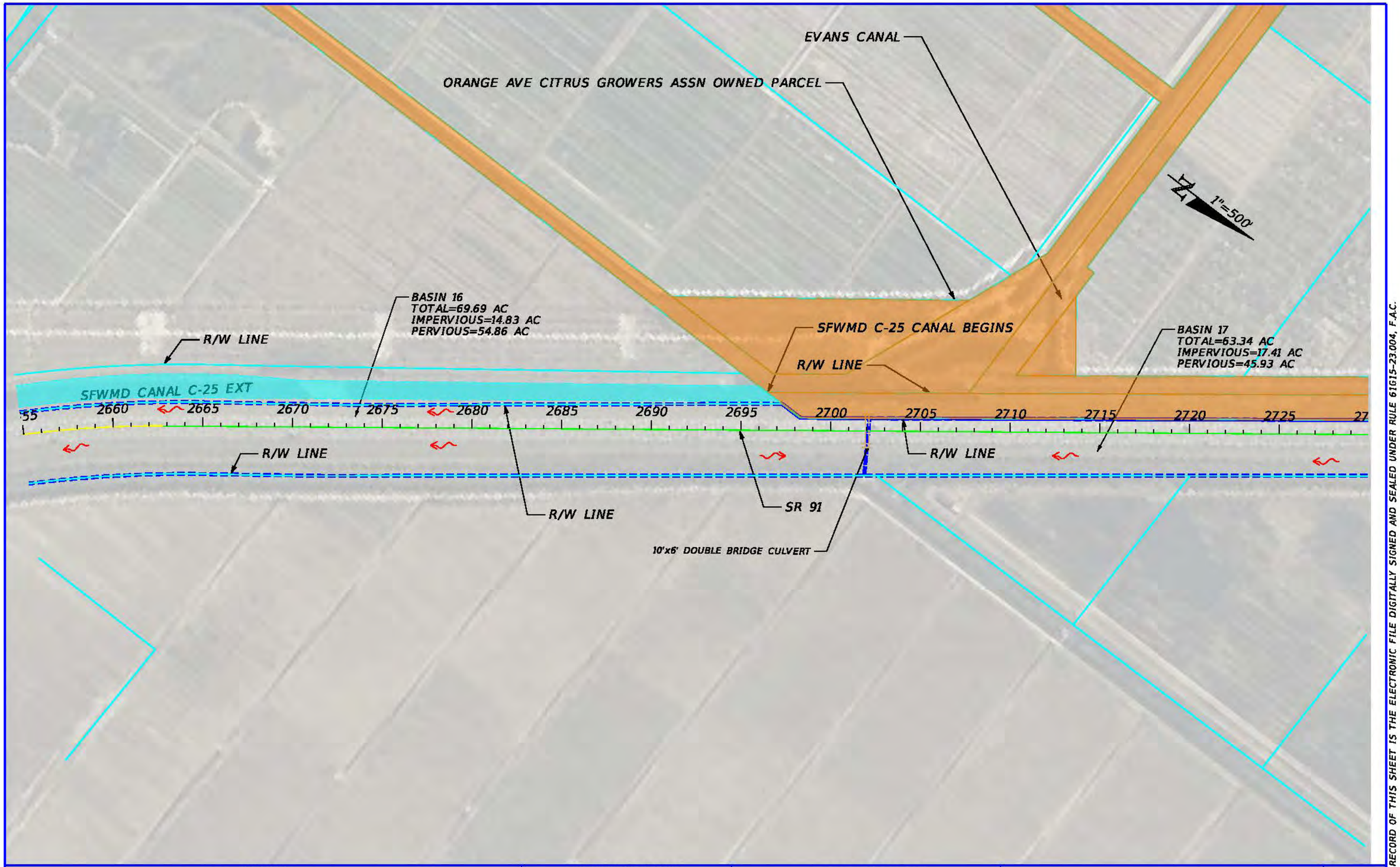
DRAINAGE MAP PRE-DEVELOPMENT

SHEET NO. 9

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

C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn : PRE DEVELOPMENT-8 [SHEET]
RoshanM 5/19/2025 4:07:26 PM

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

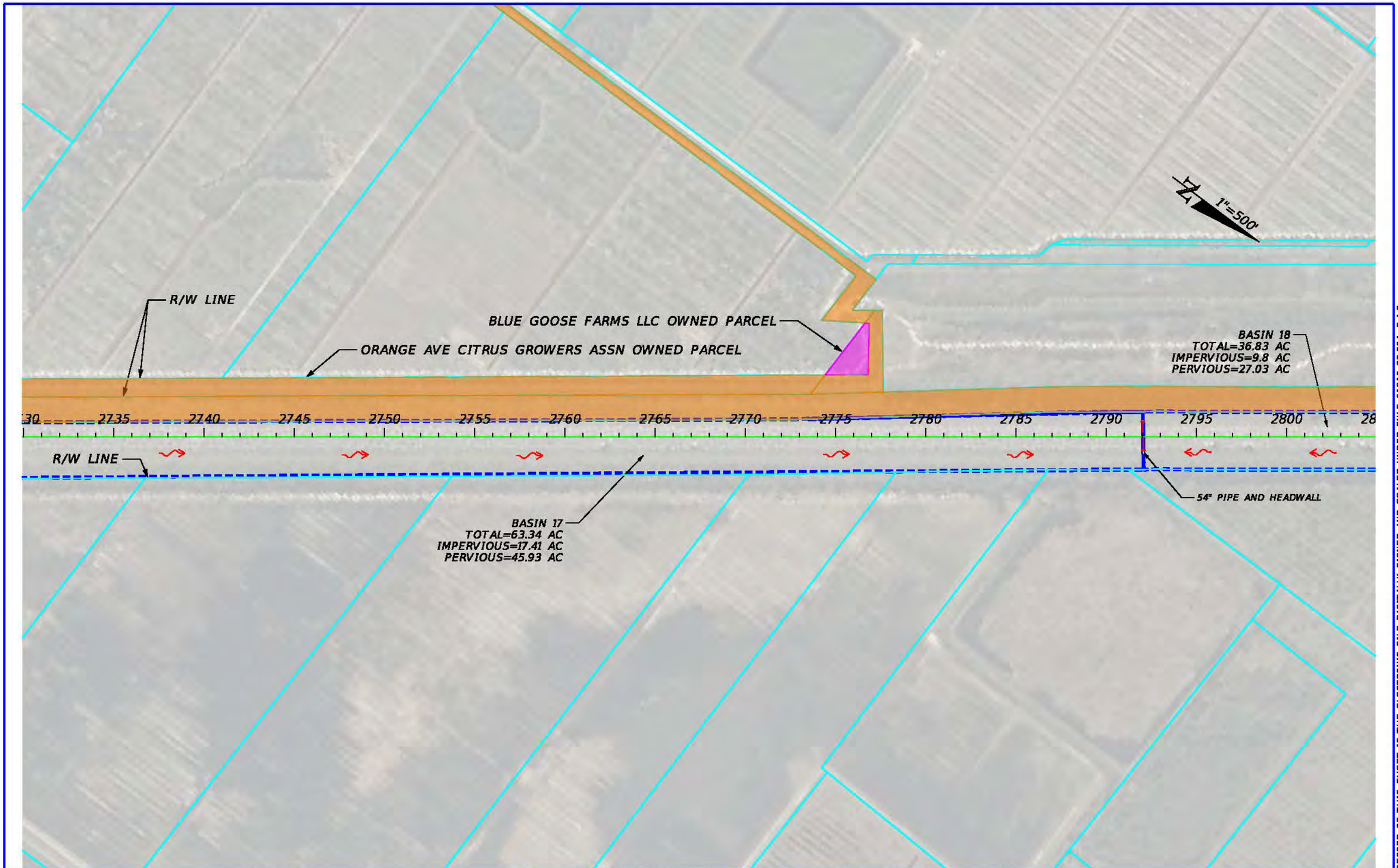
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

DRAINAGE MAP
PRE-DEVELOPMENT

SHEET NO.
10

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

C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn : PRE DEVELOPMENT-9 (SHEET)
Roshan 5/14/2025 4:07:32 PM



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

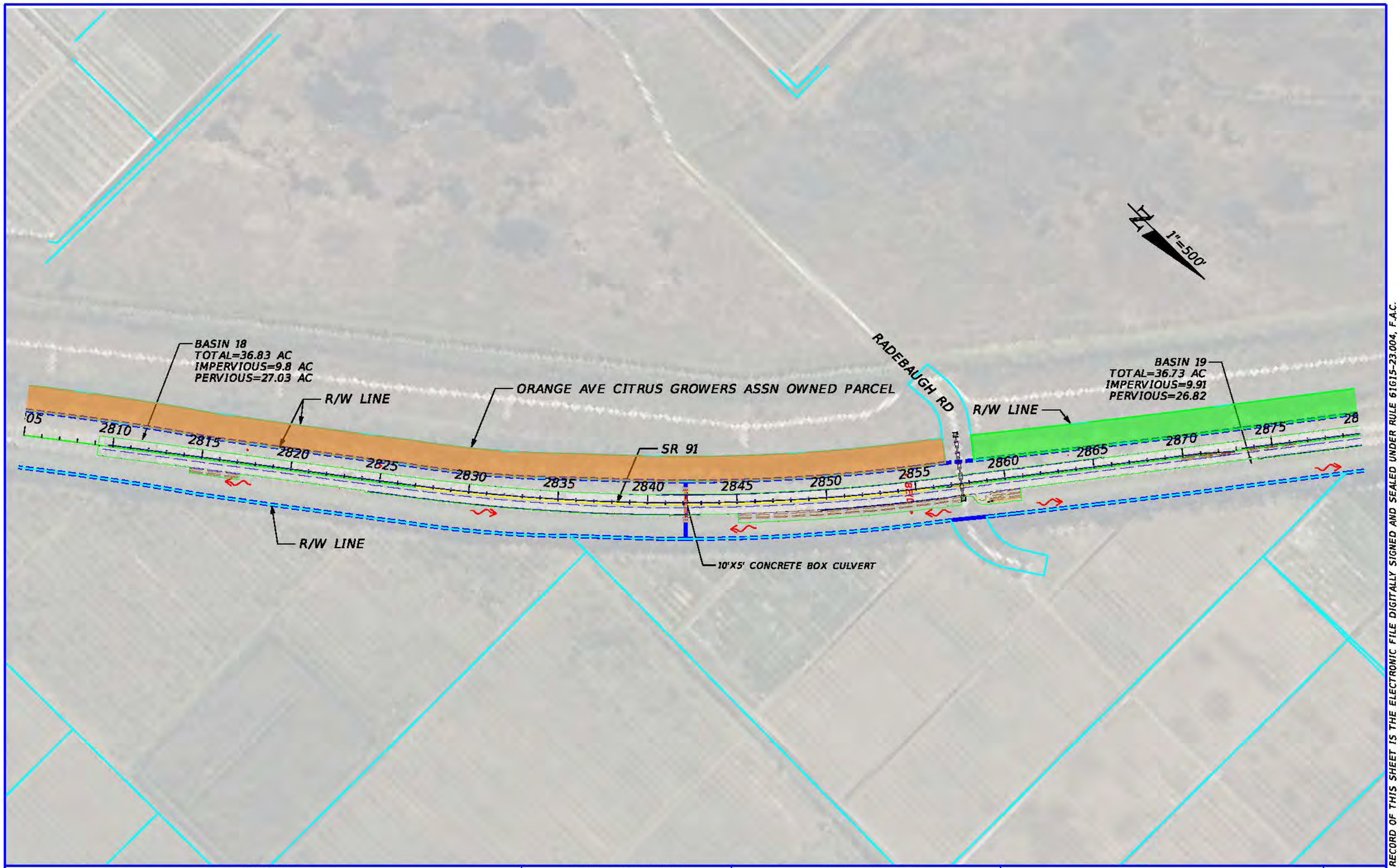
DRAINAGE MAP PRE-DEVELOPMENT

SHEET NO. 11

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

C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn : PRE DEVELOPMENT-10 [SHEET]
RoshanM 5/19/2025 4:07:39 PM

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

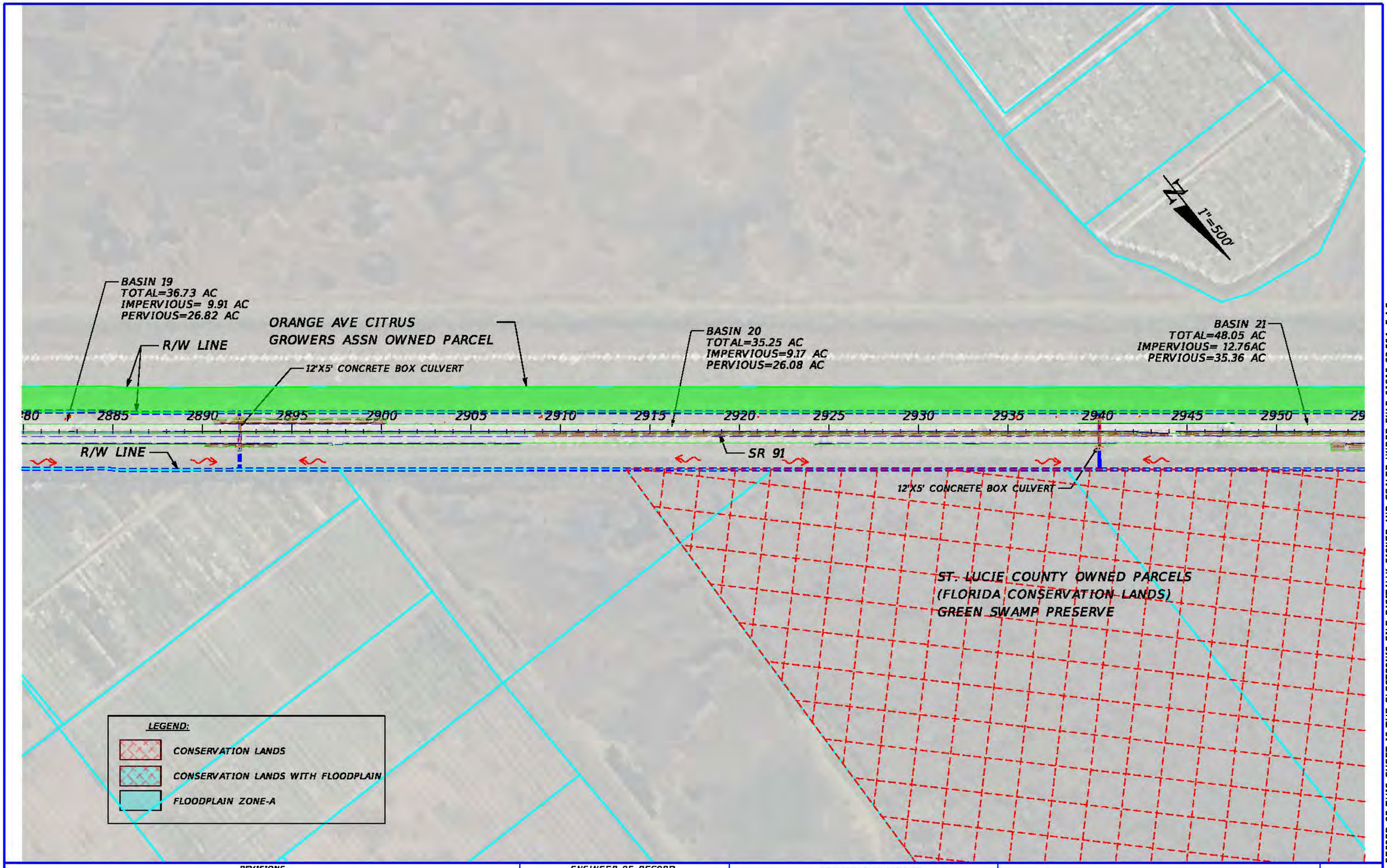
DRAINAGE MAP PRE-DEVELOPMENT

SHEET NO. 12

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

C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn : PRE DEVELOPMENT-11 [SHEET]
RoshanM 5/19/2025 4:07:45 PM

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

DRAINAGE MAP PRE-DEVELOPMENT

SHEET NO. 13

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

C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn : PRE DEVELOPMENT-12 (SHEET)
RoshanM 5/19/2025 4:07:52 PM
[C:\OPEN TEXT\OPENTEXT CAPTURE\CONFIG\DISTILLER\ADISTILLERJOBOPTIONS.JOB]

LEGEND:

- CONSERVATION LANDS
- CONSERVATION LANDS WITH FLOODPLAIN
- FLOODPLAIN ZONE-A

N

1"=500'

BASIN 21
TOTAL=48.05 AC
IMPERVIOUS=
12.76AC
PERVIOUS=35.36
AC

R/W LINE

ORANGE AVE CITRUS
GROWERS ASSN OWNED PARCEL

BASIN 22
TOTAL=56.69AC
IMPERVIOUS=45.04AC
PERVIOUS=11.65AC

12'X5' CONCRETE BOX CULVERT

2955 2960 2965 2970 2975 2980 2985 2990 2995 3000 3005 3010 3015 3020 3025 30

BEG

R/W LINE

SR 91

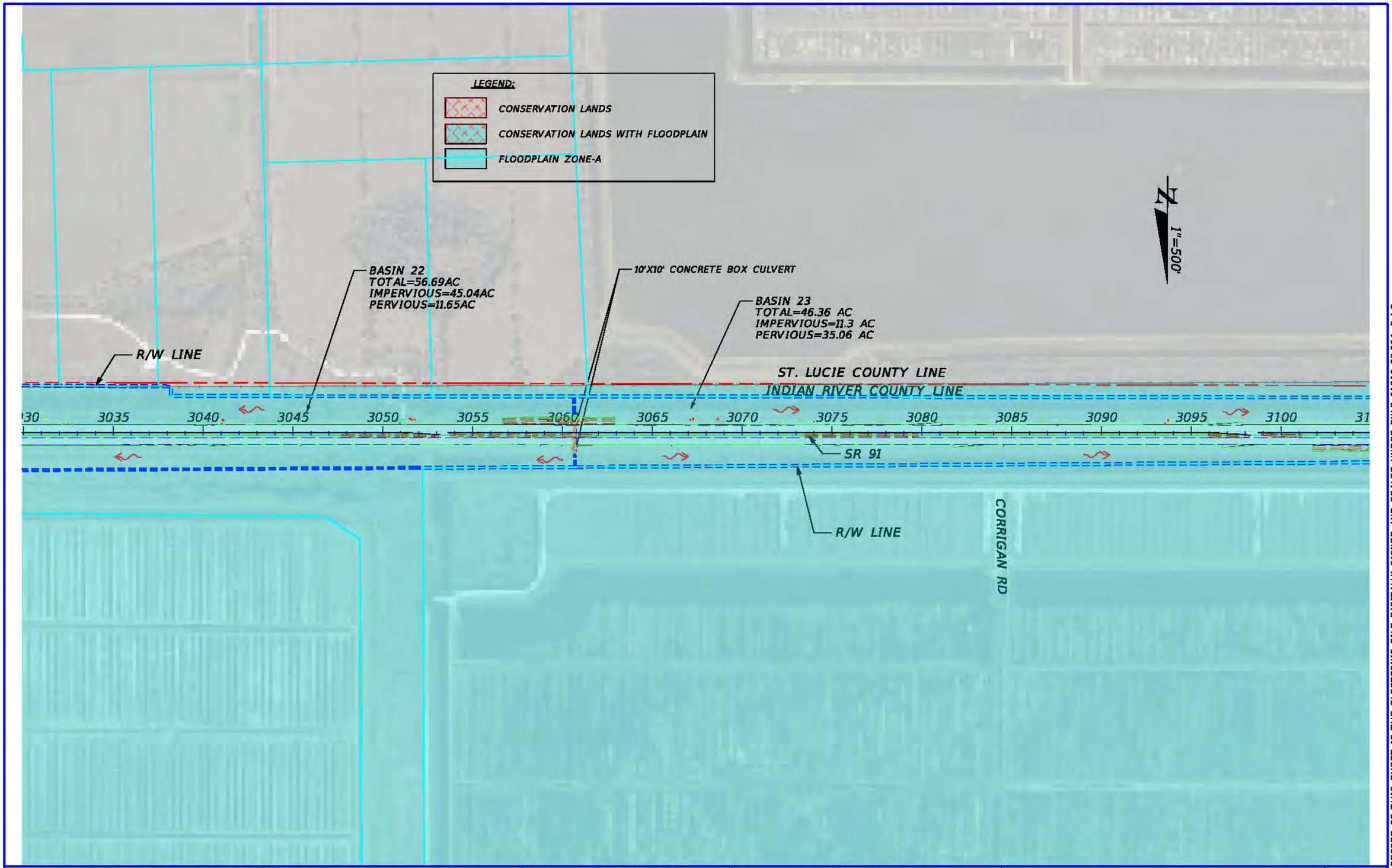
ST. LUCIE COUNTY OWNED PARCELS
(FLORIDA CONSERVATION LANDS)
GREEN SWAMP PRESERVE

ST. LUCIE COUNTY LINE
INDIAN RIVER COUNTY LINE

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

REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	CHANDRA S. RAMAN, P.E LICENSE NUMBER: 58740 APEX ENGINEERS, INC. 10175 FORTUNE PARKWAY, UNIT 704 JACKSONVILLE, FLORIDA 32256	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	DRAINAGE MAP PRE-DEVELOPMENT	14
					SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01		

C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRNPRD01 Pre Development Test.dgn : PRE DEVELOPMENT-13 (SHEET)
RoshanM 5/19/2025 4:07:58 PM
(G:\07-1 TOOLS\07-1.01 MicroStation\07-1.01.01 Configuration\07-1.01.01.01 Projects\07-1.01.01.01.01 Projects.dgn)



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

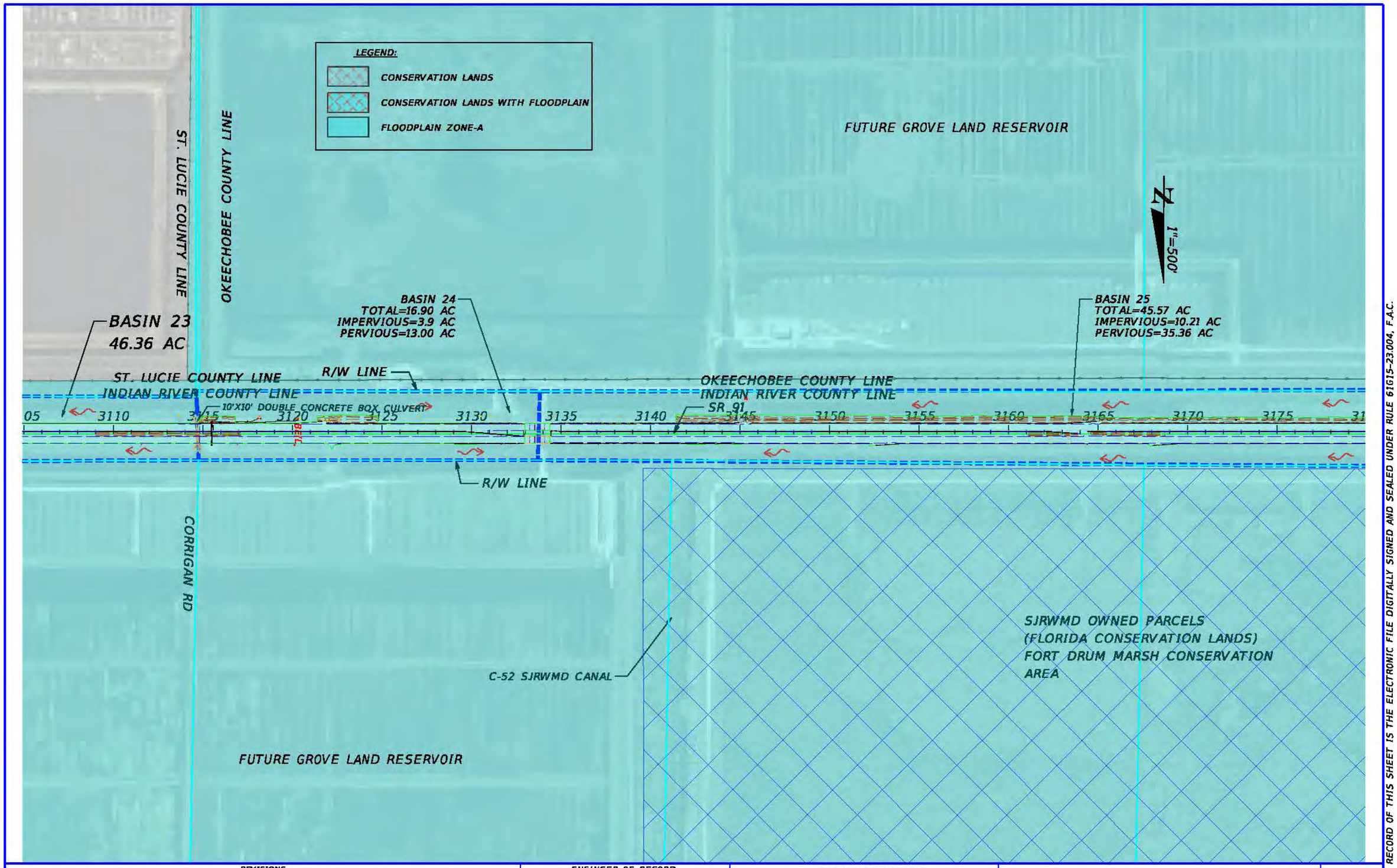
DRAINAGE MAP
PRE-DEVELOPMENT

SHEET NO.
15

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

C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn : PRE DEVELOPMENT-14 [SHEET]
RoshanM 5/19/2025 4:08:05 PM

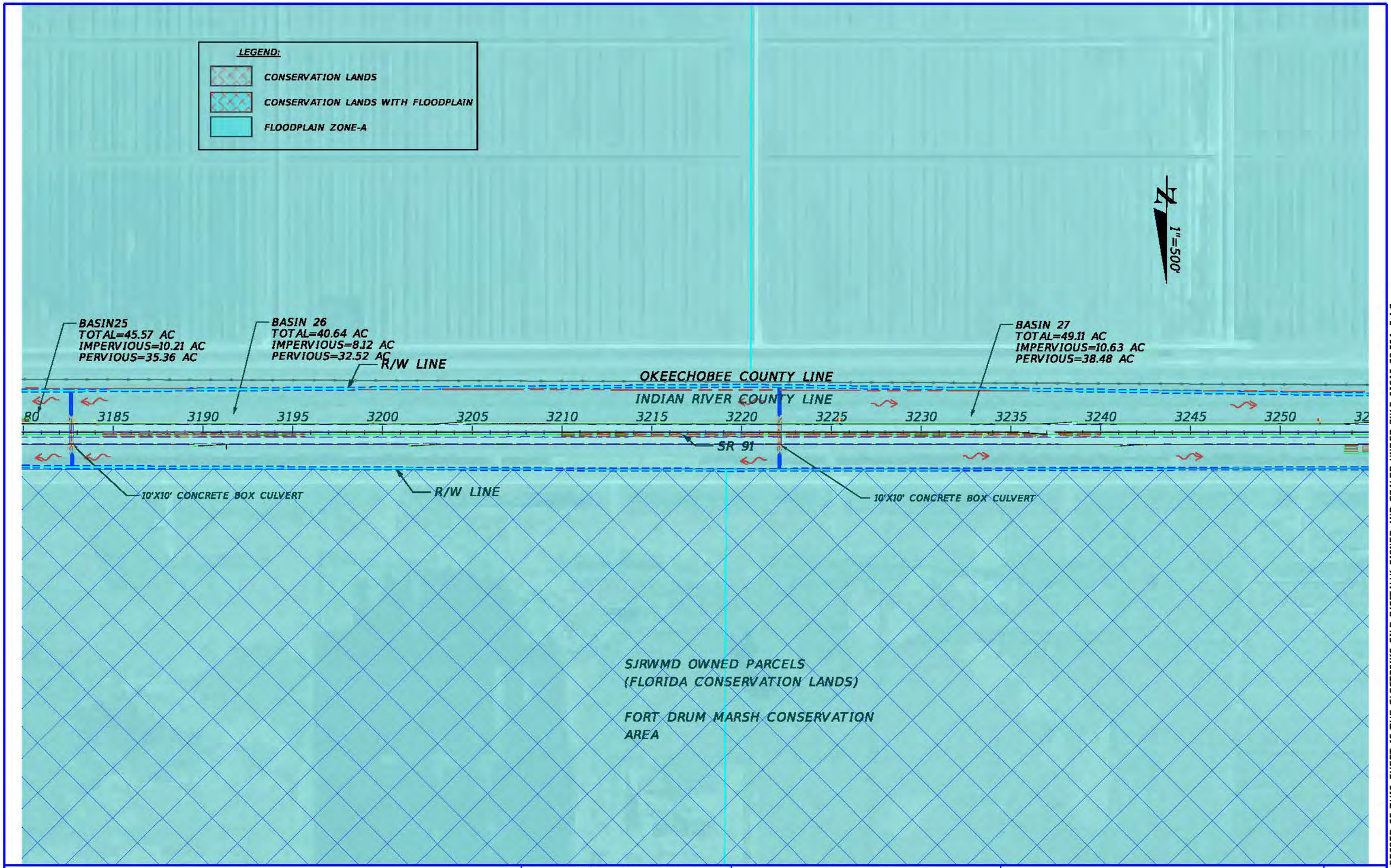
© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS



REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	CHANDRA S. RAMAN, P.E LICENSE NUMBER: 58740 APEX ENGINEERS, INC. 10175 FORTUNE PARKWAY, UNIT 704 JACKSONVILLE, FLORIDA 32256	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	DRAINAGE MAP PRE-DEVELOPMENT	16
					SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01		

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

C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRNPRD01 Pre Development Test.dgn : PRE DEVELOPMENT-15 (SHEET)
RoshanM 5/19/2023 4:08:17 PM
(c) 2023 Bentley Systems, Incorporated. All rights reserved.



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

DRAINAGE MAP PRE-DEVELOPMENT

SHEET NO. 17

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

C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn : PRE DEVELOPMENT-16 (SHEET)
RoshanM 5/19/2025 4:08:18 PM

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS

LEGEND:

- CONSERVATION LANDS
- CONSERVATION LANDS WITH FLOODPLAIN
- FLOODPLAIN ZONE-A

N

1"=500'

BASIN 27
TOTAL=49.11 AC
IMPERVIOUS=10.63 AC
PERVIOUS=38.48 AC

BASIN 28
TOTAL=43.35 AC
IMPERVIOUS=10.33
PERVIOUS=33.02

OKEECHOBEE COUNTY LINE
INDIAN RIVER COUNTY LINE

R/W LINE

3255 3260 3265 3270 3275 3280 3285 3290 3295 3300 3305 3310 3315 3320 3325 33

SR 91

R/W LINE

12'X13' BRIDGE CULVERT

SJRWMD OWNED PARCELS
(FLORIDA CONSERVATION LANDS)

FORT DRUM MARSH CONSERVATION AREA

REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	CHANDRA S. RAMAN, P.E LICENSE NUMBER: 58740 APEX ENGINEERS, INC. 10175 FORTUNE PARKWAY, UNIT 704 JACKSONVILLE, FLORIDA 32256	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	DRAINAGE MAP PRE-DEVELOPMENT	18
					SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01		

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

C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn : PRE DEVELOPMENT-17 (SHEET)
RoshanM 5/19/2025 4:09:25 PM
[C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn]

LEGEND:

- CONSERVATION LANDS
- CONSERVATION LANDS WITH FLOODPLAIN
- FLOODPLAIN ZONE-A

N

1"=500'

BASIN 29
TOTAL=16.25 AC
IMPERVIOUS=3.84 AC
PERVIOUS=12.41 AC

BASIN 30
TOTAL=33.18 AC
IMPERVIOUS=7.6 AC
PERVIOUS=25.58 AC

SJRWMD OWNED PARCELS

BASIN 31
TOTAL=31.46 AC
IMPERVIOUS=6.67 AC
PERVIOUS=24.79 AC

R/W LINE

INDIAN RIVER COUNTY LINE
OKEECHOBEE COUNTY LINE

SR 91

3330 3335 3340 3345 3350 3355 3360 3365 3370 3375 3380 3385 3390 3395 3400 34

R/W LINE

8'X4' CONCRETE BOX CULVERT

SJRWMD OWNED PARCELS
(FLORIDA CONSERVATION LANDS)

FORT DRUM MARSH CONSERVATION AREA

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

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

DRAINAGE MAP
PRE-DEVELOPMENT

SHEET NO. 19

C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn : PRE DEVELOPMENT-18 [SHEET]
RoshanM 5/19/2025 4:08:32 PM

LEGEND:

CONSERVATION LANDS

CONSERVATION LANDS WITH FLOODPLAIN

FLOODPLAIN ZONE-A

BASIN 31
TOTAL=31.46 AC
IMPERVIOUS=6.67 AC
PERVIOUS=24.79 AC

OKEECHOBEE COUNTY LINE

FORT DRUM MARSH CONSERVATION AREA
SJRWMD OWNED PARCELS
(FLORIDA CONSERVATION LANDS)

R/W LINE

OKEECHOBEE COUNTY LINE

RED BAY FOUNDATION PRESERVE
FLORIDA CONSERVATION LANDS

BASIN 32
TOTAL=54.03 AC
IMPERVIOUS=11.59 AC
PERVIOUS=42.44 AC

1"=500'

3405 3410 3415 3420 3425 3430 3435 3440 3445 3450 3455 3460 3465 3470 3475 34

SR 91

R/W LINE

8'X4' CONCRETE BOX CULVERT

8'X4' CONCRETE BOX CULVERT

INDIAN RIVER COUNTY LINE

SJRWMD OWNED PARCELS
(FLORIDA CONSERVATION LANDS)

FORT DRUM MARSH CONSERVATION AREA

FLORIDA CONSERVATION LANDS

WEDEWORTH FARM CONSERVATION EASEMENT

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

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD
CHANDRA S. RAMAN, P.E
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

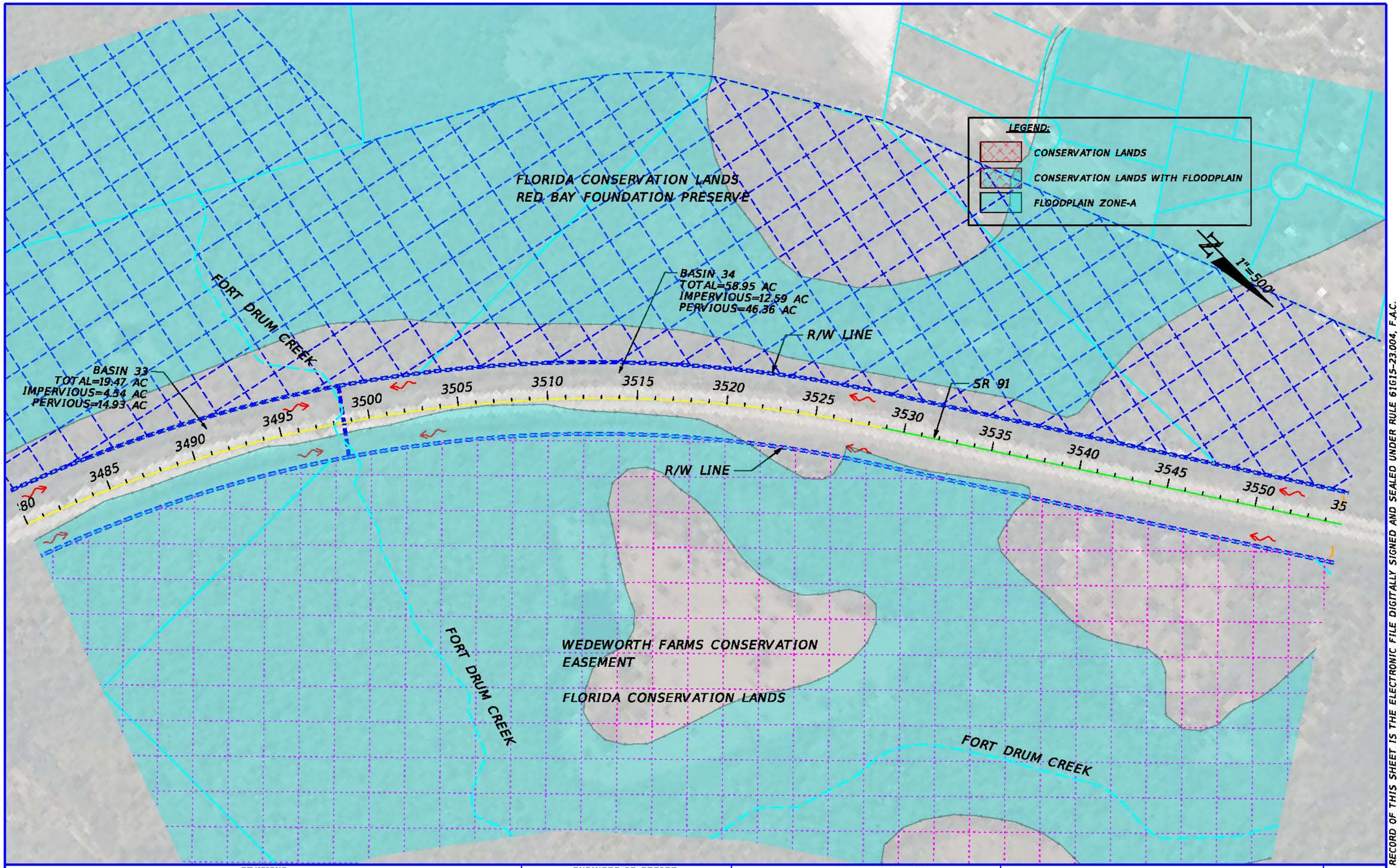
DRAINAGE MAP
PRE-DEVELOPMENT

SHEET NO. 20

C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn : PRE DEVELOPMENT-19 [SHEET]

RoshanM 5/19/2025 4:08:39 PM

(C)2025 Trustees of the University of Florida/Florida Department of Transportation. All rights reserved.



