DRAFT Pond Siting Report

Widening Western Beltway (SR 429) Project

Development and Environment (PD&E) Study

From Interstate 4 to Seidel Road
(MP 0.5 to MP 11.5)

Osceola and Orange Counties, Florida

Financial Project ID (FPID) No. 446164-1
ETDM No.: 14446

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November 2022

POND SITING REPORT
PD&E Study Widening Western Beltway from Interstate 4 to Seidel Road
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This DRAFT Pond Siting Report is based solely upon the information made available to or gathered by RS&H. RS&H does not assume responsibility for conditions, which did not come to knowledge, or conditions not recognized as unacceptable at the time this report was prepared. RS&H has performed these drainage calculations and recommendations in a manner consistent with sound practices and that level of care and skill normally exercised by members of the profession operating under similar circumstances.

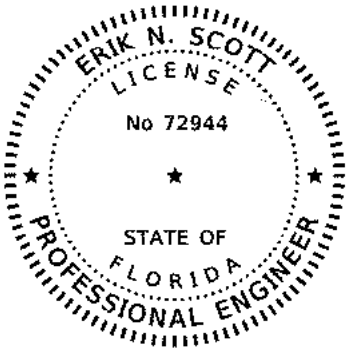
This document and the information contained within have been prepared solely for the use of Florida's Turnpike Enterprise.

This report consists of the following parts:

Sections 1 through 11
Appendices A through F

I, Erik N. Scott, hereby certify that this report, as listed above, is true and correct, represents the described work and is in accordance with the requirements of this project.

This item has been digitally signed and sealed by



on the date adjacent to the seal.

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EXECUTIVE SUMMARY

The Florida Turnpike Enterprise (FTE), part of the Florida Department of Transportation (FDOT), is evaluating the widening of Florida's Turnpike (State Road (SR) 429) from Interstate 4 to Seidel Road, a distance of approximately 10 miles. The project is located in Osceola and Orange Counties, Florida. The vertical datum used for this project is the North American Vertical Datum of 1988 (NAVD-88). The datum shift from NGVD-29 is (-)0.87-ft, with NAVD-88 being the lower elevation of the two.

NAVD-88 = NGVD-29 + datum shift

Florida's Turnpike currently has a 4-lane typical section within the study limit. This PD&E study evaluates the widening of the mainline from 4-lanes to 8-lanes. The roadway is functionally classified as an Urban Principal Arterial – Freeway and Expressway and has a posted speed limit of 70 miles per hour (mph). The purpose of the project is to improve mobility on Florida's Turnpike mainline to accommodate current and future traffic volumes, as well as improve safety along SR 429.

The analysis presented in this report identifies the stormwater management needs for each of the 20 basins defined within the study area. For basins which required new stormwater management facilities, three potential stormwater management alternatives within the basin were identified. The preferred alternative for each basin and anticipated right-of-way needs associated with the preferred alternatives are outlined in **Table 1**. The evaluation matrix which contains the details of the analysis has been provided in **Appendix E**. It should be noted that the information contained herein is preliminary and will need to be refined once this project enters the design phase. As outlined in the report which follows, there is excess treatment and attenuation provided within the currently permitted stormwater management systems that should be accounted for when developing the stormwater management design during the design phase.

Table 1: Preferred Pond Alternatives and Anticipated Right-of-Way

Basin	Preferred Alternative	Anticipated Right of Way Requirements (acres)	Total Cost
2A-2	1	12.42[1,2]	$6,426,744
FGB (Basin B)	3	4.80[1]	$1,048,101

1. Pond to be placed within remnant parcel of land being purchased for proposed roadway alignment.
2. A portion of proposed Pond 2A-2 will be located within the existing right-of-way.

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SECTION 1.0 – INTRODUCTION

The Florida Turnpike Enterprise (FTE) is evaluating alternatives to widen Florida's Turnpike (State Road (SR) 429) from Interstate 4 to Seidel Road, a distance of approximately 11 miles. As part of the study, all existing interchanges within the project limits and the need for a new interchange will be evaluated. The purpose of the project is to improve mobility on Florida's Turnpike mainline to accommodate current and future traffic volumes and improve safety along SR 429.

SECTION 2.0 – PROJECT DESCRIPTION

The project is located in Osceola and Orange Counties, Florida. See **Figure 1** for a Project Location Map**.** The vertical datum used for this project is the North American Vertical Datum of 1988 (NAVD-88). The datum shift from NGVD-29 is (-)0.87-ft, with NAVD-88 being the lower elevation of the two.

NAVD-88 = NGVD-29 + datum shift

Florida's Turnpike currently has 4-lane typical section within the study limits. See **Figure 2** for the existing typical section. The roadway is functionally classified as an Urban Principal Arterial – Freeway and Expressway and has a posted speed limit of 70 miles per hour (mph).

This PD&E Study will evaluate the widening of the Florida's Turnpike from 4-lanes to 8-lanes, along with interchange improvements. See **Figure 3** for the proposed typical section. The total project length is approximately 11.0-miles. The study includes five existing interchanges and one new interchange.

Existing interchanges are as follows:

- Interstate 4 (MP 0)
- Sinclair Road (MP 1)
- US 192 (MP 6)
- Western Way (MP 8)
- Seidel Road (MP 11)

Proposed interchange:

- Livingston Road (MP 4)

See **Figure 4** for United States Geological Survey (USGS) Quadrangle Map.

Figure 1: Project Location Map

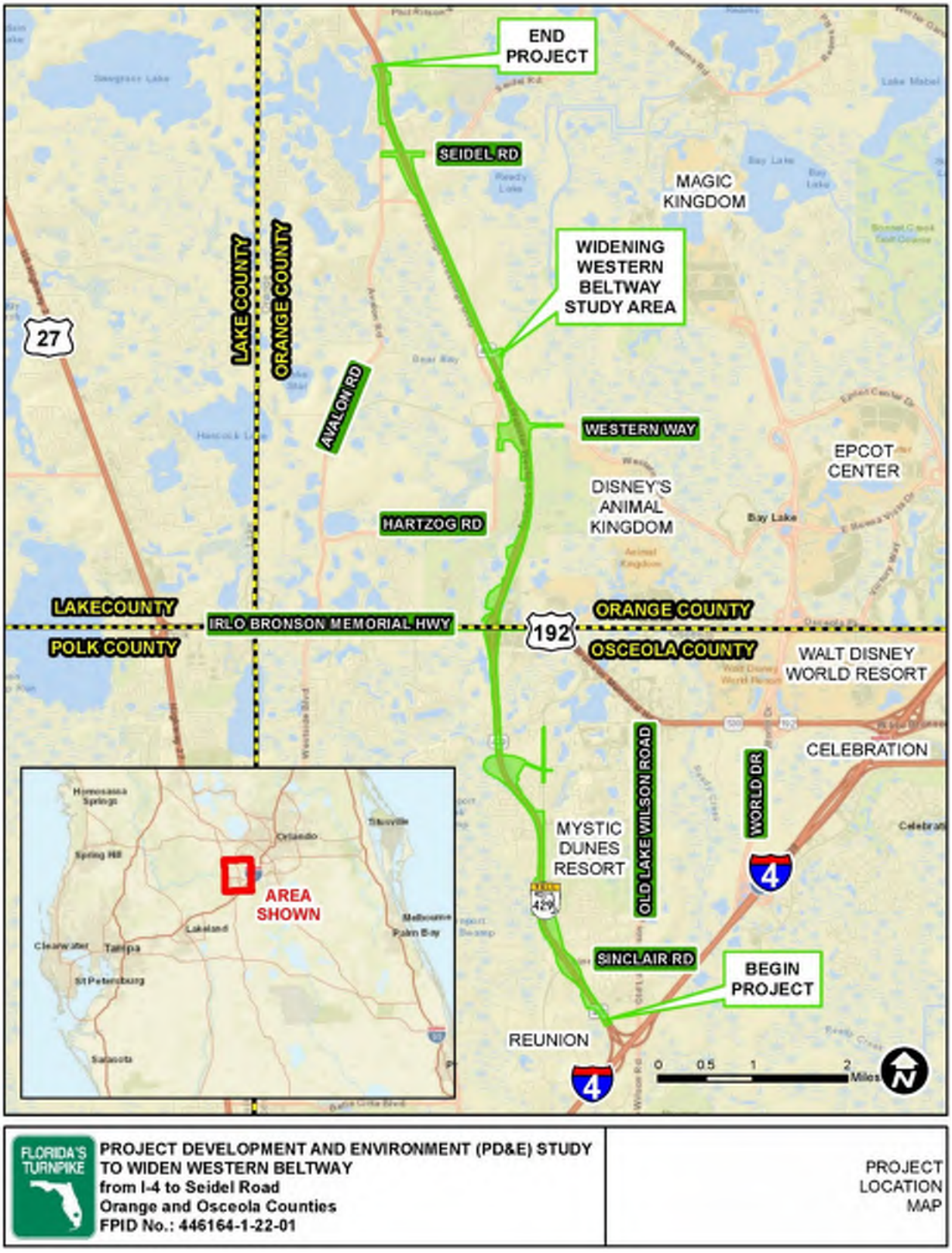


Figure 2: Existing Typical Section

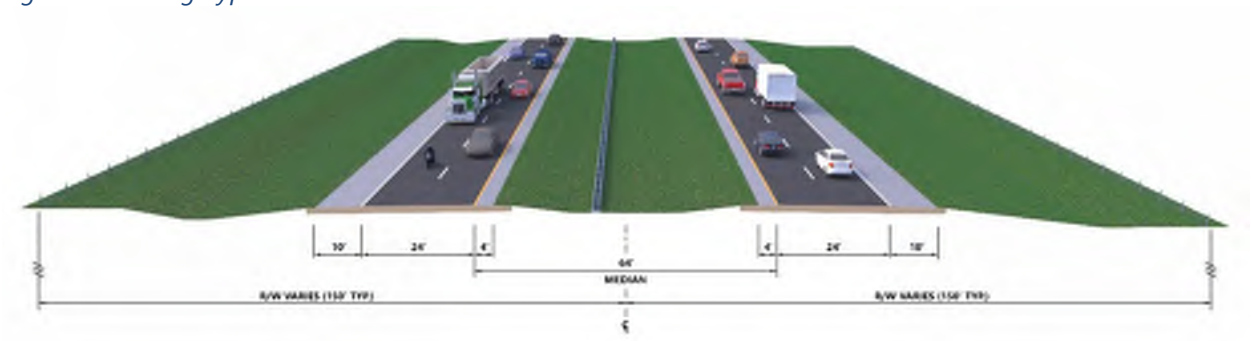


Figure 3: Proposed Typical Section

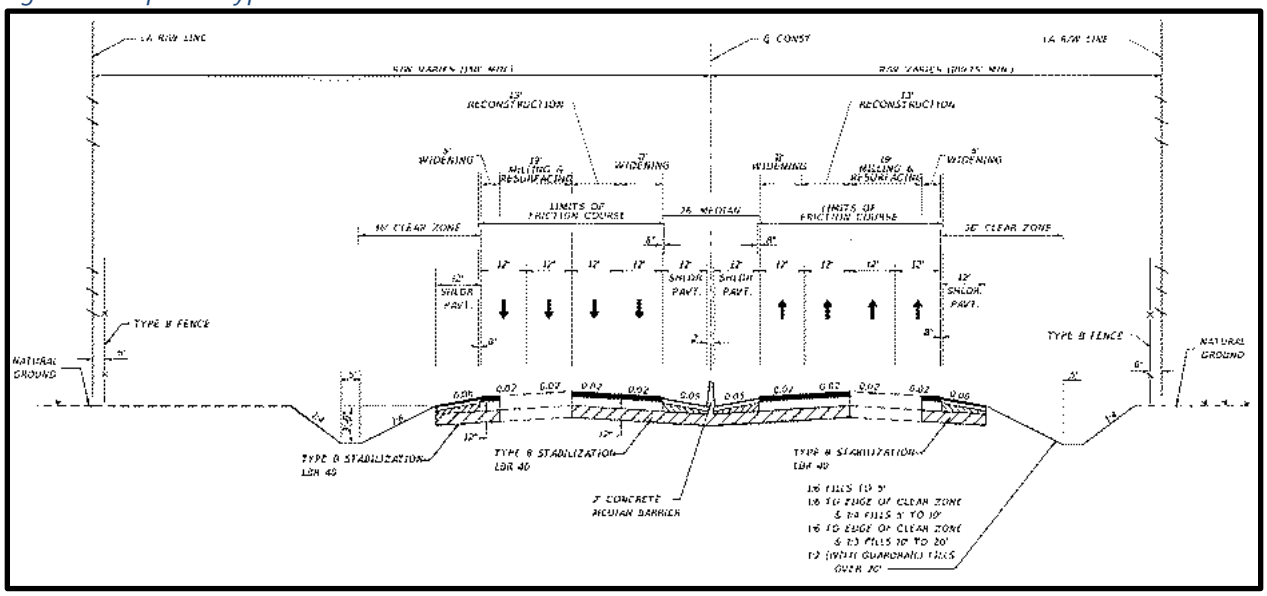
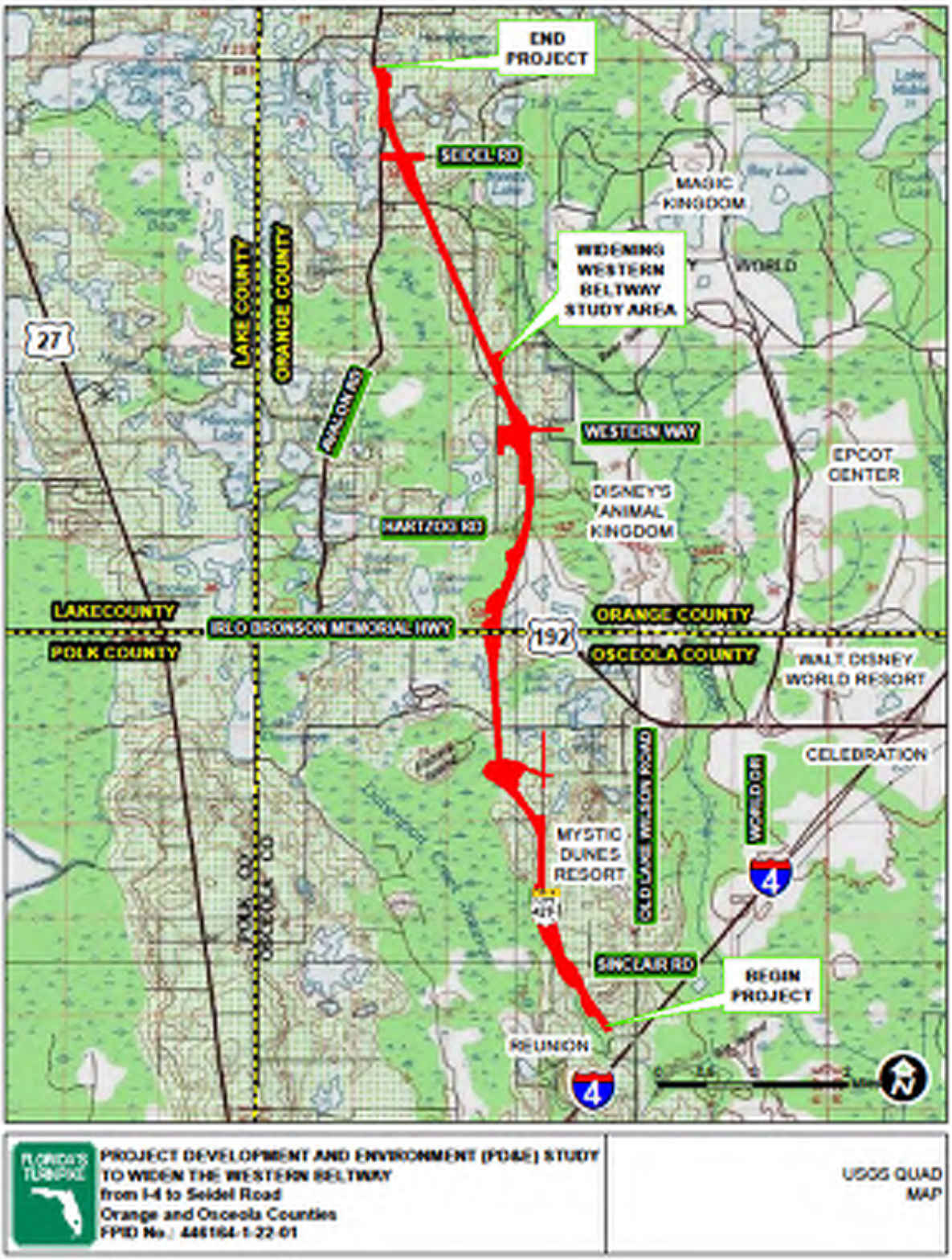


Figure 4: USGS Quad Map



SECTION 3.0 – DATA COLLECTION

Pre-application meetings were held with the Florida Department of Environmental Protection (FDEP), South Florida Water Management District (SFWMD), and Reedy Creek Improvement District (RCID) to discuss permitting requirements for the project. Meeting minutes from these pre-applications meeting have been provided in **Appendix F**. In order to locate and size the stormwater management facilities the following sources were utilized:

- USDA NRCS Web Soil Survey (2022)
- SFWMD ePermitting Web App
- FDEP NEXUS Permit Search Information Portal
- FDEP GIS Viewer (WBIDs, Impaired Waterbodies, etc.)
- FEMA Flood Insurance Rate Maps (12097C0040G, 12097C0030G, 12095C0580F, 12095C0390F, 12095C0375F)
- Conservation Easements and Wetlands- SFWMD 2016 (Updated 2020)
- LIDAR Data - http://digir.fiu.edu/

SECTION 4.0 – DESIGN CRITERIA

4.1 Rules & Regulations / Regulatory Agency Coordination

Project improvements will be designed to meet the regulatory requirements of the applicable water management districts, the requirements outlined in the FDOT Drainage Manual, and the requirements of Florida's Turnpike Enterprise (FTE). The project is located within the SFWMD jurisdiction, however FDEP reviewed and issued the original Environmental Resource Permit (ERP) in 2001. In addition, the Reedy Creek Improvement District entered into a drainage agreement with FTE for discharges outside the right of way.

FDEP will be the permitting lead for the ERP based on Ch. 338.250, FS "The Central Florida Beltway Mitigation Bill", while utilizing the applicable local water management district criteria. In addition, the project is within the Reedy Creek Watershed, therefore approval / drainage agreement from RCID will be required as well. The FDEP ERP application should be submitted to RCID for review prior to submitting to FDEP for concurrence. FDEP will be responsible for Section 404 reviews and permitting. A National Pollutant Discharge Elimination System (NPDES) permit will also be required from FDEP.

4.1.1 Water Quality Criteria

SFWMD, FDEP, and RCID

- ***Wet detention***: Detention volume shall be provided for the first inch of total runoff from the developed project, or 2.5 inches of the runoff from impervious area, whichever is greater.
- ***Dry Retention***: retention volume shall be provided equal to 50 percent of the above amounts computed for wet detention. Retention volume included in flood protection calculations requires a guarantee of long-term operation and maintenance of system bleed-down ability.
- ***Dry Detention***: volume shall be provided equal to 75 percent of the above amounts computed for wet detention.

4.1.2 Water Quantity Criteria

SFWMD

For open basins, the post-development peak discharge rate must not exceed the pre-development peak discharge rate during the 25-year, 72-hour storm. For closed basins, the post-development peak discharge volume must not exceed the pre-development peak discharge rate and volume during the 100-year, 72-hour storm.

RCID

Reedy Creek Improvement District will impose a drainage fee for any discharge from the proposed project which exceeds 13 csm (cfs per square mile) for the 50-year, 72-hour (12.91 inches of rainfall) event using the SFWMD distribution. See **Appendix F** for documentation.

FDOT

Per FDOT requirements, the above noted SFWMD requirements are to be followed in open basins. FDOT does, however, require that the constraints found in Chapter 14-86 of the Florida Administrative Code be utilized for design purposes in basins that are closed and where there are flooding concerns. For the purposes of this report, the volumetric difference associated with the 100-year, 10-day storm has been utilized for pond sizing in closed basins and basins with a history of flooding concerns.

4.2 Project-Specific Criteria

This project does not discharge to Outstanding Florida Waters. The project does, however, traverse basins where a basin management action plan has been established. A summary of these special requirements is noted in the sections that follow.

4.2.1 TMDL Requirements

FDEP maintains the Statewide Comprehensive List of Impaired Waters, which contains waterbody-parameter combinations that have been verified as impaired based on criteria and assessment methodologies. Waterbody Identification (WBID) 3170K and 3170F4 have been identified for impairments. **Table 2** outlines the impairments associated with these WBID's. It should be noted that there are nutrient removal requirements associated with the basin management action plans for WBID's which may not be listed as impaired for nutrients in the Statewide Verified List.

Table 2: Statewide Water Quality Assessments

Waterbody Name	WBID	Class	Impairment
Davenport Creek	3170K	3F	Bacteria (Fecal)
Davenport Creek Headwaters	3170F5	3F	None
Whittenhorse Creek	3170F4	3F	Dissolved Oxygen
Lake Hickorynut Drain	3170IA	3F	None

Existing stormwater management facilities are based on the water management districts presumptive treatment volumes. No additional treatment volume beyond the presumptive treatment volume will be provided for the impaired basins.

4.2.2 Basin Management Action Plans (BMAPs)

This project is within the Lake Okeechobee BMAP. Phosphorus is the nutrient of concern for this BMAP. A summary of the BMAP has been provided in **Table 3**. No additional treatment considerations were given for total phosphorus removal. Though the project is located within the basin of the BMAP, stormwater runoff from the corridor will not direct discharge into Reedy Creek, which ultimately discharges into Lake Okeechobee

Table 3: Basin Management Action Plans

Basin Management Action Plan	Date	Parameters
Lake Okeechobee	January 2020	Total Phosphorus (TP)

SECTION 5.0 – ENVIRONMENTAL LOOK AROUND

Individual technical meetings were held with RCID, FDEP, SFWMD, Osceola County, and Orange County as part of the coordination efforts of this project. During these meetings the potential opportunities for implementing a joint use or regional stormwater facility were discussed. FDEP and SFWMD stated they were open to the use of regional ponds, but no specific opportunities were identified during or after these meetings for any of the agencies and municipalities. The meeting minutes for each of these meetings have been included in **Appendix F**.

SECTION 6.0 – EXISTING & PROPOSED CONDITIONS

6.1 Existing Drainage Conditions

The existing Western Beltway (SR 429) corridor was constructed in phases in the early 2000's. The PD&E study area falls within "Part C" of the system. Part C was further subdivided into sections; the sections of interest are Section 1, Section 2A, Section 2B, and Section 3. 20 basins have been identified within the limits of the study area. These basins consist of open and closed basins. Basins have been defined to corelate with currently permitted conditions within the project limits. Basin divides have been developed from existing permit information which has been supplemented with LIDAR data. Basin divides have been detailed on the existing basin maps included in **Appendix A**.

The original Western Beltway (SR 429) corridor was designed and permitted for a 6-lane configuration, with 4-lanes constructed and 2 "future lanes" to be added within the median. This analysis takes the existing 6-lane permitted condition and analysis the treatment and attenuation requirements for an 8-lane corridor with a new interchange at Livingston Road. Existing treatment calculations depicting the required and provided treatment volumes can be found in **Appendix B**.

FDOT District 5 has two ongoing projects within the I-4 / SR 429 interchange. These projects are part of the overall Beyond the Ultimate (BTU) I-4 improvements. The first project, which is currently in construction, is the Interstate 4/SR 429 Auxiliary Lanes (FPID 444329-1-52-01). Improvements include an auxiliary lane along Interstate 4 connecting to the outside of the existing northbound lanes of SR 429. Permitting documentation for this project can be found in ERP No. 0187636-005-EI issued August 19, 2019. The second project is the widening of Interstate 4 to 10-lanes and improvements to the Interstate 4/SR 429 interchange (FPID 431456-1-52-01). Permitting documentation for this project can be found in ERP No. 0187636-003-EI issued August 19, 2019. In addition, Florida's Turnpike Enterprise is conducting a PD&E study for the extension of Poinciana Parkway from CR 532 to Sinclair Road.

For the purposes of this study only the auxiliary lane project will be considered as an existing condition. The reason for this is twofold, the BTU Interstate 4/SR 429 improvements are still in design and the Poinciana Parkway Extension evaluation will evaluate the 8-lane configuration with the BTU Interstate 4/SR 429 improvements incorporated. Based on the permit data for the auxiliary lane project found in ERP No. 0187636-005-EI, the existing stormwater management system associated with the original construction of the corridor has enough water quality and quantity volume to capture, treat, and attenuate the runoff for the auxiliary lane improvements. These improvements only fall within Basin F-4 of the PD&E study area.

As noted in **Section 4.1.2**, RCID implements a fee for water quantity for any discharge over 13 csm. The Turnpike entered into an agreement with RCID for the construction of SR 429 in 2001. This agreement states the following, "Florida's Turnpike Enterprise may discharge, and RCID, agrees to receive, surface water from the Western Beltway and the Interchange into RCID Facility at a rate of no greater than 297.64 cubic feet per second (cfs) for the 50-year/3-day storm event...". A table is cited within the contract agreement which supposably breaks down the discharge per outfall, however this table is missing. FDOT District 5 has also entered into an agreement with RCID for excess discharges from the I-4/SR 429 interchange. Upon review of BTU permit documentation, the original contract agreement adopted between FDOT and RCID could not be located. Therefore, the two agencies are currently negotiating a new agreement. It should be noted that RCID has additional fees for permit reviews and for impacts within their watershed. See **Appendix F** for additional information.

There are four drainage connection permits within the project corridor. These connection permits have been listed in **Table 4** below with the corresponding milepost for reference. Additionally, the receiving waterbody, whether the basin is open or closed, and any special basin criteria is outlined in **Table 5**. FDEP has defined four WBID's that encompass the study area. **Table 2** also outlines which impairment relates to each WBID. Specific characteristics related to each basin are outlined in the following sections.

Table 6 below provides a summary of the stormwater management facilities in each basin, along with the type of facility and the permit number for each. **Table 7** provides the required treatment and provided treatment within each of the each of the existing stormwater management facilities.

Table 4: Drainage Connection Permits

Name	Permit Number	Mile Post
Sinclair Road Apartments	TP-92-DC-180-18	1.5
Flamingo Crossings PD	TP-75-DC-130-18	7.5
Flamingo Crossings Ph I	TP-75-DC-010-08	7
Horizon High School	TP-75-DC-181-20	11

Table 5: Project Basin Summary

Name	Type	Receiving Waterbody
BASIN F-4	Open	Davenport Trib
BASIN B-2	Open	Davenport Trib
BASIN B-3	Open	Davenport Creek
BASIN B-4	Open	Davenport Creek
BASIN B-5	Open	Davenport Creek

Name	Type	Receiving Waterbody
BASIN B-6	Open	Davenport Creek
BASIN 2A-2	Open	Davenport Creek
BASIN 2A-3	Open	Boggy Creek
BASIN 2B-1	Open	Boggy Creek
BASIN 2B-2	Open	Boggy Creek
BASIN 10	Closed	-
BASIN 11	Open	RCID Perimeter Canal
BASIN 12	Open	Whittenhorse Creek
BASIN 13	Open	Whittenhorse Creek
BASIN 14	Open	Bear Bay / Whittenhorse Creek
BASIN 15	Closed	-
BASIN 1	Open	Panther Lake
BASIN 2	Open	Wetland
BASIN B (FGB)	Open	Davenport Creek
BASIN FL 530	Open	Boggy Creek

Table 6: Existing Pond Summary

Name	Basin	Treatment Method	Permit
EXIST. POND F4-A	F4	Wet Detention	49-187636001
EXIST. POND F4-B	F4	Wet Detention	49-187636001
EXIST. POND B-2	B2	Wet Detention	49-187636001
EXIST. POND B-3A	B3	Wet Detention	49-187636001
EXIST. POND B-3B	B3	Wet Detention	49-187636001
EXIST. POND B-3C	B3	Dry Detention	49-187636001
EXIST. POND B-3D	B3	Dry Detention	49-187636001
EXIST. POND B-4	B4	Wet Detention	49-187636001
EXIST. POND B-5	B5	Wet Detention	49-187636001
EXIST. POND B-6A	B6	Wet Detention	49-187636001
EXIST. POND B-6B	B6	Dry Detention	49-187636001
EXIST. POND B-6C	B6	Dry Detention	49-187636001
EXIST. POND 2A-2	2A-2	Wet Detention	49-187636001
EXIST. POND 2A-3	2A-3	Wet Detention	49-187636001
EXIST. POND 2B-1	2B-1	Wet Detention	49-187636001
EXIST. POND 2B-2	2B-2	Wet Detention	49-187636001
EXIST. POND 10	10	Dry Retention	49-187636001
EXIST. SWALE 11A	11	Dry Retention	49-187636001
EXIST. SWALE 11B	11	Dry Retention	49-187636001
EXIST. SWALE 11C	11	Dry Retention	49-187636001
EXIST. POND 11D	11	Dry Retention	49-187636001
EXIST. POND 12	12	Wet Detention	49-187636001
EXIST. POND 13	13	Wet Detention	49-187636001
EXIST. POND 14A	14	Dry Retention	49-187636001
EXIST. POND 14B	14	Dry Retention	49-187636001
EXIST. POND 14C	14	Dry Retention	49-187636001

Name	Basin	Treatment Method	Permit
EXIST. POND 15A	15	Dry Retention	49-187636001
EXIST. POND 15B	15	Dry Retention	49-187636001
EXIST. POND 15C	15	Dry Retention	49-187636001
EXIST. POND 15D	15	Dry Retention	49-187636001
EXIST. POND 15E	15	Dry Retention	49-187636001
EXIST. POND 1	1	Dry Retention	48-166214001*
EXIST. POND 2	2	Wet Detention	48-166214001*
EXIST. POND B (FGB)	B (FGB)	Wet Detention	49-00507-S
EXIST. POND A (FL 530)	A (FL 530)	Wet Detention	49-00956-P
EXIST. SWALE B (FL 530)	B (FL 530)	Dry Detention	49-00956-P
EXIST. POND C (FL 530)	C (FL 530)	Wet Detention	49-00956-P

* - Permit information could not be found through FDEP NEXUS Portal. As-built plans and drainage documentation obtained through CFX records request.

Table 7: Existing Treatment Summary

Name	Basin	Required Treatment Volume (ac-ft)	Permitted Treatment Volume (ac-ft)
EXIST. POND F4-A / F4-B	F4	3.03	3.36
EXIST. POND B-2	B2	1.58	1.78
EXIST. POND B-3A / B-3B / B-3C / B-3D / B-5	B3	2.18	2.64
EXIST. POND B-4	B4	2.26	2.47
EXIST. POND B-6A / B-6B / B-6C	B6	0.64	1.68
EXIST. POND 2A-2	2A-2	11.21	11.62
EXIST. POND 2A-3	2A-3	5.19	5.43
EXIST. POND 2B-1	2B-1	4.65	4.81
EXIST. POND 2B-2	2B-2	4.12	4.25
EXIST. POND 10	10	1.50	1.60
EXIST. SWALE 11A	11	0.72	12.54
EXIST. SWALE 11B	11	0.79	0.69
EXIST. SWALE 11C	11	0.56	0.54
EXIST. POND 11D	11	0.68	0.81
EXIST. POND 12	12	1.68	1.80
EXIST. POND 13	13	5.98	6.10
EXIST. POND 14A	14	0.88	1.03
EXIST. POND 14B	14	0.33	0.44
EXIST. POND 14C	14	0.80	0.80
EXIST. POND 15A	15	1.56	1.57
EXIST. POND 15B	15	1.28	1.68
EXIST. POND 15C	15	0.15	0.32
EXIST. POND 15D	15	0.43	0.18
EXIST. POND 15E	15	0.74	0.80
EXIST. POND 1	1	0.88	1.06
EXIST. POND 2	2	2.50	2.50

Name	Basin	Required Treatment Volume (ac-ft)	Permitted Treatment Volume (ac-ft)
EXIST. POND B (FGB)	B (FGB)	N/A	N/A
EXIST. POND A (FL 530)	A (FL 530)	1.85*	2.16
EXIST. SWALE B (FL 530)	B (FL 530)	0.48	0.54
EXIST. POND C (FL 530)	C (FL 530)	4.18	4.18

* - Required treatment calculations show 1.85 ac-ft or 2.04 ac-ft, the greater of the two. However, the permit shows 1.85 ac-ft as the required volume when it should have been 2.04 ac-ft.

6.1.1 Basin F-4

Basin F-4 is located within the Interstate 4 interchange, just north of Interstate 4 (Sta. 54+00 to 80+40). Basin F-4 is an open basin which ultimately discharges to a tributary of Davenport Creek. There are two wet detention ponds located within Basin F-4, Pond F-4-A and Pond F-4-B. These ponds receive runoff from SR 429, Interstate 4 westbound lanes, and portions of Ramps A, B, C, and D within the interchange. See **Appendix B** for existing treatment calculations.

This basin falls within the project limits of the auxiliary lane project, however as noted in the permit documentation for the auxiliary lanes project, no improvements will be made to Pond F-4 because there is sufficient treatment within the existing pond for the proposed improvements. See **Appendix B** for existing treatment calculations.

6.1.2 Basin B-2

Basin B-2 is located just north of the Interstate 4 interchange and just south of Sinclair Road (Sta. 80+40 to Sta. 101+00). Basin B-2 is an open drainage basin which ultimately discharges into a tributary of Davenport Creek. This basin contains one wet detention pond which discharges to a spreader swale located along the toe of Pond B-2 that overflows into an adjacent wetland. See **Appendix B** for existing treatment calculations.

6.1.3 Basin B-3

This basin is a compilation of the sub-basins located just south of Sinclair Road and just north of Sinclair Road, on the east side of the corridor (Sta. 101+00 to Sta. 141+00). This basin also includes portions of Sinclair Road from the high point of the bridge over SR 429 to the east to Ramp F and Ramp G. There are four ponds in total with corresponding sub-basins: Pond B-3-A, Pond B-3-B, Pond B-3-C, and Pond B-3-D. The control structure for Basin B-3 discharges from Pond B-3-A to a wetland associated with Davenport Creek. Pond B-3-C and Pond B-3-D are dry detention facilities that do not provide treatment. Pond B-3-A and Pond B-3-B are wet detention facilities. Additionally, Pond B-5 is interconnected with Pond B-3-A to provide additional attenuation. See **Appendix B** for existing treatment calculations.

