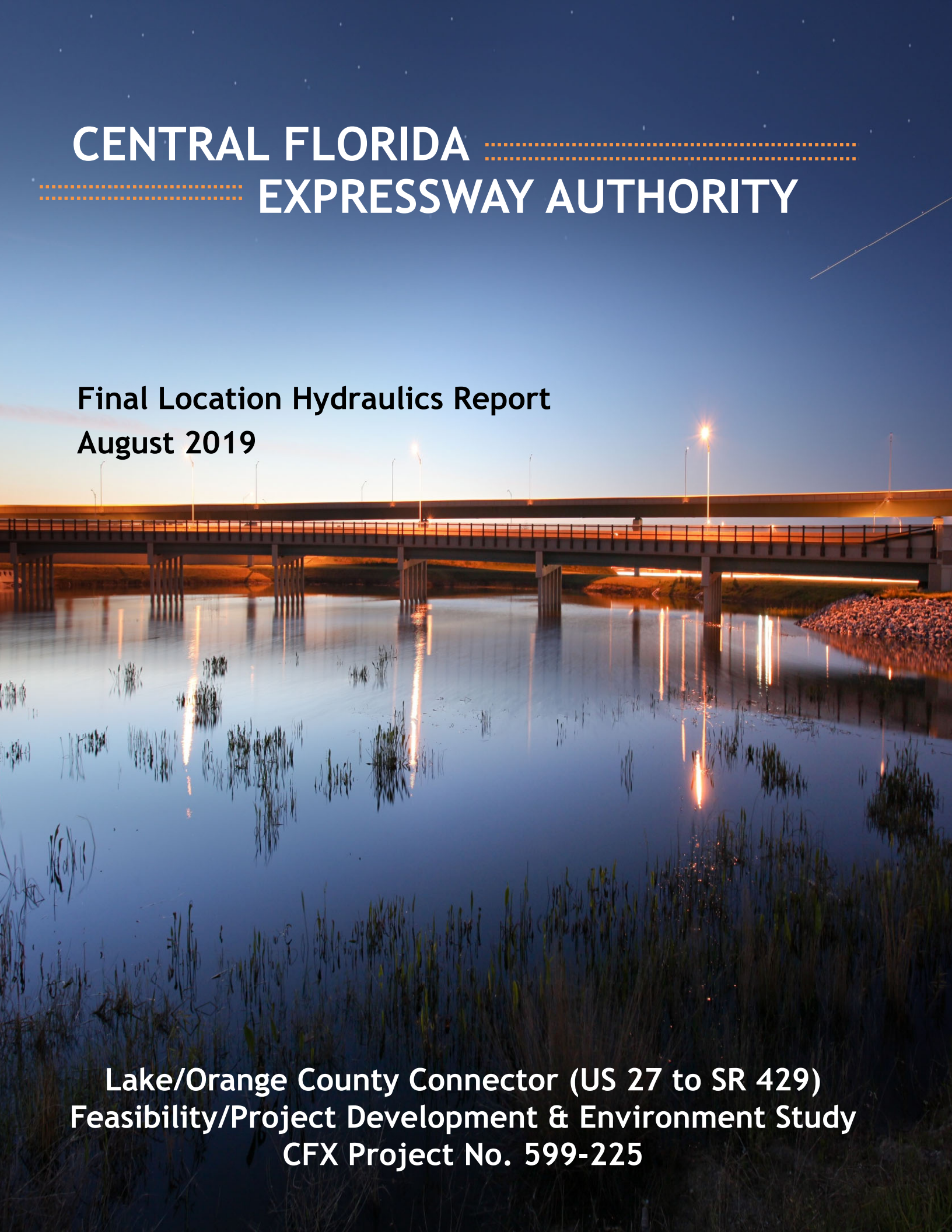


CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Final Location Hydraulics Report
August 2019

Lake/Orange County Connector (US 27 to SR 429)
Feasibility/Project Development & Environment Study
CFX Project No. 599-225

PROFESSIONAL ENGINEER CERTIFICATE

I hereby certify that I am a registered professional engineer in the State of Florida practicing engineering with Metric Engineering, Inc. and I have reviewed or approved the evaluation, findings, opinions and conclusions as reported for:

PROJECT:	**Lake/Orange County Connector PD&E Study**
FINANCIAL PROJECT NUMBER:	**CFX-Project No. 599-225**
LOCATION:	**Lake and Orange Counties**
CLIENT:	**Central Florida Expressway Authority**

This Location Hydraulics Report (LHR) provides the results of a summary of data collection efforts, and limited calculations for the proposed cross drains and floodplain evaluations prepared for the conceptual analyses for the Project Development and Environment Study for the Lake/Orange County Connector project. I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of hydrologic analysis and hydraulic engineering as applied through professional judgment and experience. This document is for planning purposes only and is not to replace any effort required for the final design.

Florida Registered Engineer:

Name: Mark Scott, P.E.

Registration Number: FL # 70948

Signature:

Date: 9/17/19

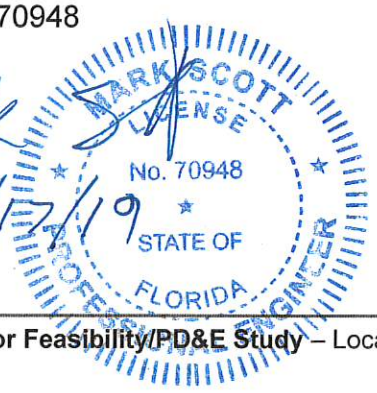


TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDICES

EXECUTIVE SUMMARY

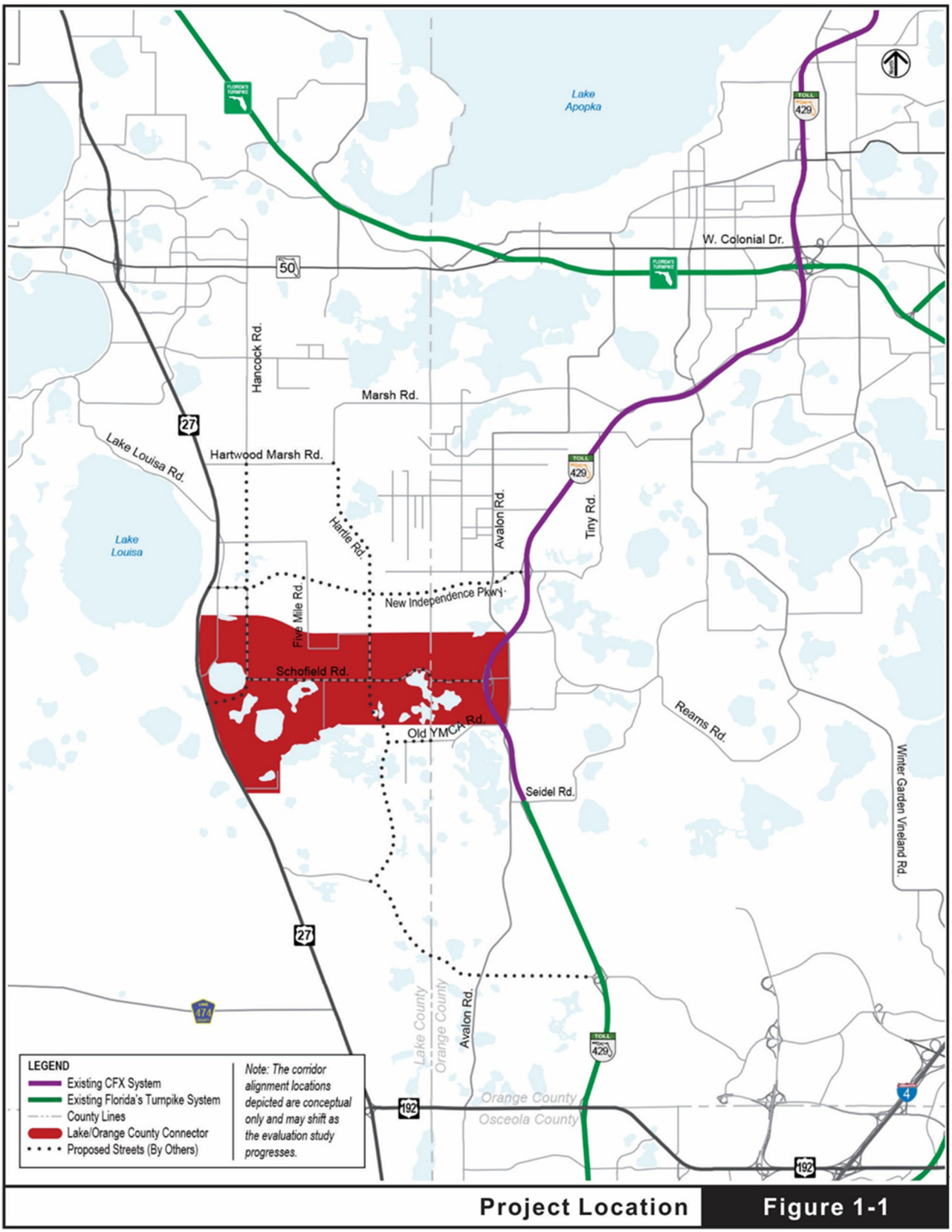
The purpose of the Lake/Orange County Connector Feasibility/Project Development and Environment (PD&E) Study is to develop a proposed improvement strategy that is technically sound, environmentally sensitive and publicly acceptable. Emphasis has been placed on the development, evaluation and documentation of detailed engineering and environmental studies including data collection, conceptual design, environmental analyses, project documentation and the preparation of a Preliminary Engineering Report. This Location Hydraulics Report (LHR) has been prepared in support of the PD&E effort.

The proposed improvements include the construction of a limited-access facility that provides a new east-west connection from US 27 in south Lake County to SR 429 in west Orange County. (see **Figure 1-1** on the following page)

The purpose of this LHR is to identify and discuss the proposed cross drains throughout the project corridor, as well as to analyze the effects of extending/shortening the existing cross drains. There are twelve new cross drains proposed for this project. The cross drains were sized (using HY-8 or ICPR 4 as described in Section 2.0) to minimize the impacts to flood elevations and floodplain limits, and to ensure that there would be no overtopping of the roadway due to the design storm event. All analysis is in accordance with PD&E manual, part 2, section 13.2.2.1 thru 13.2.2.5 (begins page 978).

Modifications to existing structures included in this project (consisting of extending 3 cross drains along US 27) will result in an insignificant change in their capacity to carry floodwater. These modifications will not cause increases in flood heights and flood limits, thus will not result in any significant adverse impacts on the natural and beneficial floodplain values or any significant change in flood risks or damage. There will be no significant change in the potential for interruption or termination of emergency service or emergency evacuation routes as the result of modifications to existing drainage structures. Throughout the corridor, along the mainline alignment, cross drains have been designed to maintain hydraulic connectivity in areas in which the proposed roadway severs the floodplain. Therefore, it has been determined that this encroachment is not

significant. In addition, the PGL has been set to maintain one full lane above the adjacent 100-year floodplain in each direction to provide continuous service during storm events.



Project Location **Figure 1-1**

1.0 INTRODUCTION

The purpose of this project is to provide a connection between south Lake County and west Orange County in order to accommodate the growth and influx of traffic within the region. The limits of this study generally extend from US 27 just south of Schofield Road and East to SR 429. The proposed Typical Sections are provided in **Appendix H**. The Lake/Orange County Connector will be a limited-access facility that allows for a more efficient way to travel between the two counties.

The Central Florida Expressway Authority (CFX) is presently evaluating the feasibility to provide a Lake/Orange County Connector, a strategic transportation investment aimed at supporting existing and future growth in south Lake and west Orange Counties. The primary objectives of this transportation improvement project are to expand regional system linkage and connectivity in Lake and Orange counties; enhance mobility between US 27 and SR 429; and accommodate the expected increase in traffic due to population and employment growth within the study area, while being consistent with accepted local and regional plans. As such, the proposed improvements include the construction of a limited-access facility that provides a new east-west connection from US 27 in south Lake County to SR 429 in west Orange County. The proposed five-mile corridor will also have intersections at Lake County's proposed CR 455 extension and a proposed connection to the extension of Valencia Parkway.

A multiphase alternative development evaluation and selection process was employed to properly assess all alternatives considered for the proposed Lake / Orange County Connector. After the comprehensive evaluation process, one alternative was selected as being the most effective option. This preferred alternative is illustrated on **Figure 2-2**.

This report discusses and analyzes proposed cross drains throughout the project corridor, as well as the extension of 3 existing cross drains due to the widening and alteration of US 27. The proposed corridor impacts wetlands and floodplains; therefore, the placement of cross drains is crucial to maintain the natural flow. A description of each proposed cross drain is located in **Section 4.1** of this report. Exhibits showing proposed cross drains are in **Appendix A**.