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

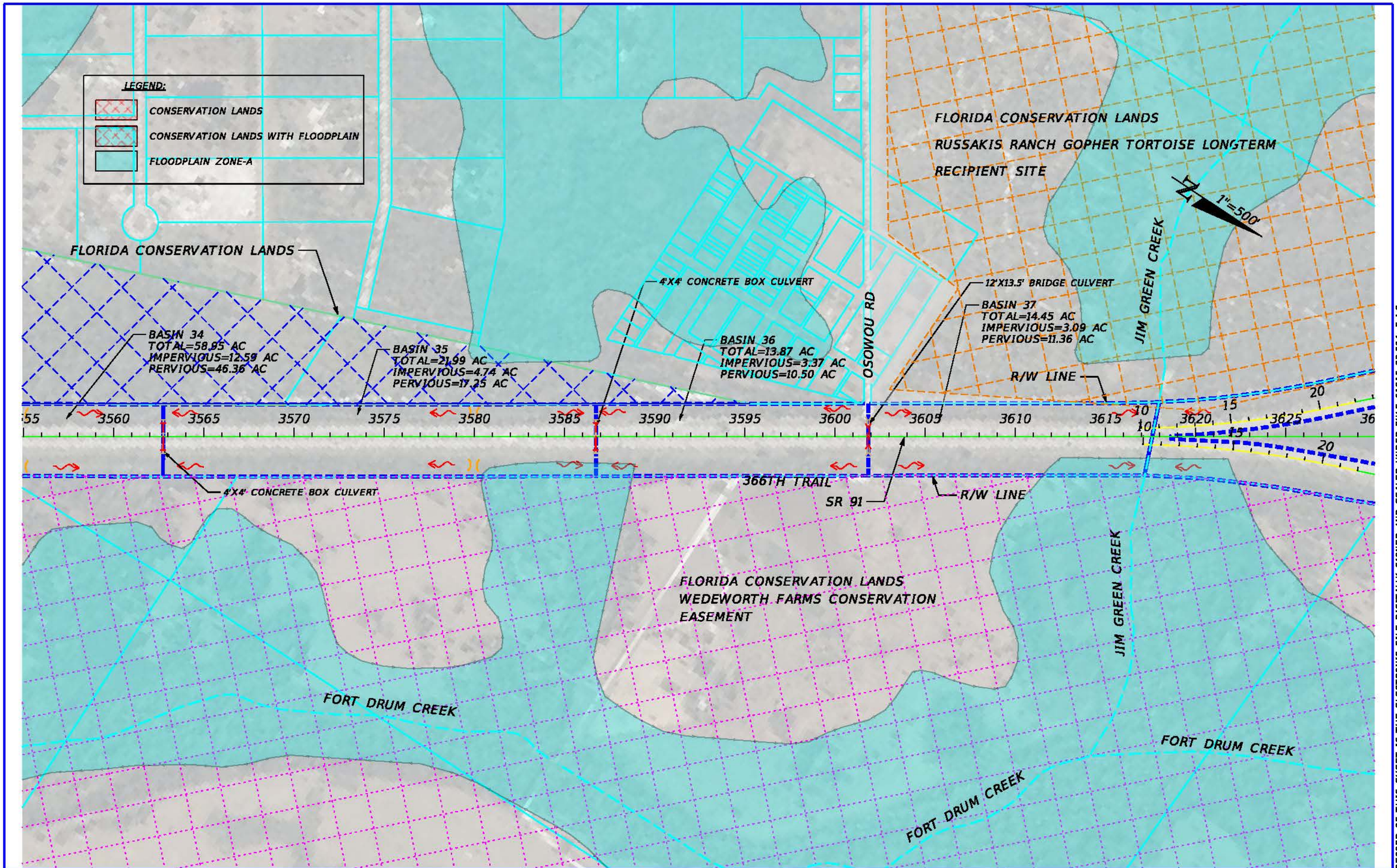
DRAINAGE MAP PRE-DEVELOPMENT

SHEET NO. 21

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

C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn : PRE DEVELOPMENT-20 [SHEET]
RoshanM 5/19/2025 4:09:46 PM

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

DRAINAGE MAP PRE-DEVELOPMENT

SHEET NO. 22

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

C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn : PRE DEVELOPMENT-21 (SHEET)
RoshanM 5/19/2025 4:08:53 PM
(C)2024 Bentley Systems, Incorporated. All rights reserved. Includes and Derived Material subject to Terms of Use

LEGEND:
CONSERVATION LANDS
CONSERVATION LANDS WITH FLOODPLAIN
FLOODPLAIN ZONE-A

FLORIDA CONSERVATION LANDS
RUSSAKIS RANCH GOPHER TORTOISE LONGTERM
RECIPIENT SITE

JIM GREEN CREEK

BASIN 38
TOTAL=23.48 AC
IMPERVIOUS=7.58 AC
PERVIOUS=15.90 AC

BASIN 39
TOTAL=25.05 AC
IMPERVIOUS=8.56 AC
PERVIOUS=16.49 AC

BASIN 40
TOTAL=36.71 AC
IMPERVIOUS=7.79 AC
PERVIOUS=28.92 AC

N
1"=500'

R/W LINE

SR 91

R/W LINE

6'X4' CONCRETE BOX CULVERT

FORT DRUM SERVICE PLAZA

PACKAGE PLANT POND THAT TREATS EFFLUENT
PERMITTED THROUGH DEP (WASTE WATER TREATMENT PONDS)
IS OWNED BY FTE.

FORT DRUM CREEK

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

DRAINAGE MAP
PRE-DEVELOPMENT

SHEET NO.
23

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

C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRNPRD01 Pre Development Test.dgn : PRE DEVELOPMENT-22 [SHEET]
RoshanM 5/19/2025 4:09:40 PM

JIM GREEN CREEK

FLORIDA CONSERVATION LANDS
GRASSLAND RESERVE PROGRAM
EASEMENT#102

JIM GREEN CREEK

1"=500'

FLORIDA CONSERVATION LANDS

BASIN 40
TOTAL=36.71 AC
IMPERVIOUS=7.79 AC
PERVIOUS=28.92 AC

BASIN 41
TOTAL=27.35 AC
IMPERVIOUS=5.69 AC
PERVIOUS=21.66 AC

R/W LINE

SR 91

BASIN 42
TOTAL=14.86 AC
IMPERVIOUS=3.15 AC
PERVIOUS=11.71 AC

BASIN 43
TOTAL=54.93 AC
IMPERVIOUS=11.29 AC
PERVIOUS=43.64 AC

05 3710 3715 3720 3725 3730 3735 3740 3745 3750 3755 3760 3765 3770 3775 37

4'X4' CONCRETE BOX CULVERT

R/W LINE

FLORIDA CONSERVATION LANDS
WEDEWORTH FARMS CONSERVATION
EASEMENT

FLORIDA CONSERVATION LAND

LEGEND:

CONSERVATION LANDS

CONSERVATION LANDS WITH FLOODPLAIN

FLOODPLAIN ZONE-A

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

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704
JACKSONVILLE, FLORIDA 32256

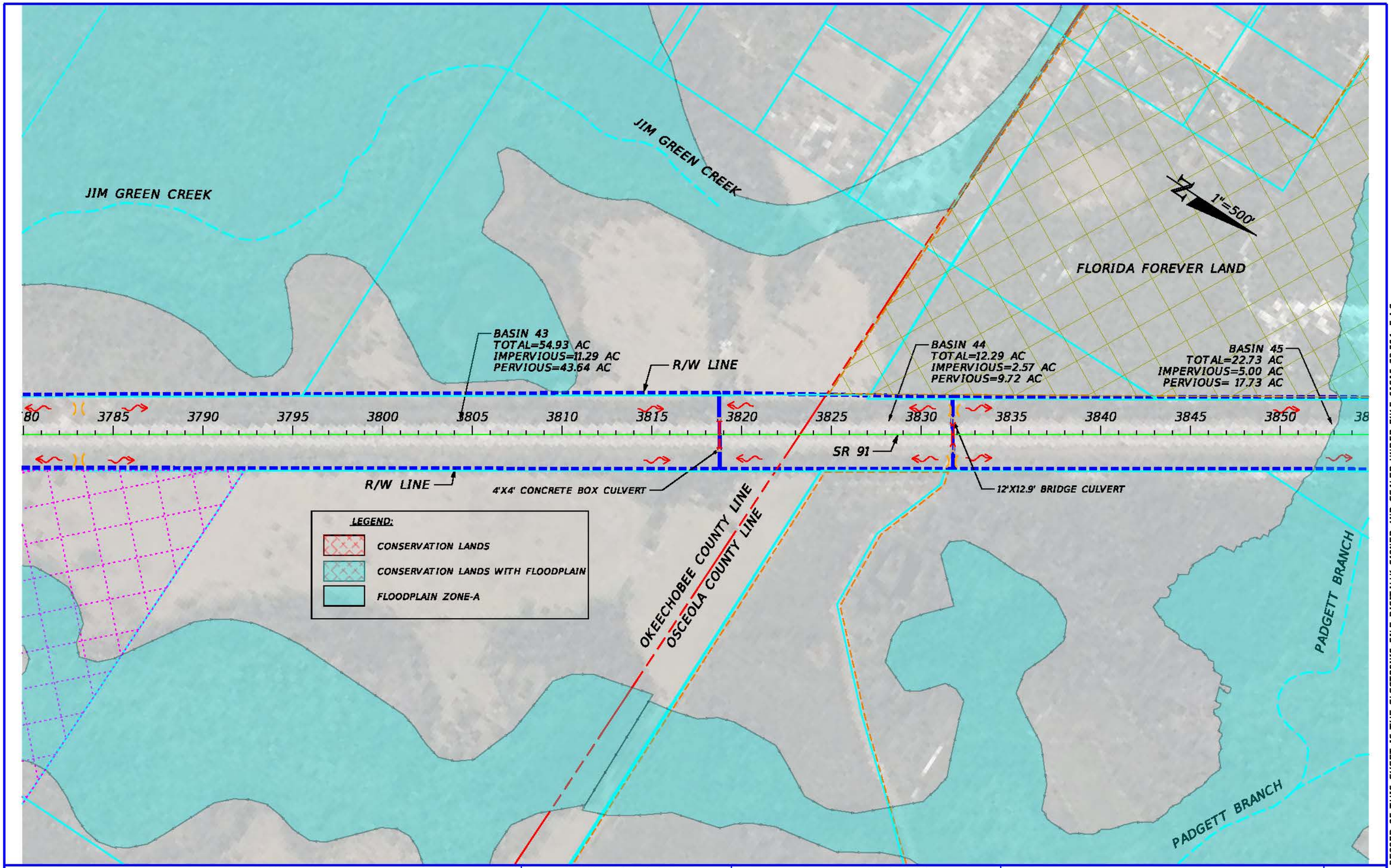
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

DRAINAGE MAP
PRE-DEVELOPMENT

SHEET NO. 24

C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn : PRE DEVELOPMENT-23 [SHEET]
RoshanM 5/19/2025 4:09:58 PM



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

DRAINAGE MAP
PRE-DEVELOPMENT

SHEET NO.
25

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

C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn : PRE DEVELOPMENT-24 (SHEET)
RoshanM 5/19/2025 4:09:18 PM

(C)2025 Trimble Inc. | Trimble Unity Construction Network (UCN) | Distribution Attributes

PADGETT BRANCH

FLORIDA FOREVER LAND

FLORIDA CONSERVATION LANDS

1"=500'

BASIN 46
TOTAL=36.07 AC
IMPERVIOUS=7.64 AC
PERVIOUS=28.43 AC

BASIN 47
TOTAL=27.61 AC
IMPERVIOUS=5.88 AC
PERVIOUS=21.73 AC

BASIN 48
TOTAL=23.88 AC
IMPERVIOUS=5.03 AC
PERVIOUS=18.85 AC

R/W LINE

3860 3865 3870 3875 3880 3885 3890 3895 3900 3905 3910 3915 3920 3925

SR 91

10'X10' BRIDGE CULVERT

R/W LINE

4'X4' CONCRETE BOX CULVERT

LEGEND:

- CONSERVATION LANDS
- CONSERVATION LANDS WITH FLOODPLAIN
- FLOODPLAIN ZONE-A

PADGETT BRANCH

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

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

DRAINAGE MAP
PRE-DEVELOPMENT

SHEET NO.
26

C:\Users\RoshanN\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn : PRE DEVELOPMENT-25 (SHEET)
RoshanN 5/19/2025 4:09:31 PM

FLORIDA CONSERVATION LANDS

DELUCA PRESERVE

COW LOG BRANCH

1"=500'

BASIN 48
TOTAL=23.88 AC
IMPERVIOUS=5.03 AC
PERVIOUS=18.85 AC

R/W LINE

BASIN 49
TOTAL=43.93 AC
IMPERVIOUS=9.25 AC
PERVIOUS=34.68 AC

BASIN 50
TOTAL=29.54 AC
IMPERVIOUS=6.34 AC
PERVIOUS=23.20 AC

3930 3935 3940 3945 3950 3955 3960 3965 3970 3975 3980 3985 3990 3995 4000 40

SR 91

R/W LINE

COW LOG BRANCH

COW LOG BRANCH

LEGEND:

- CONSERVATION LANDS
- CONSERVATION LANDS WITH FLOODPLAIN
- FLOODPLAIN ZONE-A

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

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD
CHANDRA S. RAMAN, P.E
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704
JACKSONVILLE, FLORIDA 32256

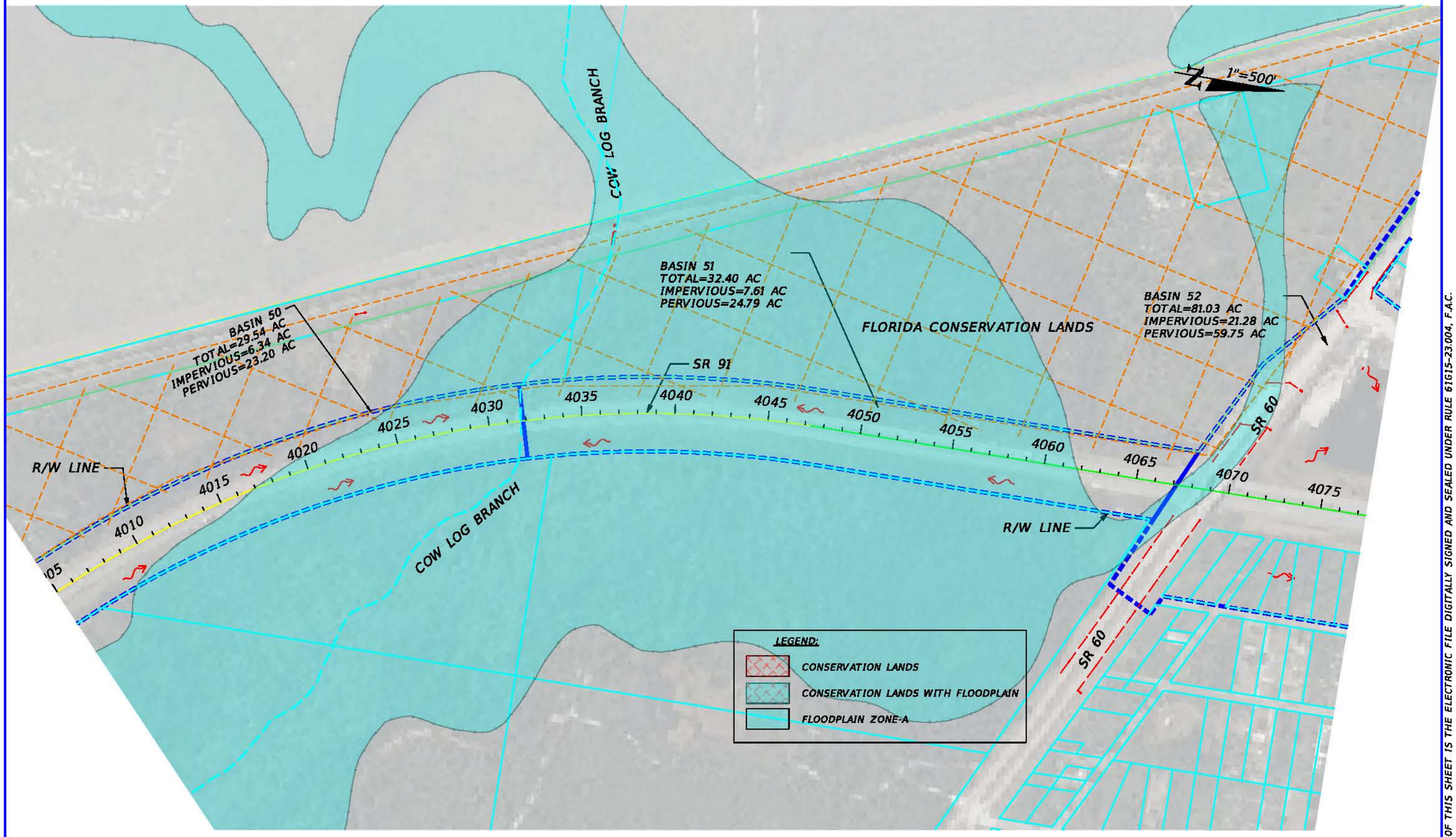
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

DRAINAGE MAP PRE-DEVELOPMENT

SHEET NO. 27

C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn : PRE DEVELOPMENT-26 [SHEET]
RoshanM 5/19/2025 4:09:40 PM



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

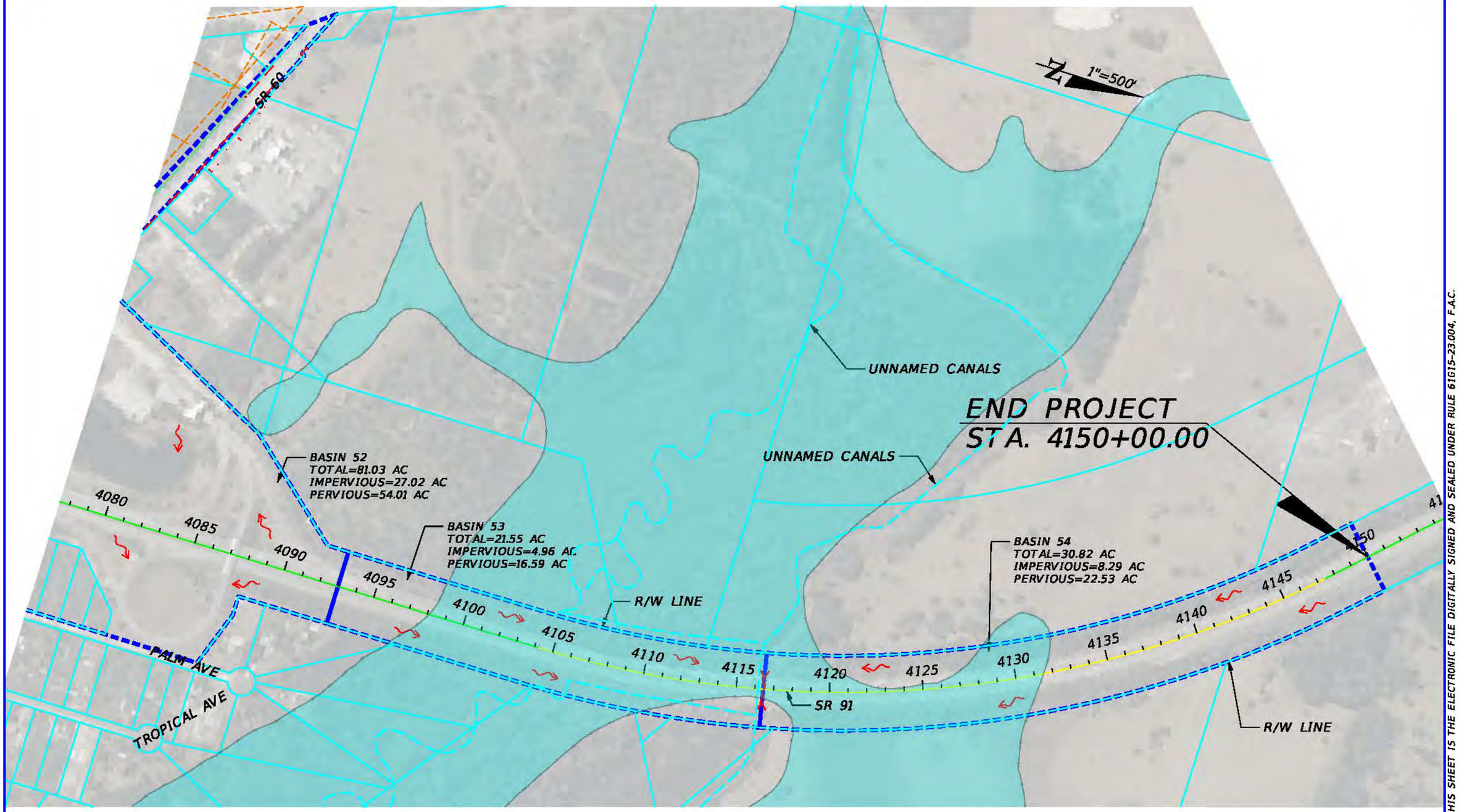
DRAINAGE MAP PRE-DEVELOPMENT

SHEET NO. 28

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

C:\Users\ToalChau\OneDrive - APEX-ENGINEERS\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn: PRE DEVELOPMENT-27 (SHEET)
Roshan 5/19/2025 4:09:48 PM

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

DRAINAGE MAP PRE-DEVELOPMENT

SHEET NO. 29

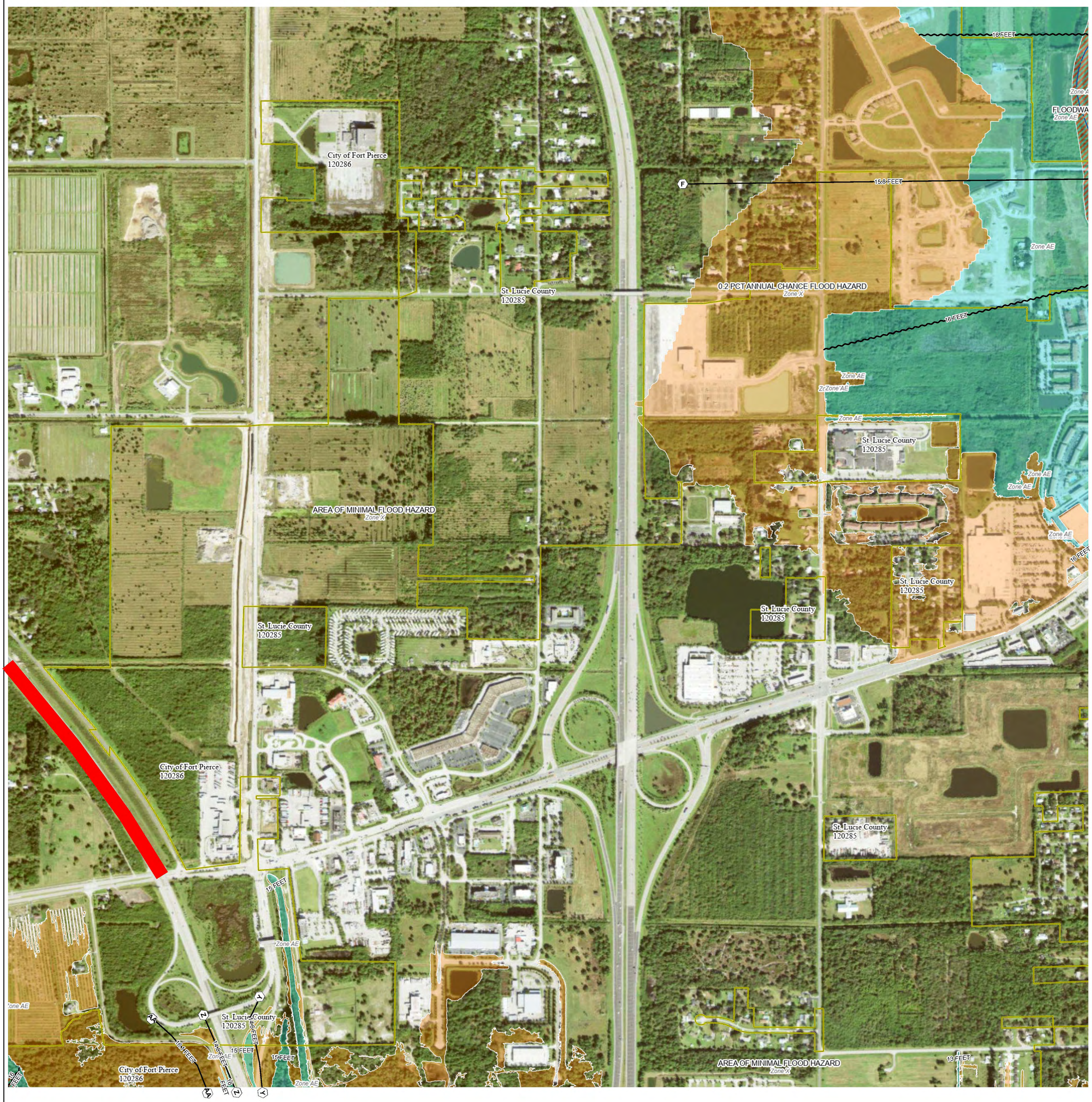
THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

C:\Users\ToalChau\OneDrive - APEX-ENGINEERS\42337422201\Drainage\DRMPRD01 Pre Development Test.dgn: PRE DEVELOPMENT-28 [SHEET]
RoshanM 5/19/2025 4:09:56 PM

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS

Appendix C

FEMA FIRM Maps



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 https://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.

Basemap information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). The basemap shown is the USGS National Map: Orthoimagery. Last refreshed October, 2020.

This map was exported from FEMA's National Flood Hazard Layer (NFHL) on **4/27/2022 4:16 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time. For additional information, please see the Flood Hazard Mapping Updates Overview Fact Sheet at https://www.fema.gov/media-library/assets/documents/118418

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards. This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date.

0 250 500 1,000 1,500 2,000 Feet

N

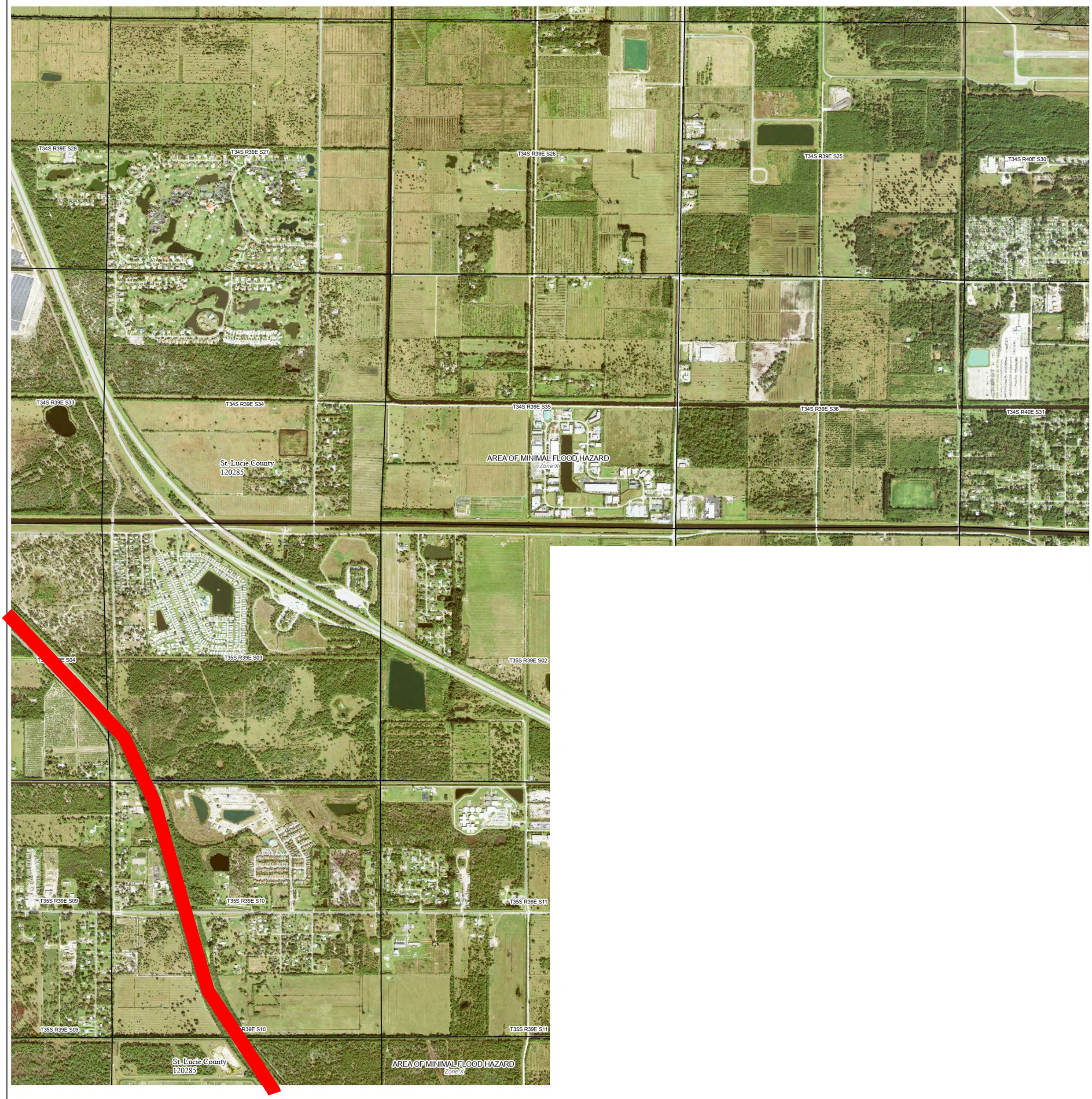
0 50 100 200 300 400 Meters

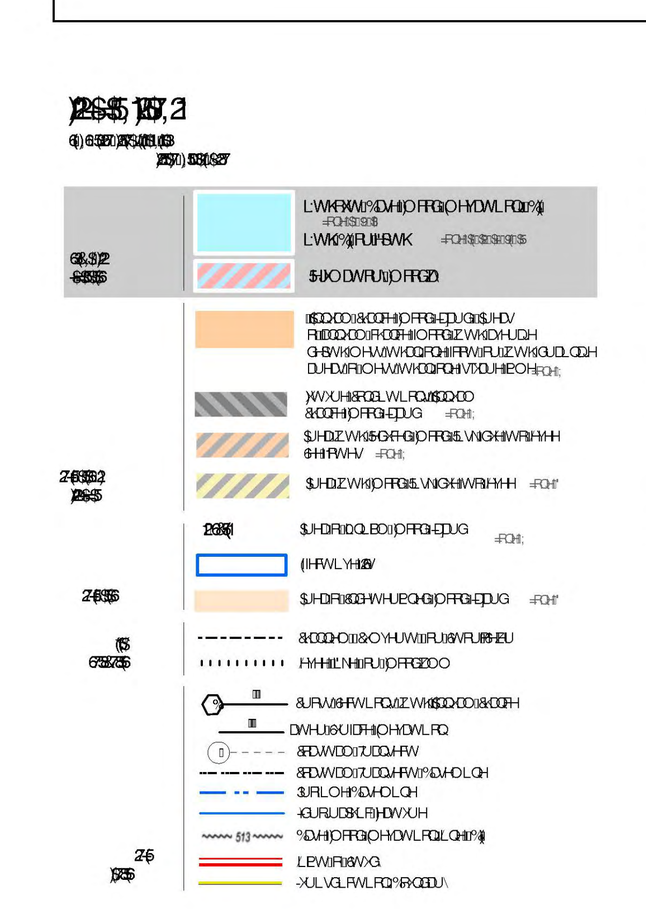
FEMA

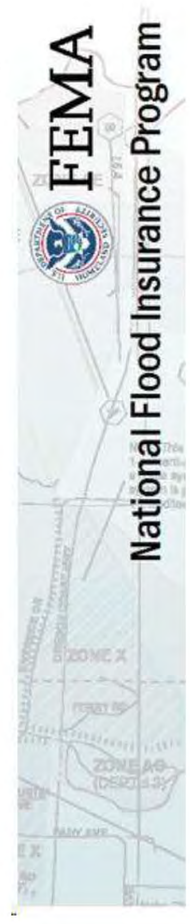
National Flood Insurance Program

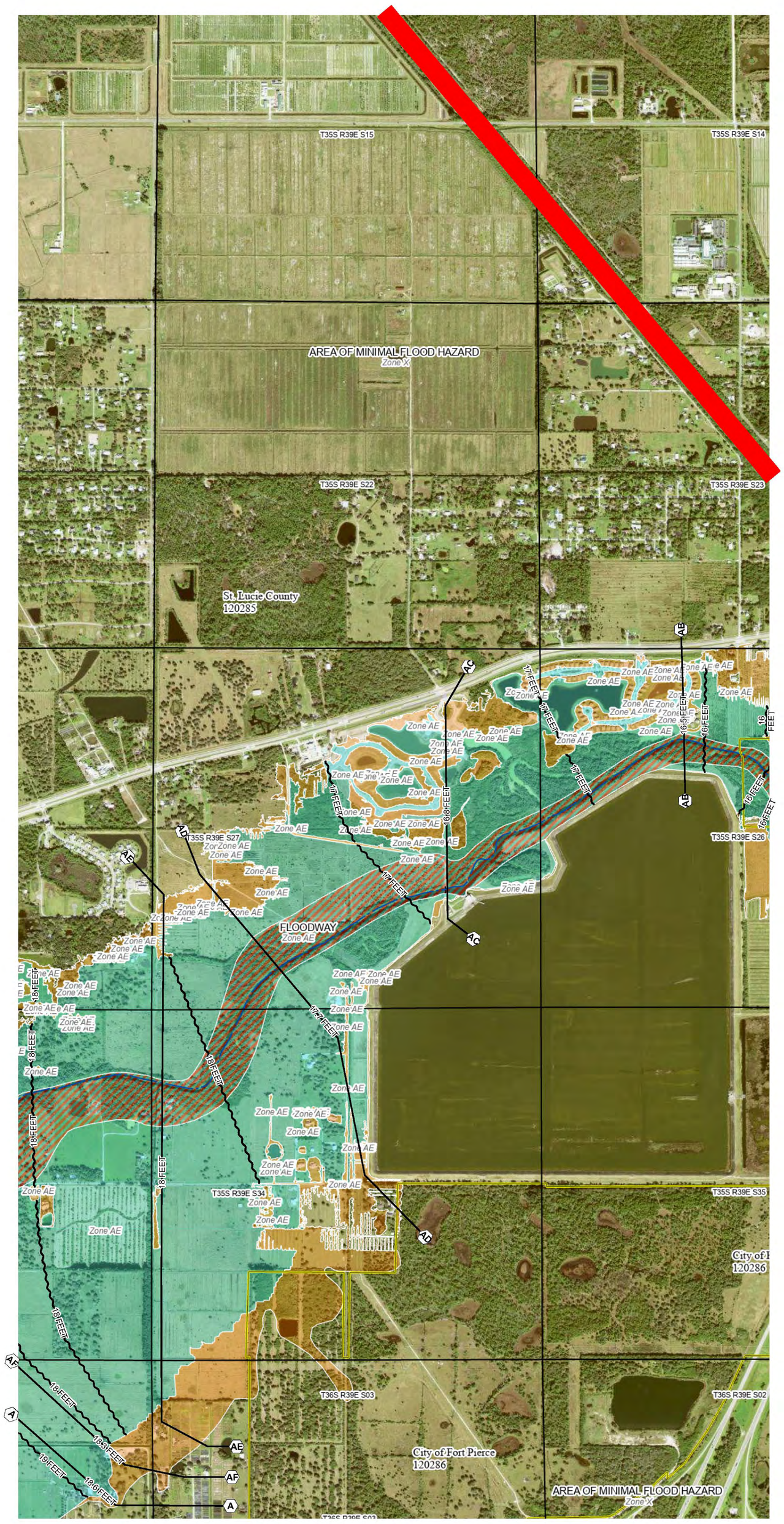
MAP NUMBER

EFFECTIVE DATE

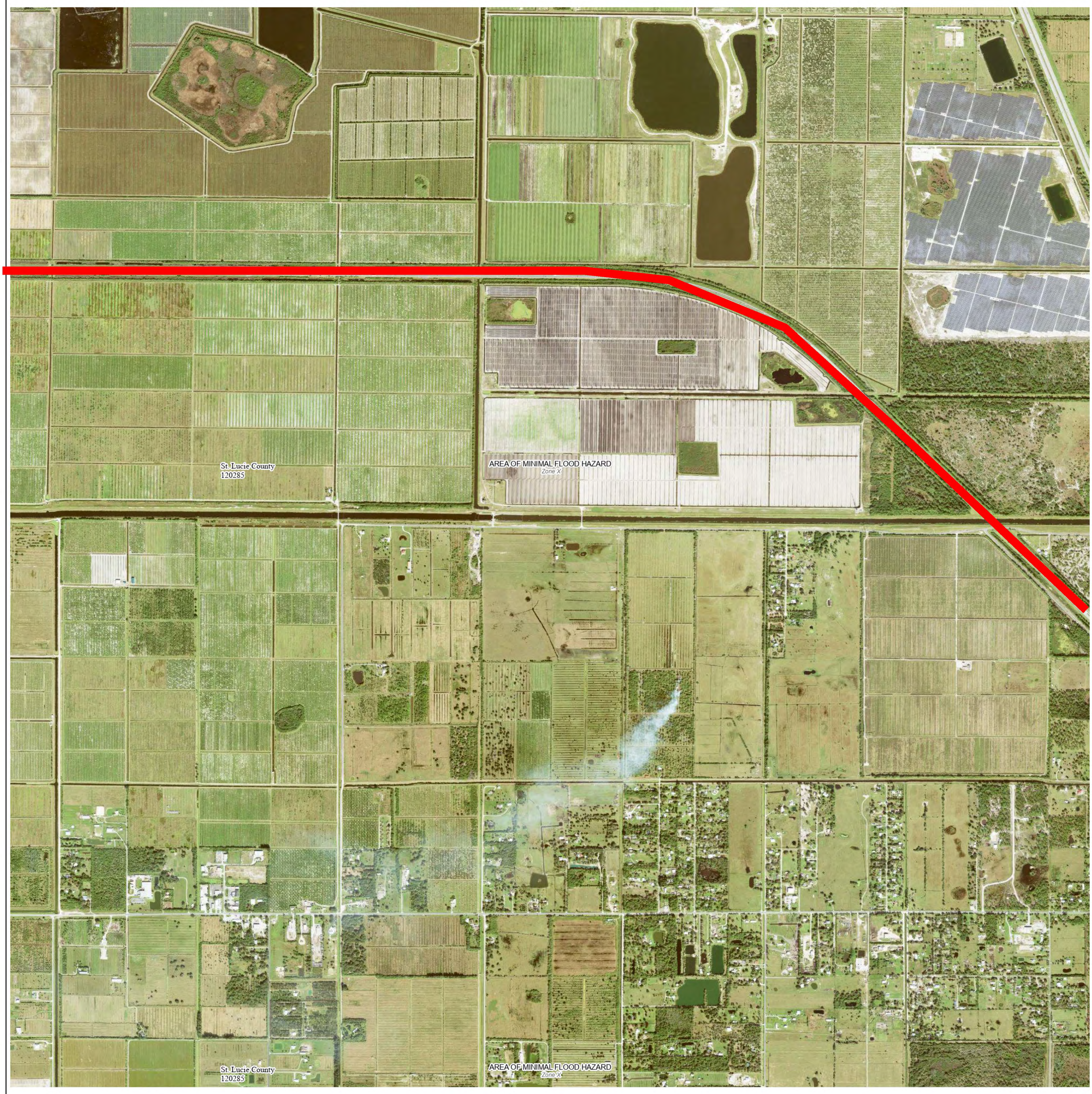

T34S R39E S28
T34S R39E S27
T34S R39E S26
T34S R39E S25
T34S R40E S30
T34S R39E S33
T34S R39E S34
T34S R39E S35
T34S R39E S36
T34S R40E S31
St. Lucie County
120285
AREA OF MINIMAL FLOOD HAZARD
Zone X
T35S R39E S04
T35S R39E S03
T35S R39E S02
T35S R39E S09
T35S R39E S10
T35S R39E S11
T35S R39E S09
R39E S10
T35S R39E S11
St. Lucie County
120285
AREA OF MINIMAL FLOOD HAZARD
Zone X