6.1.4 Basin B-4

Basin B-4 is located from Sand Hill Road and to the north (Sta. 141+50 and Sta. 167+00). This basin has one wet detention pond. Pond B-4 discharges under the adjacent access road to the west and into a wetland associated with Davenport Creek. See **Appendix B** for existing treatment calculations.

6.1.5 Basin B-5

Basin B-5 is located south of Sand Hill Road on the east side of SR 429. Basin B-5 includes Sand Hill Road from Sta. 803+00 to 814+00 and portions of the Connector Road. This basin has one wet detention pond. Pond B-5 is interconnected with Pond B-3-A in order to better utilize the large volume in Pond B-5 to help reduce flows out of Basin B-3. Pond B-5 discharges through a control structure in Pond B-3-A into a wetland associated with Davenport Creek. See **Appendix B** for existing treatment calculations. Please note treatment calculations are coupled with Basin B-3.

6.1.6 Basin B-6

This basin is a compilation of the sub-basins located just south of Sinclair Road to north of Sinclair Road (Sta. 101+00 to Sta. 125+00) on the west side of SR 429. Basin B-6 consists of three ponds: Pond B-6-A, Pond B-6-B, and Pond B-6-C. Pond B-6-B and Pond B-6C are dry detention ponds with no treatment volume associated with them. These two ponds discharge into Pond B-6-A, which is a wet detention facility. Pond B-6-A discharges into a wetland associated with Davenport Creek. See **Appendix B** for existing treatment calculations.

6.1.7 Basin 2A-2

Basin 2A-2 is located north of Sand Hill Road to Funie Steed Road (Sta. 180+00 to Sta. 268+00). This basin has one wet detention pond. Pond 2A-2 discharges under SR 429 and into Davenport Creek. This basin accepts flow from a number of offsite ponds from adjacent residential communities, as noted in the FDEP ERP documentation (49-187636001). As shown in the treatment calculations in **Appendix B**, portions of Sand Hill Road, Funie Steed Road, and Oak Island Cove are conveyed into Pond 2A-2 for treatment. The stormwater management facilities for adjacent communities Wyndham Palms and Indian Creek discharge into FTE right-of-way. It should be noted the Indian Creek/Fantasy Heights subdivision located on the east side of the SR 429 corridor discharges to a privately owned stormwater management facility on the west side of the SR 429 via a 42-inch storm sewer pipe.

6.1.8 Basin 2A-3

Basin 2A-3 is located between Funie Steed Road and SR 530 (Sta. 268+00 to Sta. 320+50). This basin has one wet detention pond. Pond 2A-3 discharges into Boggy Creek. Offsite areas east

of SR 429 is collected within roadside ditches and taken into Pond 2A-3. It is stated within the permit documentation that is possible for a portion of Basin 2A-3 to be sent to Basin 2B-1 for treatment. Though the treatment calculations seem to reflect this, the basin boundaries shown within the as-built drawings do not reflect this. See **Appendix B** for existing treatment calculations.

6.1.9 Basin 2B-1

Basin 2B-1 is located between SR 530 and just south the toll plaza (Sta. 320+50 and Sta. 1359+00). This basin has one wet detention pond. Pond 2A-3 discharges to Boggy Creek. As noted in the treatment calculations a portion of SR 530 and possibly a portion of Basin 2A-3 is conveyed to Pond 2B-1. See **Appendix B** for existing treatment calculations.

6.1.10 Basin 2B-2

Basin 2B-2 begins just south of the toll plaza located north of SR 530 and continues north to the bridge over W Orange Lake Boulevard (Sta. 1359+00 to Sta. 414+00). This basin has one wet detention pond. Pond 2B-2 discharges to Boggy Creek. See **Appendix B** for existing treatment calculations.

6.1.11 Basin 10

Basin 10 is located from the high point of the bridge over W Orange Lake Boulevard to just south of Western Way (Sta. 414+00 to Sta. 438+43). Basin 10 is a closed basin with one dry retention pond. Pond 10 was designed to retain the 100-year,10-day storm event. Approximately 14.80-acres of offsite area discharged into this pond from the west. See **Appendix B** for existing treatment calculations.

6.1.12 Basin 11

This basin is a compilation of the sub-basins located within the SR 429 at Western Way interchange (Sta. 435+00 to Sta. 474+00). Basin 11 is comprised of four dry retention ponds within the interchange. Three of the four ponds are interconnected: Pond 11B, Pond 11C and Pond 11D. The basin has a by-pass system used to convey runoff from offsite drainage areas through the project corridor without co-mingling. The ponds discharge through Pond 11C control structure to the by-pass system which outfalls into the RCID perimeter canal via a closed storm sewer system located adjacent the eastbound lanes of Western Way. See **Appendix B** for existing treatment calculations. Pond 11A was oversized to provide additional attenuation.

6.1.13 Basin 12

Basin 12 is located just north of the Western Way interchange (Sta. 474+00 to Sta. 490+00). This basin has one wet detention pond. Pond 12 discharges into an outfall ditch which conveys discharge to Whittenhorse Creek. See **Appendix B** for existing treatment calculations.

6.1.14 Basin 13

Basin 13 is located between Western Way and Seidel Road (Sta. 490+00 to Sta. 574+00). This basin has one wet detention pond. Pond 13 discharges into a by-pass system that runs south along the east right-of-way line to Whittenhorse Creek. See **Appendix B** for existing treatment calculations.

6.1.15 Basin 14

This basin is a compilation of the sub-basins located just south of the SR 429 at Seidel Road interchange (Sta. 530+00 to Sta. 585+00). Basin 14 provides treatment for SR 429 and the improvements to Hartzog Road. Pond 14A is dry retention pond that provide treatment and attenuation for Hartzog Road. Pond 14A discharges into a wetland, Bear Bay, which is associated with Whittenhorse Creek. Pond 14B is a dry retention pond that provides treatment and attenuation for Hartzog Road. Pond 14B discharges to a wetland associated with Reedy Lake. Pond 14C is a dry retention pond that provides treatment for SR 429. This pond discharges to a wetland associated with Reedy Lake. See **Appendix B** for existing treatment calculations.

6.1.16 Basin 15

This basin is a compilation of the sub-basins located within the SR 429 at Seidel Road interchange (Sta. 585+00 to Sta. 618+00). Basin 15 is a closed basin which consists of five ponds: Pond 15A, Pond 15B, Pond 15C, Pond 15D, and Pond 15E. Pond 15B, Pond 15C, and Pond 15D are interconnected with equalizer pipes to maximize treatment. Pond 15E discharges into Pond 15A, which is designed to retain the 100-year, 10-day storm event. Pond 15A does have an emergency overflow weir that discharges into Pond 15B. See **Appendix B** for existing treatment calculations.

6.1.17 Basin 1

This basin is located from Seidel Road to just north of Seidel Road (Sta. 1622+18.86 to Sta. 602+00). This basin has one dry retention pond. Pond 1 discharges into Panther Lake. See **Appendix B** for existing treatment calculations.

6.1.18 Basin 2

This basin is located from north of Seidel Road to CR 545 (Sta. 602+00 to Sta. 641+83.82). This basin has one wet detention pond. Pond 2 discharges into a wetland located on the east side of SR 429. See **Appendix B** for existing treatment calculations.

6.1.19 Basin B (FGB)

Basin OS-1 and Basin B are associated with the Formosa Gardens subdivision located east of SR 429 between Livingston Road and Funie Steed Road. Basin OS-1 is located on the west side of

Formosa Gardens Boulevard (FGB) and discharges under the roadway into Basin B. Basin B is located on the east side of FGB and is comprised of single-family homes. Pond B provides treatment and attenuation for these basins. Permit information for Formosa Gardens can be found in ERP No. 49-00507-S.

Pond B provides treatment and attenuation for the 2-lane portion of Formosa Gardens Blvd located between Livingston Road and Formosa Blvd.

6.1.20 Basin FL 530

Widening of FL 530 (SR 530 or US192) in the vicinity of SR 429 received a permit March 11, 1999 (ERP No. 49-00956-P). The improvements included stormwater management facilities along the corridor. Basin A, Basin B, and Basin C of these improvements are located within the vicinity of SR 429. Pond A is a wet detention pond that discharges to Boggy Creek. Basin B discharges into a dry swale with swale blocks and a raised inlet that discharges to Boggy Creek. Pond C is a wet detention pond that discharges to an adjacent channel.

6.2 Proposed Drainage Conditions

20 basins have been identified within the limits of the study area, which have been outlined on the proposed drainage maps included in **Appendix A**. It is anticipated that only minor changes to the basin divides will occur in the proposed condition, with the vast majority of the changes controlled by the layout of the conveyance system which will occur during the design phase. When this project was originally constructed the surrounding area was primarily rural with wetlands, wooded areas, and pastures. Over the years residential and commercial development has occurred adjacent to the corridor. This development has changed some of the offsite areas that previously discharged in the Turnpike's right-of-way. These changes are reflected in the offsite basins shown within the proposed drainage maps and within each of the basin descriptions that follow.

The original Western Beltway (SR 429) corridor was designed and permitted for a 6-lane configuration, with 4-lanes constructed and 2 "future lanes" to be added within the median. This analysis takes the existing 6-lane permitted condition and analyzes the treatment and attenuation requirements for an 8-lane corridor with a new interchange at Livingston Road. Existing treatment calculations depicting the required and provided treatment volumes can be found in **Appendix B**. Proposed treatment and attenuation calculations can be found in **Appendix C**. For the purposes of this document, the term new impervious area will only refer to the amount of impervious area that is beyond the permitted value for "future pavement". Additional analysis will be required during the design phase once the design of the conveyance system has been incorporated into the project.

As noted in **Section 6.1** the Turnpike entered into an agreement with RCID for the construction of the Western Beltway in 2001. As such, RCID will accept 297.64 cfs of discharge from the corridor. For the purposes of this design analysis, attenuation volumes will be based on the FDOT design storm of 50-year, 3-day (11.40-inches) for existing facilities. The rationale being the fee will be less than the cost of new right-of-way and construction of new stormwater management facilities. Please note this fee does not eliminate the pre vs post development water quantity requirement. No discharge over the pre-condition rate will be accepted. This is the reason for using the 50-year, 3-day instead of the 25-year, 3-day. In areas where new stormwater management facilities are required, the RCID design storm of 50-year, 3-day (12.91-inches) will be utilized. The intent is to provide attenuation within Turnpike right-of-way as to not discharge more runoff into RCID than necessary for new facilities.

In addition to the discharge fee posed by RCID, they also have a $750 administration fee for permit review and an impact fee of $200 per acre. An impact fee was paid by the Turnpike for the original Western Beltway improvements. This should be interpreted as the area within the existing right-of-way. Any new right-of-way will be subject to a fee at the rate previously described.

6.2.1 Basin F-4

Basin F-4 is located within the Interstate 4 interchange, just north of Interstate 4 (Sta. 54+00 to 80+40). Basin F-4 is an open basin which ultimately discharges to a tributary of Davenport Creek. There are two existing wet detention ponds located within Basin F-4: Pond F-4-A and Pond F-4-B. These ponds receive runoff from SR 429, Interstate 4, Ramp A, Ramp B, Ramp C, and Ramp D within the interchange.

The proposed improvements will not impact the existing stormwater management facilities Pond F-4-A and Pond F-4-B. The proposed improvements will result in approximately 1.50-acreas of impervious area requiring treatment. Based on the treatment volume provided, the surplus treatment within these interconnected ponds should be sufficient to meet permit requirements without modification or the need to purchase additional right-of-way. Approximately 0.86 ac.-ft. of attenuation is anticipated to meet the RCID requirements. The outfall structure will need to be adjusted to accommodate the attenuation requirements. Proposed treatment and attenuation calculations can be found in **Appendix C**.

6.2.2 Basin B-2

Basin B-2 is located just north of the Interstate 4 interchange and just south of Sinclair Road (Sta. 80+40 to Sta. 101+00). Basin B-2 is an open drainage basin which ultimately discharges into a tributary of Davenport Creek. This basin contains one wet detention pond, which

discharges to a spreader swale located along the toe of Pond B-2 that overflows into an adjacent wetland.

The proposed improvements will bring the total impervious area within Basin B-2 to approximately 7.85-acres. According to the existing permit, Pond B-2 was designed to treat 8.08-acres of impervious, therefore no changes to Pond B-2 are anticipated. Proposed treatment and attenuation calculations can be found in **Appendix C**.

It should be noted that improvements associated with the I-4 Beyond the Ultimate will impact Pond B-2, reducing the treatment volume by approximately 0.10 ac-ft. This will effectively bring the provided treatment volume down to 1.68 ac-ft, which would match the required volume of 1.68 ac-ft. Should additional treatment and attenuation be required due to changes associated with the I-4 Beyond the Ultimate improvements currently in design, the closed storm sewer system which collects the inside lanes can be configured to discharge into Pond B-3-D and/or Pond B-6-C. With the proposed removal of impervious area associated of the existing toll gantries and surplus treatment associated with these basins, sufficient treatment and attenuation should be available.

6.2.3 Basin B-3

This basin is a compilation of the sub-basins located just south of Sinclair Road and just north of Sinclair Road, on the east side of the corridor (Sta. 101+00 to Sta. 141+00). This basin also includes portions of Sinclair Road from the high point of the bridge over SR 429 to the east to Ramp F and Ramp G. There are four ponds in total with corresponding sub-basins: Pond B-3-A, Pond B-3-B, Pond B-3-C, and Pond B-3-D. The control structure for Basin B-3 discharges from Pond B-3-A to a wetland associated with Davenport Creek. Pond B-3-C and Pond B-3-D are dry detention facilities that do not provide treatment. Pond B-3-A and Pond B-3-B are wet detention facilities. Additionally, Pond B-5 is interconnected with Pond B-3-A to provide additional attenuation.

Approximately 2.35-acres of impervious area will require treatment within Basin B-3 and Basin B-5. The proposed improvements are not anticipated to impact the existing footprint of the existing ponds. In contrast, with the re-alignment of SR 429 and the northbound off ramp onto Sinclair Road, it will be feasible to expand the existing ponds to provide additional attenuation.

The proposed improvements will utilize surplus treatment within the existing ponds to offset the new impervious area. Approximately 2.84 ac-ft of volume is anticipated for attenuation. This volume will be offset with the expansion of Pond B-3-D. Proposed treatment and attenuation calculations can be found in **Appendix C**.

6.2.4 Basin B-4

Basin B-4 is located from Sand Hill Road and to the north (Sta. 141+50 and Sta. 167+00). This basin has one wet detention pond. Pond B-4 discharges under the adjacent access road to the west and into a wetland associated with Davenport Creek.

Proposed improvements include the re-alignment of SR 429 in the vicinity of Pond B-4. This will necessitate the need for a MSE wall adjacent to Pond B-4 to ensure the proposed roadway side slope does not encroach into the existing pond. With the use of a wall, it will be possible to expand the existing pond to allow for additional attenuation and to reduce stages. Per existing design documentation, the design high water (25-yr event) exceeds the pond berm but is lower than the adjacent side road edge of shoulder.

The proposed improvements will require approximately 0.75-acres of impervious area to be treated. This results in a required treatment volume of 2.41 ac-ft. Per the permit documentation 2.47 ac-ft of treatment volume has been provided within Pond B-4. Additionally, approximately 0.04 ac-ft of volume is required for attenuation purposes. As previously noted, the pond can be expanded to provide the additional volume without additional right-of-way. Proposed treatment and attenuation calculations can be found in **Appendix C**.

6.2.5 Basin B-5

Basin B-5 is located south of Sand Hill Road on the east side of SR 429. Basin B-5 includes Sand Hill Road from Sta. 803+00 to 814+00 and portions of the Connector Road. This basin has one wet detention pond. Pond B-5 is interconnected with Pond B-3-A to better utilize the large volume in Pond B-5 and reduce flows out of Basin B-3. Pond B-5 discharges through a control structure in Pond B-3-A into a wetland associated with Davenport Creek. See **Appendix C** for proposed treatment calculations. Please note treatment calculations are coupled with Basin B-3. See Basin B-3 for additional information regarding the treatment and attenuation volumes.

6.2.6 Basin B-6

This basin is a compilation of the sub-basins located just south of Sinclair Road to north of Sinclair Road (Sta. 101+00 to Sta. 125+00) on the west side of SR 429. Basin B-6 consists of three ponds: Pond B-6-A, Pond B-6-B, and Pond B-6-C. Pond B-6-B and Pond B-6C are dry detention ponds with no treatment volume associated with them. These two ponds discharge into Pond B-6-A, which is a wet detention facility. Pond B-6-A discharges into a wetland associated with Davenport Creek.

Approximately 0.28-acres of impervious area will require treatment. Surplus treatment provided within this basin exceeds the required treatment volume associated with the new impervious area. Approximately 0.73 ac-ft of attenuation will be required. This represents approximately

1.5-inches within the existing Basin B-6 ponds. With the proposed removal of the existing toll gantry Pond B-6-C can be expanded to provide the attenuation volume necessary to accommodate the additional pavement. Proposed treatment and attenuation calculations can be found in **Appendix C**.

6.2.7 Basin 2A-2

Basin 2A-2 is located north of Sand Hill Road to Funie Steed Road (Sta. 180+00 to Sta. 268+00). This basin has one existing wet detention pond. This pond will be modified or relocated to accommodate the new Livingston Road interchange, see **Section 8.0** for pond alternatives. This basin accepts flow from a number of offsite ponds from adjacent residential communities, as noted in the FDEP ERP No. 49-187636001. As shown in the existing treatment calculations in **Appendix B**, portions of Sand Hill Road, Funie Steed Road, and permitted Oak Island Cove, Oak Island Harbor subdivision, are conveyed into Pond 2A-2 for treatment. The new Pond 2A-2 has been sized to accommodate these offsite flows. The stormwater management facilities for adjacent communities Wyndham Palms and Indian Creek discharge into FTE right-of-way. The permitted Wyndham Palms, Windsor Palms Subdivision, stormwater management facility (Pond P-2), located in the southwest quadrant of the Canary Island Drive and SR 429 overpass, discharges into the FTE closed storm sewer system at structure W-6. See the Western Beltway Part C – Section 2A as-builts for detailed information. The Indian Creek stormwater management facility, SMA-3, discharges into FTE right-of-way approximately 400-ft north of the Indian Creek Road bridge over SR 429. The existing FTE ditch which accepts SMA-3 discharge will be impacted as part of the proposed improvements. It will be necessary to convey the discharge from SMA-3 to the outfall via a closed storm sewer pipe.

The Indian Creek/Fantasy Heights subdivision located on the east side of the SR 429 corridor discharges to a privately owned stormwater management facility, SMA-2, located on the west side of the SR 429 via a 42-inch storm sewer pipe. As part of the PD&E analysis a technical memorandum was developed analyzing design alternatives for the Canary Island Road overpass bridge. As part of this memorandum various drainage design alternatives were identified to work around or relocate the existing 42-inch storm sewer pipe that traverses SR 429. One of the alternatives outlined in the memo was to redirect flow from the Indian Creek subdivision into Pond 2A-2 for treatment; this would eliminate the need for the 42-inch pipe under SR 429, thus removing the conflict. Because this was only one of a handful of solutions, the treatment calculations provided in **Appendix C** do not account for this possibility. If during design that alternative is selected, Pond 2A-2 would need to be adjusted accordingly to ensure sufficient treatment is provided.

The proposed Livingston Road interchange will require treatment of approximately 14.09-acres of new impervious area and an attenuation volume of approximately 6.60 ac-ft to accommodate the new roadway.

6.2.8 Basin 2A-3

Basin 2A-3 is located between Funie Steed Road and SR 530 (Sta. 268+00 to Sta. 320+50). This basin has one wet detention pond. Pond 2A-3 discharges into Boggy Creek. Offsite areas east of SR 429 is collected within roadside ditches and taken into Pond 2A-3. It is stated within the permit documentation that is possible for a portion of Basin 2A-3 to be sent to Basin 2B-1 for treatment. Though the treatment calculations seem to reflect this, the basin boundaries shown within the as-built drawings do not reflect this.

Despite the possible irregularity previously noted between Basin 2A-3 and Basin 2B-1, Pond 2A-3 will be able to provide treatment and attenuation for the proposed improvements without modification. This is primarily in part due to the change in basin size and a surplus amount of treatment previously provided. When the Western Beltway was constructed approximately 12.32-acres of offsite open grass area was conveyed into Pond 2A-3 for treatment. Over the years the surrounding areas has been developed and the offsite area which once entered Pond 2A-3 for treatment has been converted into residential and commercial properties. These new facilities, Rolling Oaks Mass Grading and Rolling Oaks Commons (ERP No. 49-01801-P), no longer discharge into FTE right-of-way and discharge into stormwater management facilities located within the private development. Because the existing Pond 2A-3 was sized to treat one inch over the basin area, the required treatment volume has decreased. Treatment calculations provided in **Appendix C** depict the proposed treatment requirements based on the new basin size and new impervious area associated with the roadway widening. No additional right-of-way is anticipated for this basin.

6.2.9 Basin 2B-1

Basin 2B-1 is located between SR 530 and just south the toll plaza (Sta. 320+50 and Sta. 1359+00). This basin has one wet detention pond. Pond 2A-3 discharges to Boggy Creek. As noted in the treatment calculations a portion of SR 530 and possibly a portion of Basin 2A-3 is conveyed to Pond 2B-1.

The proposed improvements will result in a net zero gain for impervious area. There is an existing toll gantry located within Basin 2B-2 that will be removed as part of the 8-lane configuration. Though the gantry itself is located within the adjacent basin, the extra lanes associated with the gantry extends into this basin. With the new impervious associated with the widening and the removal of pavement associated with the toll gantry the amount of new impervious area requiring treatment is negligible. Pond 2B-1 currently has a surplus treatment

volume of 0.24 ac-ft. No additional right-of-way is anticipated for this basin. See **Appendix C** for proposed treatment calculations.

6.2.10 Basin 2B-2

Basin 2B-2 begins just south of the toll plaza located north of SR 530 and continues north to the bridge over W Orange Lake Boulevard (Sta. 1359+00 to Sta. 414+00). This basin has one wet detention pond. Pond 2B-2 discharges to Boggy Creek.

The proposed improvements will result in a net loss of impervious pavement within this basin. The proposed 8-lane configuration would remove the existing toll gantry, eliminating approximately 6.50-acres of impervious area. No additional right-of-way is anticipated for this basin. See **Appendix C** for proposed treatment calculations.

6.2.11 Basin 10

Basin 10 is located from the high point of the bridge over W Orange Lake Boulevard to just south of Western Way (Sta. 414+00 to Sta. 438+43). Basin 10 is a closed basin with one dry retention pond. Pond 10 was designed to retain the 100-year, 10-day storm event. In the existing condition approximately 14.80-acres of offsite area discharged into this pond from the west. However, in 2021 an apartment complex was being constructed to the west of the Western Beltway. The Flamingo Crossing East development can be found in ERP No. 48-00714-P. Permit documentation the proposed development will utilize an exfiltration system to provide treatment and attenuation prior to entering FTE right-of-way. The design drawings and corresponding drainage calculations show an area within the developed area discharging to Pond 10 which is greater in the post condition than the pre-condition. See Drainage Maps in **Appendix A**. The developer noted that the post development flow entering Pond 10 was equal to or less than the pre-condition. Per the documentation, additional flow would enter the soil via the filtration system and therefore a greater basin area could discharge into Pond 10 while not surpassing the pre-condition discharge rate. A connection permit was issued by FTE. See **Table 5** for details.

Because 14.80-acres of offsite area entered the pond in the existing condition, treatment was provided for this area. With the development of this area, treatment of this area is no longer required. This will offset the 0.15-acres of impervious area requiring treatment and leave Pond 10 with a surplus treatment volume of 0.71 ac-ft. The new impervious area will require approximately 0.10 ac-ft of attenuation for the 100-yr, 10-day storm event. This volume is anticipated to increase the stage within the pond for the 100-yr, 10-day event by 0.02-ft. Treatment and attenuation calculations have been provided on separated for this particular basin. The treatment calculations have removed the 14.80-acres of offsite not requiring treatment. The attenuation spreadsheet has left the 14.80-acres of offsite area to account for

the Flamingo Crossing development discharge into Pond 10. No additional right-of-way is anticipated for this basin. The pond was designed based on Chapter 14-86 critical duration approach. During design the same approach will be required. See **Appendix C** for proposed treatment calculations.

6.2.12 Basin 11

This basin is a compilation of the sub-basins located within the SR 429 at Western Way interchange (Sta. 435+00 to Sta. 474+00). Basin 11 is comprised of four dry retention ponds within the interchange. Three of the four ponds are interconnected: Pond 11B, Pond 11C and Pond 11D. The basin has a by-pass system used to convey runoff from offsite drainage areas through the project corridor without co-mingling. Ponds 11B-11D discharge through Pond 11C control structure to the by-pass system which outfalls into the RCID perimeter canal via a closed storm sewer system located adjacent the eastbound lanes of Western Way. Pond 11A was oversized to provide additional attenuation. Pond 11A discharges into Pond 11B via a control structure.

In order to provide sufficient attenuation during the original design Pond 11A was oversized. As noted in the permit documentation 14.58 ac-ft of treatment volume was provided, when 2.75 ac-ft was required. Therefore, the surplus treatment can be utilized towards the approximate 2.35-acres of new impervious area. With regards to attenuation, approximately 0.85 ac-ft of volume will be required. This can be accomplished by adjusting the existing control structures by 2-inches. No additional right-of-way is anticipated for this basin. See **Appendix C** for proposed treatment calculations.

6.2.13 Basin 12

Basin 12 is located just north of the Western Way interchange (Sta. 435+00 to Sta. 490+00). This basin has one wet detention pond. Pond 12 discharges into an outfall ditch which conveys discharge to Whittenhorse Creek.

Per permit documentation for the original design approximately 6.05-acres of offsite area was treated in Pond 12. With the construction of Walt Disney World Master Plan Development (ERP No. 48-00718-P) adjacent to Pond 12, this offsite area no longer requires treatment and attenuation. Therefore, the approximately 0.34-acres of new impervious area requiring treatment can be offset utilizing the surplus treatment and attenuation from the removal of this area discharging to the pond.

6.2.14 Basin 13

Basin 13 is located between Western Way and Seidel Road (Sta. 490+00 to Sta. 574+00). This basin has one wet detention pond. Pond 13 discharges into a by-pass system that runs south along the east right-of-way line to Whittenhorse Creek.

Pond 13 was sized to provide treatment for one inch over the basin area. With the proposed improvements adding an additional 2.63-acres of impervious pavement, the treatment calculations were re-evaluated to ensure the 2.5-inches over the impervious area was not the controlling criteria. As shown in the treatment calculation provided in **Appendix C**, the one inch over the basin still controls, therefore no additional treatment needs to be provided.

The new impervious area will result in approximately 1.71 ac-ft of volume needed for attenuation. This results in a 3.30-inch increase in depth within the pond to accommodate attenuation. The design peak stage for the 25-year, 72-hr event is 105.87-ft. The inside berm elevation is 105.50-ft with a outside berm elevation of 107.00-ft. The ability to expand the pond or provide a secondary site for attenuation is limited in this basin due to Whittenhorse Creek being located immediately south of Pond 13 and the surrounding area is owned by RCID for the purposes of their rapid infiltration basins. Basin 12 is anticipated to have a reduction in outflow due to the change in basin size. The attenuation previously provided in Basin 12 (approximately 1.83 ac-ft) could be used to offset the attenuation needs for Basin 13 (approximately 1.71 ac-ft). Both basins discharge into Whittenhorse Creek.

6.2.15 Basin 14

This basin is a compilation of the sub-basins located just south of the SR 429 at Seidel Road interchange (Sta. 530+00 to Sta. 585+00). Basin 14 provides treatment for SR 429 and the improvements to Hartzog Road. Pond 14A is dry retention pond that provide treatment and attenuation for Hartzog Road. Pond 14A discharges into a wetland, Bear Bay, which is associated with Whittenhorse Creek. Pond 14B is a dry retention pond that provides treatment and attenuation for Hartzog Road. Pond 14B discharges to a wetland associated with Reedy Lake. Pond 14C is a dry retention pond that provides treatment for SR 429. This pond discharges to a wetland associated with Reedy Lake.

Only Basin 14C will change as a result of the proposed improvements. Approximately 0.24-acres of impervious will require additional treatment, requiring approximately 0.03 ac-ft of volume. However, there is a surplus amount of treatment within the basin of 0.27 ac-ft. See **Appendix C** for proposed treatment calculations.

Attenuation required for the proposed improvements is approximately 0.14 ac-ft. This is approximately 2-inches of depth within Pond 14C alone or ¾-inches among all three ponds.

Much like Basin 13, the RCID rapid infiltration basins surround this basin. With the reduction of area discharging to Pond 15A and Pond 15B, it may be possible to route a portion of Basin 14 to these ponds for attenuation.

6.2.16 Basin 15

This basin is a compilation of the sub-basins located within the SR 429 at Seidel Road interchange (Sta. 585+00 to Sta. 618+00). Basin 15 is a closed basin which consists of five ponds: Pond 15A, Pond 15B, Pond 15C, Pond 15D, and Pond 15E. Pond 15B, Pond 15C, and Pond 15D are interconnected with equalizer pipes to maximize treatment. Pond 15E discharges into Pond 15A, which is designed to retain the 100-year, 10-day storm event. Pond 15A does have an emergency overflow weir that discharges into Pond 15B.

With the construction recent construction of the Horizon High School (ERP No. 48-101923-P) approximately 18.89-acres will be removed from Pond 15A and 6.73-acres from Pond 15B. Additional improvements include the Waterleigh development (ERP No. 48-02575-P), located on the west side of Western Beltway adjacent to Basin 15E. This development redirected approximately 2.00-acres of offsite area which previously discharged into FTE right-of-way.

The proposed improvement will add an additional 0.42-acres of impervious area. With the surplus volume provided in the existing condition and the removal of offsite area, Basin 15 will have a surplus treatment volume of approximately 1.63 ac-ft after accounting for the proposed improvements. See **Appendix C** for proposed treatment calculations.

With the removal offsite areas discharging to FTE right-of-way there is a surplus of attenuation within Basin 15 ponds. This surplus exceeds the amount needed to offset the new impervious area.

6.2.17 Basin 1

This basin is located from Seidel Road to just north of Seidel Road (Sta. 1622+18.86 to Sta. 602+00). This basin has one dry retention pond. Pond 1 discharges into Panther Lake.

In the existing condition approximately 2.00-acres of offsite area was treated in Pond 1. With the construction of the Seidel East (ERP No. 48-02363-P) located on the east side of the Western Beltway, the offsite 2.00-acres no longer enters FTE right-of-way.

The anticipated impervious area associated with the proposed improvements do not exceed the 8.44-acres permitted. Therefore, no additional treatment or attenuation is anticipated for this basin. See **Appendix C** for proposed treatment calculations.

6.2.18 Basin 2

This basin is located from north of Seidel Road to CR 545 (Sta. 602+00 to Sta. 641+83.82). This basin has one wet detention pond. Pond 2 discharges into a wetland located on the east side of SR 429.

The anticipated impervious area associated with the proposed improvements do not exceed the 12.01-acres permitted. Therefore, no additional treatment or attenuation is anticipated for this basin. See **Appendix C** for proposed treatment calculations.

6.2.19 Basin B (FGB)

Basin OS-1 and Basin B are associated with the Formosa Gardens subdivision located east of SR 429 between Livingston Road and Funie Steed Road. Basin OS-1 is located on the west side of Formosa Gardens Boulevard (FGB) and discharges under the roadway into Basin B. Basin B is located on the east side of FGB and is comprised of single-family homes. Pond B provides treatment and attenuation for these basins. Permit information for Formosa Gardens can be found in ERP No. 49-00507-S.

In the existing condition Pond B located within the residential community provides treatment and attenuation for the 2-lane crowned roadway of Formosa Gardens Boulevard between Livingston Road and Formosa Boulevard. With the addition of 2-lanes, it should be possible to regrade the existing 2-lanes (future northbound lanes) to discharge to the east into existing Pond B. The future two southbound lanes and a portion of the Livingston Road interchange will require treatment and attenuation. This will be provided in a new stormwater management facility, see **Section 8.0** for stormwater management facility alternatives.

6.2.20 Basin FL 530

Widening of FL 530 (SR 530 or US192) in the vicinity of SR 429 received a permit March 11, 1999 (ERP No. 49-00956-P). The improvements included stormwater management facilities along the corridor. Basin A, Basin B, and Basin C of these improvements are located within the vicinity of SR 429. Pond A is a wet detention pond that discharge to Boggy Creek. Basin B discharges into a dry swale with swale blocks and a raised inlet that discharges to Boggy Creek. Pond C is a wet detention pond that discharges to an adjacent channel.

A portion of FL 530 is treated within FTE stormwater management facilities. With the proposed improvements the new impervious will require treatment and attenuation. Pond A will require approximately 0.20 ac-ft of treatment and 0.37 ac-ft of attenuation. Pond C will require approximately 0.22 ac-ft of treatment and 0.61 ac-ft of attenuation. Some of this can be compensated within FTE Pond 2A-3 and 2B-1, however modifications to FL 530 Pond A and Pond C will be required.

Orange County and RCID have expressed interest in widening FL 530 in the near future given the amount of recent development in the area. Therefore, it is possible these improvements will be done prior to the widening of Western Beltway. Coordination with these entities is recommended during the design phase.

SECTION 7.0 – FLOODPLAIN & ENVIRONMENT INFORMATION

Project Improvements will have a minimal impact on adjacent floodplains. A detailed analysis of the impacts resulting from roadway improvements and compensation for these impacts has been included in the *Location Hydraulic Report,* included under separate cover with this submittal. The limits of the floodplain have been outlined on the drainage maps included in **Appendix A**.