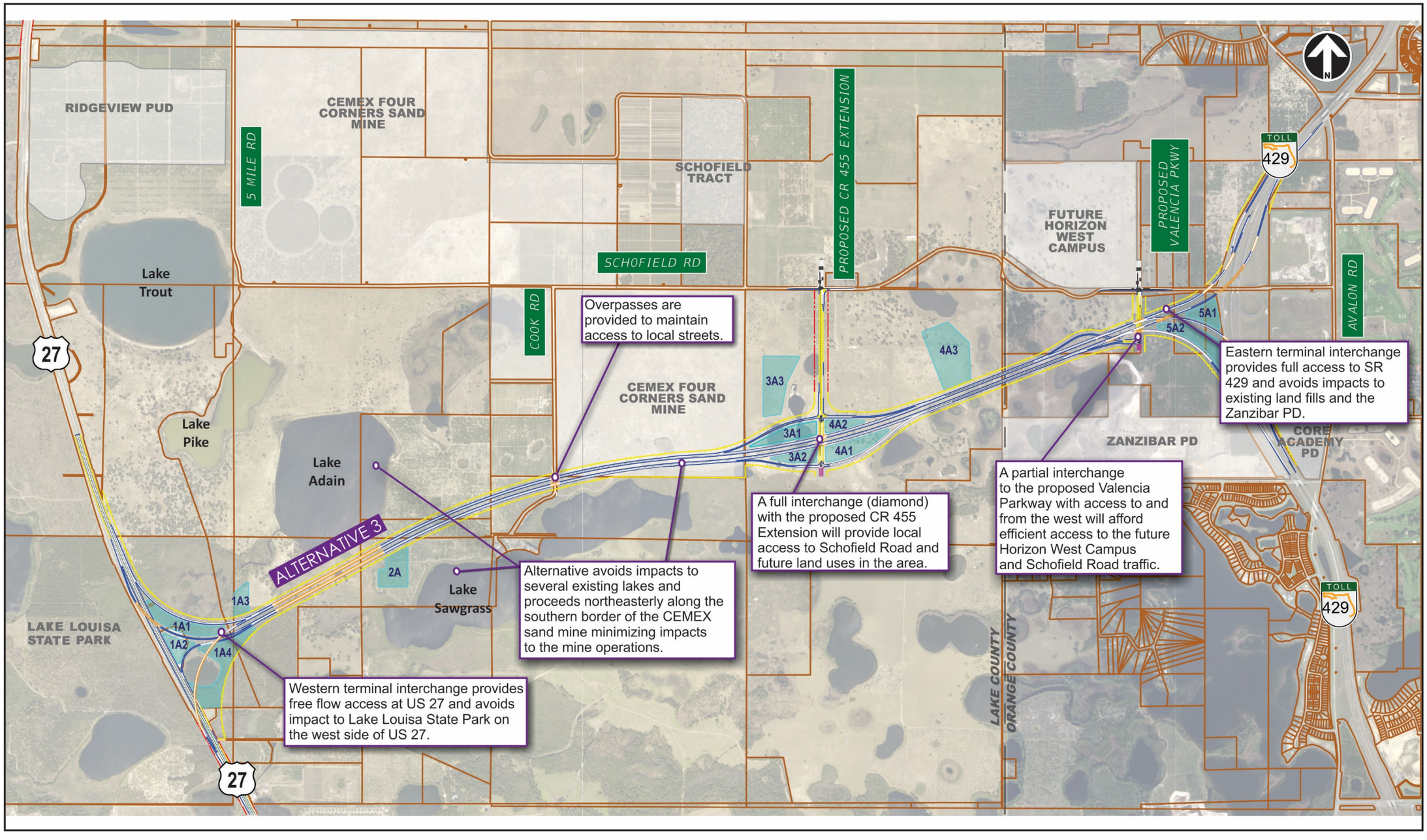


Figure 2-2 Preferred Alternative

2.0 CROSS DRAIN ANALYSIS METHODOLOGY AND DESIGN CRITERIA

Due to the proposed realignment and widening of US 27 as part of the preferred alternative, three existing cross drains (cross drains 2-4) will have to be relocated to lie under the new roadway footprint and were analyzed in order to maintain the connectivity of the flow without causing significant change in the flood elevations. These cross drains were analyzed using the existing data from St. John's River Water Management District (SJRWMD) permit #90260-2 (See **Appendix G**). The proposed project alignment is a new corridor. Cross drains 4A through 10 were located strategically along the proposed Lake/Orange County Connector to maintain flow connectivity within the impacted wetlands and floodplains. There is a total of twelve cross drains proposed along the new corridor and ramps and three existing cross drains along US 27 which will be extended as part of the proposed improvements. Cross drains 2 and 3 were modeled in HY-8 to in order to verify that the lengthening of the cross drain would not cause significant changes upstream as compared to permitted conditions. Due to the varying elevations throughout the project and the probability that runoff would flow from one basin to another, it was necessary to model the remainder of the cross drains (cross drains 4, 4A, 4B, 4C, 5, 6, 6A, 6B, 6C, 7, 8, 9, and 10) in ICPR in order to get the flow rates and stages for each of these cross drains. Drainage areas were delineated by using a one foot LiDAR contour map.

2.1 Contributing Flow Determination

ICPR Method

- For each cross drain, a basin with a stage/area node was modeled based on the general boundaries formed by the contour elevations and ponds.
- A time/stage node was set downstream for each respective cross drain starting at ground elevation, rising up to the floodplain elevation at hour 12, and going back down to ground elevation at hour 24.
- Earthen weirs were modeled for the ridges which form the links between the depressional areas.

- Pipes were modeled as the cross drain that links the upstream area with the downstream depressional area or pond.
- Time of concentration for each basin was calculated using the TR-55 Method. See Appendix I for T_c calculations.
- A 24-hour duration was used to get the rainfall intensity from the FDOT IDF curves for Zone 7 for the 10, 25, 50, and 100-year storms.
- The resulting maximum inflow to each of the cross drain links were used to calculate the 500-year and overtopping flows and stages as described in Section 4 of the FDOT Drainage Design Guide. See Appendix D.

2.2 Floodplains/Floodways Criteria

The following criteria was drawn from the 2019 FDOT Drainage Manual and SRJWMD Permit Information Manual. Floodplain information for this project is based on the Federal Emergency Management Agency's (FEMA) flood maps (**See Appendix B**).

- The proposed project may not cause a net reduction in flood storage within the 10-year floodplain.
- Structures shall cause no more than one-tenth (0.1) of a flood increase in the 100-year flood elevation 500 feet upstream and no more than one foot of a flood increase in the 100-year flood elevation directly upstream.
- Proposed construction shall not cause a reduction in flood conveyance capabilities.
- Best Management Practices (BMP's) shall be employed to minimize velocity to avoid undue erosion.
- The design of encroachments shall be consistent with standards established by FEMA.

2.3 Culvert Design Criteria

The following criteria was drawn from the 2019 FDOT Drainage Manual. The following table provides the required storm events to be analyzed for each cross drain per the

FDOT Drainage Manual and the FDOT Drainage Design Guide.

Table-1 Storm Frequency Criteria

Storm Event Frequency	Definitions
50-Year	Design Flood Event
100-Year	Base Flood Event
500-Year	Greatest Flood Event

- All cross drains, if applicable, shall be designed to have sufficient hydraulic capacity to convey the 50-year (Design Frequency) storm event. In accordance with the FDOT Drainage Manual, mainline interstate and high use road culverts should be designed for a frequency of 50 years. All culverts shall be analyzed for the base flood (100-year).
- Backwater shall not significantly change land use values unless flood rights are purchased.
- The headwater for design frequency conditions shall be kept at or below the travel lanes.
- The highest tailwater elevation, which can reasonably be expected to occur coincident with the design storm event, shall be used (typically, crown of pipe is used at the outlet).
- The minimum culvert size is 18” or its equivalent size.
- The design of all cross culverts shall comply with the guidelines set forth in the FDOT Drainage Manual, Chapter 4.

The criteria listed above was collected from the following applicable sources:

- FDOT Drainage Design Guide – Culvert Design (January 2019)
- FDOT Drainage Manual (January 2019)
- FHWA Code of Federal Regulation 23 CFR 650A
- SJRWMD Management and Storage of Surface Waters (MSSW) Permit Information Manual (October 2013)

2.4 Culvert Sizing

All proposed cross drains were sized for a 50-year storm event. The calculated 100-year backwater stage elevation from the ICPR analysis was compared with the existing 100-year flood stage. Proposed culvert sizes were initially set at 18” and used to perform an ICPR analysis. While performing the analysis, the cross drains were appropriately sized to conform with the floodplain criteria in ***Section 2.2*** of this report.

Assumptions

- The pipe length was measured based on a 36’ clear zone requirement from the edge of pavement for each cross drain, or in cases with a ditch proposed the cross drain was extended far enough so that the tie down of the ditch slope would connect to the headwall of the cross drain (approximately 60 ft from the edge of pavement).
- The change in flow line elevation from upstream to downstream was based on the contour elevations at the ends of the cross drain length.
- Manning’s “n” value of 0.012 was used.

ICPR

- A pre-development model and post-development model were developed in ICPR for each cross drain system.
- In the post-development model, the culvert size was set at 18” for the initial ICPR analysis.
- The culvert size was adjusted to maintain upstream stage elevations below the 100-year stage elevation.
- The upstream stages were compared to the pre-development stages, and cross drains were sized accordingly until the upstream stages met the criteria listed in ***Section 2.2*** and ***Section 2.3*** of this report.

3.0 EXISTING CONDITIONS

3.1 Soil Data

The National Resources Conservation Service (NRCS) Soil Survey of Orange County published by the United States Department of Agriculture (USDA) has been reviewed for the project. The soil survey map and soil types found throughout the proposed corridor are shown in the complete NRCS USDA Soil Survey located in **Appendix C**. In general, the surficial soils consist of fine sands, muck and poorly drained soil. The groundwater ranges from 0' to greater than 6' below the existing ground. Refer to **Table-2** below for the most prevalent soils within the project area.

Table-2 USDA NRCS Soil Survey Information

Soil No.	USDA Soil Name	Depth to Water Table (inches)	Hydrologic Soil Group
Lake County Classification			
4	Anclote and Myakka soils	0	A/D
8	Candler Sand, 0 to 5% slopes	>80	A
9	Candler Sand, 5 to 12% slopes	>80	A
20	Immokalee sand	6 to 18	B/D
28	Myakka-Myakka, wet, sands, 0 to 2% slopes	6 to 18	A/D
40	Placid and Myakka sands, depressional	0	A/D
45	Tavares sand, 0 to 5% slopes	42 to 72	A
Orange County Classification			
3	Basinger fine sand, frequently ponded, 0 to 1% slopes	0 to 6	A/D
4	Candler Fine Sand, 0 to 5% slopes	>80	A
5	Candler Fine Sand, 5 to 12% slopes	>80	A

3.2 Land Use

The existing land use along the proposed Lake/Orange County Connector consists mostly of pasture/range, woods, grassed area, and water bodies.

3.3 Existing Cross Drains

There are four cross drains along US 27 that are within the project limits. Three of them will be impacted due to the realignment and widening of the existing roadway. CD-1 will remain unaffected by the changes. Refer to **Table-3** for existing US 27 cross drain information. The culvert size and tailwater elevations were obtained from the existing permit #90260-2. Data from the existing permit was input into HY-8 and analyzed for the existing conditions design elevations. Refer to **Appendix G** for the existing conditions cross drain analysis that the data was pulled from.

Table-3 Existing US 27 Cross Drain General Information

Cross Drain ID	Pipe Description	Tailwater EL (ft)	Action
CD-1	2-10'x4' CBC	111.6	None/Unaffected
CD-2	4'x3' CBC	109.82	Extended 25'
CD-3	30" RCP	107.74	Extended 5'
CD-4	5'x2' CBC	105.43	Extended 15'

All existing cross drains along SR 429 will remain unaffected by the proposed changes. There is an existing ditch outfall in the corner north of Schofield Road and west of SR 429 that will be cut off from receiving runoff from the ditch due to the proposed eastbound on-ramp for the Lake/Orange County Connector. While this does not warrant an additional cross drain, it will require a connection to be provided during the design phase that includes collecting the runoff from the ditch on the north of the ramp via a ditch bottom inlet and conveying it to the downstream outfall through a closed storm sewer system. Refer to **Appendix G** for the drainage map and plan view of the existing ditch outfall from FDEP permit number ERP48-205102-002-EI, as well as a diagram showing the proposed ramp and how it will affect the ditch.

4.0 PROPOSED CONDITIONS

The project corridor will cross through floodplains, wetlands, wooded areas, and agricultural land. Cross drains were placed to allow runoff to continue to flow in its natural path and to reduce any impacts due to the proposed Lake/Orange County Connector. **Appendix A** contains exhibits showing locations and basin areas for each cross drain.

4.1 Proposed Cross Drains

Twelve cross drain locations were selected once the alignment and the most effective interchange layouts were identified for the Lake Orange Connector. The proposed cross drain locations were chosen based on the natural flow of the land from the surrounding floodplains and wetlands. The proposed Lake/Orange County Connector will have floodplain impacts along most of the corridor. These floodplain impacts will be mitigated by routing this volume to the project's proposed storm water management facilities and roadside swales. Refer to **Table-4** for calculated culvert size, flow direction, and floodplain status for each cross drain. Following the table is a description of each cross drain, including the three existing cross drains to be extended, and the results of the analysis. Refer to **Table-5** for flood data and **Table-6** for the 50-year design conditions. Refer to **Appendix D** for the rational method calculations, **Appendix F** for the ICPR analyses, and **Appendix E** for the HY-8 analyses.