FEMA
National Flood Insurance Program

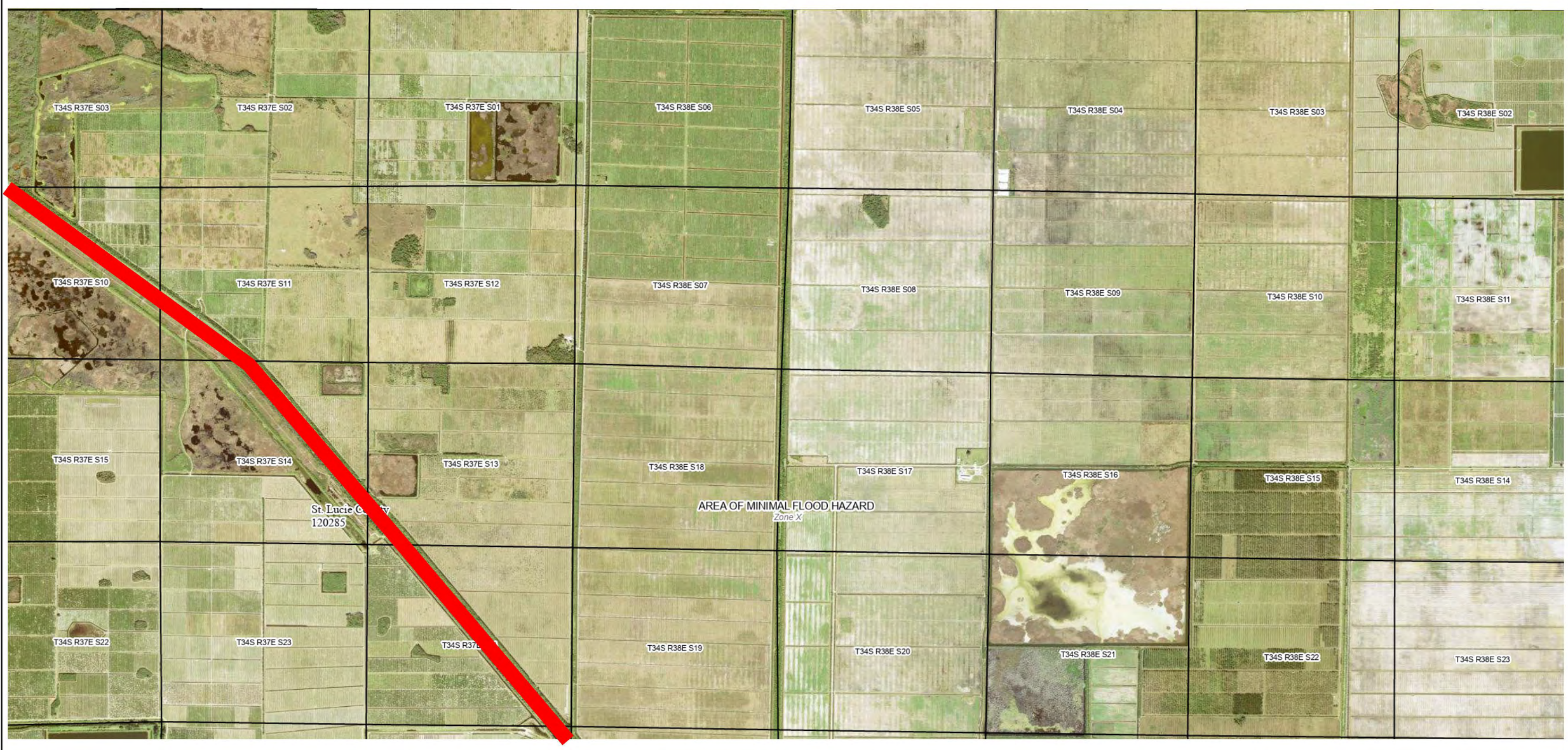


L:WKHBXWU?%DVH)OPRG(QHVDWLRQ1?%
=FQH1S1S1S1S
L:WK?%)UIHSWK =FQH1S1S1S1S1S
5HVLDWRUU)OPRG2
6XEMHFWWRIORRGLQJE\WKHDVHH
)XWXUHFRQGLWLRQV&RDO
&RDVWDO)ORRGLQJ =FQH;
$UHDZLWKUHGXFHG&RDVWDO)ORRGLQJ5LVNGHWHUPLQHG
6HHIRWH =FQH;
$UHDZLWKRWKHU)ORRG5LVN =FQH"
$UHDRIUQDQLBDUUD)ORRGHDUG =FQH;
(IHFWLYH
$UHDRI&HUWDLQHQ)ORRGHDUG =FQH"
&RRGLQDWH&OYHUWLFDOGDWXP
/HYHHLNHURU)ORRGZDOO
&URVVVHFWLRQZLWKLGHQWLFDO1XP
&URVVVHFWLRQZLWKLGHQW1XP
%DVH)ORRGLQDWLRQ(QWU1XP
/LEWLRI&WVG
-XULVGLFWLRQ%RXQGDU\
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 https://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.
Basemap information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). The basemap shown is the USGS National Map: Orthoimagery. Last refreshed October, 2020.
This map was exported from FEMA's National Flood Hazard Layer (NFHL) on 4/27/2022 4:13 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time. For additional information, please see the Flood Hazard Mapping Updates Overview Fact Sheet at https://www.fema.gov/media-library/assets/documents/118418
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards. This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date.
DSURFHWLRQ
6SHFLDO)ORRG+D]DUG$UHD
9HU\/RZ5LVN$UHD
)UHTXHQWO\)ORRGHG$UHD
)ORRGZD\$UHDZLWKRXW%DVH)ORRG(OHYDWLRQV
)ORRGZD\$UHDV
,QXQGHWHUPLQHG)ORRGSURQH$UHD
0 500 1,000 2,000 3,000 4,000 Feet
N
0 105 210 420 630 840 Meters
FEMA
National Flood Insurance Program
8.2 2, 65 3.5
2, 65 1.5 1.3
3(
CITY OF FORT
PIERCE
ST. LUCIE COUNTY
MAP NUMBER
EFFECTIVE DATE

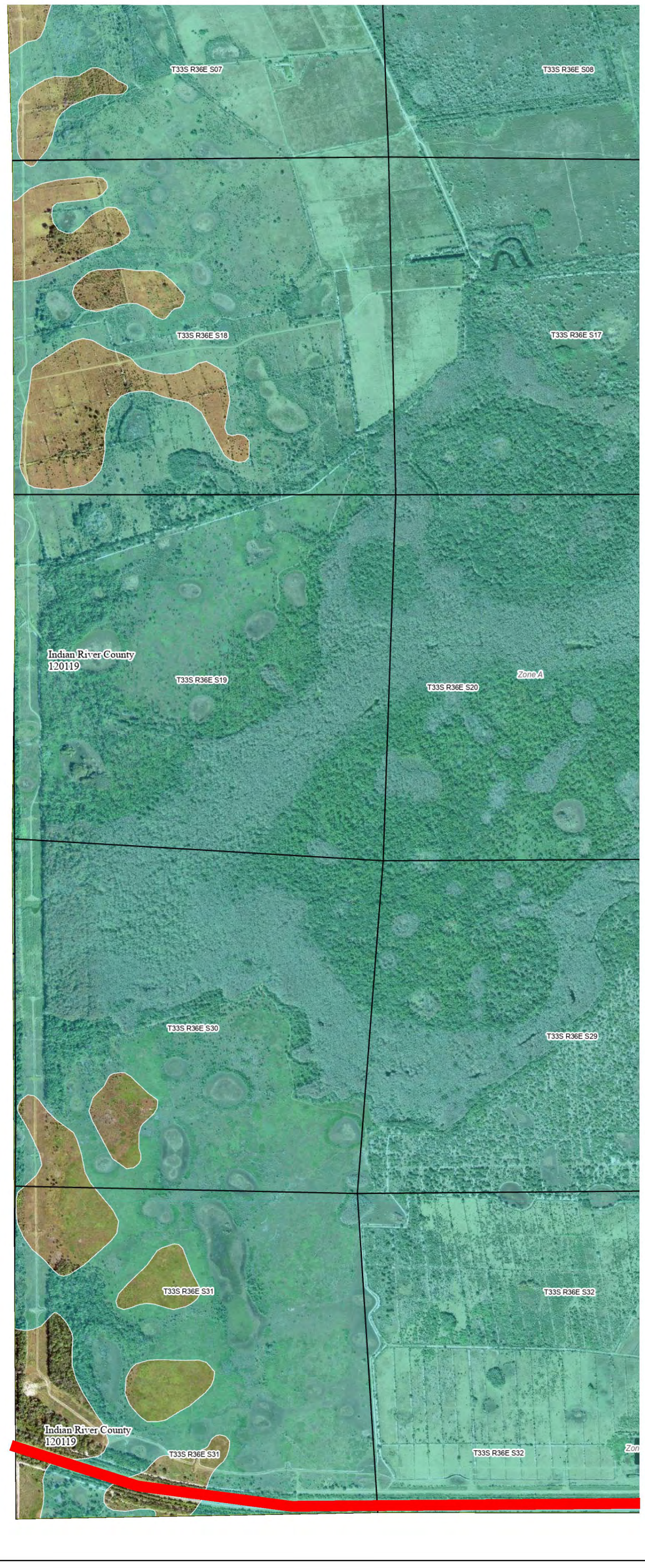


FEMA

National Flood Insurance Program

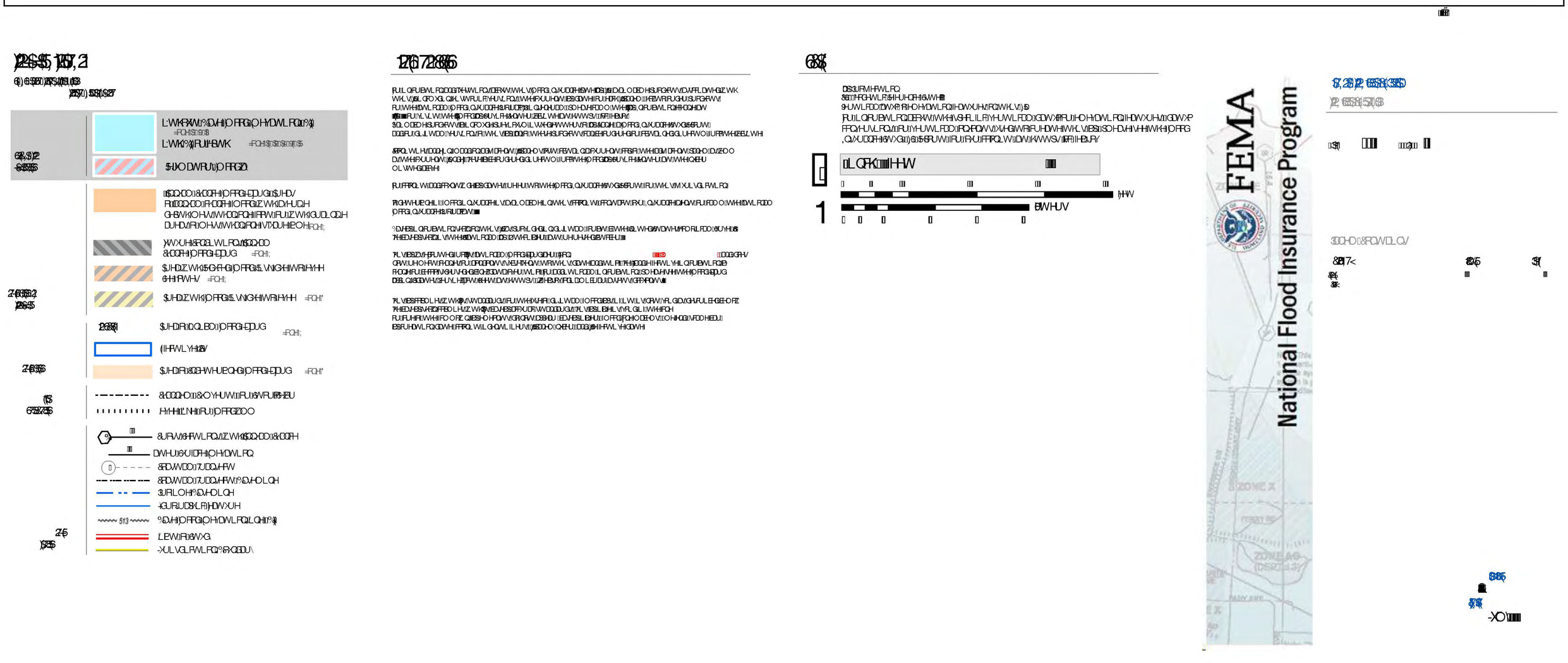


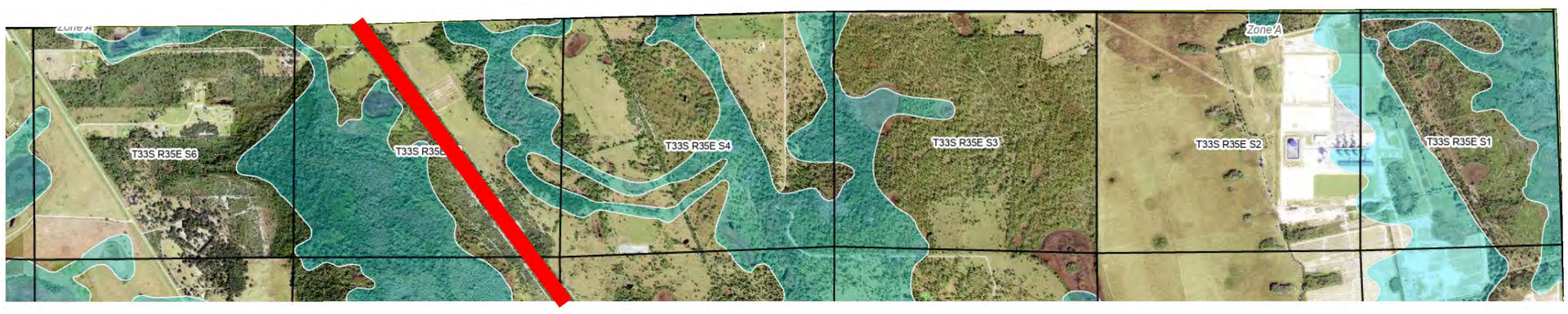
L:WKHRXW%DVH)ORRG(OHYDWLRQ%
=FOHS:S:S:S:S
L:WK%RUHSWK =FOHS:S:S:S:S
5HVHDUFK)ORRG
)ORRGZD
)ORRGZDQG&RDVWDO)ORRGSODLQ
)ORRGZDQG&RDVWDO)ORRGVTDQG&RDVWDO)ORRG
=FOHS;
$UHDRIQHJOLJLEOH)ORRG =FOHS;
$UHDRIQHJOLJLEOH)ORRG =FOHS;
&RDVWDO%DUULHU5HVRXUFH$UHD
&RDVWDO%DUULHU
%DVH)ORRG(OHYDWLRQ
&URVV6HFWLRQ
/HYHH
&XOWXUDO)HDWXUH
%DVH)ORRG(OHYDWLRQ
/LPLWRI6WXG\
-XULVGLFWLRQ%RXQGDU\
)ORRGZD%RXQGDU\
)ORRGZDQG&RDVWDO%RXQGDU\
)ORRGZD
)ORRGZDQG&RDVWDO
&RDVWDO%DUULHU
&RDVWDO%DUULHU
&RDVWDO%DUULHU


T33S R36E S07
T33S R36E S08
T33S R36E S18
T33S R36E S17
Indian River County
120119
T33S R36E S19
Zone A
T33S R36E S20
T33S R36E S30
T33S R36E S29
T33S R36E S31
T33S R36E S32
Indian River County
120119
T33S R36E S31
T33S R36E S32

FEMA
National Flood Insurance Program


T33S R35E S7
T33S R35E S8
T33S R35E S9
T33S R35E S10
T33S R35E S18
T33S R35E S17
T33S R35E S16
T33S R35E S15
Zone A
OKEECHOBEE COUNTY
120177
Zone A
T33S R34E S24
T33S R35E S19
T33S R35E S20
T33S R35E S21
T33S R35E S22
AREA OF MINIMAL FLOOD HAZARD
Zone X
T33S R34E S25
T33S R35E S30
T33S R35E S29
T33S R35E S28
T33S R35E S27
T33S R34E S36
T33S R35E S31
T33S R35E S32
T33S R35E S33
T33S R35E S34
Zone A
OKEECHOBEE COUNTY
120177
Zone A
AREA OF MINIMAL FLOOD HAZARD




Zone A
T33S R35E S6
T33S R35E S4
T33S R35E S3
Zone A
T33S R35E S2
T33S R35E S1

FEMA
National Flood Insurance Program

Appendix D

Advanced Notification Package

RON DESANTIS
GOVERNOR

Florida Department of Transportation
Florida's Turnpike Enterprise
P.O. Box 613069, Ocoee, FL 34761
407-532-3999

KEVIN J. THIBAULT, P.E.
SECRETARY

May 15, 2020

Mr. Chris Stahl, Clearinghouse Coordinator
Florida State Clearinghouse
Florida Department of Environmental Protection
3900 Commonwealth Boulevard, MS 47
Tallahassee, FL 32399-3000

Subject: **Advance Notification**
Florida's Turnpike (SR 91) Widening
From N of State Road (SR) 70 to N of SR 60 (MP 152-193)
ETDM Number: 14425
Financial Project Identification Number: 423374-2
Osceola, Indian River, Okeechobee, and St. Lucie Counties, Florida

Dear Mr. Stahl:

This Advance Notification (AN) package is being sent to your office for distribution to State agencies that conduct federal consistency reviews (consistency reviewers) in accordance with the Coastal Zone Management Act and Presidential Executive Order 12372. Although we will request specific comments during the permitting process, we are asking that consistency reviewers examine the attached information and provide us with their comments.

Consistency reviewers have 45 days from the Programming Screening Notification to provide their comments. Once you have received their comments, please submit a consistency determination for the State of Florida within 60 days of the Programming Screening Notification. If you need more review time, please send a written request for an extension to our office within the initial 60-day comment period.

This is a non-federal action and the Florida Department of Transportation will determine what type of environmental documentation will be necessary. The determination will be based upon in-house environmental evaluations and comments from other agencies. A consistency review for this project is not required by 15 CFR Part 930 because no federal actions are involved.

In addition, please review this project's consistency, to the maximum extent feasible, with requirements of Chapter 163 of the Florida Statutes.

Your comments should be submitted via the Environmental Screening Tool (EST) if you are an Environmental Technical Advisory Team (ETAT) representative, or emailed or mailed to the Florida's Turnpike contact:

Henry Pinzon, P.E., Environmental Management Engineer
Florida Department of Transportation
Florida's Turnpike Enterprise
P.O. Box 613069
Ocoee, FL 34761

Email: Henry.Pinzon@dot.state.fl.us

I appreciate your cooperation in this matter.

Sincerely,



Henry Pinzon, P.E.
Environmental Management Engineer
Florida's Turnpike Enterprise
Enclosures: AN Package

c: Transmittal List, Part III of AN Package

Advance Notification Package

Project #14425 - Florida's Turnpike (SR 91) Widening from N of State Road (SR) 70 to N of SR 60 (MP 152-193)
Programming Screen - Published on 05/15/2020
Printed on: 5/15/2020

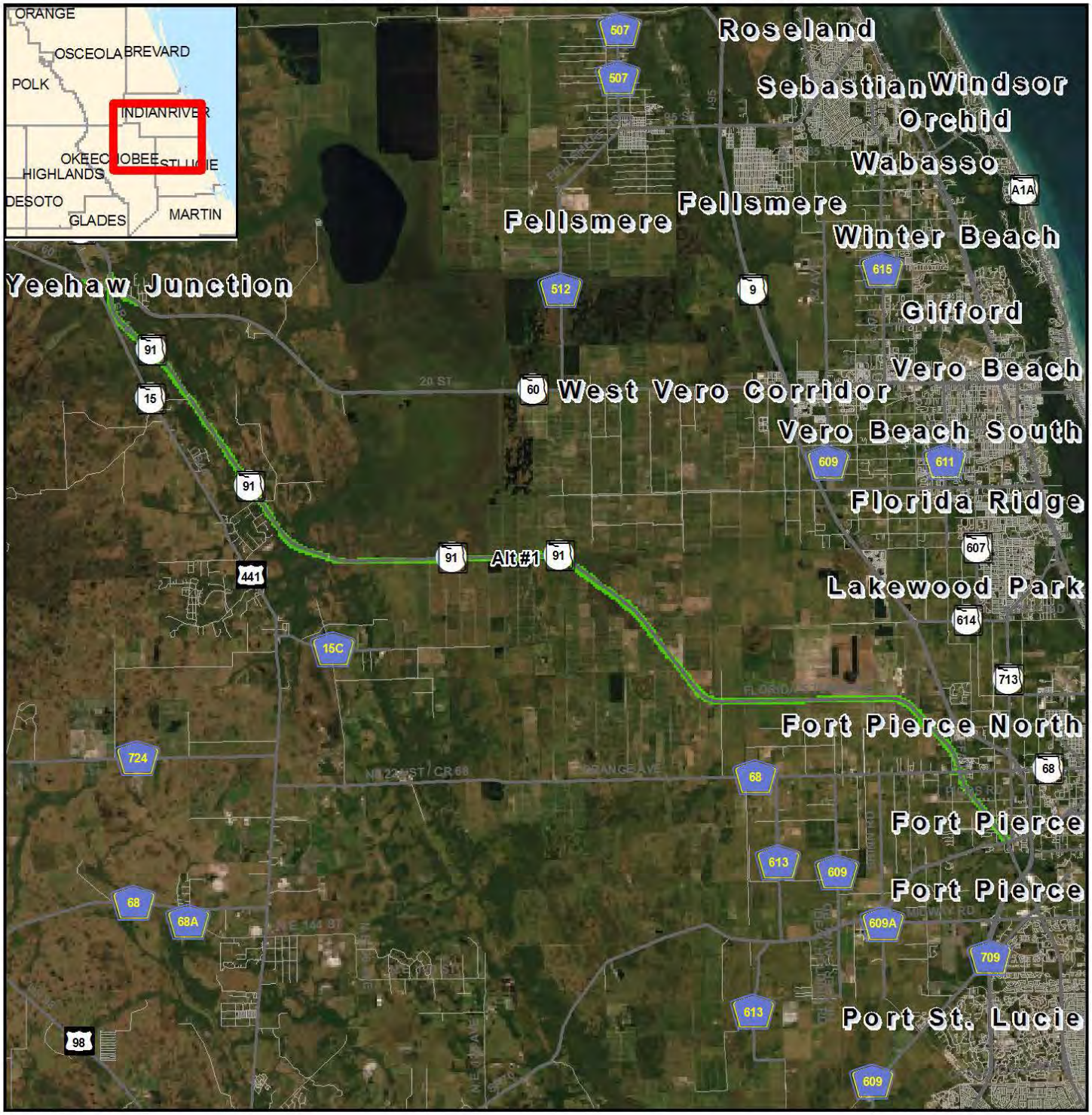
Table of Contents

I. Location Maps 1
II. Fact Sheet 6
a. Purpose and Need 6
b. Project Description 7
c. Preliminary Environmental Discussion 7
i. Social and Economic 7
1. Land Use Changes 7
2. Social 7
3. Relocation Potential 8
4. Farmlands 8
5. Aesthetic Effects 9
6. Economic 9
7. Mobility 9
ii. Cultural 10
1. Section 4(f) Potential 10
2. Historic and Archaeological Sites 10
3. Recreation Areas 10
iii. Natural 10
1. Wetlands and Surface Waters 10
2. Water Quality and Quantity 11
3. Floodplains 11
4. Coastal Zone Consistency 12
5. Wildlife and Habitat 12
6. Coastal and Marine 13
iv. Physical 13
1. Noise 13
2. Air Quality 13
3. Contamination 13
4. Infrastructure 14
5. Navigation 14
v. Special Designations 14
1. Special Designations: Outstanding Florida Waters 14
2. Special Designations: Aquatic Preserves 14
3. Special Designations: Scenic Highways 14
4. Special Designations: Wild and Scenic Rivers 15
d. Anticipated Permits 15
e. Anticipated Technical Studies 15
III. Transmittal List 16

I. Location Maps

14425 PD&E FOR WIDEN TPK FROM N OF SR70 TO N OF SR60 (MP 152 - 193)

North of State Road 70 to North of State Road 60



Project Aerial Map

- ETDM Alternative
- ETDM Alternative Terminus
- Major Road
- Local Road or Trail

Data Sources:
Highways - NAVTEQ
Digital Orthophotograph - ArcGIS Online

0 1.5 3 6 Miles

N

9/18/2019

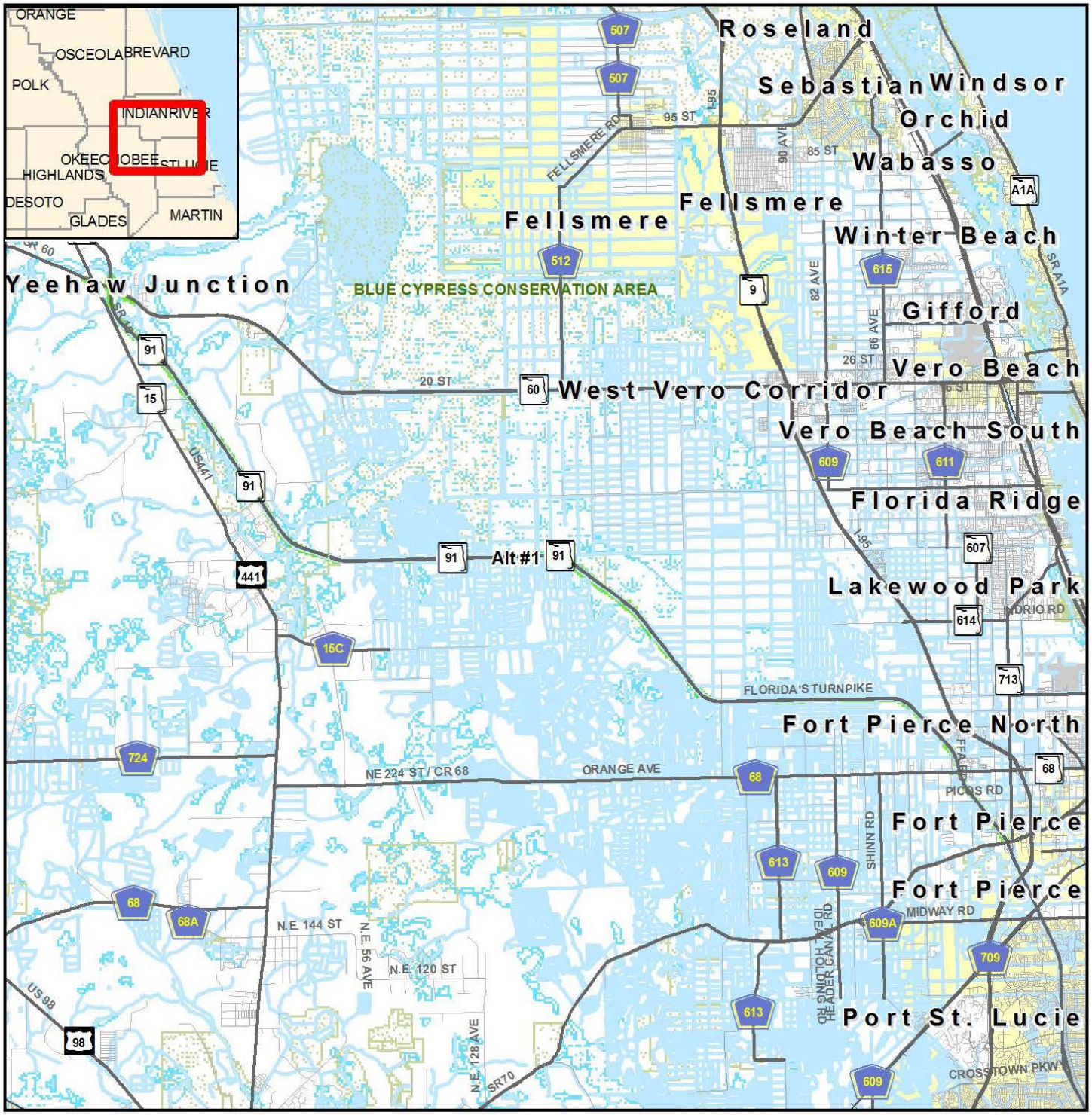
etdm Environmental Screening Tool

FDOT

This map and its content is made available by the Florida Department of Transportation on an "as is," "as available" basis without warranties of any kind, express or implied.

14425 PD&E FOR WIDEN TPK FROM N OF SR70 TO N OF SR60 (MP 152 - 193)

North of State Road 70 to North of State Road 60



Project Base Map

ETDM Alternative Terminus
Managed Conservation Lands
Alt #1
Local Road or Trail
Major Road
City Limits

Data Sources:
NAVTEQ
US Geological Survey
US Census Bureau
County Property Appraisers
Florida Natural Areas Inventory

0 1.25 2.5 5 Miles

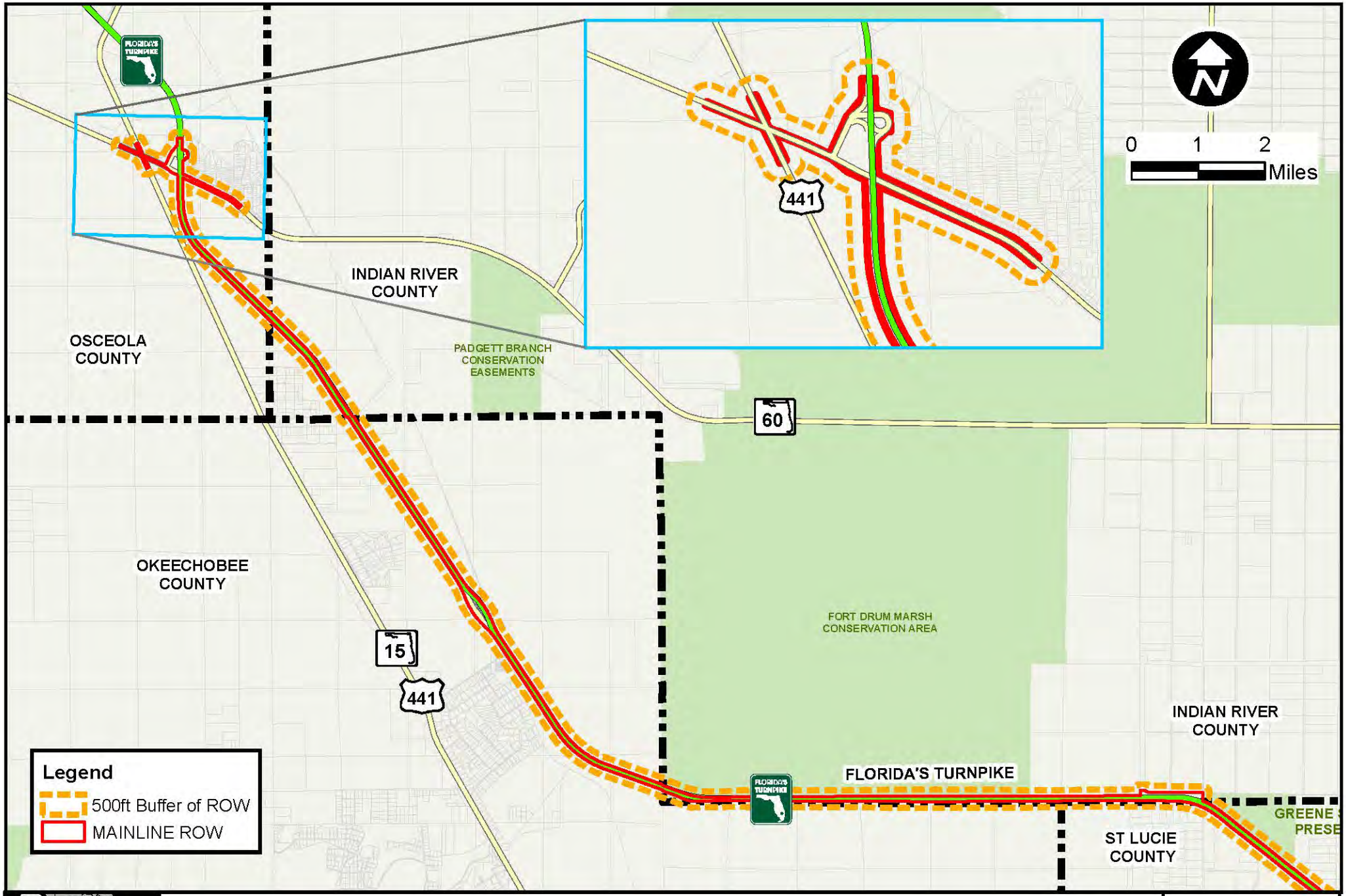
N

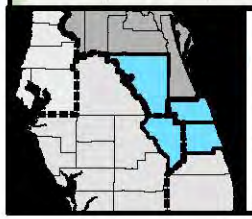
9/18/2019

etdm Environmental Screening Tool

FDOT

This map and its content is made available by the Florida Department of Transportation on an "as is," "as available" basis without warranties of any kind, express or implied.





PD&E FOR WIDEN TPK FROM N OF SR 70 TO N OF SR 60

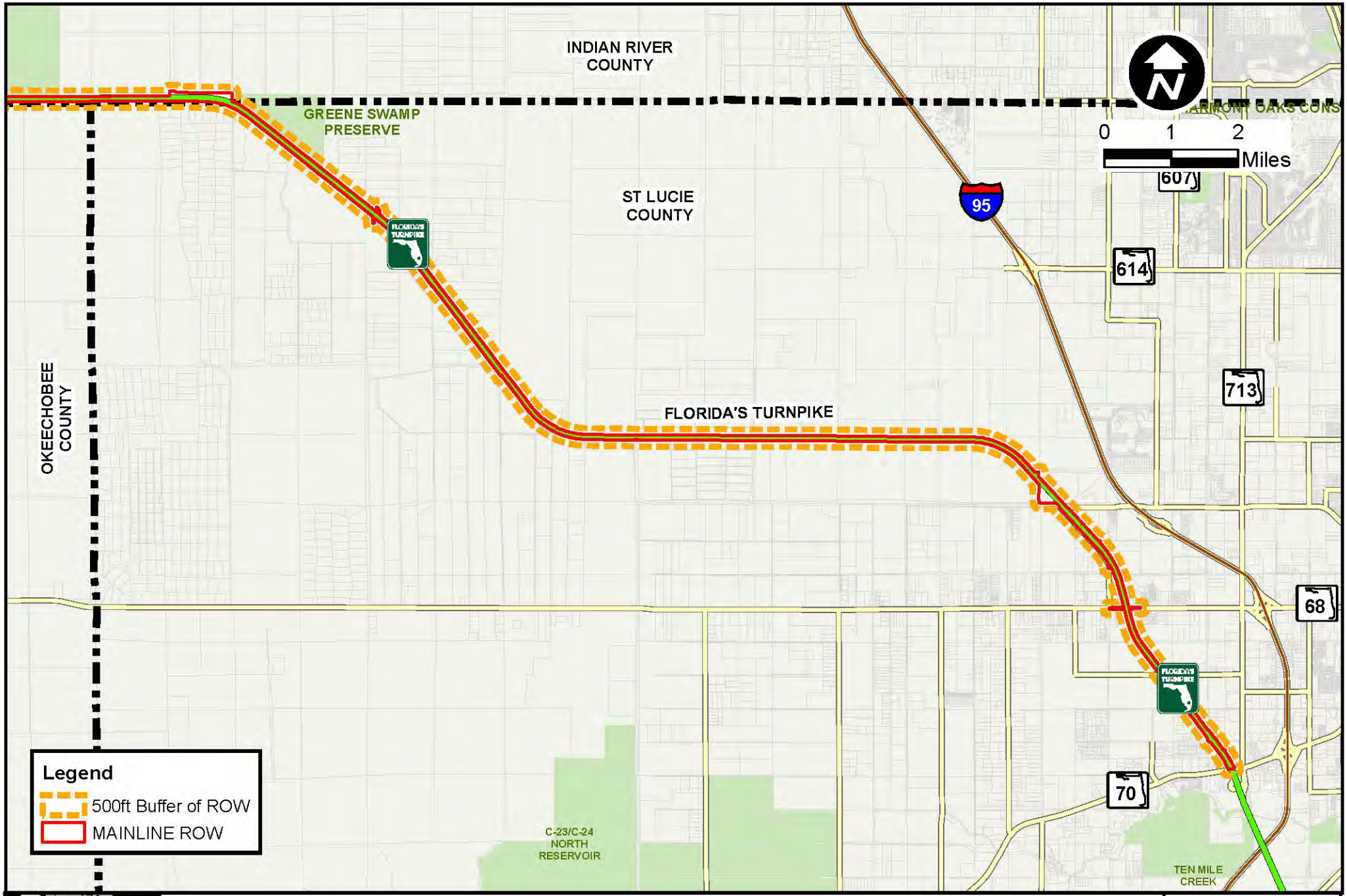
Milepost (MP) 152 to MP 193
Osceola, Indian River, Okeechobee, and St. Lucie Counties, Florida

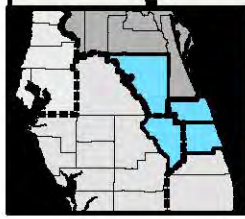
Financial Project ID: 423374-2

Project Limits Map

Figure

1-1





PD&E FOR WIDEN TPK FROM N OF SR 70 TO N OF SR 60

Milepost (MP) 152 to MP 193
Osceola, Indian River, Okeechobee, and St. Lucie Counties, Florida

Financial Project ID: 423374-2

Project Limits Map

Figure

1-2

II. Fact Sheet

Disclaimer

DISCLAIMER: The Fact Sheet data consists of the most up-to-date information available at the time the Advance Notification Package is published. Updates to this information may be found on the ETDM website at http://etdmpub.fla-etat.org

Special Note: Please be aware of the selected Milestone date when viewing project data on the ETDM website. Snapshots of project and analysis data have been taken for Project #14425 at various points throughout the project's life-cycle. On the website these **Project Milestone Dates** are listed in the the project header immediately after the project contact information. Click on any of the dates listed to view the information available on that date.

Overview

#14425 Florida's Turnpike (SR 91) Widening from N of State Road (SR) 70 to N of SR 60 (MP 152-193)

District: District 1, District 4, District 5
County: Indian River, Okeechobee, Osceola, St. Lucie
Planning Organization: Florida's Turnpike Enterprise
Plan ID: Not Available
Federal Involvement: State Funds Only (SFO)

Phase: Programming Screen
From: North of State Road 70
To: North of State Road 60
Financial Management No.: 423374-2

Contact Information: Brian Ribaric (407) 264-3095 brian.ribaric@dot.state.fl.us
Snapshot Data From: Current Draft Data

a. Purpose and Need

The purpose of this project is to increase capacity, meet existing and future travel demands, and address roadway deficiencies for the segment of Florida's Turnpike (State Road (SR) 91) from north of SR 70 at approximately MP 152 to north of SR 60 at approximately MP 193. The project will also evaluate potential new and/or modified interchange locations.

Capacity

Travel demand on the Florida's Turnpike has increased significantly. According to the Florida's Turnpike Enterprise (FTE) *Traffic Trends Report, July 2019*, the forecasted traffic data show the need to widen the Florida's Turnpike to six lanes by year 2030 within the project limits to maintain acceptable levels of service. Increase in demand has the potential to result in rear end and off-road crashes associated with congestion.

Transportation Demand

Florida's Turnpike serves regional, but also local trips, particularly for commuters traveling to/from residential and employment centers and has therefore become a critical component of local transportation networks. As demand for local access increases, traffic volumes at the SR 70 and SR 60 interchanges will result in future congestion. At just over 40 miles with only two existing access points, there is a need to evaluate new and/or modified access points to provide for emergency evacuation, incident management and population and employment growth. Additionally, the Florida's Turnpike is a designated evacuation route by the Florida Division of Emergency Management, which provides access for the largest metropolitan area in South Florida such as West Palm Beach, Fort Lauderdale, Miami and Homestead.

Roadway Deficiencies

The project will address existing roadway deficiencies, such as horizontal and vertical geometrics, for both Turnpike mainline and interchanges; clear zone requirements; inside and outside shoulder widths; and structural deficiencies at the SR 70 and SR 60 interchanges. For bridges at existing interchange locations, bridge number 940053 (at SR 70) and 920057 (at SR 60) are 64 and 57 years old, respectively. Both are functionally obsolete and will reach the end of their useful life by the time the project is constructed.

Consistency with Planning Documents

The project is not listed in the Long Range Transportation Plans (LRTPs) or Transportation Improvement Programs (TIPs) for four Metropolitan/Transportation Planning Organizations (MPO/TPO) in the study area (St Lucie TPO, Heartland Regional TPO, Indian River MPO, and MetroPlan Orlando). The State Transportation Improvement Program (STIP) has not included this widening project of Florida's Turnpike (SR 91) either. Therefore, additional coordination will take place during the PD&E Study to ensure the plan consistency by including project in the relevant documents.

b. Project Description

The project involves capacity improvements and the addition of potential new and/or modified interchanges along Florida's Turnpike north of SR 70 (MP 152) to north of SR 60 (MP 193) in St Lucie, Indian River, Okeechobee and Osceola Counties, a distance of approximately 41 miles.

c. Preliminary Environmental Discussion

i. Social and Economic

1. Land Use Changes

Project PED Comments

Analysis Area PED Comments
Alternative #1

Capacity improvements along Florida's Turnpike mainline are anticipated to occur within the existing right-of-way with the exception of new interchange locations and potential pond site and/or drainage accommodations. A 500-foot study area buffer from the existing right-of-way line was used to identify potential impacts.