SECTION 8.0 – STORMWATER PONDS

As previously noted in **Section 6.0**, the corridor was originally designed to accommodate a 6-lane configuration. Additionally, the majority of the existing ponds were sized to treat one inch over the basin, not the impervious area only. This has allowed new impervious area beyond the existing 6-lanes to be accounted for since treatment is based on the greater of the two scenarios; one inch over the basin or 2.5-inches over the impervious area. Three pond alternatives have only been provided for Basin 2A-2 and Basin FGB due to the impacts to the existing Pond 2A-2 and the new Livingston Road interchange. Seasonal high-water elevations were determined from the best available information which was typically either as-built information or permit documentation. Where feasible existing FDOT parcels were considered for pond alternatives. The location of the FDOT owned parcels haven been called out on the proposed drainage maps provided in **Appendix A**. The required treatment and attenuation volumes are included on the pond sizing calculation sheets provided in **Appendix C**. The preferred alternative interchange alignment was utilized for determining storage requirements. Impacts to existing ponds was also factored into the analysis. The impacted volumes were combined with the required treatment and attenuation volumes as noted on the calculations provided in **Appendix B**. As noted in **Section 5.0** of this report, no joint use or regional opportunities were identified as part of the environmental look around process. A brief synopsis of the concerns and outstanding features related to each pond alternative is also provided in the paragraphs that follow and the evaluation matrix has been included in **Appendix E**. The location of all pond alternatives has been shown on the proposed drainage maps included in **Appendix A**.

8.1.1 Basin 2A-2

With the proposed Livingston Road interchange impacting the existing Pond 2A-2, three pond alternatives have been provided. Pond alternative 1 utilizes the infield area and large parcel of land immediately south of the proposed interchange on the east side of the Western Beltway. The pond will be located within the same parcel of land being acquired for the new interchange. Therefore, it is anticipated that the pond will be placed within a remnant piece of the parcel. This alternative is similar to the existing pond, therefore the seasonal high water table elevation of 101.50-ft and other design data from the original pond design was utilized. Alternative 1 will impact an existing electric corridor, which will require to be relocated. Pond alternative 2 and 3 utilize a FDOT remnant parcel located on the west side of Western Beltway.

Pond Alternative 2 would require an additional parcel from the Indian Creek Homeowners Association. Additionally, alternative 2 would require compensation for wetland impacts and additional floodplain storage for lost storage space in existing Pond 2A-2. During the geotechnical site evaluation, the area was inundated with water. Pond 2A-2 is located upstream with a seasonal high water elevation of 101.50-ft, therefore that value was used for the analysis.

Pond alternative 3 would require an additional parcel from the Tohopekaliga Water Authority. Additionally, alternative 3 would require compensation for wetland impacts and additional floodplain storage for lost storage space in existing Pond 2A-2. Pond 2A-2 is located upstream with a seasonal high water elevation of 101.50-ft, therefore that value was used for the analysis.

8.1.2 Basin FGB

The improvements to Formosa Gardens Boulevard will require treatment and attenuation. As previously mentioned, the existing 2-lanes are currently treated within a wet detention pond located within the residential community immediately east of the roadway. One possible alternative (Alternative 1) is to provide treatment and attenuation for the proposed 2-lane expansion within this existing pond. The peak stage within the pond for the 100-yr, 72-hr event is 105.60-ft (NGVD-29) with a finish floor elevation of 107.00-ft (NGVD-29). Proposed attenuation for this storm event is anticipated to require 4.60 ac-ft of volume. This would potentially increase the stage within the pond to 106.20-ft (NGVD-29) for the 100-yr event.

Alternative 2 is to provide treatment and attenuation for Formosa Gardens Boulevard within proposed Pond 2A-2 located within the Livingston Road interchange. This pond alternative is only viable if the preferred alternative for Pond 2A-2 is selected, and it is not necessary to re-route the Indian Creek subdivision in FTE right-of-way for treatment and attenuation.

Pond alternative 3 is to provide a pond located in the northwest quadrant of the intersection of Livingston Road and Formosa Gardens Boulevard. This location will utilize an anticipated

remnant parcel required for the Livingston Road interchange. An outfall pipe will need to be constructed within the border width of the proposed interchange to the current outfall of Pond 2A-2. Based on a preliminary geotechnical evaluation the seasonal high water table is approximately 4-ft below the surface, at approximately elevation 108.00-ft.

SECTION 9.0 – RESULTS

The analysis presented in this report identified potential pond sites based on recent aerials and other preliminary data. Once the potential pond sites were narrowed down to three alternatives, a more detailed analysis was conducted utilizing the following parameters: right of way requirements, easement requirements, atypical construction costs for a given pond site, hazardous materials, threatened endangered & significant species, maintenance, cultural resources, wetland impacts, floodplain impacts and impacts to other relevant features as noted in the pond stie evaluation matrix provided in **Appendix E**. In conjunction with this analysis, a *Contamination Screening Evaluation Report*, *Natural Resource Evaluation*, and a *Cultural Resource Assessment Survey* were prepared and are provided under separate cover with this submittal. The preferred alternative for each basin and anticipated right of way needs associated with the preferred alternatives are outlined in **Table 9**. The evaluation matrix which contains the details of the analysis has been provided in **Appendix E**.

Table 8: Preferred Pond Alternatives and Anticipated Right of Way

Basin	Preferred Alternative	Anticipated Right of Way Requirements (acres)	Total Cost
2A-2	1	12.42[1,2]	$6,426,744
FGB (Basin B)	3	4.80[1]	$1,048,101

1. Pond to be placed within remnant parcel of land being purchased for proposed roadway alignment.
2. A portion of proposed Pond 2A-2 will be located within the existing right-of-way.

SECTION 10.0 – CONCLUSIONS

As part of this analysis, pond site alternatives were analyzed for two basins. The previous sections of this report and the evaluation matrix included in **Appendix E** summarize the results of the analysis. A preferred alternative was selected based off of this analysis with the selection and estimated right of way needs summarized in **Table 8** provided in the previous section. It should be noted that the information contained herein is preliminary and will need to be refined once this project enters the design phase.

SECTION 11.0 – REFERENCES

FDOT Drainage Design Guide, 2022

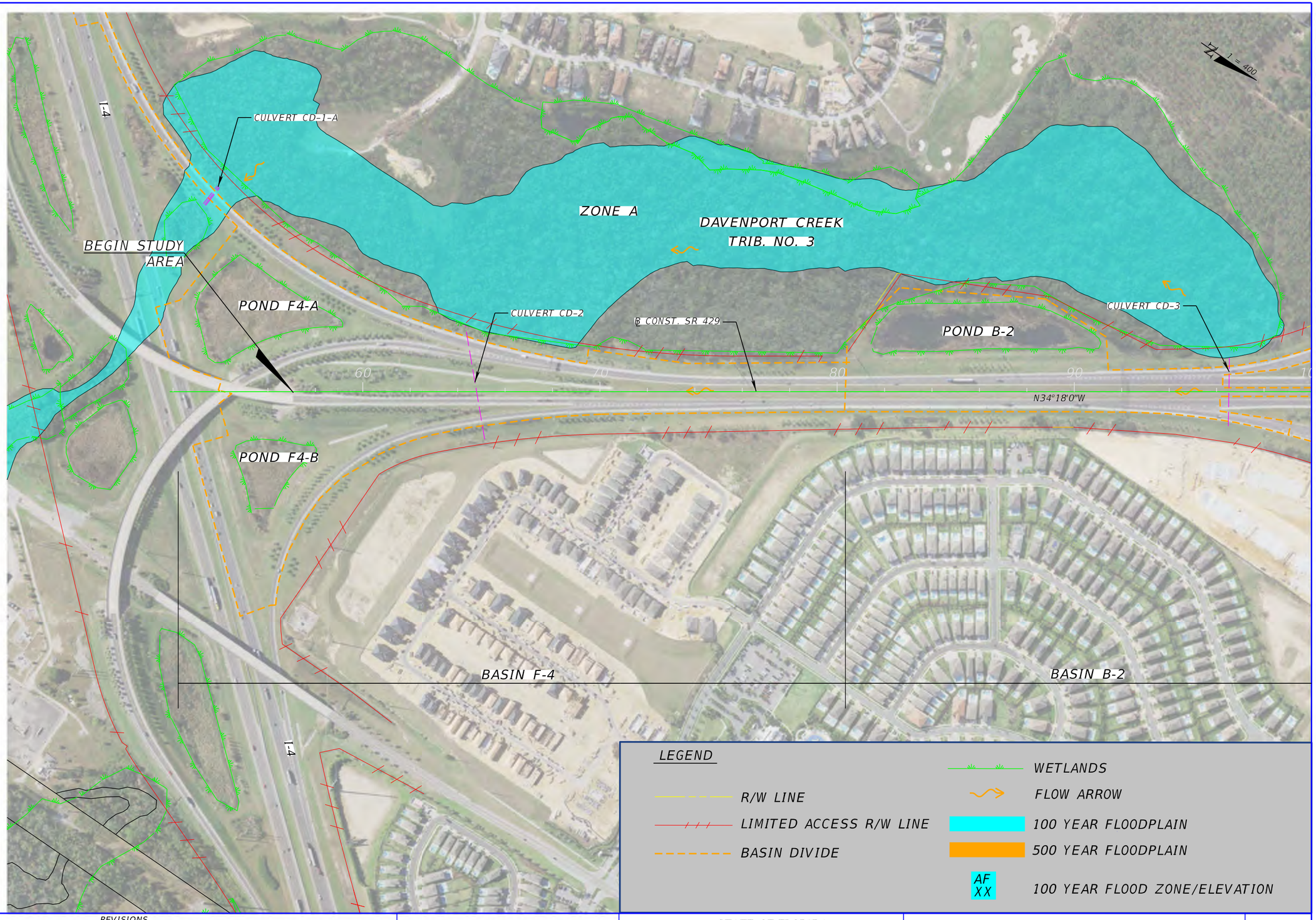
FDOT Drainage Manual, 2022

ERP Applicant's Handbook Volume I, 2018

SFWMD ERP Applicant's Handbook Volume II, 2016

FDOT Project Development and Environment Manual, 2020

APPENDIX A – DRAINAGE MAPS



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	ORANGE AND OSCEOLA	446164-1-22-01

EXISTING DRAINAGE MAP

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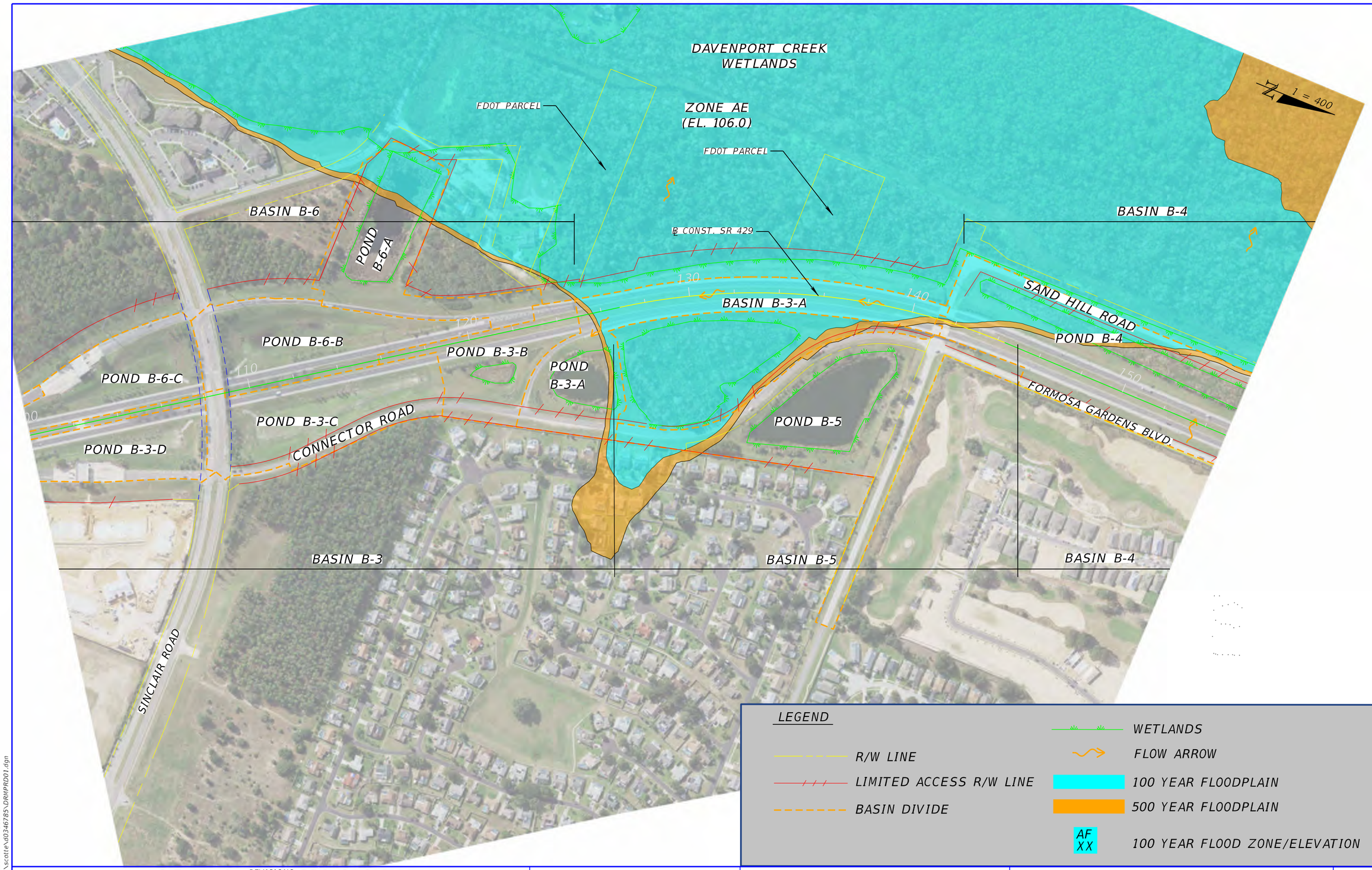

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	ORANGE AND OSCEOLA	446164-1-22-01

EXISTING DRAINAGE MAP

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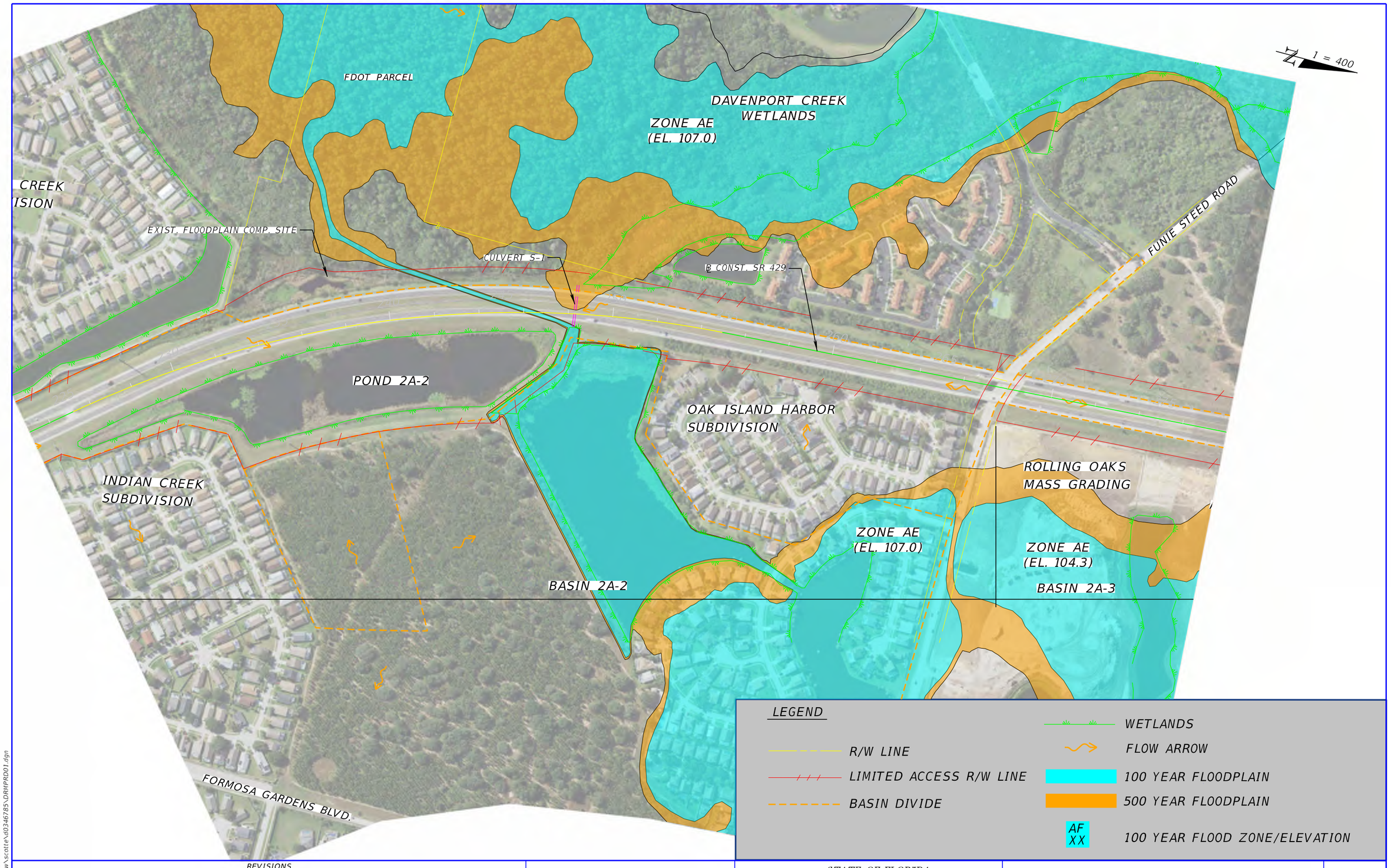

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EXISTING DRAINAGE MAP

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1 = 400

ZONE A

BOGGY CREEK WETLANDS

CULVERT S-9

S87°44'35"E

US 92 / CR 530

ZONE A

POND 2A-3

POND 2B-1

℄ CONST. SR 429

EQUATION:
STA 1330+64.16 BK =
STA 1330+90.74 AH

310

300

290

280

330

N3°43'9"W

CUVLERT S-2

ROLLING OAKS MASS GRADING

ROLLING OAKS

ZONE AE
(EL. 104.3)

N00°00'E

BASIN 2A-3

BASIN 2B-1

LEGEND

- R/W LINE
- LIMITED ACCESS R/W LINE
- BASIN DIVIDE
- WETLANDS
- FLOW ARROW
- 100 YEAR FLOODPLAIN
- 500 YEAR FLOODPLAIN
- AF XX — 100 YEAR FLOOD ZONE/ELEVATION

REVISIONS			
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EXISTING DRAINAGE MAP

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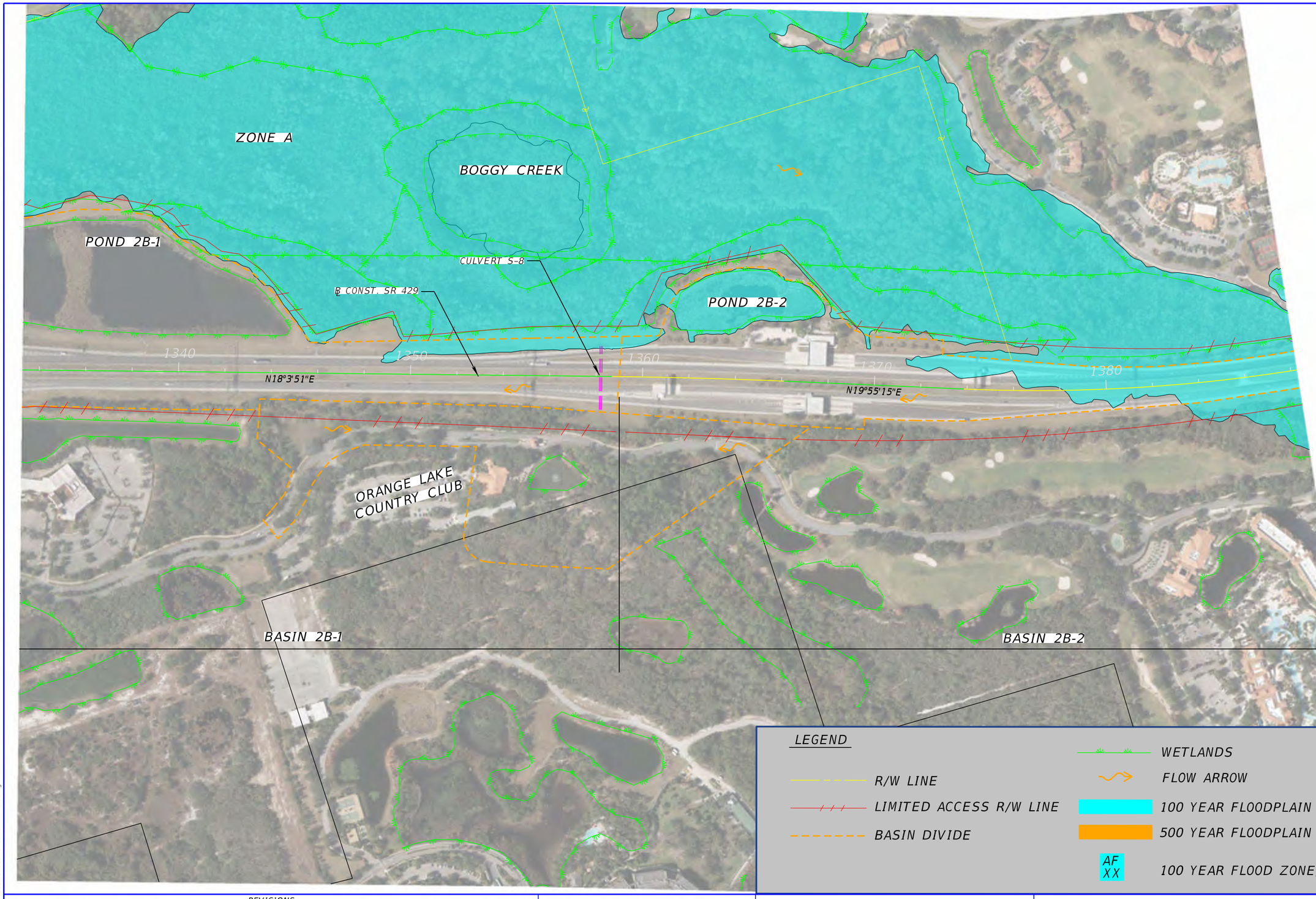

LEGEND

- R/W LINE
- LIMITED ACCESS R/W LINE
- BASIN DIVIDE
- WETLANDS
- FLOW ARROW
- 100 YEAR FLOODPLAIN
- 500 YEAR FLOODPLAIN
- AF XX — 100 YEAR FLOOD ZONE/ELEVATION

REVISIONS			
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EXISTING DRAINAGE MAP

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1 = 400

FLAMINGO CROSSING EAST

POND-10

POND-11A

POND-11B

POND-11C

POND-11D

WESTERN WAY

CULVERT S-107

W. ORANGE LAKE BLVD.

℄ CONST. SR 429

STA. 1390+74.32 BK =
STA. 410+80.54 AH =
EQUATION

1390

420

430

440

450

460

ZONE A

BOGGY CREEK

BASIN 2B-2

BASIN 10

BASIN 11

LEGEND

- R/W LINE
- LIMITED ACCESS R/W LINE
- BASIN DIVIDE
- WETLANDS
- FLOW ARROW
- 100 YEAR FLOODPLAIN
- 500 YEAR FLOODPLAIN
- AF XX — 100 YEAR FLOOD ZONE/ELEVATION

REVISIONS			
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EXISTING DRAINAGE MAP

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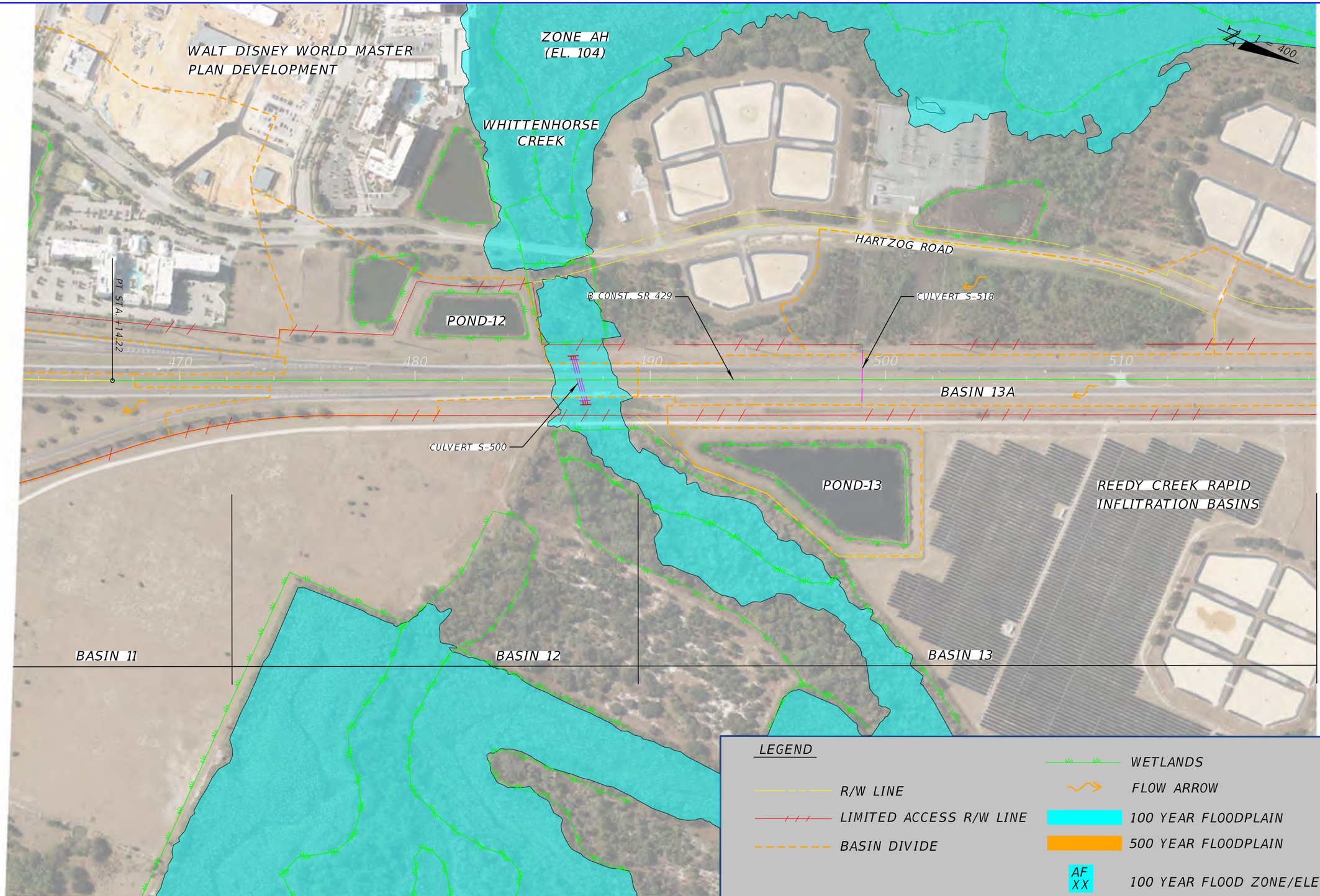

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
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EXISTING DRAINAGE MAP

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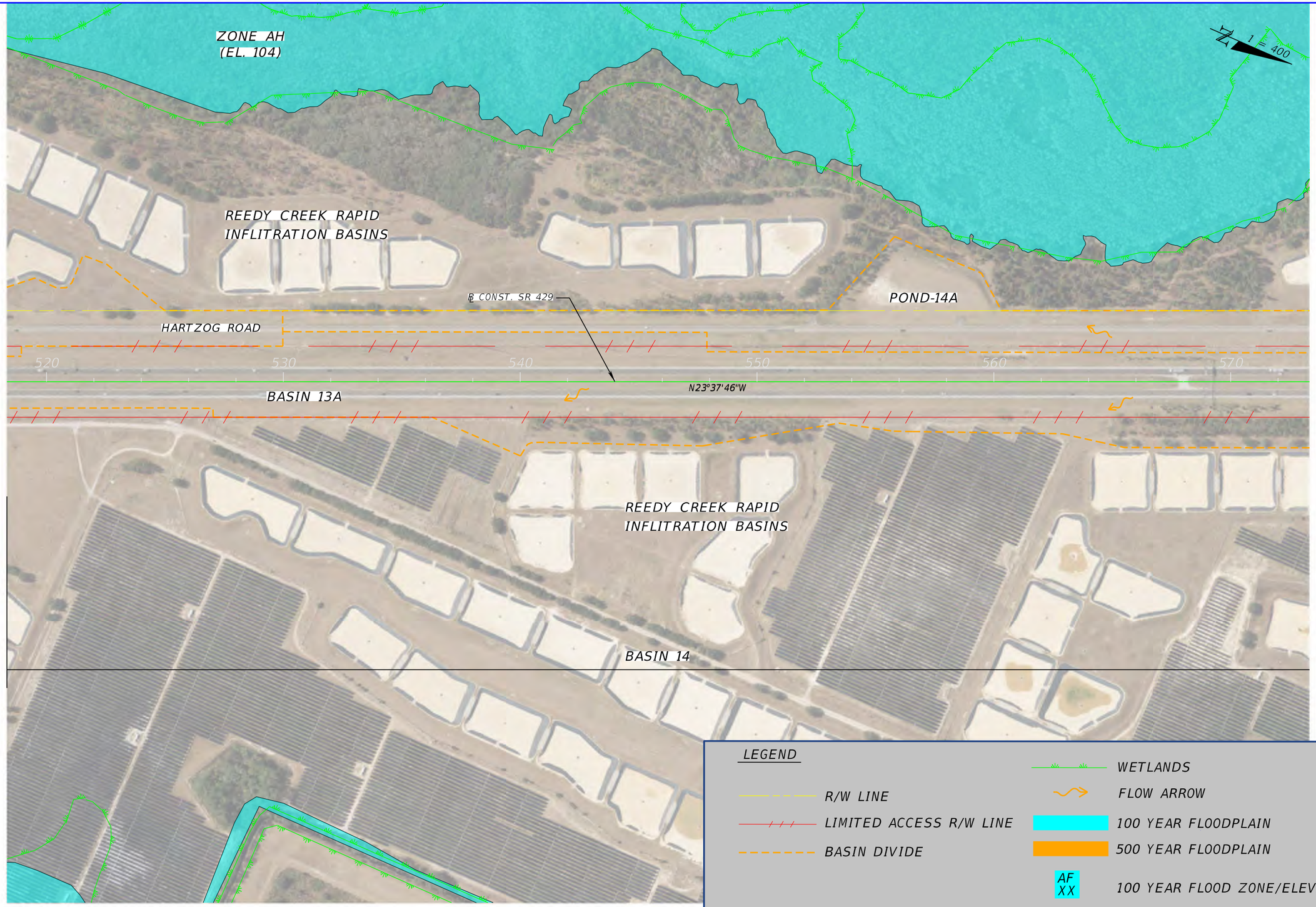

LEGEND

- R/W LINE
- LIMITED ACCESS R/W LINE
- BASIN DIVIDE
- WETLANDS
- FLOW ARROW
- 100 YEAR FLOODPLAIN
- 500 YEAR FLOODPLAIN
- AF XX — 100 YEAR FLOOD ZONE/ELEVATION

REVISIONS			
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STATE OF FLORIDA
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EXISTING DRAINAGE MAP

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ZONE AH
(EL. 104)

REEDY CREEK RAPID
INFLITRATION BASINS

℄ CONST. SR 429

POND-14B

CULVERT S-606

POND-14C

REEDY CREEK RAPID
INFLITRATION BASINS

WATERLEIGH

ZONE AE
(EL. 105.7)

AVALON ROAD

1 = 400

POND-15D

POND-15E

580 590 600 610 620

POND-15C

POND-15B

POND-15A

SEIDEL ROAD

SEIDEL EAST

BASIN 15

BASIN 1

HORIZ

LEGEND

R/W LINE	WETLANDS
LIMITED ACCESS R/W LINE	FLOW ARROW
BASIN DIVIDE	100 YEAR FLOODPLAIN
	500 YEAR FLOODPLAIN
AF XX	100 YEAR FLOOD ZONE/ELEVATION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

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EXISTING DRAINAGE MAP

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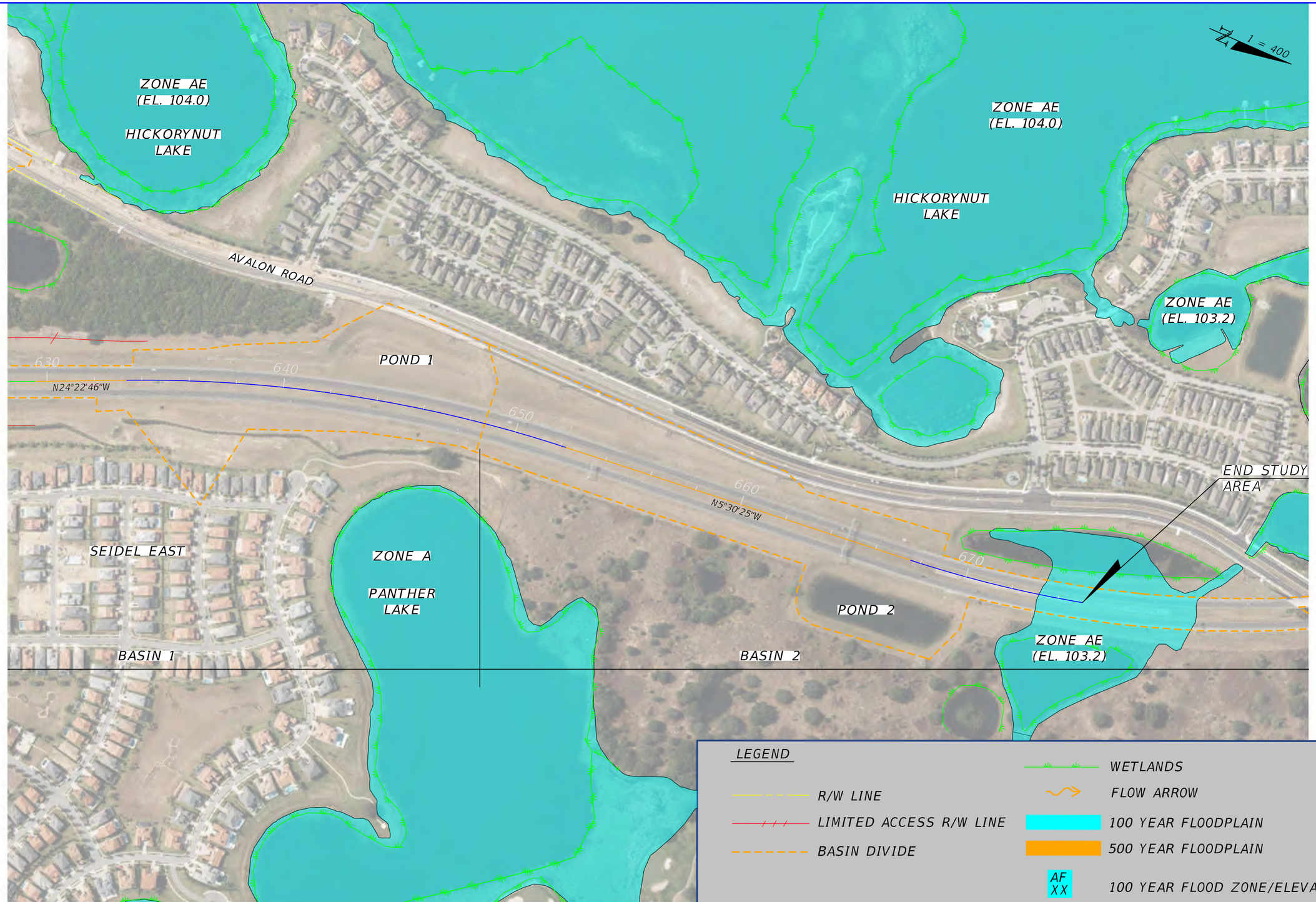