Table-4 Proposed Lake/Orange County Connector Cross Drain General Information

Cross Drain ID	Pipe Description	Flow Direction	Receiving Water Body	Within Floodplain (Yes/No)
CD-4A	18” RCP	South	Unnamed wetland system	Yes (Zone A)
CD-4B	18” RCP	North	Pond 1A1	Yes (Zone A)
CD-4C	24” RCP	East	Unnamed wetland system	Yes (Zone A)
CD-5	36” RCP	South	Unnamed wetland system	Yes (Zone AE)
CD-6	36” RCP	West	Unnamed surface water	Yes (Zone A)
CD-6A	48” RCP	South	Pond 3A1	Yes (Zone AE)
CD-6B	48” RCP	South	Pond 3A2	Yes (Zone AE)
CD-6C	48” RCP	South	Unnamed wetland system	Yes (Zone AE)
CD-7	18” RCP	West	Unnamed surface water	Yes (Zone A)
CD-8	18” RCP	South	Unnamed wetland system	Yes (Zone AE)
CD-9	18” RCP	South	Unnamed wetland system flowing to Lake Needham	Yes (Zone AE)
CD-10	18” RCP	West	Unnamed wetland system flowing to Lake Needham	No

Table-5 Flood Data Summary Table

Struct. Num.	Proposed Size		Design Flood 50-Yr Storm Event			Base Flood 100-Yr Storm Event			*Overtopping Flood			500-Yr Flood	
	Size	Length (ft)	Discharge (cfs)	Exist. Stage (ft)	Prop. Stage (ft)	Discharge (cfs)	Exist. Stage (ft)	Prop. Stage (ft)	Discharge (cfs)	Stage (ft)	Storm Freq.	Discharge (cfs)	Stage (ft)
CD-2	4'x3x CBC	190	90.00	112.74	112.83	100.80	113.35	113.48	129.28	115.29	200 Yr		
CD-3	30" RCP	195	36.80	111.36	111.44	41.20	112.10	112.19	64.80	117.00	404 Yr		
CD-4	5'x2' CBC	192	13.83	106.10	106.97	17.02	106.28	107.24				34.49	108.71
CD-4A	18" RCP	100	4.10	**	106.63	5.16	**	106.82				13.70	108.37
CD-4B	18" RCP	150	1.02	**	106.63	1.14	**	106.82				1.73	107.77
CD-4C	24" RCP	95	7.91	**	106.95	10.12	**	107.20				27.42	108.78
CD-5	36" RCP	300	19.90	106.29	107.06	23.25	106.34	107.27				39.40	108.29
CD-6	36" RCP	160	29.29	105.10	105.64	33.15	105.45	105.88				52.13	107.04
CD-6A	48" RCP	150	10.68	105.10	105.21	13.15	105.45	105.55				24.68	106.57
CD-6B	48" RCP	350	11.31	**	106.34	13.60	**	106.47				23.89	107.12
CD-6C	48" RCP	130	33.82	**	106.40	38.16	**	106.40				53.49	106.40
CD-7	18" RCP	160	8.02	108.34	110.82	8.98	109.28	111.03				13.24	111.87
CD-8	18" RCP	325	6.69	104.17	103.89	7.36	104.31	104.12				9.51	104.83
CD-9	18" RCP	340	5.37	104.17	105.03	5.40	104.31	105.04				6.27	105.91
CD-10	18" RCP	165	4.19	110.06	115.65	4.74	110.07	115.74				6.99	116.12

The flows and tailwater elevations used in this report are based on preliminary information. The culvert design shall be reviewed for flows and tailwater elevations during the final design.

*Overtopping frequency calculated based on log(flow) vs log(rainfall frequency) graphs. See **Appendix D** for overtopping frequency estimate calculations.

**Existing stages not applicable. Proposed upstream conditions are in a pond.

Table-6 Summary of Proposed Lake/Orange County Connector Cross Drains (HY-8 Analysis)

Cross Drain	HY-8 Cross Drain Size	50-Year Flow (cfs)	Tailwater EL (ft)	Proposed Roadway El (ft)	Backwater Stage Based on HY-8 (ft)
CD-2	4'x3x CBC	90.00	109.82	115.29	112.83
CD-3	30" RCP	36.80	107.74	117.00	111.44

* The flows and tailwater elevations used in this report are based on preliminary information. The culvert design will need to be reviewed for flows and tailwater elevations during the final design.

CD-2

CD-2 is an existing cross drain located along US 27. It connects the existing floodplain with Keene Lake on the west side of the road. The tailwater, flow rates, pipe information, and roadway information all come from the existing permit #90260-2 cross drain analysis. See **Appendix G** for excerpts from the permit. A pre-development and post-development analysis of this cross drain were performed in HY-8 to compare the 50-year design stage and the 100-year floodplain stage. The existing 165' cross drain will be extended to 190' in the post-development. The 50-year design stage increased by 0.09 ft due to the extension, and the 100-year stage also increased by 0.13 ft.

CD-3

CD-3 is an existing cross drain located along US 27. It connects the depression on the west side of the road with the wetland and floodplain on the east side that leads to Square Lake. The tailwater, flow rates, pipe information, and roadway information all come from the existing permit #90260-2 cross drain analysis. See **Appendix G** for excerpts from the permit. A pre-development and post-development analysis of this cross drain were performed in HY-8 to compare the 50-year design stage and the 100-year floodplain stage. The existing 190' cross drain will be extended on the East and shortened on the West to become 195' in the post-development. The 50-year design stage increased by 0.08 ft due to the extension, and the 100-year stage also increased by 0.09 ft.

CD-4

CD-4 is an existing cross drain located along US 27. It provides connectivity for the floodplains and wetlands on the east and west side of US 27. A pre-development and post-development analysis of this cross drain were modeled in ICPR to compare the 50-year design stage and the 100-year floodplain stage. The tailwater, flow rates, pipe information, and roadway information all come from the existing permit #90260-2 cross drain analysis for the pre-development analysis. Note that the permitted approach (using the velocity method) neglects basin storage, basing flows on a velocity through the cross-drain. For this reason, there is a reported "reduction" in post-development flows from permitted conditions. The permitted flows closely match the flows generated into the

basin through the pre-development model, calibrated for the 25, 50, and 100-year storms. See **Appendix G** for excerpts from the permit. The existing 177' cross drain will be extended on the East and shortened on the West to become 192' in the post-development. CD-4 will outfall into proposed Pond 1A1 that is used for floodplain compensation, which then discharges through CD-4C to the downstream floodplain. Since CD-4 is part of a series of depressional areas and ponds connected by cross drains in the post-development condition, CD-4 was modeled in ICPR (along with CD-4A, CD-4B, and CD-4C) to get accurate flow rates. Since CD-4 is an existing cross drain, a pre-development ICPR model of CD-4 was created and calibrated to existing conditions to ensure that the basin used to design CD-4 in the post-development conditions was reflective of permitted conditions. Then, this model was used for post-development conditions by including the proposed ponds and additional cross drains. The 10, 25, 50, and 100-year flow rates of 6.62, 9.89, 13.83, and 17.02 cfs, respectively, were calculated. See **Appendix F** for the ICPR analyses and ***Section 2.1*** for an explanation on this methodology. The calculated backwater stage of 106.97 ft for the 50-year design flow from the analysis is less than the proposed roadway elevation of 110.37 ft.

CD-4A

CD-4A will provide connectivity between the existing lake that will be in the infield and the proposed floodplain compensation Pond 1A2. This will allow the lake to continue to be a part of the floodplain without any disruption. CD-4A was modeled in ICPR along with CD-4, CD-4B, and CD-4C to find the 10, 25, 50, and 100-year flow rates of 1.46, 2.68, 4.10, and 5.16 cfs, respectively. See **Appendix F** for the ICPR analysis and ***Section 2.1*** for an explanation on this methodology. The calculated backwater stage of 106.63 ft for the 50-year design flow from the analysis is less than the proposed roadway elevation of 119.50 ft. The proposed cross drain size from the analysis is an 18" pipe.

CD-4B

CD-4B will provide connectivity between the Pond 1A2 and Pond 1A1. This will allow these floodplain compensation ponds to continue to be a part of the floodplain without any disruption. CD-4B was modeled in ICPR along with CD-4, CD-4A, and CD-4C to find

the 10, 25, 50, and 100-year flow rates of 0.66, 0.86, 10.2, and 1.14 cfs, respectively. See **Appendix F** for the ICPR analysis and ***Section 2.1*** for an explanation on this methodology. The calculated backwater stage of 106.63 ft for the 50-year design flow from the analysis is less than the proposed roadway elevation of 138.70 ft. The proposed cross drain size from the analysis is an 18" pipe.

CD-4C

CD-4C will provide connectivity between Pond 1A1 and the downstream floodplain. This will allow the pond to continue to be a part of the floodplain without any disruption. CD-4C was modeled in ICPR along with CD-4, CD-4A, and CD-4B to find the 10, 25, 50, and 100-year flow rates of 2.76, 5.24, 7.91, and 10.12 cfs, respectively. See **Appendix F** for the ICPR analysis and ***Section 2.1*** for an explanation on this methodology. To maintain consistency with the pre-development model, The tailwater elevation from existing SJRWMD permit #90260-2 for CD-4 was used as the tailwater for this model, since it is now the downstream cross drain in the series. The calculated backwater stage of 106.95 ft for the 50-year design flow from the analysis is less than the proposed roadway elevation of 125.95 ft. The proposed cross drain size from the analysis is a 24" pipe.

CD-5

CD-5 is a proposed cross drain that will cross the Lake/Orange County Connector mainline. CD-5 is proposed to maintain connectivity between a 60.9 acre depressional area located just north of the mainline, and the remainder of the floodplain to the south. This basin area contains within it 14.04 acres (Basin G1) which drains into a small depression first, before overtopping and flowing into the second depression (Basin G2) and rising until it flows into CD-5. Because of this, CD-5 was modeled in ICPR to find the 10, 25, 50, and 100-year flow rates of 11.53, 15.67, 19.90, and 23.25 cfs, respectively. See **Appendix F** for the ICPR analysis and ***Section 2.1*** for an explanation on this methodology. The downstream tailwater begins at ground elevation, rises to the floodplain elevation (106.4') at hour 12, and goes back down to ground elevation at hour 24. The calculated backwater stage of 107.06 ft for the 50-year design flow from the analysis is less than the proposed roadway elevation of 116.63 ft. The proposed cross drain size

from the ICPR analysis is a 36” pipe.

CD-6

CD-6 will be located on the proposed CR 455. It will convey runoff from a basin area of 42.4 acres on the east side of CR 455 to a depression located in a floodplain on the west. This upstream basin area contains within it 8.1 acres (Basin E) which drains into a small depression first, before overtopping and flowing across a steep downhill slope into CD-6 (Basin F) and out to the floodplain on the west of CR 455. Since this floodplain is being bisected by the proposed Lake/Orange County Connector and ramps, three more cross drains were designed in succession to allow the runoff to continue flowing to the south. Because of this, CD-6 was modeled in ICPR along with CD-6A, CD-6B, CD-6C, and CD-7 to find the 10, 25, 50, and 100-year flow rates of 18.18, 24.15, 29.29, and 33.15 cfs, respectively. See **Appendix F** for the ICPR analysis and ***Section 2.1*** for an explanation on this methodology. The calculated backwater stage of 105.64 ft for the 50-year design flow from the analysis is less than the proposed roadway elevation of 111.48 ft. The proposed cross drain size from the analysis is a 36” pipe.

CD-6A

CD-6A will be located downstream of CD-6. It will convey runoff from a basin area of 27.1 acres on the north side of Ramp 6 and west side of CR 455 to a proposed pond (Pond 3A1) in the infield of the Lake/Orange County Connector. CD-6A was modeled in ICPR along with CD-6, CD-6B, CD-6C, and CD-7 to find the 10, 25, 50, and 100-year flow rates of 5.57, 8.06, 10.68, and 13.15 cfs, respectively. See **Appendix F** for the ICPR analysis and ***Section 2.1*** for an explanation on this methodology. The calculated backwater stage of 105.64 ft for the 50-year design flow from the ICPR analysis is less than the proposed pond berm of 109.88 ft. The proposed cross drain size from the analysis is a 48” pipe.