Analysis of the 2014 St. Johns River Water Management District (SJRWMD) FL Land Use and Land Cover Geographic Information Systems (GIS) data identifies "Roads (= 4 Lane Divided with Medians)" as the highest percentage of land use which accounts for 678.1 acres (9.09%) of the area within the 500-foot study area buffer. Land listed as "Improved Pastures" and as "Shrub and Brushland" also account for 501.5 acres (6.72%) and 408.56 acres (5.47%) within the 500-foot study area buffer, respectively.

Analysis of the 2014-2016 South Florida Water Management District (SFWMD) Land Use and Land Cover GIS data identifies "Roads and Highways" as the highest percentage of land use within the 500-foot study area buffer. Land listed as "Roads and Highways", "Citrus Groves", and "Fallow Cropland" account for the largest portions of the 500-foot study area buffer with coverage 920.85 acres (12.34%), 855.97 acres (11.47%), and 522.75 acres (7.01%), respectively.

The following county future land use maps have identified lands within the 500-foot study area buffer as predominantly:

- 2030 Indian River County Future Land Use - Agricultural-3 (1 Unit/20 Acres)
- Okeechobee County Conceptual Future Land Use 2020 - Agriculture, and Rural Activity Center Rural Density
- Osceola County Future Land Use Map 2040 - Yeehaw Transportation Distribution Center, and Rural/Agricultural
- St. Lucie County Future Land Use 2040 - Agricultural-5 (1 du/5 ac); Conservation Public; TVC, Towns, Villages & Countryside; Residential Urban (5 du/ac); Residential Estate (1 du/ac); Agricultural-2.5 (1 du/2.5 ac); Special District; and Residential Suburban (2 du/ac)

The proposed project is anticipated to result in minimal impacts to land use.

Pursuant to Part 2, Chapter 4 of the FDOT PD&E Manual, a Sociocultural Effects evaluation will be conducted during the PD&E phase to evaluate impacts and enhancements to land use changes.

2. Social

Project PED Comments

Analysis Area PED Comments
Alternative #1

The Environmental Screening Tool (EST) Sociocultural Data Report (SDR) was used to determine demographic data. The SDR uses the U.S. Decennial Census (1990, 2000) and the American Community Survey (ACS) 5-year estimates from 2006-2010 and 2013-2017 and reflects the approximation of the population based on block group level data with a 500-foot study area buffer of the study corridor.

The American Community Survey data includes the following "data note: Detail may not sum to totals due to rounding. Hispanic population can be of any race. Population by Language Spoken at Home is available at the census tract summary level and up."

The SDR identified the following demographics within the ACS 2013-2017 data:

Population and Income
The total population within the 500-foot study area buffer is 280 individuals. Within the 500-foot study area buffer, there are 72 households, of which 7 households (9.29%) are below poverty level and 1 household (1.39%) is on public assistance.

Race and Ethnicity
Within the 500-foot study area buffer, 58 (20.7%) individuals of the population are described as Black or African American Alone, 42 (15%) individuals as Hispanic or Latino of Any Race, and 4 (0.14%) individuals as Some Other Race Alone.

Age and Disability
Within the 500-foot study area buffer, 56 (20%) individuals of the population are aged 65 and older.

Housing
Within the 500-foot study area buffer, there are 91 total housing units. Of those, 71 (78%) housing units are occupied and 19 (20.8%) housing units are vacant.

Language
Within the 500-foot study area buffer, 4 (1.5%) individuals speak English not well and 3 (1.1%) individuals speak English not at all.

This PD&E Study will be developed in accordance with the Civil Rights Act of 1964, the Civil Rights Act of 1968, along with Title VI of the Civil Rights Act, Executive Order 12898 (Environmental Justice), which requires Federal agencies to take the appropriate steps to identify and address any disproportionately high and adverse human health or environmental effects of Federal programs, policies, and activities on minority and low-income populations. Where there is potential for disproportionately high and adverse effects on minority and low-income populations, proactive measures will be taken to involve the affected community in the decisions related to alternative selection, impact analysis, and mitigation.

The proposed project is expected to result in minimal involvement with social resources.

Pursuant to Part 2, Chapter 4 of the FDOT PD&E Manual, a Sociocultural Effects evaluation will be conducted during the PD&E phase to evaluate impacts and enhancements to social conditions.

3. Relocation Potential

Project PED Comments

Analysis Area PED Comments
Alternative #1

SFWMD Residential Areas 2014-2016 GIS data indicate there are 13 residential areas within the 500-foot study area buffer, totaling 134.54 acres. Additionally, SJRWMD Residential Areas 2014 GIS data indicate there are 8 residential areas totaling 24.51 acres within the study area buffer. While efforts will be made to identify alternatives within the existing right-of-way, the proposed widening to Florida's Turnpike may require additional right-of-way from adjacent properties.

The proposed project is not anticipated to result in any relocations.

If required, a Conceptual Stage Relocation Plan (CSRP) will be prepared. Pursuant to Part 2, Chapter 4 of the FDOT PD&E Manual, a Sociocultural Effects evaluation will be conducted during the PD&E phase to evaluate impacts to residents and businesses.

4. Farmlands

Project PED Comments

Analysis Area PED Comments
Alternative #1

SJRWMD Agricultural Lands 2014 GIS data identified an estimated 870.51 acres of land labeled as citrus groves, horse farms, improved pastures, unimproved pastures, and woodland pastures. Additionally, SFWMD Agricultural Lands 2014-2016 GIS data identified 2,057.01 acres of land as improved pastures, row crops, tree nurseries, unimproved pastures, woodland pastures, citrus groves, fallow cropland, abandoned groves, ornamentals, and horse farms. U.S. Department of Agriculture GIS data provided in the EST identified 4,215.54 acres of Farmland of Unique Importance within the 500-foot study area buffer.

Moderate impacts to farmlands are anticipated.

This project does not involve federal funding. Pursuant to Part 2, Chapter 6 of the FDOT PD&E Manual, the project is not subject to the provisions of the Farmland Protection Policy Act of 1981, 7 CFR Part 658.

5. Aesthetic Effects

Project PED Comments

Analysis Area PED Comments

Alternative #1

SFWMD Residential Areas 2014-2016 GIS data indicate there are 13 residential areas within the 500-foot study area buffer, which accounts for 134.54 acres. Additionally, SJRWMD Residential Areas 2014 GIS data depict 8 residential areas within the 500-foot study area buffer, accounting for 24.51 acres.

Because the project involves the widening of an existing limited access facility, minimal impacts to aesthetics are anticipated. However, aesthetic effects and enhancements, such as decorative features on noise walls, will be evaluated in future phases of project development.

Pursuant to Part 2, Chapter 4 of the FDOT PD&E Manual, a Sociocultural Effects evaluation will be conducted during the PD&E phase to evaluate impacts and enhancements to aesthetic effects.

6. Economic

Project PED Comments

Analysis Area PED Comments

Alternative #1

The GIS data identifies 3 Developments of Regional Impact (DRIs) (Cloud Grove, The Grove, and Orchard Park), as well as 6 Planned Unit Development (PUD) sites within the 500-foot study area buffer.

The capacity improvements to the Turnpike Mainline will enhance travel time reliability, which factors into the efficient movement of goods and freight. In addition, short-term construction related jobs will be created.

Economic enhancements are anticipated.

Pursuant to Part 2, Chapter 4 of the FDOT PD&E Manual, a Sociocultural Effects evaluation will be conducted during the PD&E phase to evaluate impacts and enhancements to economic conditions.

7. Mobility

Project PED Comments

Analysis Area PED Comments

Alternative #1

Within the 500-foot study area buffer there are 4 Transportation Disadvantaged Service Provider Areas (Central Florida Regional Transportation Authority, My Contract Transportation Inc., Senior Resource Association, Inc., and St. Lucie County Board of County Commissioners), 1 Office of Greenways and Trails existing recreational trail (Fort Drum Marsh Conservation Area Trail), and one Shared-Use Nonmotorized (SUN) Trail Network unfunded gap (Florida Cracker Trail Corridor).

The proposed project is anticipated to enhance mobility by providing for increased roadway capacity and improved level of service.

Pursuant to Part 2, Chapter 4 of the FDOT PD&E Manual, a Sociocultural Effects evaluation will be conducted during the PD&E phase to evaluate impacts and enhancements to mobility.

ii. Cultural

1. Section 4(f) Potential

Project PED Comments

Analysis Area PED Comments

Alternative #1

Pursuant to Part 2, Chapter 7 of the FDOT PD&E Manual, Section 4(f) of the Department of Transportation Act of 1966 is not applicable on non-federally funded projects.

2. Historic and Archaeological Sites

Project PED Comments

Analysis Area PED Comments

Alternative #1

Florida Master Site File GIS data indicate that within the 500-foot study area buffer there is 1 Archaeological or Historic Site (SL00035-Florida State Turnpike Midden).

The EST identified 1 Historic Bridge (SL03298) which was found ineligible for listing in the National Register of Historic Places (NRHP), 5 Historic Standing Structures (2 of which are ineligible for listing in the NRHP, 2 that have not yet been evaluated by the State Historic Preservation Officer (SHPO), and 1 that is eligible for listing in the NRHP [Desert Inn]), and 12 Resource Groups. The EST did not identify any cemeteries within the 500-foot study area buffer.

The proposed project is expected to result in minimal involvement with archaeological and historic sites.

Pursuant to Part 2, Chapter 8 of the FDOT PD&E Manual, a Cultural Resources Assessment Survey (CRAS) will be conducted during the PD&E phase to evaluate potential impacts to these resources.

3. Recreation Areas

Project PED Comments

Analysis Area PED Comments

Alternative #1

GIS data indicate that within the 500-foot study area buffer there is 1 Existing Recreational Trail (Fort Drum Marsh Conservation Area Trail), 1 Local Florida Parks and Recreational Facility Boundaries (Green Swamp Preserve), and 1 Shared-Use Nonmotorized (SUN) Trail Network in Florida (Florida Cracker Trail Corridor - Unfunded Gap).

The proposed project is anticipated to result in minimal involvement with recreation areas.

Potential impacts to recreation areas will be evaluated during the PD&E phase.

iii. Natural

1. Wetlands and Surface Waters

Project PED Comments

Analysis Area PED Comments

Alternative #1

National Wetlands Inventory Areas V2 GIS data indicate there are 1,076.16 acres of Palustrine Wetlands, and 442.95 acres of Riverine Wetlands within the 500-foot study area buffer.

SFWMD Wetlands 2014-2016 GIS data indicate there are 106 acres of Cypress, 20 acres of Cypress - Mixed Hardwoods, 8 acres of Cypress - Domes/Heads, 39 acres of Emergent Aquatic Vegetation, 176 acres of Freshwater Marshes/ Graminoid Prairie- Marsh, 295 acres of Mixed Shrubs, 3 acres of Wet Pinelands Hydric Pine, >1 acre of Wet Prairie, and 10 acres of Wetland Forested Mixed, within the 500-foot study area buffer.

SJRWMD Wetlands 2014 GIS data identified 23 acres of Bay Swamp (Distinct), 9 acres of Cabbage Palm Hammock, 75 acres of Cypress, 64 acres of Emergent Aquatic Vegetation, 212 acres of Freshwater Marsh, 14 acres of Hydric Pine Flatwoods, 154 acres of Mixed Forested Wetland, 262 acres of Mixed Hardwood Wetland, 328 acres of Mixed Scrub-Shrub Wetland, and 57 acres of Wet Prairies, within the 500-foot study area buffer.

While there are approximately 1,500 acres of wetlands within the 500-foot buffer, it is anticipated that only a moderate amount of wetlands will be impacted with the capacity improvements and associated pond sites.
Alternatives will be evaluated to avoid and minimize wetland and surface water impacts, where possible. Unavoidable impacts to wetlands and surface waters will require an Environmental Resource Permit (ERP) from SJRWMD and/or SFWMD, and a Clean Water Act (CWA) Section 404 Dredge and Fill Permit from the U.S. Army Corps of Engineers (USACE).

Moderate involvement with wetlands is anticipated.

Pursuant to Part 2, Chapter 9 of the FDOT PD&E Manual, a Natural Resource Evaluation (NRE) will be conducted during the PD&E phase to determine specific impacts to wetlands and surface waters.

2. Water Quality and Quantity

Project PED Comments

Analysis Area PED Comments

Alternative #1

The entire 500-foot study area buffer is within Florida's Surficial Aquifer System. 64.55% of the area within the 500-foot study area buffer has a discharge/less than 1 and 35.38% has a recharge/less than 1 for the Recharge Areas of the Floridian Aquifer. Additionally, within the study area buffer there are 22 Environmental Protection Agency (EPA) Water Quality Data Monitoring Stations, 39 Onsite Sewage locations, 1 Principal Aquifers of the State of Florida (Surficial Aquifer System), 20 Super Act Risk Sources , 15 Super Act Wells, 21 U.S. EPA National Pollutant Discharge Elimination Systems (NPDES), 10 Verified Impaired Florida Waters, and 13 Waterbody IDs (C-25 East Segment, Ten Mile Creek, Fort Pierce Farm Canal, Fort Drum Creek, Unnamed Tributary to Cow Log Branch, Unnamed Ditch Near Yeehaw Junction, C- 52 Below S-253, Jim Green Creek, Fort Drum Marsh, Cow Log Branch, Padgett Branch, C-25 Canal West, and Unnamed Branch Near Fort Drum).

SJRWMD - Save Our Rivers Lands GIS data identified 2 areas within the Fort Drum Marsh Conservation Area (LATT MAXCY - PARCELS A and B, and D.C. SCOTT) within the 500-foot study area buffer. Additionally, there are 64.94 acres of lands identified as Comprehensive Everglades Restoration Plan (CERP) Project Boundaries (Indian River Lagoon - South) and 3,414.07 acres of Northern Everglades and Estuaries Protection Program (NEEP) Watersheds (2011 data) within the 500-foot study area buffer.

The proposed project is expected to result in minimal involvement with water quality and quantity resources.

The project will be designed to meet state water quality and quantity requirements, and Best Management Practices (BMPs) will be utilized during construction. Pursuant to Part 2, Chapter 11 of the FDOT PD&E Manual, a Water Quality Impact Evaluation (WQIE) will be conducted during the PD&E study to document and assess potential impacts to water resources.

3. Floodplains

Project PED Comments

Analysis Area PED Comments

Alternative #1

Digital Flood Insurance Rate Map (DFIRM) 100 Year Flood Zones data indicate that within the 500-foot study area buffer there are 1,887.69 acres of Flood Hazard Zone A and 5,574.73 acres that are Outside 100 Year Floodplain.

The proposed project is expected to have minimal involvement with floodplain resources.

Pursuant to Part 2, Chapter 13 of the FDOT PD&E Manual, a Location Hydraulics assessment will be conducted during the PD&E study.

4. Coastal Zone Consistency

Coastal Zone Consistency Determination is Required: **Yes**
Project is subject to a consistency review as required by **15 CFR 930**.

5. Wildlife and Habitat

For the official list of fish and wildlife designated by the state of Florida as Endangered, Threatened or Species of Special Concern, please refer to sections 68A-27.003, .0031 and 005 in *Rules Relating to Endangered or Threatened Species*, Chapter 68A-27, Florida Administrative Code, https://www.flrules.org/gateway/ChapterHome.asp?Chapter=68A-27.

For general information on Florida imperiled species and species conservation programs, go to https://myfwc.com/wildlifehabitats/wildlife/

Project PED Comments

Analysis Area PED Comments
Alternative #1

Florida Department of Environmental Protection (FDEP) GIS data indicate that 540.77 acres (7.25%), 3,315.03 acres (44.42%), and 3,606.63 acres (48.33%) of the 500-foot study area buffer is located within the Indian River Lagoon, South Florida, and Upper St. Johns River Ecosystem Management Areas, respectively. U.S. Fish and Wildlife Service (USFWS) resources include the Florida Bonneted Bat Consultation Area, Florida Grasshopper Sparrow Consultation Area, Crested Caracara Consultation Area, Lake Wales Ridge Plants Consultation Area, Florida Scrub-Jay Consultation Area, Snail Kite Consultation Area, and one Woodstork Core Foraging Area (CFA). There are 6 Florida Managed Areas within the 500-foot study area buffer (Green Swamp Preserve, Red Bay Foundation Preserve, Fort Drum Marsh Conservation Area, Grassland Reserve Program Easement #101, Grassland Reserve Program #102, and Grassland Reserve Program #103). Additionally, 291.59 acres (3.91%) of land within the 500-foot study area buffer is designated as Everglades Headwaters National Wildlife Refuge and Conservation Area.

Florida Fish and Wildlife Conservation Commission (FWC) Wildlife Observation GIS data identify the following wildlife observed within the 500-foot study area buffer: white ibis, cattle egret, great egret, tri-colored heron, snowy egret, and little blue heron.

Federally listed plant species with potential to occur within the 500-foot study area boundary include the suite of 40 rare and endemic plants species in the Lake Wales Ridge Plants Consultation Area. While the project traverses the Lake Wales Ridge Consultation Area, much of the proposed work will occur within existing, maintained right-of-way.

Federally listed vertebrate species with potential to occur within the 500-foot study area buffer include the eastern indigo snake, Audubon's crested caracara, Florida grasshopper sparrow, Red-cockaded woodpecker, Florida bonneted bat, Florida scrub jay, and Everglade snail kite. Additionally, there have been three documented Florida panther roadkills within the project corridor despite the fact that the project corridor is outside of both the Florida Panther Consultation Area and Dispersal Area.

State listed species with potential to occur within the 500-foot study area buffer include the gopher tortoise, Florida sandhill crane, Florida burrowing owl, southern fox squirrel, Florida pine snake, and imperiled wading birds such as the little blue heron, tricolored heron, and limpkin (delisted).

The project is expected to result in moderate involvement with wildlife and habitat resources.

Pursuant to Part 2, Chapter 16 of the FDOT PD&E Manual, a listed species assessment will be included in the NRE during the PD&E phase.

6. Coastal and Marine

Project PED Comments

Analysis Area PED Comments

Alternative #1

Analysis of GIS data provided in the EST indicates no presence of Coastal and Marine resources within the 500-foot study area buffer.

No adverse impacts to coastal resources are anticipated due to the location of the project and its distance to environmentally sensitive shorelines.

iv. Physical

1. Noise

Project PED Comments

Analysis Area PED Comments

Alternative #1

The EST analysis identified 6 Planned Unit Developments (PUD)'s within the 500-foot study area buffer. SFWMD Residential Areas 2014-2016 data identified 13 residential areas within the study area buffer and analysis of SJRWMD 2014 data identified 8 residential areas. A portion of 3 Developments of Regional Impact (DRIs) (Cloud Grove, The Grove, and Orchard Park) are also located within the 500-foot study area buffer with 14.49 acres (0.19%), 182.06 acres (2.44%), and 26.15 acres (0.35%), respectively.

The majority of the project is rural in nature, however, some noise sensitive sites may include single and multi-family residential areas.

The proposed project is expected to result in minimal involvement regarding noise impacts.

Pursuant to Part 2, Chapter 18 of the FDOT PD&E Manual, a noise analysis will be conducted during the PD&E Study.

2. Air Quality

Project PED Comments

Analysis Area PED Comments

Alternative #1

The project is not located within a designated Air Quality Maintenance Area.

Minimal impacts to air quality are anticipated.

Pursuant to Part 2, Chapter 19 of the FDOT PD&E Manual, an Air Quality Technical Memorandum will be completed during the PD&E Study, if deemed necessary.

3. Contamination

Project PED Comments

Analysis Area PED Comments

Alternative #1

Several buffer sizes were used to evaluate the presence of contamination sites. GIS data provided in the EST indicate that within a 500-foot study area buffer there are 35 Petroleum Contamination Monitoring Sites, 2 Hazardous Waste Facilities, 39 Onsite Sewage sites, 24 Storage Tank Contamination Monitoring sites, 20 Super Act Risk Sources, 15 Super Act Wells, 11 U.S. EPA National Pollutant Discharge Elimination System sites, and 1 U.S. EPA Resource Conservation and Recovery Act Regulated (RCA) Facilities. Within a 1,000-foot study area buffer there are 4 Solid Waste Facilities.

Corridor projects in heavily industrialized or urbanized areas with dewatering planned near the contaminated sites need to be addressed with FDEP, WMD, or the local delegated program lead.

The proposed project is expected to result in moderate involvement with potential sources of contamination.

Pursuant to Part 2, Chapter 20 of the FDOT PD&E Manual, a Contamination Screening Evaluation Report (CSER) will be prepared during the PD&E Study. Any contaminated site identified will be assessed to determine the need for avoidance, minimization, or remediation prior to construction.

4. Infrastructure

Project PED Comments

Analysis Area PED Comments

Alternative #1

Analysis of GIS data provided in the EST shows there are several infrastructure sites within the 500-foot study area buffer. These sites include the various contamination sites outlined in the Contamination section, as well as 7 Federal Aviation Administration (FAA) Obstructions, 4 Electric Power Transmission Lines, 6 Wireless Antenna Structure Locations, and 2 Cellular Antenna Locations.

The proposed project is expected to result in minimal involvement with infrastructure resources.

Pursuant to Part 2, Chapter 21 of the FDOT PD&E Manual, a Utility Assessment Package will be prepared as part of the PD&E Study.

5. Navigation

Project PED Comments

Analysis Area PED Comments

Alternative #1

Analysis of GIS data provided in the EST indicates there are no potential navigable waterway crossings found within the 500-foot study area buffer.

v. Special Designations

1. Special Designations: Outstanding Florida Waters

Project PED Comments

Analysis Area PED Comments

Alternative #1

Analysis of GIS data provided in the EST indicates no presence of Special or Outstanding Florida Waters within the 500-foot study area buffer.

2. Special Designations: Aquatic Preserves

Project PED Comments

Analysis Area PED Comments

Alternative #1

Analysis of GIS data provided in the EST indicates no presence of Aquatic Preserves within the 500-foot study area buffer.

3. Special Designations: Scenic Highways

Project PED Comments

Analysis Area PED Comments

Alternative #1

Analysis of GIS data provided in the EST indicates no presence of Florida Scenic Highways and Byways within the 500-foot study area buffer.

4. Special Designations: Wild and Scenic Rivers

Project PED Comments

Analysis Area PED Comments

Alternative #1

Analysis of GIS data provided in the EST indicates no presence of Wild and Scenic Rivers within the 500-foot study area buffer.

d. Anticipated Permits

There are no anticipated permits identified for this project in the EST.

e. Anticipated Technical Studies

Technical Study Name	Type	Comments	Assigned By	Date
Geotechnical Report	ENGINEERING		Florida's Turnpike Enterprise	04/28/2020
Noise Study Report	ENVIRONMENTAL		Florida's Turnpike Enterprise	04/28/2020
Conceptual Stage Relocation Plan	ENVIRONMENTAL		Florida's Turnpike Enterprise	04/28/2020
Water Quality Impact Evaluation	Other		Florida's Turnpike Enterprise	04/28/2020
State Environmental Impact Report (SEIR)	ENVIRONMENTAL		Florida's Turnpike Enterprise	04/28/2020
Contamination Screening Evaluation Technical Memorandum	Other		Florida's Turnpike Enterprise	04/28/2020
Sociocultural Effects Evaluation	Other		Florida's Turnpike Enterprise	04/28/2020
Preliminary Engineering Report	ENGINEERING		Florida's Turnpike Enterprise	04/28/2020
Interchange Justification Report	ENGINEERING		Florida's Turnpike Enterprise	04/28/2020
Air Quality Technical Memorandum	ENVIRONMENTAL		Florida's Turnpike Enterprise	04/28/2020
Cultural Resource Assessment Survey	ENVIRONMENTAL		Florida's Turnpike Enterprise	04/28/2020
Interchange Modification Report (IMR)	ENGINEERING		Florida's Turnpike Enterprise	04/28/2020
Utility Assessment Technical Memorandum	ENGINEERING		Florida's Turnpike Enterprise	04/28/2020
Location Hydraulics Technical Memorandum	ENGINEERING		Florida's Turnpike Enterprise	04/28/2020
Pond Siting Report	ENGINEERING		Florida's Turnpike Enterprise	04/28/2020
Natural Resources Evaluation (NRE)	ENVIRONMENTAL		Florida's Turnpike Enterprise	04/28/2020

III. Transmittal List

Official Transmittal List

	Organization	Name
1.	Central Florida Regional Planning Council	Steed, Patricia
2.	FDOT District 1	Bennett, Jonathon A
3.	FDOT District 1	Pipkin, Gwen G.
4.	FDOT District 1	Pride, Tom
5.	FDOT District 4	Broadwell, Ann
6.	FDOT District 4	Davis-Sanders, Shandra
7.	FDOT District 4	Sonnett, Anson
8.	FDOT District 5	Ganey, Jim
9.	FDOT District 5	Linger, Kathaleen
10.	FDOT District 5	Walsh, William G.
11.	FDOT Office of Environmental Management	Bianco, Brittany A.
12.	FDOT Office of Environmental Management	Clark, Thu-Huong
13.	FDOT Office of Environmental Management	Cornwell, Katasha
14.	FDOT Office of Environmental Management	Garrett, Harrison
15.	FDOT Office of Environmental Management	Kirby, Marjorie
16.	FDOT Office of Environmental Management	Marino, Matthew
17.	FDOT Office of Environmental Management	McDaniel, Mike
18.	FDOT Office of Environmental Management	McGilvray, Peter
19.	FDOT Office of Environmental Management	Overton, Maria
20.	FDOT Office of Environmental Management	Pennington, Michael
21.	FDOT Office of Environmental Management	Rach, Denise
22.	FDOT Office of Environmental Management	Samaan, Engy M.
23.	FDOT Office of Environmental Management	Sykes, Michael M.
24.	FDOT Office of Environmental Management	Turner, Jonathan
25.	Federal Aviation Administration	* Federal Aviation Administration Orlando Airports District Office
26.	Federal Emergency Management Agency	* Director, Region IV Mitigation Division
27.	Federal Rail Administration	* Director, Office of Public Engagement
28.	Federal Rail Administration	* Regional Administrator
29.	Federal Transit Administration	* Regional Administrator
30.	FL Department of Agriculture and Consumer Services	Camposano, Brian
31.	FL Department of Agriculture and Consumer Services	Morris, Vincent
32.	FL Department of Agriculture and Consumer Services	Ryals, Clark
33.	FL Department of Agriculture and Consumer Services	Weston, Michael
34.	FL Department of Economic Opportunity	Preston, Matt
35.	FL Department of Environmental Protection	Stahl, Chris
36.	FL Department of State	Aldridge, Jason
37.	FL Department of State	Daggett, Adrianne
38.	FL Department of State	McManus, Alyssa
39.	FL Department of State	Rothrock, Lindsay S.
40.	FL Fish and Wildlife Conservation Commission	Ganey, Jessica
41.	FL Fish and Wildlife Conservation Commission	Gilbert, Terry
42.	FL Fish and Wildlife Conservation Commission	Goff, Jennifer
43.	FL Fish and Wildlife Conservation Commission	Hight, Jason
44.	FL House	Grall, Erin
45.	FL House	Hogan Johnson, Delores

46.	FL House	LaRosa, Mike
47.	FL House	Pigman, Cary
48.	FL Senate	Albritton, Ben
49.	FL Senate	Harrell, Gayle
50.	FL Senate	Mayfield, Debbie
51.	FL Senate	Torres, Victor
52.	Florida Inland Navigation District	Director, Executive
53.	Florida's Turnpike Enterprise	Jung, Rax
54.	Florida's Turnpike Enterprise	Stein, Philip
55.	Heartland Regional TPO	Dunn, Benjamin
56.	Indian River County	Adams, Susan
57.	Indian River County	Barenborg, Teri
58.	Indian River County	Brown, Jason
59.	Indian River County	Burke, Vincent
60.	Indian River County	Davis, Wesley
61.	Indian River County	Ennis, James
62.	Indian River County	Flescher, Joseph
63.	Indian River County	Ivey, Rachel
64.	Indian River County	Jordan, Carole Jean
65.	Indian River County	Jordan, Kenny
66.	Indian River County	Justice, Tiffany
67.	Indian River County	Loar, Deryl
68.	Indian River County	McCoy, John
69.	Indian River County	McCully, Keith
70.	Indian River County	Moore, David
71.	Indian River County	O'Bryan, Peter
72.	Indian River County	Rosario, Jaqueline
73.	Indian River County	Schiff, Mara
74.	Indian River County	Scott, William
75.	Indian River County	Smith, Jeffrey
76.	Indian River County	Solari, Bob
77.	Indian River County	Swan, Leslie
78.	Indian River County	Szpyrka, Richard
79.	Indian River County	Zorc, Laura
80.	Indian River County	Zorc, Tim
81.	METROPLAN Orlando	Caskey, Keith
82.	Miccosukee Tribe of Indians of Florida	* Dayhoff, Fred
83.	Miccosukee Tribe of Indians of Florida	* The Honorable Mr. Billy Cypress, Chairman
84.	Muscogee (Creek) Nation	* Historic & Cultural Preservation Department
85.	Muscogee (Creek) Nation	* The Honorable Mr. James Floyd, Principal Chief
86.	National Marine Fisheries Service	Rydene, David A.
87.	National Marine Fisheries Service	Schull, Jennifer
88.	National Park Service	Barnett, Anita
89.	Natural Resources Conservation Service	Crockett, Leroy
90.	Okeechobee County	Arnold, Joe
91.	Okeechobee County	Bandi, Mickey
92.	Okeechobee County	Burroughs, Terry
93.	Okeechobee County	Chartier, Robbie
94.	Okeechobee County	Culpepper, Bryant
95.	Okeechobee County	Franklin, Ralph
96.	Okeechobee County	Goodbread, Brad

97.	Okeechobee County	Hagan, Diane
98.	Okeechobee County	Hazellief, David
99.	Okeechobee County	Holcomb, Jill
100.	Okeechobee County	Howle, John
101.	Okeechobee County	Jahner, Melisa
102.	Okeechobee County	Kenworthy, Ken
103.	Okeechobee County	Moore, Bryan
104.	Okeechobee County	Morgan, Malissa
105.	Okeechobee County	Owens, Kelly
106.	Okeechobee County	Riedel, Amanda
107.	Okeechobee County	Robertson, Sharon
108.	Okeechobee County	Royce, William
109.	Okeechobee County	Smeykal, Mitch
110.	Okeechobee County	Stephen, Noel
111.	Okeechobee County	Watford, Celeste
112.	Osceola County	Arrington, Brandon
113.	Osceola County	Arrington, Mary Jane
114.	Osceola County	Booth, Ricky
115.	Osceola County	Castillo, Terry
116.	Osceola County	Choudhry, Peggy
117.	Osceola County	Collier, Larry
118.	Osceola County	Fisher, Don
119.	Osceola County	Gibson, Russ
120.	Osceola County	Grieb, Cheryl
121.	Osceola County	Hawkins, Fred
122.	Osceola County	Janer, Viviana
123.	Osceola County	Litton, William
124.	Osceola County	Olore, Tawny
125.	Osceola County	Pace, Debra
126.	Osceola County	Ramirez, Armando
127.	Osceola County	Scarborough, Katrina
128.	Osceola County	Slaterpryce, Danielle
129.	Osceola County	Soto, Kelvin
130.	Osceola County	Thacker, Clarence
131.	Osceola County	Tomek, David
132.	Osceola County	Vickers, Bruce
133.	Osceola County	Weisheyer, Tim
134.	Poarch Band of Creek Indians	* Haikey, Larry D.
135.	Poarch Band of Creek Indians	* The Honorable Ms. Stephanie A. Bryan, Tribal Chair
136.	Seminole Nation of Oklahoma	* The Honorable Mr. Leonard M. Harjo, Principal Chief
137.	Seminole Tribe of Florida	Backhouse, Paul N.
138.	Seminole Tribe of Florida	Echeverry, David
139.	Seminole Tribe of Florida	Menchaca, Victoria
140.	Seminole Tribe of Florida	Swing, Alison
141.	Seminole Tribe of Florida	* The Honorable Mr. Marcellus W. Osceola, Chairman
142.	South Florida Water Management District	Burkett, Annette
143.	South Florida Water Management District	Stone, Trisha
144.	St. Lucie County	Bartz, Linda
145.	St. Lucie County	Craft, Chris
146.	St. Lucie County	Dekle, Murriah
147.	St. Lucie County	Dzadovsky, Chris

148.	St. Lucie County	Franklin, Michelle
149.	St. Lucie County	Gent, Wayne
150.	St. Lucie County	Gill, Erick
151.	St. Lucie County	Graham, Kim
152.	St. Lucie County	Hensley, Kathryn
153.	St. Lucie County	Hilson, Carol
154.	St. Lucie County	Hutchinson, Frances
155.	St. Lucie County	Ingersoll, Troy
156.	St. Lucie County	Johnson Hawley, Deborah
157.	St. Lucie County	Mascara, Ken
158.	St. Lucie County	Mills, Donna
159.	St. Lucie County	Mitchell, Sean
160.	St. Lucie County	Olson, Leslie
161.	St. Lucie County	Parrish, Ron
162.	St. Lucie County	Smith, Joseph
163.	St. Lucie County	Smith, Joseph E.
164.	St. Lucie County	Spera, Nate
165.	St. Lucie County	Tipton, Howard
166.	St. Lucie County	Townsend, Cathy
167.	St. Lucie County	Walker, Gertrude
168.	Treasure Coast Regional Planning Council	Heidt, Stephanie
169.	US Army Corps of Engineers	Kizlauskas, Andrew A.
170.	US Army Corps of Engineers	Ovdenk, Cynthia
171.	US Army Corps of Engineers	Tamblyn, Mark M.
172.	US Army Corps of Engineers	Turner, Randy
173.	US Coast Guard	Kowalczyk, Lisia
174.	US Coast Guard	Overton, Randall D.
175.	US Coast Guard	Tate, William G.
176.	US Coast Guard	Tompkins, Darayl
177.	US Coast Guard	Zercher, Jennifer
178.	US Department of Health and Human Services	* National Center for Environmental Health Centers for Disease Control and Prevention
179.	US Department of Housing and Urban Development	* Regional Environmental Officer
180.	US Department of Interior	* Bureau of Land Management, Southeastern States Field Office
181.	US Department of Interior	Maytubby, Bruce, Eastern Regional Office Director
182.	US Department of Interior	Sumner, David M.
183.	US Environmental Protection Agency	Kajumba, Ntale
184.	US Environmental Protection Agency	Singh-White, Alya
185.	US Environmental Protection Agency	Somerville, Amanetta
186.	US Environmental Protection Agency	White, Roshanna
187.	US Fish and Wildlife Service	Cantrell, Mark
188.	US Fish and Wildlife Service	Wrublik, John
189.	US Forest Service	Davis, Erika
190.	US House	Mast, Brian
191.	US House	Posey, Bill
192.	US House	Soto, Darren
193.	US House	Steube, Greg
194.	US Senate	Rubio, Marco
195.	US Senate	Scott, Rick

* Hardcopy recipient

Appendix E

Concept Plans and Typical Section Package

CONTRACT PLANS COMPONENTS

CONCEPT PLANS

A DETAILED INDEX APPEARS ON THE KEY SHEET OF EACH COMPONENT

INDEX OF ROADWAY PLANS

SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
S1 - S2	PROJECT LAYOUT
S3 - S20	CONCEPT PLANS

STATE OF FLORIDA

DEPARTMENT OF TRANSPORTATION

CONCEPT PLANS

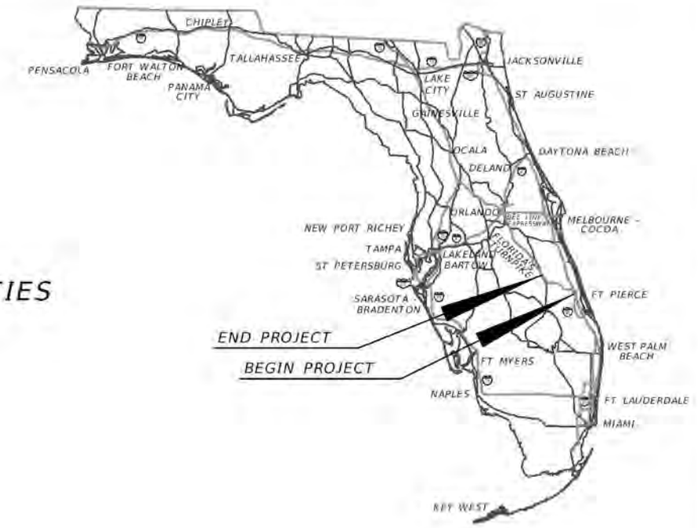
FINANCIAL PROJECT ID 423374-2-22-01

(FEDERAL FUNDS)

ST. LUCIE, INDIAN RIVER, OKEECHOBEE, and OSCEOLA COUNTIES

STATE ROAD NO. SR 91 (FLORIDA'S TURNPIKE) WIDENING

FROM NORTH OF SR 70 TO NORTH OF SR 60



PROJECT LOCATION URL:	http://tinyurl.com/turnpikesr70tosr60
PROJECT LIMITS:	BEGIN MP 152.000 - END MP 193.000
EXCEPTIONS:	NONE
BRIDGE LIMITS:	MP (154.9, 156.1, 157.9, 158.6, 165.0, 170.1, 175.4, 178.0, 180.2, 189.1, 182.3, 184.6, 186.5, 190.9, 192.4, 193.1, 193.4)
RAILROAD CROSSING:	NONE

CONCEPT PLANS

NOT FOR CONSTRUCTION

ROADWAY PLANS
ENGINEER OF RECORD:

PAUL STEVEN CARBALLO, P.E.
P.E. LICENSE NUMBER 87891
METRIC ENGINEERING, INC
13940 SOUTHWEST 136 STREET
MIAMI, FLORIDA, 33186

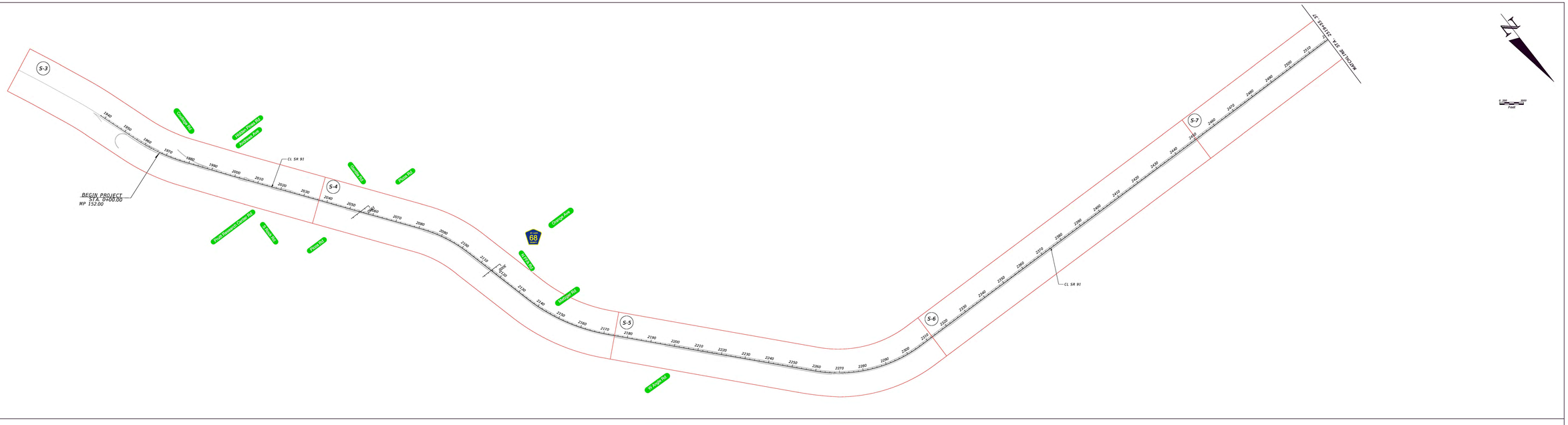
FDOT PROJECT MANAGER:

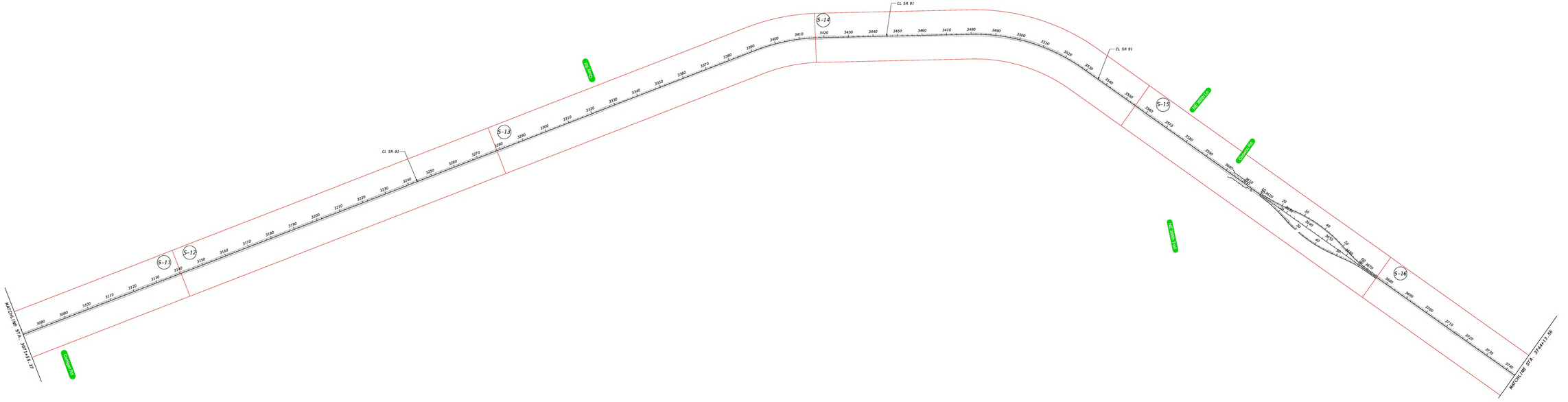
GREGORY MOORE, P.E.