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STATE OF FLORIDA
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SR 429	ORANGE AND OSCEOLA	446164-1-22-01

EXISTING DRAINAGE MAP

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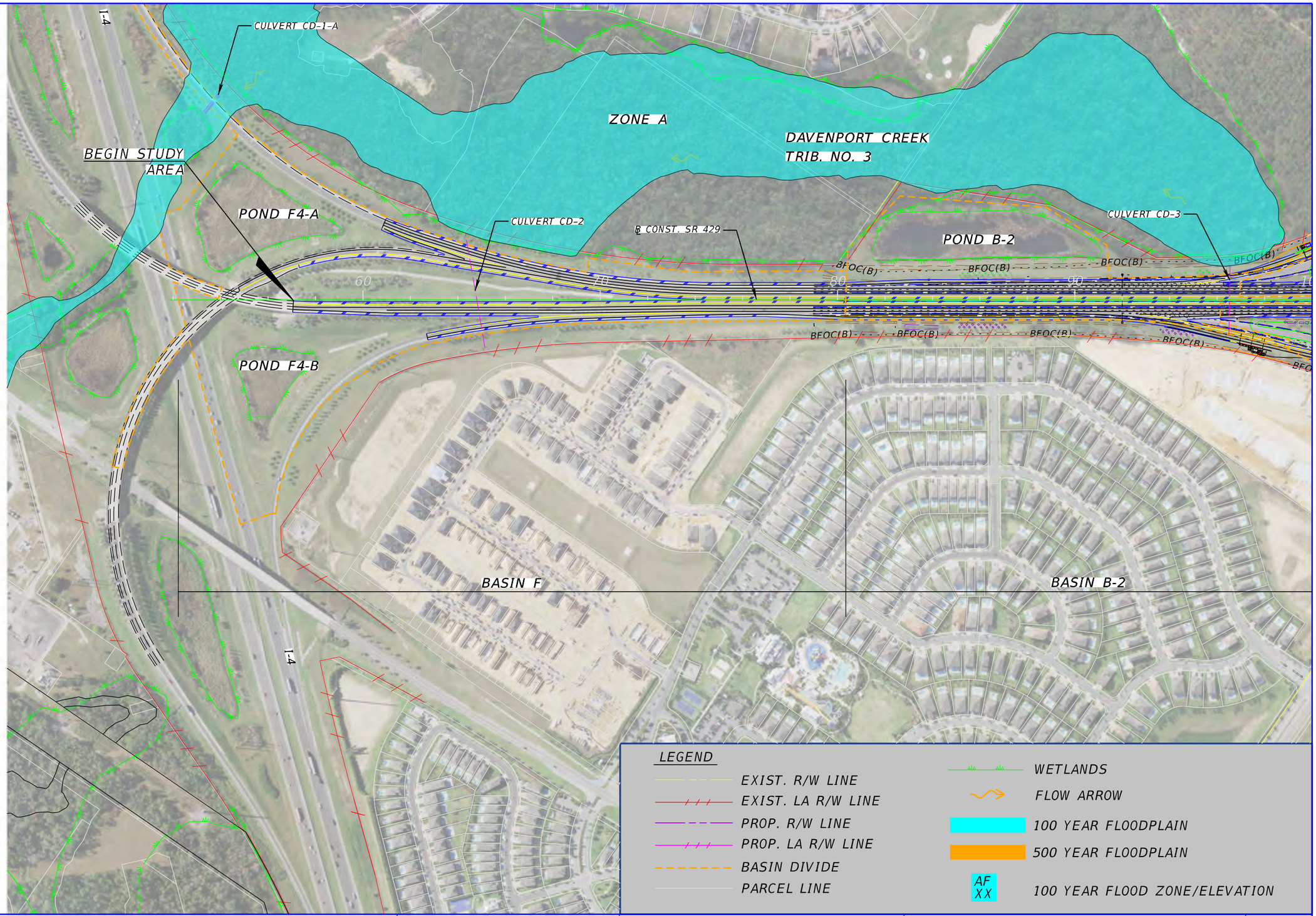

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	ORANGE AND OSCEOLA	446164-1-22-01

PROPOSED DRAINAGE MAP

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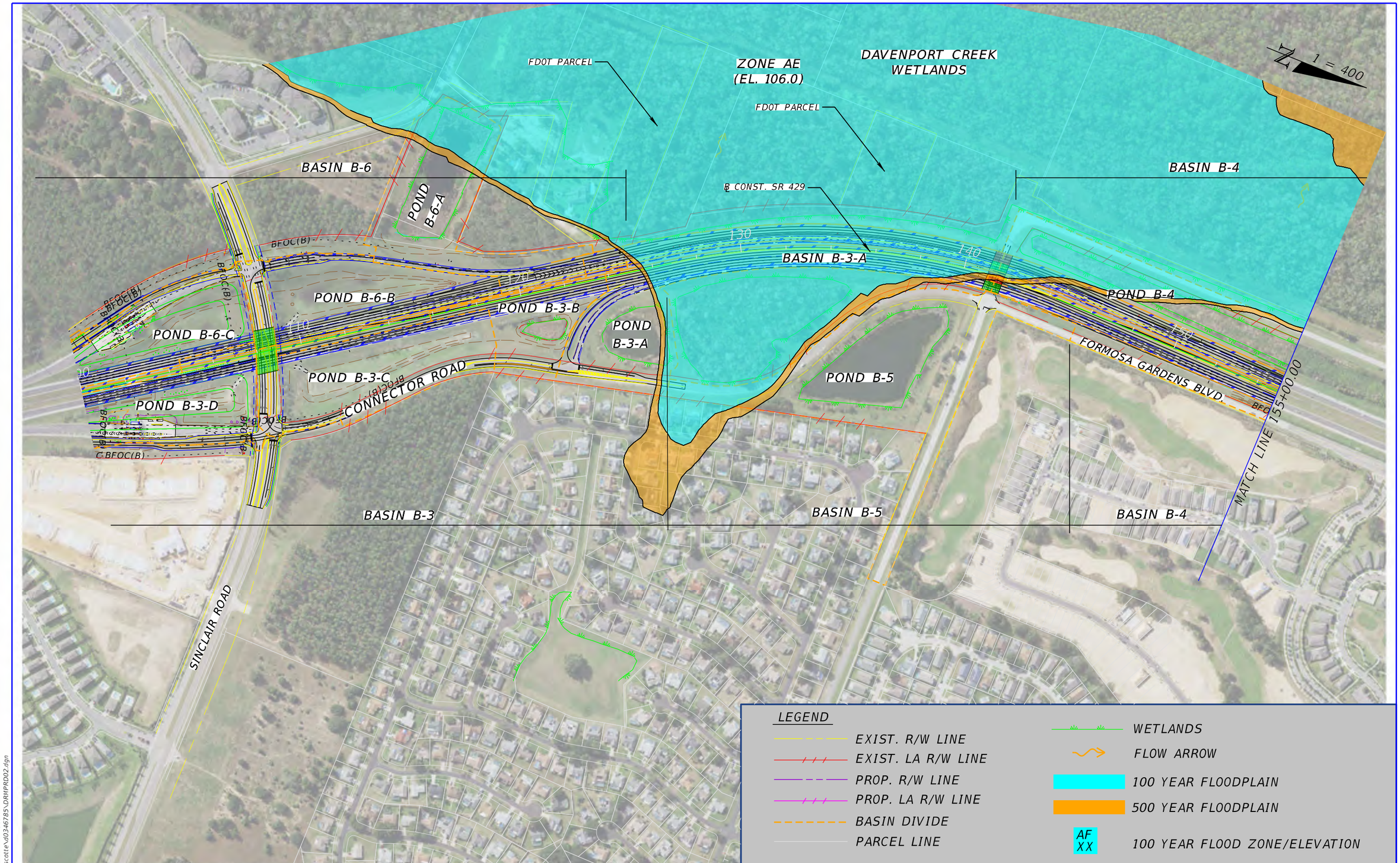

LEGEND

- EXIST. R/W LINE
- EXIST. LA R/W LINE
- PROP. R/W LINE
- PROP. LA R/W LINE
- BASIN DIVIDE
- PARCEL LINE
- WETLANDS
- FLOW ARROW
- 100 YEAR FLOODPLAIN
- 500 YEAR FLOODPLAIN
- AF XX — 100 YEAR FLOOD ZONE/ELEVATION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
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PROPOSED DRAINAGE MAP

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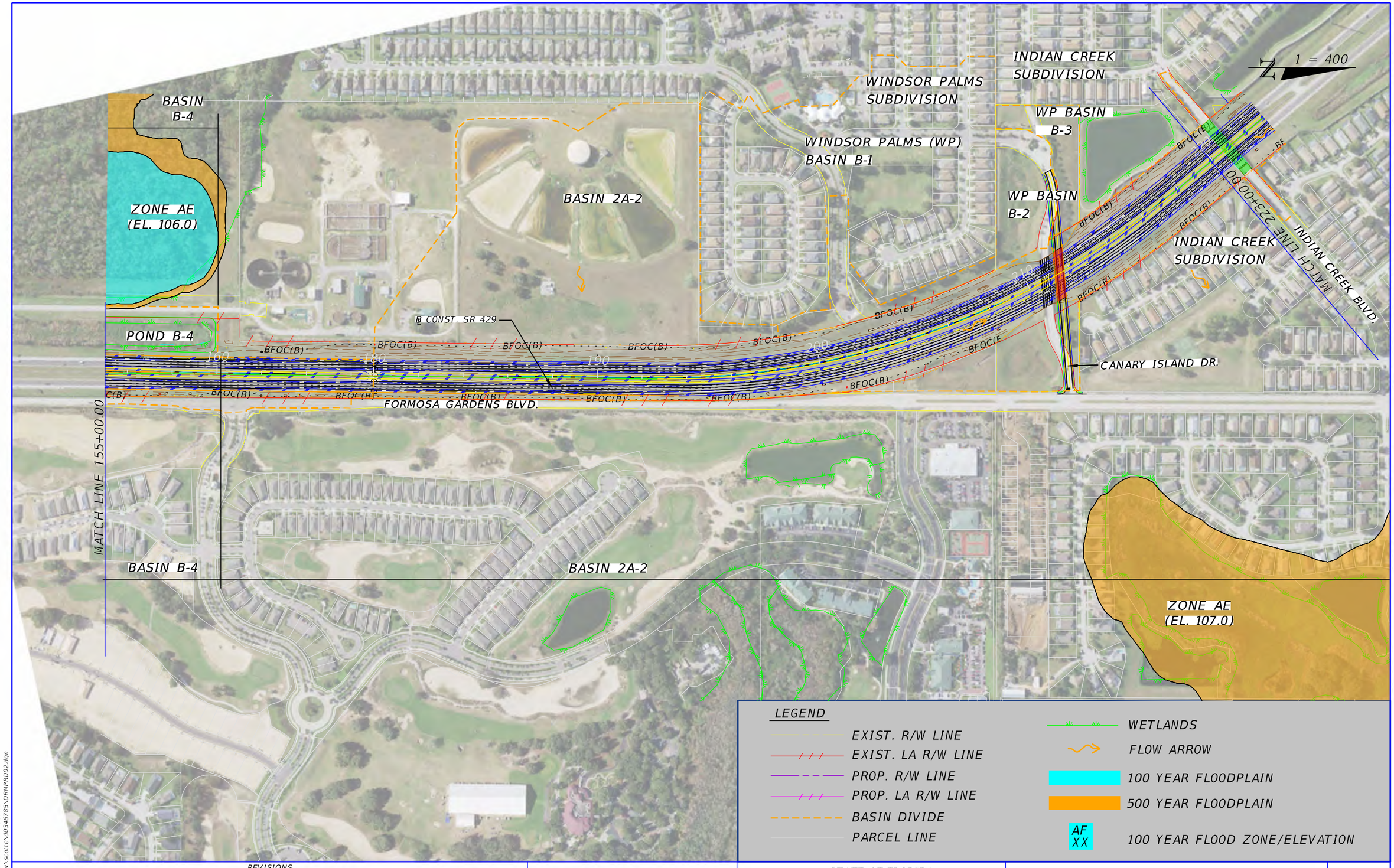

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DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	ORANGE AND OSCEOLA	446164-1-22-01

PROPOSED DRAINAGE MAP

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FDOT PARCEL

POND 2A-2 ALT 2

ZONE AE (EL. 107.0)

DAVENPORT CREEK WETLANDS

1 = 400

INDIAN CREEK SUBDIVISION

POND 2A-2 ALT 3

FUNIE STEED ROAD

FLOODPLAIN COMP. SITE

CULVERT S-1

B CONST. SR 429

BFOC(B)

MATCH LINE 223+00.00

OAK ISLAND HARBOR

ROLLING OAKS MASS GRADING

MATCH LINE 278+00.00

INDIAN CREEK SUBDIVISION

POND 2A-2 ALT 1

ZONE AE (EL. 107.0)

ZONE AE (EL. 104.3)

BASIN 2A-2

BASIN 2A-3

LIVINGSTON ROAD

FGB (BASIN B) ALT 3

FORMOSA GARDENS BLVD

LEGEND

- EXIST. R/W LINE
- EXIST. LA R/W LINE
- PROP. R/W LINE
- PROP. LA R/W LINE
- BASIN DIVIDE
- PARCEL LINE
- WETLANDS
- FLOW ARROW
- 100 YEAR FLOODPLAIN
- 500 YEAR FLOODPLAIN
- AF XX — 100 YEAR FLOOD ZONE/ELEVATION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

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SR 429	ORANGE AND OSCEOLA	446164-1-22-01

PROPOSED DRAINAGE MAP

SHEET NO. 15

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MATCH LINE 2023+98.07

ZONE A

BOGGY CREEK WETLAND

1 = 400

ZONE A

US 92 / CR 530

POND 2A-3

POND 2B-1

℄ CONST. SR 429

MATCH LINE 2078+00.00

MATCH LINE 1333+26.58

CUVLERT S-2

ROLLING OAKS MASS GRADING

ROLLING OAKS

ZONE AE (EL. 104.3)

BASIN 2A-3

BASIN 2B-1

2050

BFOC(B)

280 290 300 310 320 330

LEGEND

- EXIST. R/W LINE
- EXIST. LA R/W LINE
- PROP. R/W LINE
- PROP. LA R/W LINE
- BASIN DIVIDE
- PARCEL LINE
- WETLANDS
- FLOW ARROW
- 100 YEAR FLOODPLAIN
- 500 YEAR FLOODPLAIN
- AF XX — 100 YEAR FLOOD ZONE/ELEVATION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

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SR 429	ORANGE AND OSCEOLA	446164-1-22-01

PROPOSED DRAINAGE MAP

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ZONE A

BOGGY CREEK

POND 2B-1

POND 2B-2

CULVERT S-8

℄ CONST. SR 429

MATCH LINE 1333+26.58

MATCH LINE 1388+26.58

1 = 400

BFOC(B)

1340

1350

1360

1370

1380

ORANGE LAKE RESORT

BASIN 2B-1

BASIN 2B-2

LEGEND

- EXIST. R/W LINE
- EXIST. LA R/W LINE
- PROP. R/W LINE
- PROP. LA R/W LINE
- BASIN DIVIDE
- PARCEL LINE
- WETLANDS
- FLOW ARROW
- 100 YEAR FLOODPLAIN
- 500 YEAR FLOODPLAIN
- AF XX — 100 YEAR FLOOD ZONE/ELEVATION

REVISIONS			
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DEPARTMENT OF TRANSPORTATION

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SR 429	ORANGE AND OSCEOLA	446164-1-22-01

PROPOSED DRAINAGE MAP

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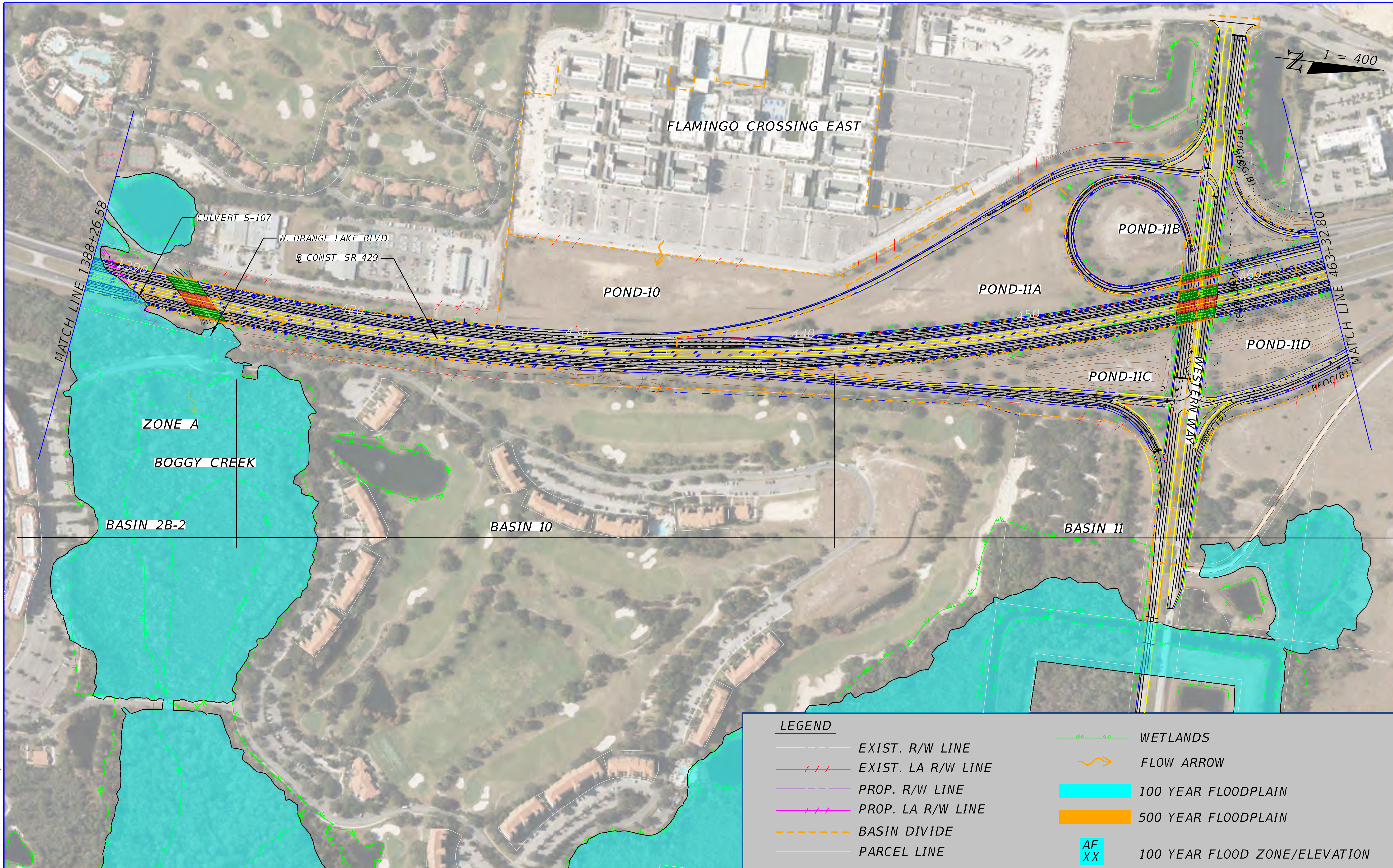

LEGEND

EXIST. R/W LINE	WETLANDS
EXIST. LA R/W LINE	FLOW ARROW
PROP. R/W LINE	100 YEAR FLOODPLAIN
PROP. LA R/W LINE	500 YEAR FLOODPLAIN
BASIN DIVIDE	AF XX 100 YEAR FLOOD ZONE/ELEVATION
PARCEL LINE	

REVISIONS

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PROPOSED DRAINAGE MAP

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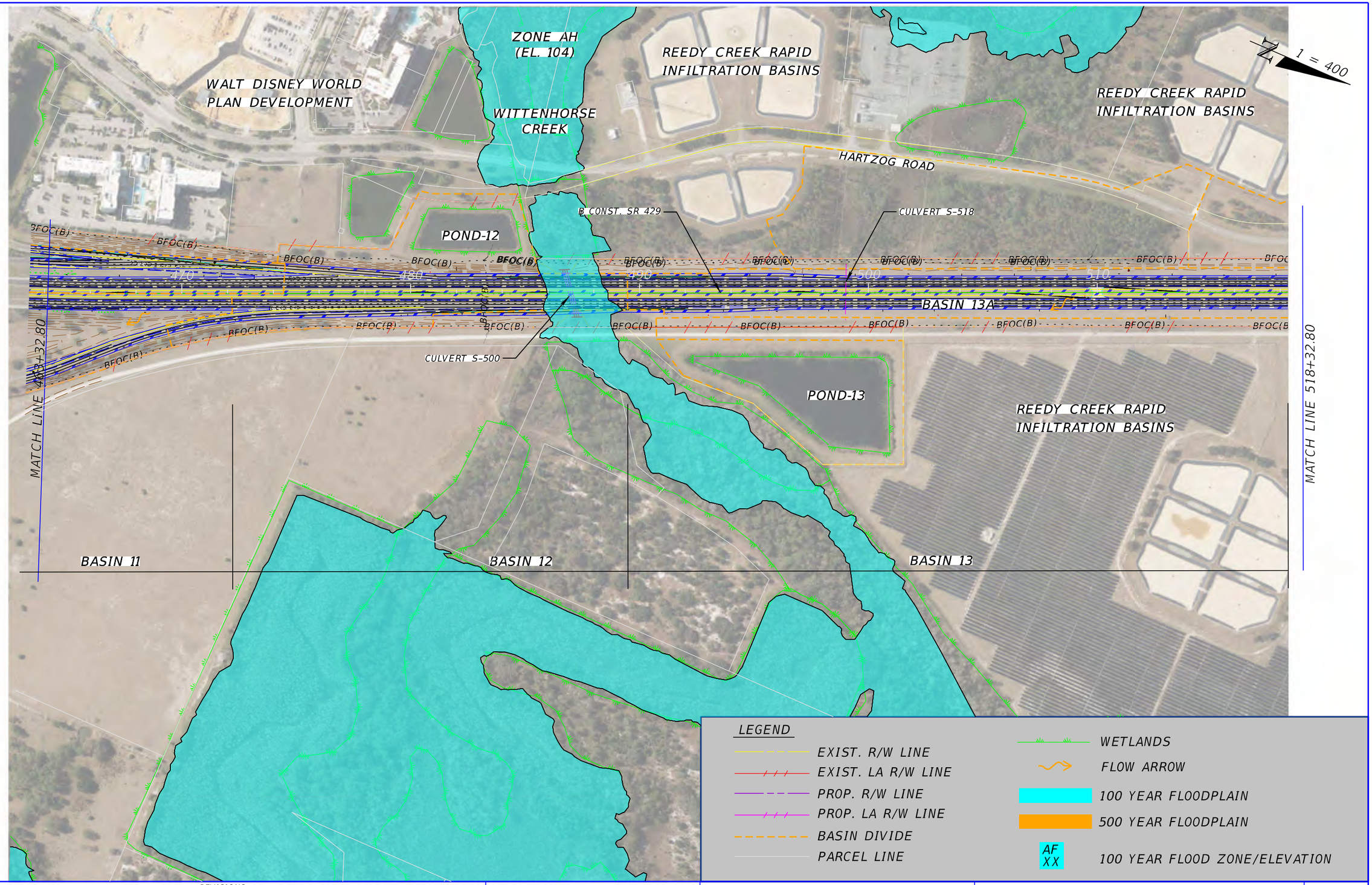

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PROPOSED DRAINAGE MAP

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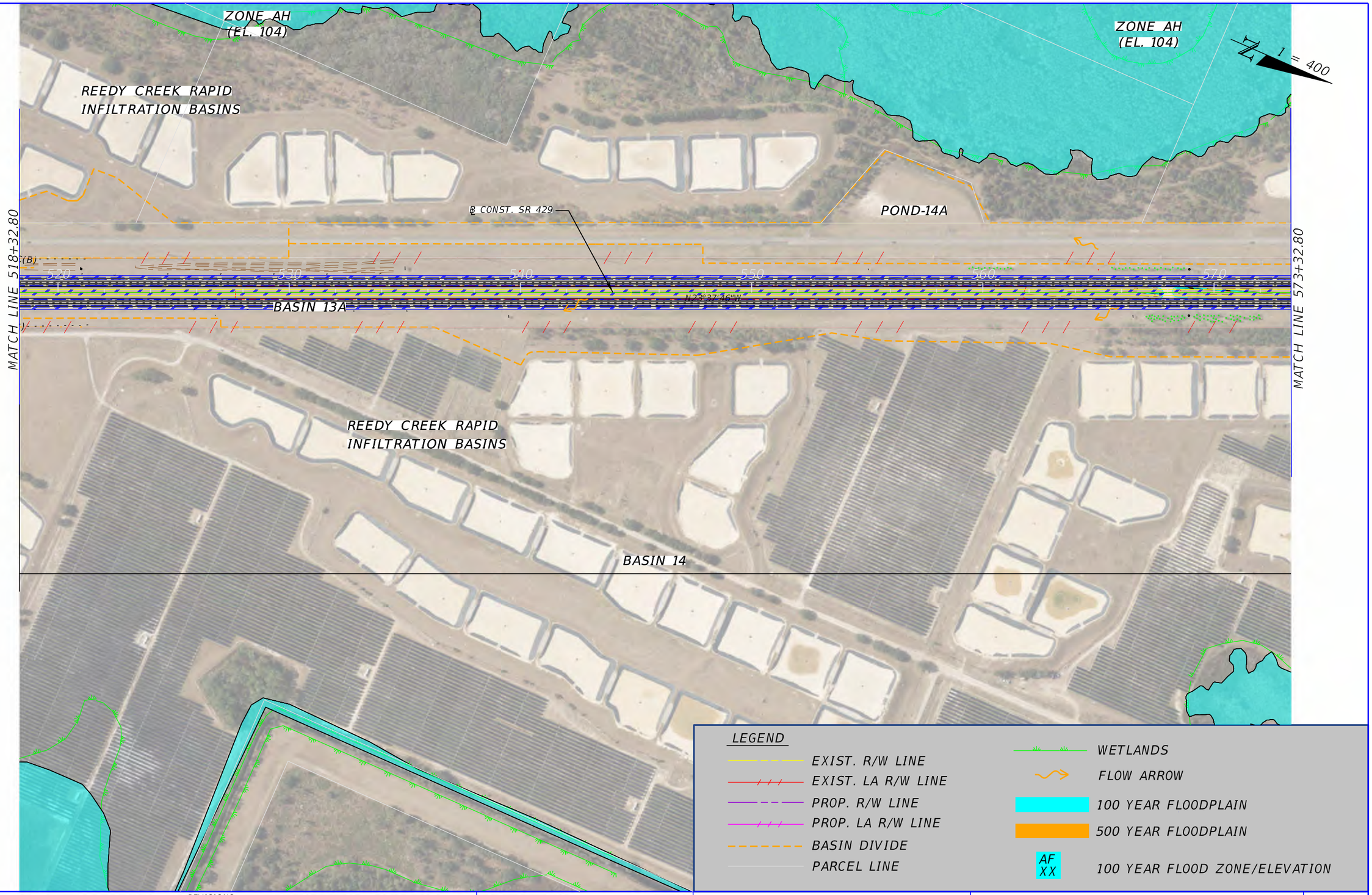

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	ORANGE AND OSCEOLA	446164-1-22-01

PROPOSED DRAINAGE MAP

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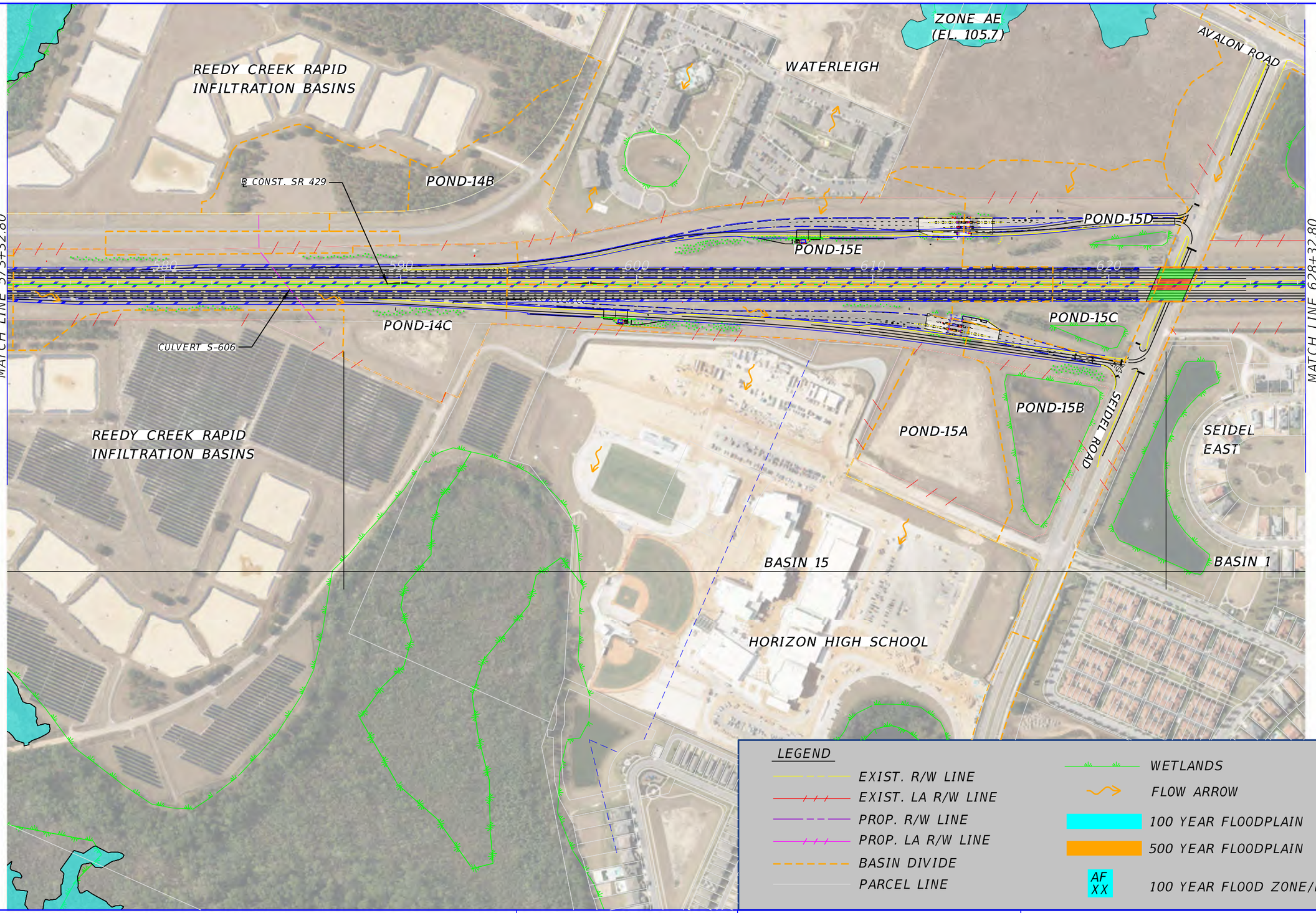

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	ORANGE AND OSCEOLA	446164-1-22-01

PROPOSED DRAINAGE MAP

SHEET NO. 21

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ZONE AE
(EL. 104.0)

ZONE AE
(EL. 104.0)

1 = 400

AVALON ROAD

MATCH LINE 628+32.80

ZONE AE
(EL. 103.2)

POND 1

630

640

650

660

670

N24°22'46"W

N5°30'25"W

END STUDY
AREA

SEIDEL
EAST

ZONE A

PANTHER
LAKE

POND 2

BASIN 1

BASIN 2

ZONE AE
(EL. 103.2)

LEGEND

- EXIST. R/W LINE
- EXIST. LA R/W LINE
- PROP. R/W LINE
- PROP. LA R/W LINE
- BASIN DIVIDE
- PARCEL LINE
- WETLANDS
- FLOW ARROW
- 100 YEAR FLOODPLAIN
- 500 YEAR FLOODPLAIN
- AF XX — 100 YEAR FLOOD ZONE/ELEVATION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	ORANGE AND OSCEOLA	446164-1-22-01

PROPOSED DRAINAGE MAP

SHEET NO. 22

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APPENDIX B – PRE-DEVELOPMENT CALCULATIONS

Existing Development: Basin F-4

Stations 54+00 to 80+40

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Basin F-4				
Impervious Area	A	14.13	98	1384.74
Pervious	A	17.62	48	845.76
Pervious	D	0.00	80	0.00
Water		4.57	100	457.00
		36.32		2687.50
		CN=		74.0

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Wet Detention			
1" Over Total Project Area	1	36.32	3.03
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	14.13	2.94

Treatment Volume Required (ac.ft.) = 3.03

Treatment Volume Provided (ac.ft.) = 3.36

Existing Development: Basin B-2

Stations 80+40 to 101+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Good Condition	A	3.51	48	168.48
	D	0.00	80	0.00
Pavement	A	8.08	98	791.84
	D	0.00	98	0.00
Pond	A	3.45	100	345.00
	D	0.00	100	0.00
		15.04		1305.32
		CN=		86.8

