

FINAL LOCATION HYDRAULICS REPORT

Florida Department of Transportation

District Four

C.R. 510 Project Development and Environment (PD&E) Study

Limits of Project: C.R. 510/85 Street from C.R. 512 (M.P. 0.0) to 58 Ave (M.P. 5.283)

Indian River County, Florida

Financial Management Number: 405606-2-22-02

ETDM Number: 14233

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



Authorized Signature

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Title

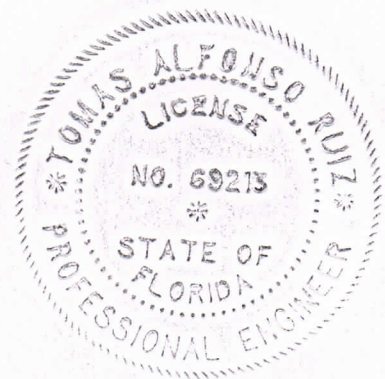
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## EXECUTIVE SUMMARY

The purpose of this report is to address the 100-year (base) floodplain encroachments resulting from the roadway improvements evaluated in the Project Development and Environment (PD&E) study for CR-510 from CR-512 to 58th Avenue. In accordance with Executive Order 11988m “Floodplain Management”, USDOT Order 5650.2, “Floodplain Management Protection”, and Federal-Aid Policy Guide 23 CFR 650A, floodplains must be protected. The intent of these regulations is to avoid or minimize highway encroachments within the base floodplains, and to avoid supporting land use development incompatible with floodplain values.

The scope of this project includes reconstruction of CR-510 from an existing two-lane roadway facility to one with four lanes. and replacement of three (3) bridges and two (2) culverts. This project is located in Indian River County, Florida, in the vicinity of the City of Sebastian. Also, the project is located in Township 31 S - Range 38E - Sections 23, 25, and 26 & Township 31 S - Range 39 E - Sections 21 and 30.

A review of the Flood Insurance Rate Map (FIRM) published by Federal Emergency Management Agency (FEMA), indicates that the study area is located in Special Flood Zones A, AE, X and X500. The portion of the study area located in Zone A has a 1% annual chance of being flooded by the base flood (100-year storm) with no base flood elevation determined. Areas located in Zone AE also has a 1% annual chance of being flooded by the 100-year storm with base flood elevations determined. Areas identified in Zones X & X500 are estimated to have less than 1 foot or no flooding at all during the 100-year storm.

The northbound/southbound portion of CR-510, between CR-512 and just north of 86th St, is located in Zone AE with base elevations ranging from 18.5 to 20.0-ft NAVD (20.0 to 21.5-ft NGVD). The eastbound/westbound portion of CR-510, located between 90th Avenue and 58th Avenue, is mainly located in Zone X. A negligible portion of the eastbound/westbound corridor is located in Zones A and AE. The portion of CR-510 located in Zone AE has a base flood elevation of 15.5-ft NAVD (17.0-ft NGVD).

Although this project involves work within the horizontal limits of the 100-year floodplain, no work is being performed below the 100-year flood elevation and, as a result, this project does not encroach upon the base floodplain.

This project will affect several cross drains due to the widening of the CR-510 roadway. Recommendations for culvert replacement or extension are given in **Section 5** of the report. It is necessary to ensure that adequate hydraulic capacity and no adverse effects on downstream and upstream canal stages.

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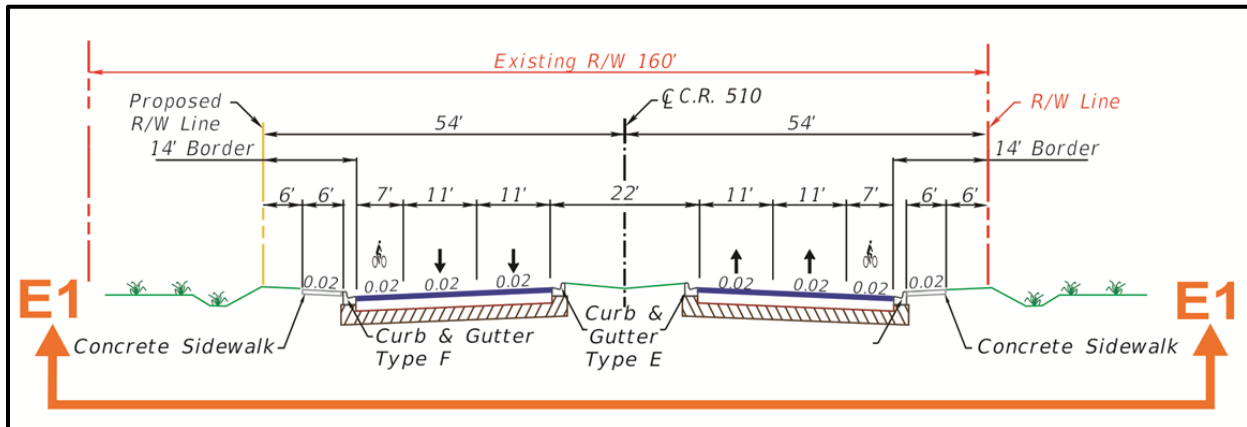
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# 1 INTRODUCTION

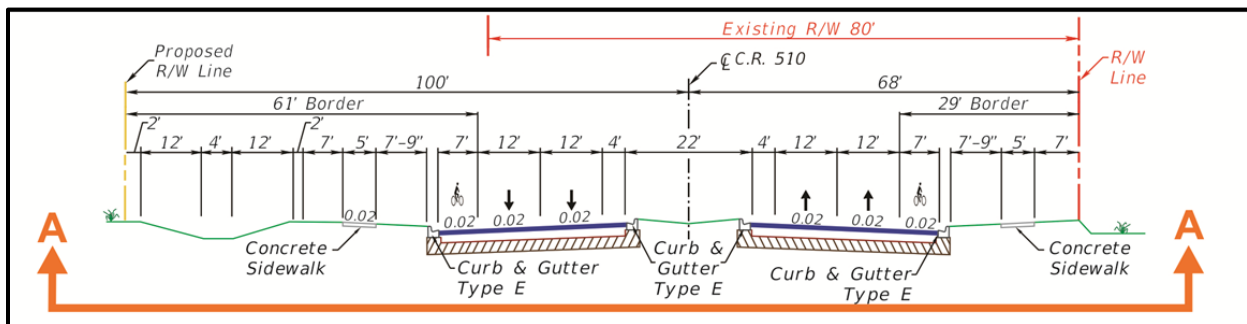
The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) Study for the widening and reconstruction of CR-510 from CR-512 to 58th Avenue. The purpose of this report is to address the 100-year (base) floodplain encroachments resulting from the roadway improvements evaluated in the Project Development and Environment (PD&E) study for CR-510 from CR-512 to 58th Avenue. In accordance with Executive Order 11988m "Floodplain Management", USDOT Order 5650.2, "Floodplain Management Protection", and Federal-Aid Policy Guide 23 CFR 650A, floodplains must be protected. The intent of these regulations is to avoid or minimize highway encroachments within the base floodplains, and to avoid supporting land use development incompatible with floodplain values.

## 1.1 PROJECT DESCRIPTION

The scope of this project includes reconstruction of CR-510 from an existing two-lane roadway facility to one with four lanes. The project was broken down into four (4) distinct segments. Each segment has unique characteristics as well as potential differences in right-of-way, operational, geometric and environmental features. These segments consist of Urban and/or Sub-Urban typical sections. A representation of each section is shown in **Figures 1-1** and **1-2** below. Refer to **Appendix A** for typical sections for the recommended alternative. Also, the scope of this project involves the replacement of three (3) bridges and two (2) culverts.



**Figure 1-1: Urban typical section**



**Figure 1-2: Sub-Urban typical section**

## 1.2 PROJECT LOCATION

This project is located in Indian River County, Florida, in the vicinity of the City of Sebastian. Also, the project is located in Township 31 S - Range 38E - Sections 23, 25, and 26 & Township 31 S - Range 39 E - Sections 21 and 30. Refer to **Figure 1-3** for the location of the project.

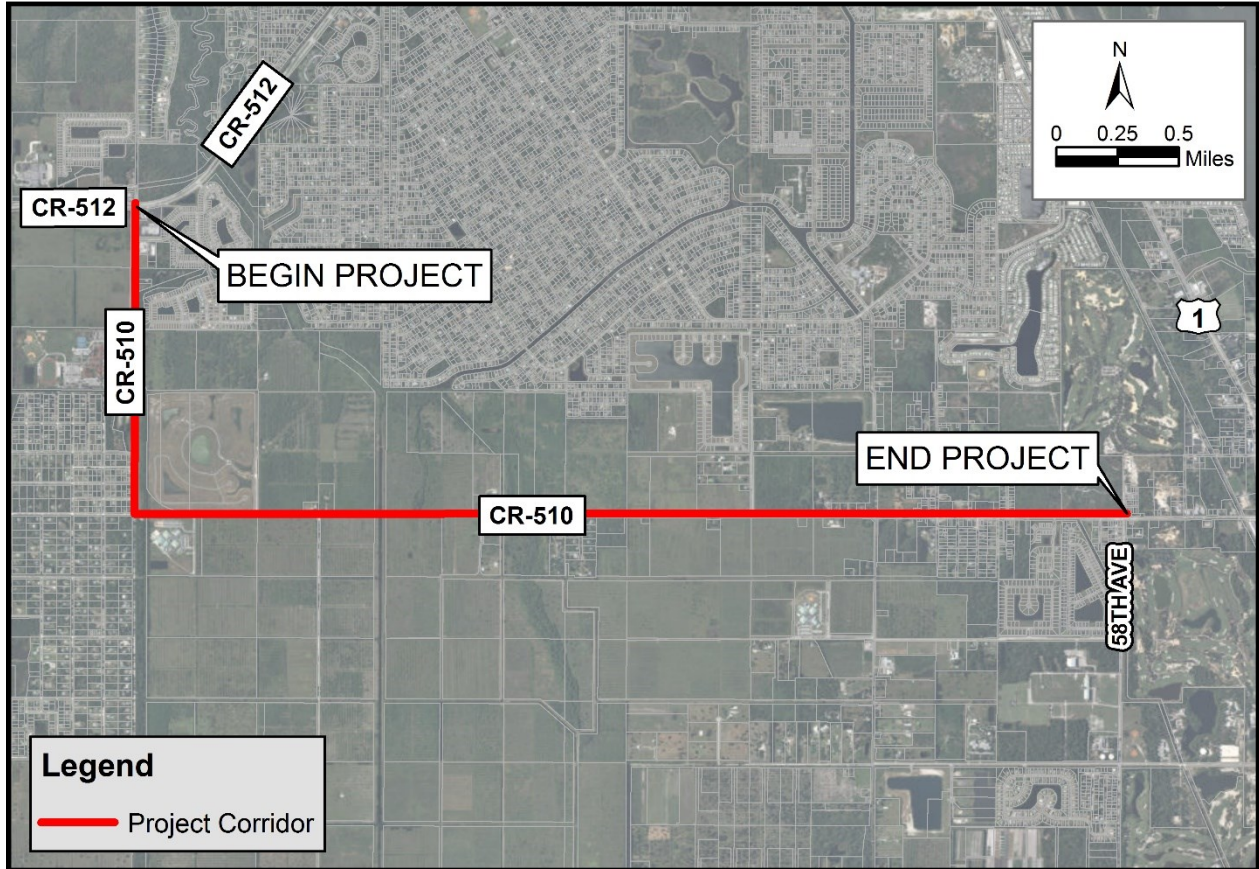


Figure 1-3: Project Area

## 2 LAND USE

### 2.1 Existing Land Use

According to Indian River County Zoning Maps, the project is located in the following zoning areas: Agriculture, Limited Commercial, Public Land Conversation, Planned Development Traditional Neighborhood Design, Multi-Family Residential, and Single-Family Residential. Proposed roadway improvements will occur in all of the zoning area except for Public Land Conversation. Refer to **Appendix B** for Indian River County Existing Zoning Maps.

### 2.2 Future Land Use

According to the 2030 Indian River County Future Land Use Map, revised on January 12, 2016, future land uses in the project area will remain unaltered with the exception of an agricultural zoning area north of CR 510, between Shakespeare St and 66<sup>th</sup> Ave. This area has been designated as future residential land. See **Appendix B** for the 2030 Indian River County Future Land Use Map.



### 3 EXISTING CONDITIONS

#### 3.1 Hydrologic Data

Historical rainfall data was obtained from the St John's River Water Management District (SJRWMD) Average Rainfall Maps. See **Table 3-1** below for average rainfall for various rainstorm events within the project area and **Appendix C** for the SJRWMD Average Rainfall Maps.

<b>Table 3-1: SJRWMD Average Rainfall Data</b>	
<b>Rainstorm Event</b>	<b>Rainfall (inches)</b>
10-Year 24-Hour	7.6
25-Year 24-Hour	9.4
100-Year 24-Hour	12.2
10-Year 48-Hour	8.7
25-Year 48-Hour	10.5
100-Year 48-Hour	13.6
10-Year 96-Hour	9.8
25-Year 96-Hour	11.9
100-Year 96-Hour	15.2

### 3.2 Base Floodplain

The Federal Emergency Management Agency (FEMA) website was reviewed to find the latest Flood Insurance Rate Maps (FIRM) for the project area. FIRM Community Panel Numbers 12061C0078 F, 12061C0087 F and 12061C0090 F dated December 4, 2012, indicates that a small portion of the study area is located in the 100-year floodplain. See **Appendix D** for FEMA FIRM and **Figure 3-1** below for the FEMA flood zones within the project limits.

A review of the Flood Insurance Rate Map (FIRM) published by Federal Emergency Management Agency (FEMA), indicates that the study area is located in Special Flood Zones A, AE, X and X500. The portion of the study area located in Zone A has a 1% annual chance of being flooded by the base flood (100-year storm) with no base flood elevation determined. Areas located in Zone AE also has a 1% annual chance of being flooded by the 100-year storm with base flood elevations determined. Areas identified in Zones X & X500 are estimated to have less than 1 foot or no flooding at all during the 100-year storm.

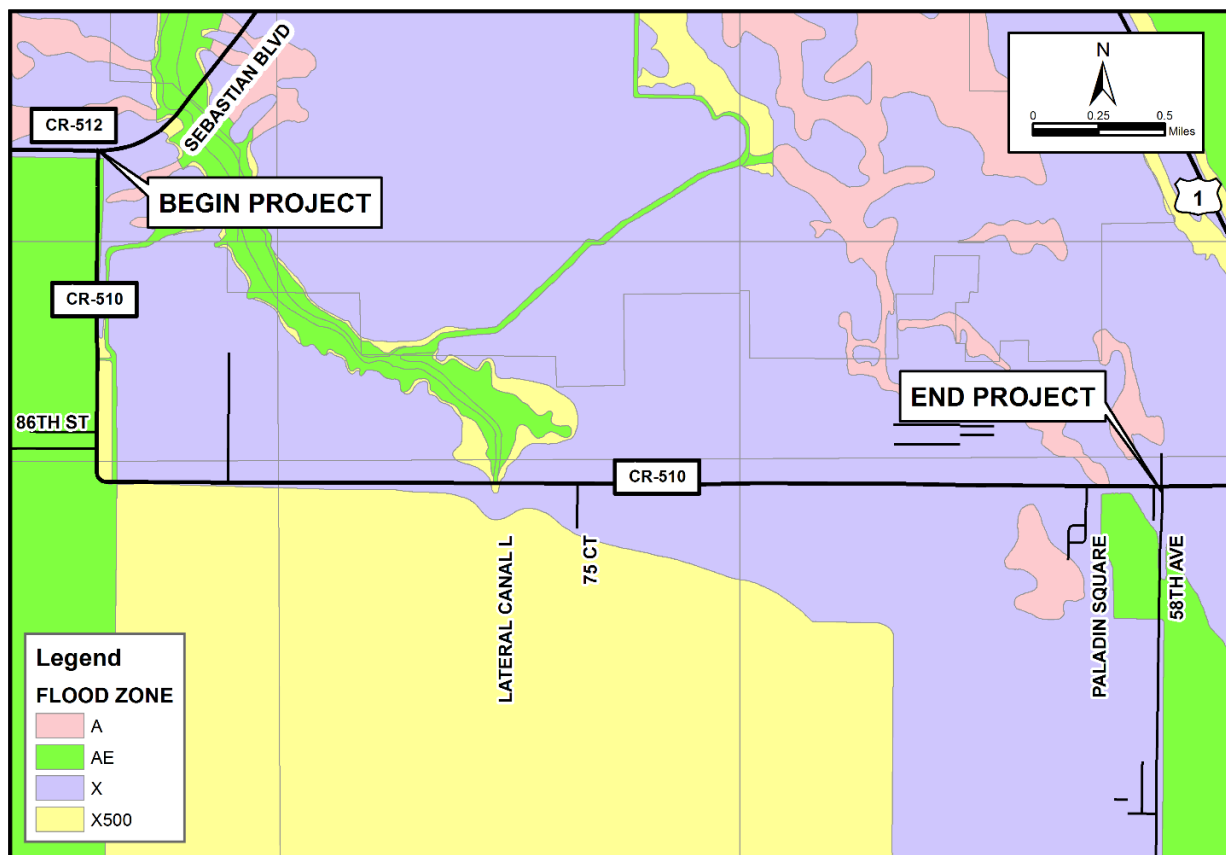


Figure 3-1: FEMA Flood Zones

The northbound/southbound portion of CR-510, between CR-512 and just north of 86th St, is located in Zone AE with base elevations ranging from 18.5 to 20.0-ft NAVD (20.0 to 21.5-ft NGVD). The eastbound/westbound portion of CR-510, located between 90th Avenue and 58th Avenue, is mainly located in Zone X. A negligible portion of the eastbound/westbound corridor is located

in Zones A and AE. The portion of CR-510 located in Zone AE has a base flood elevation of 15.5-ft NAVD (17.0-ft NGVD). See **Table 3-2** below for a summary of the floodplain for various locations within the study area.

<b>Table 3-2: Floodplain Summary</b>						
<b>Section Name</b>	<b>Road Section Description</b>	<b>Flood Zone</b>	<b>Base El. (ft-NGVD)</b>	<b>Base El. (ft-NAVD)</b>	<b>Existing El.<sup>1</sup> (ft-NAVD)</b>	<b>Proposed Roadway Recommendation</b>
1	CR-510 from CR-512 to 86 <sup>th</sup> St	AE, X, X500	20.0 to 21.5	18.5 to 20.0	Min 18.5 to 20.0-ft	Maintain existing elevation of 18.5-ft
2	CR-510 from 86 <sup>th</sup> St to Lateral Canal L	X	-	-	-	Maintain existing elevation
3	CR-510 from Lateral Canal L to 75 Ct	AE, X, X500	17.0	15.5	Min 17.0-ft	Maintain existing elevation of 17.0-ft
4	CR-510 from 75 Ct to Paladin Square	X	-	-	-	Maintain existing elevation
5	CR-510 from Paladin Square to 58 <sup>th</sup> Ave	A, X	-	-	-	Maintain existing elevation

<sup>1</sup> Existing elevations were obtained from Topo CADD files.

All elevations are based on the NAVD88 datum. To convert to NGVD29 datum, a shift of (+)1.463 feet is needed, as found by using the National Geodetic Survey VERTCON online tool. The proposed roadway edge of pavement will vary within the project area. To ensure that the roadway remains open to traffic during the 100-year flood, minimum elevations were proposed in **Table 3-2** above.

No adverse impacts are anticipated to the floodplain, as required by the SJRWMD permitting process. Encroachments due to the proposed roadway improvements are being compensated within the proposed stormwater management system, through the use of wet-detention and dry retention ponds.

### 3.3 Soil Properties

Geotechnical data was obtained from a Geotechnical Report prepared for this study. See **Appendix E** and **Table 3-2** for the soil properties. A review of the documentation indicates that percolation rates along the project corridor are fairly poor with values ranging from 1.15 to 9.69 E-05 cfs/ft<sup>2</sup>. Exfiltration trenches will not be proposed for this project. However, the hydraulic conductivity values are reported for future reference, if needed.

Based on a desktop review of the U.S. Department of Agriculture (USDA) soil map for Indian River County, nine (9) general mapping units underlie the existing and potential pond sites in the study area. Drainage properties of soils within the project area range from poor to moderately well. Refer to **Appendix E** for soil types.

**Table 3-2: Soil Properties**

<b>Map Unit Symbol</b>	<b>Map Unit Name</b>	<b>Description</b>
3	EauGallie fine sand	Hydrologic Soil Group A/D poorly drained
5	Myakka- Myakka, wet, fine sands, 0 to 2 percent slopes	Hydrologic Soil Group A/D poorly drained
6	Oldsmar fine sand	Hydrologic Soil Group A/D poorly drained
10	Riviera Fine sand, 0 to 2 percent slopes	Hydrologic Soil Group A/D poorly drained
12	Archbold sand, 0 to 5 percent slopes	Hydrologic Soil Group A moderately well drained
13	Wabasso fine sand	Hydrologic Soil Group C/D poorly drained
14	Winder fine sand, 0 to 2 percent slopes	Hydrologic Soil Group C/D poorly drained
16	Pineda fine sand	Hydrologic Soil Group C/D poorly drained
51	Riviera fine sand, depressional, 0 to 1 percent slopes	Hydrologic Soil Group A/D very poorly drained

## 4 EXISTING DRAINAGE BASINS

The project area was divided into ten (10) main drainage systems (i.e. Basin 1 to 10), as shown in **Figure 4-1**. Basin numbers were assigned in increments of 1, starting from the basin at the project begin location. These basins have a combined total area of 145 Acres. Basin delineation was primarily based on existing drainage divides such as canals, intersections, and other high points.

Based on a Desktop Analysis and Field Review, existing offsite properties are draining into the County's Right-of-Way for basins 1, 2, 3, 5, 6, 7, 8, 9 and 10. To prevent comingling of offsite runoff with onsite runoff, a secondary swale or offsite drainage system is proposed. Two different types of offsite drainage systems are proposed. For basins 1, 2, 5, 6, 7 and a portion of 8, existing homes are not close to the Right of Way line. As such, an Open Swale Offsite Drainage System with a 4 feet bottom width, 1V:4H side slopes, located in a 32 feet wide easement is proposed for these areas. For basins 3, 9 and a portion of 8, there are existing homes near the proposed CR-510 Right of Way. As such, a 48 inch-wide Trunkline Offsite Drainage System, located in a 20 feet easement, is proposed for these areas. See **Figure 4-2** for the location of the proposed offsite drainage.

### 4.1 Basin 1

Basin 1 covers CR-510 from CR-512 to 600-ft. south of Stone Point Drive. The drainage area is approximately 3.17 Acres in size. The total impervious area is approximately 2.09 Acres. A review of previous drainage plans and existing permit documentation shows that runoff is being conveyed towards the north via roadside swales, pipes and culverts, and outfalls to Pond D.

### 4.2 Basin 2

Basin 2 covers CR-510 from 600-ft. south of Stone Point Drive to 89th Street. The drainage area is approximately 6.58 Acres in size. The total impervious area is approximately 3.41 Acres. A review of previous drainage plans and existing permit documentation shows that runoff from the north and south portion (with respect to 400-ft. north of Mako Way) of the basin is being conveyed by roadside swales, pipes and culverts and ultimately discharges into Lateral Canal D. In addition, runoff from the southwest portion of the basin discharges into Lake A.

### 4.3 Basin 3

Basin 3 covers CR-510 from 89th Street to 85th Street. The drainage area is approximately 7.65 Acres in size. The total impervious area is approximately 3.12 Acres. A review of the previous drainage plans and existing permit documentation shows that runoff from the left side of the north portion of this basin (with respect to 86th St) is being conveyed to Lake A via roadside swales and sheet flow. Runoff from all other areas within this basin, is conveyed towards the south and ultimately discharges into Lateral Canal D.

### 4.4 Basin 4

Basin 4 covers CR-510 from Lateral Canal D to 86th Ave. The drainage area is approximately 6.69 Acres in size. The total impervious area is approximately 2.73 Acres. A review of the previous drainage plans and permit documentation shows that runoff from this basin is being conveyed

toward the west by roadside swales, pipes and culverts and ultimately discharges into Lateral Canal D. Currently, there are existing connections to two wet detention ponds of Bluewater Bay PUD for treatment before discharging into the South Prong of the Sebastian River.