CD-6B

CD-6B will be located downstream of CD-6A. It will connect proposed Pond 3A1 in the northern infield of the Lake/Orange County Connector to proposed Pond 3A2 in the southern infield. Pond 3A1 is also connected to floodplain compensation Pond 4C2 by an

equalizer pipe. The basin for Pond 3A1 was delineated to only include the portion of Basin 4 (See Basin Exhibits in the Pond Siting Report) that could reasonably be expected to be conveyed to Pond 3A1 by the proposed ditches and storm sewer systems. This includes 50 acres of Basin 4. A calculation was done in the Pond Siting Report to confirm that the runoff draining to Pond 3A1 would be more than enough to provide the required treatment and attenuation for the entire basin. Pond 3A1 is designed to hold all required treatment and attenuation volume below the elevation of 105'. Therefore, CD-6B and the equalizer pipe were placed at elevation 105 so that any additional runoff from Pond 3A1 and Pond 4C2 would overflow into Pond 3A2 to the south, allowing for continuity of the floodplain flow. CD-6B was modeled in ICPR along with CD-6, CD-6A, CD-6C, and CD-7 to find the 10, 25, 50, and 100-year flow rates of 6.34, 8.81, 11.31, and 13.60 cfs, respectively. See **Appendix F** for the ICPR analysis and ***Section 2.1*** for an explanation on this methodology. The calculated backwater stage of 106.34 ft for the 50-year design flow from the analysis is less than the proposed roadway elevation of 137.27 ft. The proposed cross drain size from the analysis is a 48" pipe.

CD-6C

CD-6C will be located downstream of CD-6B. It will connect proposed Pond 3A2 in the southern infield of the Lake/Orange County Connector to the floodplain to the south. Pond 3A2 is designed as a floodplain compensation pond. Therefore, CD-6C was placed at the bottom of the pond so that any runoff would flow directly into the floodplain to the south. CD-6C was modeled in ICPR along with CD-6, CD-6A, CD-6B, and CD-7 to find the 10, 25, 50, and 100-year flow rates of 23.94, 28.86, 29.29, and 38.16 cfs, respectively. See **Appendix F** for the ICPR analysis and ***Section 2.1*** for an explanation on this methodology. The downstream tailwater begins at ground elevation, rises to the floodplain elevation (106.4') at hour 12, and goes back down to ground elevation at hour 24.The calculated backwater stage of 106.40 ft for the 50-year design flow from the analysis is less than the proposed pond berm elevation of 107.50 ft. The proposed cross drain size from the analysis is a 48" pipe.

CD-7

CD-7 will convey runoff from 12.4 acres of land that flows from the east side of the proposed CR 455 to a depression on the west side. A time of concentration of 21.7 minutes was calculated for this basin area using the TR-55 method. CD-7 was modeled in ICPR along with CD-6, CD-6A, CD-6B, and CD-6C to get the 10, 25, 50, and 100-year flow rates of 5.35, 6.70, 8.02, and 8.98 cfs, respectively. The calculated backwater stage of 110.82 ft for the 50-year design flow from the ICPR analysis is less than the proposed roadway elevation of 112.76 ft. The proposed cross drain size from the analysis is an 18" pipe.

CD-8

CD-8 will be located along the mainline of the Lake/Orange County Connector. The Lake/Orange County Connector transects a large Floodplain Zone AE with an elevation of 106 ft. CD-8, along with CD-9, will provide connectivity between the northern and southern limits of this floodplain that Lake/Orange County Connector will be cutting through. The floodplain in which these cross drains are located within contains many different depressions and ridges (**Appendix A**). For this reason, the floodplain was divided into three major areas (Basin A, B, and C) that were modeled in ICPR to obtain the design flow rates draining into each of the cross drain locations. See **Appendix F** for the ICPR analysis and ***Section 2.1*** for an explanation on this methodology. For CD-8, the 10, 25, 50, and 100-year flow rates are 5.15, 5.79, 6.69, and 7.36 cfs, respectively. The downstream tailwater begins at ground elevation, rises to the floodplain elevation (106.0') at hour 12, and goes back down to ground elevation at hour 24. The calculated backwater stage of 103.89 ft for the 50-year design flow from the analysis is less than the proposed roadway elevation of 109.22 ft. The calculated backwater stage of 104.12 ft for the 100-year flow from the analysis is less than the floodplain elevation of 106 ft. The proposed cross drain size from the ICPR analysis is an 18" pipe.

CD-9

CD-9 will be located along the mainline of the Lake/Orange County Connector. The Lake/Orange County Connector transects a large Floodplain Zone AE with an elevation

of 106 ft. CD-9, along with CD-8, will provide connectivity between the northern and southern limits of this floodplain that Lake/Orange County Connector will be cutting through. The floodplain in which these cross drains are located within contains many different depressions and ridges (**Appendix A**). For this reason, the floodplain was divided into three major areas (Basin A, B, and C) that were modeled in ICPR to obtain the design flow rates draining into each of the cross drain locations. See **Appendix F** for the ICPR analysis and ***Section 2.1*** for an explanation on this methodology. For CD-9, the 10, 25, 50, and 100-year flow rates are 4.53, 5.03, 5.37, and 5.40 cfs, respectively. The downstream tailwater began at ground elevation, rose to the floodplain elevation (106.0') at hour 12, and went back down to ground elevation at hour 24. The calculated backwater stage of 105.03 ft for the 50-year design flow from the analysis is less than the proposed roadway elevation of 124.94 ft. The calculated backwater stage of 105.04 ft for the 100-year flow from the analysis is less than the floodplain elevation of 106 ft. The proposed cross drain size from the ICPR analysis is an 18" pipe.

CD-10

CD-10 will convey runoff from the land that flows from the east side of the proposed Valencia Road to the existing depression on the west side. The basin area is approximately 6.1 acres. A time of concentration of 37.4 minutes was calculated for this basin area using the TR-55 method. CD-10 was modeled in ICPR along with CD-8 and CD-9, since the downstream depression for CD-10 discharges into the basin for CD-8. The flow rate for the 10, 25, 50, and 100-year storm was 2.81, 3.50, 4.19, and 4.74 cfs, respectively. The calculated backwater stage of 115.65 ft for the 50-year design flow from the analysis is less than the proposed roadway elevation of 116.91 ft. The proposed cross drain size from the ICPR analysis is an 18" pipe.

Within Project Limits

As a result of geotechnical exploration, it was determined that it is feasible to remove the proposed bridge traversing the area between Lake Adain and Sawgrass Lake. This area is part of a FEMA floodplain (Zone AE, Elevation 106.4 feet). A proposed cross drain will be necessary at this location in order to provide connectivity between the

upstream and downstream portions of the existing floodplain. The cross drain will be reviewed during the design phase of the project.

4.2 Floodplain Impacts

The project will impact the 100-year floodplain in three different ways:

1) Longitudinal roadway impacts resulting from filling the floodplain areas.
2) Impact due to proposed pond locations in floodplain.
3) Impact due to proposed cross drains in floodplain.

The longitudinal impact due to the recommended Lake/Orange County Connector alignment cannot be avoided. During the final design phase of the project, every effort should be taken to minimize floodplain impacts. During the design phase, floodplain impacts should be mitigated by routing to proposed stormwater management facilities and roadside swales.

The FEMA's Flood Insurance Rate Map (FIRM) shows that portions of the project lie within the 100-year floodplain areas Zone AE (100-year Base flood elevations are provided) and Zone A (100-year base flood elevations are not provided, areas with 1% change of flooding). FEMA Map No. 12069C0675E and 12095C0375F provide flood information for the project. Floodplain elevations within the corridor range from elevation 106 to 110.4. Floodplain impact will occur throughout the project corridor. Refer to **Appendix B** for a FEMA Flood Insurance Rate Map.

It is determined that the floodplain impacts will all be minimized by including floodplain compensation storage in the design of the proposed ponds. Please refer to **Table 6** in the Pond Siting Report (under separate cover) for a summary of floodplain impacts and compensation. In addition, runoff within the corridor will be collected and conveyed to stormwater management facilities; therefore, reducing overall impacts to the remaining floodplain. Floodplain impacts due to the proposed corridor were calculated and documented in the Pond Siting Report.

4.3 Project Classification

The floodplain is in a medium density, semi-urbanized area and the encroachments are classified as “minimal”. Minimal encroachment of a floodplain occurs when there is floodplain involvement, but the impacts on human life, transportation facilities, and natural and beneficial floodplain values are not significant and can be resolved with minimal efforts. Normally, these minimal efforts to address the impacts will consist of applying the FDOT drainage design standards and following the SJRWMD and SFWMD procedures to achieve results that will not increase or significantly change the flood elevation and the floodplain limits.

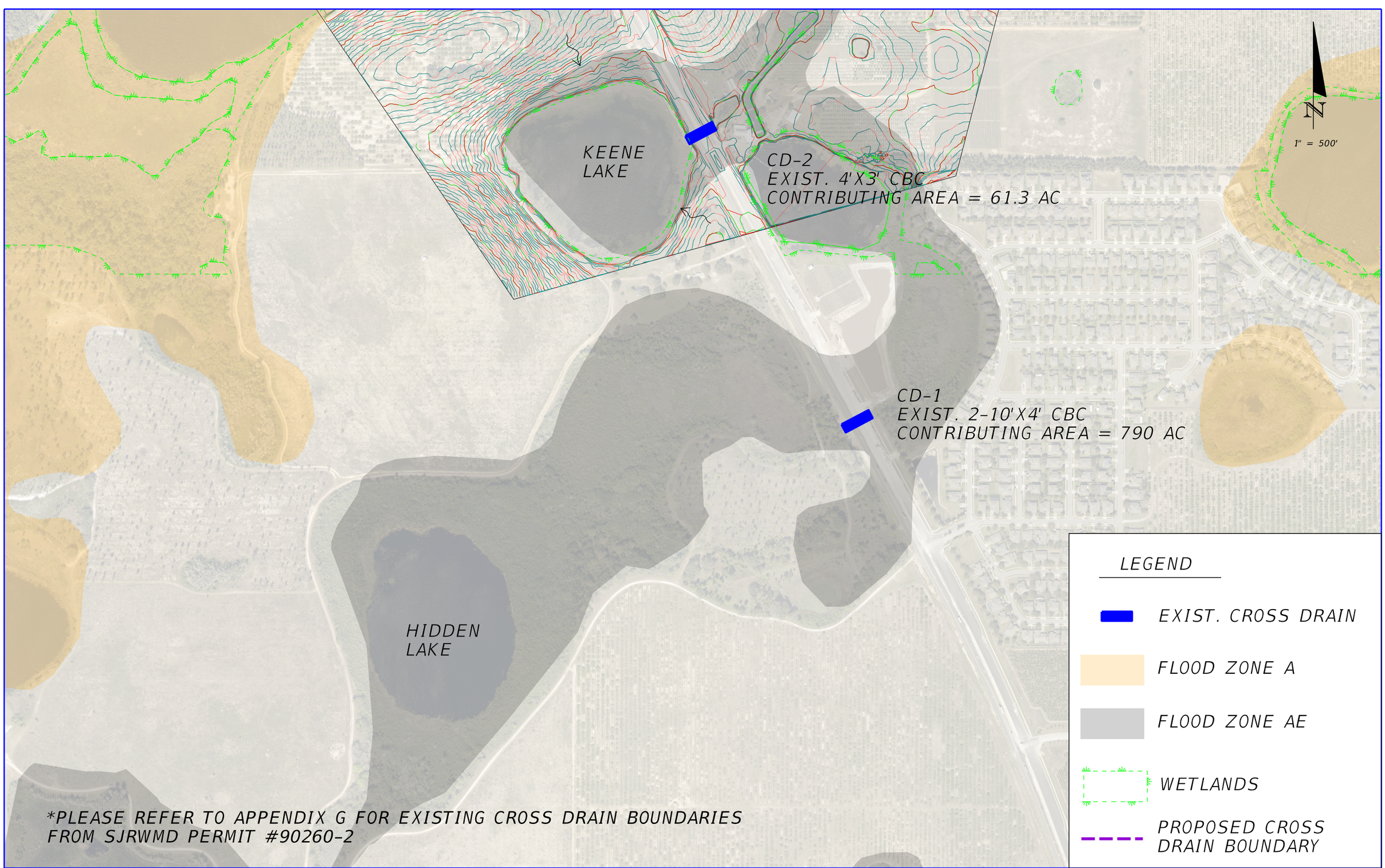
4.4 Flooding History and Maintenance Concern

Based on Environmental Look Around (ELA) meetings with the water management districts and the counties, there are no major flooding concerns within the region. Due to the project being located in a mostly rural area surrounded by floodplains and wetlands, any flooding within the area does not create any major risks. There was not any flooding history along the existing US 27 or SR 429 that was mentioned.

5.0 CONCLUSION

The purpose of this report was to provide detail regarding the design and analysis of cross drain locations required along the proposed Lake/Orange County Connector corridor to reduce impacts to floodplains and wetlands. The proposed alignment will cross through wetlands, agricultural land, and wooded areas. The proposed cross drain locations were chosen based on maintaining the natural flow of the land from the surrounding floodplains and wetlands. Twelve cross drains were selected and analyzed for this project, and three existing cross drains were analyzed for extension. The flow rates for cross drains 2, 3, and 4 (pre-development) were obtained from the existing permit #90260-2. Cross drains 4, 4A, 4B, 4C, 5, 6, 6A, 6B, 6C, 7, 8, 9, and 10 were modeled in ICPR to determine the design flow rates. Each cross drain was designed for a 50-year storm event, and the 100-year elevation was also analyzed in order to compare the 100-year backwater elevation with the 100-year existing flood elevation. Proposed culverts were initially set at a size of 18”, and were then modified to avoid overtopping the 50-year roadway stage elevation, and to avoid significant impacts to the 100-year floodplain elevations. The floodplains will be impacted due to longitudinal roadway construction and proposed pond locations. By following FDOT design standards and water management procedures, the proposed cross drains will have minimal impacts on the existing floodplains and wetlands. The purpose is to achieve results which do not increase or significantly change existing flood elevations or floodplain limits. The proposed cross drains located within floodplains will have minor volumetric impacts, and insignificant impact to flood stage and flood limits. The final design team should verify the proposed culvert sizes and their locations, based on the final design of the roadway geometry and profile.