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Wet Detention			
1" Over Total Project Area	1	15.04	1.25
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	8.08	1.68

Treatment Volume Required (ac.ft.) = 1.68

Treatment Volume Provided (ac.ft.) = 1.78

NOTES:

1. Based on Interstate 4/SR 429 Aux Lane proposed condition

Existing Development: Basin B-3-A, B-3-B, B-3-C, B-3-D, B-5

Stations 101+00 to 141+50

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Basin B-3-A				
Impervious Area	A	5.70	98	558.60
Pervious	A	2.03	48	97.44
Pervious	D	0.00	80	0.00
Water		1.28	100	128.00
		9.01		784.04
Basin B-3-B				
Impervious Area	A	1.73	98	169.54
Pervious	A	2.71	48	130.08
Pervious	D	0.00	80	0.00
Water		0.29	100	29.00
		4.73		328.62
Basin B-3-C				
Impervious Area	A	2.41	98	236.18
Pervious	A	5.46	48	262.08
Pervious	D	0.00	80	0.00
Water		0.00	100	0.00
		7.87		498.26
Basin B-3-D				
Impervious Area	A	2.73	98	267.54
Pervious	A	3.21	48	154.08
Pervious	D	0.00	80	0.00
Water		0.00	100	0.00
		5.94		421.62
Basin B-5				
Impervious Area	A	2.10	98	205.80
Pervious	A	6.71	48	322.08
Pervious	D	0.00	80	0.00
Water		3.60	100	360.00
		12.41		887.88
		CN=		73.1

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Wet Detention			
1" Over Total Project Area	1	39.96	3.33
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	14.67	3.06

Treatment Volume Required (ac.ft.) = 3.33

Treatment Volume Provided (ac.ft.) = 3.72

Existing Development: Basin B-4

Stations 141+50 to 167+00 (180+00)

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Basin B-4				
Impervious Area	A	10.85	98	1063.30
Pervious	A	7.79	48	373.92
Pervious	D	1.66	80	132.80
Water		2.60	100	260.00
		22.90		1830.02
		CN=		79.9

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Wet Detention			
1" Over Total Project Area	1	22.90	1.91
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	10.85	2.26

Treatment Volume Required (ac.ft.) = 2.26

Treatment Volume Provided (ac.ft.) = 2.47

Existing Development: Basin B-6-A, B-6-B, B-6-C

Stations 101+00 to 125+00

Project: Widen Western Beltway PD&E *Date: 7/12/2022*

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Basin B-6-A				
Impervious Area	A	0.74	98	72.52
Pervious	A	3.23	48	155.04
Pervious	D	0.41	80	32.80
Water		3.33	100	333.00
		7.71		593.36
Basin B-6-B				
Impervious Area	A	3.42	98	335.16
Pervious	A	4.49	48	215.52
Pervious	D	0.00	80	0.00
Water		0.00	100	0.00
		7.91		550.68
Basin B-6-C				
Impervious Area	A	2.16	98	211.68
Pervious	A	3.59	48	172.32
Pervious	D	0.00	80	0.00
Water		0.00	100	0.00
		5.75		384.00
		CN=		71.5

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Wet Detention			
1" Over Total Project Area	1	21.37	1.78
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	6.32	1.32

Treatment Volume Required (ac.ft.) = 1.78

Treatment Volume Provided (ac.ft.) = 2.03

Existing Development: Basin Wyndham Palms Basin 1

Stations 198+00 – 213+00

Project: Widen Western Beltway PD&E Date: 10/7/2021

Project No.: 104-0125-000

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Good Condition	A	14.55	39	567.45
Pavement	A	14.20	98	1391.60
Pond	A	0.85	98	83.30
		29.60		2042.35
		CN=		69.0

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
1" Over Total Project Area	1	29.60	2.47
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	14.20	2.96
Treatment Volume=Greater of Two Values (ac.ft.)		Treatment Volume=	2.96

TIME OF CONCENTRATION	LENGTH (FT)	VELOCITY (FT/S)	TC (MIN)
Sheet Flow	Assume 15 minutes		15.0
Ditch Flow	N/A	N/A	
Pipe Flow	N/A	N/A	
		Time of Conc.=	15.0

Existing Development: Wyndham Palms Basin B-2

Stations 198+00 - 213+00

Project: Widen Western Beltway PD&E *Date: 10/7/2021*

Project No.: 104-0125-000

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Good Condition	A	3.09	39	120.51
Dreamer's Drive	A	1.10	98	107.80
Wyndham Pavement	A	1.20	98	117.60
Pond	A	0.71	98	69.58
		6.10		415.49
		CN=		68.1

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
1" Over Total Project Area	1	6.10	0.51
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	2.30	0.48
Treatment Volume=Greater of Two Values (ac.ft.)		Treatment Volume=	0.51

TIME OF CONCENTRATION	LENGTH (FT)	VELOCITY (FT/S)	TC (MIN)
Sheet Flow	Assume 15 minutes		15.0
Ditch Flow	N/A	N/A	
Pipe Flow	N/A	N/A	
		Time of Conc.=	15.0

Existing Development: Wyndham Palms Basin B-3

Stations 198+00 – 213+00

Project: Widen Western Beltway PD&E *Date: 10/7/2021*

Project No.: 104-0125-000

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Good Condition	A	3.09	39	120.51
		3.09		120.51
		CN=		39.0

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
1" Over Total Project Area	1	3.09	0.26
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	0.00	0.00
Treatment Volume=Greater of Two Values (ac.ft.)		Treatment Volume=	0.26

TIME OF CONCENTRATION	LENGTH (FT)	VELOCITY (FT/S)	TC (MIN)
Sheet Flow	Assume 15 minutes		15.0
Ditch Flow	N/A	N/A	
Pipe Flow	N/A	N/A	
		Time of Conc.=	15.0

Existing Development: Basin 2A-2

Stations 180+00 - 268+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Good Condition	A	11.61	39	452.79
	D	14.03	80	1122.40
Pavement	A	12.59	98	1233.82
	D	6.70	98	656.60
Future Pavement	A	6.93	98	679.14
	D	3.82	98	374.36
Pond	A	4.97	98	487.06
	D	6.97	98	683.06
Wyndham Palms (Triangle Offsite)				
Woods - Grass Combination Fair	A	4.67	43	200.81
Dreamer's Drive	A	0.62	98	60.76
Sandhill	A	1.10	98	107.80
Treatment Plant (Offsite)				
Woods - Grass Combination Fair	A	29.07	43	1250.01
Offsite				
Woods Fair	A	10.94	36	393.84
Sand Hill Road				
Pavement	A	0.98	98	96.04
Funie Steed Road				
Pavement	A	0.46	98	45.08
Oak Island Cove				
Res. 1/8 acre or less (65% Imp)	A	16.95	77	1305.15
	D	2.14	92	196.88
		134.55		9345.60
			CN=	69.5

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Wet Detention			
1" Over Total Project Area	1	134.55	11.21
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	45.61	9.50

Treatment Volume Required (ac.ft.) = 11.21

Treatment Volume Provided (ac.ft.) = 11.62

Existing Development: Basin 2A-3

Stations 268+00 – 320+50

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Good Condition	A	22.21	39	866.19
Pavement	A	12.91	98	1265.18
	D	1.40	98	137.20
Future Pavement	A	5.91	98	579.18
	D	0.73	98	71.54
Pond	A	4.71	98	461.58
Offsite				
Woods	A	12.32	36	443.52
SR 530/US 192				
Pavement	A	1.20	98	117.60
Open Space-Good Condition	A	0.91	39	35.49
		62.30		3977.48
		CN=		63.8

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Wet Detention			
1" Over Total Project Area	1	62.30	5.19
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	22.15	4.61

Treatment Volume Required (ac.ft.) = 5.19

Treatment Volume Provided (ac.ft.) = 5.43

Existing Development: Basin 2B-1

Stations 320+50 – 1359+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Good Condition	A	4.04	39	157.56
	C	5.87	74	434.38
	D	3.38	80	270.40
Pavement	A	2.94	98	288.12
	C	7.36	98	721.28
	D	3.79	98	371.42
Future Pavement	A	2.73	98	267.54
	C	1.47	98	144.06
	D	2.28	98	223.44
Pond	A	3.50	98	343.00
	C	5.07	98	496.86
	D	2.92	98	286.16
SR 530/US 192				
Pavement	A	1.74	98	170.52
Open Space-Good Condition	A	1.75	39	68.25
		48.84		4242.99
		CN=		86.9

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Wet Detention			
1" Over Total Project Area	1	48.84	4.07
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	22.31	4.65

Treatment Volume Required (ac.ft.) = 4.65

Treatment Volume Provided (ac.ft.) = 4.81

Existing Development: Basin 2B-2

Stations 1359+00 - 414+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Good Condition	C	2.91	74	215.34
	D	1.31	80	104.80
Toll Facility	D	0.86	98	84.28
Pavement	C	5.83	98	571.34
	D	4.40	98	431.20
Future Pavement	C	2.28	98	223.44
	D	1.09	98	106.82
Pond	C	1.78	98	174.44
	D	0.79	98	77.42
Section 3 (Sta. 400+00 - 414+00)				
Pavement	C	1.28	98	125.44
	D	2.24	98	219.52
Future Pavement	C	0.65	98	63.70
	D	1.15	98	112.70
		26.57		2510.44
		CN=		94.5

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Wet Detention			
1" Over Total Project Area	1	26.57	2.21
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	19.78	4.12

Treatment Volume Required (ac.ft.) = 4.12

Treatment Volume Provided (ac.ft.) = 4.25

Existing Development: Basin 10

Stations 414+00 – 445+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Closed Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	8.20	49	401.80
Pavement	A	8.40	98	823.20
Pond	A	4.50	100	450.00
Offsite				
Woods (grove)-Poor	A	14.80	57	843.60
		35.90		2518.60
		CN=		70.2

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Dry Retention			
50% of 1" Over Total Project Area	1	35.90	1.50
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	8.40	0.88

Treatment Volume Required (ac.ft.) = 1.50

Treatment Volume Provided (ac.ft.) = 1.60

Existing Development: Basin 11A

Stations 435+00 – 455+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	6.00	49	294.00
	C	0.20	79	15.80
Pavement	A	6.20	98	607.60
Pond	A	4.90	100	490.00
		17.30		1407.40
		CN=		81.4

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Dry Retention			
50% of 1" Over Total Project Area	1	17.30	0.72
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	6.20	0.65

Treatment Volume Required (ac.ft.) = 0.72

Treatment Volume Provided (ac.ft.) = 12.54

Existing Development: Basin 11B

Stations 455+00 – 490+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	5.90	49	289.10
	C	0.70	79	55.30
	D	0.40	84	33.60
Pavement	A	7.60	98	744.80
Pond	A	2.20	100	220.00
		16.80		1342.80
		CN=		79.9

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Dry Retention			
50% of 1" Over Total Project Area	1	16.80	0.70
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	7.60	0.79

Treatment Volume Required (ac.ft.) = 0.79

Treatment Volume Provided (ac.ft.) = 0.69

Existing Development: Basin 11C

Stations 438+00 – 457+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	5.00	49	245.00
	C	2.90	79	229.10
Pavement	A	3.90	98	382.20
Pond	A	1.60	100	160.00
		13.40		1016.30
		CN=		75.8

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Dry Retention			
50% of 1" Over Total Project Area	1	13.40	0.56
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	3.90	0.41

Treatment Volume Required (ac.ft.) = 0.56

Treatment Volume Provided (ac.ft.) = 0.54

Existing Development: Basin 11D

Stations 457+00 – 474+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	7.30	49	357.70
	C	0.20	79	15.80
Pavement	A	6.20	98	607.60
Pond	A	2.50	100	250.00
		16.20		1231.10
		CN=		76.0

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Dry Retention			
50% of 1" Over Total Project Area	1	16.20	0.68
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	6.20	0.65

Treatment Volume Required (ac.ft.) = 0.68

Treatment Volume Provided (ac.ft.) = 0.81

Existing Development: Basin 12

Stations 474+00 – 490+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	5.70	49	279.30
	C	1.20	79	94.80
Woods (grove)-Fair	A	4.70	43	202.10
Pavement	A	6.70	98	656.60
Pond	A	1.80	100	180.00
		20.10		1412.80
		CN=		70.3

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Wet Detention			
1" Over Total Project Area	1	20.10	1.68
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	6.70	1.40

Treatment Volume Required (ac.ft.) = 1.68

Treatment Volume Provided (ac.ft.) = 1.80

Existing Development: Basin 13 & 13A

Stations 490+00 – 574+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Basin 13A				
Onsite				
Open Space-Fair Condition	A	26.70	49	1308.30
	B	0.50	69	34.50
	C	0.30	79	23.70
Pavement	A	25.80	98	2528.40
Offsite				
Tree Farm-Poor Condition	A	9.50	57	541.50
		62.80		4436.40
		CN=		70.6
Basin 13				
Onsite				
Open Space-Fair Condition	A	1.50	49	73.50
	C	1.30	79	102.70
Pond	A	6.20	100	620.00
		9.00		796.20
		CN=		88.5

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Wet Detention			
1" Over Total Project Area	1	71.80	5.98
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	25.80	5.38

Treatment Volume Required (ac.ft.) = 5.98

Treatment Volume Provided (ac.ft.) = 6.10

Existing Development: Basin 14A

Stations 530+00 – 585+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	15.00	49	735.00
Pavement	A	4.10	98	401.80
Pond	A	1.90	100	190.00
		21.00		1326.80
		CN=		63.2
Compensatory Treatment (Hartzog Road)				
Pavement	A	0.80	98	78.40

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Dry Retention			
50% of 1" Over Total Project Area	1	21.00	0.88
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	4.90	0.51

Treatment Volume Required (ac.ft.) = 0.88

Treatment Volume Provided (ac.ft.) = 1.03

Existing Development: Basin 14B

Stations 587+00 – 590+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Woods (Poor)	A	5.90	45	265.50
Pavement	A	1.10	98	107.80
Pond	A	1.00	100	100.00
		8.00		473.30
		CN=		59.2

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Dry Retention			
50% of 1" Over Total Project Area	1	8.00	0.33
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	1.10	0.11

Treatment Volume Required (ac.ft.) = 0.33

Treatment Volume Provided (ac.ft.) = 0.44

Existing Development: Basin 14C

Stations 574+00 – 595+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	7.70	49	377.30
Pavement	A	7.70	98	754.60
Pond	A	1.40	100	140.00
		16.80		1271.90
		CN=		75.7

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Dry Retention			
50% of 1" Over Total Project Area	1	16.80	0.70
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	7.70	0.80

Treatment Volume Required (ac.ft.) = 0.80

Treatment Volume Provided (ac.ft.) = 0.80

Existing Development: Basin 15A

Stations 595+00 – 618+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Closed Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Basin 15A				
Onsite				
Open Space-Fair Condition	A	7.40	49	362.60
Pavement	A	5.20	98	509.60
Pond	A	5.10	100	510.00
Offsite				
Grove-Good Condition	A	5.80	32	185.60
Meadow	A	4.40	30	132.00
		27.90		1699.80
		CN=		60.9
Basin 15F				
Onsite				
Meadow	A	9.00	30	270.00
Pavement	A	0.50	98	49.00
		9.50		319.00
		CN=		33.6

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Dry Retention			
50% of 1" Over Total Project Area	1	37.40	1.56
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	5.70	0.59

Treatment Volume Required (ac.ft.) = 1.56

Treatment Volume Provided (ac.ft.) = 1.57

Existing Development: Basin 15B

Stations 595+00 – 618+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Closed Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	5.70	49	279.30
Open Space-Fair Condition	C	1.30	79	102.70
Open Space-Fair Condition	D	0.40	84	33.60
Pavement	A	8.00	98	784.00
Pond	A	3.00	100	300.00
Offsite				
Grove-Good Condition	A	1.60	43	68.80
Meadow	A	9.10	30	273.00
Grove-Good Condition	C	0.60	72	43.20
Grove-Good Condition	D	1.00	79	79.00
		30.70		1963.60
		CN=		64.0

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Dry Retention			
50% of 1" Over Total Project Area	1	30.70	1.28
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	8.00	0.83

Treatment Volume Required (ac.ft.) = 1.28

Treatment Volume Provided (ac.ft.) = 1.68

Existing Development: Basin 15C

Stations 595+00 – 618+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Closed Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	1.50	49	73.50
Open Space-Fair Condition	C	0.70	79	55.30
Open Space-Fair Condition	D	0.40	84	33.60
Pavement	A	0.40	98	39.20
Pond	A	0.50	100	50.00
		3.50		251.60
		CN=		71.9

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Dry Retention			
50% of 1" Over Total Project Area	1	3.50	0.15
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	0.40	0.04

Treatment Volume Required (ac.ft.) = 0.15

Treatment Volume Provided (ac.ft.) = 0.32

Existing Development: Basin 15D

Stations 595+00 – 618+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Closed Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	3.40	49	166.60
Open Space-Fair Condition	C	1.10	79	86.90
Open Space-Fair Condition	D	0.20	84	16.80
Pavement	A	1.70	98	166.60
Pond	A	0.20	100	20.00
Offsite				
Meadow	A	3.70	30	111.00
		10.30		567.90
		CN=		55.1

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Dry Retention			
50% of 1" Over Total Project Area	1	10.30	0.43
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	1.70	0.18

Treatment Volume Required (ac.ft.) = 0.43

Treatment Volume Provided (ac.ft.) = 0.18

Existing Development: Basin 15E

Stations 595+00 – 618+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Closed Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	6.80	49	333.20
Pavement	A	7.10	98	695.80
Pond	A	1.80	100	180.00
Offsite				
Meadow	A	2.00	32	64.00
		17.70		1273.00
		CN=		71.9

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Dry Retention			
50% of 1" Over Total Project Area	1	17.70	0.74
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	7.10	0.74

Treatment Volume Required (ac.ft.) = 0.74

Treatment Volume Provided (ac.ft.) = 0.80

Existing Development: Basin 1

Stations 1622+18.86 – 602+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	10.88	39	424.32
Pavement	A	8.44	98	827.12
Pond	A	1.72	39	67.08
		21.04		1318.52
		CN=		62.7

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
50% of 1" Over Total Project Area	1	21.04	0.88
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	8.44	0.88

Treatment Volume Required (ac.ft.) = 0.88

Treatment Volume Provided (ac.ft.) = 1.06

Existing Development: Basin 2

Stations 602+00 – 641+83.82

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	8.53	39	332.67
Pavement	A	12.01	98	1176.98
Pond	A	2.61	100	261.00
		23.15		1770.65
		CN=		76.5

WATER QUALITY		CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Wet Detention	Wet Detention	Wet Detentio	Wet Deter	Wet Detention
1" Over Total Project Area		1	23.15	1.93
2.5" Over Project Impervious Areas (Exclude Ponds)		2.5	12.01	2.50

Treatment Volume Required (ac.ft.) = 2.50

Treatment Volume Provided (ac.ft.) = 2.50

Existing Development: Basin FGB

Project: Widen Western Beltway PD&E Date: 7/12/2022
Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin
Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Woods - Grass Combination Fair	A	7.03	43	302.29
Pavement	A	0.00	98	0.00
Pond	A	2.00	43	86.00
Offsite				
Woods - Grass Combination Fair	A	9.43	43	405.49
		18.46		793.78
		CN=		43.0

Existing Development: SR 530 Basin A

Stations 12+83 – 27+60

Project: Widen Western Beltway PD&E Date: 7/12/2022
Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin
Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
SR 530/US 192				
Open Space-Good Condition	D	10.12	79	799.19
Pavement	A	9.79	98	959.19
Pond	D	1.37	100	136.65
	D	0.93	79	73.40
		22.20		1968.42
		CN=		88.7

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Wet Detention			
1" Over Total Project Area	1	22.20	1.85
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	9.79	2.04

Treatment Volume Required (ac.ft.) = 1.85

Treatment Volume Provided (ac.ft.) = 2.16

NOTES:

1. Permit states 1.85-acres required, however this does not appear to be the greater of the two calculations.

Existing Development: SR 530 Basin C

Stations 31+70 – 55+00

Project: Widen Western Beltway PD&E *Date: 7/12/2022*
Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin
Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
SR 530/US 192				
Pavement	D	9.29	98	910.51
Pond	D	1.85	98	180.99
Grassed Area – Fair	A	8.26	49	404.77
	D	1.11	84	93.40
Pavement	D	3.11	98	304.39
Off-site Impervious	D	1.09	98	106.55
Grassed Area – Fair	D	3.61	84	303.04
Pavement	D	5.53	98	541.95
Off-site Impervious	D	1.04	98	101.46
Grassed Area – Fair	A	3.04	49	148.93
		37.92		3096.00
		CN=		81.7

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Wet Detention			
1" Over Total Project Area	1	37.92	3.16
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	20.05	4.18

Treatment Volume Required (ac.ft.) = **4.18**

Treatment Volume Provided (ac.ft.) = **4.18**

NOTES:

1. CN differs from permit because of a calculation error for the 3.61-ac of Grassed Area.

APPENDIX C – POST-DEVELOPMENT CALCULATIONS

Treatment Summary Page: Pre Conditions vs. Post Conditions

Project: Widen Western Beltway PD&E 11/4/2022
Project No.: 446164-1-22-01
Company: RS&H

Basin	Pre Conditions Treatment Volume Provided (ac.ft.)	Post Conditions Treatment Volume Required (ac.ft.)	Delta (ac-ft)
F-4	3.36	3.26	-0.10
B-2	1.78	1.68	-0.10
B-3 & B-5	3.72	3.66	-0.06
B-4	2.47	2.41	-0.06
B-6	2.03	1.91	-0.12
2A-2	11.62	13.71	2.09
2A-3	5.43	4.86	-0.57
2B-1	4.81	4.65	-0.16
2B-2	4.25	2.64	-1.61
10	1.60	0.89	-0.71
11A	12.54	0.75	-11.79
11B	0.69	0.93	0.24
11C	0.54	0.50	-0.04
11D	0.81	0.66	-0.15
Total 11	**14.58**	**2.85**	**-11.73**
12	1.80	1.47	-0.33
13	6.10	5.98	-0.12
14A	1.03	0.88	-0.16
14B	0.44	0.33	-0.11
14C	0.80	0.83	0.03
15A	1.57	0.77	-0.80
15B	1.68	0.83	-0.85
15C	0.32	0.15	-0.17
15D	0.18	0.43	0.25
15E	0.80	0.74	-0.06
Total 15	**4.55**	**2.92**	**-1.63**
1	1.06	0.88	-0.18
2	2.50	2.50	0.00
Basin B (FGB)	-	1.54	1.54
FL 530 (Basin A)	2.16	2.41	0.25
FL 530 (Basin C)	4.18	4.40	0.22

Attenuation Summary Page: Pre Conditions vs. Post Conditions

Project: Widen Western Beltway PD&E 11/4/2022
Project No.: 446164-1-22-01
Company: RS&H

Basin	Pre Conditions Runoff Volume (ac.ft.)	Post Conditions Runoff Volume (ac.ft.)	Delta (ac-ft)
F-4	24.37	25.23	0.86
B-2	12.23	12.23	0.00
B-3 & B-5	26.39	29.23	2.84
B-4	16.90	16.94	0.04
B-6	13.72	14.51	0.79
2A-2	103.51	110.11	6.60
2A-3	34.36	34.20	-0.16
2B-1	39.76	37.31	-2.45
2B-2	23.75	21.96	-1.79
10	28.04	18.93	-9.11
11A	13.04	13.89	0.85
11B	12.40	13.62	1.22
11C	9.27	8.73	-0.54
11D	11.24	11.12	-0.12
Total 11	**45.95**	**47.36**	**1.41**
12	12.62	10.79	-1.83
13	45.39	47.10	1.71
14A	-	-	-
14B	-	-	-
14C	11.60	11.74	0.14
15A	21.08	15.85	-5.23
15B	21.52	16.70	-4.82
15C	2.81	3.01	0.20
15D	5.98	5.87	-0.11
15E	14.22	11.79	-2.43
Total 15	**65.61**	**53.22**	**-12.39**
1	11.30	11.30	0.00
2	16.19	16.19	0.00
Basin B (FGB)	5.35	8.86	3.51
FL 530 (Basin A)	22.16	22.53	0.37
FL 530 (Basin C)	34.87	35.48	0.61

Post Development: Basin F-4

Stations 54+00 to 80+40

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Basin F-4				
Impervious Area	A	15.63	98	1531.74
Pervious	A	16.12	48	773.76
Pervious	D	0.00	80	0.00
Water		4.57	100	457.00
		36.32		2762.50
		CN=		76.1

WATER QUALITY	CRITERIA	AREA	TREATMENT
Wet Detention			
1" Over Total Project Area	1	36.32	3.03
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	15.63	3.26

Treatment Volume Required (ac.ft.) =	3.26
Treatment Volume Permitted (ac.ft.) =	3.36
Additional Treatment Required (ac.ft.) =	-0.10

WATER QUANTITY (50-yr/72-hr)	PRE-DEVELOPMENT		POST DEVELOPMENT
Precipitation, in	11.40		11.40
Potential Maximum Retention (S)	3.51		3.15
Runoff Depth (Q), in	8.05		8.33
Runoff Volume, acre-ft	24.37		25.23
Volume Differential, acre-ft		0.86	

NOTES:

Post Development: Basin B-2

Stations 80+40 to 101+00

Project: Widen Western Beltway PD&E Date: 7/12/2022
Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin
Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Good Condition	A	3.51	48	168.48
	D	0.00	80	0.00
Pavement	A	8.08	98	791.84
	D	0.00	98	0.00
New/Future 8-Lane Pavement (Req. treatment)	A	0.00	98	0.00
	D	0.00	98	0.00
Pond	A	3.45	100	345.00
	D	0.00	100	0.00
		15.04		1305.32
		CN=		86.8

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Wet Detention			
1" Over Total Project Area	1	15.04	1.25
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	8.08	1.68

Treatment Volume Required (ac.ft.) =	1.68
Treatment Volume Permitted (ac.ft.) =	1.78
Additional Treatment Required (ac.ft.) =	-0.10

WATER QUANTITY (50-yr/72-hr)	PRE-DEVELOPMENT	POST DEVELOPMENT
Precipitation, in	11.40	11.40
Potential Maximum Retention (S)	1.52	1.52
Runoff Depth (Q), in	9.76	9.76
Runoff Volume, acre-ft	12.23	12.23
Volume Differential, acre-ft	0.00	

NOTES:

1. Existing permit assumed paved median. New impervious area does not exceed permitted impervious area.

Post Development: Basin B-3-A, B-3-B, B-3-C, B-3-D, B-5

Stations 101+00 to 141+50

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Basin B-3-A				
Impervious Area	A	7.87	98	771.26
Pervious	A	3.05	48	146.40
Pervious	D	0.00	80	0.00
Water		1.28	100	128.00
		12.20		1045.66
Basin B-3-B				
Impervious Area	A	1.93	98	189.14
Pervious	A	1.95	48	93.60
Pervious	D	0.00	80	0.00
Water		0.29	100	29.00
		4.17		311.74
Basin B-3-C				
Impervious Area	A	1.91	98	187.18
Pervious	A	6.08	48	291.84
Pervious	D	0.00	80	0.00
Water		0.00	100	0.00
		7.99		479.02
Basin B-3-D				
Impervious Area	A	3.21	98	314.58
Pervious	A	3.99	48	191.52
Pervious	D	0.00	80	0.00
Water		0.00	100	0.00
		7.20		506.10
Basin B-5				
Impervious Area	A	2.10	98	205.80
Pervious	A	6.71	48	322.08
Pervious	D	0.00	80	0.00
Water		3.60	100	360.00
		12.41		887.88
		CN=		73.5

WATER QUALITY	CRITERIA	AREA	TREATMENT
Wet Detention			
1" Over Total Project Area	1	43.97	3.66
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	17.02	3.55

Treatment Volume Required (ac.ft.) = 3.66

Treatment Volume Permitted (ac.ft.) = 3.72

Additional Treatment Required (ac.ft.) = -0.06

Post Development: Basin B-3-A, B-3-B, B-3-C, B-3-D, B-5

Stations 101+00 to 141+50

Project: Widen Western Beltway PD&E *Date: 7/12/2022*

Project No.: 446164-1-22-01

WATER QUANTITY (50-yr/72-hr)	*PRE-DEVELOPMENT*	*POST DEVELOPMENT*
Precipitation, in	*11.40*	*11.40*
Potential Maximum Retention (S)	*3.68*	*3.61*
Runoff Depth (Q), in	*7.93*	*7.98*
Runoff Volume, acre-ft	*26.39*	*29.24*
Volume Differential, acre-ft	*2.84*	

NOTES:

Post Development: Basin B-4

Stations 141+50 to 167+00 (180+00)

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Basin B-4				
Impervious Area	A	11.57	98	1133.86
Pervious	A	6.14	48	294.72
Pervious	D	1.66	80	132.80
Water		2.60	100	260.00
		21.97		1821.38
		CN=		82.9

WATER QUALITY	CRITERIA	AREA	TREATMENT
Wet Detention			
1" Over Total Project Area	1	21.97	1.83
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	11.57	2.41

Treatment Volume Required (ac.ft.) = 2.41

Treatment Volume Permitted (ac.ft.) = 2.47

Additional Treatment Required (ac.ft.) = -0.06

WATER QUANTITY (50-yr/72-hr)	PRE-DEVELOPMENT		POST DEVELOPMENT
Precipitation, in	11.40		11.40
Potential Maximum Retention (S)	2.51		2.06
Runoff Depth (Q), in	8.85		9.25
Runoff Volume, acre-ft	16.90		16.94
Volume Differential, acre-ft		0.04	

NOTES:

1. Pond can be expanded 10 to 15-ft to the east to provide additional attenuation volume with the use of an MSE wall.

Post Development: Basin B-6-A, B-6-B, B-6-C

Stations 101+00 to 125+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Basin B-6-A				
Impervious Area	A	1.22	98	119.56
Pervious	A	3.85	48	184.80
Pervious	D	0.41	80	32.80
Water		3.33	100	333.00
		8.81		670.16
Basin B-6-B				
Impervious Area	A	3.44	98	337.12
Pervious	A	4.24	48	203.52
Pervious	D	0.00	80	0.00
Water		0.00	100	0.00
		7.68		540.64
Basin B-6-C				
Impervious Area	A	2.04	98	199.92
Pervious	A	4.37	48	209.76
Pervious	D	0.00	80	0.00
Water		0.00	100	0.00
		6.41		409.68
		CN=		70.8

WATER QUALITY	CRITERIA	AREA	TREATMENT
Wet Detention			
1" Over Total Project Area	1	22.90	1.91
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	6.70	1.40

Treatment Volume Required (ac.ft.) = 1.91

Treatment Volume Permitted (ac.ft.) = 2.03

Additional Treatment Required (ac.ft.) = -0.12

WATER QUANTITY (50-yr/72-hr)	PRE-DEVELOPMENT		POST DEVELOPMENT
Precipitation, in	11.40		11.40
Potential Maximum Retention (S)	3.99		4.13
Runoff Depth (Q), in	7.71		7.60
Runoff Volume, acre-ft	13.72		14.51
Volume Differential, acre-ft		0.79	

NOTES:

Post Development: Basin Wyndham Palms Basin 1

Stations 198+00 – 213+00

Project: Widen Western Beltway PD&E Date: 10/7/2021

Project No.: 104-0125-000

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Good Condition	A	14.55	39	567.45
Pavement	A	14.20	98	1391.60
Pond	A	0.85	98	83.30
		29.60		2042.35
		CN=		69.0

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
1" Over Total Project Area	1	29.60	2.47
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	14.20	2.96
Treatment Volume=Greater of Two Values (ac.ft.)		Treatment Volume=	2.96

TIME OF CONCENTRATION	LENGTH (FT)	VELOCITY (FT/S)	TC (MIN)
Sheet Flow	Assume 15 minutes		15.0
Ditch Flow	N/A	N/A	
Pipe Flow	N/A	N/A	
		Time of Conc.=	15.0

Post Development: Wyndham Palms Basin B-2

Stations 198+00 - 213+00

Project: Widen Western Beltway PD&E Date: 10/7/2021

Project No.: 104-0125-000

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Good Condition	A	3.09	39	120.51
Dreamer's Drive	A	1.10	98	107.80
Wyndham Pavement	A	1.20	98	117.60
Pond	A	0.71	98	69.58
		6.10		415.49
			CN=	68.1

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
1" Over Total Project Area	1	6.10	0.51
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	2.30	0.48
Treatment Volume=Greater of Two Values (ac.ft.)		Treatment Volume=	0.51

TIME OF CONCENTRATION	LENGTH (FT)	VELOCITY (FT/S)	TC (MIN)
Sheet Flow	Assume 15 minutes		15.0
Ditch Flow	N/A	N/A	
Pipe Flow	N/A	N/A	
		Time of Conc.=	15.0

Post Development: Wyndham Palms Basin B-3

Stations 198+00 - 213+00

Project: Widen Western Beltway PD&E Date: 10/7/2021

Project No.: 104-0125-000

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Good Condition	A	3.09	39	120.51
		3.09		120.51
			CN=	39.0

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
1" Over Total Project Area	1	3.09	0.26
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	0.00	0.00
Treatment Volume=Greater of Two Values (ac.ft.)		Treatment Volume=	0.26

TIME OF CONCENTRATION	LENGTH (FT)	VELOCITY (FT/S)	TC (MIN)
Sheet Flow	Assume 15 minutes		15.0
Ditch Flow	N/A	N/A	
Pipe Flow	N/A	N/A	
		Time of Conc.=	15.0

Post Pre Development: Basin 2A-2

Stations 180+00 – 268+00

Project: Widen Western Beltway PD&E Date: 7/12/2022
Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin
Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Good Condition	A	7.59	39	296.01
	D	14.03	80	1122.40
Pavement	A	12.59	98	1233.82
	D	6.70	98	656.60
"Future" Pavement (Permitted 6-Lanes)	A	6.93	98	679.14
	D	3.82	98	374.36
New/Future 8-Lane Pavement (Req.	A	6.89	98	675.22
treatment)	D	0.00	98	0.00
Livingston Interchange Pavement	A	0.00	98	0.00
	D	0.00	98	0.00
Woods – Good Cover	D	18.04	77	1389.08
Pond	A	4.97	98	487.06
	D	6.97	98	683.06
Wyndham Palms (Triangle Offsite)				
Woods – Grass Combination Fair	A	4.67	43	200.81
Dreamer's Drive	A	0.62	98	60.76
Sandhill	A	1.10	98	107.80
Treatment Plant (Offsite)				
Woods – Grass Combination Fair	A	29.07	43	1250.01
Offsite				
Woods Fair	A	20.04	36	721.44
Sand Hill Road				
Pavement	A	0.98	98	96.04
Funie Steed Road				
Pavement	A	0.46	98	45.08
Oak Island Cove				
Res. 1/8 acre or less (65% Imp)	A	16.95	77	1305.15
	D	2.14	92	196.88
		164.56		11580.72
		CN=		70.4

NOTES:

1. Pre vs post require the same basin area, therefore this sheet represents the permitted condition with the additional offsite area required for the new interchange.