#### **4.5 Basin 5**

Basin 5 covers CR-510 from 86th Ave to Lateral Canal C. The drainage area is approximately 10.14 Acres in size. The total impervious area is approximately 1.93 Acres. A review of the previous drainage plans shows that runoff from this basin is being conveyed toward the east by roadside swales, pipes and culverts and discharges directly into Lateral Canal C.

#### **4.6 Basin 6**

Basin 6 covers CR-510 from Lateral Canal C to Lateral Canal L. The drainage area is approximately 10.03 Acres in size. The total impervious area is approximately 1.91 Acres. A review of the previous drainage plans shows that runoff from this basin is being conveyed toward the west and east by roadside swales, pipes and culverts. Runoff from the west portion of the basin (with respect to 900-ft. west of 79th Ter) discharges directly into Lateral Canal C and runoff from the east portion of the basin discharges directly into Lateral Canal L.

#### **4.7 Basin 7**

Basin 7 covers CR-510 from Lateral Canal L to approximately 2,500-ft. west of 70th Ave. The drainage area is approximately 10.22 Acres in size. The total impervious area is approximately 1.95 Acres. A review of the previous drainage plans shows that runoff from this basin is being conveyed toward the west by roadside swales, pipes and culverts and discharges directly into Lateral Canal L.

#### **4.8 Basin 8**

Basin 8 covers CR-510 from approximately 2,500-ft. west of 70th Ave to 66th Ave. The drainage area is approximately 20.63 Acres in size. The total impervious area is approximately 3.93 Acres. Runoff from this basin is being conveyed toward the west by roadside swales, pipes and culverts and ultimately discharges into Lateral Canal L.

#### **4.9 Basin 9**

Basin 9 covers CR-510 from 66th Ave to 62nd Ave. The drainage area is approximately 6.30 Acres in size. The total impervious area is approximately 1.94 Acres. Runoff from this basin is being conveyed toward the west by roadside swales, pipes and culverts and ultimately discharges into Lateral Canal L.

#### **4.10 Basin 10**

Basin 10 covers CR-510 from 62th Ave to 58th Ave. The total impervious area is approximately 2.49 Acres. Runoff from this basin is being conveyed by roadside swales, pipes and culverts and discharges into Sub-Lateral G-S canal.

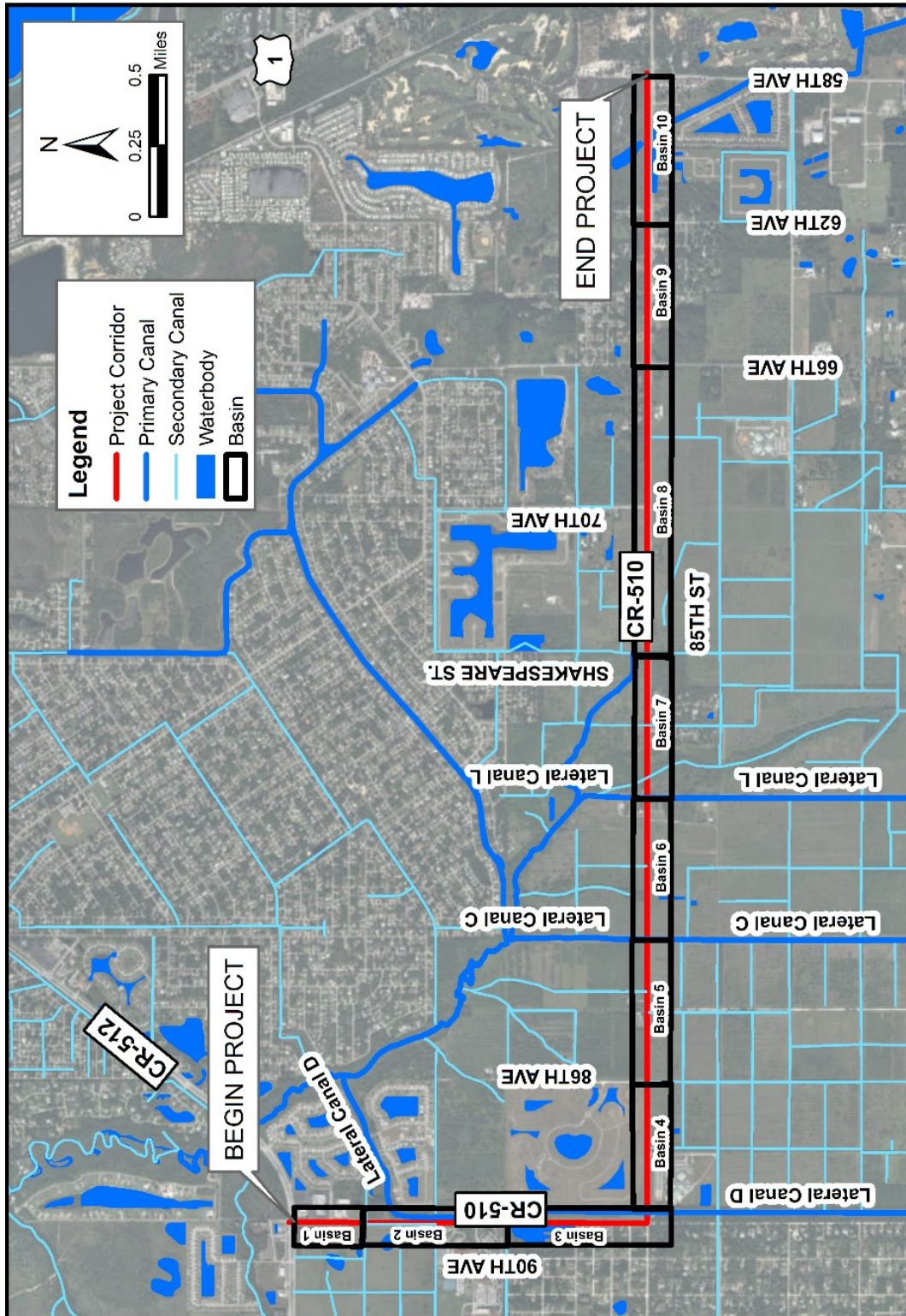


Figure 4-1: Drainage Basins

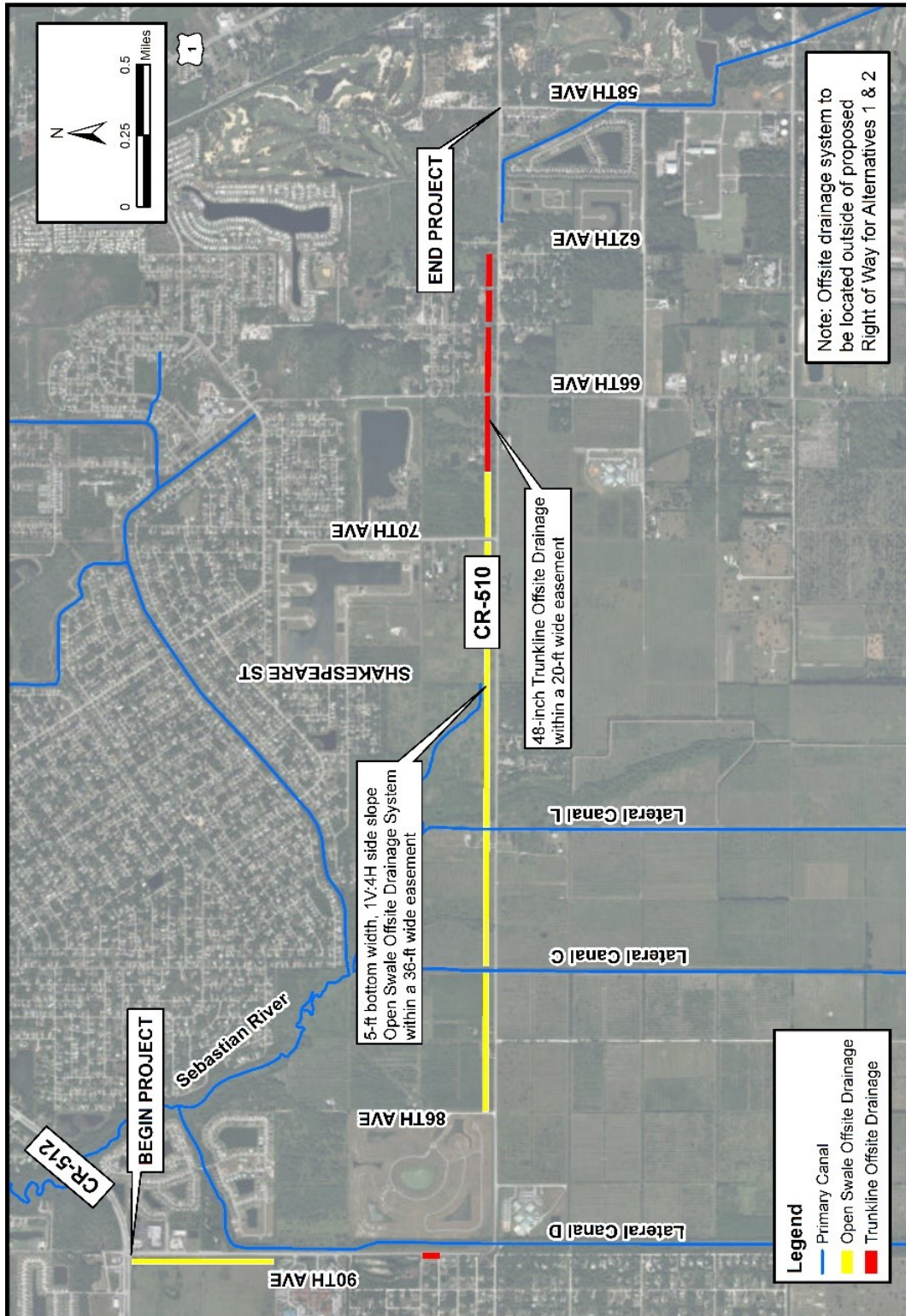


Figure 4-2: Proposed Offsite Drainage System



## 5 EXISTING CROSS DRAINS (CD)

There are four (4) identified cross drains in this project. See below for a description of each cross drain. Refer to **Figure 6-1** for a map of the cross drains within the project area.

### 5.1 Culvert 1 (CD 1)

Culvert 1 (CD 1) is a 48" Reinforced Concrete Pipe (RCP), with a length of 102-ft., that runs under CR-510 approximately 600 ft. south of Stony Point Drive. This culvert is used to connect Lateral D Canal Watershed to Sebastian River Watershed. Proposed conditions, under the recommended alternative, include the widening of CR-510 on both sides of the roadway. To maintain the regional drainage pattern, an extension of CD 1 on both sides will be needed. CD 1 will should be extended 15-ft towards the west and 2-ft toward the east.

### 5.2 Culvert 2 (CD 2) - Box Culvert

Culvert 2 (CD 2) is a box culvert that is located at the intersection of CR-510 and 89th Street. It has a length of 106-ft., depth of 10-ft., and a width of 18-ft. to the west and 14-ft. to the east. This culvert was designed to connect Lateral D Canal Watershed to Sebastian River Watershed. Proposed conditions, under the recommended alternative, involve realignment and widening of CR-510 towards the east. To maintain the regional drainage pattern, a culvert replacement will be needed. A box culvert of length 121-ft. will be required.

### 5.3 Culvert 3 (CD 3)

Culvert 3 (CD 3) is a 36" Corrugated Metal Pipe (CMP) with a length of 42-ft. This culvert runs under CR-510 and is located approximately 977 ft. east of 75th Ct. Culvert 3 (CD 3) was designed to connect the Lateral L Canal Watershed to the Sebastian River Watershed. The proposed roadway alignment and widening is towards the north. To maintain the regional drainage pattern, a culvert replacement will be needed. A culvert of length 134-ft will be required for the recommended alternative.

### 5.4 Culvert 4 (CD 4)

Culvert 4 (CD 4) has a north pipe of 24" Reinforced Concrete Pipe (RCP) with a length of 42-ft and a south pipe of 24" Corrugated Metal Pipe (CMP) with a length of 41-ft. This culvert runs under CR-510 and is located approximately 960 ft. west of 58th Ave. Culvert 4 (CD 4) was designed to connect the Lateral G Canal Watershed to the Sebastian River Watershed. For the recommended alternative, the proposed roadway alignment and widening is towards the south. To maintain the regional drainage pattern, a culvert replacement will be needed. A culvert of length 104-ft will be required.

## **6 WATERBODY CROSSINGS (WC)**

There are four (4) identified waterbody crossings in this project. Roadway improvements will involve work within the jurisdiction of St John River Florida Water Management District (SJRWMD), Sebastian River Water Improvement District (SRID) and Indian River Farms Water Control District (IRFWCD). See below for a description of the waterbody crossings within the project area. Refer to **Figure 6-1** for a map of the waterbody crossings within the project area.

### **6.1 WC 1 (Bridge No. 880047)**

Existing Bridge 880047 is located at the intersection of CR-510 and approximately 233 ft. east of 90th Avenue. This bridge carries CR-510 eastbound and westbound traffic over Lateral D Canal. FDOT is proposing to place a culvert crossing at Lateral Canal-D to accommodate the proposed roadway alignment, with a wider horizontal curve. The new curve will improve the turning radius for traffic safety. Existing Bridge 880047 will be removed for the recommended alternative and a triple-box culvert will be installed at Lateral D Canal where realigned CR-510 crosses the canal. Preliminary calculations indicate that a triple box culvert and the existing bridge will provide a similar hydraulic flow capacity since required hydraulic capacity with the allowable backwater increment of 0.1-ft., a triple box culvert is being proposed to address potential clogging and maintenance concerns. The proposed culvert provides a minimum drift clearance of 1-ft. above the 100-Year FEMA elevation.

### **6.2 WC 2 (Bridge No. 880063)**

Existing Bridge 880063 is located at the intersection of CR-510 and approximately 79 ft. west of 82nd Avenue. This bridge carries CR-510 eastbound and westbound traffic over Lateral C Canal. Existing Bridge 880063 will be removed for the recommended alternative and a new bridge will be installed over Lateral C Canal to accommodate the proposed widening of CR-510. Existing plans show that the bridge at this location consists of timber and steel piles with an overall length of 75-ft. The bridge proposed for this location will have an overall length of 85-ft.

### **6.3 WC 3 (Bridge No. 880044)**

Existing Bridge 880044 located at the intersection of CR-510 and approximately 433 ft. east of 79th Terrace. carries CR-510 eastbound and westbound traffic over the Lateral L Canal. Existing Bridge 880044 will be removed for the recommended alternative and a new bridge will be installed over Lateral L Canal to accommodate the proposed widening of CR-510.

### **6.4 WC 4 (Culvert Replaced with Bridge Structure)**

The existing 106" x 60" CMP culvert is currently a cross drain that is used to connect Lateral L Canal to the Sebastian River Watersheds. The existing 106" x 60" CMP culvert will be removed for the recommended alternative and replaced with a bridge structure. For more information, refer to the Bridge Hydraulics Report.

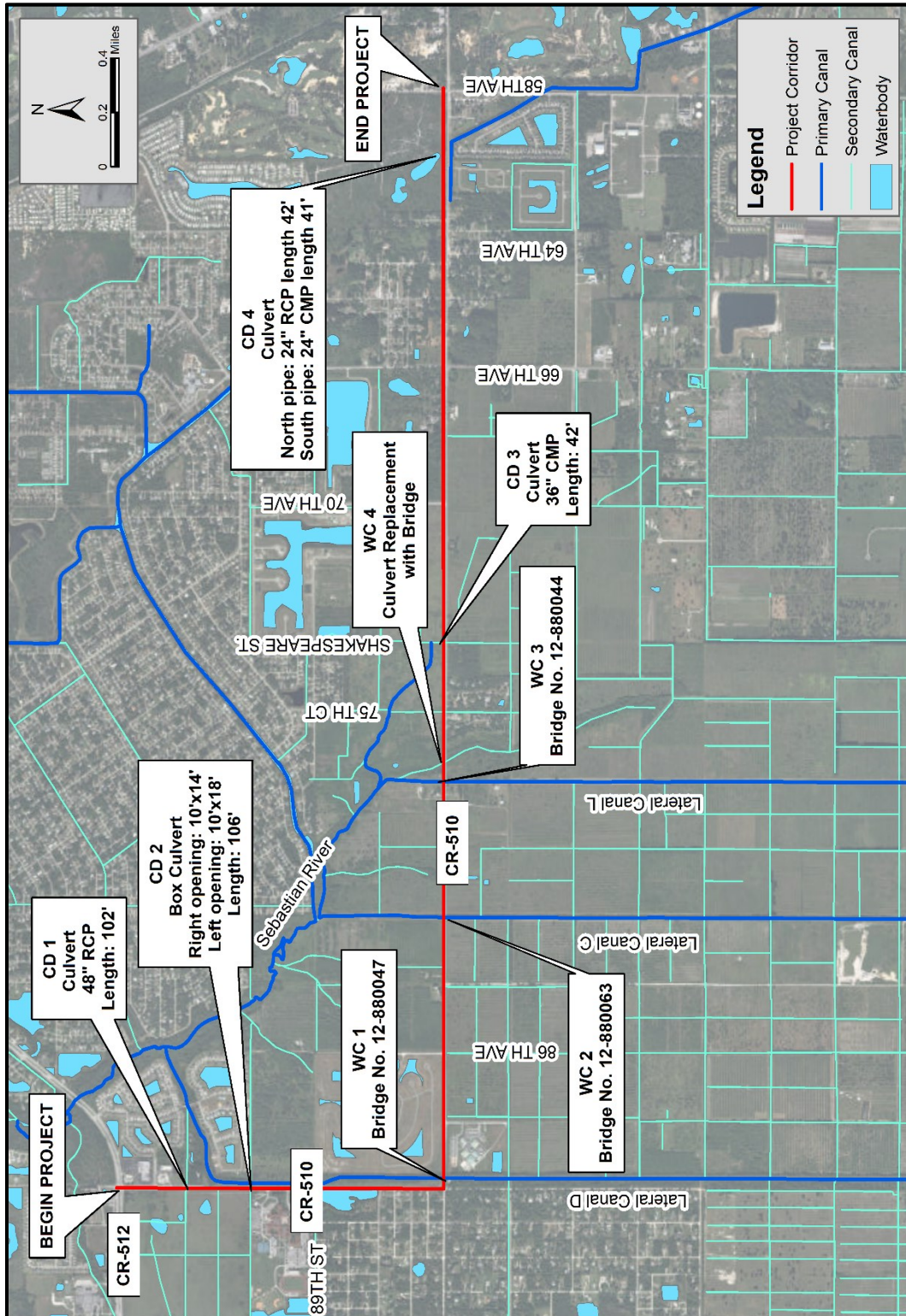


Figure 6-1: Cross Drains and Waterbody Crossings

## 7 CONCLUSION

There is no change in flood “Risk” or adverse floodplain impacts associated with this project. The following floodplain statement was taken from Chapter 13 of the FDOT PD&E Manual (statement Number 1).

*Although this project involves work within the horizontal limits of the 100-year floodplain, no work is being performed below the 100-year flood elevation and, as a result, this project does not encroach upon the base floodplain.*

This project will affect several cross drains due to the widening of the CR-510 roadway. Recommendations for culvert replacement or extension are given in **Section 5** of the report. It is necessary to ensure that adequate hydraulic capacity and no adverse effects on downstream and upstream canal stages.

# **APPENDIX A**

(Typical Sections)