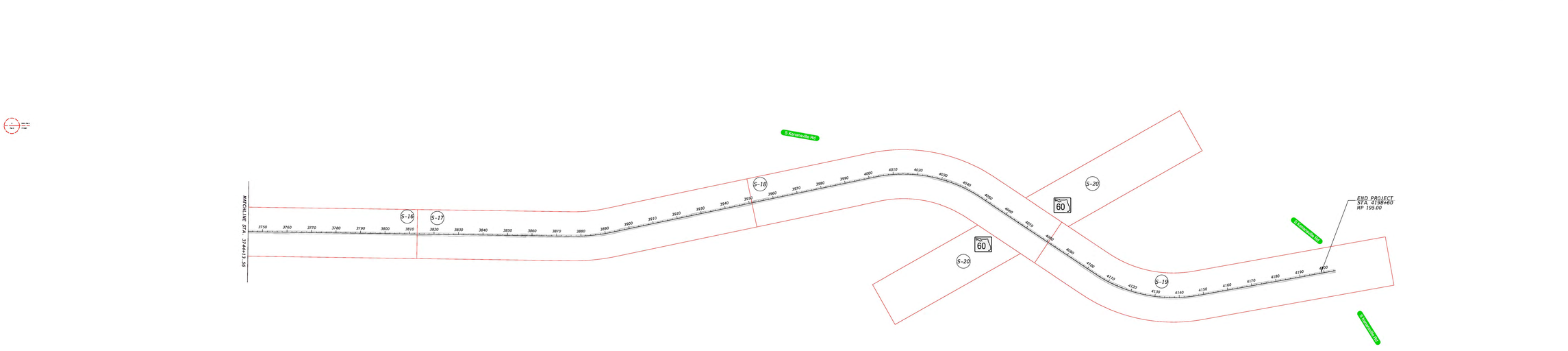
CONSTRUCTION CONTRACT NO.	FISCAL YEAR	SHEET NO.
X	25	1

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

12/29/2023 2:01:30 PM Marcel Abik
E:\projects\metric-dw.bentley.com_usmetric-dw-01\Roadway Plans\Sheets\Concept Plans\S20759 KEY SHEET.dgn

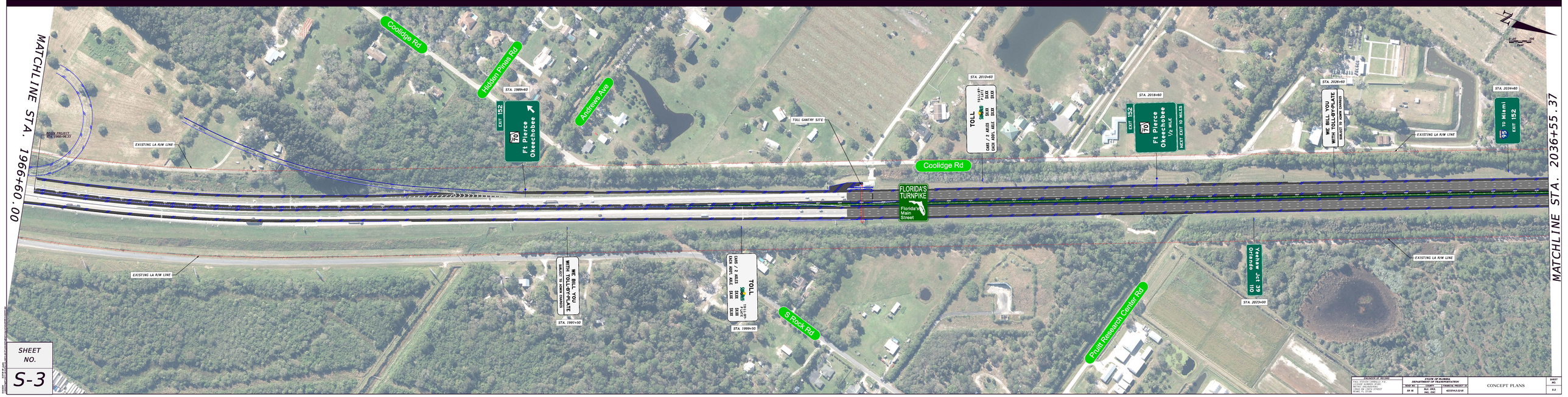

S-3
S-4
S-5
S-6
S-7
BEGIN PROJECT
STA 2400.00
MP 152.00
CL SR 91
Concrete Traffic Barrier
Guardrail
Guardrail
Guardrail





ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			PROJECT LAYOUT	SHEET NO.
PAUL STEVEN CARNALL P.E. LICENSE NUMBER 49361 STATE OF FLORIDA	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		9-2
TOWN OF LAKE STREET MIAMI, FL 33108	SR 91	Sub. OKE. IND. OSC.	4220142-22-01		

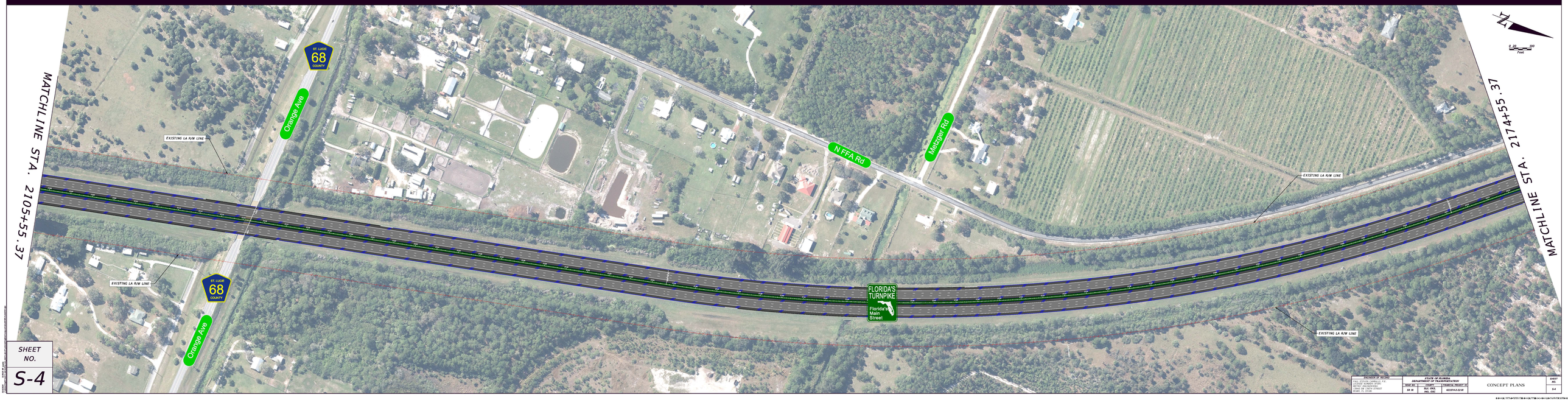




SHEET NO.
S-3

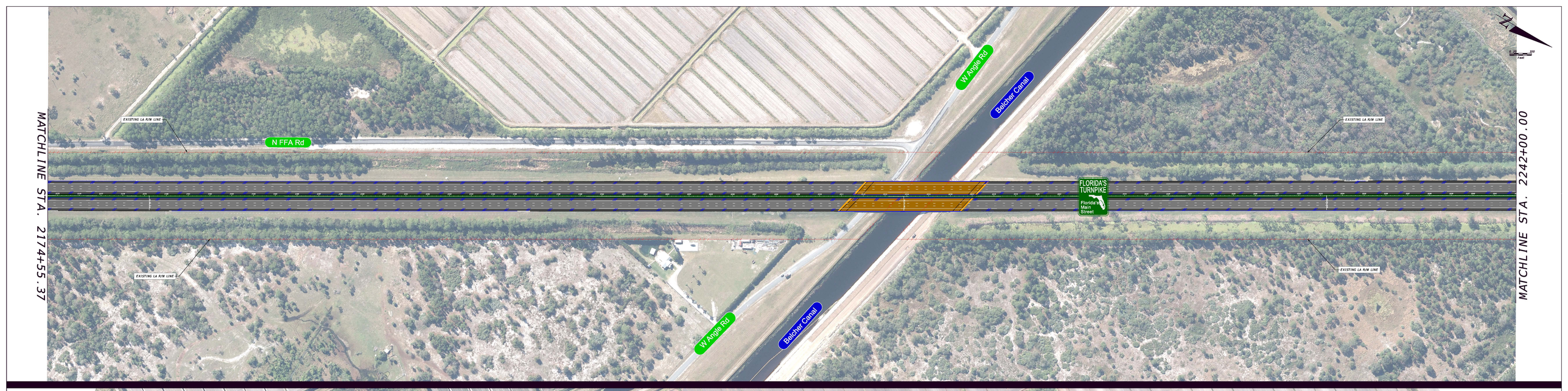
ENGINEER OF RECORD PAUL DOUGLAS CARBONELL P.E. LICENSE NUMBER 87261 METRIC ENGINEERING 3300 NW 25TH STREET MIAMI, FL 33142	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CONCEPT PLANS
	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	SHEET NO.
	SR 91	Mdc. Dec. Mdc. Dec.	423374-2-22-01	S-3





SHEET NO.
S-4

ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CONCEPT PLANS	SHEET NO.
PAUL STEVEN CARROLL P.E. LICENSE NUMBER 47291 METHOD ENGINEERING 3700 SW 13TH STREET NEWS, FL 32608	ROAD NO. SR 91	COUNTY ST. LUCIE, MAD. OKE. MAD. OSC.	FINANCIAL PROJECT ID 433274-2-22-01		S-4

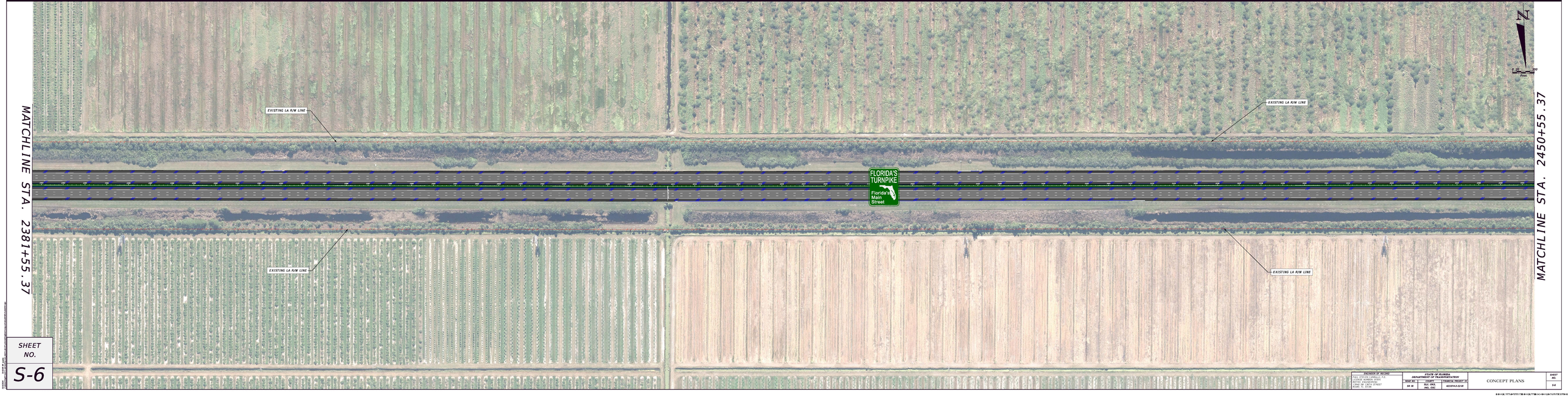




SHEET NO.
S-5

ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CONCEPT PLANS	SHEET NO.
PAUL STEVEN CARRAGO, P.E. LICENSE NUMBER 80291 PRIME CONSULTANT: TRANSPORTATION DESIGN SERVICES 1000 SE 12TH STREET POMPANO BEACH, FL 33060	ROAD NO. SR 91	COUNTY Hdo. Dade Hdo. Dade	FINANCIAL PROJECT ID 433214-2-22-01		S-5





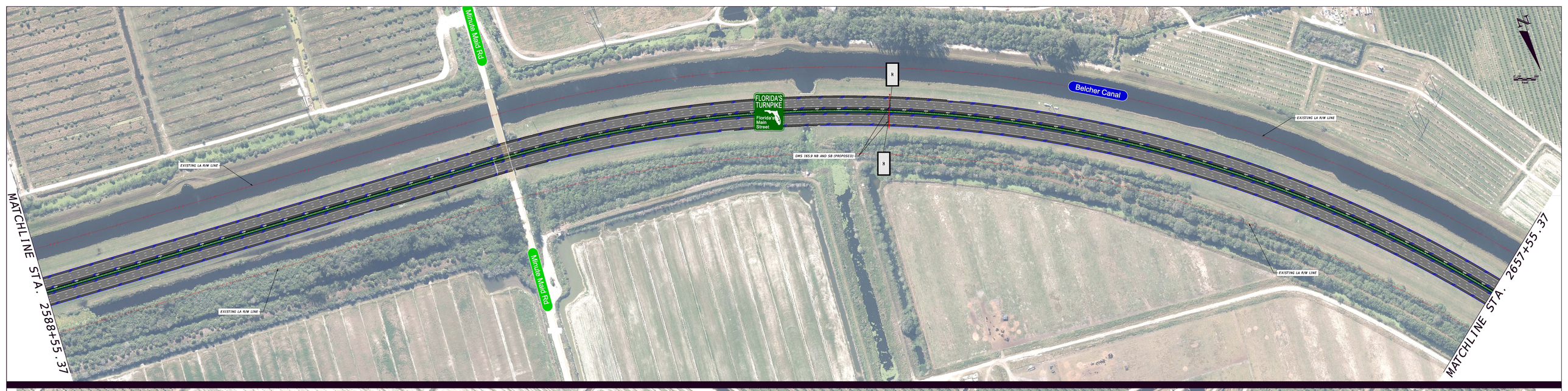
SHEET NO.
S-6

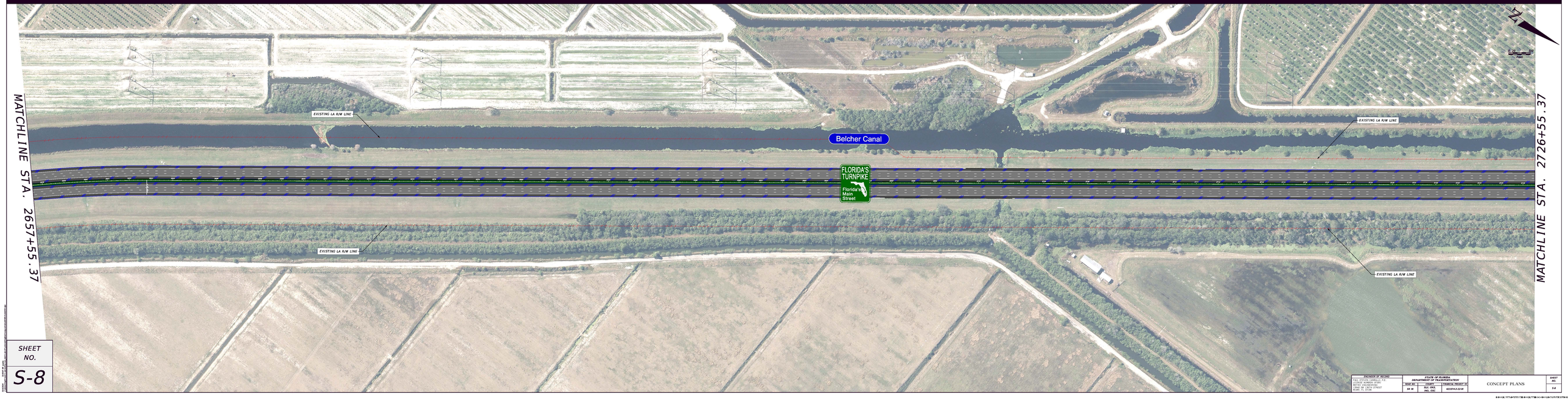
ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CONCEPT PLANS	SHEET NO.
PAUL STEVEN CAMPBELL P.E. LICENSE NUMBER 60291 METAL ENGINEERING 1000 NW 57TH STREET GAINESVILLE, FL 32605	ROAD NO. SR 91	COUNTY BLVD. CKS. NO. 0512	PROJECT NUMBER 91		S-6



SHEET NO.
S-7

ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CONCEPT PLANS	SHEET NO.
PAUL STEVEN CARRIGAN, P.E. LICENSE NUMBER 67281 METRIC ENGINEERING 3200 NW 43RD STREET GRAND PA 32606	ROAD NO. SR 90	COUNTY BLVD. OKE. MD. OKE.	FINANCIAL PROJECT ID 433214-2-22-01		S-7





SHEET NO.

S-8

ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CONCEPT PLANS	SHEET NO.
PAUL STEVEN LEMMING, P.E. LICENSE NUMBER 80201 METALS ENGINEERING 2000 NW 17TH STREET FORT LAUDERDALE, FL 33311	ROAD NO. SR 91	COUNTY Bdr. Dade, Hdl. Obs.	FINANCIAL PROJECT ID 433214-2-22-01		S-8

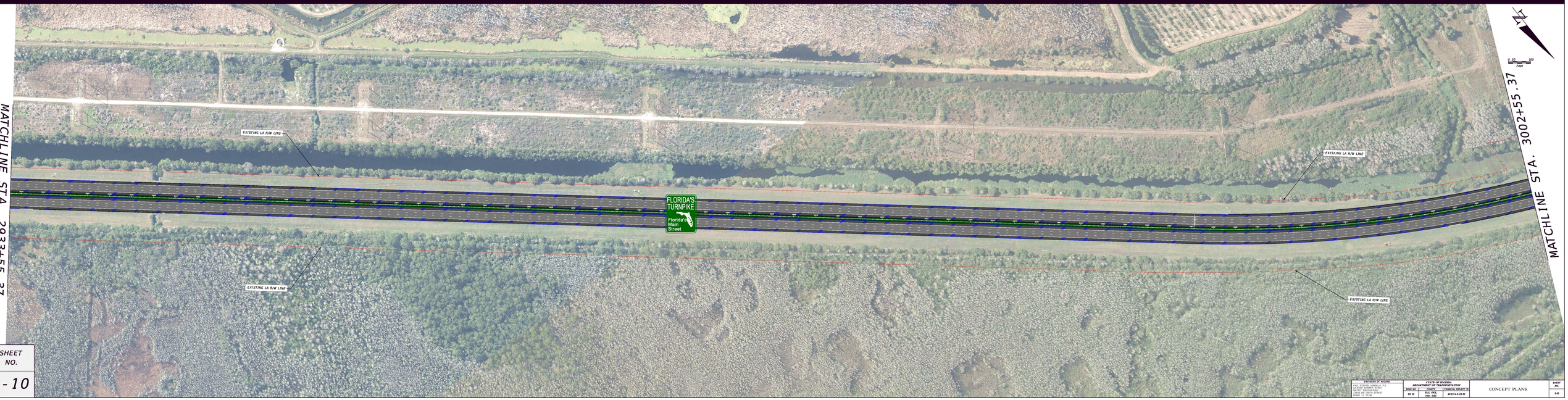




SHEET NO.
S-9

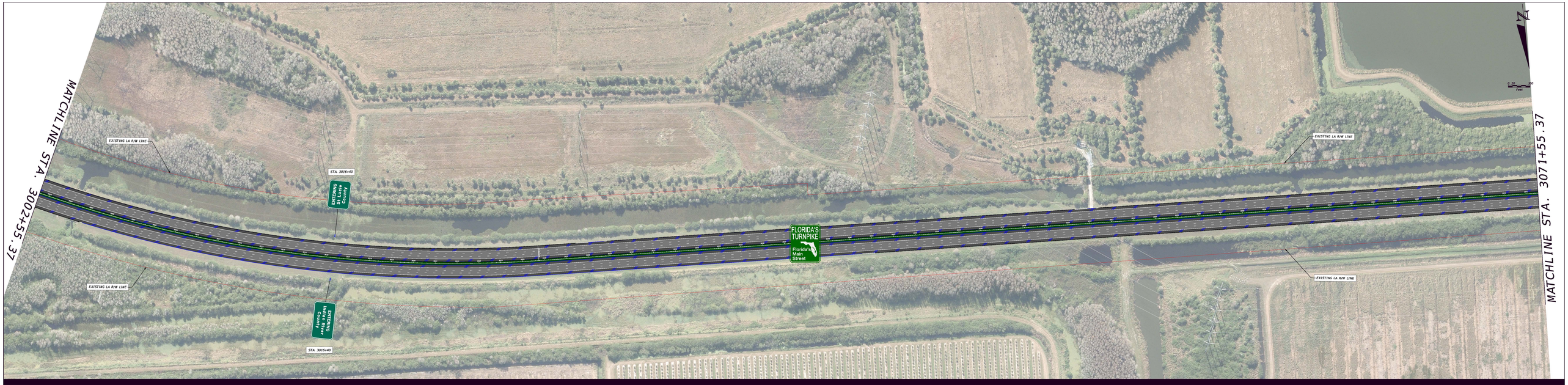
ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CONCEPT PLANS	SHEET NO.
PAUL STEVEN CARRIGLIO, P.E. LICENSE NUMBER 67931 METRIC ENGINEERING 7300 NW 12TH STREET MIAMI, FL 33126	ROAD NO.	COUNTY	PROJECT NO.		
	SR 91	BUS. DATE NO. DSC	4320-9-2-22-01		S-9





SHEET NO.
S-10

ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CONCEPT PLANS	SHEET NO.
PAUL STEVEN CARRELLI, P.E. LICENSE NUMBER: 87291 METRIC ENGINEERING SERVICES LLC 12000 EXPRESS STREET ORLANDO, FL 32827	ROAD NO. SR 91	COUNTY Bus. Dist. Hol. Dist.	FINANCIAL PROJECT ID 43329-2-22-01		S-10

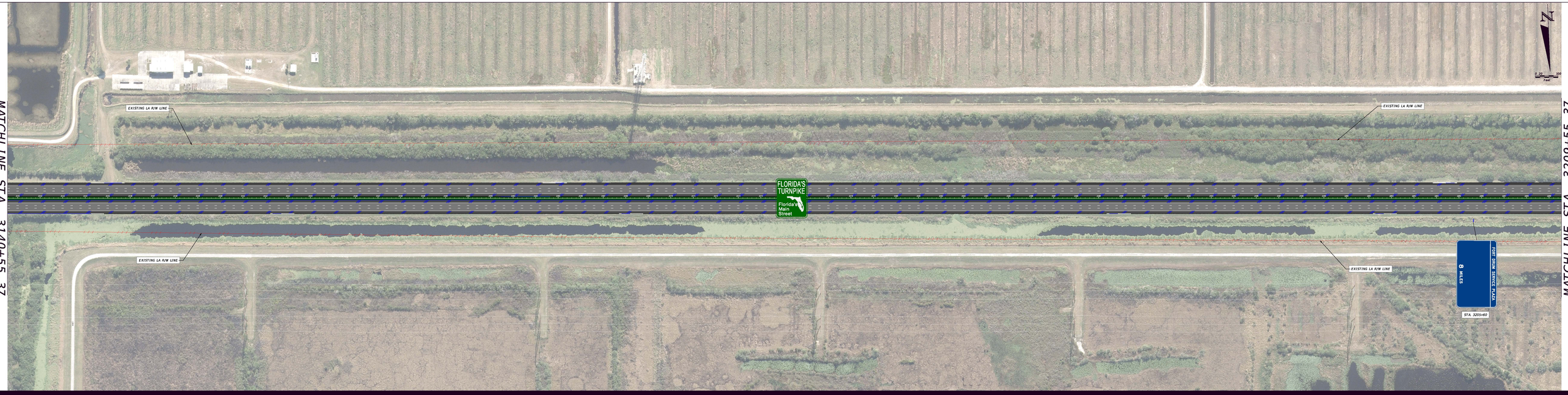


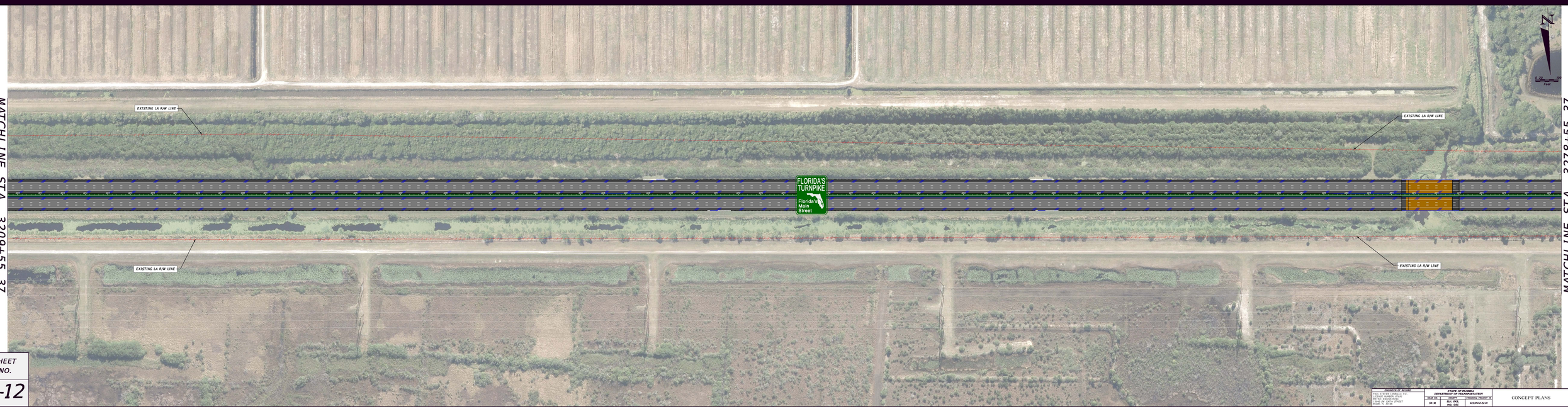


SHEET NO.

S-11

ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CONCEPT PLANS	SHEET NO.
PAUL STEVEN CARRALLO, P.E. LICENSE NUMBER 87525 METAL ENGINEERING 1200 NW 136TH STREET MIAMI, FL 33168	ROAD NO. SR 91	COUNTY Bus. DIST. Hdq. Ofc.	FINANCIAL PROJECT ID 433214-2-22-01		S-11





SHEET NO.
S-12

ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CONCEPT PLANS	SHEET NO.
PAUL STEVEN CARBALLO, P.E. LICENSE NUMBER 80201 METRIC ENGINEERING TRAINING OF CENTRAL FLORIDA	ROAD NO. SR 91	COUNTY BUS. DIST. NO. 1/SC	FINANCIAL PROJECT ID 433374-2-22-01		S-12

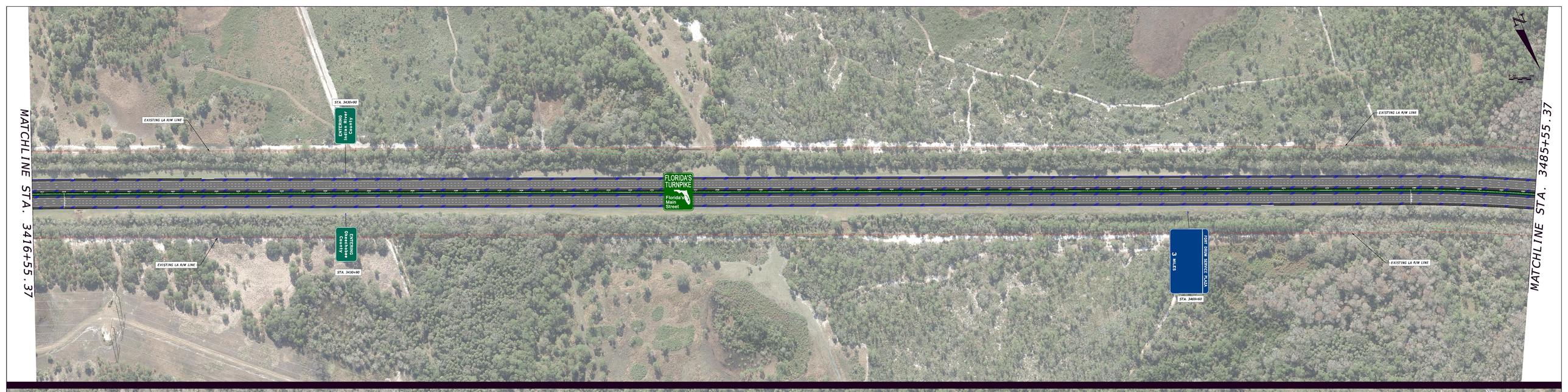




SHEET NO.
S-13

ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CONCEPT PLANS	SHEET NO.
PAUL STEVEN LAMBRIAN, P.E. LICENSE NUMBER: 87291 METHOD: ENGINEERING TIME: 08:19 AM 10/18/2017 FILE NAME: 3347+55.37	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
	SR 91	BLVD. OKEE. MID. DIST.	42329-2-22-01		S-13

© 2016 BY THE PROFESSIONAL ENGINEERS IN PRACTICE AT THE FLORIDA DEPARTMENT OF TRANSPORTATION

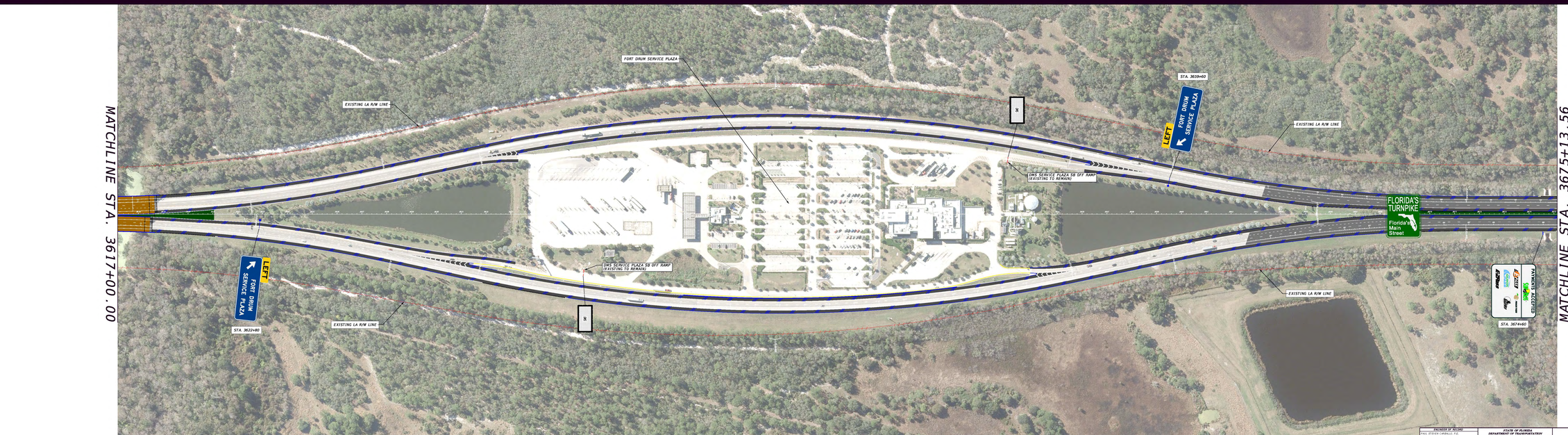




SHEET NO.
S-14

ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CONCEPT PLANS	SHEET NO.
PAUL STEVEN CARBONELL P.E. LICENSE NUMBER 80291 METHOD ENGINEERING TOWER OF LOUIS STREET SUITE 1 ORLANDO, FL	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
	SR 91	BLK. CKE. NO. OSC	433374-2-22-01		S-14





SHEET NO.

S-15

ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CONCEPT PLANS	SHEET NO.
DWG. STATUS: CANCELLED P.E. LICENSE NUMBER: 67201 METHOD: ENGINEERING TIME: 04 JUNE 2024	ROAD NO. SR 91	COUNTY Bdg. Dist. Hdq. Ctrl.	FINANCIAL PROJECT ID 43329-2-22-01		S-15





SHEET NO.
S-16

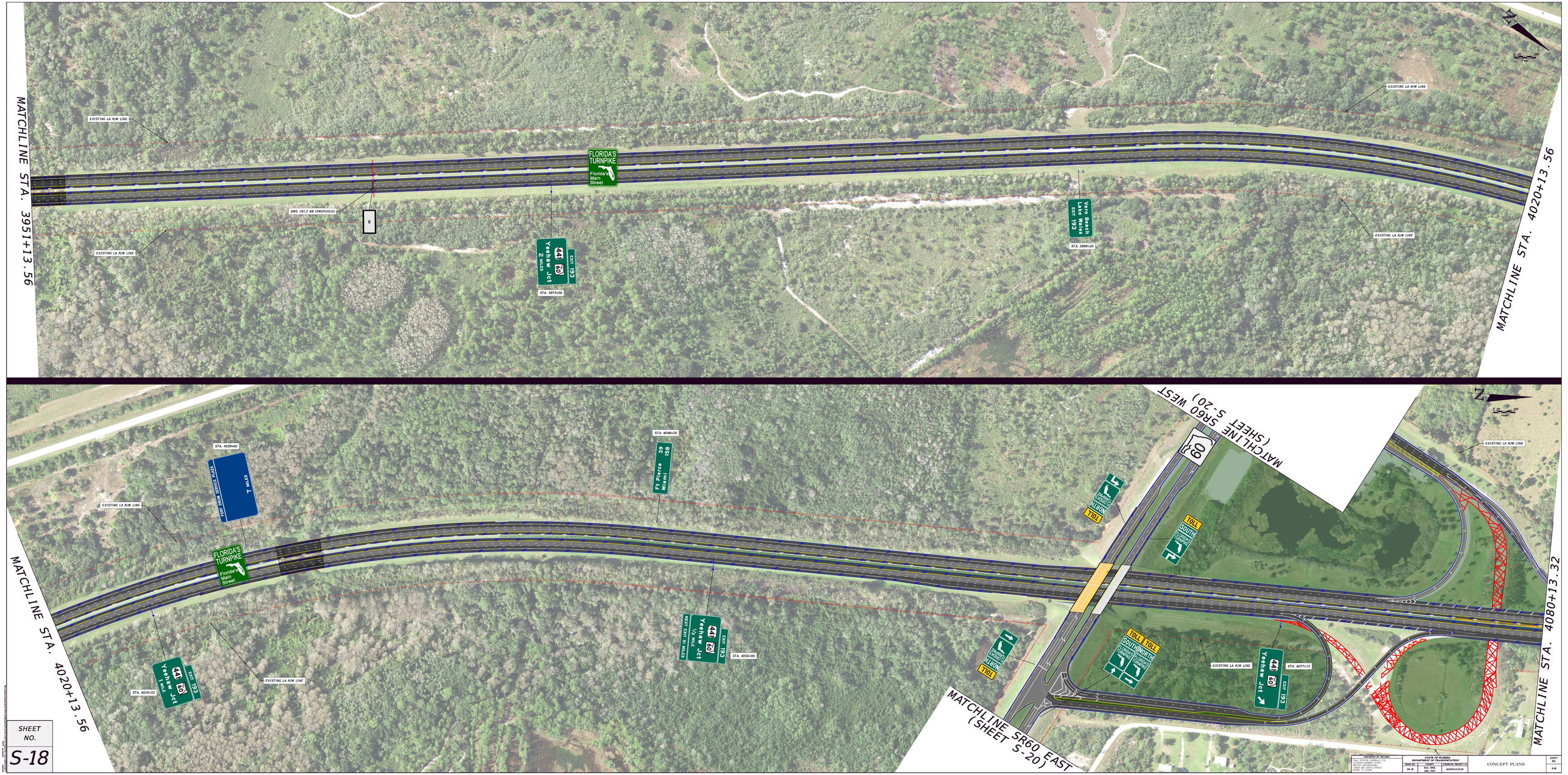
ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CONCEPT PLANS	SHEET NO.
PAUL STEVEN LAMBALLI P.E. LICENSE NUMBER 60821 METRIC ENGINEERING TOWN OF LAKE STREET ROME, FL 33165	ROAD NO. SR 91	COUNTY Mul. Oke. Mo. Ore.	FINANCIAL PROJECT ID 43329-2-22-01		S-16

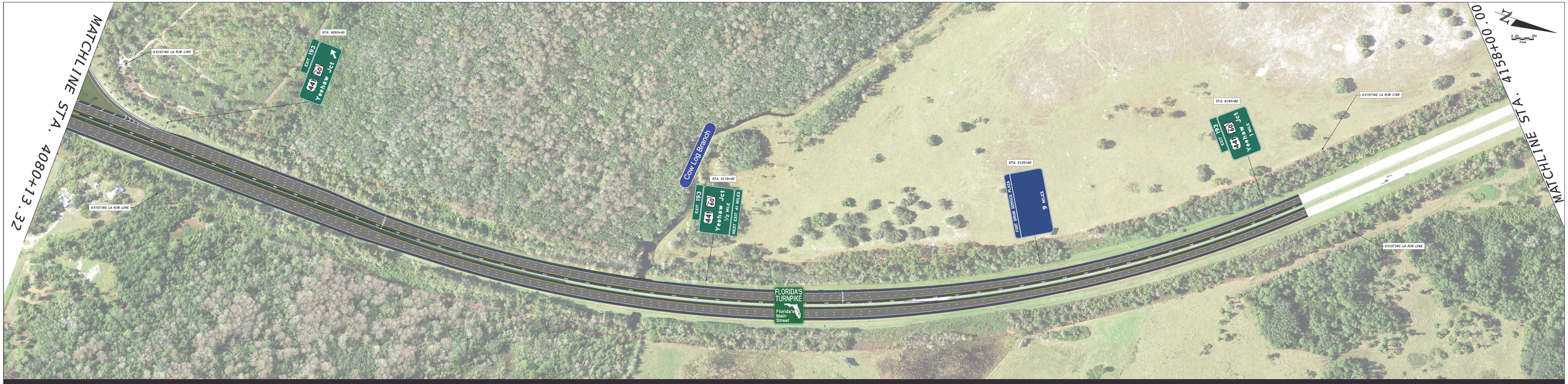




SHEET NO.
S-17

ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CONCEPT PLANS	SHEET NO.
PAUL STEVEN CARRIGAN, P.E. LICENSE NUMBER 67931 METALS ENGINEERING 2000 SW 12TH STREET DEERFIELD, FLORIDA	ROAD NO. SR 91	COUNTY Bus. DKE. Hdq. Ohc.	FINANCIAL PROJECT ID 4332914-2-22-01		S-17


MATCHLINE STA. 3951+13.56
MATCHLINE STA. 4020+13.56
EXISTING LA R/W LINE
FLORIDA'S TURNPIKE
Florida's Main Street
DMS 191.2 NB (PROPOSED)
Yeehaw Jct
2 MILES
EXIT 193
STA. 3975+00
Vero Beach Lake Wales
EXIT 193
STA. 3999+20
MATCHLINE SR60 WEST (SHEET S-20)
MATCHLINE STA. 4020+13.56
MATCHLINE STA. 4080+13.32
MATCHLINE SR60 EAST (SHEET S-20)
STA. 4029+60
7 MILES
STA. 4048+20
Ft Pierce Miami
39
158
STA. 4024+55
Yeehaw Jct
1 MILE
NEXT EXIT 51 MILES
Yeehaw Jct
1/2 MILE
STA. 4050+95
TOLL
SOUTH
NORTH
STA. 4077+15
SHEET NO.
S-18
CONCEPT PLANS





SHEET NO.