Post Development: Basin 2A-2 (Alt 1 Preferred)

Stations 180+00 - 268+00

Project: Widen Western Beltway PD&E *Date: 7/12/2022*

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Good Condition	A	19.00	39	741.00
	D	14.03	80	1122.40
Pavement	A	12.59	98	1233.82
	D	6.70	98	656.60
"Future" Pavement (Permitted 6-Lanes)	A	6.93	98	679.14
	D	3.82	98	374.36
New/Future 8-Lane Pavement (Req.	A	6.89	98	675.22
treatment)	D	0.00	98	0.00
Livingston Interchange Pavement	A	4.38	98	429.24
	D	2.82	98	276.36
Woods - Good Cover	D	18.04	77	1389.08
Pond	A	13.37	98	1310.26
	D	0.00	98	0.00
Wyndham Palms (Triangle Offsite)				
Woods - Grass Combination Fair	A	4.67	43	200.81
Dreamer's Drive	A	0.62	98	60.76
Sandhill	A	1.10	98	107.80
Treatment Plant (Offsite)				
Woods - Grass Combination Fair	A	29.07	43	1250.01
Sand Hill Road				
Pavement	A	0.98	98	96.04
Funie Steed Road				
Pavement	A	0.46	98	45.08
Oak Island Cove				
Res. 1/8 acre or less (65% Imp)	A	16.95	77	1305.15
	D	2.14	92	196.88
		164.56		12150.01
		CN=		73.8

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Wet Detention			
1" Over Total Project Area	1	164.56	13.71
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	59.70	12.44

Treatment Volume Required (ac.ft.) = 13.71

Treatment Volume Permitted (ac.ft.) = 11.62

Additional Treatment Required (ac.ft.) = 2.09

Post Development: Basin 2A-2 (Alt 1 Preferred)

Stations 180+00 - 268+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

WATER QUANTITY (50-yr/72-hr)	PRE-DEVELOPMENT	POST DEVELOPMENT
Precipitation, in	11.40	11.40
Potential Maximum Retention (S)	4.21	3.54
Runoff Depth (Q), in	7.55	8.03
Runoff Volume, acre-ft	103.51	110.11
Volume Differential, acre-ft	**6.60**	

POND SIZING

Pond Bottom / Control Elevation =	101.50	FT
Top of bank elevation =	106.00	FT
Area @ pond bottom / control elevation =	13.06	AC
Area @ Top of bank =	14.32	AC

Elevation ft		Area acres	Volume acre-ft
101.50	Control Elev.	13.06	0.00
102.60	Treat. El	13.37	**14.54**
106.00	Inside TOB	14.32	61.61
102.60	Treat. El	13.37	0.00
103.20	Attenuation El	13.54	**8.07**
106.00	Inside TOB	14.32	47.07

RCID CALCULATIONS (50-yr/72-hr)	MAX. ALLOWABLE DISCHARGE RATE (BASED ON 13 CFS PER SQ MI)
Precipitation, in	12.91
Area, ac	164.56
Area, sq-mi	0.26
Peak Allowable Runoff, cfs	3.34

NOTES:

1. Basin area changed due to new interchange
2. Used RCID rainfall to avoid drainage fee.
3. SHWT based on permitted elevation for existing Pond 2A-2.

Post Development: Basin 2A-2 (Alt 2)

Stations 180+00 - 268+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Good Condition	A	15.89	39	619.71
	D	14.03	80	1122.40
Pavement	A	12.59	98	1233.82
	D	6.70	98	656.60
"Future" Pavement (Permitted 6-Lanes)	A	6.93	98	679.14
	D	3.82	98	374.36
New/Future 8-Lane Pavement (Req.	A	6.89	98	675.22
treatment)	D	0.00	98	0.00
Livingston Interchange Pavement	A	4.38	98	429.24
	D	2.82	98	276.36
Woods - Good Cover	D	18.04	77	1389.08
Pond	A	16.48	98	1615.04
	D	0.00	98	0.00
Wyndham Palms (Triangle Offsite)				
Woods - Grass Combination Fair	A	4.67	43	200.81
Dreamer's Drive	A	0.62	98	60.76
Sandhill	A	1.10	98	107.80
Treatment Plant (Offsite)				
Woods - Grass Combination Fair	A	29.07	43	1250.01
Sand Hill Road				
Pavement	A	0.98	98	96.04
Funie Steed Road				
Pavement	A	0.46	98	45.08
Oak Island Cove				
Res. 1/8 acre or less (65% Imp)	A	16.95	77	1305.15
	D	2.14	92	196.88
		164.56		12333.50
		CN=		74.9

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Wet Detention			
1" Over Total Project Area	1	164.56	13.71
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	59.70	12.44

Treatment Volume Required (ac.ft.) = 13.71

Treatment Volume Permitted (ac.ft.) = 11.62

Additional Treatment Required (ac.ft.) = 2.09

Post Development: Basin 2A-2 (Alt 2)

Stations 180+00 - 268+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

WATER QUANTITY (50-yr/72-hr)	PRE-DEVELOPMENT	POST DEVELOPMENT
Precipitation, in	11.40	11.40
Potential Maximum Retention (S)	4.21	3.34
Runoff Depth (Q), in	7.55	8.18
Runoff Volume, acre-ft	103.51	112.21
Volume Differential, acre-ft	**8.70**	

POND SIZING

Pond Bottom / Control Elevation =	101.50	FT
Top of bank elevation =	104.00	FT
Area @ pond bottom / control elevation =	15.54	AC
Area @ Top of bank =	16.48	AC

Elevation ft		Area acres	Volume acre-ft
101.50	Control Elev.	15.54	0.00
102.40	Treat. El	15.88	**14.14**
104.00	Inside TOB	16.48	40.03
102.40	Treat. El	15.88	0.00
103.00	Attenuation El	16.10	**9.59**
104.00	Inside TOB	16.48	25.89

RCID CALCULATIONS (50-yr/72-hr)	MAX. ALLOWABLE DISCHARGE RATE (BASED ON 13 CFS PER SQ MI)
Precipitation, in	12.91
Area, ac	164.56
Area, sq-mi	0.26
Peak Allowable Runoff, cfs	3.34

NOTES:

1. Basin area changed due to new interchange
2. Used RCID rainfall to avoid drainage fee.
3. SHWT based on permitted elevation for existing Pond 2A-2.

Post Development: Basin 2A-2 (Alt 3)

Stations 180+00 - 268+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Good Condition	A	16.94	39	660.66
	D	14.03	80	1122.40
Pavement	A	12.59	98	1233.82
	D	6.70	98	656.60
"Future" Pavement (Permitted 6-Lanes)	A	6.93	98	679.14
	D	3.82	98	374.36
New/Future 8-Lane Pavement (Req.	A	6.89	98	675.22
treatment)	D	0.00	98	0.00
Livingston Interchange Pavement	A	4.38	98	429.24
	D	2.82	98	276.36
Woods - Good Cover	D	18.04	77	1389.08
Pond	A	15.43	98	1512.14
	D	0.00	98	0.00
Wyndham Palms (Triangle Offsite)				
Woods - Grass Combination Fair	A	4.67	43	200.81
Dreamer's Drive	A	0.62	98	60.76
Sandhill	A	1.10	98	107.80
Treatment Plant (Offsite)				
Woods - Grass Combination Fair	A	29.07	43	1250.01
Sand Hill Road				
Pavement	A	0.98	98	96.04
Funie Steed Road				
Pavement	A	0.46	98	45.08
Oak Island Cove				
Res. 1/8 acre or less (65% Imp)	A	16.95	77	1305.15
	D	2.14	92	196.88
		164.56		12271.55
		CN=		74.6

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Wet Detention			
1" Over Total Project Area	1	164.56	13.71
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	59.70	12.44

Treatment Volume Required (ac.ft.) = 13.71

Treatment Volume Permitted (ac.ft.) = 11.62

Additional Treatment Required (ac.ft.) = 2.09

Post Development: Basin 2A-2 (Alt 3)

Stations 180+00 - 268+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

WATER QUANTITY (50-yr/72-hr)	PRE-DEVELOPMENT	POST DEVELOPMENT
Precipitation, in	11.40	11.40
Potential Maximum Retention (S)	4.21	3.41
Runoff Depth (Q), in	7.55	8.13
Runoff Volume, acre-ft	103.51	111.51
Volume Differential, acre-ft	**7.99**	

POND SIZING

Pond Bottom / Control Elevation =	101.50	FT
Top of bank elevation =	104.00	FT
Area @ pond bottom / control elevation =	14.60	AC
Area @ Top of bank =	15.43	AC

Elevation ft		Area acres	Volume acre-ft
101.50	Control Elev.	14.60	0.00
102.50	Treat. El	14.93	**14.77**
104.00	Inside TOB	15.43	37.54
102.50	Treat. El	14.93	0.00
103.05	Attenuation El	15.11	**8.26**
104.05	Inside TOB	15.43	23.53

RCID CALCULATIONS (50-yr/72-hr)	MAX. ALLOWABLE DISCHARGE RATE (BASED ON 13 CFS PER SQ MI)
Precipitation, in	12.91
Area, ac	164.56
Area, sq-mi	0.26
Peak Allowable Runoff, cfs	3.34

NOTES:

1. Basin area changed due to new interchange
2. Used RCID rainfall to avoid drainage fee.
3. SHWT based on permitted elevation for existing Pond 2A-2.

Post Development: Basin 2A-3

Stations 268+00 – 320+50

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Good Condition	A	21.03	39	820.17
Pavement	A	12.91	98	1265.18
	D	1.40	98	137.20
"Future" Pavement (Permitted 6-Lanes)	A	5.91	98	579.18
	D	0.73	98	71.54
New/Future 8-Lane Pavement (Req.	A	1.18	98	115.64
treatment)	D	0.00	98	0.00
Pond	A	4.71	98	461.58
Offsite				
Woods	A	0.00	36	0.00
SR 530/US 192				
Pavement	A	1.20	98	117.60
New Pavement	A	0.00	98	0.00
Open Space-Good Condition	A	0.91	39	35.49
		49.98		3603.58
		CN=		72.1

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Wet Detention			
1" Over Total Project Area	1	49.98	4.17
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	23.33	4.86

Treatment Volume Required (ac.ft.) = **4.86**

Treatment Volume Permitted (ac.ft.) = **5.43**

Additional Treatment Required (ac.ft.) = **-0.57**

WATER QUANTITY (50-yr/72-hr)	PRE-DEVELOPMENT	POST DEVELOPMENT
Precipitation, in	11.40	11.40
Potential Maximum Retention (S)	5.66	3.87
Runoff Depth (Q), in	6.62	7.79
Runoff Volume, acre-ft	34.36	32.44
Volume Differential, acre-ft	**-1.91**	

NOTES:

1. Reduction in basin area is a result of Rolling Oak commercial property no longer discharging to FTE R/W.

Post Development: Basin 2B-1

Stations 320+50 – 1359+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Good Condition	A	4.04	39	157.56
	C	5.87	74	434.38
	D	3.38	80	270.40
Pavement	A	2.94	98	288.12
	C	7.36	98	721.28
	D	3.79	98	371.42
"Future" Pavement (Permitted 6-Lanes)	A	2.73	98	267.54
	C	1.47	98	144.06
	D	2.28	98	223.44
New/Future 8-Lane Pavement (Req.	A	0.00	98	0.00
treatment)	C	0.00	98	0.00
	D	0.00	98	0.00
Pond	A	3.50	98	343.00
	C	5.07	98	496.86
	D	2.92	98	286.16
SR 530/US 192				
Pavement	A	1.74	98	170.52
Open Space-Good Condition	A	1.75	39	68.25
		48.84		4242.99
		CN=		86.9

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Wet Detention			
1" Over Total Project Area	1	48.84	4.07
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	22.31	4.65

Treatment Volume Required (ac.ft.) = 4.65

Treatment Volume Permitted (ac.ft.) = 4.81

Additional Treatment Required (ac.ft.) = -0.16

WATER QUANTITY (50-yr/72-hr)	PRE-DEVELOPMENT	POST DEVELOPMENT
Precipitation, in	11.40	11.40
Potential Maximum Retention (S)	1.51	1.51
Runoff Depth (Q), in	9.77	9.77
Runoff Volume, acre-ft	39.76	39.76
Volume Differential, acre-ft	0.00	

NOTES:

Post Development: Basin 2B-2

Stations 1359+00 - 414+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Good Condition	C	10.04	74	742.96
	D	1.31	80	104.80
Toll Facility	D	0.86	98	84.28
Pavement	C	5.83	98	571.34
	D	4.40	98	431.20
"Future" Pavement (Permitted 6-Lanes)	C	2.28	98	223.44
	D	1.09	98	106.82
New/Future 8-Lane Pavement (Req.	C	-6.56	98	-642.88
treatment)	D	0.00	98	0.00
Pond	C	1.78	98	174.44
	D	0.79	98	77.42
Section 3 (Sta. 400+00 - 414+00)				
Pavement	C	1.28	98	125.44
	D	2.24	98	219.52
"Future" Pavement (Permitted 6-Lanes)	C	0.65	98	63.70
	D	1.15	98	112.70
New/Future 8-Lane Pavement (Req.	C	-0.57	98	-55.86
treatment)	D	0.00	98	0.00
		26.57		2339.32
		CN=		88.0

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Wet Detention			
1" Over Total Project Area	1	26.57	2.21
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	12.65	2.64

Treatment Volume Required (ac.ft.) = 2.64

Treatment Volume Permitted (ac.ft.) = 4.25

Additional Treatment Required (ac.ft.) = -1.61

WATER QUANTITY (50-yr/72-hr)	PRE-DEVELOPMENT		POST DEVELOPMENT
Precipitation, in	11.40		11.40
Potential Maximum Retention (S)	0.58		1.36
Runoff Depth (Q), in	10.73		9.92
Runoff Volume, acre-ft	23.75		21.96
Volume Differential, acre-ft		-1.79	

NOTES:

1. Assumes the removal of the toll lanes. Assumed toll building and parking lot to remain.

Post Development: Basin 10

Stations 414+00 – 445+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Closed Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	8.05	49	394.45
Pavement (Permitted)	A	8.40	98	823.20
New Pavement (Req. Treatment)	A	0.15	98	14.70
Pond	A	4.50	100	450.00
Offsite				
Woods (grove)-Poor	A	0.00	57	0.00
		21.10		1682.35
		CN=		79.7

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Dry Retention			
50% of 1" Over Total Project Area	1	21.10	0.88
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	8.55	0.89

Treatment Volume Required (ac.ft.) = 0.89

Treatment Volume Permitted (ac.ft.) = 1.60

Additional Treatment Required (ac.ft.) = -0.71

NOTES:

1. Reduction in basin area is a result of Flamingo East Village Apartments being treated prior to entering FTE R/W.
2. Apartment exfiltration system discharges into FTE Pond 10.

Post Development: Basin 10

Stations 414+00 – 445+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Closed Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	8.05	49	394.45
Pavement (Permitted)	A	8.40	98	823.20
New Pavement (Req. Treatment)	A	0.15	98	14.70
Pond	A	4.50	100	450.00
Offsite				
Woods (grove)-Poor	A	14.80	57	843.60
		35.90		2525.95
		CN=		70.4

WATER QUANTITY (100-yr/240-hr)	PRE-DEVELOPMENT		POST DEVELOPMENT
Precipitation, in	15.80		15.80
Potential Maximum Retention (S)	4.25		4.21
Runoff Depth (Q), in	11.64		11.67
Runoff Volume, acre-ft	34.82		34.91
Volume Differential, acre-ft		0.10	

NOTES:

1. Apartment exfiltration system discharges into FTE Pond 10.

Post Development: Basin 11A

Stations 435+00 – 455+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	5.82	49	285.18
	C	0.20	79	15.80
Pavement (Permitted)	A	6.20	98	607.60
New Pavement (Req. Treatment)	A	0.98	98	96.04
Pond	A	4.90	100	490.00
		18.10		1494.62
		CN=		82.6

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Dry Retention			
50% of 1" Over Total Project Area	1	18.10	0.75
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	7.18	0.75

Treatment Volume Required (ac.ft.) = 0.75

Treatment Volume Permitted (ac.ft.) = 12.54

Additional Treatment Required (ac.ft.) = -11.79

WATER QUANTITY (50-yr/72-hr)	PRE-DEVELOPMENT		POST DEVELOPMENT
Precipitation, in	11.40		11.40
Potential Maximum Retention (S)	2.29		2.11
Runoff Depth (Q), in	9.05		9.21
Runoff Volume, acre-ft	13.04		13.89
Volume Differential, acre-ft		0.85	

NOTES:

1. Increase in basin area associated with outside NB widening associated with 8-lanes.

Post Development: Basin 11B

Stations 455+00 – 490+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	5.76	49	282.24
	C	0.70	79	55.30
	D	0.40	84	33.60
Pavement (Permitted)	A	7.60	98	744.80
New Pavement (Req. Treatment)	A	1.36	98	133.28
Pond	A	2.20	100	220.00
		18.02		1469.22
		CN=		81.5

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Dry Retention			
50% of 1" Over Total Project Area	1	18.02	0.75
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	8.96	0.93

Treatment Volume Required (ac.ft.) = 0.93

Treatment Volume Permitted (ac.ft.) = 0.69

Additional Treatment Required (ac.ft.) = 0.24

WATER QUANTITY (50-yr/72-hr)	PRE-DEVELOPMENT		POST DEVELOPMENT
Precipitation, in	11.40		11.40
Potential Maximum Retention (S)	2.51		2.27
Runoff Depth (Q), in	8.86		9.07
Runoff Volume, acre-ft	12.40		13.62
Volume Differential, acre-ft		1.22	

NOTES:

1. Increase in basin area is a result of ramp and side road improvements.

Post Development: Basin 11C

Stations 438+00 – 457+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	3.58	49	175.42
	C	2.90	79	229.10
Pavement (Permitted)	A	3.90	98	382.20
New Pavement (Req. Treatment)	A	0.01	98	0.98
Pond	A	1.60	100	160.00
		11.99		947.70
		CN=		79.0

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Dry Retention			
50% of 1" Over Total Project Area	1	11.99	0.50
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	3.91	0.41

Treatment Volume Required (ac.ft.) = 0.50

Treatment Volume Permitted (ac.ft.) = 0.54

Additional Treatment Required (ac.ft.) = -0.04

WATER QUANTITY (50-yr/72-hr)	PRE-DEVELOPMENT	POST DEVELOPMENT
Precipitation, in	11.40	11.40
Potential Maximum Retention (S)	3.19	2.65
Runoff Depth (Q), in	8.31	8.74
Runoff Volume, acre-ft	9.27	8.73
Volume Differential, acre-ft	-0.54	

NOTES:

Post Development: Basin 11D

Stations 457+00 – 474+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	7.00	49	343.00
	C	0.20	79	15.80
Pavement (Permitted)	A	6.20	98	607.60
New Pavement (Req. Treatment)	A	0.00	98	0.00
Pond	A	2.50	100	250.00
		15.90		1216.40
		CN=		76.5

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Dry Retention			
50% of 1" Over Total Project Area	1	15.90	0.66
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	6.20	0.65

Treatment Volume Required (ac.ft.) = 0.66

Treatment Volume Permitted (ac.ft.) = 0.81

Additional Treatment Required (ac.ft.) = -0.15

WATER QUANTITY (50-yr/72-hr)	PRE-DEVELOPMENT	POST DEVELOPMENT
Precipitation, in	11.40	11.40
Potential Maximum Retention (S)	3.16	3.07
Runoff Depth (Q), in	8.33	8.40
Runoff Volume, acre-ft	11.24	11.12
Volume Differential, acre-ft	-0.12	

NOTES:

1. Adjusted basin for 8-lane widening and side road improvements.

Post Development: Basin 12

Stations 474+00 – 490+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	4.01	49	196.49
	C	1.20	79	94.80
Woods (grove)-Fair	A	0.00	43	0.00
Pavement (Permitted)	A	6.70	98	656.60
New Pavement (Req. Treatment)	A	0.34	98	33.32
Pond	A	1.80	100	180.00
		14.05		1161.21
		CN=		82.6

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Wet Detention			
1" Over Total Project Area	1	14.05	1.17
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	7.04	1.47

Treatment Volume Required (ac.ft.) = 1.47

Treatment Volume Permitted (ac.ft.) = 1.80

Additional Treatment Required (ac.ft.) = -0.33

WATER QUANTITY (50-yr/72-hr)	PRE-DEVELOPMENT	POST DEVELOPMENT
Precipitation, in	11.40	11.40
Potential Maximum Retention (S)	4.23	2.10
Runoff Depth (Q), in	7.54	9.22
Runoff Volume, acre-ft	12.62	10.79
Volume Differential, acre-ft	-1.83	

NOTES:

1. Reduction in basin size due to Walt Disney World Master site development. See permit 48-00714-S

Post Development: Basin 13 & 13A

Stations 490+00 – 574+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Basin 13A				
Onsite				
Open Space-Fair Condition	A	24.07	49	1179.43
	B	0.50	69	34.50
	C	0.30	79	23.70
Pavement (Permitted)	A	25.80	98	2528.40
New Pavement (Req. Treatment)	A	2.63	98	257.74
Offsite				
Tree Farm-Poor Condition	A	9.50	57	541.50
		62.80		4565.27
		CN=		72.7
Basin 13				
Onsite				
Open Space-Fair Condition	A	1.50	49	73.50
	C	1.30	79	102.70
Pond	A	6.20	100	620.00
		9.00		796.20
		CN=		88.5

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Wet Detention			
1" Over Total Project Area	1	71.80	5.98
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	28.43	5.92

Treatment Volume Required (ac.ft.) = 5.98

Treatment Volume Permitted (ac.ft.) = 6.10

Additional Treatment Required (ac.ft.) = -0.12

WATER QUANTITY (50-yr/72-hr)	PRE-DEVELOPMENT		POST DEVELOPMENT
Precipitation, in	11.40		11.40
Potential Maximum Retention (S)	4.16		3.76
Runoff Depth (Q), in	7.59		7.87
Runoff Volume, acre-ft	45.39		47.10
Volume Differential, acre-ft		1.71	

NOTES:

Post Development: Basin 14A

Stations 530+00 – 585+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	15.00	49	735.00
Pavement (Permitted)	A	4.10	98	401.80
New Pavement (Req. Treatment)	A	0.00	98	0.00
Pond	A	1.90	100	190.00
		21.00		1326.80
		CN=		63.2
Compensatory Treatment (Hartzog Road)				
Pavement	A	0.80	98	78.40

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Dry Retention			
50% of 1" Over Total Project Area	1	21.00	0.88
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	4.90	0.51

Treatment Volume Required (ac.ft.) = 0.88

Treatment Volume Permitted (ac.ft.) = 1.03

Additional Treatment Required (ac.ft.) = -0.16

NOTES:

1. No change

Post Development: Basin 14B

Stations 587+00 – 590+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Woods (Poor)	A	5.90	45	265.50
Pavement (Permitted)	A	1.10	98	107.80
New Pavement (Req. Treatment)	A	0.00	98	0.00
Pond	A	1.00	100	100.00
		8.00		473.30
		CN=		59.2

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Dry Retention			
50% of 1" Over Total Project Area	1	8.00	0.33
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	1.10	0.11

Treatment Volume Required (ac.ft.) = 0.33

Treatment Volume Permitted (ac.ft.) = 0.44

Additional Treatment Required (ac.ft.) = -0.11

WATER QUANTITY (50-yr/72-hr)	PRE-DEVELOPMENT	POST DEVELOPMENT
Precipitation, in	11.40	11.40
Potential Maximum Retention (S)	6.90	6.90
Runoff Depth (Q), in	5.93	5.93
Runoff Volume, acre-ft	3.95	3.95
Volume Differential, acre-ft	0.00	

NOTES:

1. No change is anticipated in this basin.

Post Development: Basin 14C

Stations 574+00 – 595+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	7.46	49	365.54
Pavement (Permitted)	A	7.70	98	754.60
New Pavement (Req. Treatment)	A	0.24	98	23.52
Pond	A	1.40	100	140.00
		16.80		1283.66
			CN=	76.4

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Dry Retention			
50% of 1" Over Total Project Area	1	16.80	0.70
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	7.94	0.83

Treatment Volume Required (ac.ft.) = 0.83

Treatment Volume Permitted (ac.ft.) = 0.80

Additional Treatment Required (ac.ft.) = 0.03

WATER QUANTITY (50-yr/72-hr)	PRE-DEVELOPMENT		POST DEVELOPMENT
Precipitation, in	11.40		11.40
Potential Maximum Retention (S)	3.21		3.09
Runoff Depth (Q), in	8.29		8.38
Runoff Volume, acre-ft	11.60		11.74
Volume Differential, acre-ft		0.14	

NOTES:

Post Development: Basin 15A

Stations 595+00 – 618+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Closed Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Basin 15A				
Onsite				
Open Space-Fair Condition	A	7.67	49	375.83
Pavement (Permitted)	A	5.20	98	509.60
New Pavement (Req. Treatment)	A	0.54	30	16.20
Pond	A	5.10	100	510.00
Offsite				
Grove-Good Condition	A	0.00	32	0.00
Meadow	A	0.00	30	0.00
		18.51		1411.63
		CN=		76.3

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Dry Retention			
50% of 1" Over Total Project Area	1	18.51	0.77
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	5.74	0.60

Treatment Volume Required (ac.ft.) = 0.77

Treatment Volume Permitted (ac.ft.) = 1.57

Additional Treatment Required (ac.ft.) = -0.80

WATER QUANTITY (100-yr/240-hr)	PRE-DEVELOPMENT		POST DEVELOPMENT
Precipitation, in	15.80		15.80
Potential Maximum Retention (S)	8.53		3.11
Runoff Depth (Q), in	8.78		12.59
Runoff Volume, acre-ft	27.37		19.43
Volume Differential, acre-ft		-7.94	

NOTES:

1. Basin 15F and Offsite have been removed due to the construction of Horizon High School, Permit No. 48-101923-P
2. It appears new roadway pavement was added which discharges to Pond 15A as part of the Horizon High School project, however there was no mention of impacts or calculations for Pond 15A presented in the permit.

Post Development: Basin 15B

Stations 595+00 – 618+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Closed Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	5.70	49	279.30
Open Space-Fair Condition	C	1.30	79	102.70
Open Space-Fair Condition	D	0.40	84	33.60
Pavement (Permitted)	A	8.00	98	784.00
New Pavement (Req. Treatment)	A	0.00	98	0.00
Pond	A	3.00	100	300.00
		18.40		1499.60
		CN=		81.5

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Dry Retention			
50% of 1" Over Total Project Area	1	18.40	0.77
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	8.00	0.83

Treatment Volume Required (ac.ft.) = 0.83

Treatment Volume Permitted (ac.ft.) = 1.68

Additional Treatment Required (ac.ft.) = -0.85

WATER QUANTITY (100-yr/240-hr)	PRE-DEVELOPMENT		POST DEVELOPMENT
Precipitation, in	15.80		15.80
Potential Maximum Retention (S)	5.63		2.27
Runoff Depth (Q), in	10.60		13.37
Runoff Volume, acre-ft	27.12		20.50
Volume Differential, acre-ft		-6.62	

NOTES:

1. Offsite has been removed due to the construction of Horizon High School, Permit No. 48-101923-P
2. It appears new roadway pavement was added which discharges to Pond 15B as part of the Horizon High School project, however there was no mention of impacts or calculations for Pond 15B presented in the permit.

Post Development: Basin 15C

Stations 595+00 – 618+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Closed Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	1.16	49	56.84
Open Space-Fair Condition	C	0.70	79	55.30
Open Space-Fair Condition	D	0.40	84	33.60
Pavement (Permitted)	A	0.40	98	39.20
New Pavement (Req. Treatment)	A	0.34	98	33.32
Pond	A	0.50	100	50.00
		3.50		268.26
		CN=		76.6

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Dry Retention			
50% of 1" Over Total Project Area	1	3.50	0.15
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	0.74	0.08

Treatment Volume Required (ac.ft.) = 0.15

Treatment Volume Permitted (ac.ft.) = 0.32

Additional Treatment Required (ac.ft.) = -0.17

WATER QUANTITY (100-yr/240-hr)	PRE-DEVELOPMENT		POST DEVELOPMENT
Precipitation, in	15.80		15.80
Potential Maximum Retention (S)	3.91		3.05
Runoff Depth (Q), in	11.91		12.65
Runoff Volume, acre-ft	3.48		3.69
Volume Differential, acre-ft		0.22	

NOTES:

Post Development: Basin 15D

Stations 595+00 – 618+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Closed Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	3.36	49	164.64
Open Space-Fair Condition	C	1.10	79	86.90
Open Space-Fair Condition	D	0.20	84	16.80
Pavement (Permitted)	A	1.70	98	166.60
New Pavement (Req. Treatment)	A	0.04	98	3.92
Pond	A	0.20	100	20.00
Offsite				
Meadow	A	3.70	30	111.00
		10.30		569.86
		CN=		55.3

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Dry Retention			
50% of 1" Over Total Project Area	1	10.30	0.43
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	1.74	0.18

Treatment Volume Required (ac.ft.) = 0.43

Treatment Volume Permitted (ac.ft.) = 0.18

Additional Treatment Required (ac.ft.) = 0.25

WATER QUANTITY (100-yr/240-hr)	PRE-DEVELOPMENT		POST DEVELOPMENT
Precipitation, in	15.80		15.80
Potential Maximum Retention (S)	8.14		8.07
Runoff Depth (Q), in	9.00		9.04
Runoff Volume, acre-ft	7.73		7.76
Volume Differential, acre-ft		0.03	

NOTES:

Post Development: Basin 15E

Stations 595+00 – 618+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Closed Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	6.80	49	333.20
Pavement (Permitted)	A	7.10	98	695.80
New Pavement (Req. Treatment)	A	0.00	98	0.00
Pond	A	1.80	100	180.00
		15.70		1209.00
		CN=		77.0

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Dry Retention			
50% of 1" Over Total Project Area	1	15.70	0.65
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	7.10	0.74

Treatment Volume Required (ac.ft.) = 0.74

Treatment Volume Permitted (ac.ft.) = 0.80

Additional Treatment Required (ac.ft.) = -0.06

WATER QUANTITY (100-yr/240-hr)	PRE-DEVELOPMENT	POST DEVELOPMENT
Precipitation, in	15.80	15.80
Potential Maximum Retention (S)	3.90	2.99
Runoff Depth (Q), in	11.92	12.71
Runoff Volume, acre-ft	17.58	16.63
Volume Differential, acre-ft	-0.96	

NOTES:

1. Basin Offsite removed due to WaterLeigh improvements, see Permit No. 48-02575-P
2. The permitted 7.10-acres of impervious is greater than the proposed pavement of 5.48-acres.

Post Development: Basin 1

Stations 1622+18.86 – 602+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	8.88	39	346.32
Pavement (Permitted)	A	8.44	98	827.12
New Pavement (Req. Treatment)	A	0.00	98	0.00
Pond	A	1.72	39	67.08
		19.04		1240.52
			CN=	65.2

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
50% of 1" Over Total Project Area	1	19.04	0.79
50% of 2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	8.44	0.88

Treatment Volume Required (ac.ft.) = 0.88

Treatment Volume Permitted (ac.ft.) = 1.06

Additional Treatment Required (ac.ft.) = -0.18

WATER QUANTITY (50-yr/72-hr)	PRE-DEVELOPMENT	POST DEVELOPMENT
Precipitation, in	11.40	11.40
Potential Maximum Retention (S)	5.96	5.35
Runoff Depth (Q), in	6.45	6.81
Runoff Volume, acre-ft	11.30	10.80
Volume Differential, acre-ft	-0.50	

NOTES:

1. Permitted pavement is greater than or equal to proposed pavement. Therefore, no "New Pavement".
2. Adjusted basin boundary to remove offsite area which no longer discharges into FTE R/W.