A1-A5: Recommended Alternative Typical Sections



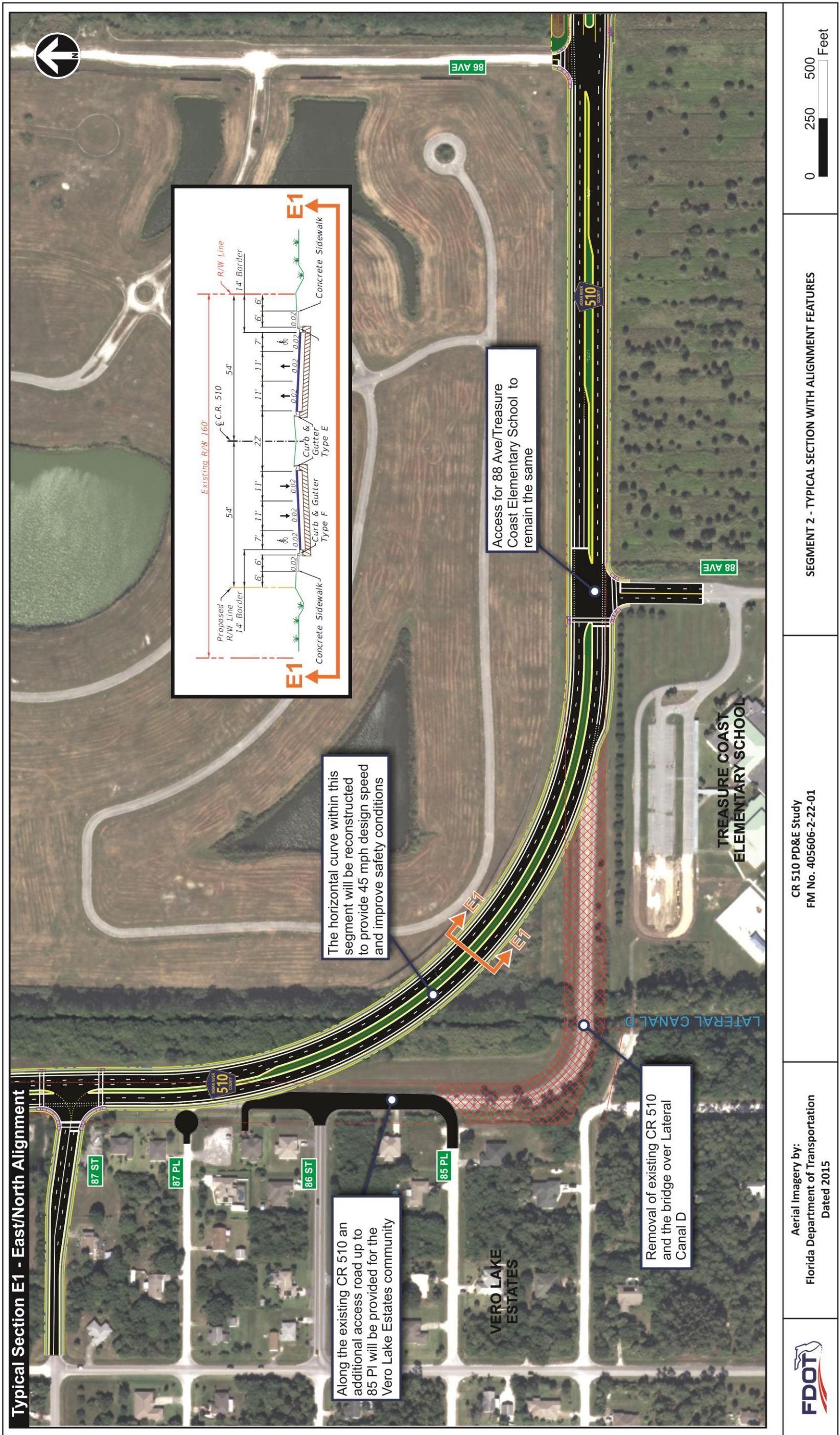


Figure 4 - Segment 2 Typical Section with Alignment Features

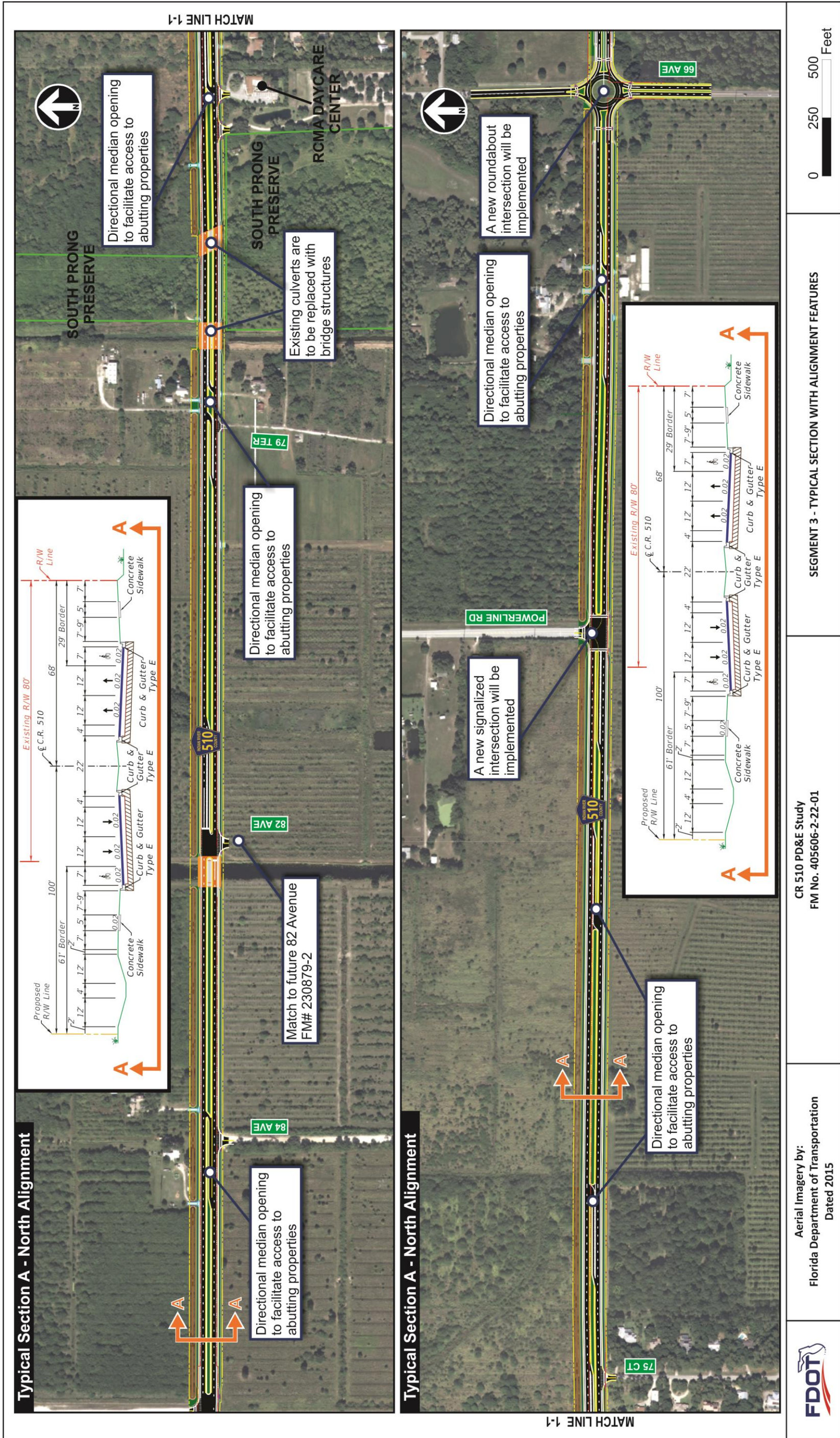


Figure 5 - Segment 3 Typical Section with Alignment Features



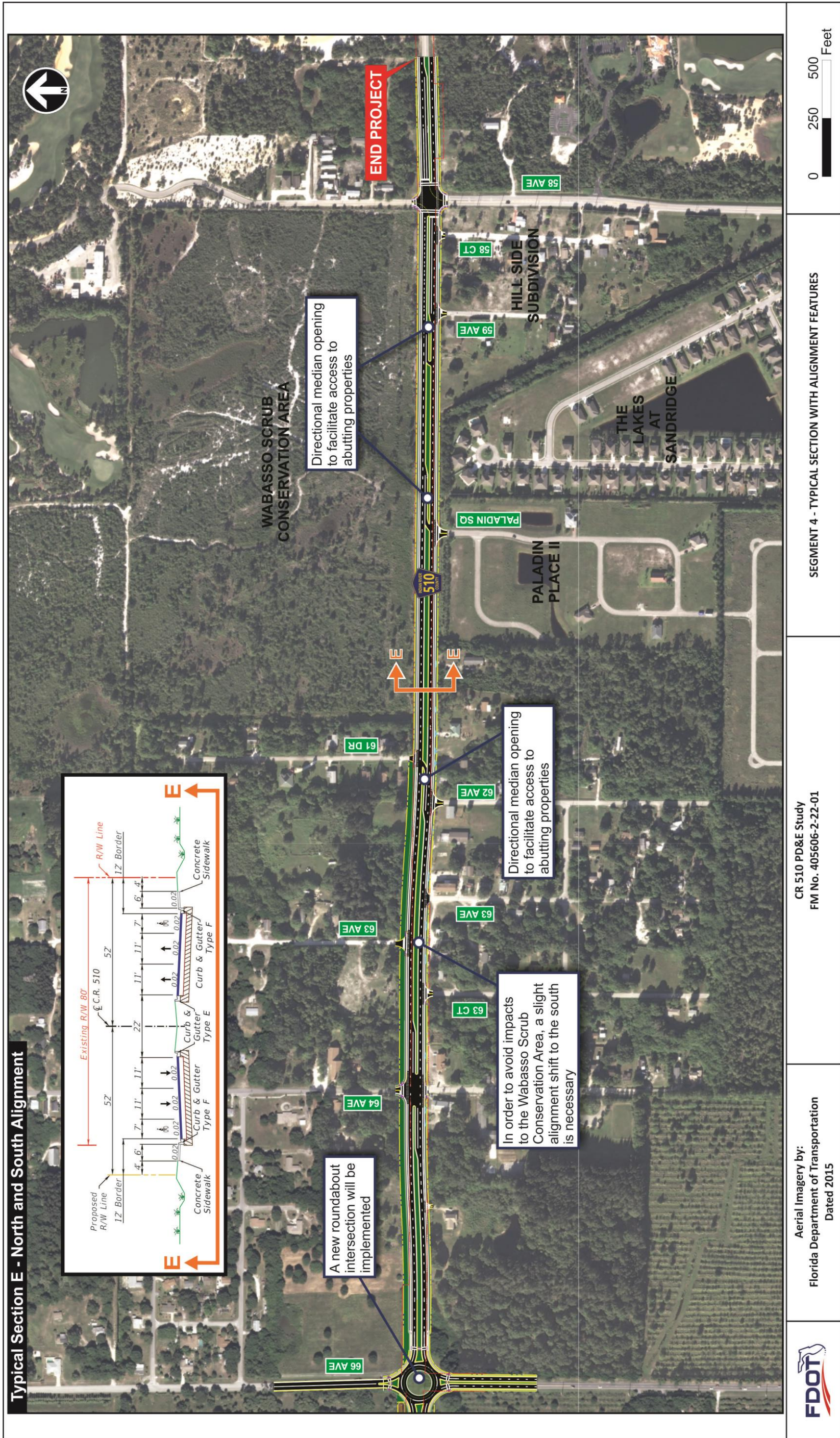


Figure 6 – Segment 4 Typical Section with Alignment Features

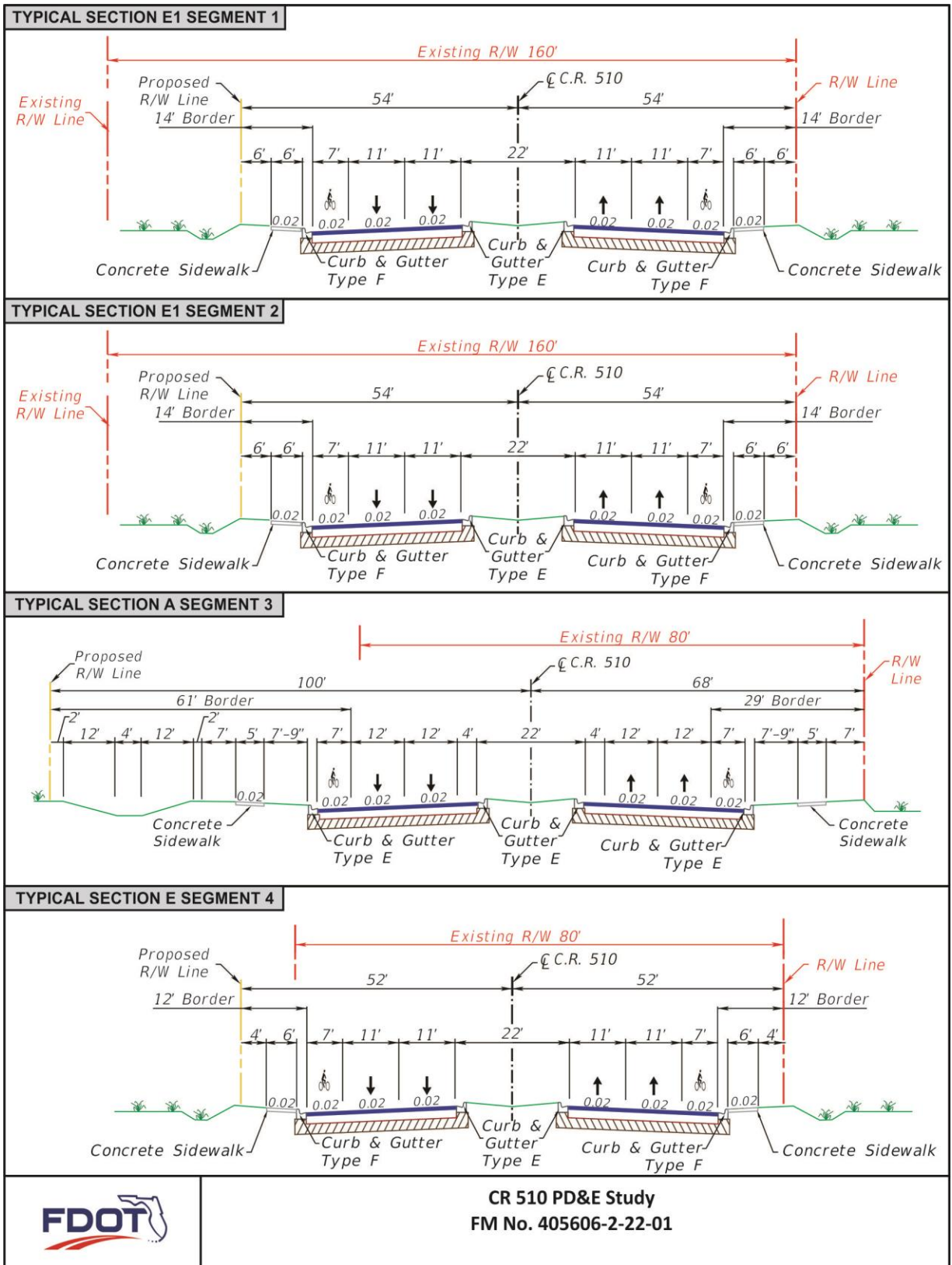


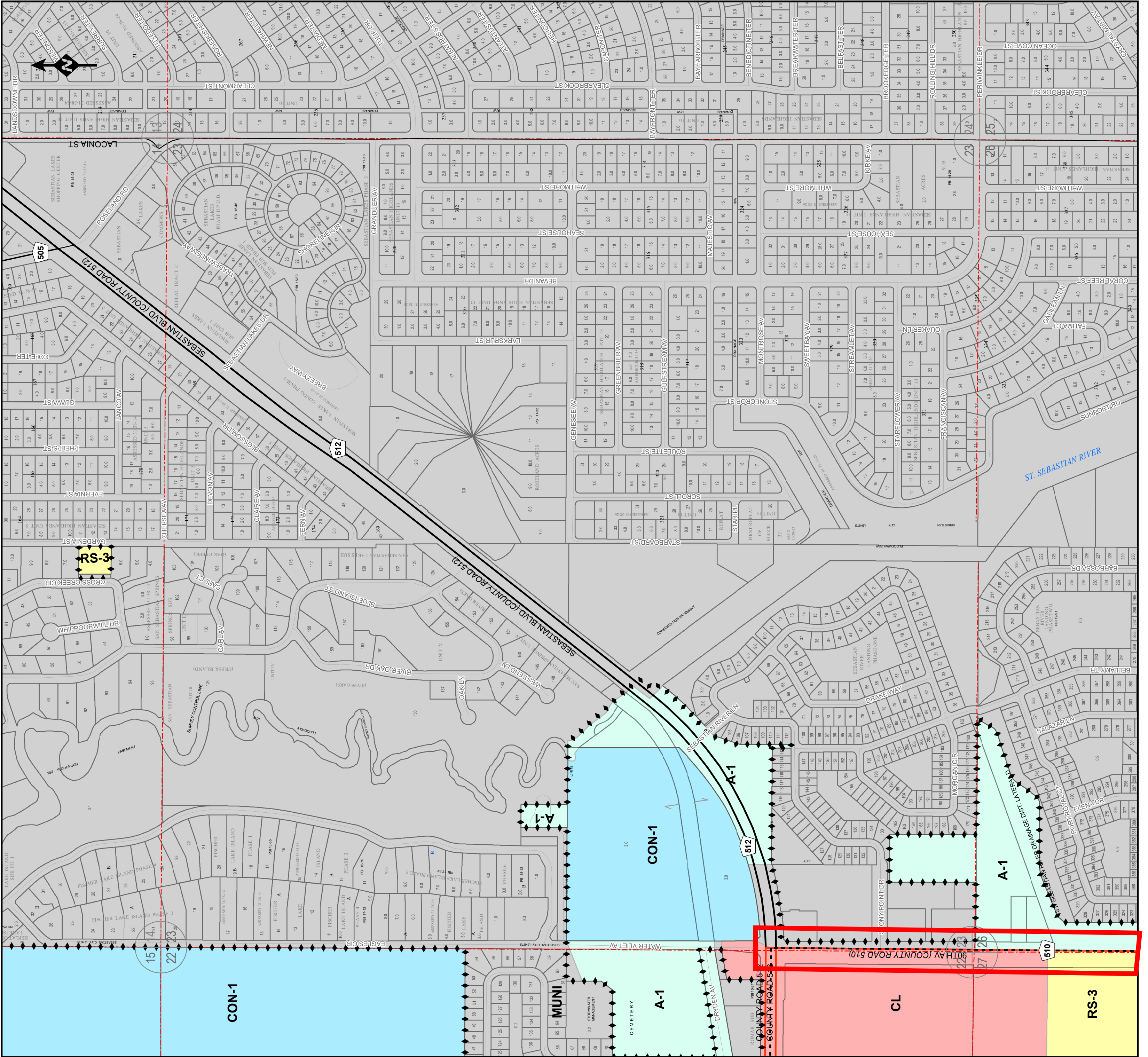
Figure 7 – Typical Section Details

## **APPENDIX B**

(Zoning Maps)

B1-B5: Indian River County Existing Zoning Maps

B6: 2030 Indian River County Future Land Use Map



# OFFICIAL ZONING ATLAS

## INDIAN RIVER COUNTY, FLORIDA

### Section 23 31S-38E

Map Number: 07.33

Map Date: January 19, 2016



Community Development Department  
1801 27th Street  
Vero Beach, FL 32960  
Phone: 772-226-1237

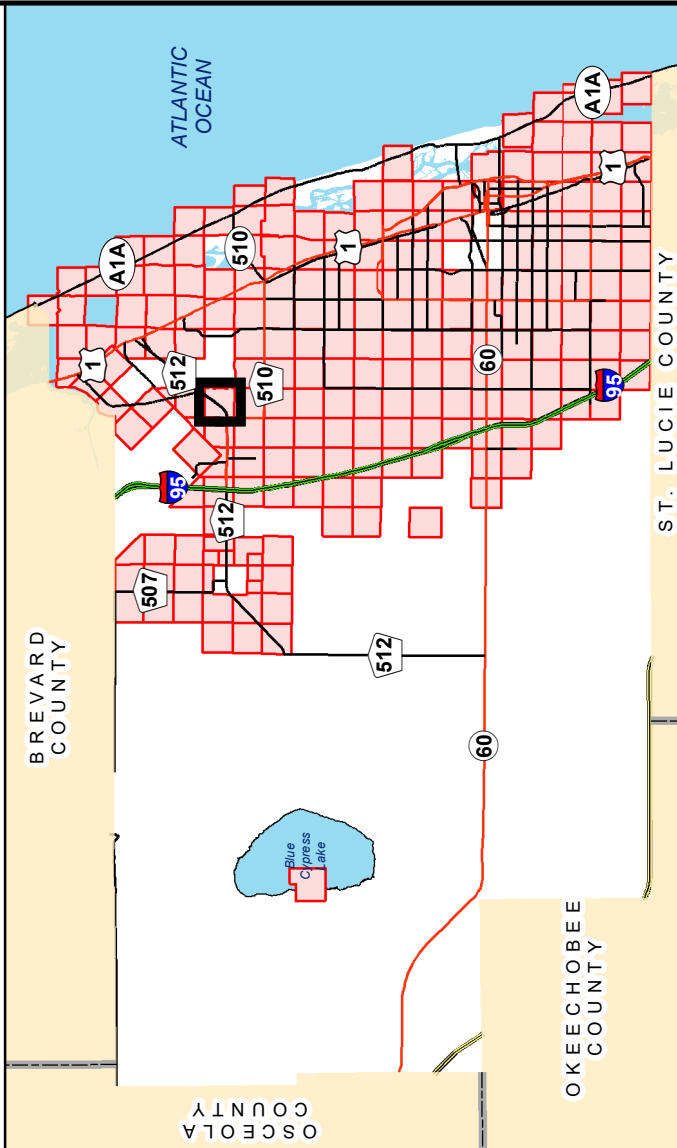
#### MAP LEGEND

- PLSS Section Corners
- City Limits
- TieBar Lines
- Special Corridors
- County Line
- Meander Lines
- Section Lines
- Tracts & Aliquot Parts
- Parcel Boundaries

#### ZONING

- |       |       |        |          |
|-------|-------|--------|----------|
| A-1   | CON-2 | PDMXD  | RM-10    |
| A-2   | CON-3 | PDTND  | RM-10 ex |
| A-3   | CRVP  | PRO    | RMH-6    |
| AIR-1 | IG    | R-BCID | RMH-8    |
| CG    | IL    | RFD    | RS-1     |
| CH    | MED   | RM-3   | RS-2     |
| CL    | MUNI  | RM-4   | RS-3     |
| CN    | OCR   | RM-6   | RS-6     |
| CON-1 | PD    | RM-8   | RT-6     |
|       |       |        | Rose-4   |

#### LOCATOR MAP



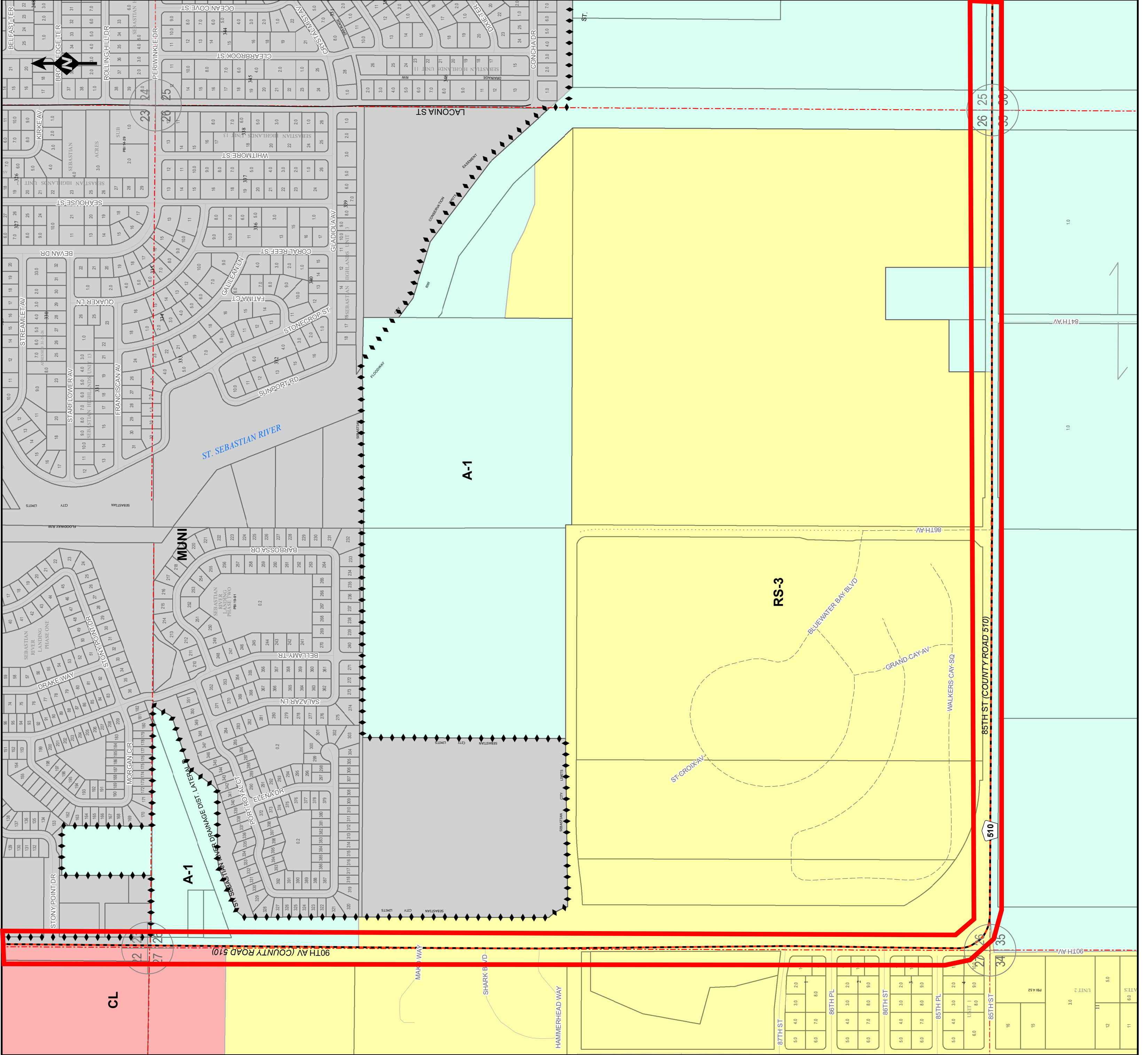
NOTE: Undeveloped riverfront wetlands are zoned Con-2, subject to survey verification. Contact county environmental planning staff for more information.

NOTE: Zoning designations adjacent to the St. Sebastian River may include Con-2 and Con-3, contingent upon site-specific environmental surveys. Such surveys require county staff approval and will set the precise boundary of Con-2 and Con-3.