Appendix A – Cross Drain Exhibits



*PLEASE REFER TO APPENDIX G FOR EXISTING CROSS DRAIN BOUNDARIES
FROM SJRWMD PERMIT #90260-2

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

CROSS DRAIN
PRE-DEVELOPMENT EXHIBIT

SHEET NO.
A-1

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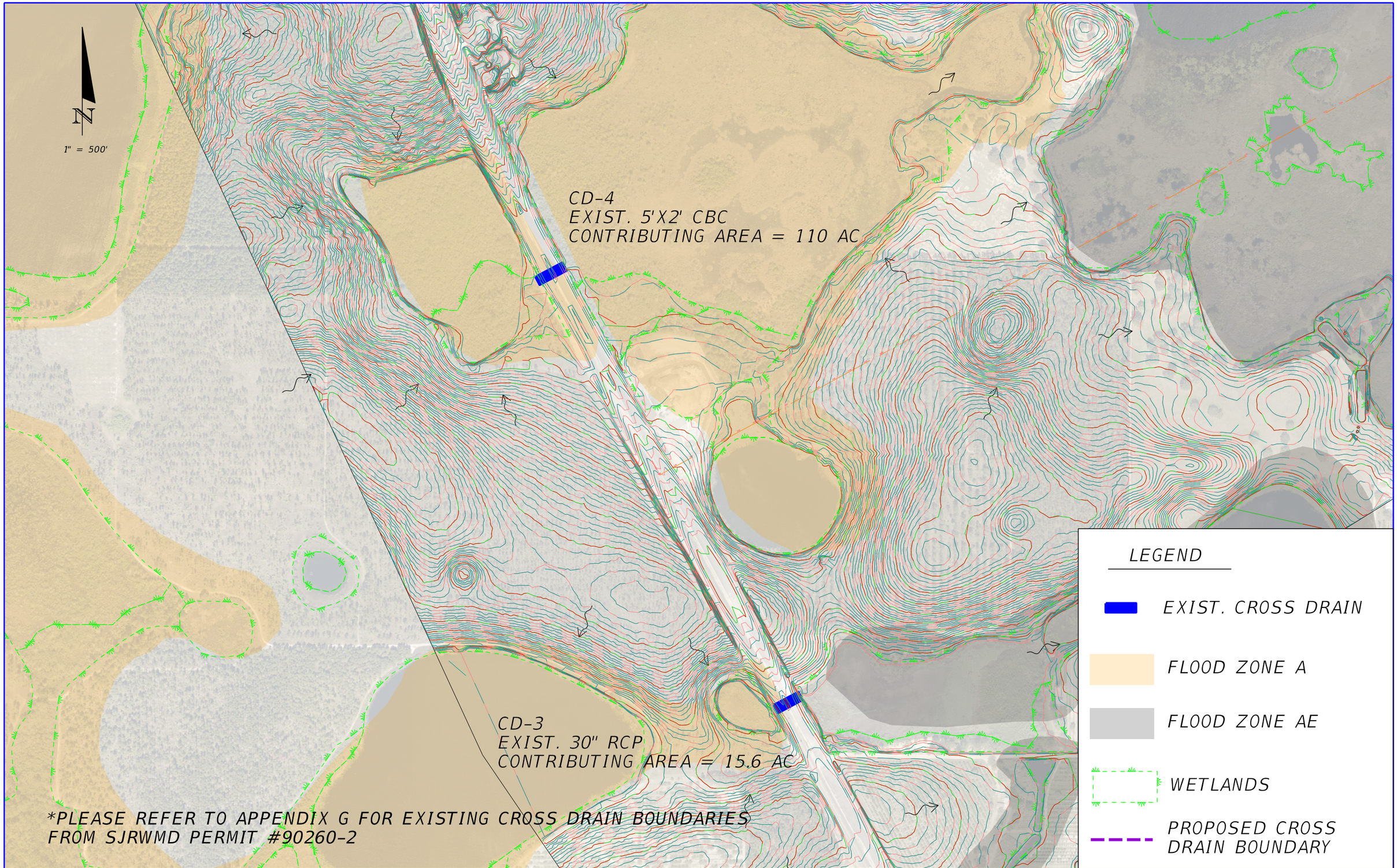

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

CROSS DRAIN PRE-DEVELOPMENT EXHIBIT

SHEET NO. A-2

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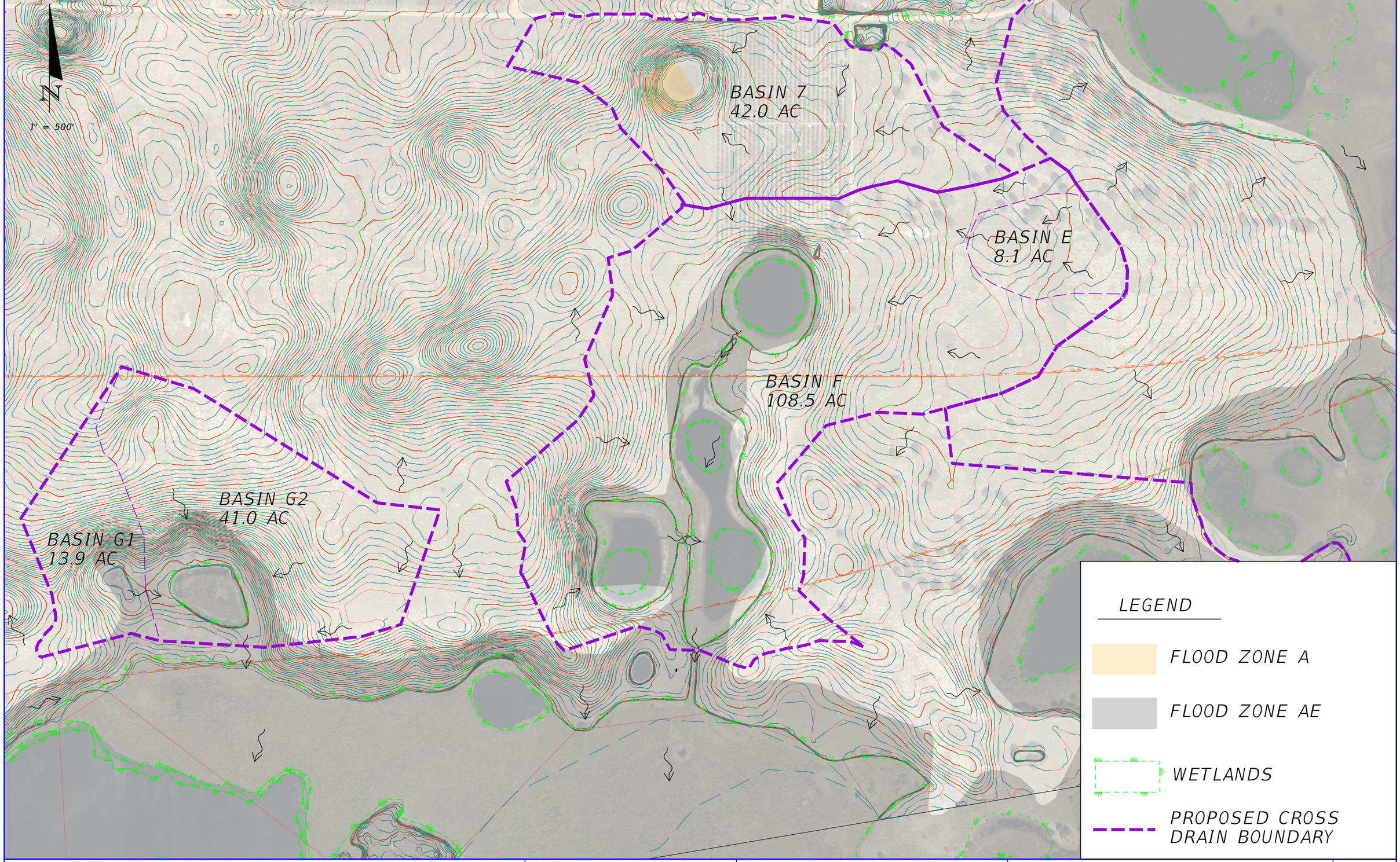

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

CROSS DRAIN PRE-DEVELOPMENT EXHIBIT

SHEET NO.
A-3

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N

1" = 500'

BASIN C
20.6 AC

BASIN E
8.1 AC

BASIN A
398.7 AC

LAKE
NEEDHAM

LEGEND

FLOOD ZONE A

FLOOD ZONE AE

WETLANDS

PROPOSED CROSS
DRAIN BOUNDARY

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

CROSS DRAIN
PRE-DEVELOPMENT EXHIBIT

SHEET NO.
A-4

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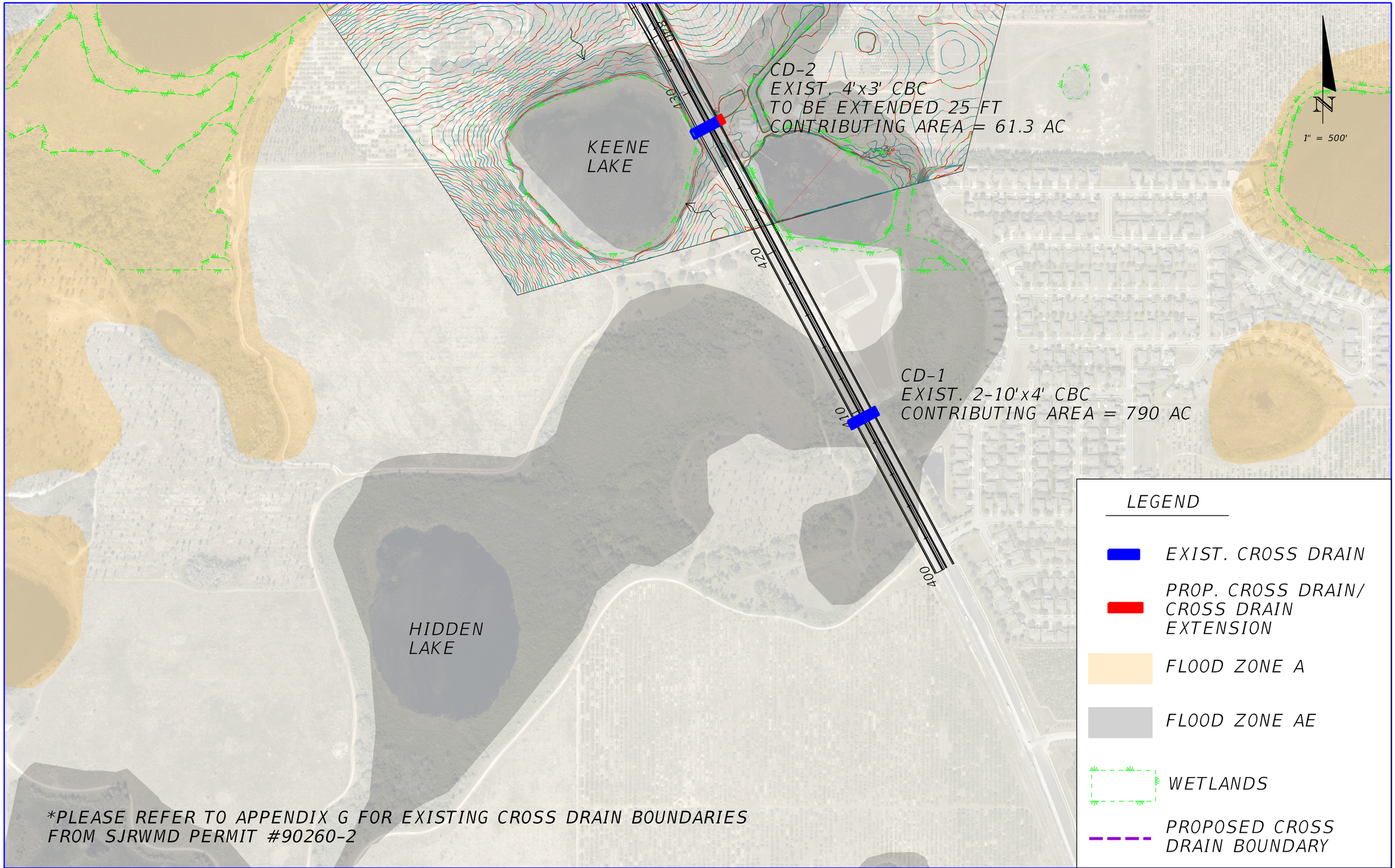