S-19

ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CONCEPT PLANS	SHEET NO.
PAUL STEVEN CARRIGAN, P.E. LICENSE NUMBER 67301 METHOD ENGINEERING 3000 SW 148TH STREET SUITE 110 OKLAHOMA, FL 33330	ROAD NO. SR 91	COUNTY Bus. OKE. Hwy. OSC	FINANCIAL PROJECT ID 433374-2-22-01		S-19



MATCHLINE SR 60 EAST
(SHEET S-18)



MATCHLINE SR 60 WEST
(SHEET S-18)

SHEET NO.
S-20

ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CONCEPT PLANS	SHEET NO.
PAUL STEVEN LAMBRIDE, P.E. LICENSE NUMBER 40205 PRIVATE ENGINEERING FIRM NO. 27676 STREET ADDRESS: 20 CROSS STREET	ROAD NO. SR 60	COUNTY Sub. DIST. No. 02C	FINANCIAL PROJECT ID 42329-2-22-01		S-20

STATE OF FLORIDA

DEPARTMENT OF TRANSPORTATION

TYPICAL SECTION PACKAGE

FINANCIAL PROJECT ID 423374-2-22-01

ST. LUCIE (94470), INDIAN RIVER (88470), OKEECHOBEE (91470), and OSCEOLA COUNTIES (92470)

STATE ROAD NO. 91 (FLORIDA'S TURNPIKE) WIDENING

FROM NORTH OF SR 70 TO NORTH OF SR 60

TURNPIKE DISTRICT DESIGN ENGINEER

CONCURRING WITH:
TYPICAL SECTION ELEMENTS
DESIGN & POSTED SPEEDS

TURNPIKE DISTRICT TRAFFIC OPERATIONS ENGINEER

CONCURRING WITH:
DESIGN & POSTED SPEEDS

TURNPIKE DISTRICT INTERMODAL SYSTEMS DEVELOPMENT MANAGER

CONCURRING WITH:
CONTEXT CLASSIFICATION
TARGET SPEED

TURNPIKE DISTRICT STRUCTURES DESIGN ENGINEER

CONCURRING WITH:
TYPICAL SECTION ELEMENTS

NOT USED

CONCURRING WITH:

NOT USED

CONCURRING WITH:

NOT USED

CONCURRING WITH:

NOT USED

CONCURRING WITH:

PROJECT LOCATION URL:	http://tinyurl.com/turnpikesr70tosr60
PROJECT LIMITS:	BEGIN MM 152.0 - END MM 194.6
EXCEPTIONS:	NONE
BRIDGE LIMITS:	MM (154.9, 156.1, 157.9, 158.6, 165.0, 170.1, 175.4, 178.0, 180.2, 189.1, 182.3, 184.6, 186.5, 190.9, 192.4, 193.1, 193.4)
RAILROAD CROSSING:	NONE

APPROVED BY:

PAUL STEVEN CARBALLO LICENSE No 87891 STATE OF FLORIDA PROFESSIONAL ENGINEER

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY

PAUL STEVEN CARBALLO, P.E.

ON THE DATE ADJACENT TO THE SEAL

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

METRIC ENGINEERING, INC.
13940 SW 136TH ST
MIAMI, FLORIDA, 33186
PAUL STEVEN CARBALLO, P.E. NO. 87891

THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THE FOLLOWING SHEETS IN ACCORDANCE WITH RULE 61G15-23.004, F.A.C.

INDEX OF SHEETS

SHEET NO	SHEET DESCRIPTION
01	COVER SHEET
02	TYPICAL SECTION No. 1 - MAINLINE
03	TYPICAL SECTION No. 2 - FIVE LANE RAMP
04	TYPICAL SECTION No. 3 - SINGLE LANE RAMPS
05	TYPICAL SECTION No. 4 - BRIDGE NOS. 940055 & 940056
06	TYPICAL SECTION No. 5 - BRIDGE NOS. 940057/940073 & 940058/940083
07	TYPICAL SECTION No. 6 - BRIDGE NOS. 940059/940060
08	TYPICAL SECTION No. 7 - BRIDGE NOS. 880057/880065, 880058/880066, 880059/880067, 910056/910058, 910059/910060, 910062/910064, 880060/880068, 920055/920124, 920056/920125, & TBD/TBD
09	TYPICAL SECTION No. 8 - BRIDGE NO. 920200
10	TYPICAL SECTION No. 9 - TOLL GANTRY

SHEET NO.

01

5/12/2025 8:46:37 AM mcollings
c:\pwworkingdir\metric-pw.bentley.com metric-pw-01\diego.tamayo@metriceng.com\dms14147\TYPDRD02.dgn

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
(X)	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
(X)	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
( )	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

- ( ) NATIONAL HIGHWAY SYSTEM
- (X) STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- ( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

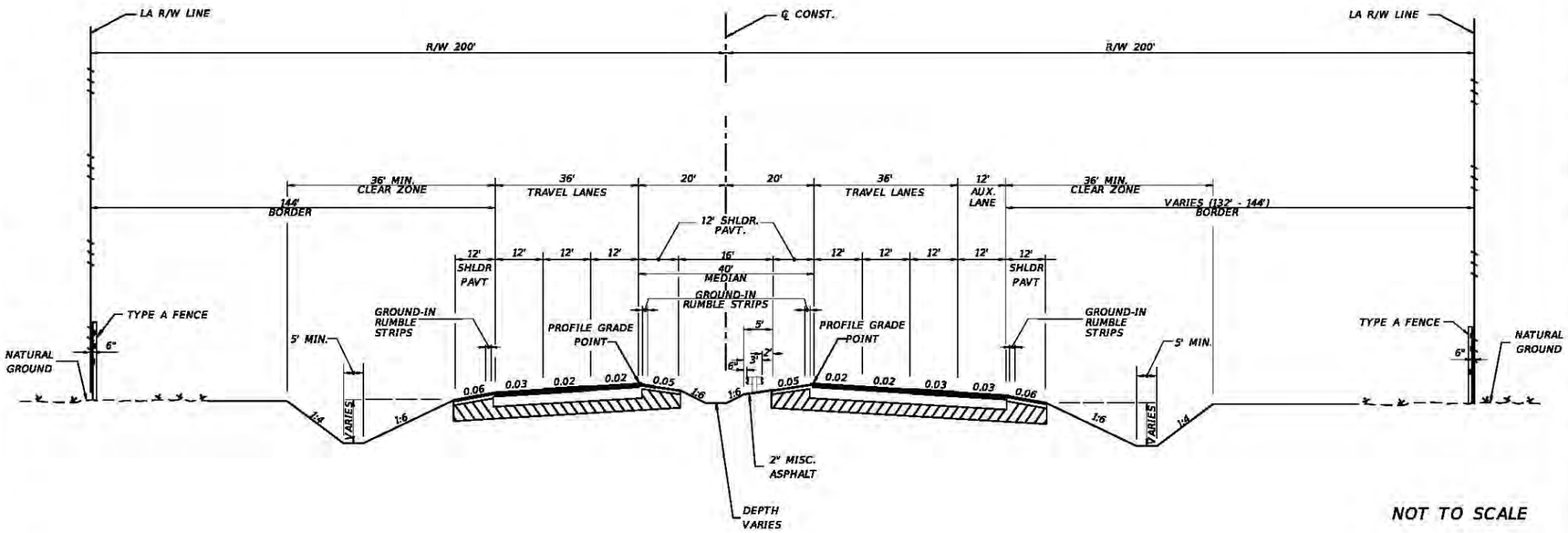
- (X) 1 - FREEWAY
- ( ) 2 - RESTRICTIVE w/Service Roads
- ( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
- ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- ( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
- ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- ( ) 7 - BOTH MEDIAN TYPES

CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- ( ) RESURFACING (LA FACILITIES)
- ( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 1



NOT TO SCALE

FLORIDA'S TURNPIKE
MAINLINE
MM 152.0 - MM 194.6

TRAFFIC DATA

EXISTING CONDITIONS =2020 AADT = 41,000
ESTIMATED OPENING YEAR =2030 AADT = 43,200
ESTIMATED DESIGN YEAR =2050 AADT = 65,400
K = 10.5% D = 54.0% T = 15.9% (24 HOUR)
DESIGN HOURS T = 8.0%
DESIGN SPEED = 70 MPH
POSTED SPEED = 70 MPH
TARGET SPEED = N/A

FINANCIAL PROJECT ID	SHEET NO.
423374-2-22-01	02

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

5/12/2025 8:22:02 AM mcollings
c:\pwworkingdir\metric-pw.bentley.com_metric-pw-01\diego.tamayo@metriceng.com\dms14147\TYPDRD02.dgn

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
( ) C2 : RURAL
( ) C2T : RURAL TOWN
( ) C3R : SUBURBAN RES.
( ) C3C : SUBURBAN COMM.
( ) C4 : URBAN GENERAL
( ) C5 : URBAN CENTER
( ) C6 : URBAN CORE
(X) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

( ) INTERSTATE
(X) FREEWAY/EXPWY.
( ) PRINCIPAL ARTERIAL
( ) MINOR ARTERIAL
( ) MAJOR COLLECTOR
( ) MINOR COLLECTOR
( ) LOCAL

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
(X) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

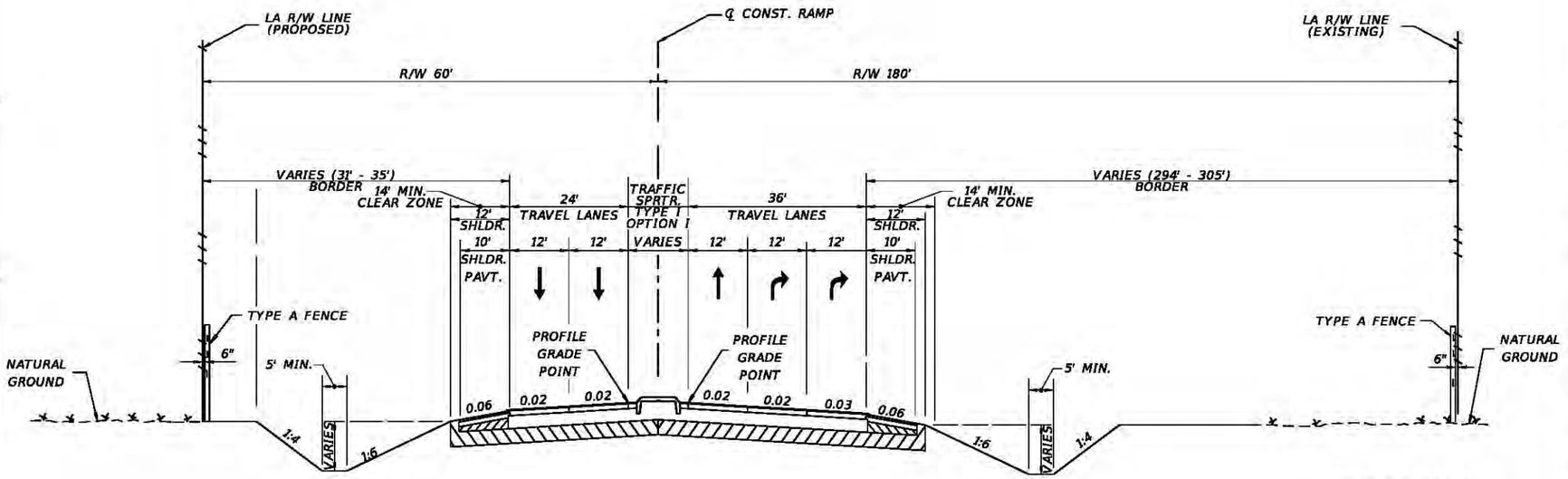
(X) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 2



NOT TO SCALE

FLORIDA'S TURNPIKE
FIVE LANE RAMP TO/FROM US 441/SR 60
EXIT 193

TRAFFIC DATA

DESIGN SPEED = 35 MPH
TARGET SPEED = N/A

FINANCIAL PROJECT ID	SHEET NO.
423374-2-22-01	03

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

5/12/2025 8:22:25 AM mcallings
c:\pwworkingdir\metric-pw.bentley.com_metric-pw-01\diego.tamayo@metriceng.com\dms14147\TYPDRD02.dgn

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
( ) C2 : RURAL
( ) C2T : RURAL TOWN
( ) C3R : SUBURBAN RES.
( ) C3C : SUBURBAN COMM.
( ) C4 : URBAN GENERAL
( ) C5 : URBAN CENTER
( ) C6 : URBAN CORE
(X) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

( ) INTERSTATE
(X) FREEWAY/EXPWY.
( ) PRINCIPAL ARTERIAL
( ) MINOR ARTERIAL
( ) MAJOR COLLECTOR
( ) MINOR COLLECTOR
( ) LOCAL

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
(X) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

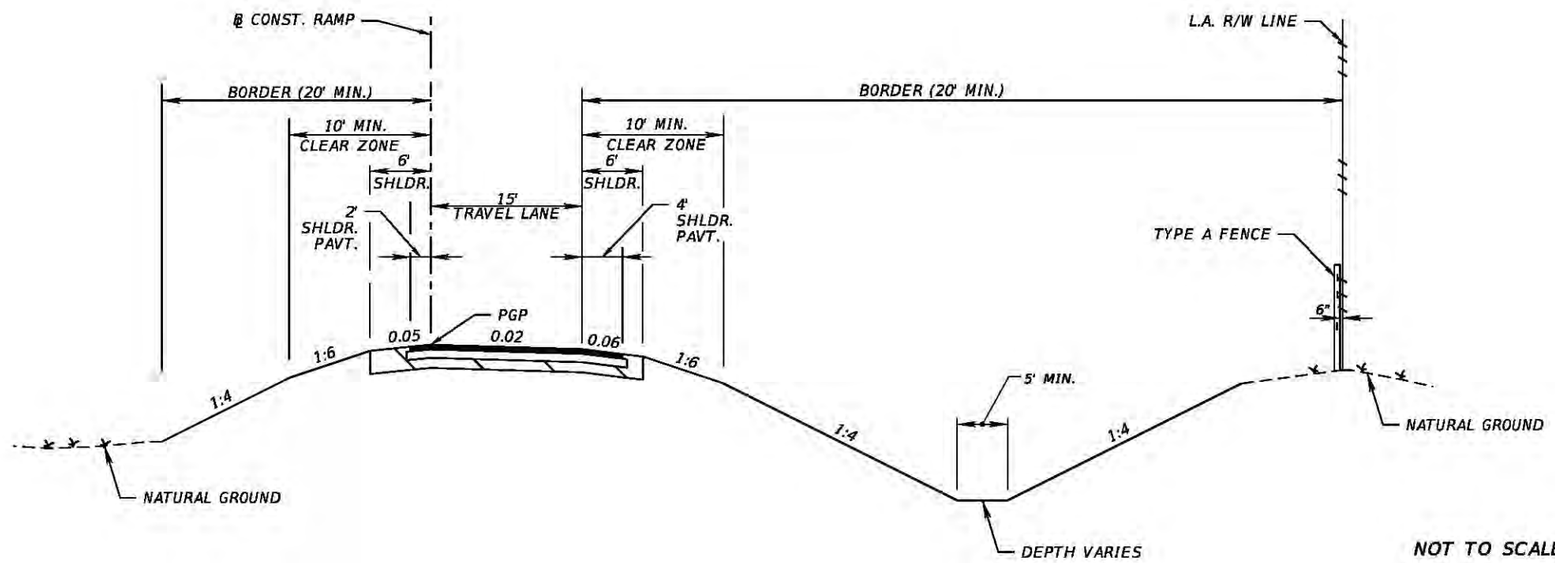
(X) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 3



NOT TO SCALE

SINGLE LANE RAMPS
FTE NORTHBOUND/SOUTHBOUND ON RAMPS FROM US 441/SR 60
FTE EXIT 193 NORTHBOUND/SOUTHBOUND/ OFF RAMPS TO US 441/SR 60

TRAFFIC DATA

DESIGN SPEED = 30 MPH
TARGET SPEED = N/A

FINANCIAL PROJECT ID	SHEET NO.
423374-2-22-01	04

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

5/12/2025 8:22:57 AM mcollings
c:\pwworkingdir\metric-pw.bentley.com_metric-pw-01\diego.lamayo@metricengg.com\dms14147\TYPPDR002.dgn

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
( ) C3C : SUBURBAN COMM.
(X) C2 : RURAL
( ) C4 : URBAN GENERAL
( ) C2T : RURAL TOWN
( ) C5 : URBAN CENTER
( ) C3R : SUBURBAN RES.
( ) C6 : URBAN CORE
(_) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

( ) INTERSTATE
(X) MAJOR COLLECTOR
(_) FREEWAY/EXPWY.
( ) MINOR COLLECTOR
( ) PRINCIPAL ARTERIAL
( ) LOCAL
(X) MINOR ARTERIAL

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
(_) STRATEGIC INTERMODAL SYSTEM
(_) STATE HIGHWAY SYSTEM
(X) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

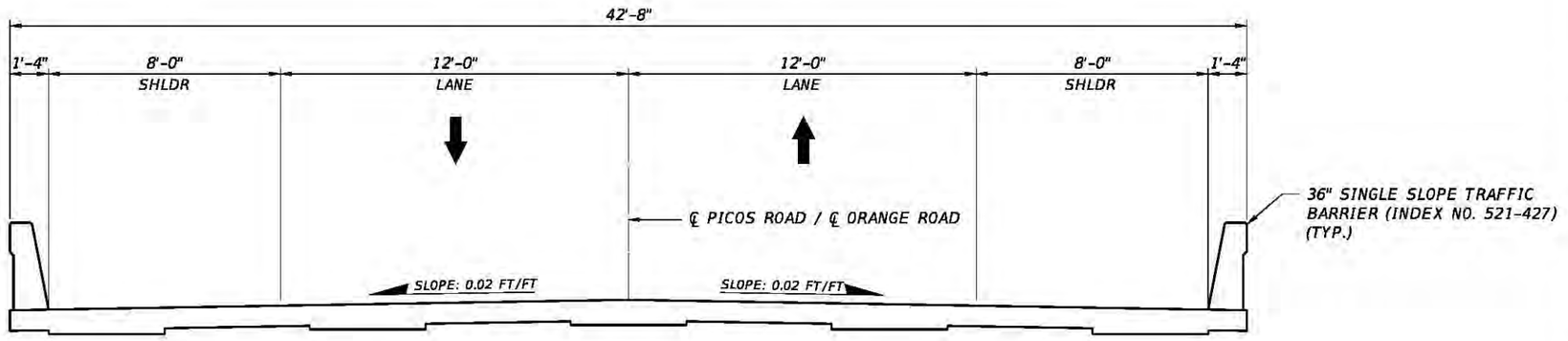
(X) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 4



BRIDGE NOS. 940055 & 940056
STRUCTURES TYPICAL SECTION

TRAFFIC DATA

PICOS ROAD
DESIGN SPEED = 40 MPH
TARGET SPEED = N/A

ORANGE AVENUE
DESIGN SPEED = 35 MPH
TARGET SPEED = N/A

FINANCIAL PROJECT ID	SHEET NO.
423374-2-22-01	05

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

5/12/2025 4:28:03 PM mcollings
c:\pwworkingdir\metric-pw.bentley.com_metric-pw-01\diego.tamayo@metriceng.com\dms14147\TYPDRD02.dgn

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
( ) C2 : RURAL
( ) C2T : RURAL TOWN
( ) C3R : SUBURBAN RES.
( ) C3C : SUBURBAN COMM.
( ) C4 : URBAN GENERAL
( ) C5 : URBAN CENTER
( ) C6 : URBAN CORE
(X) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

( ) INTERSTATE
(X) FREEWAY/EXPWY.
( ) PRINCIPAL ARTERIAL
( ) MINOR ARTERIAL
( ) MAJOR COLLECTOR
( ) MINOR COLLECTOR
( ) LOCAL

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
(X) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

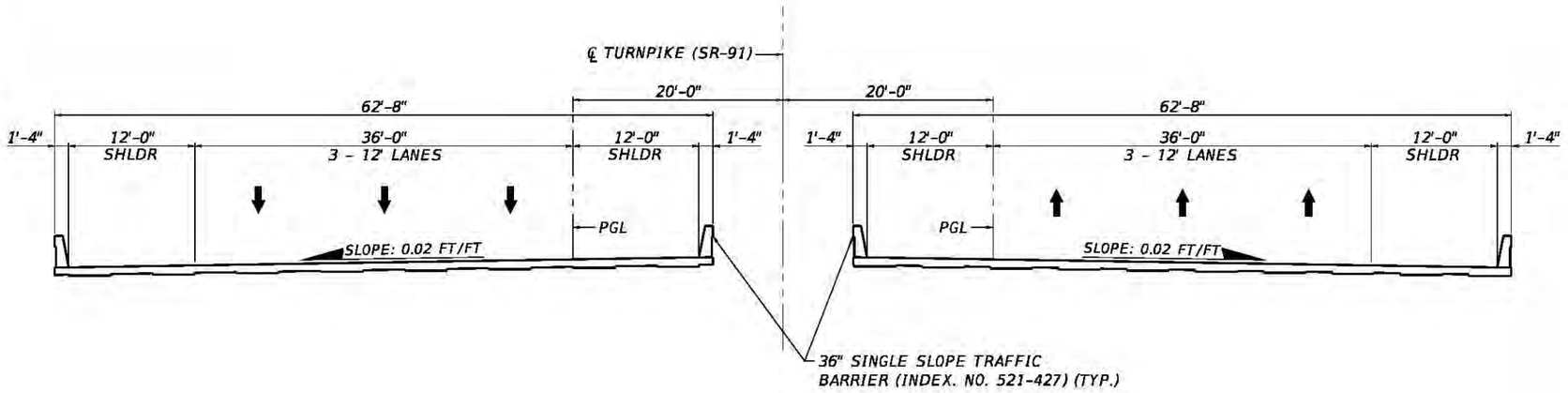
(X) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 5



BRIDGE NOS. 940057/940073 & 940058/940083
DESIGN SPEED = 70 MPH
STRUCTURES TYPICAL SECTION

TRAFFIC DATA

EXISTING CONDITIONS =2020 AADT = 41,000
ESTIMATED OPENING YEAR =2030 AADT = 43,200
ESTIMATED DESIGN YEAR =2050 AADT = 65,400
K = 10.5% D = 54.0% T = 15.9% (24 HOUR)
DESIGN HOURS T = 8.0%
DESIGN SPEED = 70 MPH
POSTED SPEED = 70 MPH
TARGET SPEED = N/A

FINANCIAL PROJECT ID	SHEET NO.
423374-2-22-01	06

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

5/12/2025 4:25:14 PM mcallings
C:\pwworkingdir\metric-pw.bentley.com_metric-pw-01\diego.lamaya@metricceng.com\dms14147\TYPDRD02.dgn

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
(X) C2 : RURAL
( ) C2T : RURAL TOWN
( ) C3R : SUBURBAN RES.
( ) C3C : SUBURBAN COMM.
( ) C4 : URBAN GENERAL
( ) C5 : URBAN CENTER
( ) C6 : URBAN CORE
(_) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

( ) INTERSTATE
(_) FREEWAY/EXPWY.
( ) PRINCIPAL ARTERIAL
( ) MINOR ARTERIAL
( ) MAJOR COLLECTOR
( ) MINOR COLLECTOR
(X) LOCAL

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
(_) STRATEGIC INTERMODAL SYSTEM
(_) STATE HIGHWAY SYSTEM
(X) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

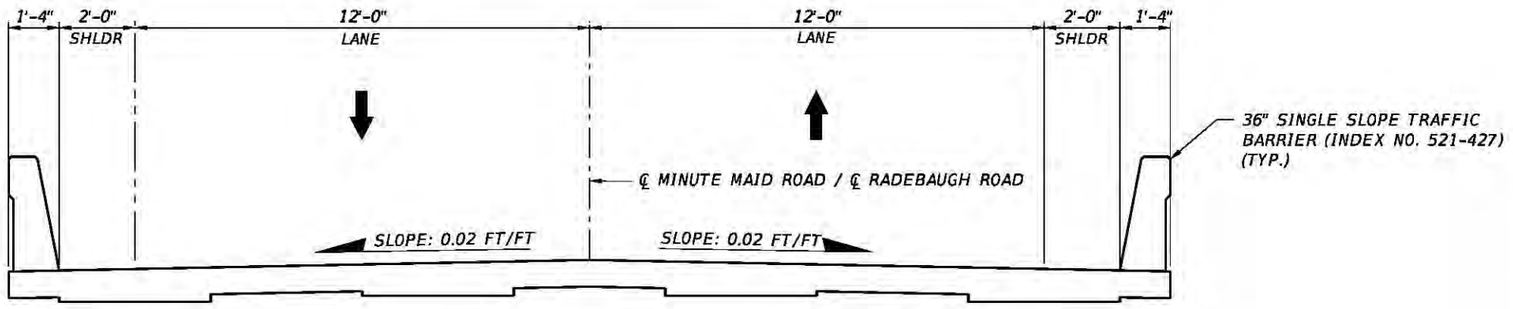
(X) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 6



BRIDGE NOS. 940059 & 940060
STRUCTURES TYPICAL SECTION

TRAFFIC DATA

MINUTE MAID ROAD
DESIGN SPEED = 40 MPH
TARGET SPEED = N/A

RADEBAUGH ROAD
DESIGN SPEED = 40 MPH
TARGET SPEED = N/A

FINANCIAL PROJECT ID	SHEET NO.
423374-2-22-01	07

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

5/12/2025 4:25:38 PM mcollings
c:\pwworkingdir\metric-pw.bentley.com_metric-pw-01\diego.tamayo@metricengr.com\dms14147\TYPDRD02.dgn

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
( ) C2 : RURAL
( ) C2T : RURAL TOWN
( ) C3R : SUBURBAN RES.
( ) C3C : SUBURBAN COMM.
( ) C4 : URBAN GENERAL
( ) C5 : URBAN CENTER
( ) C6 : URBAN CORE
(X) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

( ) INTERSTATE
(X) FREEWAY/EXPWY.
( ) PRINCIPAL ARTERIAL
( ) MINOR ARTERIAL
( ) MAJOR COLLECTOR
( ) MINOR COLLECTOR
( ) LOCAL

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
(X) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

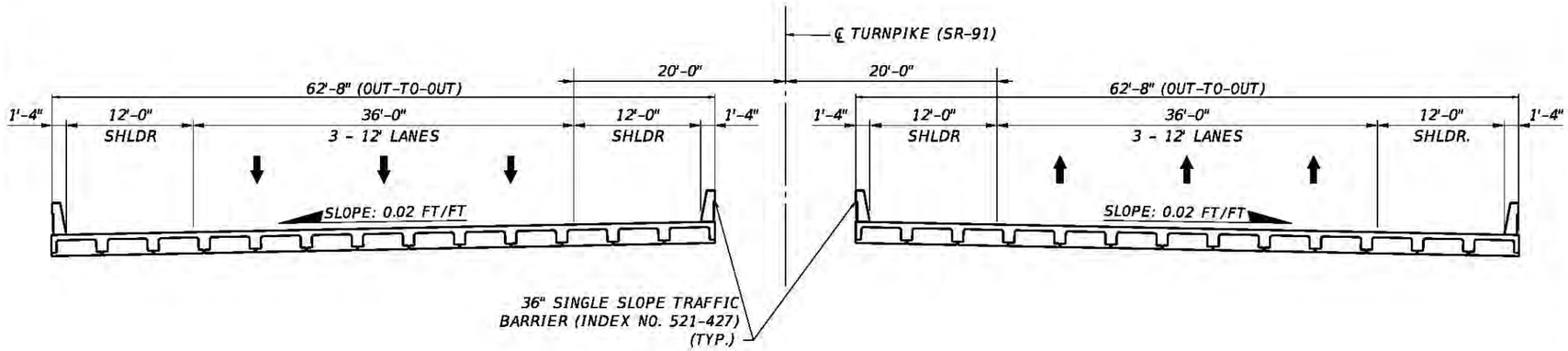
(X) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 7



BRIDGE NOS. 880057/880065, 880058/880066, 880059/880067, 910056/910058, 910059/910060, 910062/910064, 880060/880068, 920055/920124, 920056/920125, & TBD/TBD (MP 184.3)
DESIGN SPEED = 70 MPH
STRUCTURES TYPICAL SECTION

TRAFFIC DATA

EXISTING CONDITIONS =2020 AADT = 41,000
ESTIMATED OPENING YEAR =2030 AADT = 43,200
ESTIMATED DESIGN YEAR =2050 AADT = 65,400
K = 10.5% D = 54.0% T = 15.9% (24 HOUR)
DESIGN HOURS T = 8.0%
DESIGN SPEED = 70 MPH
POSTED SPEED = 70 MPH
TARGET SPEED = N/A

FINANCIAL PROJECT ID	SHEET NO.
423374-2-22-01	08

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

5/12/2025 8:25:09 AM mcollings
c:\pwworkingdir\metric-pw.bentley.com_metric_pw-01\diego.tamayo@metriceng.com\dms14147\TYPDR002.dgn

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
(X) C2 : RURAL
( ) C2T : RURAL TOWN
( ) C3R : SUBURBAN RES.
( ) C3C : SUBURBAN COMM.
( ) C4 : URBAN GENERAL
( ) C5 : URBAN CENTER
( ) C6 : URBAN CORE
(_) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

( ) INTERSTATE
(_) FREEWAY/EXPWY.
(X) PRINCIPAL ARTERIAL
( ) MINOR ARTERIAL
( ) MAJOR COLLECTOR
( ) MINOR COLLECTOR
( ) LOCAL

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
(_) STRATEGIC INTERMODAL SYSTEM
(_) STATE HIGHWAY SYSTEM
(X) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

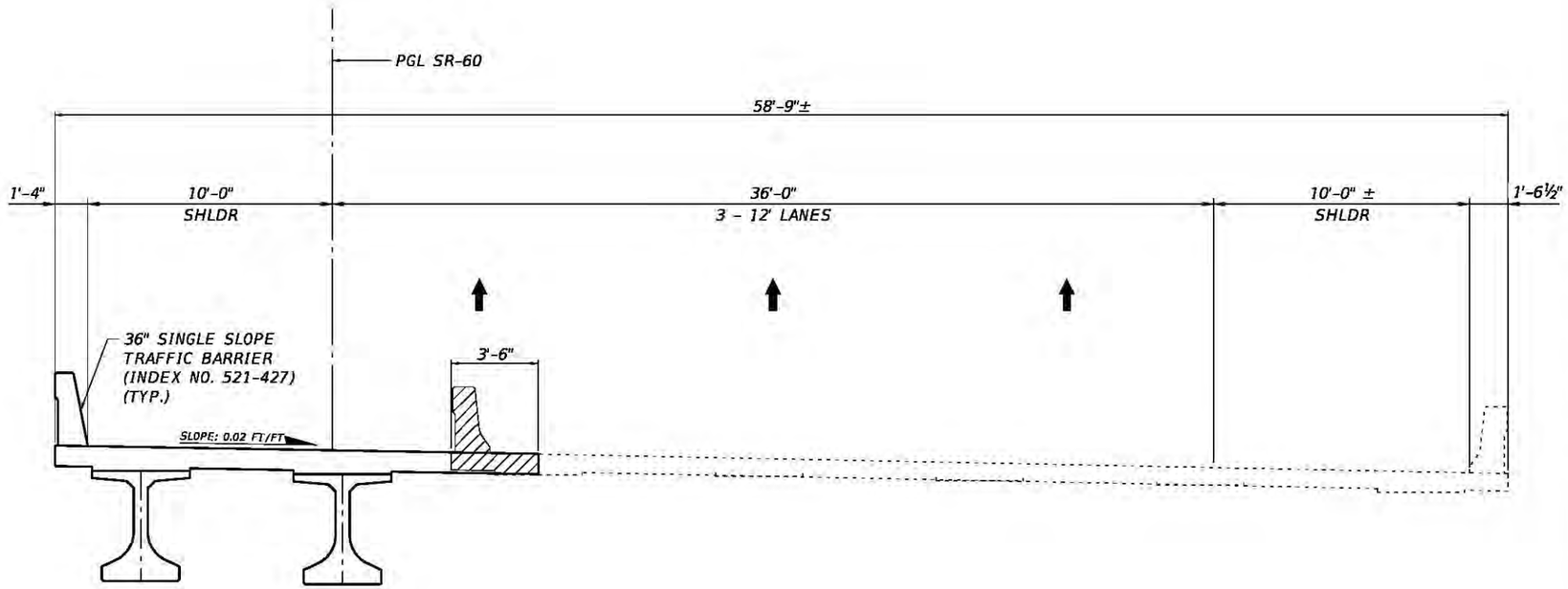
(X) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 8



BRIDGE NO. 920200
STRUCTURES TYPICAL SECTION

TRAFFIC DATA

SR-60
DESIGN SPEED = 40 MPH
TARGET SPEED = N/A

FINANCIAL PROJECT ID	SHEET NO.
423374-2-22-01	09

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

5/12/2025 4:26:25 PM mcallings
C:\pwworkingdir\metric-pw.bentley.com_metric-pw-01\diego.lamayo@metriceng.com\dms14147\TYPDRD02.dgn

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
( ) C2 : RURAL
( ) C2T : RURAL TOWN
( ) C3R : SUBURBAN RES.
( ) C3C : SUBURBAN COMM.
( ) C4 : URBAN GENERAL
( ) C5 : URBAN CENTER
( ) C6 : URBAN CORE
(X) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

( ) INTERSTATE
(X) FREEWAY/EXPWY.
( ) PRINCIPAL ARTERIAL
( ) MINOR ARTERIAL
( ) MAJOR COLLECTOR
( ) MINOR COLLECTOR
( ) LOCAL

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
(X) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

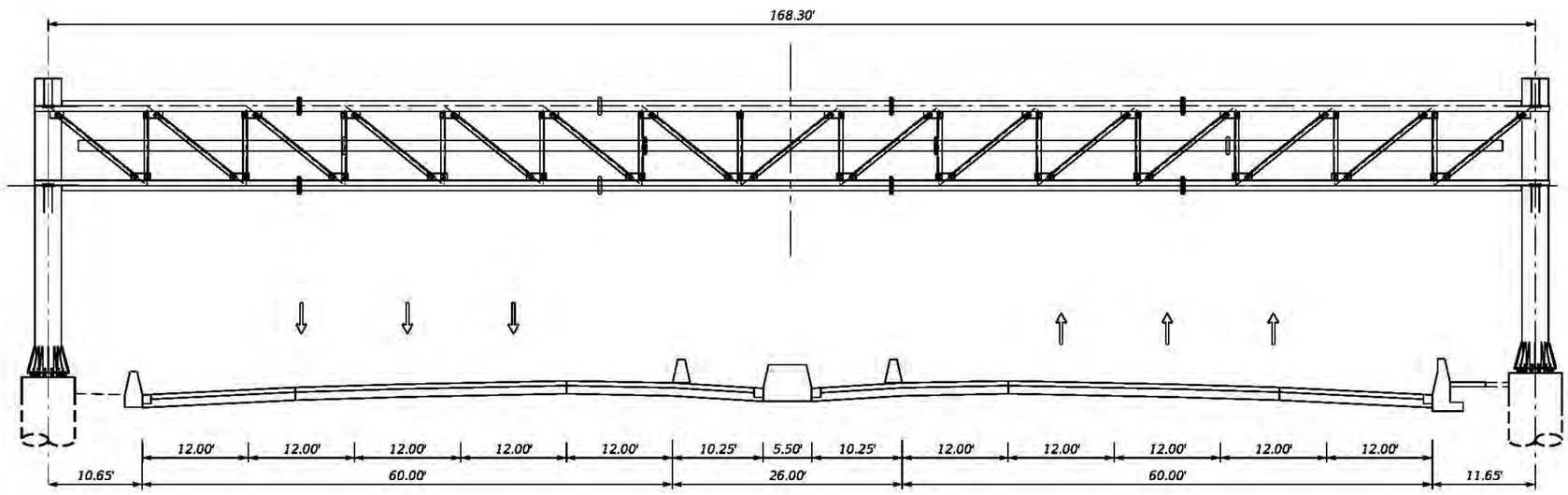
(X) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 9



TOLL GANTRY TYPICAL SECTION

TRAFFIC DATA

EXISTING CONDITIONS =2020 AADT = 41,000
ESTIMATED OPENING YEAR =2030 AADT = 43,200
ESTIMATED DESIGN YEAR =2050 AADT = 65,400
K = 10.5% D = 54.0% T = 15.9% (24 HOUR)
DESIGN HOURS T = 8.0%
DESIGN SPEED = 70 MPH
POSTED SPEED = 70 MPH
TARGET SPEED = N/A

FINANCIAL PROJECT ID	SHEET NO.
423374-2-22-01	10

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

5/12/2025 12:52:56 PM mcollings
c:\pwworkingdir\metric-pw.bentley.com_metric-pw-01\diego.lamayo@metricceng.com\dms14147\TYPDR002.dgn

Appendix F

Proposed Drainage Maps

BEGIN PROJECT
STA. 1979+94.26

BASIN 1
TOTAL=8.01 AC
IMPERVIOUS=2.42 AC
PERVIOUS=5.59 AC

SMF1-1

POND ACCESS

EXTEND 11'X7' CONCRETE DOUBLE BOX CULVERT

R/W LINE

CANAL 49 (NSLRWCD)

EXTEND 10'X5' CONCRETE DOUBLE BOX CULVERT

BASIN 2
TOTAL=28.97 AC
IMPERVIOUS=9.11 AC
PERVIOUS=19.86 AC

COOLIDGE RD

CANAL 48 (NSLRWCD)

COOLIDGE RD

EXTEND 12'X6' CONCRETE BOX CULVERT

BASIN 3
TOTAL=29.12 AC
IMPERVIOUS=9.31 AC
PERVIOUS=19.81 AC

1"=500'

1985 1990 1995 2000 2005 2010 2015 2020 2025 2030 2035 2040 2045 2050

Linear Ann

S ROCK RD

FGT
EASEMENT

R/W LINE

SR 91

POND ACCESS

POND ACCESS

SITE 1- AT&T
ST.LUCIE
COMPLEX (LOW RISK)

HOEFFNER LN

RESEARCH CENTER RD

SITE 2- UNIVERSITY OF FLORIDA (LOW RISK)

SMF3-1

SITE 3 - US HORICULTURAL RESEARCH LABORATORY (LOW RISK)