#### INFORMATIONAL PLAT - NOT A SURVEY

THE INFORMATION CONTAINED HEREIN IS TAKEN FROM RELIABLE SOURCES HOWEVER, ITS ACCURACY IS NOT GUARANTEED  
STATE PLANE COORDINATES, NAD83/90




# OFFICIAL ZONING ATLAS

## INDIAN RIVER COUNTY, FLORIDA

### Section 26 31S-38E

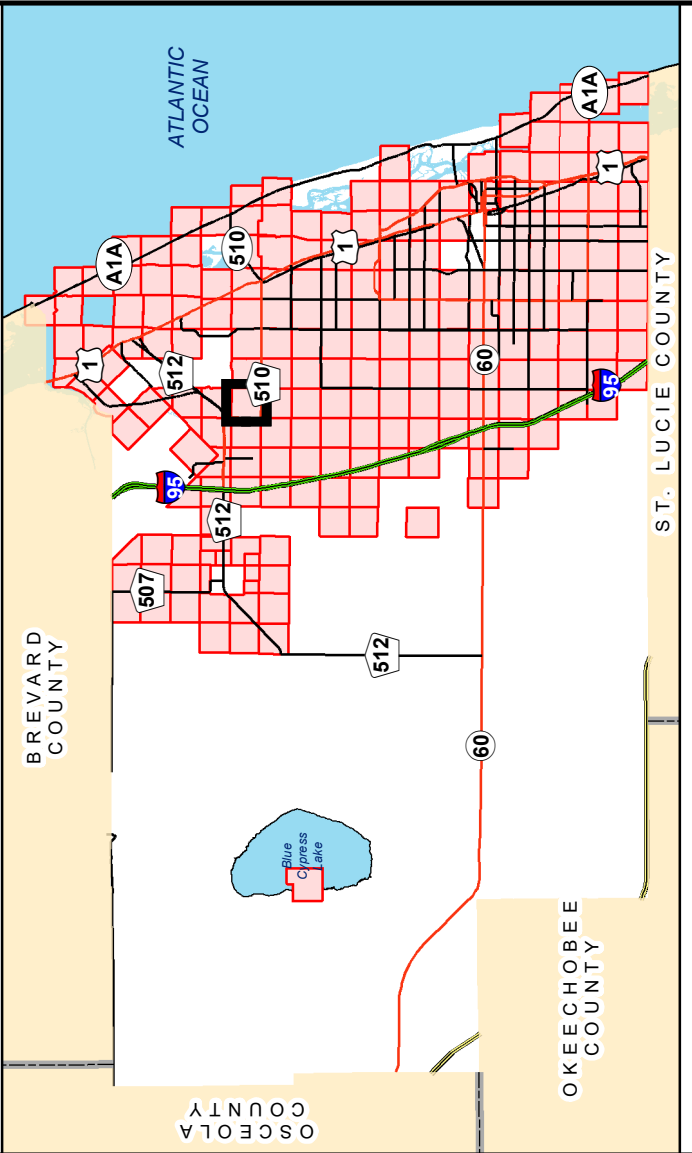
Map Number: 08:10  
Map Date: January 19, 2016



**Community Development Department**  
1801 27th Street  
Vero Beach, FL 32960  
Phone: 772-226-1237


### MAP LEGEND

<ul style="list-style-type: none"> <li>⊕ PLSS Section Corners</li> <li>◆ City Limits</li> <li>— TieBar Lines</li> <li>--- Special Corridors</li> <li>— County Line</li> <li>— Meander Lines</li> <li>--- Section Lines</li> <li>--- Tracts &amp; Aliquot Parts</li> <li>□ Parcel Boundaries</li> </ul>	<h4 style="text-align: center;">ZONING</h4> <table border="0" style="width: 100%;"> <tr> <td style="width: 20%;">A-1</td> <td style="width: 20%;">CON-2</td> <td style="width: 20%;">PDMXD</td> <td style="width: 20%;">RM-10</td> </tr> <tr> <td>A-2</td> <td>CON-3</td> <td>PDTND</td> <td>RM-10 ex</td> </tr> <tr> <td>A-3</td> <td>CRVP</td> <td>PRO</td> <td>RMH-6</td> </tr> <tr> <td>AIR-1</td> <td>IG</td> <td>R-BCID</td> <td>RMH-8</td> </tr> <tr> <td>CG</td> <td>IL</td> <td>RFD</td> <td>RS-1</td> </tr> <tr> <td>CH</td> <td>MED</td> <td>RM-3</td> <td>RS-2</td> </tr> <tr> <td>CL</td> <td>MUNI</td> <td>RM-4</td> <td>RS-3</td> </tr> <tr> <td>CN</td> <td>OCR</td> <td>RM-6</td> <td>RS-6</td> </tr> <tr> <td>CON-1</td> <td>PD</td> <td>RM-8</td> <td>RT-6</td> </tr> <tr> <td></td> <td></td> <td></td> <td>Rose-4</td> </tr> </table>	A-1	CON-2	PDMXD	RM-10	A-2	CON-3	PDTND	RM-10 ex	A-3	CRVP	PRO	RMH-6	AIR-1	IG	R-BCID	RMH-8	CG	IL	RFD	RS-1	CH	MED	RM-3	RS-2	CL	MUNI	RM-4	RS-3	CN	OCR	RM-6	RS-6	CON-1	PD	RM-8	RT-6				Rose-4
A-1	CON-2	PDMXD	RM-10																																						
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**NOTE:** Undeveloped riverfront wetlands are zoned Con-2, subject to survey verification. Contact county environmental planning staff for more information.

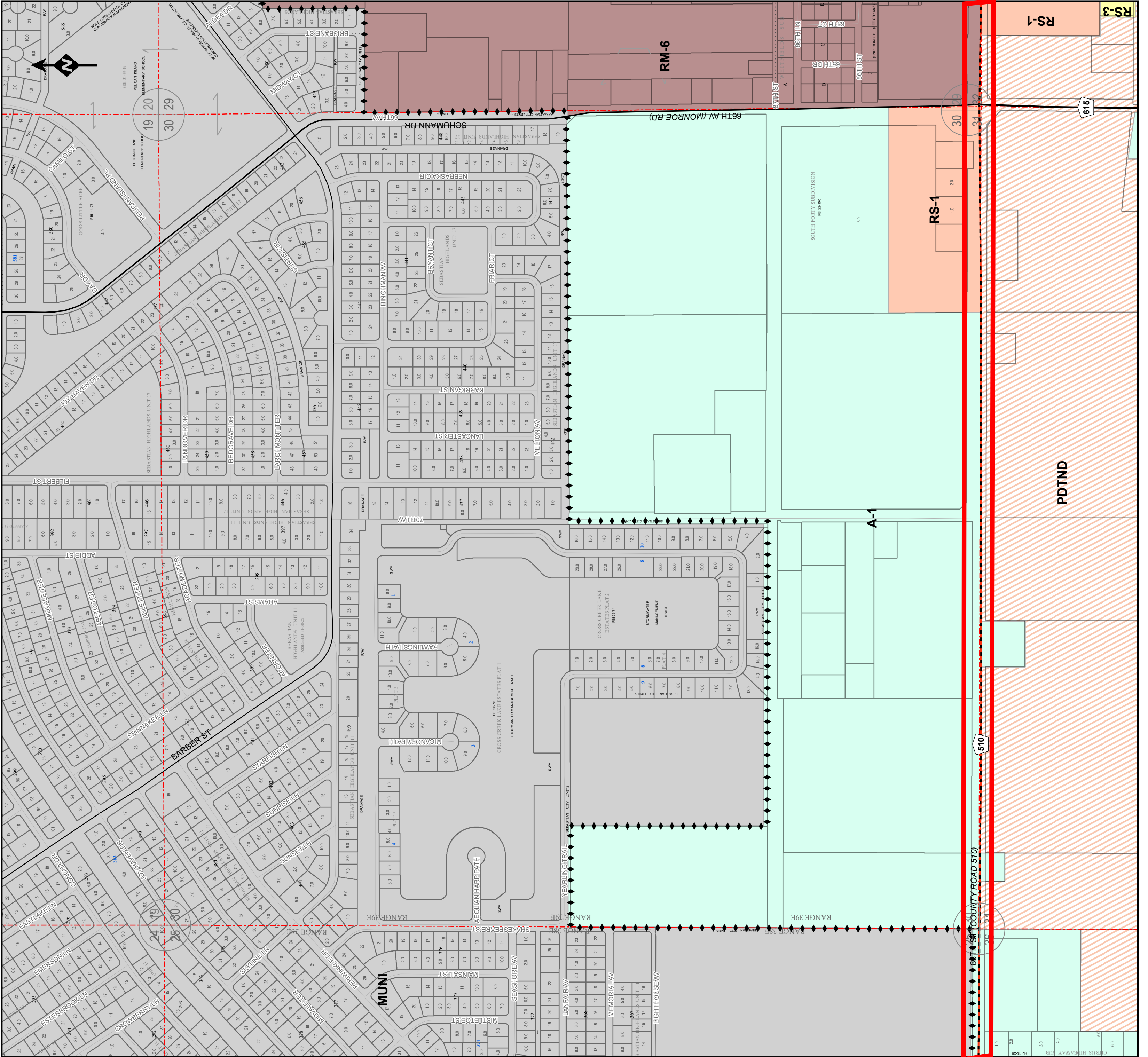
**NOTE:** Zoning designations adjacent to the St. Sebastian River may include Con-2 and Con-3, contingent upon site-specific environmental surveys. Such surveys require county staff approval and will set the precise boundary of Con-2 and Con-3.



**INFORMATIONAL PLAT - NOT A SURVEY**

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HOWEVER, ITS ACCURACY IS NOT GUARANTEED  
STATE PLANE COORDINATES, NAD83/90





# OFFICIAL ZONING ATLAS

## INDIAN RIVER COUNTY, FLORIDA

### Section 30 31S-39E

Map Number: 11.10

Map Date: January 19, 2016



Community Development Department  
1801 27th Street  
Vero Beach, FL 32960  
Phone: 772-226-1237

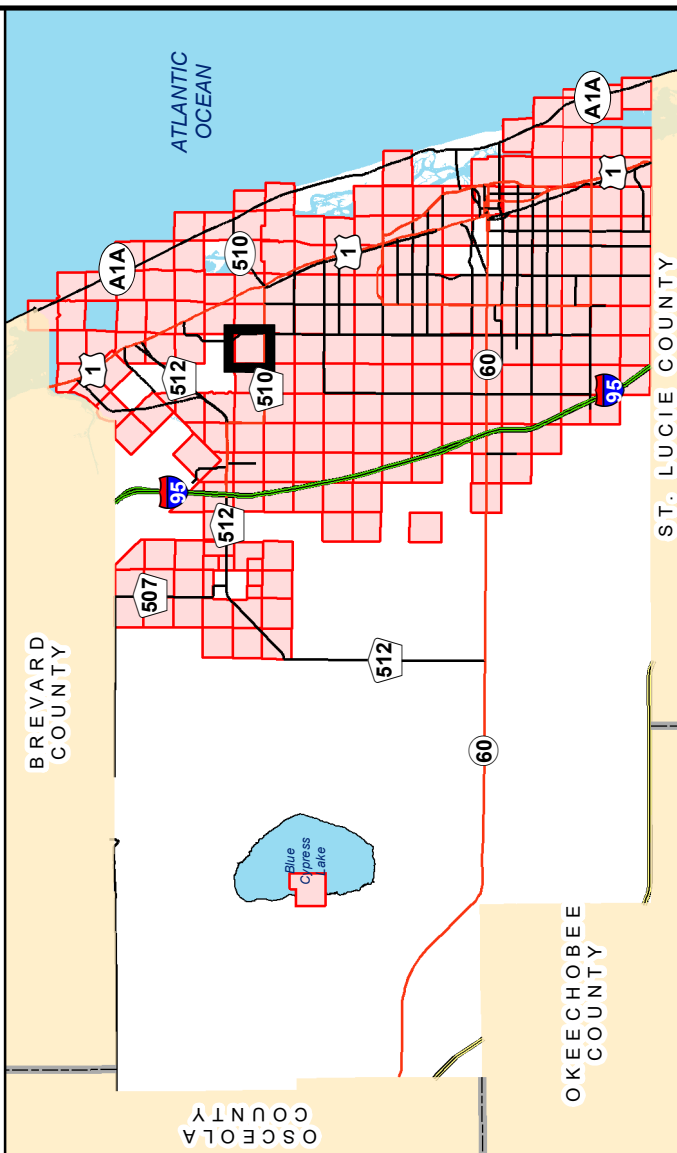
#### MAP LEGEND

- County Line
- Meander Lines
- Section Lines
- Tracts & Aliquot Parts
- Parcel Boundaries
- PLSS Section Corners
- City Limits
- TieBar Lines
- Special Corridors

#### ZONING

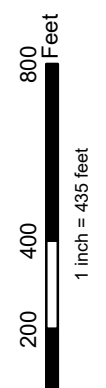
- |       |       |        |          |
|-------|-------|--------|----------|
| A-1   | CON-2 | PDMXD  | RM-10    |
| A-2   | CON-3 | PDND   | RM-10 ex |
| A-3   | CRVP  | PRO    | RMH-6    |
| AIR-1 | IG    | R-BCID | RMH-8    |
| CG    | IL    | RFD    | RS-1     |
| CH    | MED   | RM-3   | RS-2     |
| CL    | MUNI  | RM-4   | RS-3     |
| CN    | OCR   | RM-6   | RS-6     |
| CON-1 | PD    | RM-8   | RT-6     |
|       |       |        | Rose-4   |

#### LOCATOR MAP



NOTE: Undeveloped riverfront wetlands are zoned Con-2, subject to survey verification. Contact county environmental planning staff for more information.

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#### INFORMATIONAL PLAT - NOT A SURVEY

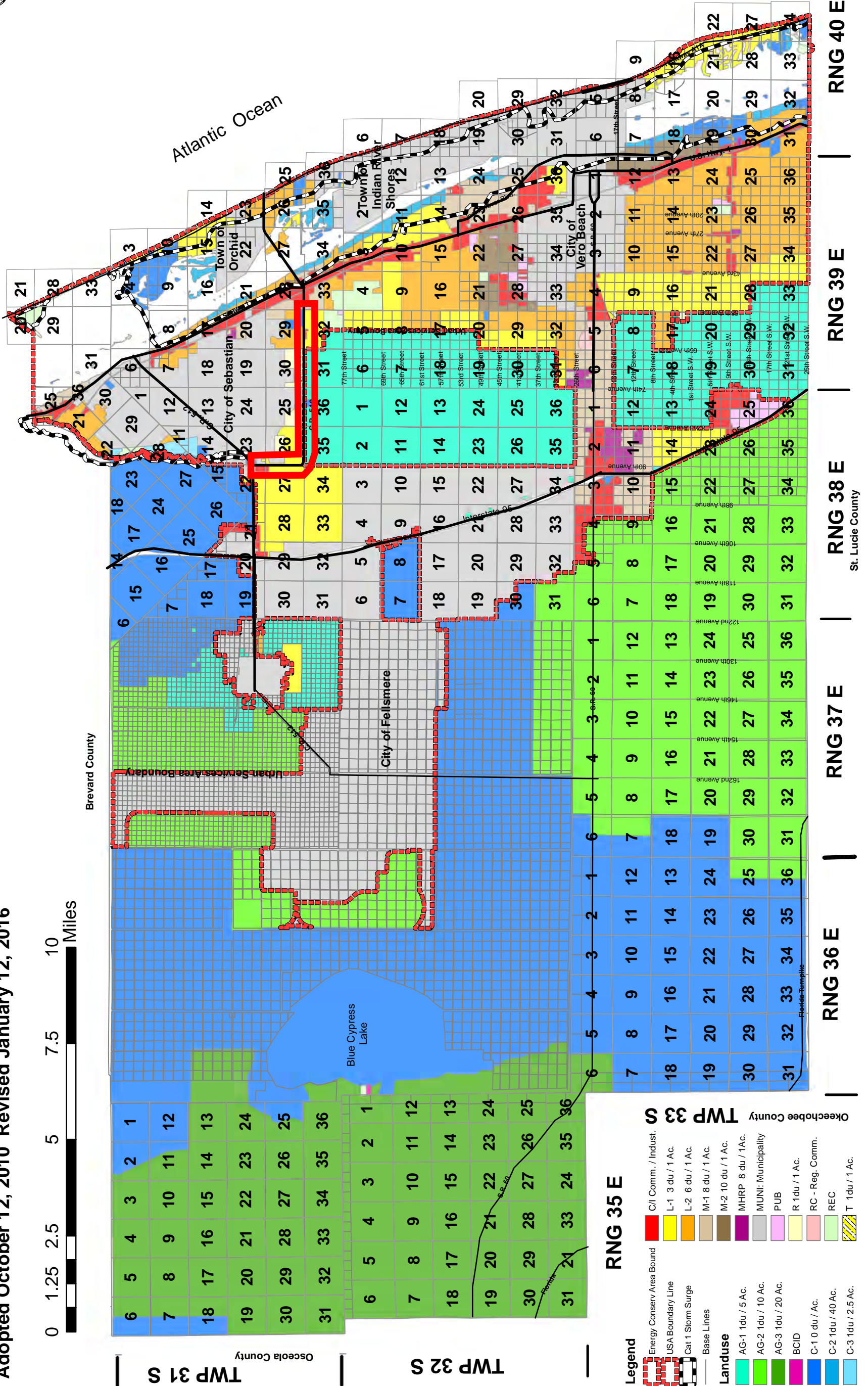
THE INFORMATION CONTAINED HEREIN IS TAKEN FROM RELIABLE SOURCES HOWEVER, ITS ACCURACY IS NOT GUARANTEED  
STATE PLANE COORDINATES, NAD83/90





# 2030 Indian River County Future Land Use Map

Adopted October 12, 2010 Revised January 12, 2016



**Legend**

- Energy Conserv Area Bound
- USA Boundary Line
- Cat 1 Storm Surge
- Base Lines

**Landuse**

- AG-1 1du / 5 Ac.
- AG-2 1du / 10 Ac.
- AG-3 1du / 20 Ac.
- BCID
- C-1 0 du / Ac.
- C-2 1du / 40 Ac.
- C-3 1du / 2.5 Ac.
- C/I Comm. / Indust.
- L-1 3 du / 1 Ac.
- L-2 6 du / 1 Ac.
- M-1 8 du / 1 Ac.
- M-2 10 du / 1 Ac.
- MHRP 8 du / 1Ac.
- MUNI: Municipality
- PUB
- R 1du / 1 Ac.
- RC - Reg. Comm.
- REC
- T 1du / 1 Ac.

**RNG 35 E**

**TWP 31 S**

**TWP 32 S**

**Okechobee County**

**RNG 36 E** | **RNG 37 E** | **RNG 38 E** | **RNG 39 E** | **RNG 40 E**

St. Lucie County

## **APPENDIX C**

(Rainfall Maps)

C1-C9: SJRWMD Average Rainfall Maps

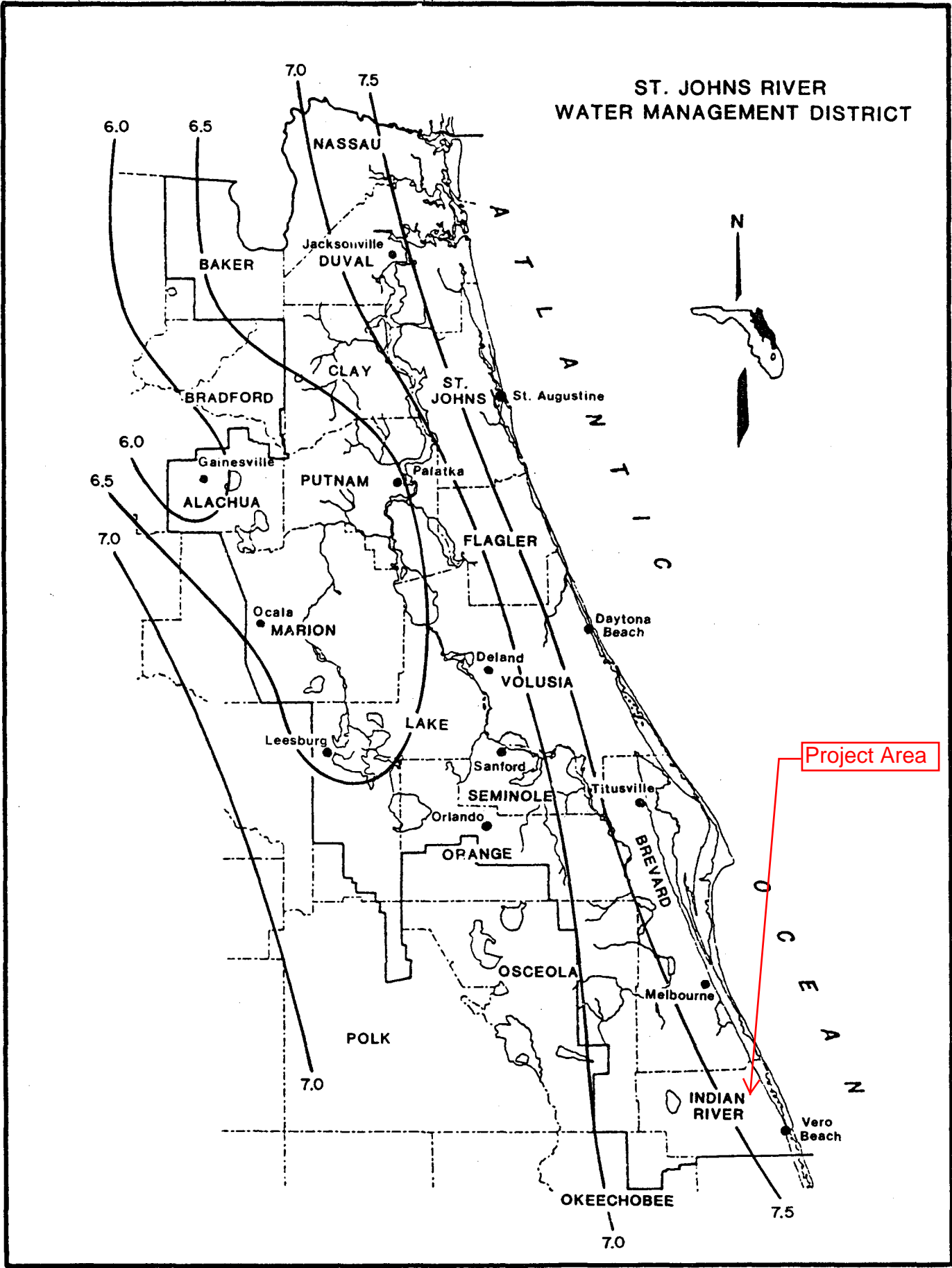


Figure 6. 10-Year 24-Hour Maximum Rainfall for Northeast Florida, Inches.

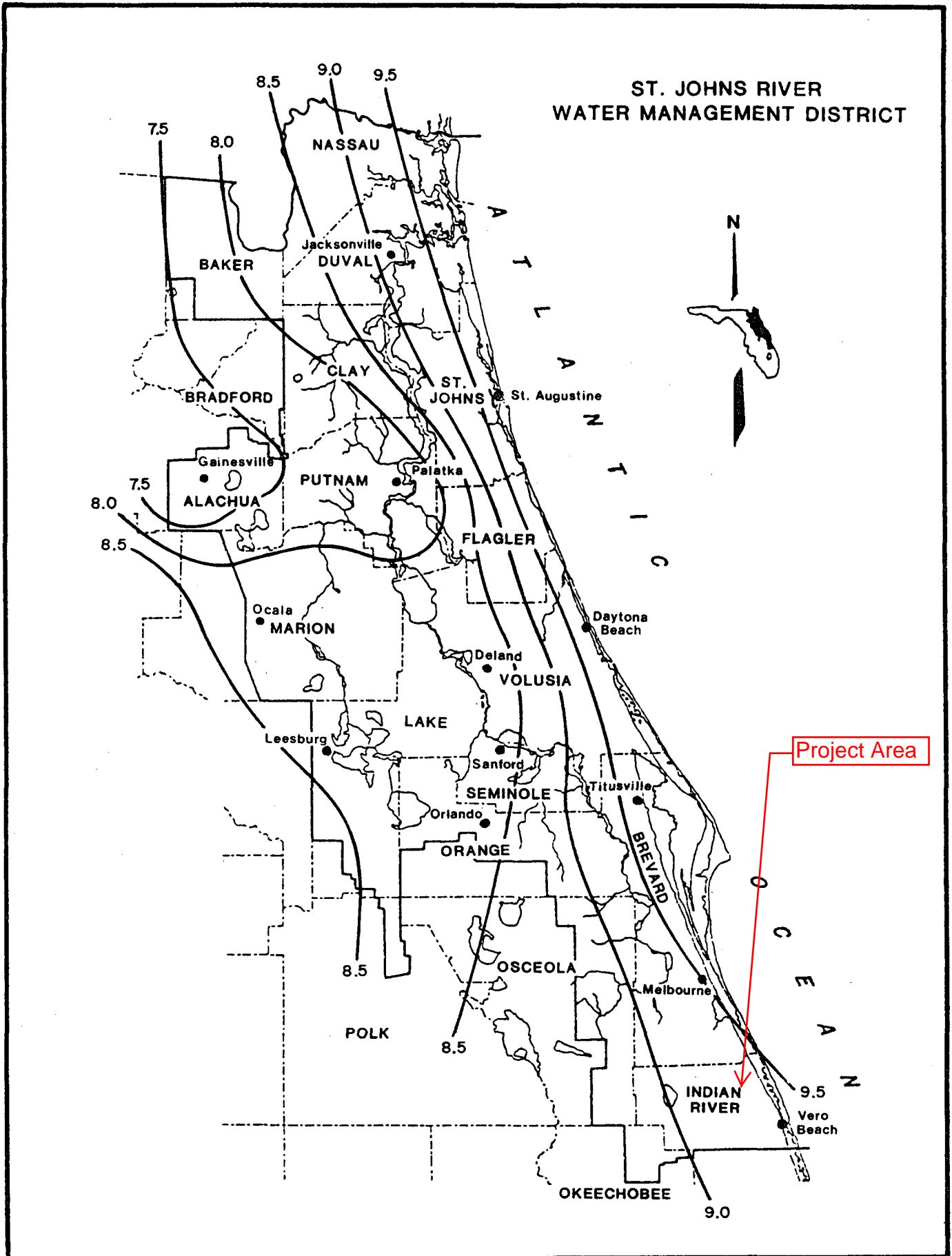


Figure 7. 25-Year 24-Hour Maximum Rainfall for Northeast Florida, Inches.