Post Development: Basin 2

Stations 602+00 – 641+83.82

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Open Space-Fair Condition	A	8.53	39	332.67
Pavement (Permitted)	A	12.01	98	1176.98
New Pavement (Req. Treatment)	A	0.00	98	0.00
Pond	A	2.61	100	261.00
		23.15		1770.65
		CN=		76.5

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Wet Detention			
1" Over Total Project Area	1	23.15	1.93
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	12.01	2.50

Treatment Volume Required (ac.ft.) = 2.50

Treatment Volume Permitted (ac.ft.) = 2.50

Additional Treatment Required (ac.ft.) = 0.00

WATER QUANTITY (50-yr/72-hr)	PRE-DEVELOPMENT	POST DEVELOPMENT
Precipitation, in	11.40	11.40
Potential Maximum Retention (S)	3.07	3.07
Runoff Depth (Q), in	8.39	8.39
Runoff Volume, acre-ft	16.19	16.19
Volume Differential, acre-ft	0.00	

NOTES:

1. Permitted pavement is greater than or equal to proposed pavement. Therefore, no "New Pavement".

Post Development: Basin FGB – Alt 3

Project: Widen Western Beltway PD&E Date: 7/12/2022
Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin
Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
Onsite				
Woods – Grass Combination Fair	A	3.72	43	159.96
Pavement	A	3.31	98	324.38
Pond	A	2.00	100	200.00
Offsite				
Woods – Grass Combination Fair	A	9.43	43	405.49
		18.46		1089.83
		CN=		59.0

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Wet Detention			
1" Over Total Project Area	1	18.46	1.54
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	3.31	0.69

Treatment Volume Required (ac.ft.) = 1.54

Treatment Volume Permitted (ac.ft.) = 0.00

Additional Treatment Required (ac.ft.) = 1.54

Post Development: Basin FGB – Alt 3

Project: Widen Western Beltway PD&E Date: 7/12/2022
Project No.: 446164-1-22-01

WATER QUANTITY (50-yr/72-hr)	PRE-DEVELOPMENT		POST DEVELOPMENT
Precipitation, in	11.40		11.40
Potential Maximum Retention (S)	13.26		6.94
Runoff Depth (Q), in	3.48		5.91
Runoff Volume, acre-ft	5.35		9.10
Volume Differential, acre-ft		**3.75**	

POND SIZING

Pond Bottom / Control Elevation =	108.00	FT
Top of bank elevation =	112.00	FT
Area @ pond bottom / control elevation =	2.00	AC
Area @ Top of bank =	2.16	AC

Elevation ft		Area acres	Volume acre-ft
108.00	Control Elev.	2.00	0.00
109.00	Treat. El	2.04	**2.02**
112.00	Inside TOB	2.16	8.32
109.00	Treat. El	2.04	0.00
111.00	Attenuation El	2.12	**4.16**
112.00	Inside TOB	2.16	6.30

REEDY CREEK CALCULATIONS (50-yr/72-hr)

Precipitation, in	12.91	12.91
Area, ac		18.46
Area, sq-mi		0.03
Peak Allowable Runoff, cfs		0.37

NOTES:
1. Basin area changed due to new interchange

Post Development: SR 530 Basin A

Stations 12+83 – 27+60

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
SR 530/US 192				
Open Space-Good Condition	D	8.34	79	658.57
Pavement	A	11.57	98	1133.63
Pond	D	1.37	100	136.65
	D	0.93	79	73.40
		22.20		2002.24
			CN=	90.2

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Wet Detention			
1" Over Total Project Area	1	22.20	1.85
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	11.57	2.41

Treatment Volume Required (ac.ft.) = 2.41

Treatment Volume Permitted (ac.ft.) = 2.16

Additional Treatment Required (ac.ft.) = 0.25

WATER QUANTITY (50-yr/72-hr)	PRE-DEVELOPMENT		POST DEVELOPMENT
Precipitation, in	13.40		13.40
Potential Maximum Retention (S)	1.28		1.09
Runoff Depth (Q), in	11.98		12.18
Runoff Volume, acre-ft	22.16		22.53
Volume Differential, acre-ft		0.37	

Post Development: SR 530 Basin A

Stations 12+83 – 27+60

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

POND SIZING	NGVD-29

Pond Bottom / Control Elevation =	103.00	FT
Top of bank elevation =	105.00	FT
Area @ pond bottom / control elevation =	1.37	AC
Area @ Top of bank =	1.62	AC

Elevation ft		Area acres	Volume acre-ft
103.00	Control Elev.	1.37	0.00
104.50	Treat. El	1.56	2.19
105.00	Inside TOB	1.62	2.99

NOTES:

1. Elevations left in NGVD-29 for clarity in demonstrating the existing permitted conditions

Post Development: SR 530 Basin C

Stations 31+70 – 55+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

Basin Info:

Basin Type: Open Basin

Discharges to Impaired Waterbody: No

LAND USE	SCS CLASS	AREA (AC)	CN	PRODUCT
SR 530/US 192				
Pavement	D	10.37	98	1016.35
Pond	D	1.85	98	180.99
Grassed Area – Fair	A	7.18	49	351.85
	D	1.11	84	93.40
Pavement	D	3.11	98	304.39
Off-site Impervious	D	1.09	98	106.55
Grassed Area – Fair	D	3.61	84	303.04
Pavement	D	5.53	98	541.95
Off-site Impervious	D	1.04	98	101.46
Grassed Area – Fair	A	3.04	49	148.93
		37.92		3148.92
		CN=		83.0

WATER QUALITY	CRITERIA (IN)	AREA (AC)	TREATMENT (AC.FT.)
Wet Detention			
1" Over Total Project Area	1	37.92	3.16
2.5" Over Project Impervious Areas (Exclude Ponds)	2.5	21.13	4.40

Treatment Volume Required (ac.ft.) = 4.40

Treatment Volume Permitted (ac.ft.) = 4.18

Additional Treatment Required (ac.ft.) = 0.22

WATER QUANTITY (50-yr/72-hr)	PRE-DEVELOPMENT		POST DEVELOPMENT
Precipitation, in	13.40		13.40
Potential Maximum Retention (S)	2.25		2.04
Runoff Depth (Q), in	11.04		11.23
Runoff Volume, acre-ft	34.87		35.48
Volume Differential, acre-ft		0.61	

Post Development: SR 530 Basin C

Stations 31+70 – 55+00

Project: Widen Western Beltway PD&E Date: 7/12/2022

Project No.: 446164-1-22-01

POND SIZING	NGVD-29

Pond Bottom / Control Elevation =	100.00	FT
Top of bank elevation =	105.00	FT
Area @ pond bottom / control elevation =	1.85	AC
Area @ Top of bank =	2.47	AC

Elevation ft		Area acres	Volume acre-ft
100.00	Control Elev.	1.85	0.00
102.30	Treat. El	2.13	4.58
105.00	Inside TOB	2.47	10.79

NOTES:

1. Elevations left in NGVD-29 for clarity in demonstrating the existing permitted conditions

NOAA Atlas 14, Volume 9, Version 2
Location name: Kissimmee, Florida, USA*
Latitude: 28.3481°, Longitude: -81.6148°
Elevation: 106.75 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.480** (0.392-0.581)	**0.546** (0.445-0.662)	**0.650** (0.527-0.789)	**0.731** (0.590-0.893)	**0.837** (0.649-1.05)	**0.913** (0.693-1.17)	**0.984** (0.722-1.30)	**1.05** (0.740-1.44)	**1.14** (0.767-1.61)	**1.19** (0.788-1.74)
10-min	**0.703** (0.573-0.851)	**0.800** (0.652-0.969)	**0.951** (0.772-1.16)	**1.07** (0.864-1.31)	**1.23** (0.950-1.54)	**1.34** (1.01-1.71)	**1.44** (1.06-1.90)	**1.54** (1.08-2.11)	**1.66** (1.12-2.35)	**1.75** (1.16-2.54)
15-min	**0.857** (0.699-1.04)	**0.975** (0.795-1.18)	**1.16** (0.942-1.41)	**1.31** (1.05-1.60)	**1.49** (1.16-1.88)	**1.63** (1.24-2.09)	**1.76** (1.29-2.32)	**1.88** (1.32-2.57)	**2.03** (1.37-2.87)	**2.13** (1.41-3.10)
30-min	**1.38** (1.13-1.67)	**1.57** (1.27-1.90)	**1.86** (1.51-2.26)	**2.08** (1.68-2.55)	**2.38** (1.84-2.99)	**2.59** (1.97-3.32)	**2.79** (2.05-3.69)	**2.98** (2.10-4.08)	**3.21** (2.17-4.55)	**3.37** (2.23-4.90)
60-min	**1.82** (1.48-2.20)	**2.07** (1.69-2.51)	**2.48** (2.01-3.01)	**2.79** (2.26-3.42)	**3.21** (2.49-4.03)	**3.51** (2.66-4.49)	**3.79** (2.78-5.01)	**4.06** (2.85-5.55)	**4.39** (2.96-6.21)	**4.61** (3.05-6.71)
2-hr	**2.25** (1.85-2.71)	**2.58** (2.12-3.11)	**3.10** (2.54-3.74)	**3.51** (2.85-4.26)	**4.04** (3.15-5.04)	**4.42** (3.38-5.63)	**4.79** (3.53-6.28)	**5.13** (3.63-6.97)	**5.56** (3.78-7.82)	**5.86** (3.90-8.46)
3-hr	**2.45** (2.02-2.93)	**2.81** (2.32-3.37)	**3.40** (2.79-4.09)	**3.87** (3.16-4.68)	**4.50** (3.53-5.61)	**4.96** (3.82-6.31)	**5.41** (4.02-7.10)	**5.86** (4.17-7.95)	**6.42** (4.39-9.02)	**6.83** (4.56-9.84)
6-hr	**2.81** (2.34-3.34)	**3.22** (2.68-3.83)	**3.91** (3.24-4.67)	**4.50** (3.71-5.40)	**5.34** (4.26-6.70)	**6.02** (4.69-7.68)	**6.72** (5.05-8.83)	**7.45** (5.36-10.1)	**8.45** (5.84-11.9)	**9.23** (6.20-13.2)
12-hr	**3.26** (2.74-3.85)	**3.68** (3.09-4.35)	**4.46** (3.73-5.29)	**5.20** (4.32-6.20)	**6.34** (5.15-8.02)	**7.33** (5.79-9.39)	**8.41** (6.40-11.1)	**9.60** (6.99-13.1)	**11.3** (7.91-15.9)	**12.7** (8.60-18.1)
24-hr	**3.75** (3.18-4.40)	**4.22** (3.57-4.95)	**5.14** (4.33-6.06)	**6.06** (5.08-7.18)	**7.57** (6.24-9.60)	**8.91** (7.12-11.4)	**10.4** (8.01-13.7)	**12.1** (8.90-16.5)	**14.6** (10.3-20.5)	**16.7** (11.3-23.5)
2-day	**4.29** (3.66-5.00)	**4.86** (4.14-5.67)	**5.99** (5.09-7.01)	**7.12** (6.01-8.38)	**8.96** (7.45-11.3)	**10.6** (8.54-13.5)	**12.4** (9.65-16.3)	**14.5** (10.8-19.6)	**17.6** (12.5-24.5)	**20.1** (13.8-28.2)
3-day	**4.72** (4.04-5.47)	**5.32** (4.56-6.18)	**6.53** (5.57-7.61)	**7.73** (6.56-9.06)	**9.68** (8.08-12.1)	**11.4** (9.23-14.5)	**13.4** (10.4-17.4)	**15.5** (11.6-20.9)	**18.7** (13.4-26.0)	**21.4** (14.7-29.9)
4-day	**5.10** (4.39-5.91)	**5.72** (4.92-6.63)	**6.95** (5.95-8.08)	**8.17** (6.95-9.55)	**10.1** (8.49-12.7)	**11.9** (9.66-15.1)	**13.9** (10.8-18.1)	**16.1** (12.0-21.6)	**19.3** (13.8-26.8)	**22.0** (15.2-30.7)

7-day	**6.14** (5.32-7.07)	**6.76** (5.85-7.79)	**7.98** (6.88-9.23)	**9.20** (7.88-10.7)	**11.2** (9.40-13.8)	**12.9** (10.5-16.2)	**14.9** (11.7-19.2)	**17.1** (12.8-22.8)	**20.3** (14.6-27.9)	**23.0** (15.9-31.8)
10-day	**7.06** (6.15-8.10)	**7.71** (6.70-8.85)	**8.97** (7.77-10.3)	**10.2** (8.78-11.8)	**12.2** (10.2-14.9)	**13.9** (11.4-17.3)	**15.8** (12.4-20.3)	**17.9** (13.5-23.8)	**21.0** (15.2-28.8)	**23.6** (16.4-32.6)
20-day	**9.71** (8.52-11.1)	**10.6** (9.30-12.1)	**12.2** (10.6-13.9)	**13.6** (11.8-15.6)	**15.6** (13.2-18.8)	**17.4** (14.2-21.2)	**19.2** (15.1-24.2)	**21.1** (15.9-27.5)	**23.8** (17.2-32.2)	**26.0** (18.2-35.7)
30-day	**12.1** (10.6-13.7)	**13.2** (11.7-15.0)	**15.2** (13.3-17.3)	**16.8** (14.7-19.2)	**19.1** (16.1-22.7)	**20.9** (17.1-25.2)	**22.6** (17.9-28.3)	**24.5** (18.5-31.6)	**27.0** (19.5-36.1)	**28.9** (20.3-39.4)
45-day	**15.2** (13.5-17.2)	**16.8** (14.9-19.0)	**19.2** (17.0-21.8)	**21.2** (18.6-24.2)	**23.8** (20.1-28.0)	**25.8** (21.2-30.9)	**27.6** (21.9-34.2)	**29.5** (22.3-37.7)	**31.7** (23.0-42.1)	**33.4** (23.6-45.4)
60-day	**18.0** (16.1-20.3)	**20.0** (17.7-22.5)	**22.9** (20.3-25.9)	**25.2** (22.2-28.7)	**28.2** (23.8-32.9)	**30.3** (25.0-36.1)	**32.3** (25.6-39.7)	**34.1** (25.9-43.5)	**36.4** (26.4-48.0)	**37.9** (26.8-51.4)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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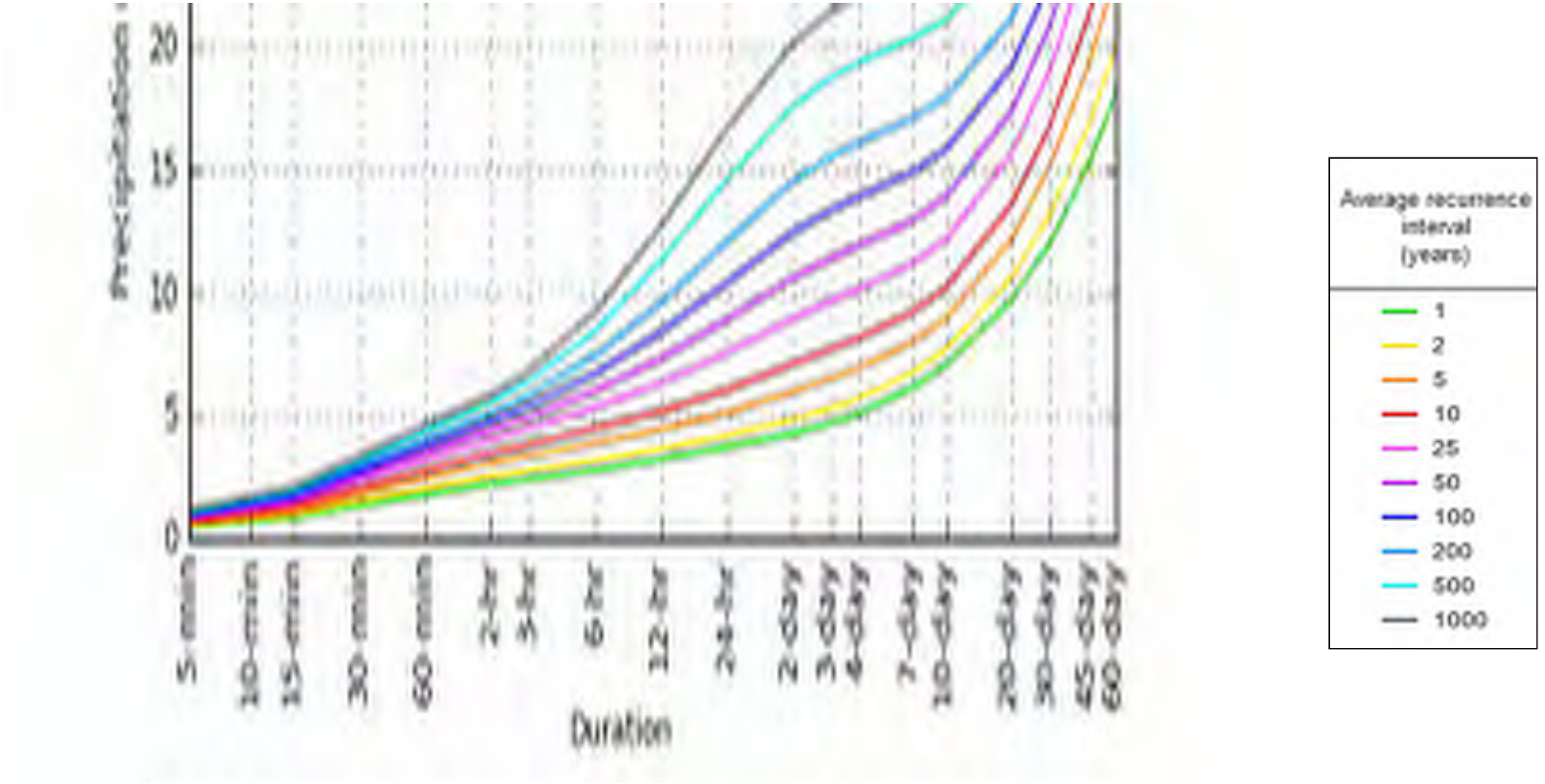
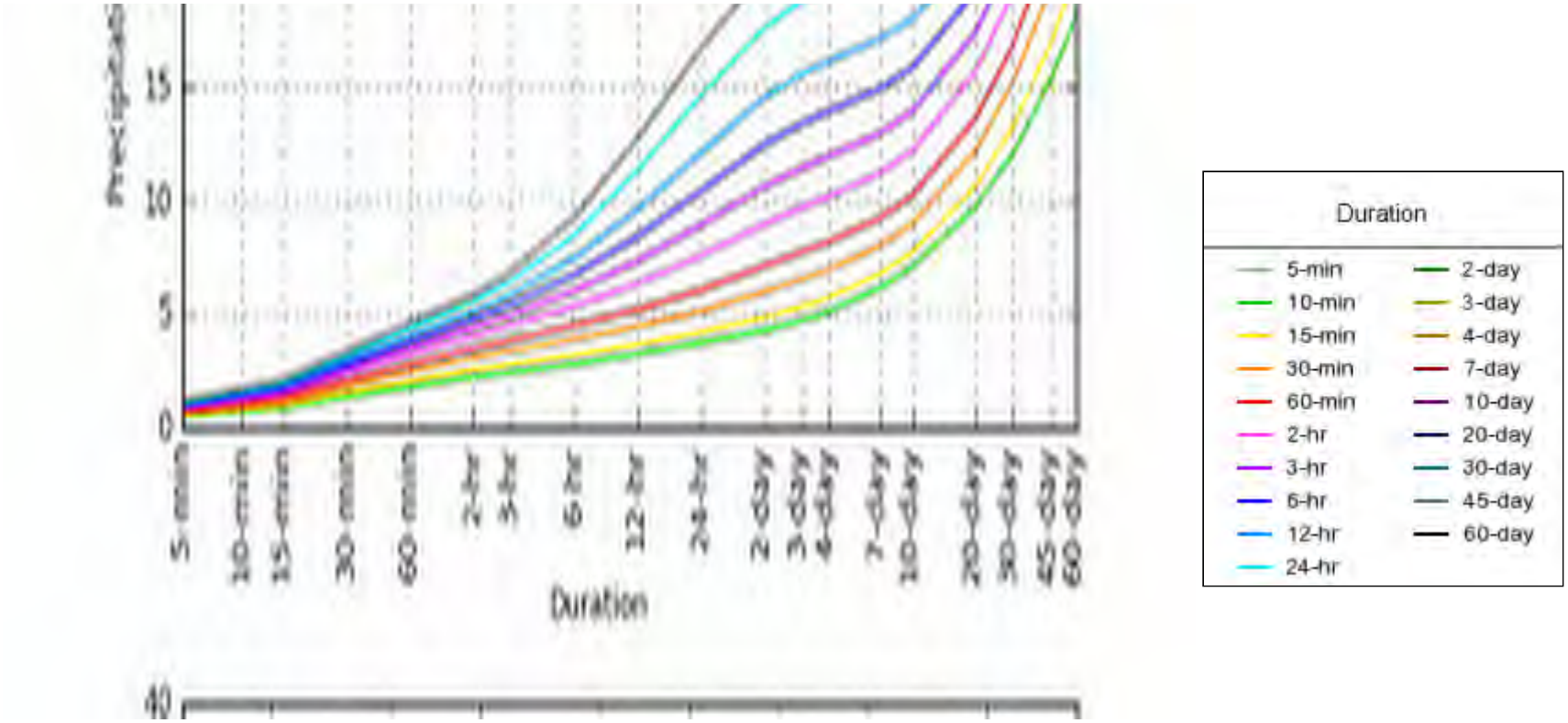
PF graphical





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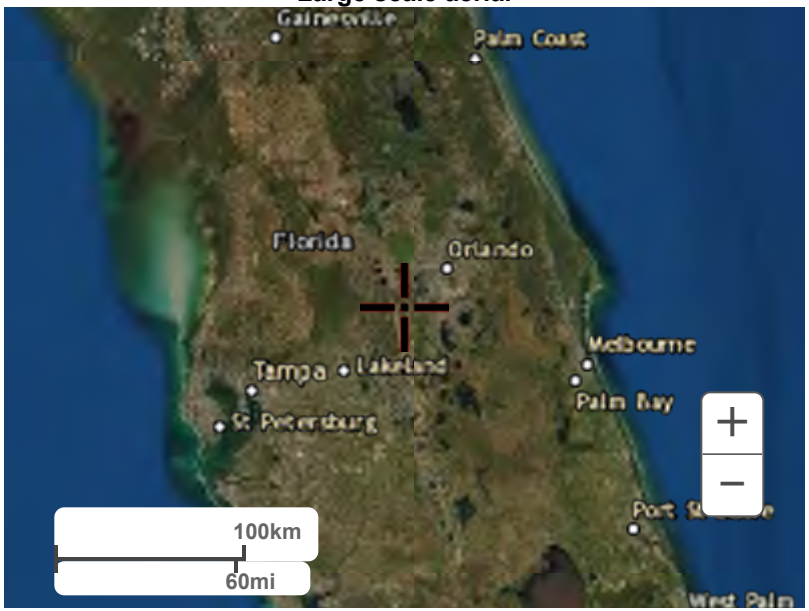
Maps & aerials

Small scale terrain

Large scale terrain

Large scale map

Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

APPENDIX D – FLOODPLAIN ENCROACHMENT CALCULATIONS

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Transverse Mercator State Plane Florida East FIPS 0901. The **horizontal datum** was NAD83 HARN, GRS 1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NNGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242** or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was provided in digital format by the Osceola County Planning Office. Orthophotography was collected in late 2007 early 2008.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

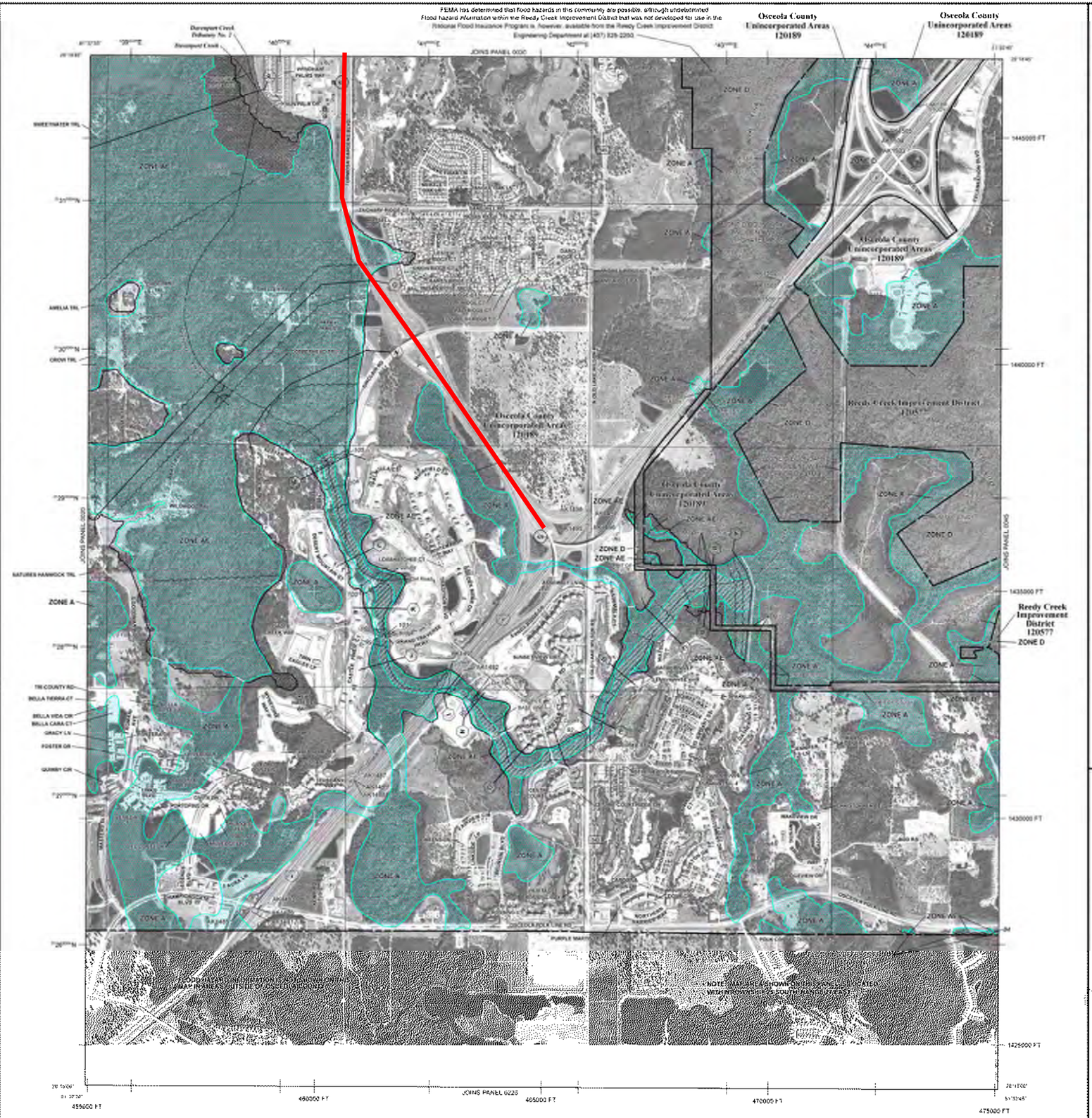
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the **FEMA Mapping Information eXchange** at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service website at http://www.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. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

The **"profile base lines"** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the "profile base line", in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

FEMA has determined that flood hazards in this community are possible, although undetermined. Flood hazard information within the Reedy Creek Improvement District that was not developed for use in the National Flood Insurance Program is, however, available from the Reedy Creek Improvement District Engineering Department at (407) 828-2250.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A — No Base Flood Elevations determined.
- ZONE AE — Base Flood Elevations determined.
- ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99 — Area to be protected from 1% annual chance flood event by a federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- Cross section line
- Transect line

97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western hemisphere

1000-meter Universal Transverse Mercator grid ticks, zone 17

6000000 FT — 5000-foot grid values: Florida State Plane coordinate system, East zone (FIPSZONE = 0901), Transverse Mercator projection

DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)

- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories List on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
MAY 7, 2001

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
JUNE 5, 2001 - To correct datum reference note.

JUNE 18, 2013 - To update corporate limits, change Base Flood Elevations, add Base Flood Elevations, change Special Flood Hazard Areas, change zone designations, update roads and road names, incorporate previously issued Letters of Map Revision, and reflect updated topographic information.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in 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.

MAP SCALE 1" = 1000'

NFIP — NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0040G

FIRM

FLOOD INSURANCE RATE MAP

OSCEOLA COUNTY, FLORIDA AND INCORPORATED AREAS

PANEL 40 OF 900

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
OSCEOLA COUNTY	120189	0040	G
REEDY CREEK IMPROVEMENT DISTRICT	120577	0040	G

MAP NUMBER
12097C0040G

MAP REVISED
JUNE 18, 2013

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Transverse Mercator State Plane Florida East FIPS 0901. The **horizontal datum** was NAD83 HARN, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242 or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by the Osceola County Planning Office. Orthophotography was collected in late 2007 early 2008.

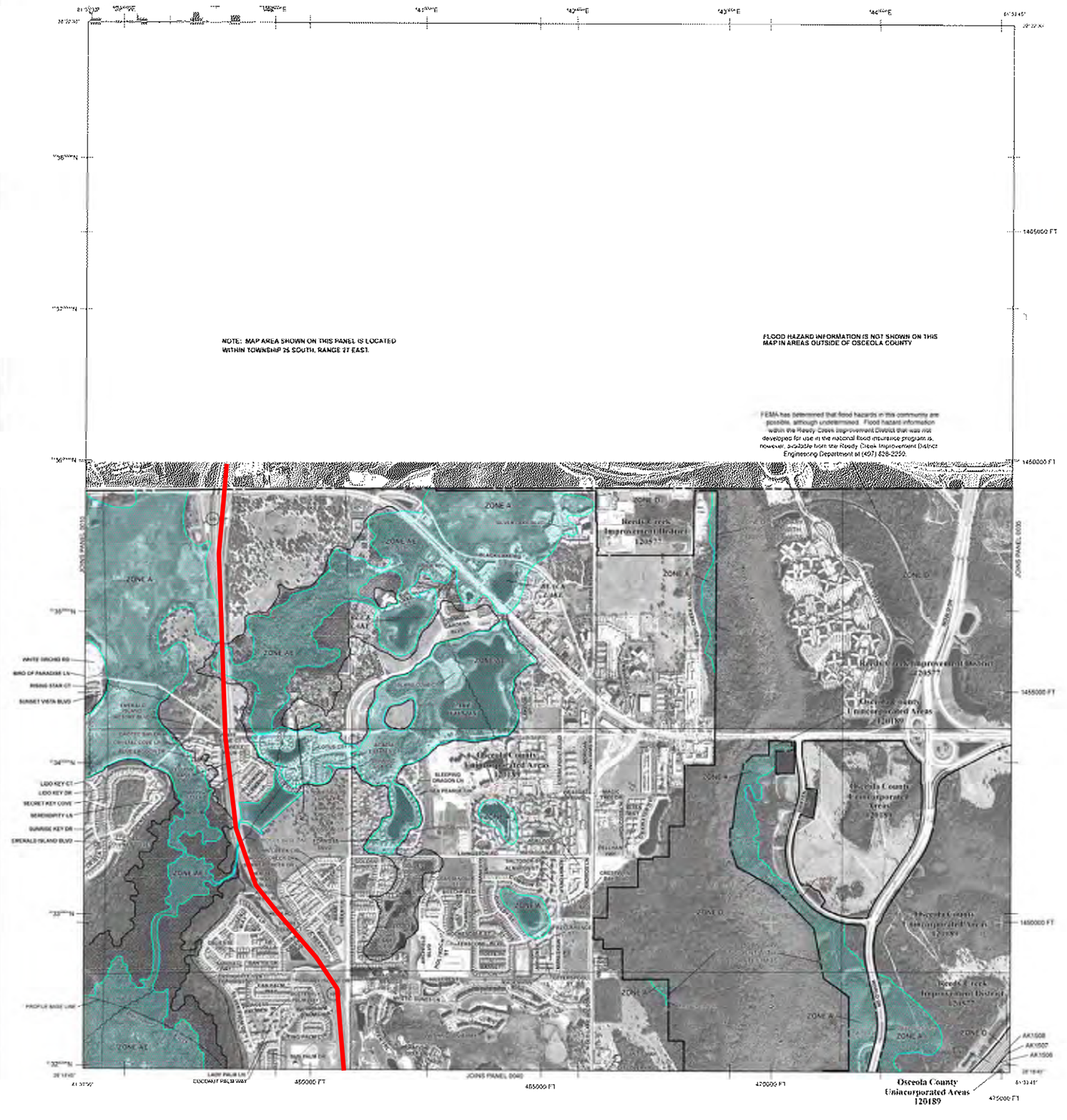
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the **FEMA Mapping Information eXchange** at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service website at http://www.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. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

The **"profile base lines"** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the "profile base line", in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A — No Base Flood Elevations determined.
- ZONE AE — Base Flood Elevations determined.
- ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99 — Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*
- * Referenced to the North American Vertical Datum of 1988
- A — A — Cross section line
- 23 — 23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 1000-meter Universal Transverse Mercator grid ticks, zone 17
- 5000-foot grid values: Florida State Plane coordinate system, East Zone (FIPSZONE = 0901), Transverse Mercator projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories List on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
MAY 7, 2001

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
JUNE 5, 2001 - To correct datum reference note.

JUNE 18, 2013 - To update corporate limits, change Base Flood Elevations, add Base Flood Elevations, change Special Flood Hazard Areas, change zone designations, update roads and road names, incorporate previously issued Letters of Map Revision, and reflect updated topographic information.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in 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.

MAP SCALE 1" = 1000'

NFIP — NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0030G

FIRM

FLOOD INSURANCE RATE MAP

OSCEOLA COUNTY, FLORIDA AND INCORPORATED AREAS

PANEL 30 OF 900

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
OSCEOLA COUNTY	120189	0030	G
REEDY CREEK IMPROVEMENT DISTRICT	120177	0030	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
12097C0030G

MAP REVISED
JUNE 18, 2013

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was State Plane Florida East FIPS Zone 0901. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242** or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was provided in digital format by Orange County, Florida.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

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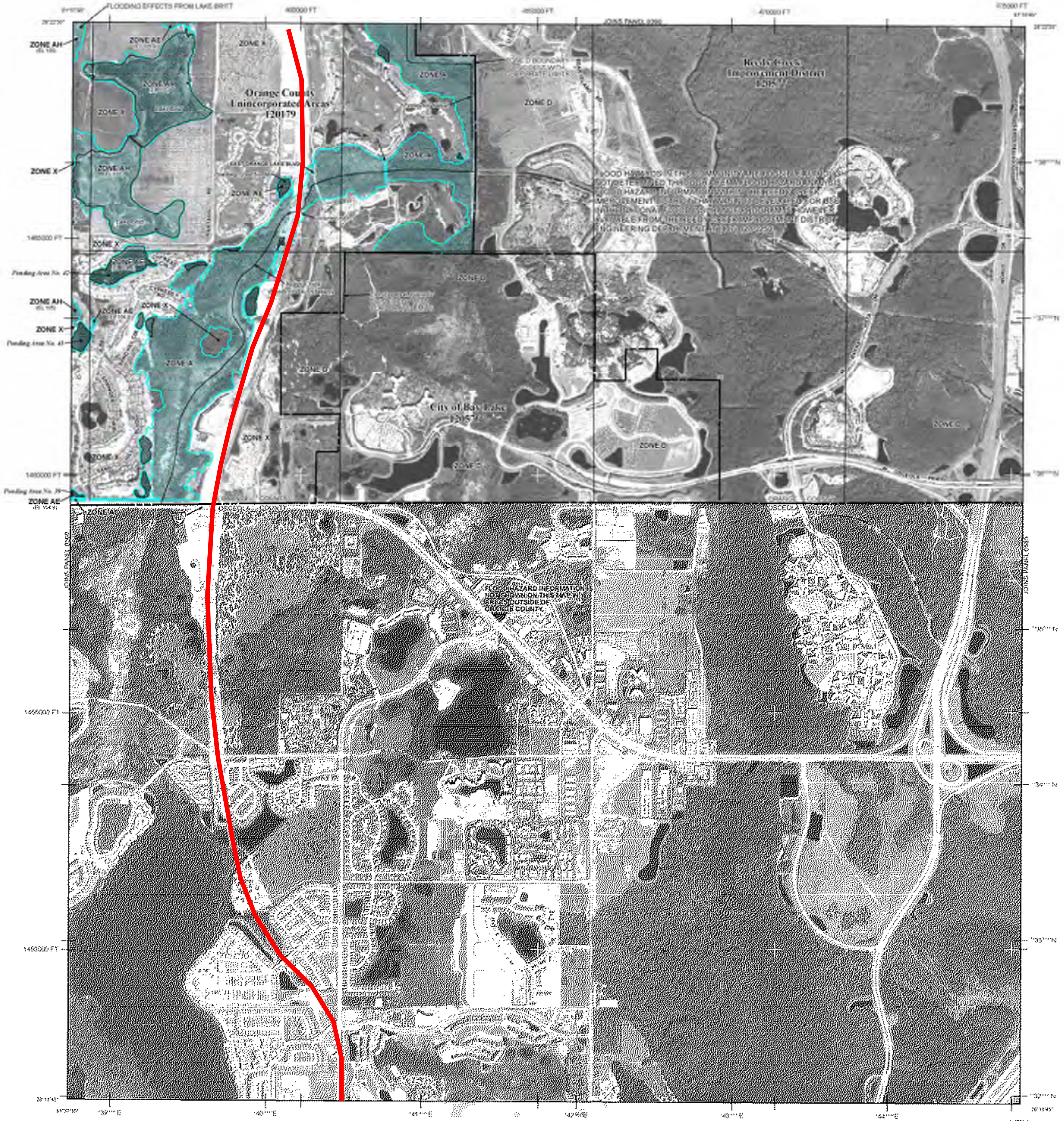
Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels, community map repository addresses, and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip/.