*PLEASE REFER TO APPENDIX G FOR EXISTING CROSS DRAIN BOUNDARIES FROM SJRWMD PERMIT #90260-2

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

CROSS DRAIN EXHIBIT

SHEET NO.
A-5

N

1" = 500'

CD-4
EXIST. 5'x2' CBC
TO BE EXTENDED 80 FT (RT)
AND SHORTENED 65 FT (LT)
CONTRIBUTING AREA = 110 AC

CD-4C
PROP. 24" RCP

POND 1A1
13.4 AC

CD-4B
PROP. 18" RCP

POND 1A2
7.0 AC

CD-4A
PROP. 18" RCP

LAKE
9.7 AC

CD-3
EXIST. 30" RCP
TO BE EXTENDED 40 FT (RT)
AND SHORTENED 35 FT (LT)
CONTRIBUTING AREA = 15.6 AC

*PLEASE REFER TO APPENDIX G FOR EXISTING CROSS DRAIN BOUNDARIES FROM SJRWMD PERMIT #90260-2

LEGEND

- EXIST. CROSS DRAIN
- PROP. CROSS DRAIN/ CROSS DRAIN EXTENSION
- FLOOD ZONE A
- FLOOD ZONE AE
- WETLANDS
- PROPOSED CROSS DRAIN BOUNDARY

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

CROSS DRAIN EXHIBIT

SHEET NO. A-6

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N

1" = 500'

CD-7
PROP. 18" RCP

CD-7 BASIN
12.4 AC

BASIN E
8.1 AC

BASIN A
198.1 AC

CD-6
PROP. 36" RCP

POND
3A3
14.7 AC

DOWN-
STREAM 6
27.1 AC

BASIN F
34.3 AC

CD-6A
PROP. 48" RCP

BASIN G2
46.9 AC

POND 3A1
50.0 AC

CD-6B
PROP. 48" RCP

CD-5
PROP. 36" RCP

BASIN G1
14.0 AC

POND 3A2
26.4 AC

CD-6C
PROP. 48" RCP

LEGEND

- EQUALIZER PIPE
- PROP. CROSS DRAIN/ CROSS DRAIN EXTENSION
- FLOOD ZONE A
- FLOOD ZONE AE
- WETLANDS
- PROPOSED CROSS DRAIN BOUNDARY

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

CROSS DRAIN EXHIBIT

SHEET NO.
A-7

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N

1" = 500'

BASIN A
198.1 AC

BASIN B
33.8 AC

BASIN C2
9.0 AC

BASIN C1
6.1 AC

BASIN E
8.1 AC

CD-10
PROP. 18" RCP

CD-9
PROP. 18" RCP

CD-8
PROP. 18" RCP

LAKE
NEEDHAM

LEGEND

PROP. CROSS DRAIN/
CROSS DRAIN
EXTENSION

FLOOD ZONE A

FLOOD ZONE AE

WETLANDS

PROPOSED CROSS
DRAIN BOUNDARY

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

CROSS DRAIN EXHIBIT

SHEET NO.
A-8

PS972SM 10/18/2018 4:03:57 PM NoteBorderText C:\FDOTSS4\RESOURCES\Cell\Roadway.cel

Appendix B – FEMA Maps

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, NINGS12
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 Lake County and the Florida Geographic Data Library. Orthophotography was collected in 2009 by the Southwest Florida and St. Johns River Water Management District.

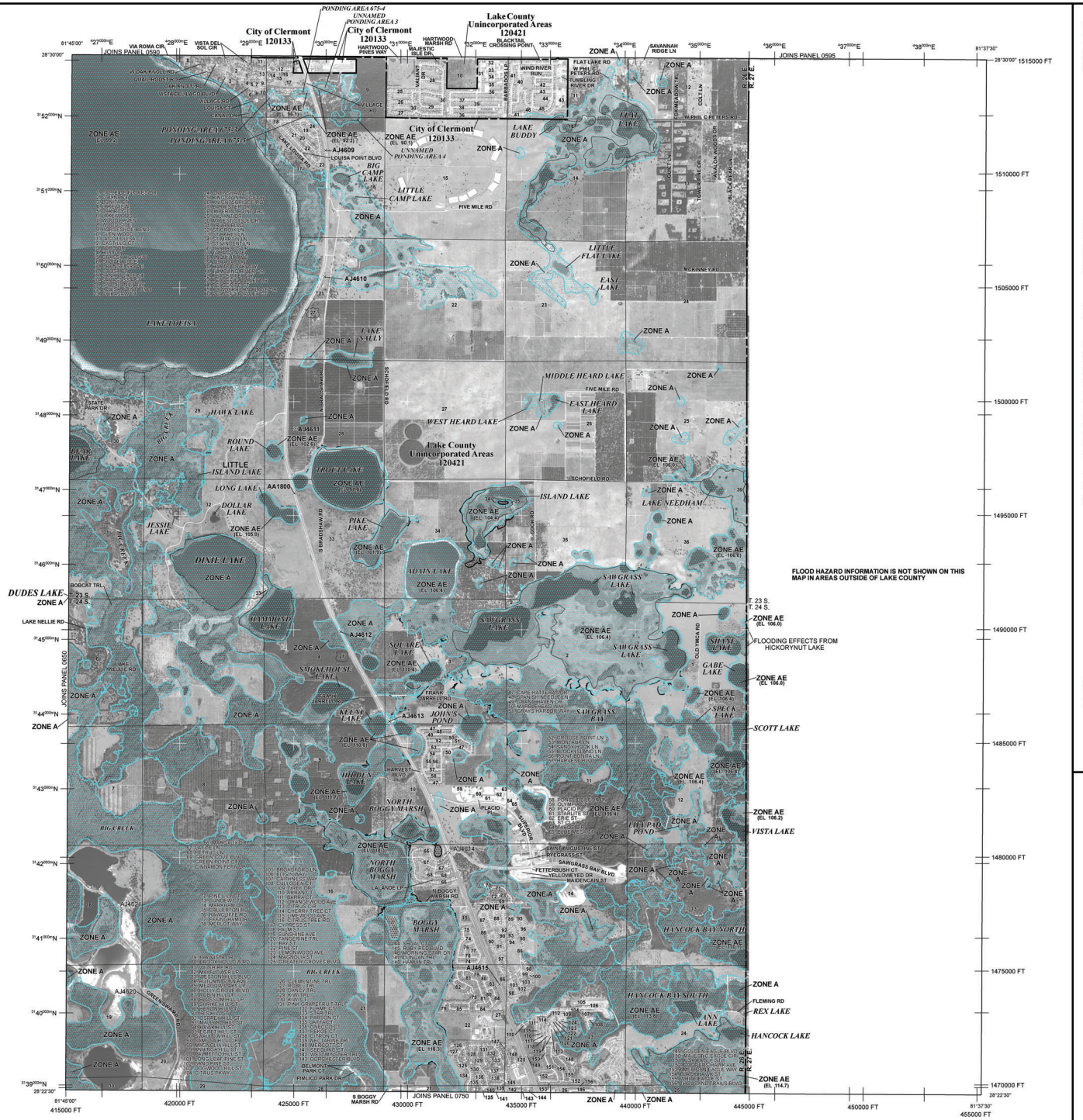
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, 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 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 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 Area Zones and 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*
* 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
4275000m 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
July 3, 2002

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

December 18, 2012 - 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" = 2000'

1,000 0 1,000 2,000 3,000 4,000 FEET
500 0 500 1,000 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0675E

FIRM

FLOOD INSURANCE RATE MAP

LAKE COUNTY, FLORIDA AND INCORPORATED AREAS

PANEL 675 OF 750

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CLERMONT, CITY OF	120133	0675	E
LAKE COUNTY	120421	0675	E

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 12069C0675E

MAP REVISED DECEMBER 18, 2012

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.

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.

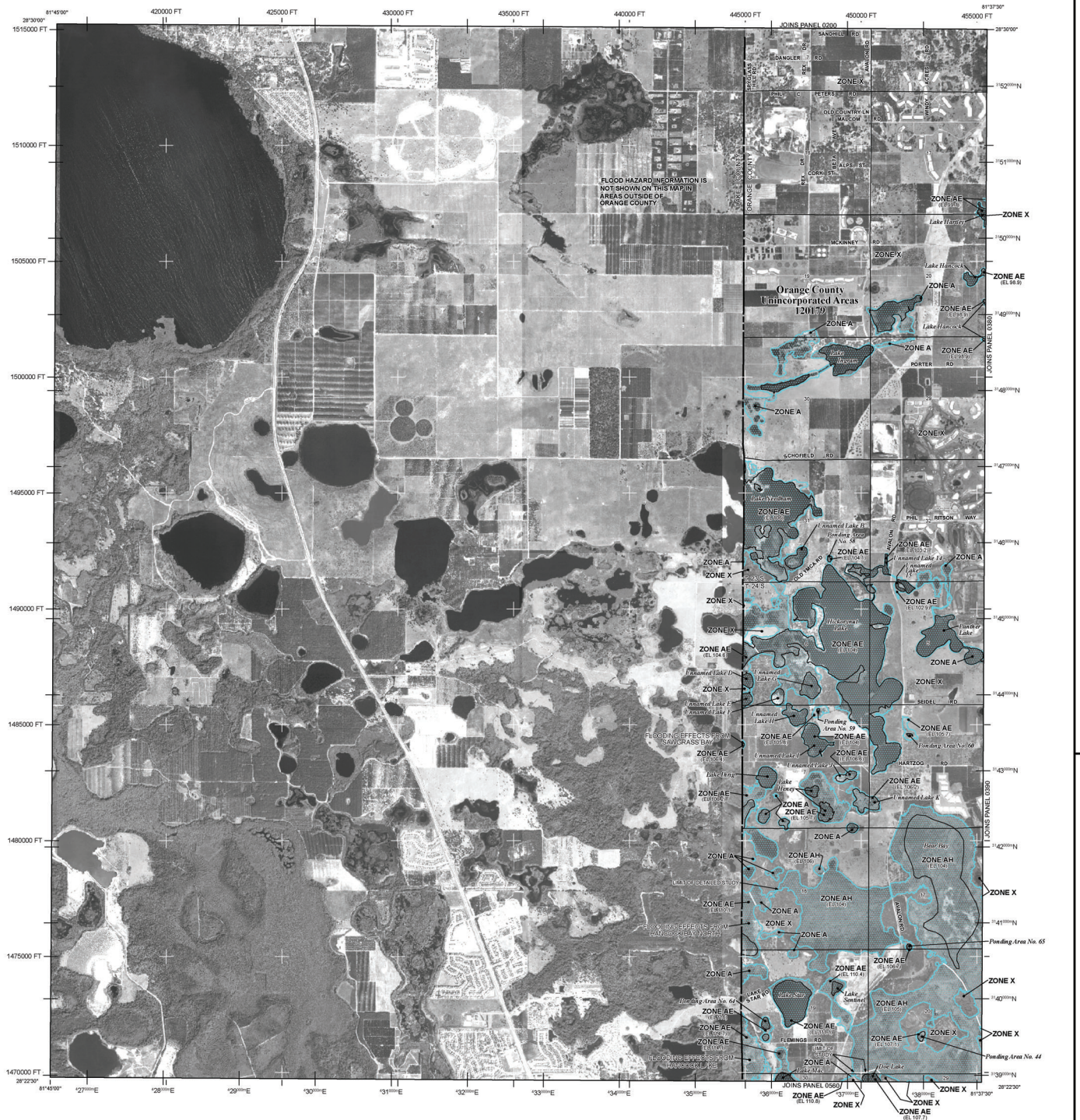
Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which 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	-1.15	-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	-0.96	-1.05	-0.98	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	-0.88	-0.89	-0.88	0.02
Shingle Creek	-0.88	-0.95	-0.91	0.04
St. Johns River	-1.08	-1.33	-1.19	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** — 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 (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)

- A — A — Cross section line
- 23 — 23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referred 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 = 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" = 2000'