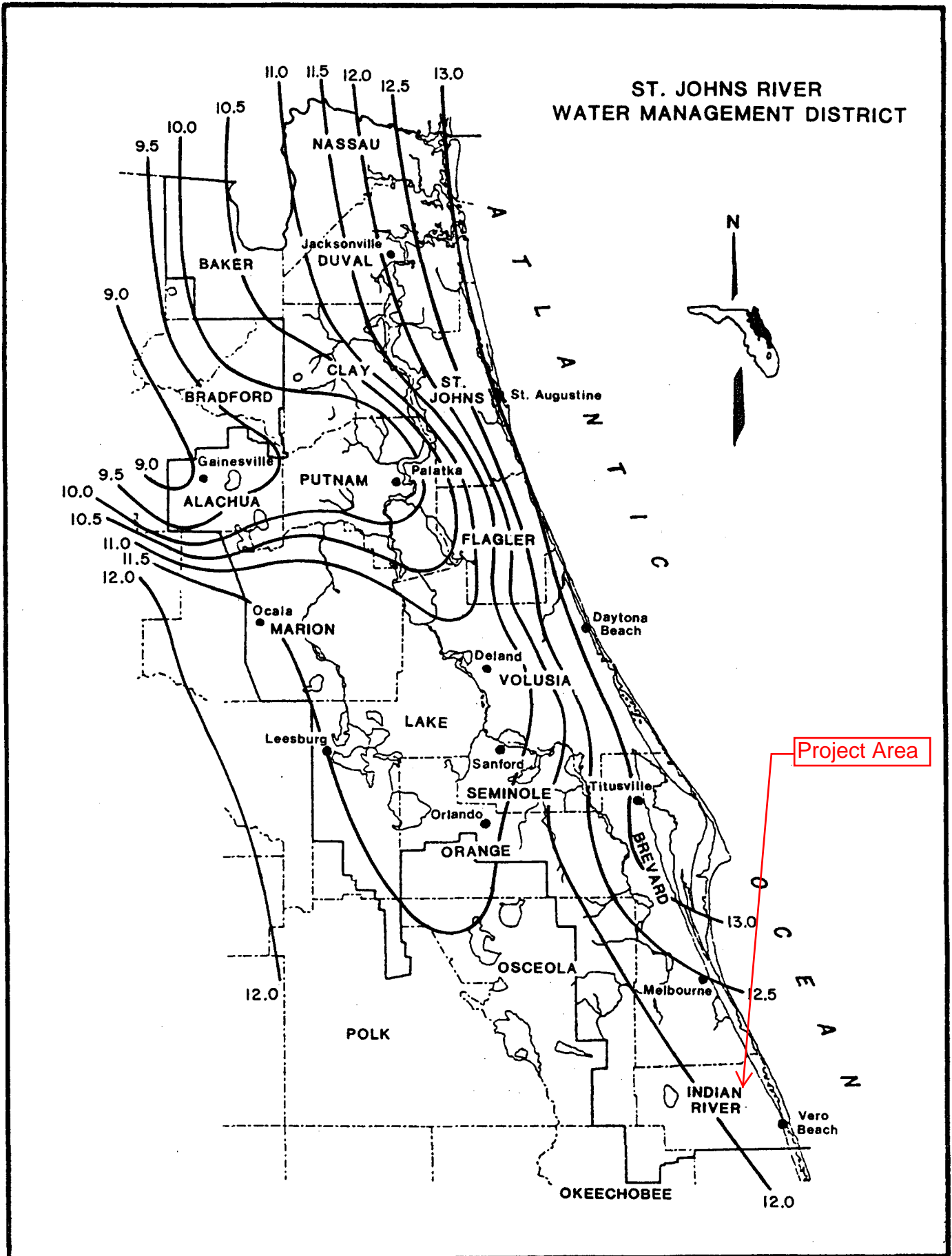


Figure 8. 100-Year 24-Hour Maximum Rainfall for Northeast Florida, Inches.

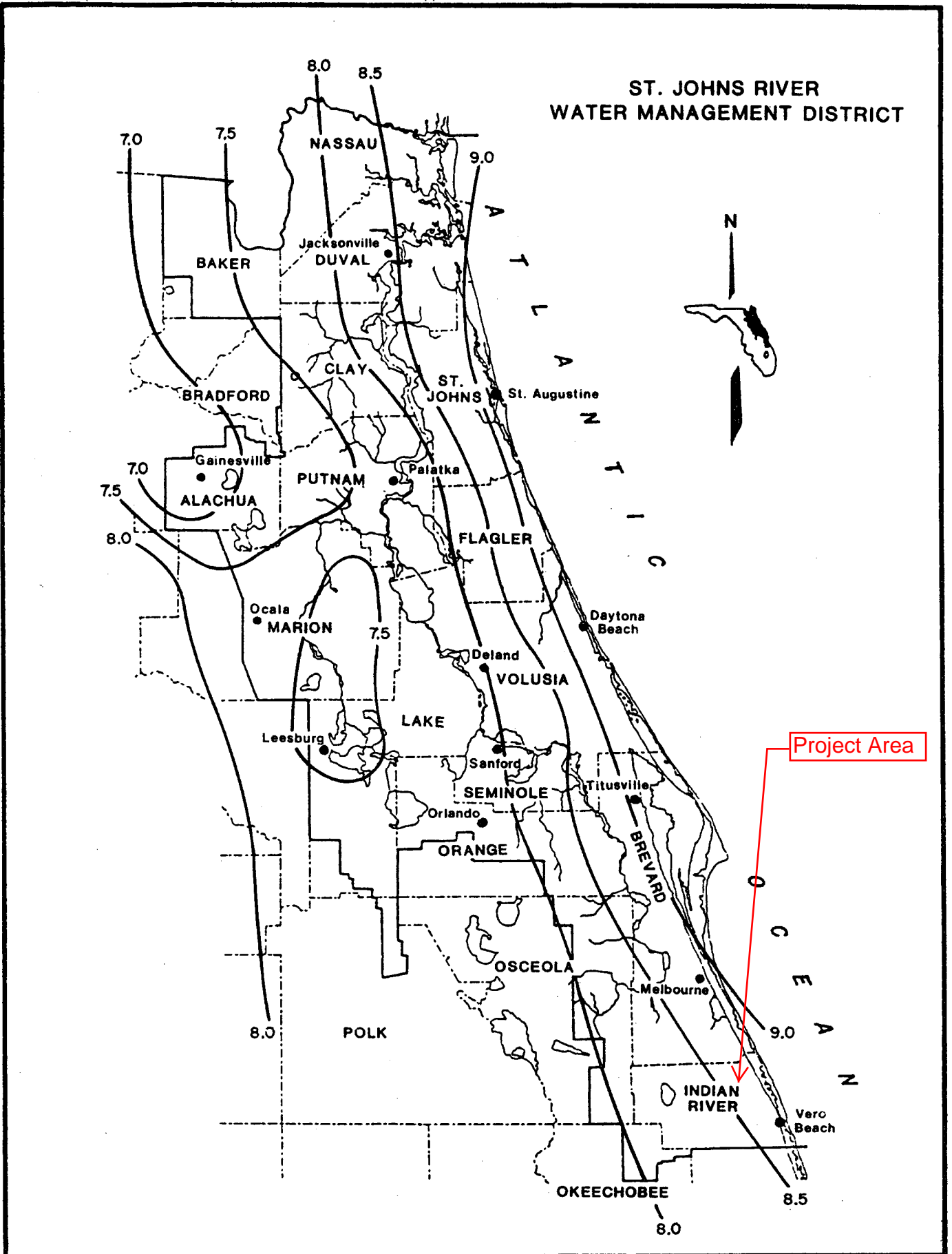


Figure 9. 10-Year 48-Hour Maximum Rainfall for Northeast Florida, Inches.

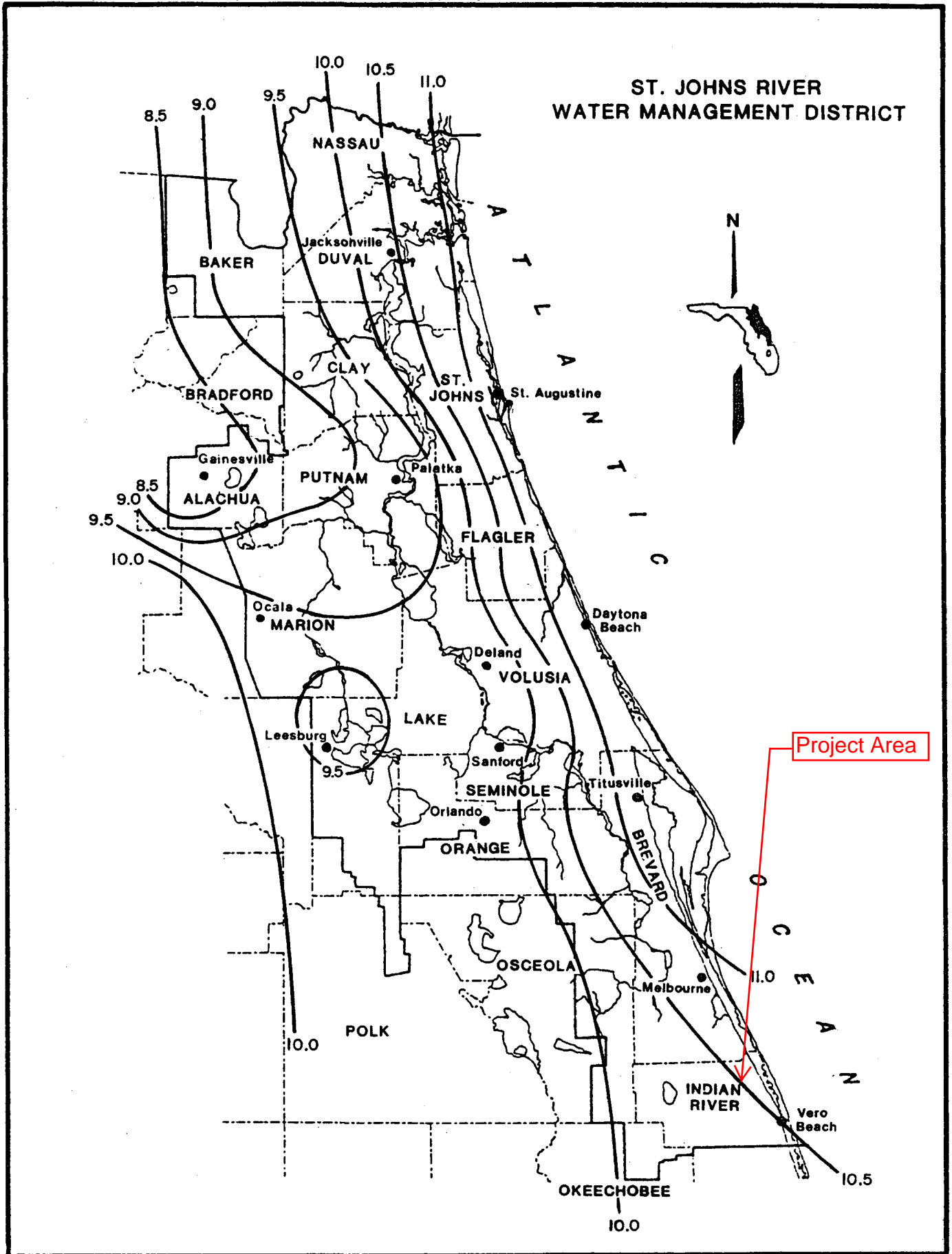


Figure 10. 25-Year 48-Hour Maximum Rainfall for Northeast Florida, Inches.

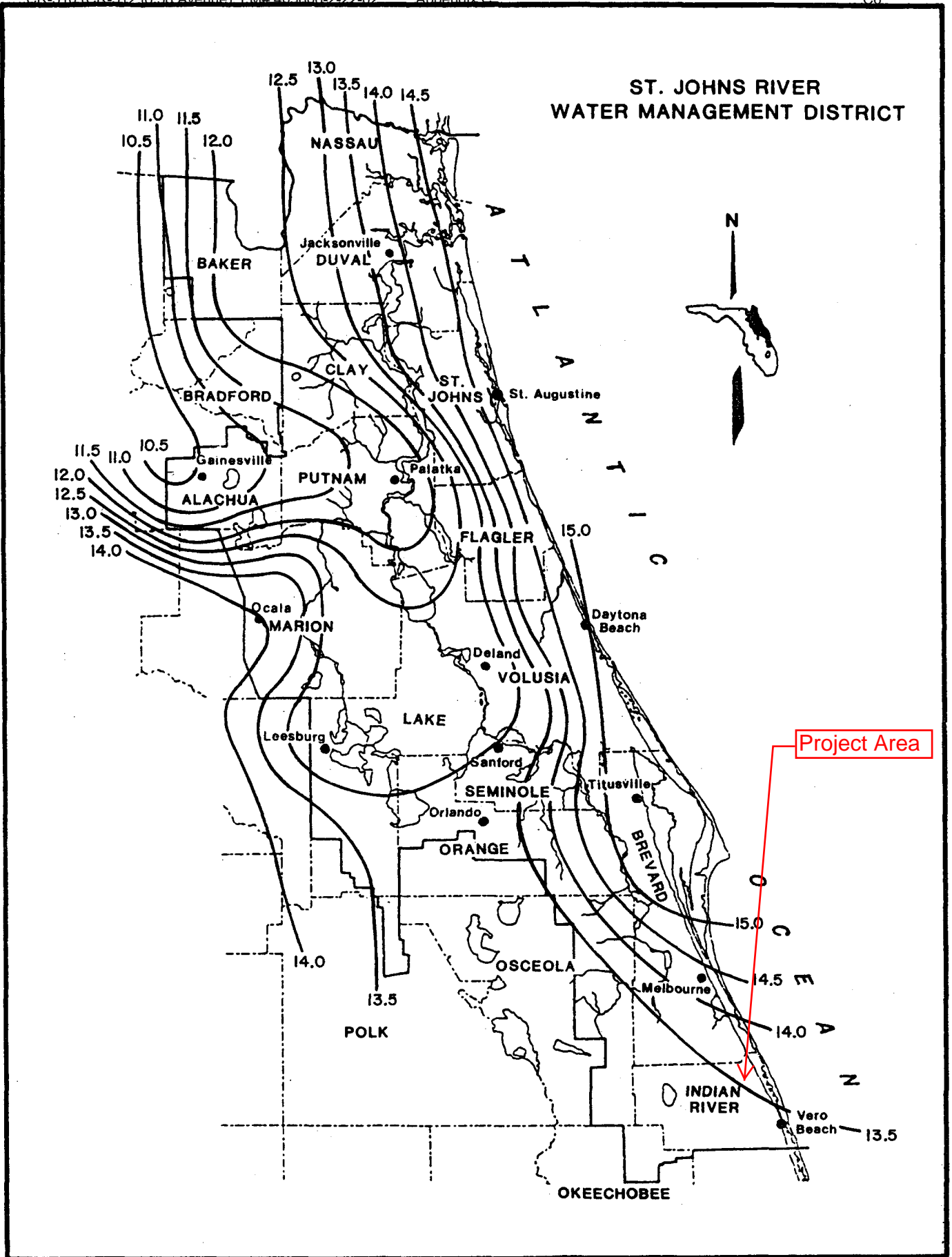


Figure 11. 100-Year 48-Hour Maximum Rainfall for Northeast Florida, Inches.



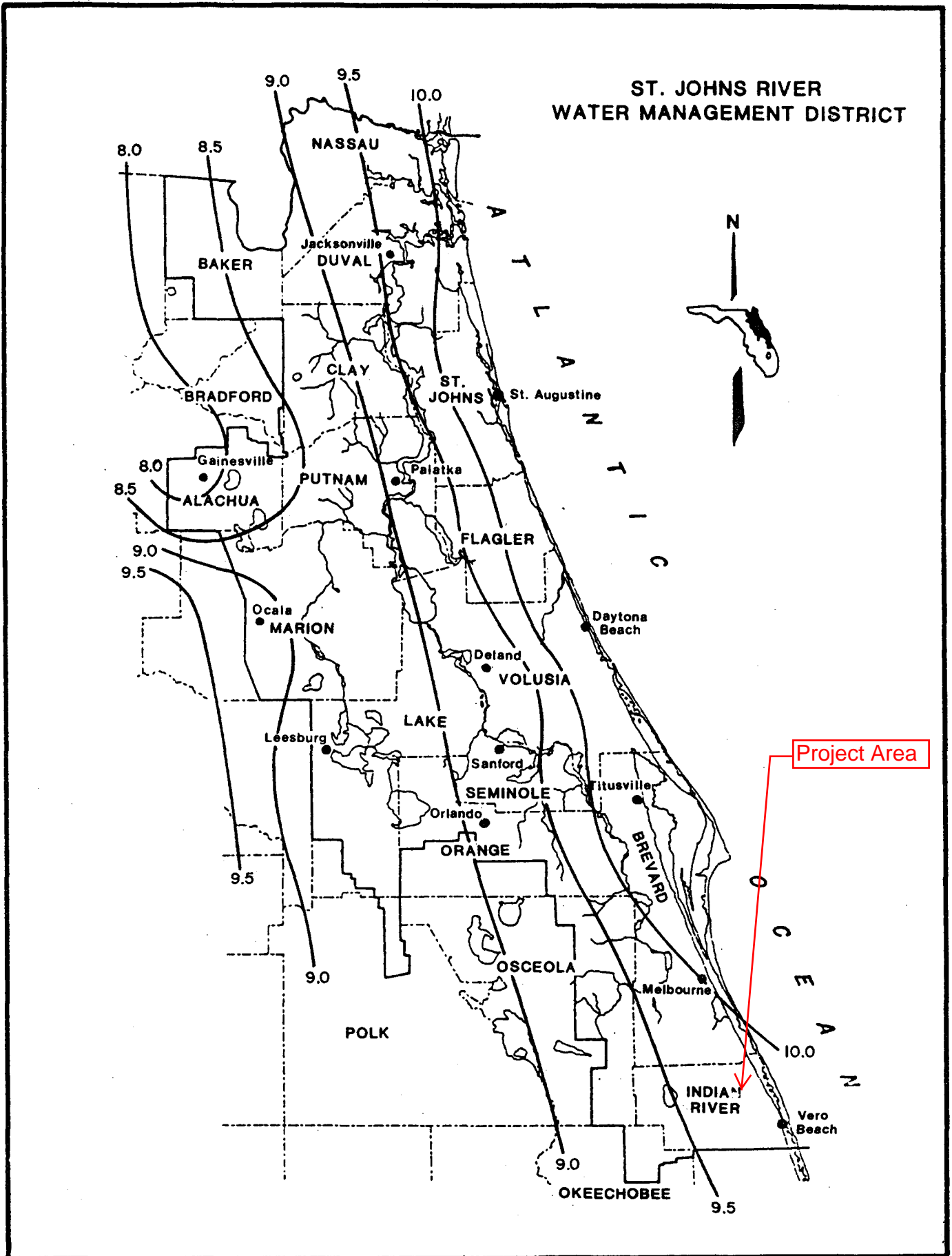


Figure 12. 10-Year 96-Hour Maximum Rainfall for Northeast Florida, Inches.

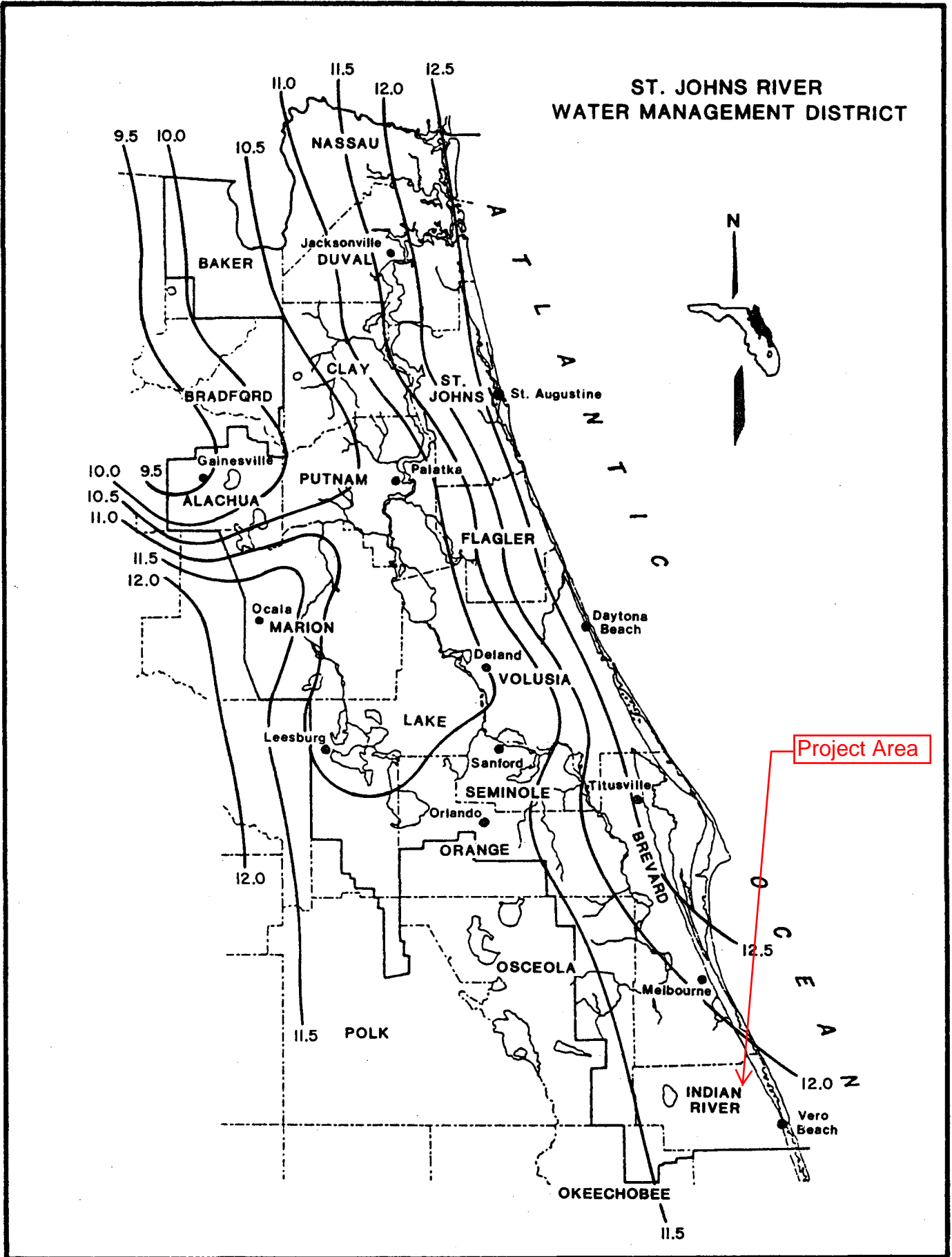


Figure 13. 25-Year 96-Hour Maximum Rainfall for Northeast Florida, Inches.