SMF2-1

ROCK RD

PICOS RD

CANAL 47 (NSLRWCD)

CANAL 40

LEGEND:

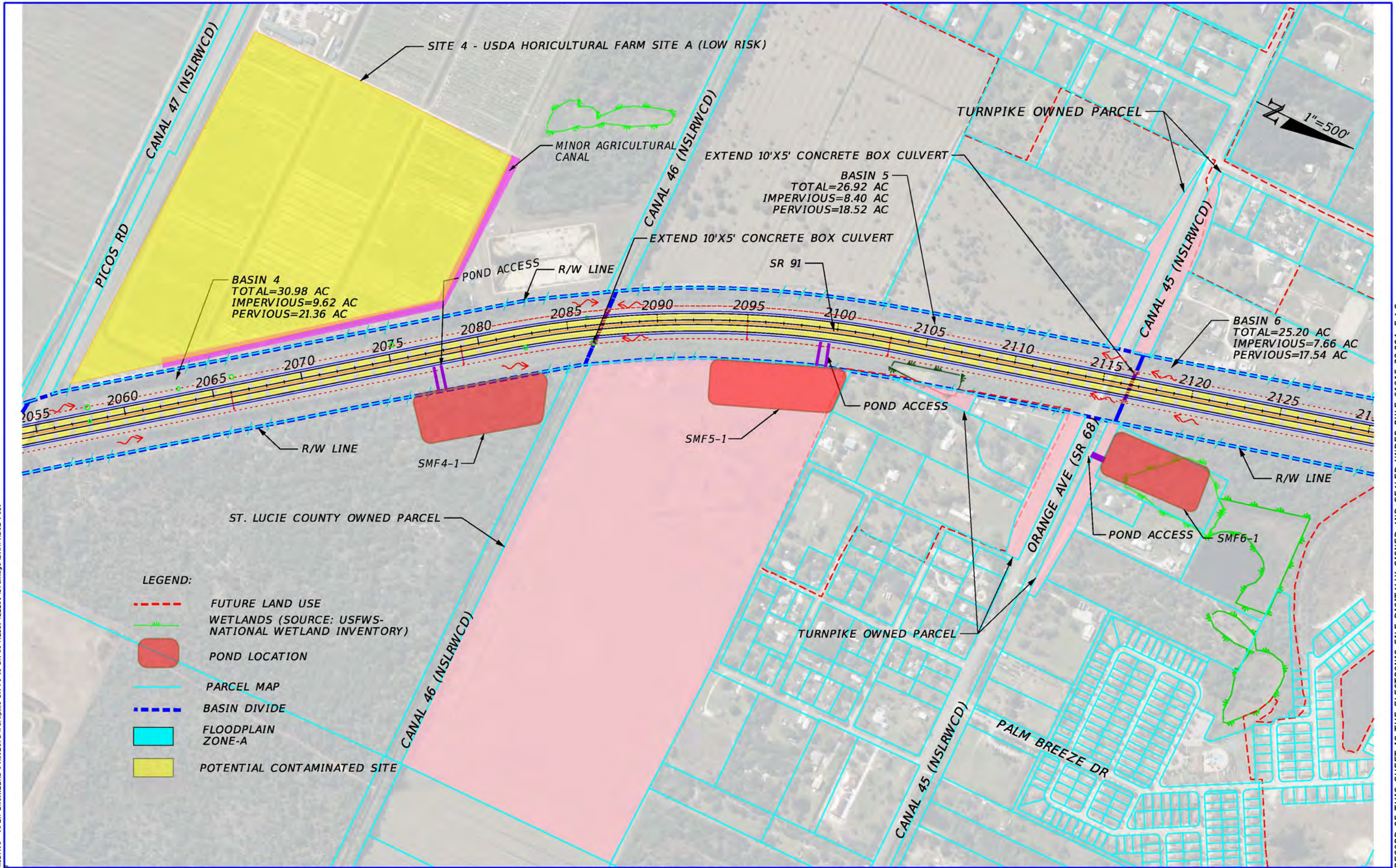
- FUTURE LAND USE
- WETLANDS (SOURCE: USFWS-NATIONAL WETLAND INVENTORY)
- POND LOCATION
- PARCEL MAP
- BASIN DIVIDE
- FLOODPLAIN ZONE-A
- POTENTIAL CONTAMINATED SITE

REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP POST-DEVELOPMENT	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	CHANDRA S. RAMAN, P.E. LICENSE NUMBER: 58740 APEX ENGINEERS, INC. 10175 FORTUNE PARKWAY, UNIT 704. JACKSONVILLE, FLORIDA 32256	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		1
					SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01		

3/10/2025 6:36:04 PM RoshanM
C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\423374222O1\Drainage\DRWPRD02-Post Development Map.dgn

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

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS

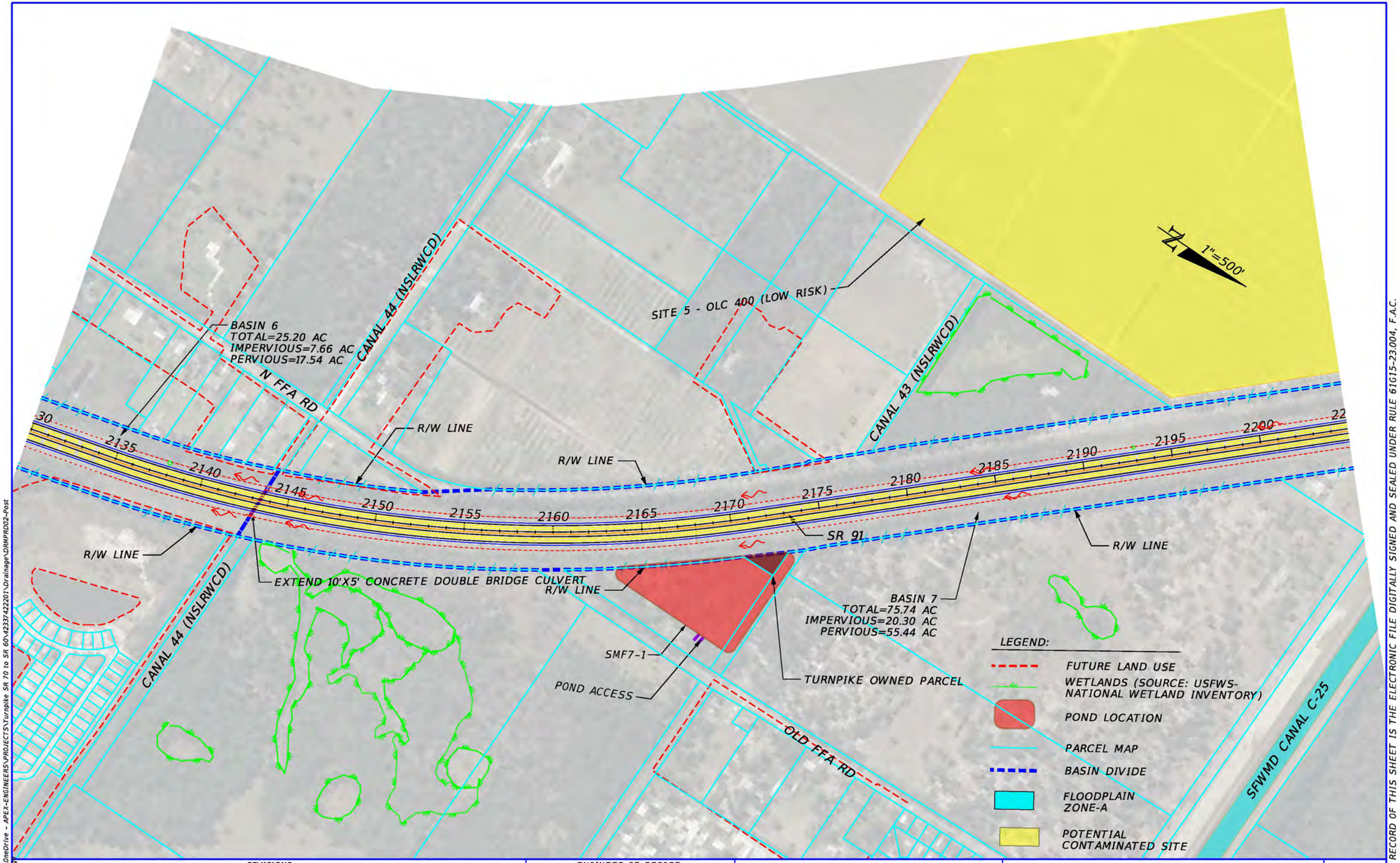


REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP POST-DEVELOPMENT	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	CHANDRA S. RAMAN, P.E. LICENSE NUMBER: 58740 APEX ENGINEERS, INC. 10175 FORTUNE PARKWAY, UNIT 704. JACKSONVILLE, FLORIDA 32256	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		2
					SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01		

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

3/10/2025 6:45:10 PM RoshanM
C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\423374222O1\Drainage\DRMPRD02-Post Development Recs.dgn

© 2025 Microsoft Corporation Earthstar Geographics SIO

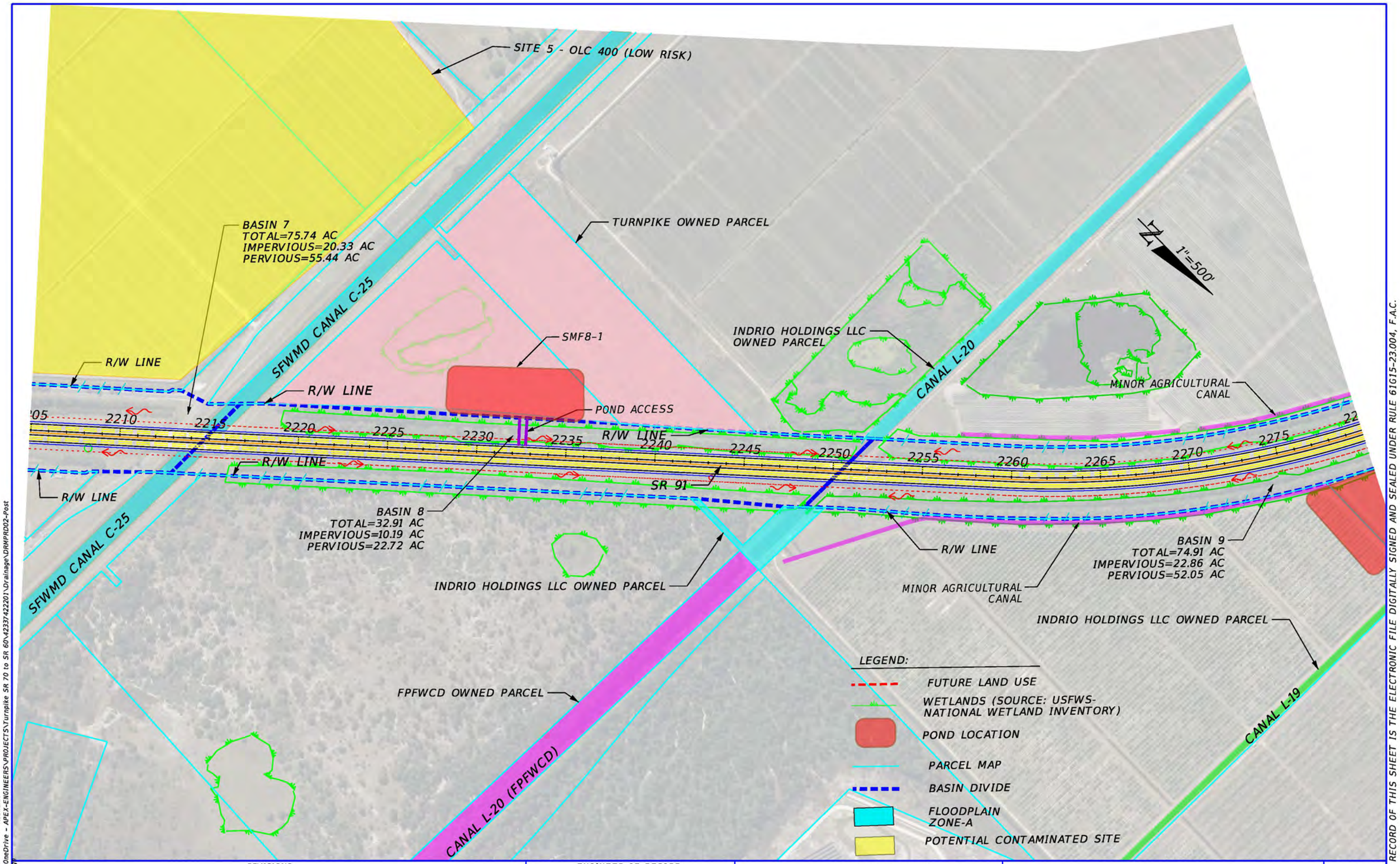


REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP POST-DEVELOPMENT	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	CHANDRA S. RAMAN, P.E. LICENSE NUMBER: 58740 APEX ENGINEERS, INC. 10175 FORTUNE PARKWAY, UNIT 704. JACKSONVILLE, FLORIDA 32256	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		3
					SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01		

3/10/2025 6:36:16 PM RoshanM
C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\423374222\Drainage\DRMPRD02-Post Development Map.dgn

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

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS



REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP POST-DEVELOPMENT	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	CHANDRA S. RAMAN, P.E. LICENSE NUMBER: 58740 APEX ENGINEERS, INC. 10175 FORTUNE PARKWAY, UNIT 704. JACKSONVILLE, FLORIDA 32256	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		4
					SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01		

3/10/2025 6:46:04 PM RoshanM
C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\423374222201\Drainage\DRMPRD02-Post Development.dgn

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

© 2025 Microsoft Corporation Earthstar Geographics SIO

INDRIO HOLDINGS LLC OWNED PARCEL

1"=500'

COMPREHENSIVE EVERGLADES RESTORATION PLAN (CERP) PROJECT

MINOR AGRICULTURAL CANAL

POND ACCESS

R/W LINE

BASIN 9
TOTAL=74.91 AC
IMPERVIOUS=22.86 AC
PERVIOUS=52.05 AC

BASIN 10
TOTAL=24.40 AC
IMPERVIOUS=7.46 AC
PERVIOUS=16.94 AC

2280 2285 2290 2295 2300 2305 2310 2315 2320 2325 2330 2335 2340 2345 2350

SR 91

CANAL L-19

R/W LINE

REPLACE 12'X6' CONCRETE BOX CULVERT

POND ACCESS

MINOR AGRICULTURAL CANAL

CANAL REROUTING

SMF10-1

SMF9-1

INDRIO HOLDINGS LLC OWNED PARCELS

LEGEND:

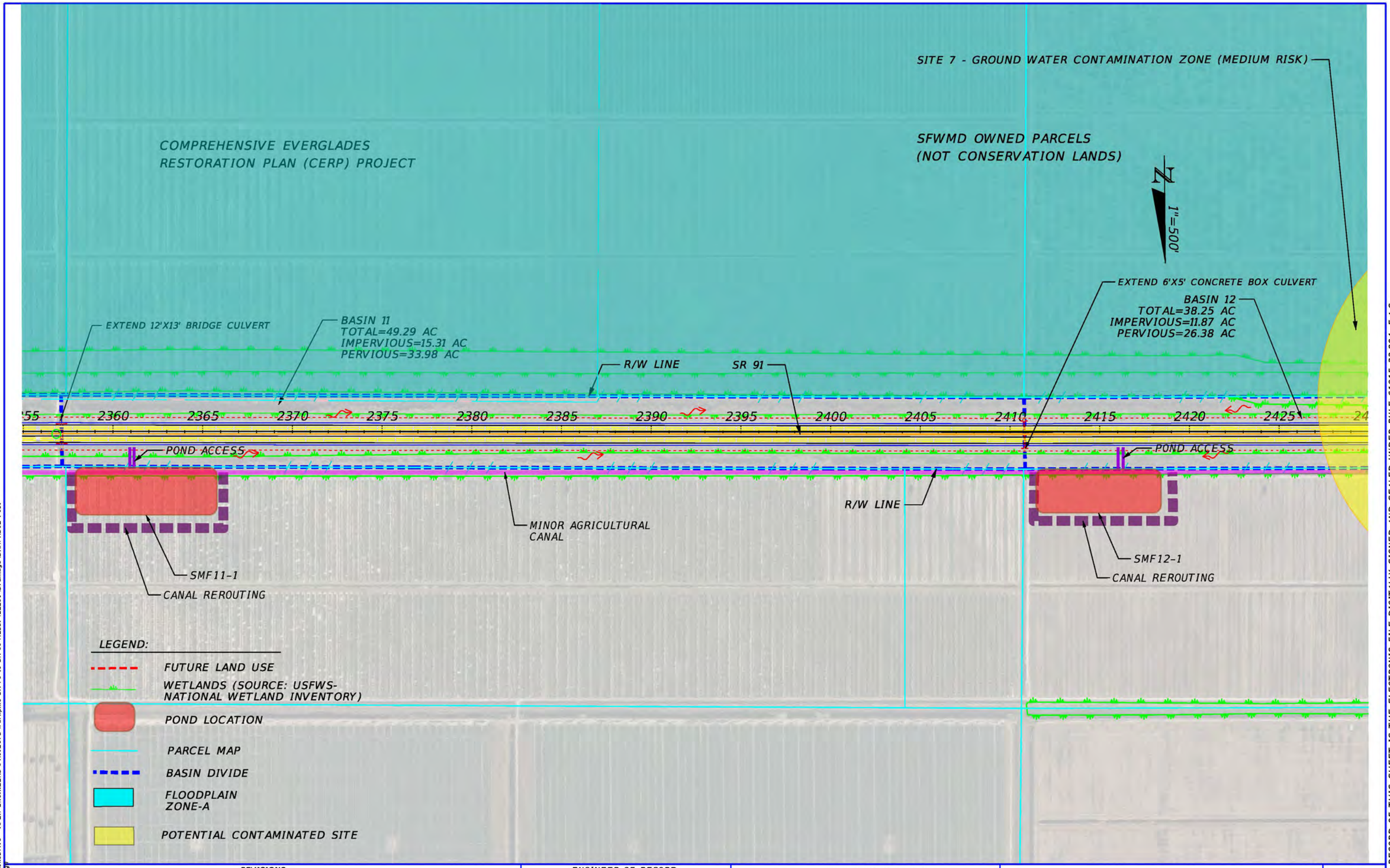
- FUTURE LAND USE
- WETLANDS (SOURCE: USFWS-NATIONAL WETLAND INVENTORY)
- POND LOCATION
- PARCEL MAP
- BASIN DIVIDE
- FLOODPLAIN ZONE-A

REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP POST-DEVELOPMENT	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	CHANDRA S. RAMAN, P.E. LICENSE NUMBER: 58740 APEX ENGINEERS, INC. 10175 FORTUNE PARKWAY, UNIT 704. JACKSONVILLE, FLORIDA 32256	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		5
					SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01		

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

3/10/2025 6:36:28 PM RoshanM
C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\423374222001\Drainage\DRMPRD02-Post Development.dwg

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD
CHANDRA S. RAMAN, P.E.
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704.
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

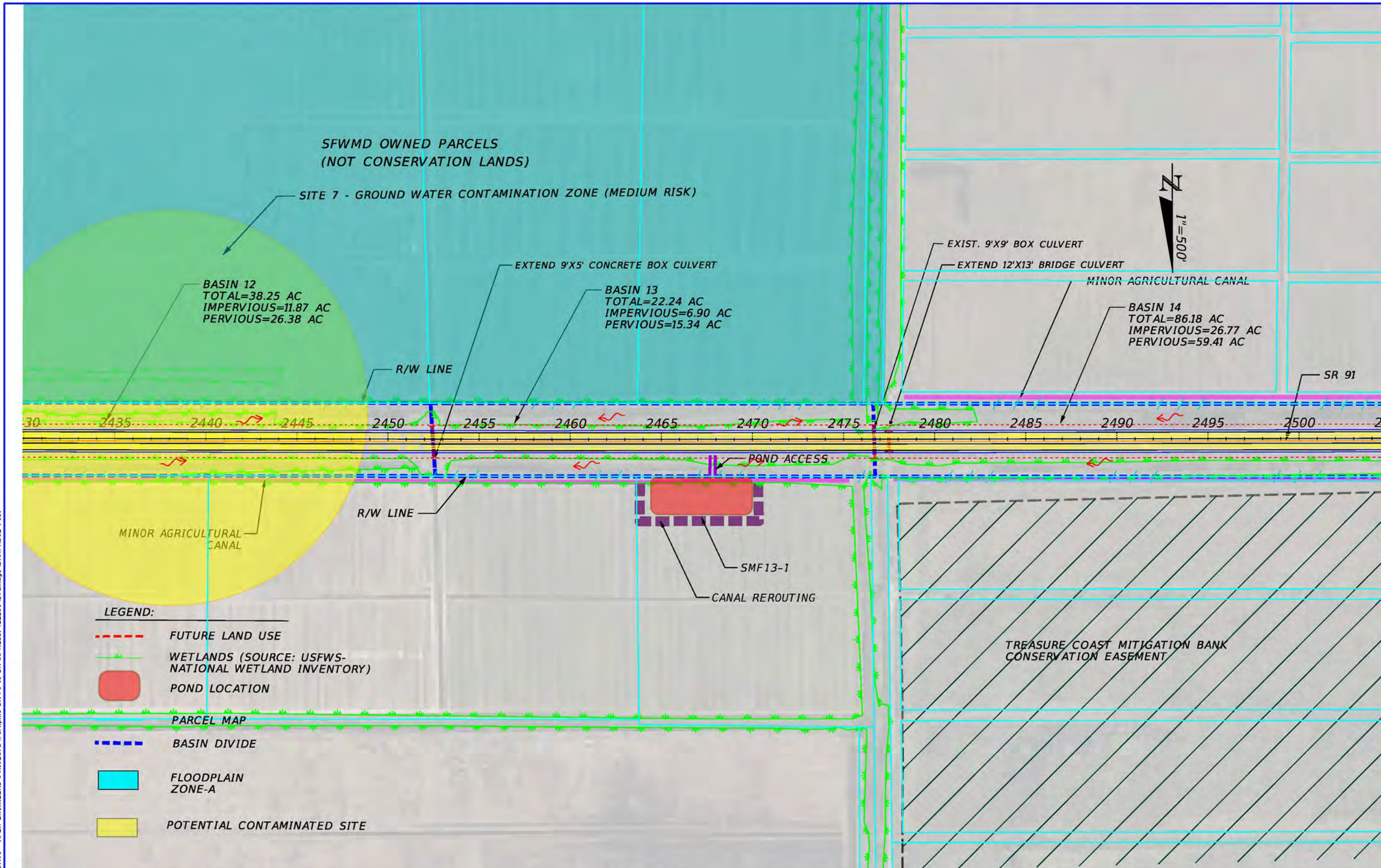
DRAINAGE MAP POST-DEVELOPMENT

SHEET NO. 6

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

3/11/2025 2:18:03 PM RoshanM
C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD02-Post Development Map.dgn

© 2025 Microsoft Corporation, Earthstar Geographics, SIO



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E.
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704.
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

DRAINAGE MAP POST-DEVELOPMENT

SHEET NO. 7

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

3/10/2025 6:36:39 PM RoshanM
C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\42337422201\Drainage\DRMPRD02-Post Development.dgn

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS

LEGEND:

FUTURE LAND USE

WETLANDS (SOURCE: USFWS-NATIONAL WETLAND INVENTORY)

POND LOCATION

PARCEL MAP

BASIN DIVIDE

FLOODPLAIN ZONE-A

TREASURE COAST MITIGATION BANK CONSERVATION EASEMENT

1"=500'

SFWMD CANAL C-25 EXT

MINOR AGRICULTURAL CANAL

BASIN 14
TOTAL=86.18 AC
IMPERVIOUS=26.77 AC
PERVIOUS=59.41 AC

BASIN 15
TOTAL=49.25 AC
IMPERVIOUS=15.29 AC
PERVIOUS=33.96 AC

R/W LINE

SR 91

R/W LINE

2505 2510 2515 2520 2525 2530 2535 2540 2545 2550 2555 2560 2565 2570 2575 25

POND ACCESS

REPLACE 12'X6' CONCRETE BOX CULVERT

R/W LINE

SMF14-1

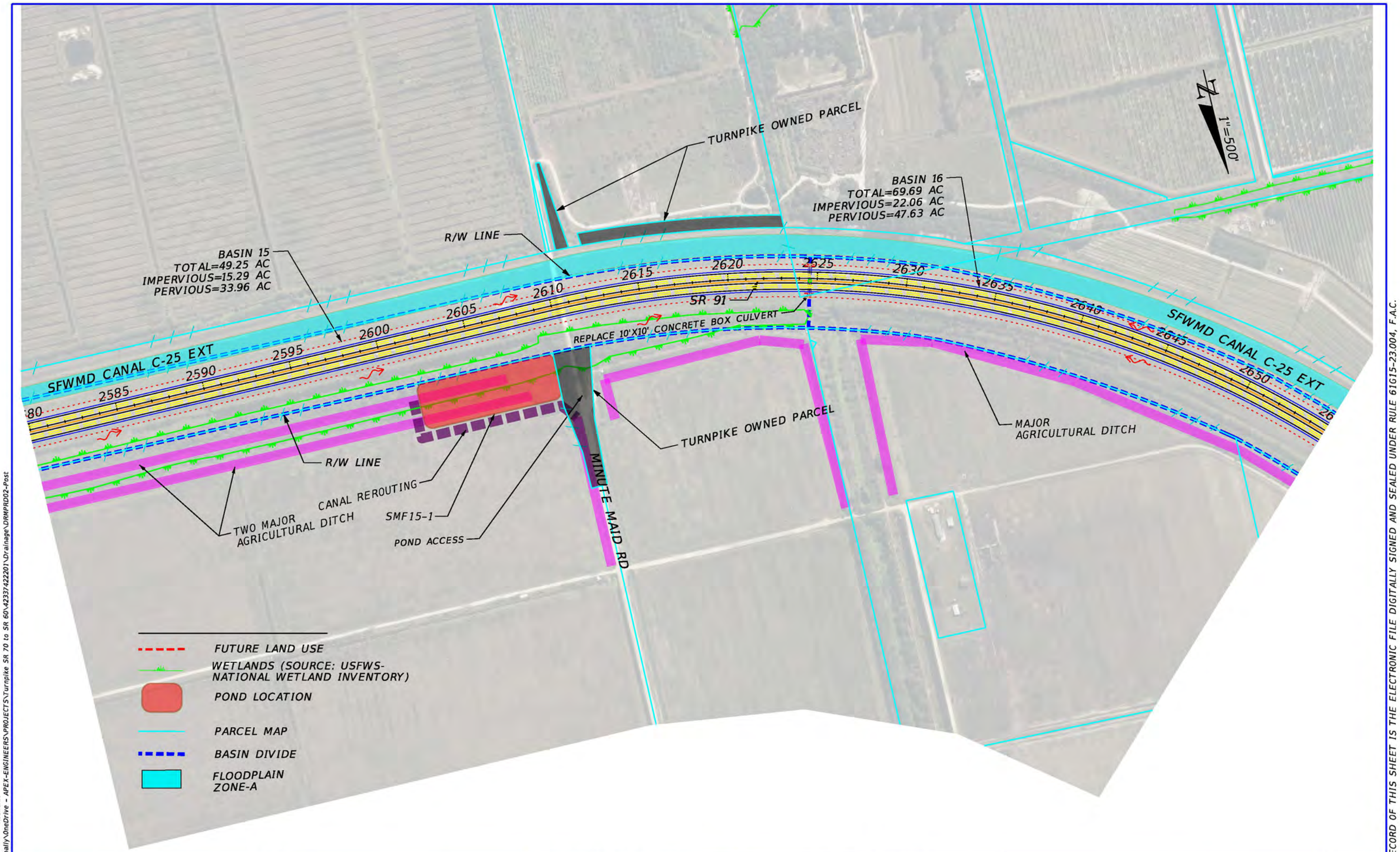
TREASURE COAST MITIGATION BANK
CONSERVATION EASEMENT

REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP POST-DEVELOPMENT	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	CHANDRA S. RAMAN, P.E. LICENSE NUMBER: 58740 APEX ENGINEERS, INC. 10175 FORTUNE PARKWAY, UNIT 704. JACKSONVILLE, FLORIDA 32256	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		8
					SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01		

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

3/10/2025 6:36:45 PM RoshanM
C:\Users\Roshan\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\423374222\01\Drainage\DRMPRD02-Post Development.dgn

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS



REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP POST-DEVELOPMENT	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	CHANDRA S. RAMAN, P.E. LICENSE NUMBER: 58740 APEX ENGINEERS, INC. 10175 FORTUNE PARKWAY, UNIT 704. JACKSONVILLE, FLORIDA 32256	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		9
					SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01		

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

3/10/2025 6:36:53 PM RoshanM
C:\Users\RoshanMarripally\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\423374222201\Drainage\DRMPRD02-Post Development Design.dgn

© 2025 Microsoft Corporation Earthstar Geographics SIO

EVANS CANAL

ORANGE AVE CITRUS GROWERS ASSN OWNED PARCEL

1"=500'

MAJOR CANAL

BASIN 16
TOTAL=69.69 AC
IMPERVIOUS=22.06 AC
PERVIOUS=47.63 AC

SFWMD C-25 CANAL BEGINS

BASIN 17
TOTAL=63.34 AC
IMPERVIOUS=25.62 AC
PERVIOUS=37.72 AC

R/W LINE

R/W LINE

SFWMD CANAL C-25 EXT

2660 2665 2670 2675 2680 2685 2690 2695 2700 2705 2710 2715 2720 2725

EXTEND 10'x6' DOUBLE BRIDGE CULVERT

POND ACCESS

SR 91

R/W LINE

MAJOR AGRICULTURAL DITCH

SMF16-1

CANAL REROUTING

R/W LINE

MAJOR AGRICULTURAL DITCH

SITE 8- INDIAN RIVER EXCHANGE PACKERS (LOW RISK)

SITE 9- VERO PRODUCERS INC (MEDIUM RISK)

*) USDA-NRCS CONSERVATION EASEMENT

LEGEND:

- FUTURE LAND USE
- WETLANDS (SOURCE: USFWS-NATIONAL WETLAND INVENTORY)
- POND LOCATION
- PARCEL MAP
- BASIN DIVIDE
- FLOODPLAIN ZONE-A
- POTENTIAL CONTAMINATED SITE & USDA-NRCS CONSERVATION EASEMENT

REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	CHANDRA S. RAMAN, P.E. LICENSE NUMBER: 58740 APEX ENGINEERS, INC. 10175 FORTUNE PARKWAY, UNIT 704. JACKSONVILLE, FLORIDA 32256	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	DRAINAGE MAP POST-DEVELOPMENT	10
					SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01		

3/12/2025 5:13:40 PM RoshanM
C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\423374222\Drainage\DRWPRD02-Post Development Map.dgn

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

© 2025 Microsoft Corporation Earthstar Geographics SIO

LEGEND:

FUTURE LAND USE

WETLANDS (SOURCE: USFWS-NATIONAL WETLAND INVENTORY)

POND LOCATION

PARCEL MAP

BASIN DIVIDE

FLOODPLAIN ZONE-A

POTENTIAL CONTAMINATED SITE & USDA- NRCS CONSERVATION EASEMENT

1"=500'

R/W LINE

MAJOR CANAL

ORANGE AVE CITRUS GROWERS ASSN OWNED PARCEL

BLUE GOOSE FARMS LLC OWNED PARCEL

BASIN 18
TOTAL=36.83 AC
IMPERVIOUS=14.23 AC
PERVIOUS=22.60 AC

2735 2740 2745 2750 2755 2760 2765 2770 2775 2780 2785 2790 2795 2800

EXTEND 54" PIPE AND HEADWALL

R/W LINE
MINOR AGRICULTURAL DITCH

BASIN 17
TOTAL=63.34 AC
IMPERVIOUS=25.62 AC
PERVIOUS=37.72 AC

SITE 9- VERO PRODUCERS INC (MEDIUM RISK)

) USDA-NRCS CONSERVATION EASEMENT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E.
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704.
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

DRAINAGE MAP POST-DEVELOPMENT

SHEET NO. 11

3/13/2025 12:19:43 PM RoshanM
C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\423374222001\Drainage\DRMPRD02-Post Development Map.dgn

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

© 2025 Microsoft Corporation Earthstar Geographics SIO

ORANGE AVE CITRUS GROWERS ASSN OWNED PARCEL

BASIN 18
TOTAL=36.83 AC
IMPERVIOUS=14.23 AC
PERVIOUS=22.60 AC

R/W LINE

SR 91

REPLACE 10'X5' CONCRETE BOX CULVERT

MAJOR CANAL

RADEBAUGH RD

BASIN 19
TOTAL=36.73 AC
IMPERVIOUS=14.23 AC
PERVIOUS=22.50 AC

2805 2810 2815 2820 2825 2830 2835 2840 2845 2850 2855 2860 2865 2870 2875

POND ACCESS

R/W LINE

MINOR AGRICULTURAL DITCH AND DIRT ROAD

SMF18-1

CANAL REROUTING

1"=500'

LEGEND:

- FUTURE LAND USE
- WETLANDS (SOURCE: USFWS-NATIONAL WETLAND INVENTORY)
- POND LOCATION
- PARCEL MAP
- BASIN DIVIDE
- FLOODPLAIN ZONE-A

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E.
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704.
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

DRAINAGE MAP POST-DEVELOPMENT

SHEET NO. 12

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

3/10/2025 6:37:12 PM RoshanM
C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\423374222O1\Drainage\DRMPRD02-Post Development.dgn

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS

LEGEND:

FUTURE LAND USE

WETLANDS (SOURCE: USFWS-NATIONAL WETLAND INVENTORY)

POND LOCATION

PARCEL MAP

BASIN DIVIDE

FLOODPLAIN ZONE-A

1"=500'

BASIN 19
TOTAL=36.73 AC
IMPERVIOUS=14.23 AC
PERVIOUS=22.50 AC

ORANGE AVE CITRUS GROWERS ASSN OWNED PARCEL

BASIN 20
TOTAL=35.25 AC
IMPERVIOUS=13.66 AC
PERVIOUS=21.59 AC

MAJOR CANAL

BASIN 21
TOTAL=48.05 AC
IMPERVIOUS=18.29 AC
PERVIOUS=29.76 AC

R/W LINE

REPLACE 12'X5' CONCRETE BOX CULVERT

SR 91

2880 2885 2890 2895 2900 2905 2910 2915 2920 2925 2930 2935 2940 2945 2950

R/W LINE

MINOR AGRICULTURAL DITCH & ACCESS ROAD

REPLACE 12'X5' CONCRETE BOX CULVERT

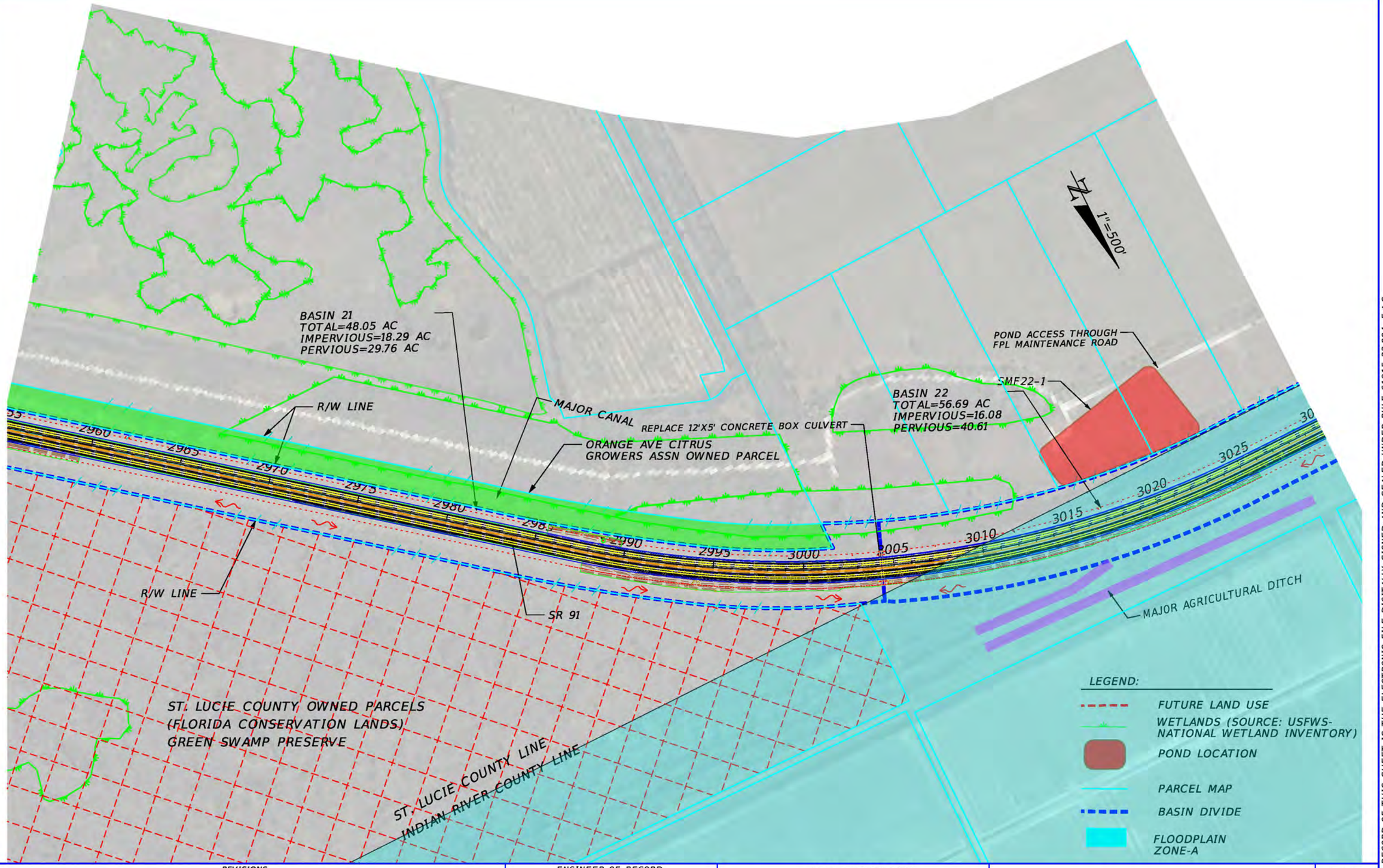
ST. LUCIE COUNTY OWNED PARCELS
(FLORIDA CONSERVATION LANDS)
GREEN SWAMP PRESERVE

REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP POST-DEVELOPMENT	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	CHANDRA S. RAMAN, P.E. LICENSE NUMBER: 58740 APEX ENGINEERS, INC. 10175 FORTUNE PARKWAY, UNIT 704. JACKSONVILLE, FLORIDA 32256	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		13
					SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01		

3/10/2025 6:37:18 PM RoshanM
C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\423374222201\Drainage\DRMPRD02-Post Development.dgn