1,000 0 1,000 2,000 3,000 4,000 FEET
500 0 500 1,000 METERS

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

Appendix C – USDA Soil Survey

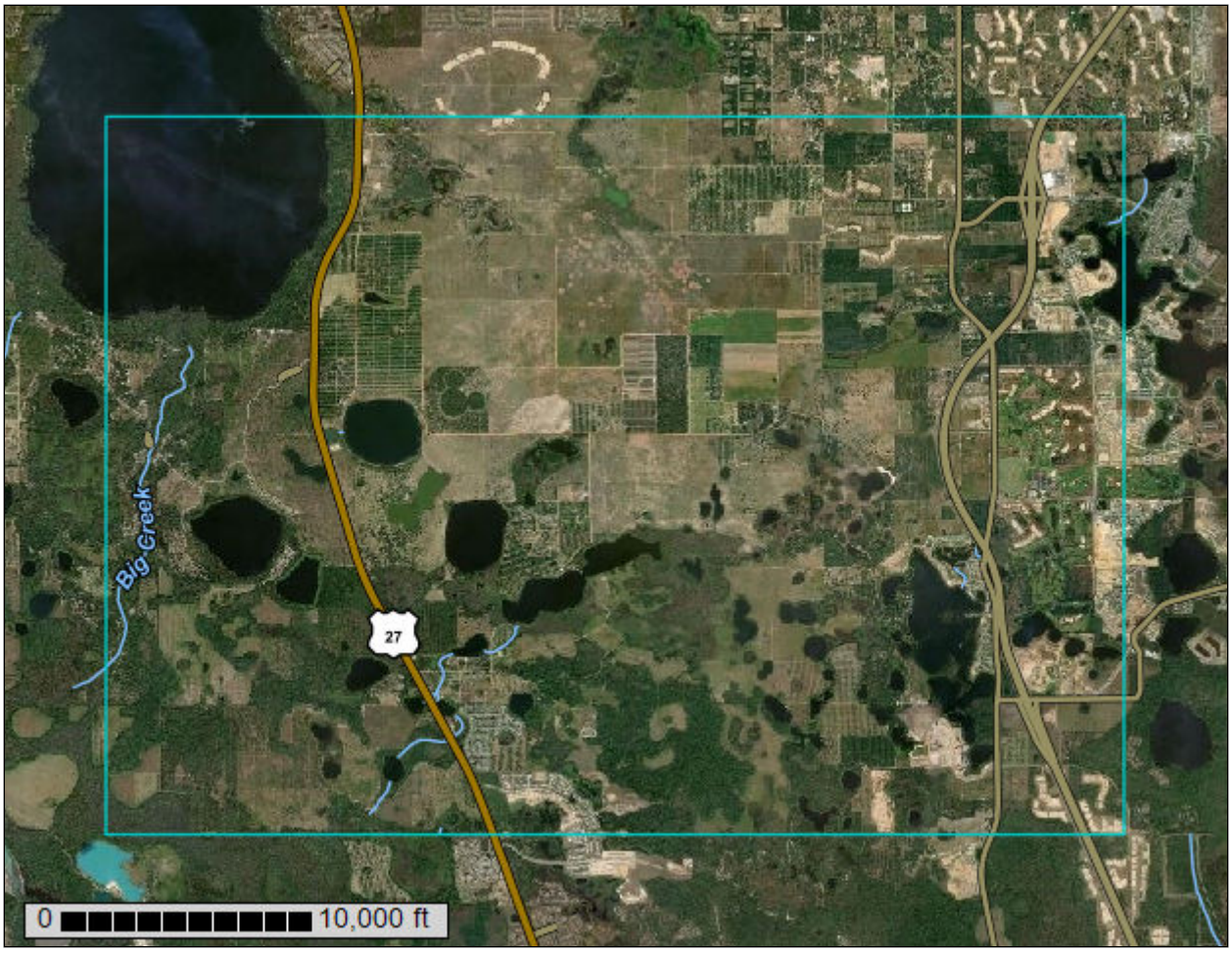
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Lake County Area, Florida, and Orange County, Florida



April 23, 2019

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

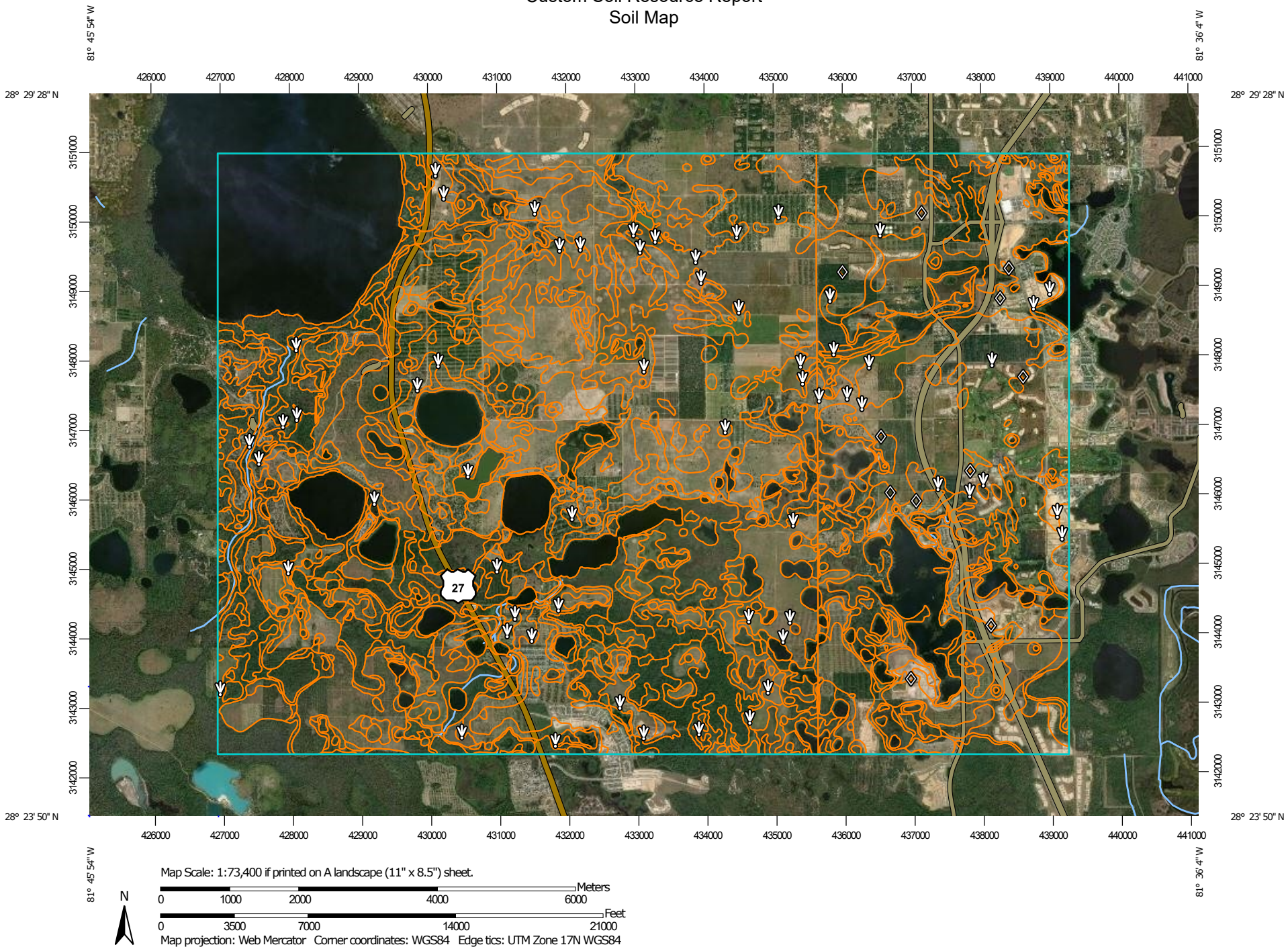
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.


81° 45' 54" W
81° 36' 4" W
28° 29' 28" N
28° 23' 50" N
426000
427000
428000
429000
430000
431000
432000
433000
434000
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439000
440000
441000
3151000
3150000
3149000
3148000
3147000
3146000
3145000
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3143000
3142000
27
N
Map Scale: 1:73,400 if printed on A landscape (11" x 8.5") sheet.
Meters
0
1000
2000
4000
6000
Feet
0
3500
7000
14000
21000
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Lake County Area, Florida
Survey Area Data: Version 18, Sep 13, 2018

Soil Survey Area: Orange County, Florida
Survey Area Data: Version 15, Sep 13, 2018

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: Dec 8, 2010—Nov 26, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND	MAP INFORMATION
	imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
4	Anclote and Myakka soils	738.3	2.8%
5	Apopka sand, 0 to 5 percent slopes	41.6	0.2%
6	Apopka sand, 5 to 12 percent slopes	41.4	0.2%
8	Candler sand, 0 to 5 percent slopes	5,851.8	22.1%
9	Candler sand, 5 to 12 percent slopes	2,822.8	10.7%
10	Candler sand, 12 to 40 percent slopes	261.4	1.0%
12	Cassia sand	45.0	0.2%
17	Arents	173.7	0.7%
20	Immokalee sand	647.4	2.4%
21	Lake sand, 0 to 5 percent slopes	341.5	1.3%
22	Lake sand, 5 to 12 percent slopes	182.4	0.7%
24	Kendrick sand, 0 to 5 percent slopes	36.5	0.1%
25	Kendrick sand, 5 to 8 percent slopes	16.2	0.1%
28	Myakka-Myakka, wet, sands, 0 to 2 percent slopes	977.5	3.7%
30	Lochloosa sand	7.3	0.0%
32	Oklawaha muck	446.8	1.7%
33	Ona-Ona, wet, fine sand, 0 to 2 percent slopes	7.5	0.0%
34	Orlando fine sand, 0 to 5 percent slopes	2.8	0.0%
35	Paola sand, 0 to 5 percent slopes	24.8	0.1%
37	Ellzey sand	6.5	0.0%
38	Placid sand, frequently ponded, 0 to 2 percent slopes	143.7	0.5%
39	Seffner sand	26.3	0.1%
40	Placid and Myakka sands, depressional	813.9	3.1%
41	Pomello sand, 0 to 5 percent slopes	279.8	1.1%
42	Pompano sand	55.1	0.2%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
43	St. Lucie sand, 0 to 8 percent slopes	39.9	0.2%
44	Swamp	935.6	3.5%
45	Tavares sand, 0 to 5 percent slopes	623.9	2.4%
46	Orsino sand	19.4	0.1%
50	Borrow Pits	7.6	0.0%
99	Water	3,002.4	11.4%
Subtotals for Soil Survey Area		**18,620.7**	**70.4%**
Totals for Area of Interest		**26,438.6**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Arents, nearly level	1.0	0.0%
3	Basinger fine sand, frequently ponded, 0 to 1 percent slopes	681.0	2.6%
4	Candler fine sand, 0 to 5 percent slopes	2,946.5	11.1%
5	Candler fine sand, 5 to 12 percent slopes	2,163.5	8.2%
6	Candler-Apopka fine sands, 5 to 12 percent slopes	69.2	0.3%
20	Immokalee fine sand	199.8	0.8%
33	Pits	2.1	0.0%
34	Pomello fine sand, 0 to 5 percent slopes	113.6	0.4%
37	St. Johns fine sand	44.2	0.2%
41	Samsula-Hontoon-Basinger association, depressional	98.5	0.4%
42	Sanibel muck	91.8	0.3%
43	Seffner fine sand, 0 to 2 percent slopes	2.7	0.0%
44	Smyrna-Smyrna, wet, fine sand, 0 to 2 percent slopes	12.7	0.0%
46	Tavares fine sand, 0 to 5 percent slopes	202.0	0.8%
47	Tavares-Millhopper complex, 0 to 5 percent slopes	238.1	0.9%
99	Water	951.4	3.6%
Subtotals for Soil Survey Area		**7,818.0**	**29.6%**
Totals for Area of Interest		**26,438.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas

shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Lake County Area, Florida

4—Anclote and Myakka soils

Map Unit Setting

National map unit symbol: 1qt5x
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 340 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Anclote and similar soils: 35 percent
Myakka and similar soils: 30 percent
Felda and similar soils: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Anclote

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy marine deposits

Typical profile

A - 0 to 12 inches: fine sand
Cg - 12 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on stream terraces, flood plains, or in depressions (G154XB145FL)
Other vegetative classification: Slough (R154XY011FL)
Hydric soil rating: Yes

Description of Myakka

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy marine deposits

Typical profile

A - 0 to 6 inches: sand
E - 6 to 20 inches: sand
Bh - 20 to 36 inches: sand
C - 36 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on stream terraces, flood plains, or in depressions (G154XB145FL)
Other vegetative classification: Slough (R154XY011FL)
Hydric soil rating: Yes

Description of Felda

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 3 inches: fine sand
E - 3 to 25 inches: fine sand
Btg - 25 to 56 inches: sandy clay loam
Ckg - 56 to 60 inches: marly clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches

Natural drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: Occasional
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G154XB245FL)
Other vegetative classification: Slough (R154XY011FL)
Hydric soil rating: Yes

Minor Components

Brighton, depressional

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

Oklawaha, freq. flooded

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

Manatee, depressional

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

5—Apopka sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2w0q6
Elevation: 40 to 150 feet
Mean annual precipitation: 44 to 56 inches
Mean annual air temperature: 66 to 77 degrees F
Frost-free period: 248 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Apopka and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Apopka

Setting

Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, interfluve, tread
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Parent material: Eolian deposits and/or sandy and loamy marine deposits

Typical profile

A - 0 to 6 inches: sand
E - 6 to 55 inches: sand
Bt - 55 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on ridges and dunes of xeric uplands (G154XB111FL)
Other vegetative classification: Upland Hardwood Hammock (R154XY008FL), Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Minor Components

Sparr
Percent of map unit: 6 percent
Landform: Rises on marine terraces, flats on marine terraces
Landform position (three-dimensional): Interfluve, rise
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Other vegetative classification: Upland Hardwood Hammock (R154XY008FL)
Hydric soil rating: No