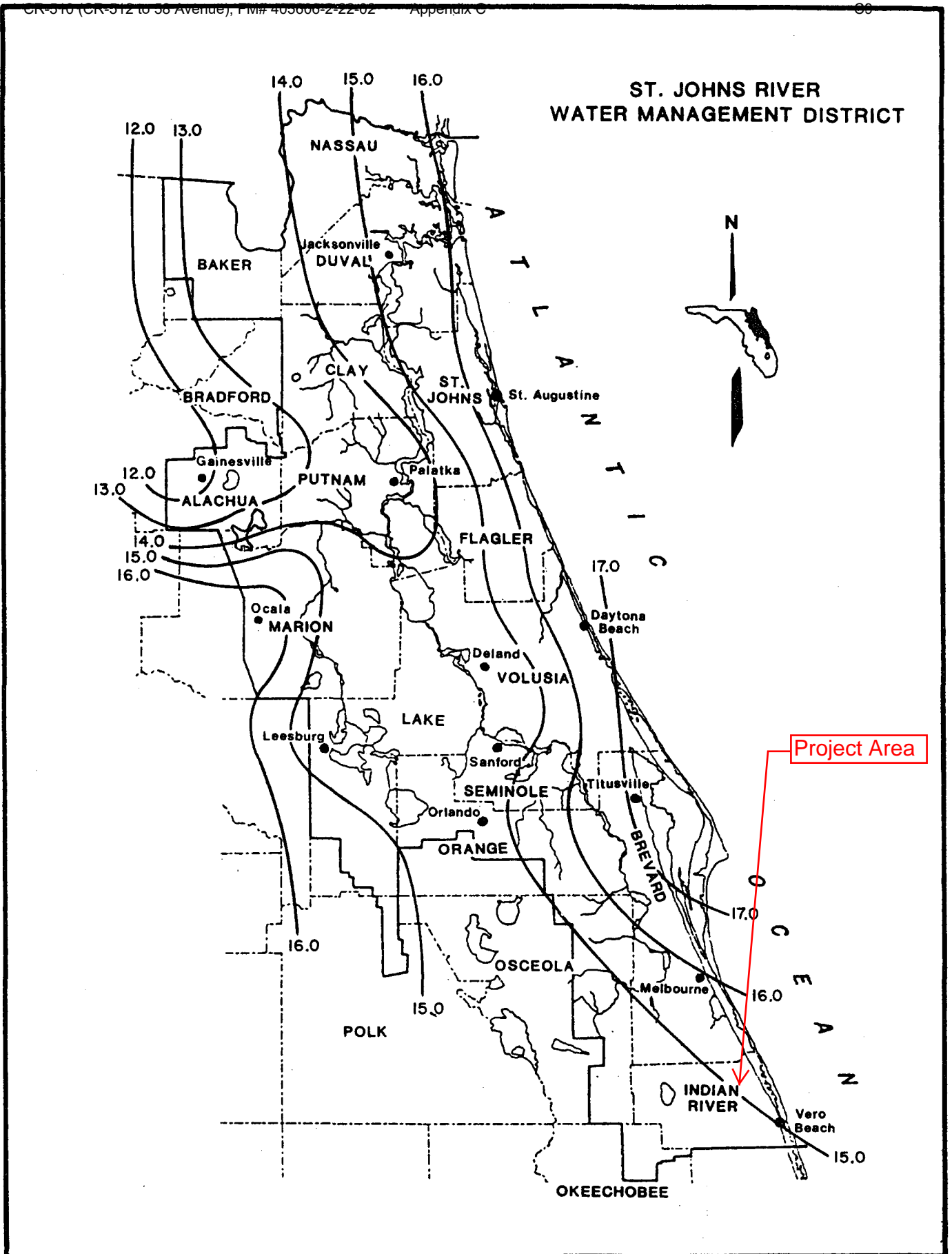
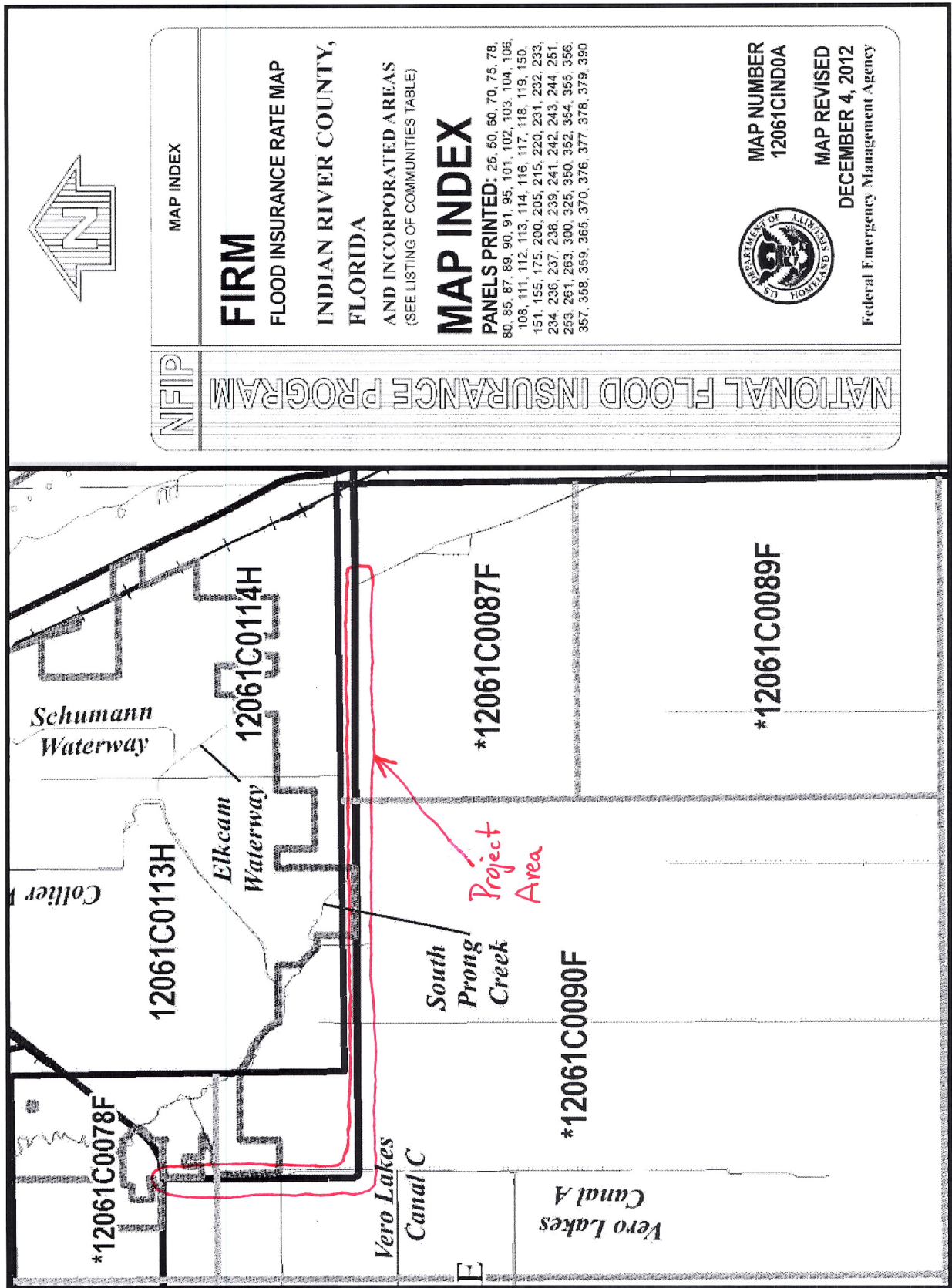


Figure 14. 100-Year 96-Hour Maximum Rainfall for Northeast Florida, Inches.

## **APPENDIX D**

(Floodplain Maps)

D1-D6: FEMA FIRM



**NFIP** NATIONAL FLOOD INSURANCE PROGRAM

**MAP INDEX**

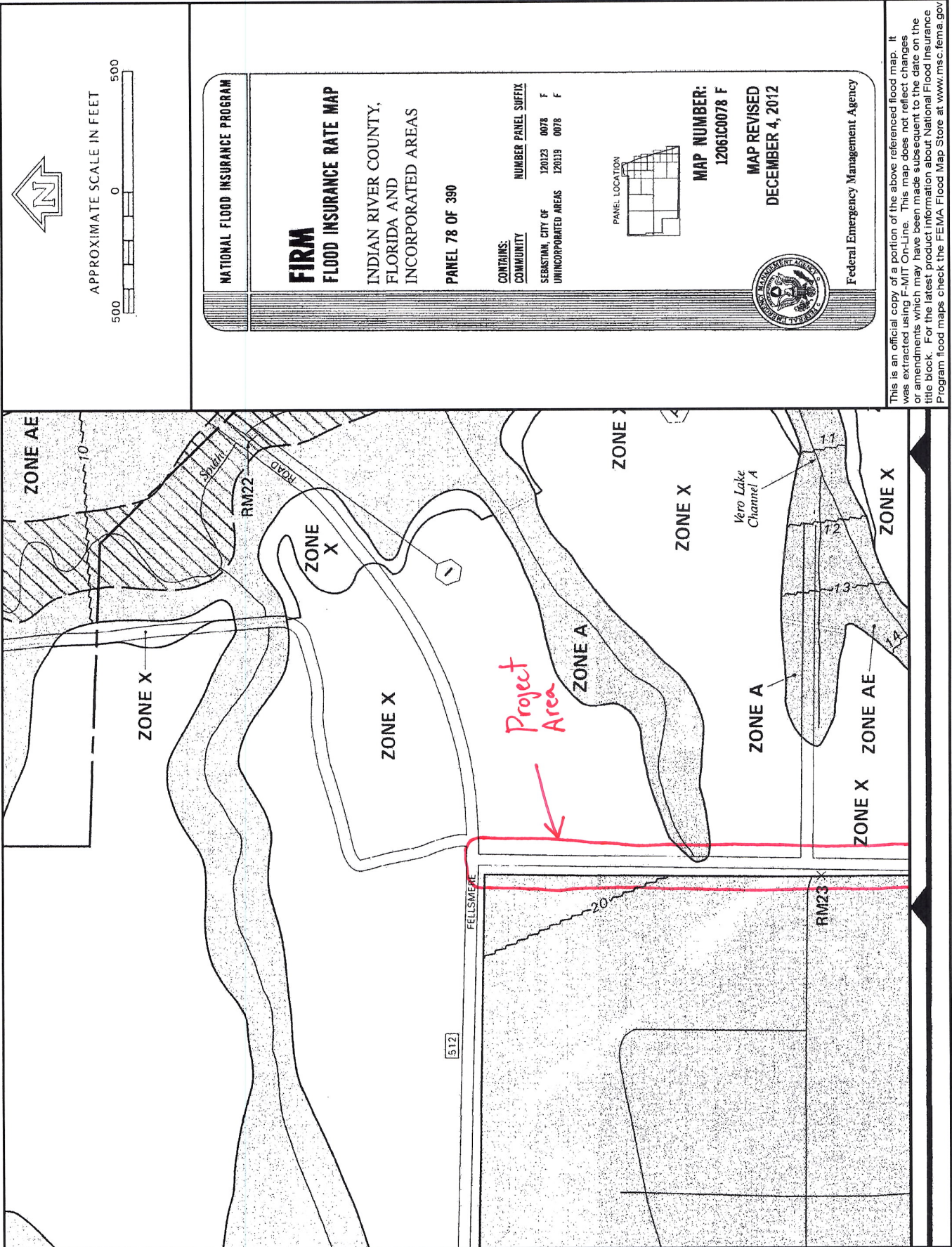
**FIRM**  
**FLOOD INSURANCE RATE MAP**  
**INDIAN RIVER COUNTY,**  
**FLORIDA**  
**AND INCORPORATED AREAS**  
 (SEE LISTING OF COMMUNITIES TABLE)

**MAP INDEX**  
**PANELS PRINTED:** 25, 50, 60, 70, 75, 78,  
 80, 85, 87, 89, 90, 91, 95, 101, 102, 103, 104, 106,  
 108, 111, 112, 113, 114, 116, 117, 118, 119, 150,  
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 357, 358, 359, 365, 370, 376, 377, 378, 379, 390

**MAP NUMBER**  
**12061CIND0A**

**MAP REVISED**  
**DECEMBER 4, 2012**

Federal Emergency Management Agency



**NATIONAL FLOOD INSURANCE PROGRAM**

**FIRM**  
**FLOOD INSURANCE RATE MAP**

INDIAN RIVER COUNTY,  
 FLORIDA AND  
 INCORPORATED AREAS

PANEL 78 OF 390

CONTAINS:	NUMBER	PANEL	SUFFIX
COMMUNITY	120123	0078	F
SEBASTIAN, CITY OF UNINCORPORATED AREAS	120119	0078	F

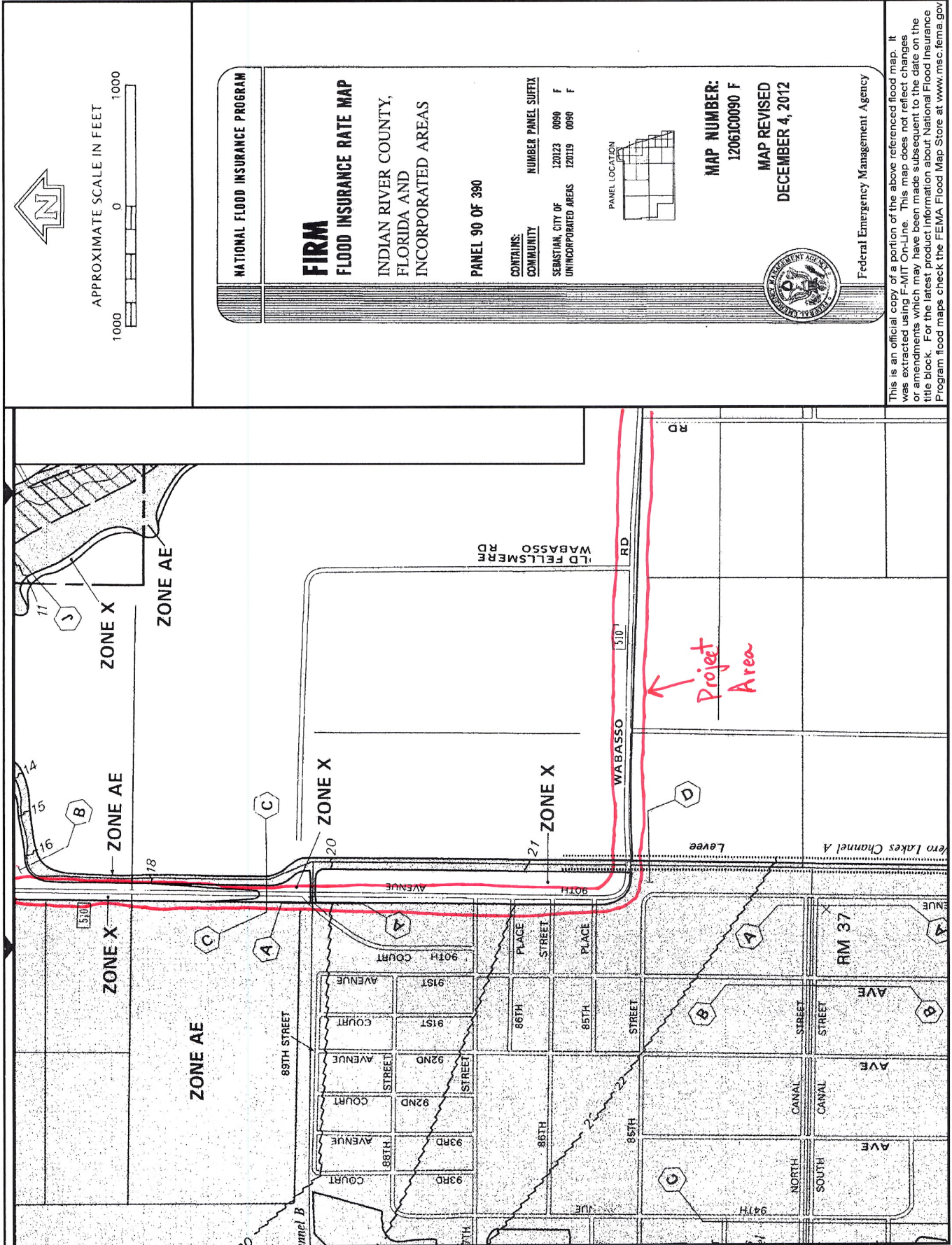
PANEL LOCATION

MAP NUMBER:  
12061C0078 F

MAP REVISED  
DECEMBER 4, 2012

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT OH-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)



APPROXIMATE SCALE IN FEET  
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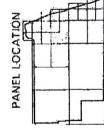
**NATIONAL FLOOD INSURANCE PROGRAM**

**FIRM  
 FLOOD INSURANCE RATE MAP**

INDIAN RIVER COUNTY,  
 FLORIDA AND  
 INCORPORATED AREAS

PANEL 90 OF 390

COUNTY: INDIAN RIVER COUNTY  
 COMMUNITY: SEBASTIAN, CITY OF  
 UNINCORPORATED AREAS



MAP NUMBER:  
 12061C0090 F  
 MAP REVISED  
 DECEMBER 4, 2012

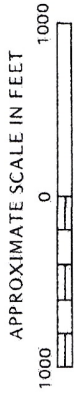
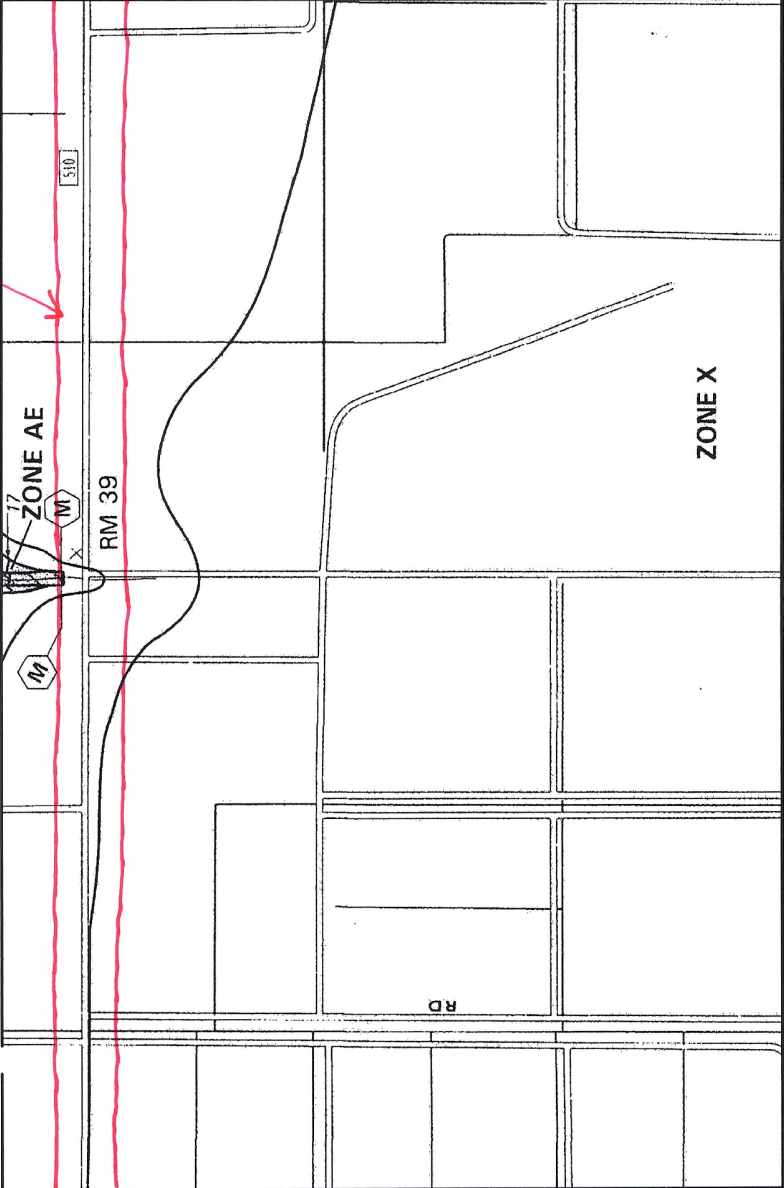


Federal Emergency Management Agency

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SEE PANELS 12061C0113 FOR EFFECTIVE INFORMATION.

*Project Area*



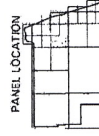
NATIONAL FLOOD INSURANCE PROGRAM

**FIRM**  
FLOOD INSURANCE RATE MAP

INDIAN RIVER COUNTY,  
FLORIDA AND  
INCORPORATED AREAS

PANEL 90 OF 390

CONTRAINS:	NUMBER	PANEL	SUFFIX
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SEBASTIAN CITY OF UNINCORPORATED AREAS	120119	0090	F



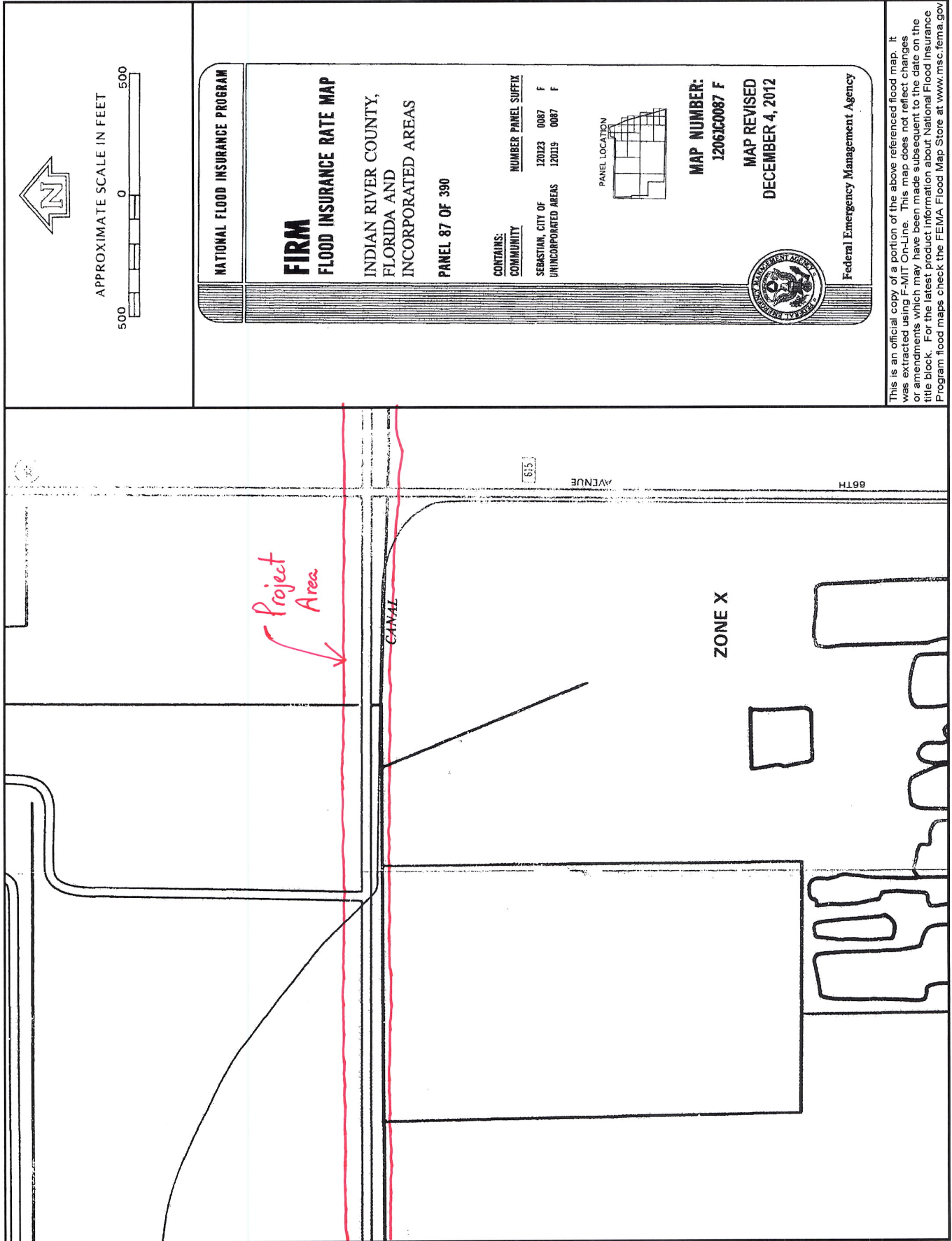
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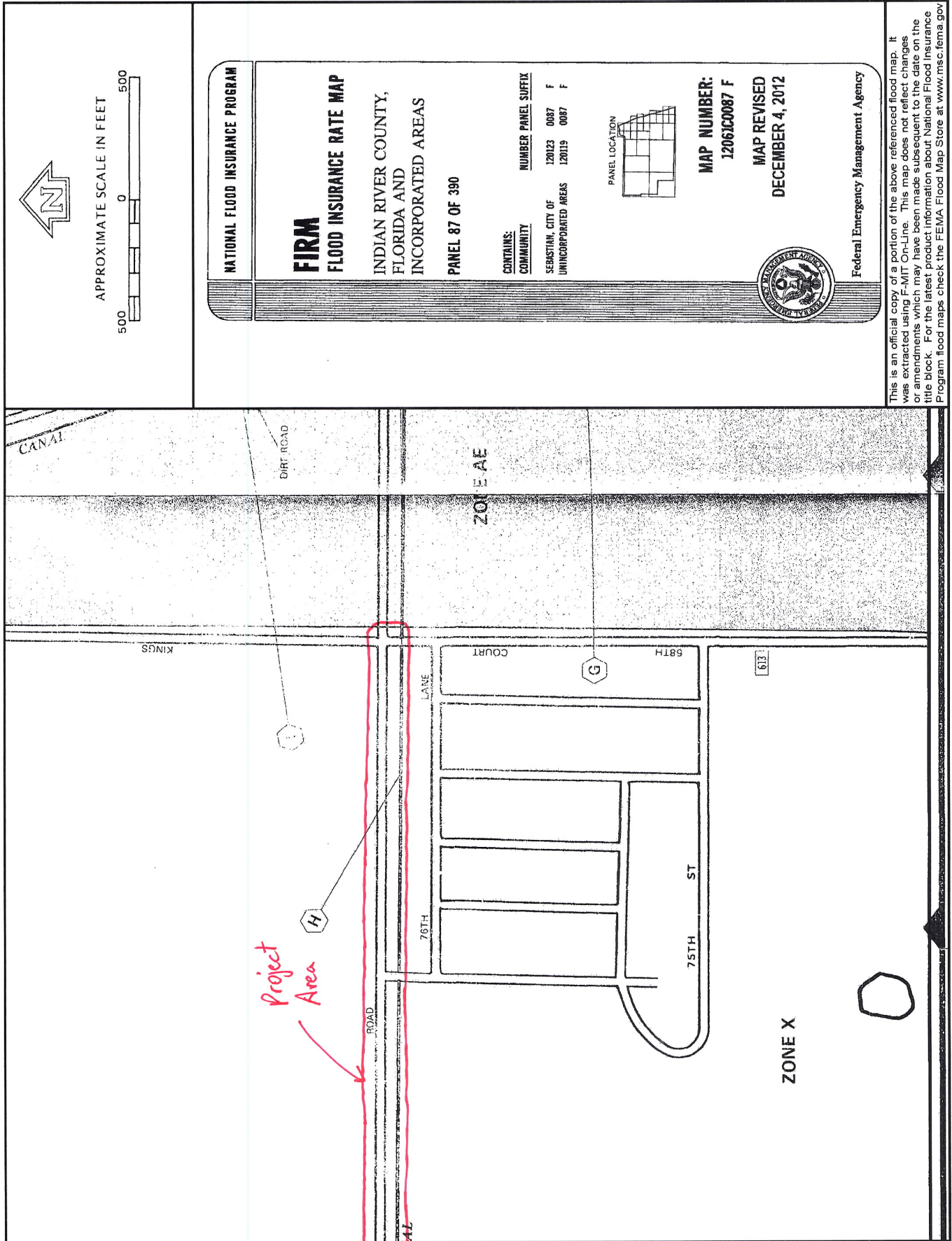