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

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS

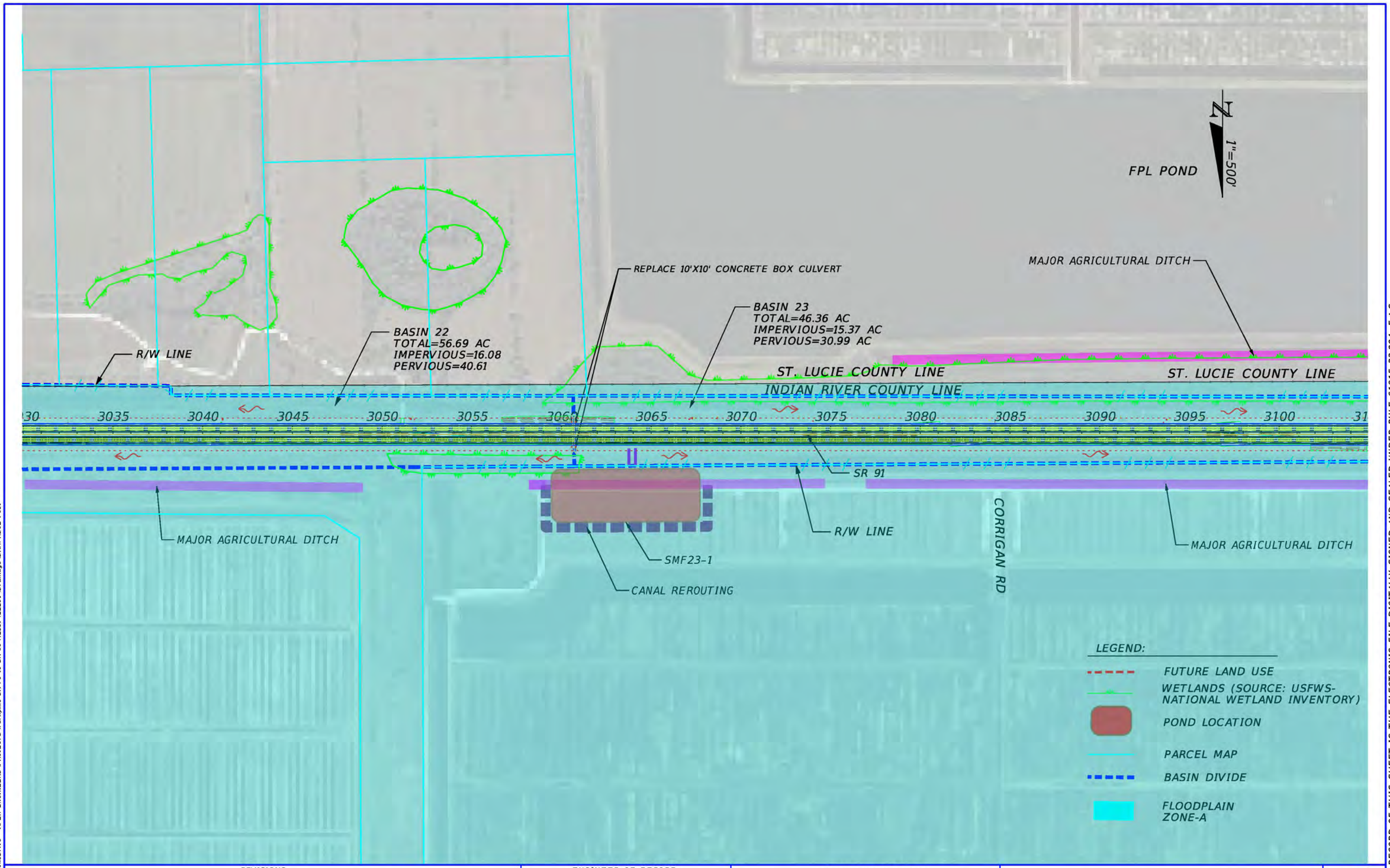


REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP POST-DEVELOPMENT	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	CHANDRA S. RAMAN, P.E. LICENSE NUMBER: 58740 APEX ENGINEERS, INC. 10175 FORTUNE PARKWAY, UNIT 704. JACKSONVILLE, FLORIDA 32256	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		14
					SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01		

3/10/2025 6:37:24 PM RoshanM
C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\423374220\1\Drainage\DRMPRD02-Post Development.dgn

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

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS



REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP POST-DEVELOPMENT	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	CHANDRA S. RAMAN, P.E. LICENSE NUMBER: 58740 APEX ENGINEERS, INC. 10175 FORTUNE PARKWAY, UNIT 704. JACKSONVILLE, FLORIDA 32256	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		15
					SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01		

3/10/2025 6:37:30 PM RoshanM
C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\423374222001\Drainage\DRMPRD02-Post Development.dgn

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

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS

FPL POND

ST. LUCIE COUNTY LINE

OKEECHOBEE COUNTY LINE

FUTURE GROVE LAND RESERVOIR

SITE 10- EVANS GROVE LAND (HIGH RISK)

1"=500'

CANAL REROUTING

SMF 25-1 {5.17 AC}

MAJOR DITCH

BASIN 24
TOTAL=16.90 AC
IMPERVIOUS=5.42 AC
PERVIOUS=11.48 AC

BASIN 25
TOTAL=45.57 AC
IMPERVIOUS=13.93 AC
PERVIOUS=31.64 AC

MAJOR AGRICULTURAL DITCH

R/W LINE

INDIAN RIVER COUNTY LINE

OKEECHOBEE COUNTY LINE
INDIAN RIVER COUNTY LINE

REPLACE 10'X10' DOUBLE CONCRETE BOX CULVERT

SR 91

3105 3110 3115 3120 3125 3130 3135 3140 3145 3150 3155 3160 3165 3170 3175

POND ACCESS

R/W LINE

BASIN 23
TOTAL=46.36 AC
IMPERVIOUS=15.37 AC
PERVIOUS=30.99 AC

SMF24-1

MAJOR AGRICULTURAL DITCH

CANAL REROUTING

CORRIGAN RD

FUTURE GROVE LAND RESERVOIR

SJRWMD OWNED PARCELS
(FLORIDA CONSERVATION LANDS)

FORT DRUM MARSH CONSERVATION AREA

LEGEND:

- FUTURE LAND USE
- WETLANDS (SOURCE: USFWS-NATIONAL WETLAND INVENTORY)
- POND LOCATION
- PARCEL MAP
- BASIN DIVIDE
- FLOODPLAIN ZONE-A
- POTENTIAL CONTAMINATED SITE

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E.
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704.
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

DRAINAGE MAP POST-DEVELOPMENT

SHEET NO. 16

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

3/10/2025 6:37:36 PM RoshanM
C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\423374222001\Drainage\DRMPRD02-Post Development Map.dgn

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS

LEGEND:

FUTURE LAND USE

WETLANDS (SOURCE: USFWS-NATIONAL WETLAND INVENTORY)

POND LOCATION

PARCEL MAP

BASIN DIVIDE

FLOODPLAIN ZONE-A

1"=500'

BASIN 25
TOTAL=45.57 AC
IMPERVIOUS=13.93 AC
PERVIOUS=31.64 AC

CANAL REROUTING

SMF 26-1 {4.38 AC}

POND ACCESS

BASIN 26
TOTAL=40.64 AC
IMPERVIOUS=11.17 AC
PERVIOUS=29.47 AC

MAJOR DITCH

R/W LINE

CANAL REROUTING

SMF27-1

POND ACCESS

BASIN 27
TOTAL=49.11 AC
IMPERVIOUS=14.40 AC
PERVIOUS=34.71 AC

OKEECHOBEE COUNTY LINE

INDIAN RIVER COUNTY LINE

80 3185 3190 3195 3200 3205 3210 3215 3220 3225 3230 3235 3240 3245 3250 32

SR 91

REPLACE 10'X10' CONCRETE BOX CULVERT

R/W LINE

REPLACE 10'X10' CONCRETE BOX CULVERT

SJRWMD OWNED PARCELS
(FLORIDA CONSERVATION LANDS)

FORT DRUM MARSH CONSERVATION AREA

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E.
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704.
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

DRAINAGE MAP POST-DEVELOPMENT

SHEET NO. 17

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

3/10/2025 6:37:44 PM RoshanM
C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\423374222001\Drainage\DRMPRD02-Post Development.dgn

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS

LEGEND:

- FUTURE LAND USE
- WETLANDS (SOURCE: USFWS-NATIONAL WETLAND INVENTORY)
- POND LOCATION
- PARCEL MAP
- BASIN DIVIDE
- FLOODPLAIN ZONE-A

N

1"=500'

BASIN 27
TOTAL=49.11 AC
IMPERVIOUS=14.40 AC
PERVIOUS=34.71 AC

CANAL REROUTING
SMF28-1
POND ACCESS

BASIN 28
TOTAL=43.35 AC
IMPERVIOUS=14.80 AC
PERVIOUS=28.55 AC

MINOR AGRICULTURAL CANAL

CANAL REROUTING
POND ACCESS
SMF29-1

R/W LINE

OKEECHOBEE COUNTY LINE
INDIAN RIVER COUNTY LINE

3255 3260 3265 3270 3275 3280 3285 3290 3295 3300 3305 3310 3315 3320 3325 33

SR 91

R/W LINE

EXTEND 12'X13' BRIDGE CULVERT

BASIN 29
TOTAL=16.25 AC
IMPERVIOUS=5.75 AC
PERVIOUS=10.50 AC

SJRWMD OWNED PARCELS
(FLORIDA CONSERVATION LANDS)

FORT DRUM MARSH CONSERVATION AREA

REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP POST-DEVELOPMENT	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	CHANDRA S. RAMAN, P.E. LICENSE NUMBER: 58740 APEX ENGINEERS, INC. 10175 FORTUNE PARKWAY, UNIT 704. JACKSONVILLE, FLORIDA 32256	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		18
					SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01		

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

3/10/2025 6:37:50 PM RoshanM
C:\Users\RoshanMarripally\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\423374222O1\Drainage\DRMPRD02-Post Development.dgn

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS

LEGEND:

- FUTURE LAND USE
- WETLANDS (SOURCE: USFWS-NATIONAL WETLAND INVENTORY)
- POND LOCATION
- PARCEL MAP
- BASIN DIVIDE
- FLOODPLAIN ZONE-A

1"=500'

BASIN 29
TOTAL=16.25 AC
IMPERVIOUS=5.75 AC
PERVIOUS=10.50 AC

R/W LINE

CANAL REROUTING

SMF30-1

POND ACCESS

BASIN 30
TOTAL=33.18 AC
IMPERVIOUS=11.27 AC
PERVIOUS=21.91 AC

SR 91

INDIAN RIVER COUNTY LINE
OKEECHOBEE COUNTY LINE

MINOR AGRICULTURAL CANAL

CANAL REROUTING

SMF31-1

POND ACCESS

SJRWMD OWNED PARCELS

3335 3340 3345 3350 3355 3360 3365 3370 3375 3380 3385 3390 3395 3400

EXTEND 8'X4' CONCRETE BOX CULVERT

R/W LINE

BASIN 31
TOTAL=31.46 AC
IMPERVIOUS=9.79 AC
PERVIOUS=21.67 AC

SJRWMD OWNED PARCELS
(FLORIDA CONSERVATION LANDS)

FORT DRUM MARSH CONSERVATION AREA

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E.
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704.
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

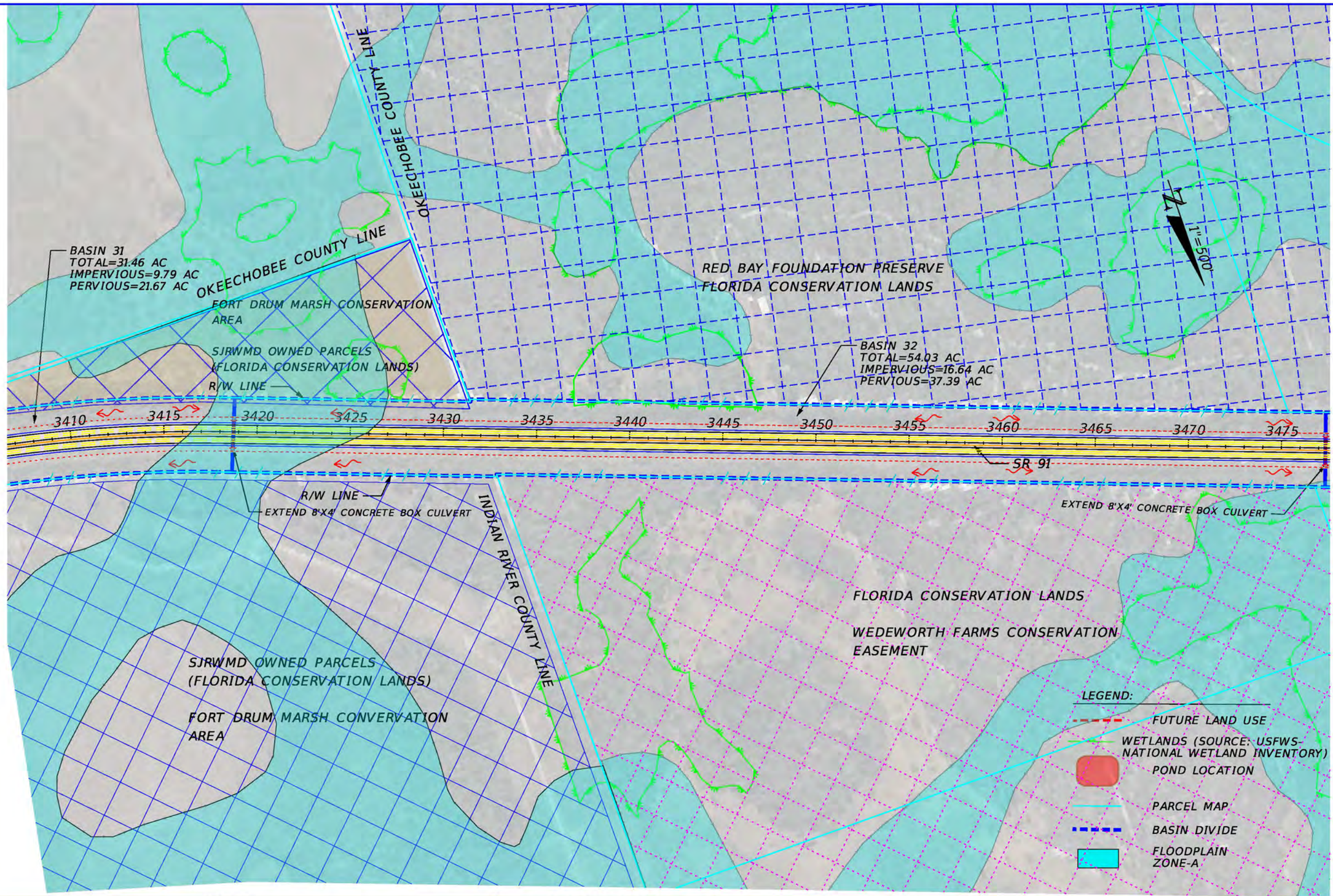
DRAINAGE MAP POST-DEVELOPMENT

SHEET NO. 19

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

3/10/2025 6:37:56 PM RoshanM
C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\423374220\Drainage\DRMPROD2-Post Development.dgn

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E.
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704.
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

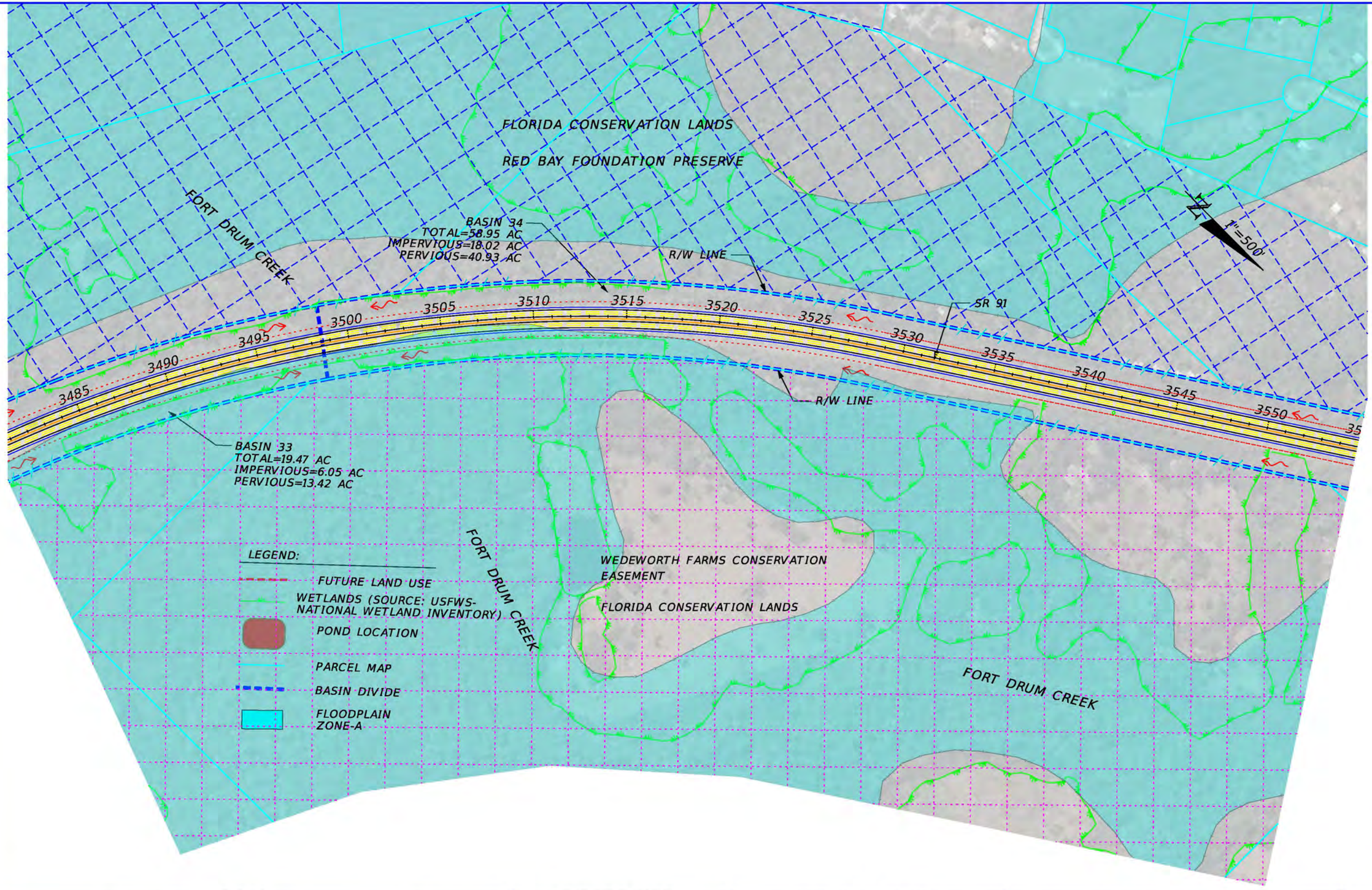
DRAINAGE MAP POST-DEVELOPMENT

SHEET NO. 20

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

3/10/2025 6:38:03 PM RoshanM
C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\423374222201\Drainage\DRMPRD02-Post Development.dgn

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS



REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	CHANDRA S. RAMAN, P.E. LICENSE NUMBER: 58740 APEX ENGINEERS, INC. 10175 FORTUNE PARKWAY, UNIT 704. JACKSONVILLE, FLORIDA 32256	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	DRAINAGE MAP POST-DEVELOPMENT	21
					SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01		

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

3/10/2025 6:38:09 PM RoshanM
C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\423374222201\Drainage\DRMPRD02-Post Development.dgn

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS

FLORIDA CONSERVATION LANDS

RUSSAKIS RANCH GOPHER TORTOISE LONGTERM

RECIPIENT SITE

FLORIDA CONSERVATION LANDS

BASIN 34
TOTAL=58.95 AC
IMPERVIOUS=18.02 AC
PERVIOUS=40.93 AC

RED BAY FOUNDATION PRESERVE

BASIN 35
TOTAL=21.99 AC
IMPERVIOUS=7.12 AC
PERVIOUS=14.87 AC

REPLACE 4'X4' CONCRETE BOX CULVERT

BASIN 36
TOTAL=13.87 AC
IMPERVIOUS=4.30 AC
PERVIOUS=9.57 AC

POND ACCESS THROUGH
OSOWOU ROAD
SMF36-1

OSOWOU RD

EXTEND 12'X13.5' BRIDGE CULVERT

BASIN 37
TOTAL=14.45 AC
IMPERVIOUS=4.47 AC
PERVIOUS=9.98 AC

R/W LINE

JIM GREEN CREEK

1"=500'

3560 3565 3570 3575 3580 3585 3590 3595 3600 3605 3610 3615 3620

REPLACE 4'X4' CONCRETE BOX CULVERT

3661ST TRAIL

SR 91

R/W LINE

FLORIDA CONSERVATION LANDS
WEDEWORTH FARMS CONSERVATION
EASEMENT

SITE 12 - WEDGWORTH FARMS INC-FORT DRUM (LOW RISK)

FORT DRUM CREEK

FORT DRUM CREEK

FORT DRUM CREEK

JIM GREEN CREEK

LEGEND:

- FUTURE LAND USE
- WETLANDS (SOURCE: USFWS-NATIONAL WETLAND INVENTORY)
- POND LOCATION
- PARCEL MAP
- BASIN DIVIDE
- FLOODPLAIN ZONE-A
- POTENTIAL CONTAMINATED SITE

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E.
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704.
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

DRAINAGE MAP POST-DEVELOPMENT

SHEET NO. 22

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

3/12/2025 5:32:19 PM RoshanM
C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\423374220\1\Drainage\DRMPROD02-Post Development Design.dgn

© 2025 Microsoft Corporation Earthstar Geographics SIO

SITE 13 - FORT DRUM SERVICE PLAZA/FLORIDA'S TURNPIKE MP 184 (MEDIUM RISK)

FLORIDA CONSERVATION LANDS
RUSSAKIS RANCH GOPHER TORTOISE LONGTERM
RECIPIENT SITE

JIM GREEN CREEK

BASIN 38
TOTAL=23.48 AC
IMPERVIOUS=8.21 AC
PERVIOUS=15.27 AC

BASIN 39
TOTAL=25.05 AC
IMPERVIOUS=9.65 AC
PERVIOUS=15.40 AC

BASIN 40
TOTAL=36.71 AC
IMPERVIOUS=11.40 AC
PERVIOUS=25.31 AC

N

1"=500'

R/W LINE

SR 91

EXTEND 6'X4' CONCRETE BOX CULVERT

PACKAGE PLANT POND THAT TREATS EFFLUENT PERMITTED THROUGH DEP (WASTE WATER TREATMENT PONDS) IS OWNED BY FTE.

FORT DRUM SERVICE PLAZA

FORT DRUM CREEK

LEGEND:

- FUTURE LAND USE
- WETLANDS (SOURCE: USFWS-NATIONAL WETLAND INVENTORY)
- POND LOCATION
- PARCEL MAP
- BASIN DIVIDE
- FLOODPLAIN ZONE-A
- POTENTIAL CONTAMINATED SITE

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E.
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704.
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

DRAINAGE MAP POST-DEVELOPMENT

SHEET NO. 23

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

3/12/2025 3:05:42 PM RoshanM
C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\423374222201\Drainage\DRMPRD02-Post Development.dgn

© 2025 Microsoft Corporation Earthstar Geographics SIO

JIM GREEN CREEK

FLORIDA CONSERVATION LANDS
GRASSLAND RESERVE PROGRAM
EASEMENT#102

JIM GREEN CREEK

FLORIDA CONSERVATION LANDS

1"=500'

BASIN 41
TOTAL=27.35 AC
IMPERVIOUS=8.45 AC
PERVIOUS=18.90 AC

R/W LINE

SR 91

BASIN 42
TOTAL=14.86 AC
IMPERVIOUS=4.63 AC
PERVIOUS=10.23 AC

BASIN 43
TOTAL=54.93 AC
IMPERVIOUS=16.52 AC
PERVIOUS=38.41 AC

3705 3710 3715 3720 3725 3730 3735 3740 3745 3750 3755 3760 3765 3770 3775 37

EXTEND 4'X4' CONCRETE BOX CULVERT

R/W LINE

BASIN 40
TOTAL=36.71 AC
IMPERVIOUS=11.40 AC
PERVIOUS=25.31 AC

FLORIDA CONSERVATION LAND
WEDEWORTH FARMS CONSERVATION
EASEMENT

FLORIDA CONSERVATION LAND

LEGEND:

- FUTURE LAND USE
- WETLANDS (SOURCE: USFWS-NATIONAL WETLAND INVENTORY)
- POND LOCATION
- PARCEL MAP
- BASIN DIVIDE
- FLOODPLAIN ZONE-A

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E.
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704.
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

DRAINAGE MAP
POST-DEVELOPMENT

SHEET NO.
24

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

3/10/2025 6:38:29 PM RoshanM
C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\423374222O1\Drainage\DRWPRD02-Post Development.dgn

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS

BASIN 43
TOTAL=54.93 AC
IMPERVIOUS=16.52 AC
PERVIOUS=38.41 AC

JIM GREEN CREEK

JIM GREEN CREEK

FPC 1-A (4.45 AC)

FPC 1-B (7.67 AC)

R/W LINE

SMF43-1

SMF44-1

POND ACCESS

POND ACCESS

POND ACCESS

POND ACCESS

BASIN 44
TOTAL=12.29 AC
IMPERVIOUS=3.70 AC
PERVIOUS=8.59 AC

BASIN 45
TOTAL=22.73 AC
IMPERVIOUS=7.03 AC
PERVIOUS=15.70 AC

FLORIDA FOREVER LAND

1"=500'

3780 3785 3790 3795 3800 3805 3810 3815 3820 3825 3830 3835 3840 3845 3850

SR 91

R/W LINE

EXTEND 4'X4' CONCRETE BOX CULVERT

EXTEND 12'X12.9' BRIDGE CULVERT

OKEECHOBEE COUNTY LINE
OSCEOLA COUNTY LINE

SMF45-1

PADGETT BRANCH

PADGETT BRANCH

LEGEND:

- FUTURE LAND USE
- WETLANDS (SOURCE: USFWS-NATIONAL WETLAND INVENTORY)
- POND LOCATION
- PARCEL MAP
- BASIN DIVIDE
- FLOODPLAIN ZONE-A
- FPC- FLOODPLAIN COMPENSATION POND

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E.
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704.
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

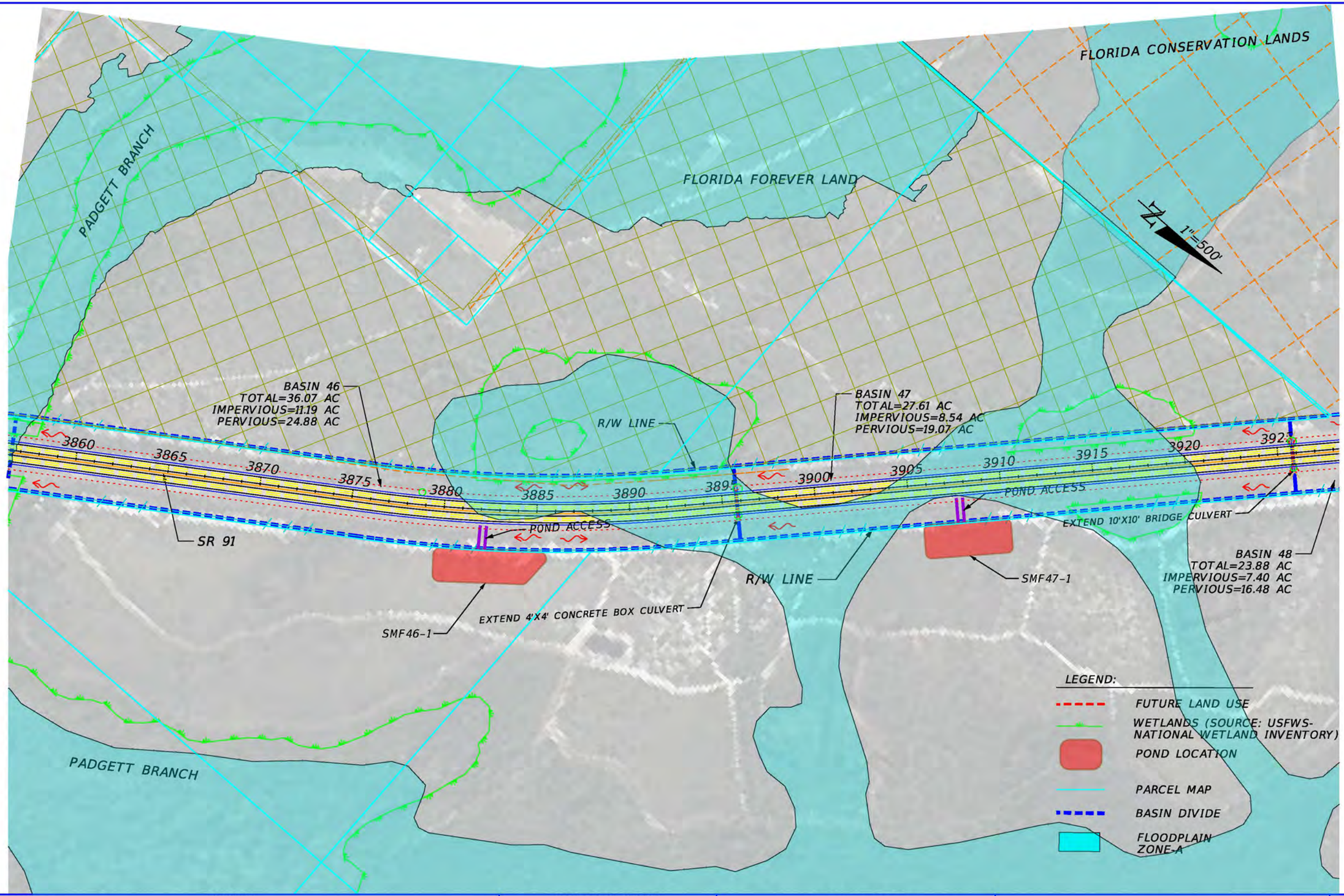
DRAINAGE MAP
POST-DEVELOPMENT

SHEET NO.
25

3/10/2025 6:38:38 PM RoshanM
C:\Users\RoshanMarripally\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\423374222201\Drainage\DRMPRD02-Post Development Map.dgn

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

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS

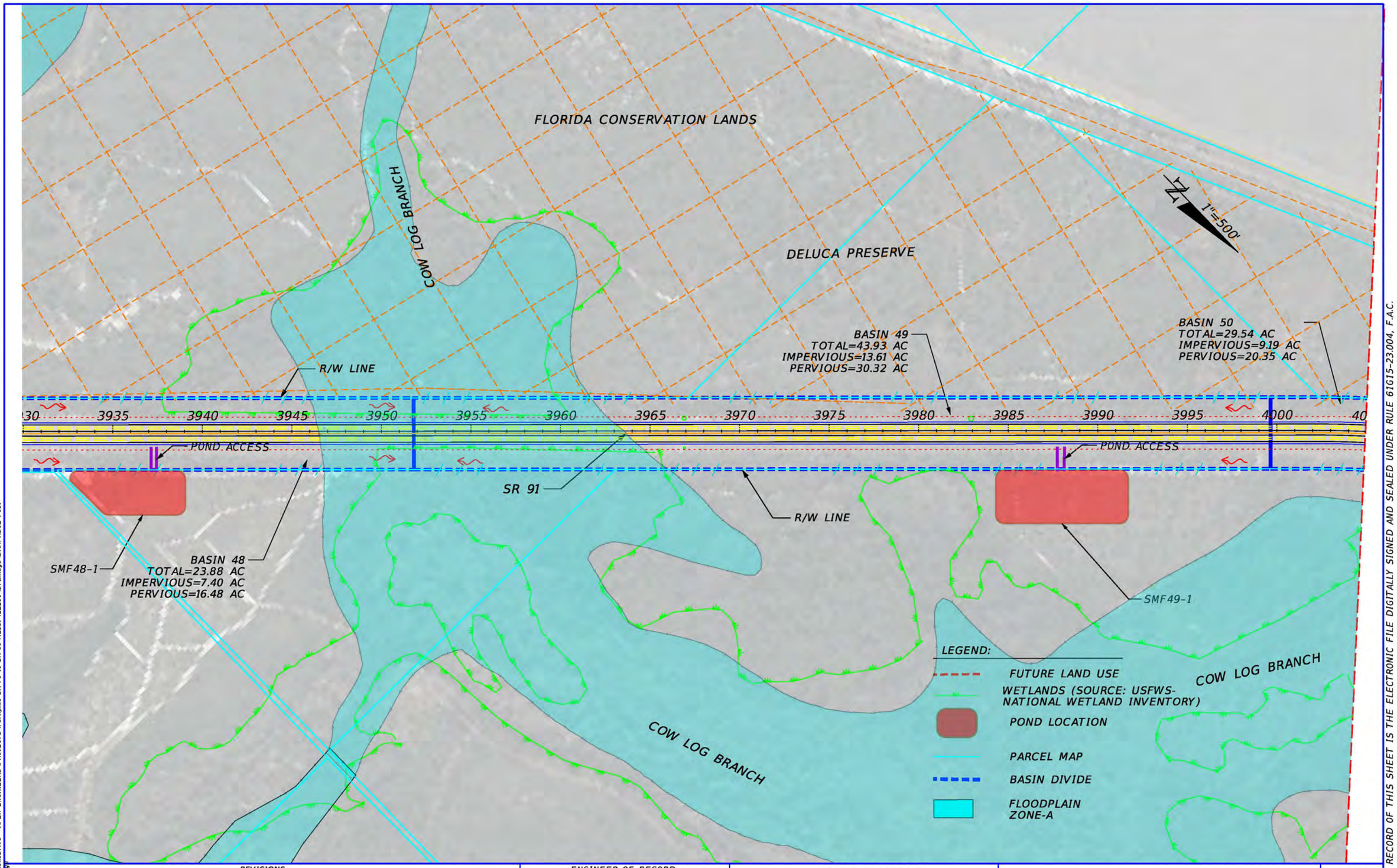


REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	CHANDRA S. RAMAN, P.E. LICENSE NUMBER: 58740 APEX ENGINEERS, INC. 10175 FORTUNE PARKWAY, UNIT 704. JACKSONVILLE, FLORIDA 32256	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	DRAINAGE MAP POST-DEVELOPMENT	26
					SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01		

3/10/2025 6:38:47 PM RoshanM
C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\423374222201\Drainage\DRMPRD02-Post Development.dgn

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

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

CHANDRA S. RAMAN, P.E.
LICENSE NUMBER: 58740
APEX ENGINEERS, INC.
10175 FORTUNE PARKWAY, UNIT 704.
JACKSONVILLE, FLORIDA 32256

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01

DRAINAGE MAP
POST-DEVELOPMENT

SHEET NO. 27

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

3/10/2025 6:38:57 PM RoshanM
C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\423374222\01\Drainage\DRMPRD02-Post Development design.dgn

© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Airbus DS

LEGEND:

- FUTURE LAND USE
- WETLANDS (SOURCE: USFWS-NATIONAL WETLAND INVENTORY)
- POND LOCATION
- PARCEL MAP
- BASIN DIVIDE
- FLOODPLAIN ZONE-A
- POTENTIAL CONTAMINATED SITE

SITE 24 - LATT MAXCY PROPERTY (LOW RISK)

1"=500'

COW LOG BRANCH

SITE 24 - LATT MAXCY PROPERTY (LOW RISK)

FLORIDA CONSERVATION LANDS

R/W LINE

4005 4010 4015 4020 4025 4030 4035 4040 4045 4050 4055 4060 4065 4070 4075

SR 91

SR 60

BASIN 50
29.54 AC

COW LOG BRANCH

BASIN 51
TOTAL=32.40 AC
IMPERVIOUS=9.93 AC
PERVIOUS=22.47 AC

SMF 52-2 {5.97 AC}

SMF 52-1 {6.51 AC}

R/W LINE

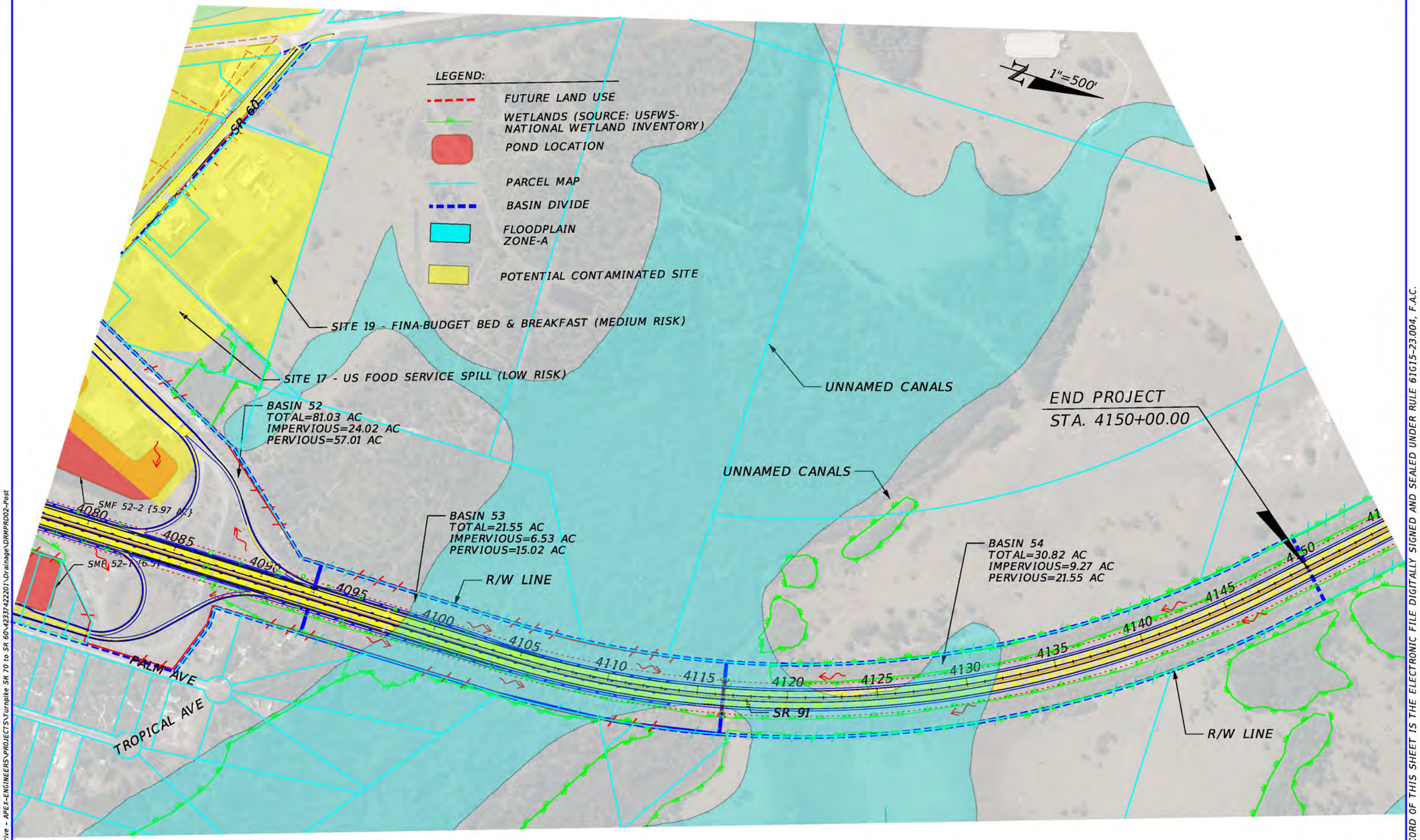
SR 60

© 2025 Microsoft Corporation Earthstar Geographics SIO

REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP POST-DEVELOPMENT	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	CHANDRA S. RAMAN, P.E. LICENSE NUMBER: 58740 APEX ENGINEERS, INC. 10175 FORTUNE PARKWAY, UNIT 704. JACKSONVILLE, FLORIDA 32256	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		28
					SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01		

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

3/12/2025 5:12:01 PM RoshanM
C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\423374222201\Drainage\DRMPRD02-Post Development.dgn



REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE MAP POST-DEVELOPMENT	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	CHANDRA S. RAMAN, P.E. LICENSE NUMBER: 58740 APEX ENGINEERS, INC. 10175 FORTUNE PARKWAY, UNIT 704. JACKSONVILLE, FLORIDA 32256	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		29
					SR 91	ST. LUCIE OKEECHOBEE INDIAN RIVER	423374-2-22-01		

3/12/2025 5:29:56 PM RoshanM
C:\Users\RoshanM\OneDrive - APEX-ENGINEERS\PROJECTS\Turnpike SR 70 to SR 60\423374222\Drainage\DRMPRD02-Post Development.dgn

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

© 2025 Microsoft Corporation Earthstar Geographics SIO