NGVD29 to NAVD88 Vertical Datum Conversion Table (feet)

Watershed Name	Minimum Conversion	Maximum Conversion	Average Conversion	Maximum Offset
Big Econlockhatchee River	-1.03	-1.15	-1.09	0.06
Boggy Creek	-0.95	-1.01	-0.98	0.06
Cypress Creek	-0.87	-0.95	-0.89	0.02
Howell Branch	-0.90	-1.05	-0.96	0.07
Lake Apopka	-0.87	-0.97	-0.91	0.09
Lake Hart	-0.97	-1.07	-1.02	0.05
Little Econlockhatchee River	-0.97	-1.07	-1.01	0.09
Little Wekiva River	-0.91	-1.02	-0.99	0.07
Reedy Creek	-0.86	-0.92	-0.88	[illegible]
Shingle Creek	-0.86	-0.99	-0.91	0.04
St. Johns River	-1.03	-1.33	-1.15	[illegible]
Wekiva River	-0.83	-1.05	-0.94	[illegible]



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A — No Base Flood Elevations determined.
- ZONE AE — Base Flood Elevations determined.
- ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR — Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99 — Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- ~~~ 513 ~~~ Base Flood Elevation line and value; elevation in feet*
- (EL 987) Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

- A—A Cross section line
- 23—23 Transect line
- 97°07'30", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4275000 E 1000-meter Universal Transverse Mercator grid ticks, zone 17
- 6000000 FT 5000-foot grid values: Florida State Plane coordinate system, East Zone (FIPSZONE 0901), Transverse Mercator projection
- DX5510 × Bench mark (see explanation in Notes to Users section of this FIRM panel)
- • M1.5 River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
DECEMBER 6, 2000

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
SEPTEMBER 25, 2009 - to update corporate limits, to change Base Flood Elevations, to add Base Flood Elevations, to add Special Flood Hazard Areas, to change Special Flood Hazard Areas, to delete Special Flood Hazard Areas, to update map format, to add roads and road names, to incorporate previously issued Letters of Map Revision, to reflect updated topographic information, and to incorporate previously issued Letters of Map Amendment.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in 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.

MAP SCALE 1" = 1000'

500 0 500 1,000 1,500 2,000 FEET
METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0580F

FIRM
FLOOD INSURANCE RATE MAP
ORANGE COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 580 OF 750

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BAY LAKE, CITY OF	120676	0580	F
ORANGE COUNTY	120179	0580	F
REEDY CREEK IMPROVEMENT DISTRICT	120672	0580	F

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
12095C0580F

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0 North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was State Plane Florida East FIPS Zone 0901. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242** or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was provided in digital format by Orange County, Florida.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

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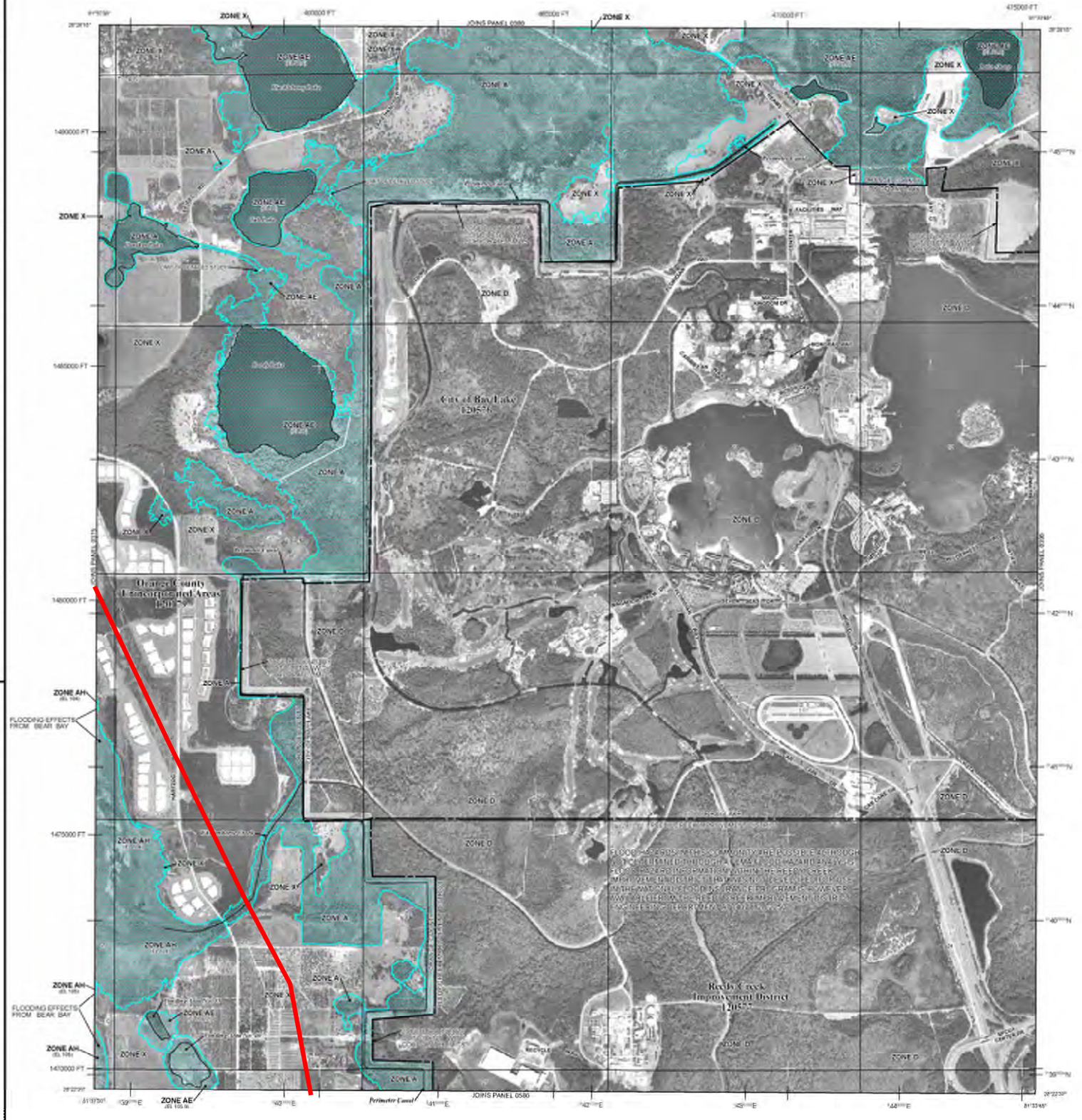
Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip/.

NGVD29 to NAVD88 Vertical Datum Conversion Table (feet)

Watershed Name	Minimum Conversion	Maximum Conversion	Average Conversion	Maximum Offset
Big Econlockhatchee River	-1.03	-1.16	-1.09	0.06
Boggy Creek	-0.91	-1.01	-0.96	0.05
Cypress Creek	-0.87	-0.91	-0.89	0.02
Howell Branch	-0.98	-1.05	-0.99	0.07
Lake Apopka	-0.87	-0.97	-0.91	0.06
Lake Hart	-0.97	-1.07	-1.02	0.05
Little Econlockhatchee River	-0.92	-1.07	-1.01	0.09
Little Wekiva River	-0.91	-1.02	-0.95	0.07
Reedy Creek	-0.95	-0.80	-0.89	0.02
Shingle Creek	-0.93	-0.95	-0.91	0.04
St Johns River	-1.04	-1.20	-1.14	0.14
Wekiva River	-0.89	-1.01	-0.94	0.07



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equalled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood.

- **ZONE A** No Base Flood Elevations determined.
- **ZONE AE** Base Flood Elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 (EL 987) Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

- Cross section line
- Transect line
- 32°07'30", 102°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4375000 FT 1000-meter Universal Transverse Mercator grid ticks, zone 17
- 6000000 FT 5000-foot grid values: Florida State Plane coordinate system, East Zone (FIPSZONE = 901), Transverse Mercator projection
- DX5510 Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
DECEMBER 6, 2000

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
SEPTEMBER 25, 2009 - to update corporate limits, to change Base Flood Elevations, to add Base Flood Elevations, to add Special Flood Hazard Areas, to change Special Flood Hazard Areas, to delete Special Flood Hazard Areas, to update map format, to add roads and road names, to incorporate previously issued Letters of Map Revision, to reflect updated topographic information, and to incorporate previously issued Letters of Map Amendment.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in 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.

MAP SCALE 1" = 1000'

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0390F

FIRM
FLOOD INSURANCE RATE MAP
ORANGE COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 390 OF 750
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BAY LAKE, CITY OF	120519	0390	F
ORANGE COUNTY	120179	0390	F
REEDY CREEK IMPROVEMENT DISTRICT	120537	0390	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
12095C0390F

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0 feet North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was State Plane Florida East (FIPSZONE 0901). The **horizontal datum** was North American Datum of 1983 (NAD83). Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242** or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was provided in digital format by Orange County, Florida.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transitioned from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

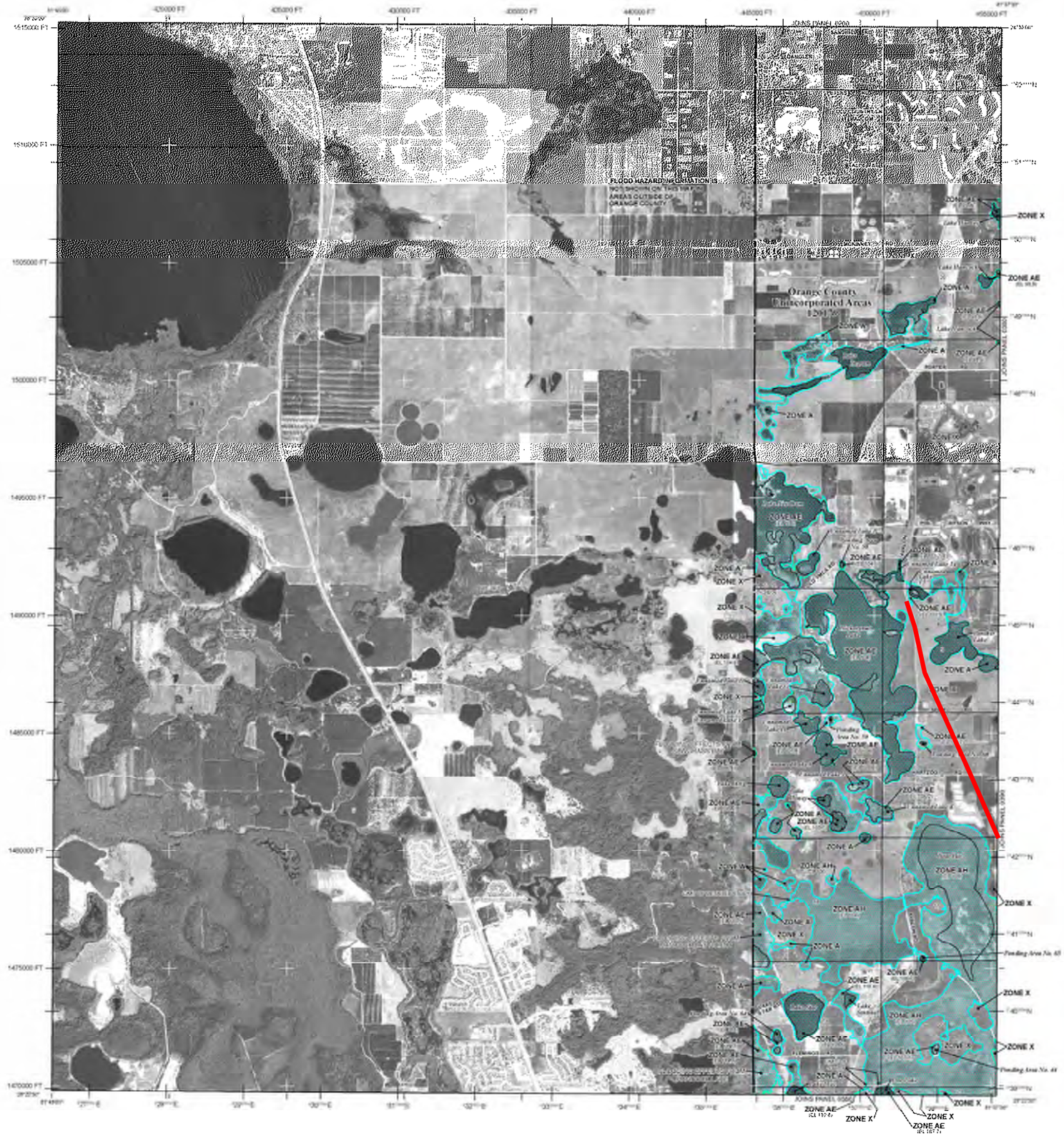
Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip/.

NGVD29 to NAVD88 Vertical Datum Conversion Table (feet)

Watershed Name	Minimum Conversion	Maximum Conversion	Average Conversion	Maximum Offset
Big Econlockhatchee River	-1.03	-1.10	-1.09	0.08
Boggy Creek	-0.91	-1.01	-0.96	0.10
Cypress Creek	-0.87	-0.91	-0.89	0.02
Howell Branch	-0.86	-1.00	-0.96	0.07
Lake Apopka	-0.87	-0.97	-0.91	0.06
Lake Hart	-0.97	-1.07	-1.02	0.05
Little Econlockhatchee River	-0.92	-1.07	-1.01	0.09
Little Wekiva River	-0.91	-1.10	-0.95	0.07
Reedy Creek	-0.86	-0.90	-0.88	0.02
Shingle Creek	-0.86	-0.90	-0.91	0.04
St Johns River	-1.08	-1.22	-1.14	0.14
Wekiva River	-0.88	-1.01	-0.94	0.07



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A — No Base Flood Elevations determined.

ZONE AE — Base Flood Elevations determined.

ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR — Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 — Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

- A — A — Cross section line
- 23 — 23 — Transect line
- 32°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western hemisphere
- 1000-meter Universal Transverse Mercator grid ticks, zone 17
- 6000000 FT — 5000-foot grid values: Florida State Plane coordinate system, East Zone (FIPSZONE = 0901), Transverse Mercator projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
DECEMBER 8, 2000

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

SEPTEMBER 25, 2009 - to update corporate limits, to change Base Flood Elevations, to add Base Flood Elevations, to add Special Flood Hazard Areas, to change Special Flood Hazard Areas, to delete Special Flood Hazard Areas, to update map format, to add roads and road names, to incorporate previously issued Letters of Map Revision, to reflect updated topographic information, and to incorporate previously issued Letters of Map Amendment.

For communities map revision history prior to countywide mapping, refer to the Community Map History table located in 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.

MAP SCALE 1" = 2000'

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0375F

FIRM

FLOOD INSURANCE RATE MAP

ORANGE COUNTY, FLORIDA AND INCORPORATED AREAS

PANEL 375 OF 750

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS

COMMUNITY	NUMBER	PANEL	SUFFIX
ORANGE COUNTY	120179	0375	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 12095C0375F

MAP REVISED SEPTEMBER 25, 2009

Federal Emergency Management Agency

RS&H, Inc.
FPID: 44616412201
FLOODPLAIN IMPACT VOLUME CALCULATIONS

By: AB
Date: 10/18/2022
Checked: ENS
Date: 11/9/2022

Location: 1
Alignment: SR 429
Beginning Station: 125+60
End Station: 141+00
Side: LT

Elevation (ft)	Area (ac)	Incremental Volume (ac-ft)	Cumulative Volume (ac-ft)	Comments
101.4	0.59		0.00	SHWT = 101.37 (permit)
		0.37		
102.0	0.59		0.37	
		0.59		
103.0	0.59		0.96	
		0.59		
104.0	0.59		1.55	
		0.59		
105.0	0.59		2.14	
		0.59		
106.0	0.59		2.73	100-year BFE (Zone AE)

Note: Permit data associated with ERP No. 49-187636001

RS&H, Inc.
FPID: 44616412201
FLOODPLAIN IMPACT VOLUME CALCULATIONS

By: AB
Date: 10/18/2022
Checked: ENS
Date: 11/9/2022

Location: 3
Alignment: SR 429
Beginning Station: 287+80
End Station: 296+00
Side: LT

Elevation (ft)	Area (ac)	Incremental Volume (ac-ft)	Cumulative Volume (ac-ft)	Comments
105.0	0.14		0.00	SHWT = 100.80 (Permitted Pond 2A-3)
		0.14		
106.0	0.14		0.14	
		0.14		
107.0	0.14		0.28	100-year BFE

Note: Permit data associated with ERP No. 49-187636001

RS&H, Inc.
FPID: 44616412201
FLOODPLAIN IMPACT VOLUME CALCULATIONS

By: AB
Date: 10/18/2022
Checked: ENS
Date: 11/9/2022

Location: 5
Alignment: SR 429
Beginning Station: 485+60
End Station: 489+20
Side: LT/RT

Elevation (ft)	Area (ac)	Incremental Volume (ac-ft)	Cumulative Volume (ac-ft)	Comments
100.0	0.06		0.00	SHWT = 100.00 (permit)
		0.06		
101.0	0.06		0.06	
		0.06		
102.0	0.06		0.11	
		0.01		
102.2	0.06		0.12	100-year BFE (permit)

Note: Permit data associated with ERP No. 49-187636001

APPENDIX E – POND SITE EVALUATION MATRIX

APPENDIX F – CORRESPONDENCE, MEETING MINUTES, AND EXCERPTS FROM PREVIOUS PERMITS AND STUDIES

Florida Department of Transportation

RON DESANTIS
GOVERNOR

Florida's Turnpike Enterprise
P.O. Box 613069, Ocoee, FL 34761
407-532-3999

KEVIN J. THIBAULT, P.E.
SECRETARY

MEETING MINUTES
FTE/FDEP PRE-APP COORDINATION MEETING
Poinciana Parkway Extension PD&E Study from CR 532 to North of I-4
FPID No.: 446581-1-22-01
Western Beltway (SR 429) Widening PD&E Study from North of I-4 to Seidel Road
FPID No.: 446164-1-22-01

Osceola and Orange Counties County, Florida
Monday, April 11, 2022, 9:00 am

I. Attendees:

FTE
Henry Pinzon (PD&E)
Rax Jung (Project Dev. Engineer/EMO)
Philip Stein (Environmental)
Annemarie Hammond (Environmental Permits Coordinator)
Erin Yao (Drainage Engineer)

FDEP
Teayann Duclos (Environmental Manager)
Jennipher Walton (Env. Specialist)
Leo Anglero (ERP/Stormwater)
Allan Popak (Environmental Specialist)
Lindsay Furr (Environmental Consultant)
Jill Farris (Environmental Consultant)

FTE/GEC
Stephanie Underwood (PM/HNTB GEC)
Fred Gaines (Permitting/Atkins GEC)
Adriana Kirwan (Drainage/HNTB GEC)
Tiffany Crosby (Senior Scientist/Atkins GEC)

RS&H Team
Douglas Reed (RS&H PM)
Erik Scott (RS&H Drainage)
Sarah Johnson (KHA/Environmental)

FDOT Central Office
Jonathan Turner (Project Delivery Coordinator)

FDOT District 5
Casey Lyon (Env. Permits Coordinator)

II. Introductions

The meeting started with FDOT District 5 discussed their projects with FDEP. After attendees were introduced, Stephanie Underwood explained the purpose of the meeting was to initiate pre-application coordination with the Florida Department of Environmental Protection for the two Project Development and Environment (PD&E) studies.

III. PowerPoint presentation

Erik Scott explained the two projects with a PowerPoint presentation and separate exhibits (attached). Discussion is summarized below.

<u>Widen Western Beltway PD&E Study:</u>

- The PD&E study was summarized, including existing conditions and the proposed widening of SR

429 from four to eight-lanes from north of I-4 to Seidel Road. Improvements are also proposed at the existing interchanges at Sinclair Road, US 192, Western Way, and Seidel Road. A new interchange is proposed at Livingston Road. It was noted that this is early in the process in the PD&E phase, and not the Design phase, so a permit application is not imminent.

- FDEP and Reedy Creek Improvement District (RCID) permitted SR 429 in 2001. FTE is coordinating with RCID.
- The existing water quality volume was calculated based on the criteria of 1-inch over the contributing basin or 2.5-inches over the impervious area. For most of the basins the 1-inch over the contributing area was the controlling factor for the required water quality. This is due in part because the existing corridor was in located within a rural corridor and offsite areas were included in the contributing basin calculation. Since 2001, some of the offsite areas have been developed with new, offsite ponds. Therefore, when adding the additional pavement along SR 429 for the eight-lane configuration, most of the basins still have sufficient water quality volume provided in the existing ponds. For any basins lacking the required water quality volume within the existing permitted ponds, the difference will be accommodated by adjusting the existing control structures or providing additional pond area.
- Basin boundaries will be revised to reflect the development adjacent to SR 429.
- The project study area is located within two impaired WBIDs, Davenport Creek for bacteria and Whittenhorse Creek for dissolved oxygen. In addition, the project study is located within the Lake Okeechobee Subwatershed BMAP. FTE believes that additional treatment is not required given FDOT BMPs include a series of treatment trains and their facilities do not directly discharge into the impaired waterbodies. FDEP stated that additional treatment considerations may not be necessary because they are moving away from the 50% additional treatment volume but will need to be discussed further during the design phase.
- Attenuation will be provided per FDEP criteria for open and closed basins, with consideration for RCID requirements.
- FDEP agreed this stormwater approach is reasonable.
- The corridor has floodplains associated with Boggy Creek and Whittenhorse Creek. There is one existing Floodplain Compensation site located north of Indian Creek Boulevard adjacent to the southbound lanes. Though encroachments are anticipated, they will be minimal. Encroachments will be mitigated by compensation sites or by using the importer/exporter method.
- FTE confirmed with FDEP that the Environmental Resource Permit (ERP) for widening of Western Beltway (SR 429) will be handled by FDEP. This includes the 404 permit.
- Wetland lines from the previous permit will be used as much as possible in areas that are not new interchanges. Direct wetland impacts are approximately 10 acres.
- Conservation easements are located within the project study area.
- Wetlands and conservation easements impacts will be avoided and minimized as much as possible. Some minimization methods considered include bridging or MSE walls.
- Impacts to most species is minimal along the existing roadway; however, there is suitable sand skink habitat to be considered especially within the new interchange area.
- Mitigation banks are located within the available service area for this project to offset any unavoidable wetland impacts.
- Coordination with USFWS for species involvement occurred in 2021.
- There were no questions, but if any questions arise, additional coordination can occur.

Poinciana Parkway Extension PD&E Study:

- The PD&E study was summarized, including existing conditions; the proposed new six-lane expressway on new alignment; and interchanges at CR 532, I-4, and Sinclair Road. The new

alignment crosses Davenport Creek on bridge structure.

- There are two alternatives, but the worst-case Alternative 1 was discussed.
- FTE clarified with FDEP that they anticipated that SFWMD would be responsible for issuing the ERP and FDEP would be responsible for reviewing and issuing the 404 permit.
- The team depicted the wetlands and conservation areas within the study area.
- Wetland lines from the previous permits will be used as much as possible in existing roadway areas; new wetland lines will be set in the new alignment area. Direct wetland impacts range from 131 acres to 141 acres for the alternatives. Approximately 130 acres of direct impacts will be minimized with bridges and MSE walls.
- Conservation easements for RCID and Reunion are present within and adjacent to the project study area.
- Wetlands and conservation easements impacts will be avoided and minimized as much as possible. Some minimization methods considered include bridging or MSE walls.
- FTE has already met with USFWS in October 2020 and again in October 2021. A scrub jay survey was completed in October 2021, however; there were no observations of scrub-jays as a result of the survey. Suitable sand skink habitat is located within the project study area and sand skink tracks were observed during pedestrian transects.
- We will coordinate with FWC for state-listed species.
- Mitigation banks are located within the available service area for this project to offset any unavoidable wetland impacts. FDEP confirmed with FTE that mitigation banks should be utilized for wetland mitigation as the 1st priority and followed by other options after this measure. Impacts to conservation easements should be a last resort. Should the release of a Conservation Easement or an impact to a Conservation Easement be necessary, FDEP has asked that FTE coordinate with FDEP early in the design development given the process is different than that of mitigation banks.
- FTE indicated that the avoidance and minimization measures mentioned previously is standard and considered adequate; FDEP indicated that FTE is on the right track

MEETING MINUTES
FTE/RCID AGENCY COORDINATION MEETING
Poinciana Parkway Extension PD&E Study from CR 532 to North of I-4
FPID No.: 446581-1-22-01
Western Beltway (SR 429) Widening PD&E Study from North of I-4 to Seidel Road
FPID No.: 446164-1-22-01

Osceola and Orange Counties County, Florida
Wednesday, May 19, 2021, 1:00 pm

I. Attendees:

Henry Pinzon (FTE PD&E)	Erin Yao (FTE/Drainage)	Rax Jung (FTE Project Dev. Eng./EMO)	Douglas Reed (RS&H PM)
Stephanie Underwood (FTE PM)	Doug Zang (FTE/Environmental)	Annemarie Hammond (FTE/Env. Permit Coordinator)	Erik Scott (RS&H Drainage)
Ramon Breton (KHA, DPM 446581)	Fred Gaines (FTE/Permitting)	Clif Tate (KHA/Engineering)	Sarah Johnson (KHA/Environmental)
Adriana Kirwan (FTE/Drainage)		Kate Kolbo (RCID Planning/Engineering)	

II. Introductions

Stephanie introduced the Florida Turnpike Enterprise (FTE) staff and explained the purpose of the meeting was to coordinate with the Reedy Creek Improvement District (RCID). RS&H team staff was introduced followed by the RCID staff. John Classe (RCID District Administrator and Sam Dewes (RCID Roadway) were not in attendance.

III. PowerPoint presentation

Doug Reed went through a PowerPoint presentation (attached), which was sent to RCID after the meeting. Discussion is summarized below.

a. Slide 7: Kate Kolbo explained that there are no set procedures if the Wildlife Management Conservation Area (WMCA) is impacted. It was set up in 1966 as a major floodway to never be impacted. Although two crossings were anticipated, including I-4. Poinciana Parkway would also be an exemption. However, there cannot be any adverse impacts to the existing flow rates. Most flows are north to south, except for Reunion which flows south to north. Major cross drains will be required along the utility "stair step" area to maintain flows.

   Sarah Johnson pointed out the two graphics were slightly different and asked which one is correct. Kate Kolbo will send the CADD file for the correct WMCA limits to Stephanie Underwood, who will distribute it to the team. Kate mentioned that they use a different datum and they will convert it to NAVD88 before sending.

   Fred Gaines asked if any easements had been transferred to other owners. Kate responded that none had been transferred.

b. Slide 15: Kate indicated that the system is well defined. The cross section is fixed, canals cannot be widened, and drainage structures cannot be modified. Therefore, the flow cannot be increased. Any additional runoff must flow elsewhere. Stephanie Underwood suggested pre-post flows should be ok. Kate responded that it may not

be, depending on the definition off pre-post, but she will send the stipulations to Stephanie. The Reedy Creek system is based on 13 cfm/sq mile, and they are already exceeding that volume. Anything over that will require a fee. Kate mentioned that I-4 Beyond the Ultimate (BtU) project is attenuating to below the pre-post volume.

Fred Gaines mentioned that Turnpike had already paid a fee for SR 429 during the original construction.

Erik Scott asked about the permit process. Kate responded that a SFWMD permit application should be sent to RCID first for review and approval before being submitted to South Florida Water Management District (SFWMD). RCID will then send SFWMD a letter explaining the negotiation points and expressing support.

Kate mentioned that RCID uses a different rainfall distribution than SFWMD with a 50 yr/72 hr event. Erik asked about the unit hydrograph, and Kate will send Stephanie the RCID drainage person's contact information who can provide the information.

Erik mentioned we anticipate staying below the 290 cfs that was used previously. Kate will pull the permit and modifications can be worked through. Kate also mentioned they would require an initial 30-day review period to provide comments or questions. The Turnpike's team will provide information for RCID to feed into the model. Kate also mentioned they will review the projects even if outside the RCID boundary as long as it is within the watershed.

Erik asked if there were any other entities that were interested in taking additional water. Kate responded that there were none.

Fred asked if RCID can provide conceptual approval since this is PD&E and we are not submitting an actual permit until a later phase. Kate responded that conceptual approval can be granted.

The bottom line was reiterated:

- Stay out of the WMCA, and
- Do not discharge more flow into RCID

IV. Action Items

a. Doug Reed will prepare meeting minutes. (done)
b. Kate Kolbo will send the CADD files for the correct WMCA limits and flow stipulations. (done)

MEETING MINUTES
FTE/RCID AGENCY COORDINATION MEETING #2
Poinciana Parkway Extension PD&E Study from CR 532 to North of I-4
FPID No.: 446581-1-22-01
Western Beltway (SR 429) Widening PD&E Study from North of I-4 to Seidel Road
FPID No.: 446164-1-22-01

Osceola and Orange Counties County, Florida
Thursday, March 3, 2022, 10:00 am

I. Attendees:

Henry Pinzon (FTE PD&E)	Todd Rimmer (Walt Disney Planning)	Rax Jung (FTE Project Dev. Eng./EMO)	Douglas Reed (RS&H PM)
Stephanie Underwood (FTE PM)	Emam Emam (FTE/Planning/Traffic)	Philip Stein (FTE/Environmental)	Erik Scott (RS&H Drainage)
Ramon Breton (KHA, DPM 446581)	Fred Gaines (FTE/Permitting)	Clif Tate (KHA/Engineering)	Matt Betancourt (RS&H Public Inv.)
Katherine Luetzow (RCID)	Sarah Johnson (KHA/Env)	Kate Kolbo (RCID Planning/Eng)	Rick Langlass (RS&H DPM/Eng.)
Sandy Morales (RCID)			

II. Introductions

Stephanie introduced the Florida Turnpike Enterprise (FTE) staff and explained the purpose of the meeting was to continue coordination with the Reedy Creek Improvement District (RCID) on the two PD&E studies. The RS&H team and RCID was also introduced.

III. PowerPoint presentation

Doug Reed went through a PowerPoint presentation. Discussion is summarized below.

<u>Poinciana Parkway Extension PD&E Study and Drainage Design:</u>
Erik Scott outlined the anticipated worst—case encroachment into Whittenhorse Creek with the proposed 8-lane typical. Kate Kolbo requested the hydraulic model FTE is using to evaluate the HGL. RS&H does not anticipate any changes to the Boggy Creek culvert. Davenport Creek will be bridged

Kate Kolbo indicated that FTE is not required to use a specific hydraulic model, but all modeling (electronic executable files) would need to be submitted for RCID review.

Todd Rimmer indicated that the CADD files would be requested from Mattamy Homes for the Celebration Island Village site plan.

Erik Scott requested the RCID model for use. Kate Kolbo agreed to send it after the meeting.

Kate Kolbo suggested the permit request should be submitted to RCID before submitting to the South Florida Water Management District (SFWMD).

The fee structure of $4.15 per acre/csm is still applicable. The $200/acre is also still

applicable for the portion of the project located within the RCID boundary if runoff drains into RCID. The original permits will be reviewed and fees will be assessed based on the improvements.

It was noted that the easements are water management first and foremost, then wildlife conservation.

Todd Rimmer asked if the two Poinciana Parkway Extension alternatives operate similarly. The response was yes, the configuration differs, but operations are similar. Todd also suggested the relocation of utilities be included in the evaluation and footprint.

Historical storage must be preserved as this area serves a large area of Osceola and Orange counties. Flood storage is critical.

Kate Kolbo will send the latest GIS files for the most up to date information on the jurisdictional and water management conservation area limits. A separate meeting can be set up to go through the information.

Widen Western Beltway PD&E Study:
Todd Rimmer indicated they are looking at 2040 traffic models for Western Way due to its connection into Lake County. Emam Emam indicated he can share the Synchro files which have been coordinated with District 5 and FDOT Central Office.

Bike and pedestrian facilities can be removed from Western Way since other means (i.e. shuttles) are being incorporated by Disney for bike and pedestrian accommodations. This will ultimately be safer due to the free flow ramp movements.

RCID is evaluating widening Western Way to six lanes. Funding is included in the 10-year plan.

It was noted that Disney was not invited to the Reunion Coordination meeting scheduled for March 10, 2022.

In general, it was agreed that Poinciana Parkway Extension Alternative 2 has reduced direct and indirect impacts to RCID resources compared to Alternative 1.

IV. Action Items

a. Doug Reed will prepare meeting minutes. (done)
b. Kate Kolbo will send the RCID model.
c. Stephanie Underwood will send the HEC-RAS and Synchro models.