Federal Emergency Management Agency

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## **APPENDIX E**

(Geotechnical Data)

E1-E12: CR 510 Geotechnical Report

E13-E18: NRCS Soil Map

Date: April 12, 2017

Prepared by: **GCME, Inc.**

TO: Metric Engineering, Inc.  
13940 SW 136th St #200  
Miami, Florida 33186

Attention: Mr. Carlos Rodriguez, P.E.  
Transportation Planning Manager

SUBJECT: **Geotechnical Report -Revised  
Roadway Soils Survey and Structures**  
CR 510 PD&E Study  
From CR 512 to 58<sup>th</sup> Avenue  
Indian River County, Florida  
FM No.: 405606-2-22-02  
GCME Project No.: 2000-01-15013

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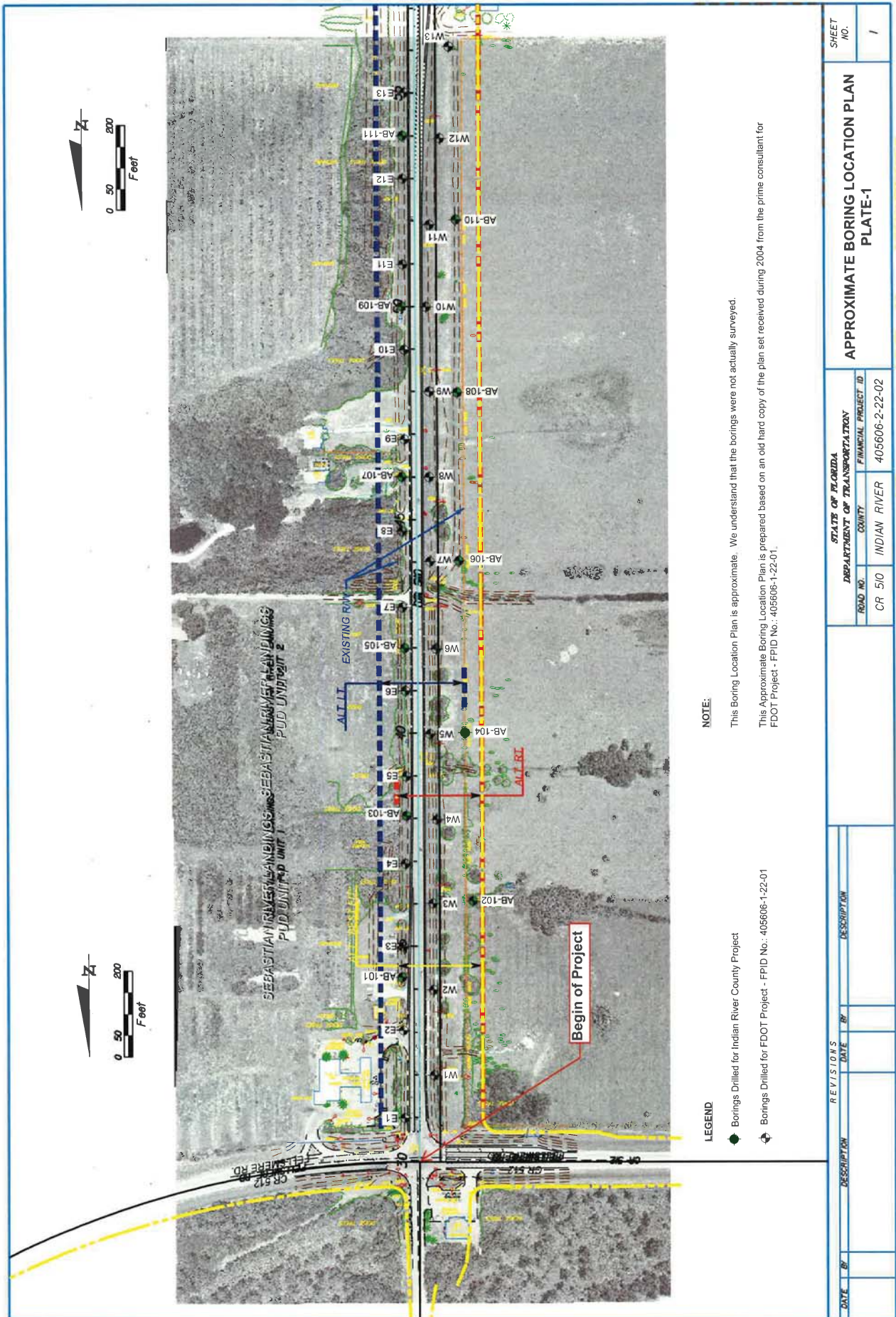
Dear Mr. Rodriguez

**GCME, Inc.** has completed the Geotechnical Services Report – Roadway Soils Survey and Structures in connection with the subject project. The purpose of this report is to provide all available existing geotechnical information to the roadway/structural engineers and for preparation of the plans for the proposed improvements (PD&E Study).

This report is updated to incorporate the comments made in reference to our previous report dated December 20, 2016 and the follow up discussion during our meeting with Ms. Maria Formoso, P.E., Mr. Matthew Gisondi, P.E., Mr. Terrance Walters (with FDOT) and you on March 21, 2017, at the FDOT District IV office.

The following report includes the methods of study, evaluations and recommendations concerning geotechnical aspects of the proposed improvements.

The work was completed following our contract with your firm and followed the basic guidelines of the Florida Department of Transportation (FDOT) Soils and Foundations Handbook, 2016. This report is written using English units.



**NOTE:**

This Boring Location Plan is approximate. We understand that the borings were not actually surveyed.

This Approximate Boring Location Plan is prepared based on an old hard copy of the plan set received during 2004 from the prime consultant for FDOT Project - FPID No. -405606-1-22-01.

**LEGEND**

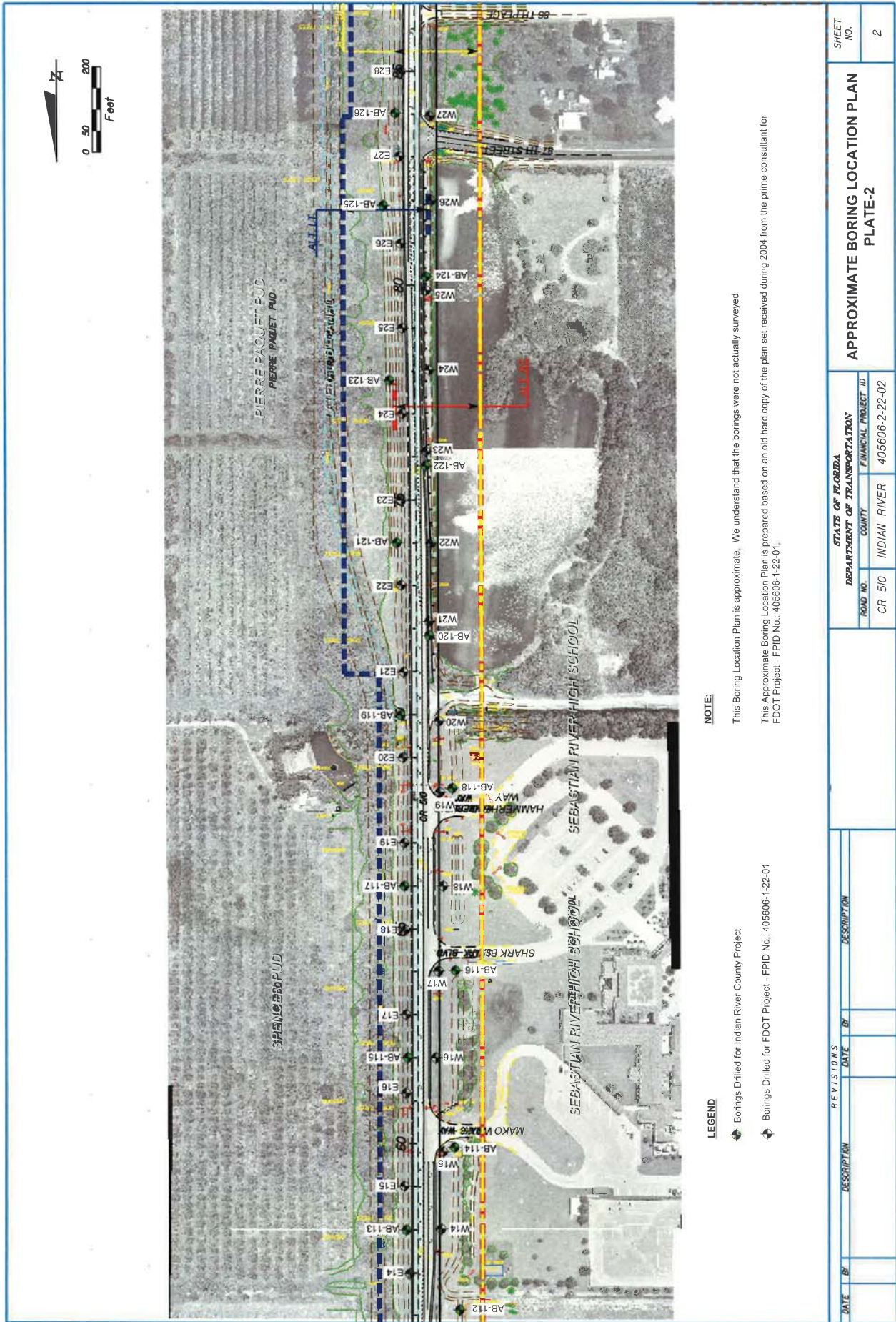
● Borings Drilled for Indian River County Project

◆ Borings Drilled for FDOT Project - FPID No. -405606-1-22-01

DATE	BY	DESCRIPTION	REVISIONS DATE	BY	DESCRIPTION

STATE OF FLORIDA		SHEET NO. 1	
DEPARTMENT OF TRANSPORTATION		APPROXIMATE BORING LOCATION PLAN	
ROAD NO. CR 510	COUNTY INDIAN RIVER	FINANCIAL PROJECT ID 405606-2-22-02	PLATE-1



**NOTE:**

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 This Approximate Boring Location Plan is prepared based on an old hard copy of the plan set received during 2004 from the prime consultant for FDOT Project - FPID No. - 405606-1-22-01.

**LEGEND**

- ◆ Borings Drilled for Indian River County Project
- ◆ Borings Drilled for FDOT Project - FPID No. - 405606-1-22-01

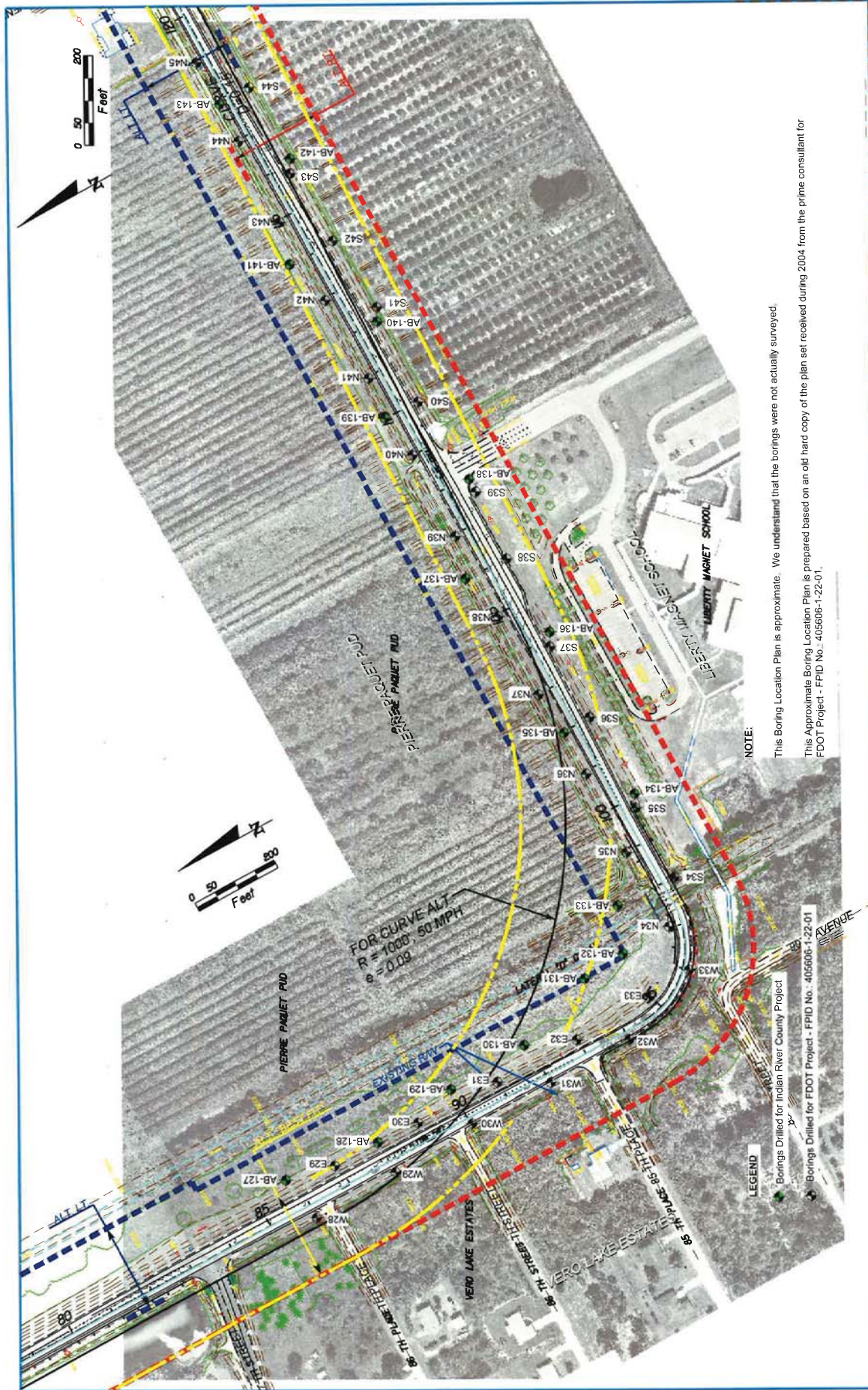
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

STATE OF FLORIDA		FINANCIAL PROJECT ID	
DEPARTMENT OF TRANSPORTATION	ROAD NO.	COUNTY	INDIAN RIVER
CR 510	405606-2-22-02		

APPROXIMATE BORING LOCATION PLAN		SHEET NO.
PLATE-2		2



DATE	BY	DESCRIPTION	REVISIONS	DATE	BY	DESCRIPTION

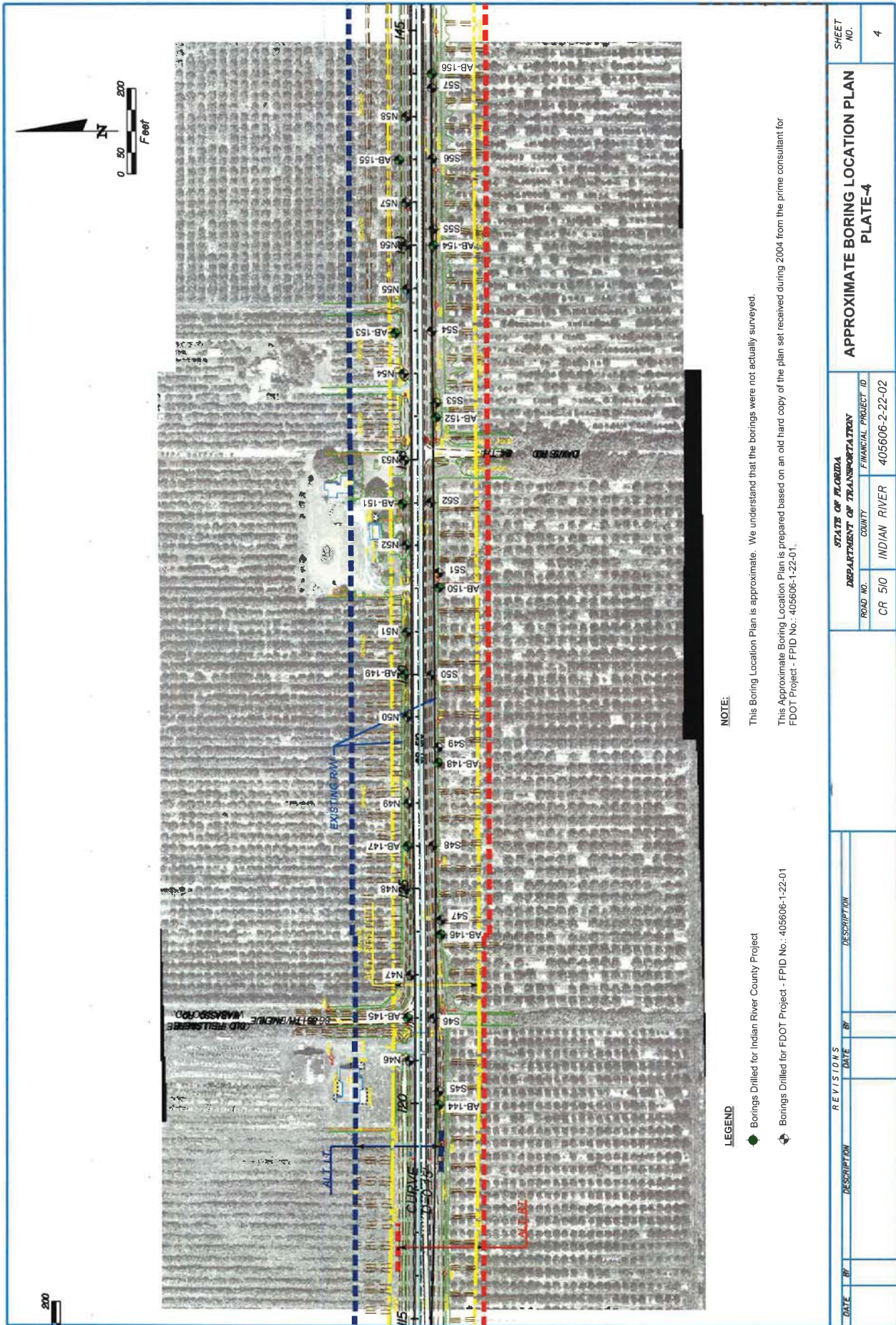
  

STATE OF FLORIDA		SHEET NO. 3	
DEPARTMENT OF TRANSPORTATION		APPROXIMATE BORING LOCATION PLAN	
ROAD NO. CR 510	COUNTY INDIAN RIVER	FINANCIAL PROJECT ID 405606-2-22-02	PLATE-3

NOTE: This Boring Location Plan is approximate. We understand that the borings were not actually surveyed. This Approximate Boring Location Plan is prepared based on an old hard copy of the plan set received during 2004 from the prime consultant for FDOT Project - FPID No. - 405606-1-22-01.

LEGEND

- Borings Drilled for Indian River County Project
- Borings Drilled for FDOT Project - FPID No. - 405606-1-22-01



**LEGEND**

- Borings Drilled for Indian River County Project
- ◆ Borings Drilled for FDOT Project - FPID No.: 405606-1-22-01

**NOTE:**

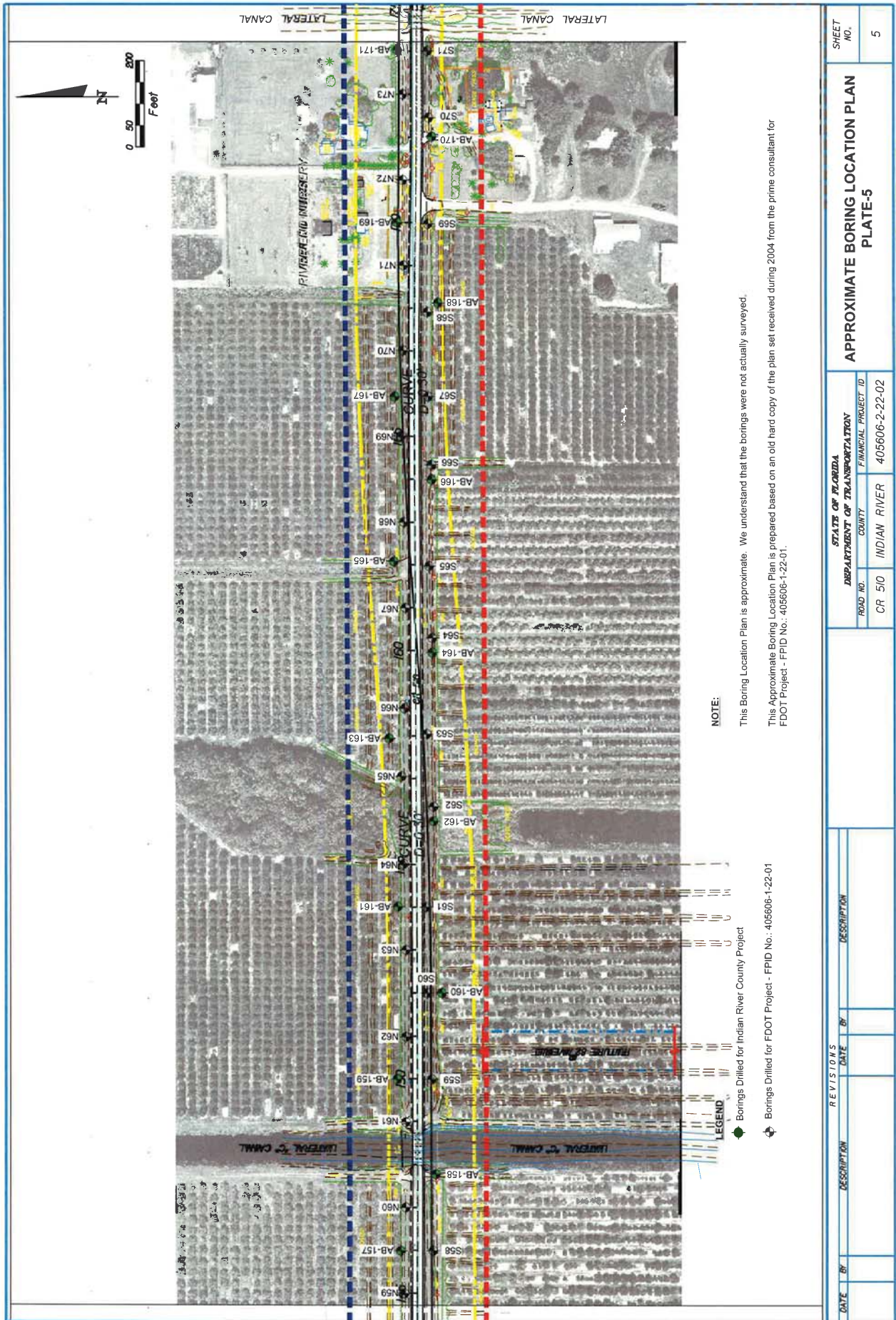
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DATE	BY	DESCRIPTION	REVISIONS	DATE	BY	DESCRIPTION

<b>STATE OF FLORIDA</b>		<b>SHEET NO.</b>
<b>DEPARTMENT OF TRANSPORTATION</b>		<b>4</b>
ROAD NO. CR 510	COUNTY INDIAN RIVER	FINANCIAL PROJECT ID 405606-2-22-02
<b>APPROXIMATE BORING LOCATION PLAN</b>		
<b>PLATE-4</b>		





**NOTE:**

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This Approximate Boring Location Plan is prepared based on an old hard copy of the plan set received during 2004 from the prime consultant for FDOT Project - FPID No.: 405606-1-22-01.

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	
ROAD NO. CR 510	COUNTY INDIAN RIVER
FINANCIAL PROJECT ID 405606-2-22-02	

<b>APPROXIMATE BORING LOCATION PLAN PLATE-5</b>	
SHEET NO.	5



**LEGEND**

- ◆ Borings Drilled for Indian River County Project
- ◆ Borings Drilled for FDOT Project - FPID No.: 405606-1-22-01

**NOTE:**

This Boring Location Plan is approximate. We understand that the borings were not actually surveyed.

This Approximate Boring Location Plan is prepared based on an old hard copy of the plan set received during 2004 from the prime consultant for FDOT Project - FPID No.: 405606-1-22-01.

DATE	BY	DESCRIPTION	REVISIONS	DATE	BY	DESCRIPTION

STATE OF FLORIDA		SHEET NO. 6	
DEPARTMENT OF TRANSPORTATION		FINANCIAL PROJECT ID	
ROAD NO.	COUNTY	FINANCIAL PROJECT ID	
CR 510	INDIAN RIVER	405606-2-22-02	



**NOTE:**

This Boring Location Plan is approximate. We understand that the borings were not actually surveyed.

This Approximate Boring Location Plan is prepared based on an old hard copy of the plan set received during 2004 from the prime consultant for FDOT Project - FPID No.: 405606-1-22-01.

**LEGEND**

● Borings Drilled for Indian River County Project

◆ Borings Drilled for FDOT Project - FPID No.: 405606-1-22-01

DATE	BY	DESCRIPTION	REVISIONS	DATE	BY	DESCRIPTION

STATE OF FLORIDA		FINANCIAL PROJECT ID	
DEPARTMENT OF TRANSPORTATION		405606-2-22-02	
ROAD NO.	COUNTY	PROJECT ID	
CR 510	INDIAN RIVER	405606-2-22-02	

APPROXIMATE BORING LOCATION PLAN		SHEET NO.
PLATE-7		7



**LEGEND**

◆ Borings Drilled for Indian River County Project

◀ Borings Drilled for FDOT Project - FPID No.: 405606-1-22-01

**NOTE:**

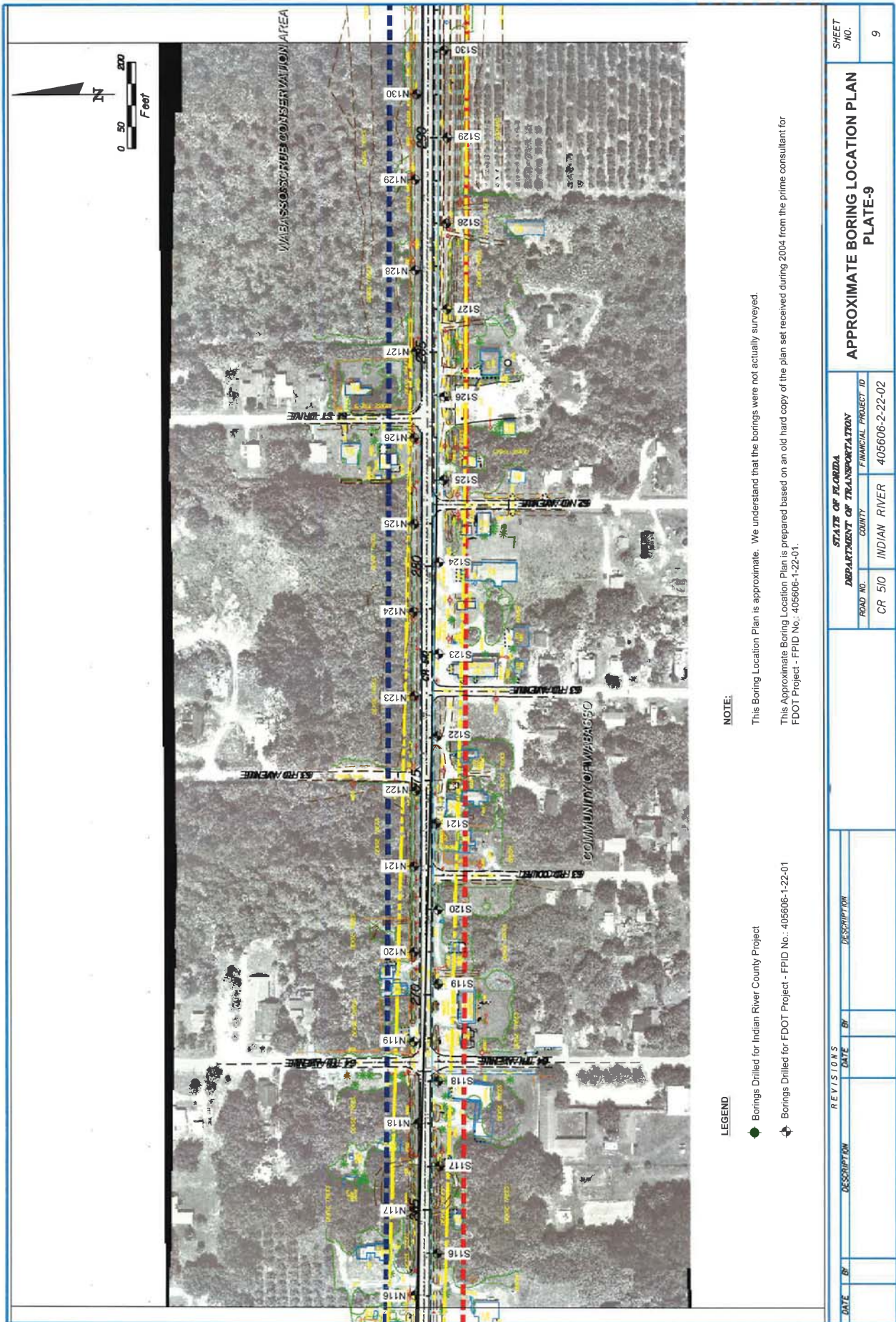
This Boring Location Plan is approximate. We understand that the borings were not actually surveyed.

This Approximate Boring Location Plan is prepared based on an old hard copy of the plan set received during 2004 from the prime consultant for FDOT Project - FPID No.: 405606-1-22-01.

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

STATE OF FLORIDA	
DEPARTMENT OF TRANSPORTATION	
ROAD NO.	FINANCIAL PROJECT ID
CR 510	405606-2-22-02
COUNTY	
INDIAN RIVER	

APPROXIMATE BORING LOCATION PLAN	
PLATE-8	
SHEET NO.	8



**LEGEND**

- Borings Drilled for Indian River County Project
- Borings Drilled for FDOT Project - FPID No.: 405606-1-22-01

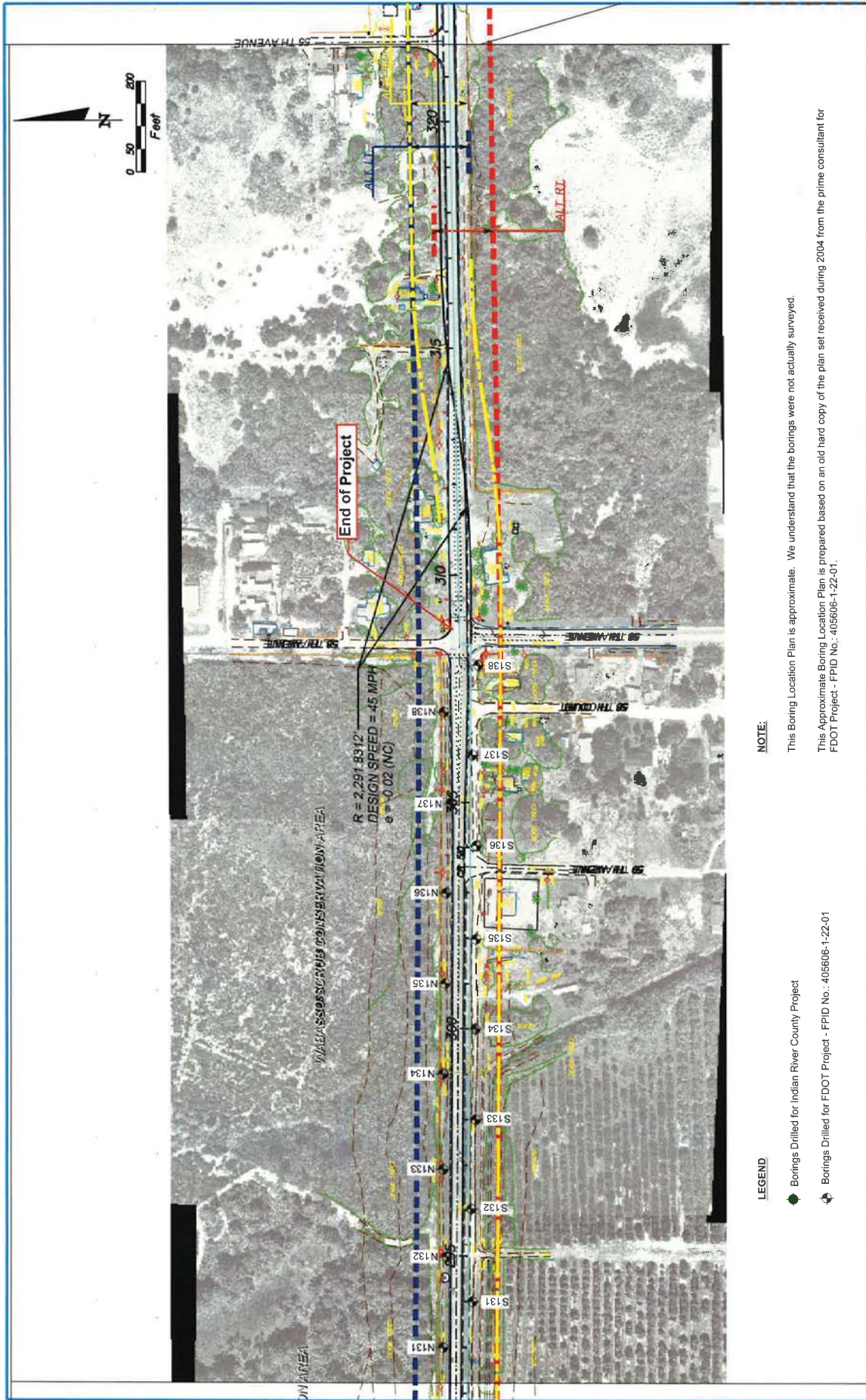
**NOTE:**

This Boring Location Plan is approximate. We understand that the borings were not actually surveyed.  
 This Approximate Boring Location Plan is prepared based on an old hard copy of the plan set received during 2004 from the prime consultant for FDOT Project - FPID No.: 405606-1-22-01.

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

STATE OF FLORIDA	
DEPARTMENT OF TRANSPORTATION	
ROAD NO.	FINANCIAL PROJECT ID
CR 510	405606-2-22-02
COUNTY	
INDIAN RIVER	

APPROXIMATE BORING LOCATION PLAN	
PLATE-9	
SHEET NO.	9



**NOTE:**

This Boring Location Plan is approximate. We understand that the borings were not actually surveyed.

This Approximate Boring Location Plan is prepared based on an old hard copy of the plan set received during 2004 from the prime consultant for FDOT Project - FPID No.: 405606-1-22-01.

**LEGEND**

- ◆ Borings Drilled for Indian River County Project
- ◆ Borings Drilled for FDOT Project - FPID No.: 405606-1-22-01

DATE	BY	DESCRIPTION	REVISIONS	DATE	BY	DESCRIPTION

STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		SHEET NO.	10
ROAD NO.	COUNTY	FINANCIAL PROJECT ID			
CR 510	INDIAN RIVER	405606-2-22-02			
<b>APPROXIMATE BORING LOCATION PLAN</b>					
<b>PLATE-10</b>					

**Table - E1****Borehole Permeability Test Results****Reference: FDOT Project, FPID No.: 405606-1-22-01**

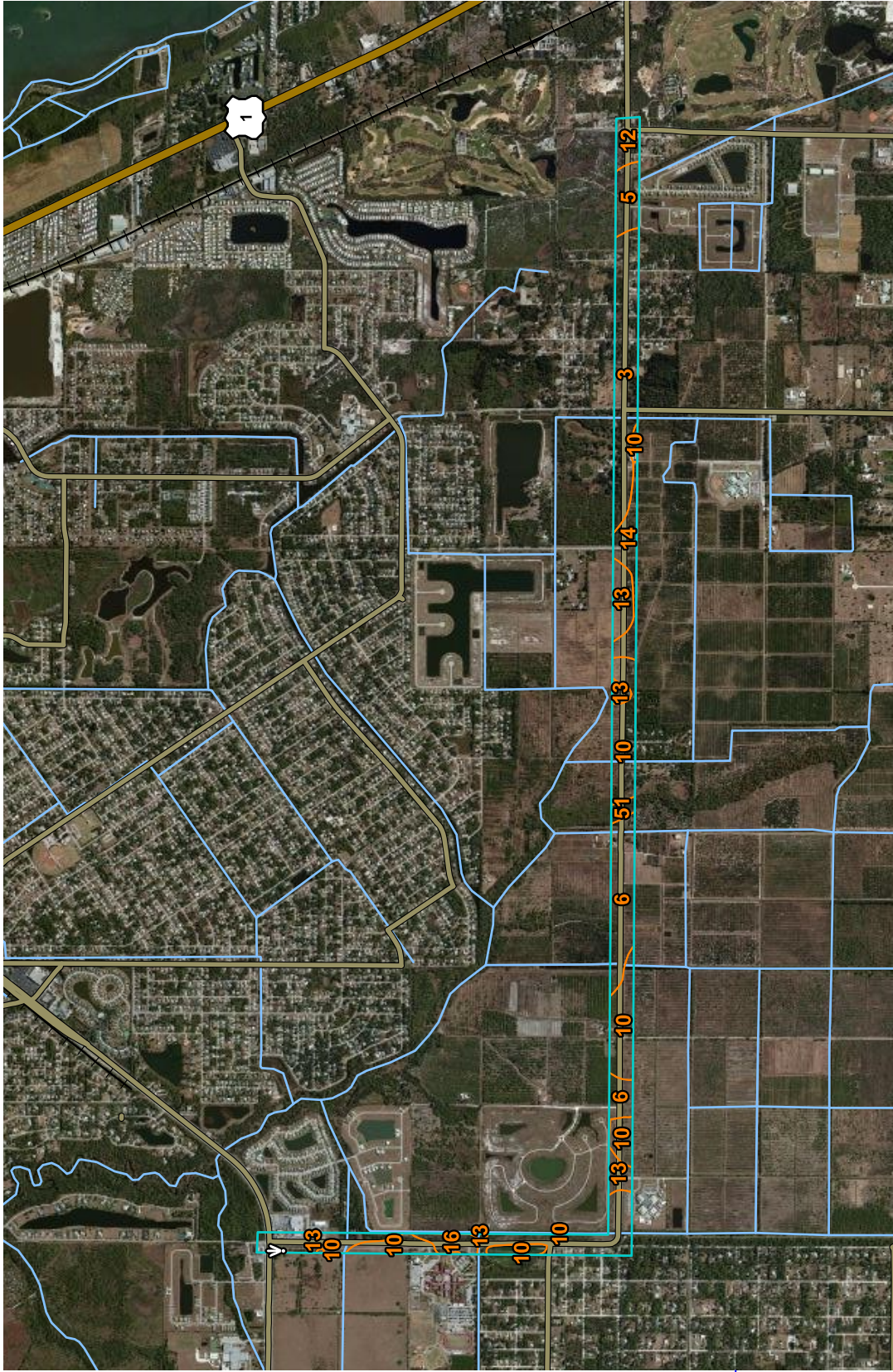
<b>BHP Name /Location</b>	<b>Station</b>	<b>Offset*</b>	<b>k (cfs/ft<sup>2</sup>)</b>	<b>k (feet/day)</b>
BHP # 1 [E5]	39+00	4 RT	6.94E-05	6.0
BHP # 2 [W10]	50+00	5 LT	1.16E-05	1.0
BHP # 3 [E27]	83+00	8 RT	3.47E-05	3.0
BHP # 4 [W32]	94+00	1 LT	1.15E-05	1.0
BHP # 5 [N51]	131+00	0 LT	1.16E-05	1.0
BHP # 6 [S56]	142+00	2 RT	3.47E-05	3.0
BHP # 7 [N74]	177+00	1 LT	6.14E-06	0.5
BHP # 8 [S89]	210+00	1 RT	1.23E-05	1.1
BHP # 9 [N97]	223+00	1 LT	3.50E-05	3.0
BHP # 10 [S101]	234+00	2 RT	8.02E-05	7.0
BHP # 11 [N121]	273+00	1 LT	3.62E-05	3.1
BHP # 12 [S127]	286+00	2 RT	9.69E-05	8.4
BHP # 13 [N145]	321+00	2 LT	1.53E-05	1.3
BHP # 14 [S165]	362+00	5 RT	2.59E-05	2.2

\* Offset measured from edge of pavement

M 91.92 08

M 91.92 08

Soil Map—Indian River County, Florida



27° 46' 51" N

27° 44' 4" N

80° 31' 7" W

80° 31' 7" W

Map Scale: 1:36,400 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84



### MAP LEGEND

- Area of Interest (AOI)
- Area of Interest (AOI)
- Soils**
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points
- Special Point Features**
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features
- Water Features**
- Streams and Canals
- Transportation**
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads
- Background**
- Aerial Photography

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000. Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Indian River County, Florida  
 Survey Area Data: Version 14, Nov 19, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 15, 2010—Mar 13, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table: Soil Types in Project Area		
Map Unit Symbol	Map Unit Name	Description
3	EauGallie fine sand	<ul style="list-style-type: none"> <li>▪ Hydrologic Soil Group A/D</li> <li>▪ Drainage Class: poorly drained</li> <li>▪ Profile: 0 to 5 inches consist of fine sand 5 to 26 inches consist of fine sand 26 to 42 inches consist of fine sand 42 to 47 inches consist of fine sand 47 to 62 inches consist of sandy clay loam 62 to 80 inches consist of loamy sand</li> <li>▪ Permeability rate: 0.06 to 1.98 in/hr</li> </ul>
5	Myakka-Myakka, wet, fine sands, 0 to 2 percent slopes	<ul style="list-style-type: none"> <li>▪ Hydrologic Soil Group A/D</li> <li>▪ Drainage Class: poorly drained</li> <li>▪ Profile: 0 to 6 inches consist of fine sand 6 to 20 inches consist of fine sand 20 to 36 inches consist of fine sand 36 to 80 inches consist of fine sand</li> <li>▪ Permeability rate: 0.57 to 5.95 in/hr</li> </ul>
6	Oldsmar fine sand	<ul style="list-style-type: none"> <li>▪ Hydrologic Soil Group A/D</li> <li>▪ Drainage Class: poorly drained</li> <li>▪ Profile: 0 to 5 inches consist of fine sand 5 to 32 inches consist of fine sand 32 to 50 inches consist of fine sand 50 to 62 inches consist of sandy clay loam 62 to 80 inches consist of loamy fine sand</li> <li>▪ Permeability rate: 0.06 to 0.20 in/hr</li> </ul>

Table: Soil Types in Project Area		
Map Unit Symbol	Map Unit Name	Description
10	Riviera fine sand, 0 to 2 percent slopes	<ul style="list-style-type: none"> <li>▪ Hydrologic Soil Group A/D</li> <li>▪ Drainage Class: poorly drained</li> <li>▪ Profile: 0 to 6 inches consist of fine sand 6 to 28 inches consist of fine sand 28 to 36 inches consist of sandy loam 36 to 42 inches consist of sandy clay loam 42 to 80 inches consist of fine sand</li> <li>▪ Permeability rate: 0.60 to 6.00 in/hr</li> </ul>
12	Archbold sand, 0 to 5 percent slopes	<ul style="list-style-type: none"> <li>▪ Hydrologic Soil Group A</li> <li>▪ Drainage Class: moderately well drained</li> <li>▪ Profile: 0 to 2 inches consist of sand 2 to 80 inches consist of sand</li> <li>▪ Permeability rate: 20.00 to 50.02 in/hr</li> </ul>
13	Wabasso fine sand	<ul style="list-style-type: none"> <li>▪ Hydrologic Soil Group C/D</li> <li>▪ Drainage Class: poorly drained</li> <li>▪ Profile: 0 to 7 inches consist of fine sand 7 to 24 inches consist of fine sand 24 to 35 inches consist of fine sand 35 to 48 inches consist of sandy clay loam 48 to 80 inches consist of loamy sand</li> <li>▪ Permeability rate: 0.06 to 0.20 in/hr</li> </ul>

Table: Soil Types in Project Area		
Map Unit Symbol	Map Unit Name	Description
14	Winder fine sand, 0 to 2 percent slopes	<ul style="list-style-type: none"> <li>▪ Hydrologic Soil Group C/D</li> <li>▪ Drainage Class: poorly drained</li> <li>▪ Profile: 0 to 7 inches consist of fine sand 7 to 17 inches consist of fine sand 17 to 23 inches consist of sandy loam 23 to 34 inches consist of sandy loam 34 to 48 inches consist of sandy loam 48 to 65 inches consist of sandy loam 65 to 80 inches consist of loamy sand</li> <li>▪ Permeability rate: 0.06 to 0.20 in/hr</li> </ul>
16	Pineda fine sand	<p>Hydrologic Soil Group C/D</p> <p>Drainage Class: poorly drained</p> <p>Profile: 0 to 4 inches consist of fine sand 4 to 9 inches consist of fine sand 9 to 23 inches consist of fine sand 23 to 40 inches consist of sandy loam 40 to 80 inches consist of loamy sand</p> <p>Permeability rate: 0.06 to 0.20 in/hr</p>
51	Riviera fine sand, depressionals, 0 to 1 percent slopes	<p>Hydrologic Soil Group A/D</p> <p>Drainage Class: very poorly drained</p> <p>Profile: 0 to 4 inches consist of fine sand 4 to 36 inches consist of fine sand 36 to 42 inches consist of fine sandy loam 42 to 56 inches consist of fine sand 56 to 80 inches consist of fine sand</p> <p>Permeability rate: 0.60 to 2.00 in/hr</p>

## Map Unit Legend

Indian River County, Florida (FL061)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3	EauGallie fine sand	52.5	18.5%
5	Myakka-Myakka, wet, fine sands, 0 to 2 percent slopes	13.1	4.6%
6	Oldsmar fine sand	38.6	13.6%
10	Riviera fine sand, 0 to 2 percent slopes	95.8	33.8%
12	Archbold sand, 0 to 5 percent slopes	9.3	3.3%
13	Wabasso fine sand	40.5	14.3%
14	Winder fine sand, 0 to 2 percent slopes	17.9	6.3%
16	Pineda fine sand	8.0	2.8%
51	Riviera fine sand, depressional, 0 to 1 percent slopes	3.4	1.2%
99	Water	4.5	1.6%
<b>Totals for Area of Interest</b>		<b>283.6</b>	<b>100.0%</b>