Jumper
Percent of map unit: 5 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Candler
Percent of map unit: 5 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve, side slope, tread
Down-slope shape: Convex
Across-slope shape: Convex
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R155XY002FL), Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Jonesville
Percent of map unit: 4 percent
Landform: Rises on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

6—Apopka sand, 5 to 12 percent slopes

Map Unit Setting
National map unit symbol: 1qt5z
Elevation: 40 to 150 feet

Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 340 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Apopka and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Apopka

Setting

Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Eolian deposits and/or sandy and loamy marine deposits

Typical profile

A - 0 to 6 inches: sand
E - 6 to 55 inches: sand
Bt - 55 to 80 inches: sandy clay loam

Properties and qualities

Slope: 5 to 12 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on strongly sloping to steep side slopes of xeric uplands (G154XB113FL)
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Minor Components

Apopka

Percent of map unit: 7 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)

Hydric soil rating: No

Kendrick

Percent of map unit: 7 percent
Landform: Ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Kendrick, thin subsurface

Percent of map unit: 6 percent
Landform: Ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Upland Hardwood Hammock (R154XY008FL)
Hydric soil rating: No

8—Candler sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2t3z1
Elevation: 10 to 260 feet
Mean annual precipitation: 47 to 56 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 280 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Candler and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Candler

Setting

Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, interfluve, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Eolian deposits and/or sandy and loamy marine deposits

Typical profile

A - 0 to 6 inches: sand
E - 6 to 63 inches: sand
E and Bt - 63 to 80 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on ridges and dunes of xeric uplands (G154XB111FL), Sandy soils on ridges and dunes of xeric uplands (G155XB111FL)
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R155XY002FL), Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Minor Components

Tavares

Percent of map unit: 5 percent
Landform: Ridges on marine terraces
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex, concave
Across-slope shape: Linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Millhopper

Percent of map unit: 5 percent
Landform: Ridges on marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

9—Candler sand, 5 to 12 percent slopes

Map Unit Setting

National map unit symbol: 2w0q4
Elevation: 30 to 160 feet
Mean annual precipitation: 44 to 56 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 290 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Candler and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Candler

Setting

Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, interfluve, tread
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Eolian deposits and/or sandy and loamy marine deposits

Typical profile

A - 0 to 5 inches: sand
E - 5 to 67 inches: sand
E and Bt - 67 to 80 inches: sand

Properties and qualities

Slope: 5 to 12 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A

Forage suitability group: Sandy soils on strongly sloping to steep side slopes of xeric uplands (G154XB113FL)
Other vegetative classification: Sand Pine Scrub (R154XY001FL), Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Minor Components

Apopka
Percent of map unit: 6 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

Kendrick
Percent of map unit: 5 percent
Landform: Ridges on marine terraces
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Adamsville
Percent of map unit: 3 percent
Landform: Rises on marine terraces, knolls on marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

Pompano
Percent of map unit: 1 percent
Landform: Flats on marine terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear, convex
Hydric soil rating: Yes

10—Candler sand, 12 to 40 percent slopes

Map Unit Setting
National map unit symbol: 1nrvg
Elevation: 40 to 150 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 340 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Candler and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Candler

Setting

Landform: Hills on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Eolian or sandy marine deposits

Typical profile

A - 0 to 3 inches: sand
E - 3 to 67 inches: sand
E and Bt - 67 to 80 inches: sand

Properties and qualities

Slope: 12 to 40 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on strongly sloping to steep side slopes of xeric uplands (G154XB113FL)
Other vegetative classification: Sand Pine Scrub (R154XY001FL)
Hydric soil rating: No

Minor Components

Kendrick

Percent of map unit: 5 percent
Landform: Ridges on marine terraces
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Apopka

Percent of map unit: 5 percent

Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

12—Cassia sand

Map Unit Setting

National map unit symbol: 1nrvj
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 340 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Cassia and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cassia

Setting

Landform: Rises on marine terraces
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 4 inches: sand
E - 4 to 25 inches: sand
Bh - 25 to 37 inches: sand
C - 37 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 12 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on rises and knolls of mesic uplands (G154XB131FL)
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Minor Components

Immokalee, non-hydric

Percent of map unit: 10 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

17—Arents

Map Unit Setting

National map unit symbol: 1qt6b
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 340 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Arents and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arents

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Altered marine deposits

Typical profile

C - 0 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 1.98 in/hr)
Depth to water table: About 30 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 7.8 inches)

20—Immokalee sand

Map Unit Setting

National map unit symbol: 1nrvs
Elevation: 10 to 60 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 340 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Immokalee, non-hydric, and similar soils: 70 percent
Immokalee, hydric, and similar soils: 20 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Immokalee, Non-hydric

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 4 inches: sand
E - 4 to 38 inches: sand
Bh - 38 to 56 inches: sand
BC - 56 to 68 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.0 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G154XB141FL)
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Description of Immokalee, Hydric

Setting
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile
A - 0 to 4 inches: sand
E - 4 to 38 inches: sand
Bh - 38 to 56 inches: sand
BC - 56 to 68 inches: sand

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.0 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G154XB141FL)
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: Yes

Minor Components

Wabasso, hydric
Percent of map unit: 5 percent

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: Yes

Placid, depressional

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Slough (R154XY011FL)
Hydric soil rating: Yes

21—Lake sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 1qt6g
Elevation: 30 to 150 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 340 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Lake and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lake

Setting

Landform: Ridges, hills, marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Eolian deposits or sandy fluvial or marine deposits

Typical profile

A - 0 to 7 inches: sand
C - 7 to 80 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 50.02 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on ridges and dunes of xeric uplands (G154XB111FL)
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Minor Components

Apopka

Percent of map unit: 10 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Astatula

Percent of map unit: 10 percent
Landform: Ridges on marine terraces, hills on marine terraces
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Other vegetative classification: Sand Pine Scrub (R154XY001FL)
Hydric soil rating: No

22—Lake sand, 5 to 12 percent slopes

Map Unit Setting

National map unit symbol: 1nrvv
Elevation: 40 to 150 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 340 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Lake and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lake

Setting

Landform: Ridges, hills, marine terraces
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Eolian deposits or sandy fluvial or marine deposits

Typical profile

A - 0 to 5 inches: sand
C - 5 to 80 inches: sand

Properties and qualities

Slope: 5 to 12 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 50.02 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on strongly sloping to steep side slopes of xeric uplands (G154XB113FL)
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Minor Components

Apopka

Percent of map unit: 5 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Lake, 0 to 5 percent

Percent of map unit: 5 percent
Landform: Ridges, hills, marine terraces

Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

24—Kendrick sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 1nrvx
Elevation: 40 to 150 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 340 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Kendrick and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kendrick

Setting

Landform: Ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine and fluvial deposits

Typical profile

A - 0 to 5 inches: sand
E - 5 to 32 inches: sand
Bt - 32 to 75 inches: sandy clay loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Forage suitability group: Sandy over loamy soils on knolls and ridges of mesic uplands (G154XB211FL)
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Minor Components

Apopka

Percent of map unit: 10 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

25—Kendrick sand, 5 to 8 percent slopes

Map Unit Setting

National map unit symbol: 1qt6l
Elevation: 40 to 150 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 340 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Kendrick and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kendrick

Setting

Landform: Ridges on marine terraces
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine and fluvial deposits

Typical profile

A - 0 to 5 inches: sand
E - 5 to 27 inches: sand
Bt - 27 to 75 inches: sandy clay loam

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Forage suitability group: Sandy over loamy soils on knolls and ridges of mesic uplands (G154XB211FL)
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Minor Components

Kendrick, thin subsurface

Percent of map unit: 10 percent
Landform: Ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Upland Hardwood Hammock (R154XY008FL)
Hydric soil rating: No

28—Myakka-Myakka, wet, sands, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2twt1
Elevation: 10 to 130 feet
Mean annual precipitation: 43 to 62 inches
Mean annual air temperature: 64 to 75 degrees F
Frost-free period: 280 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Myakka and similar soils: 75 percent
Myakka, wet, and similar soils: 15 percent
Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Myakka

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 6 inches: sand
E - 6 to 20 inches: sand
Bh - 20 to 36 inches: sand
C - 36 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Description of Myakka, Wet

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 6 inches: sand
E - 6 to 20 inches: sand
Bh - 20 to 36 inches: sand
C - 36 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Minor Components

Basinger

Percent of map unit: 5 percent
Landform: Drainageways on marine terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Linear, convex
Across-slope shape: Concave, linear
Ecological site: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Eaugallie

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Placid, depressional

Percent of map unit: 1 percent
Landform: Depressions on marine terraces
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Convex, concave
Across-slope shape: Linear, concave
Ecological site: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

30—Lochloosa sand

Map Unit Setting

National map unit symbol: 1qt6r
Elevation: 40 to 160 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 340 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Lochloosa and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lochloosa

Setting

Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 7 inches: sand
E - 7 to 33 inches: sand
Btg - 33 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 36 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B

Forage suitability group: Sandy over loamy soils on rises and knolls of mesic uplands (G154XB231FL)
Other vegetative classification: Upland Hardwood Hammock (R154XY008FL)
Hydric soil rating: No

Minor Components

Sparr

Percent of map unit: 10 percent
Landform: Rises on marine terraces, flats on marine terraces
Landform position (three-dimensional): Interfluve, rise
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Upland Hardwood Hammock (R154XY008FL)
Hydric soil rating: No

Kendrick

Percent of map unit: 5 percent
Landform: Ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

32—Oklawaha muck

Map Unit Setting

National map unit symbol: 1nrw5
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 340 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Oklawaha, freq. flooded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oklawaha, Freq. Flooded

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Herbaceous organic material over loamy and clayey marine deposits

Typical profile

Oa - 0 to 9 inches: muck

Oe - 9 to 25 inches: mucky peat
Cg1 - 25 to 31 inches: sandy loam
Cg2 - 31 to 54 inches: sandy clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: High (about 9.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Forage suitability group: Organic soils in depressions and on flood plains (G154XB645FL)
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

Minor Components

Brighton, depressional

Percent of map unit: 10 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

33—Ona-Ona, wet, fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2w4gx
Elevation: 10 to 130 feet
Mean annual precipitation: 46 to 56 inches
Mean annual air temperature: 66 to 77 degrees F
Frost-free period: 325 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Ona and similar soils: 75 percent
Ona, wet, and similar soils: 12 percent
Minor components: 13 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ona

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 9 inches: fine sand
Bh - 9 to 16 inches: fine sand
C - 16 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

Description of Ona, Wet

Setting

Landform: Sloughs on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 9 inches: fine sand
Bh - 9 to 16 inches: fine sand
C - 16 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Minor Components

Myakka

Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Basinger, hydric

Percent of map unit: 4 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Other vegetative classification: Slough (R155XY011FL)
Hydric soil rating: Yes

Immokalee

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

34—Orlando fine sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2ttld
Elevation: 50 to 150 feet
Mean annual precipitation: 48 to 56 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 324 to 354 days
Farmland classification: Not prime farmland

Map Unit Composition

Orlando and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Orlando

Setting

Landform: Ridges, marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits over fluviomarine deposits

Typical profile

A - 0 to 20 inches: fine sand
C - 20 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 4.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A

Forage suitability group: Sandy soils on ridges and dunes of xeric uplands (G155XB111FL)
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R155XY002FL)
Hydric soil rating: No

Minor Components

Candler
Percent of map unit: 3 percent
Landform: Knolls, marine terraces, ridges
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Seffner
Percent of map unit: 2 percent
Landform: Flats, rises, marine terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Upland Hardwood Hammock (R154XY008FL)
Hydric soil rating: No

35—Paola sand, 0 to 5 percent slopes

Map Unit Setting
National map unit symbol: 2tzwj
Elevation: 0 to 100 feet
Mean annual precipitation: 44 to 60 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition
Paola and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paola

Setting
Landform: Ridges on marine terraces, hills on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve, side slope, riser
Down-slope shape: Convex, linear
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 6 inches: sand
E - 6 to 55 inches: sand
B/E - 55 to 80 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 50.02 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on ridges and dunes of xeric uplands (G155XB111FL)
Other vegetative classification: Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

Minor Components

Apopka

Percent of map unit: 6 percent
Landform: Ridges on marine terraces, knolls on marine terraces, hills on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve, side slope, riser, rise
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Astatula

Percent of map unit: 5 percent
Landform: Knolls on marine terraces, hills on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve, side slope, riser, rise
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Pomello

Percent of map unit: 4 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (two-dimensional): Backslope, summit

Landform position (three-dimensional): Side slope, interfluve, riser
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: Sand Pine Scrub (R155XY001FL)
Other vegetative classification: Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

37—Ellzey sand

Map Unit Setting

National map unit symbol: 1qt6z
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 340 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Ellzey, non-hydric, and similar soils: 70 percent
Ellzey, hydric, and similar soils: 20 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ellzey, Non-hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 5 inches: sand
E - 5 to 32 inches: sand
Btg - 32 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G154XB141FL)
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Description of Ellzey, Hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 5 inches: sand
E - 5 to 32 inches: sand
Btg - 32 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G154XB141FL)
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: Yes

Minor Components

Wabasso, non-hydric

Percent of map unit: 5 percent
Landform: Ridges on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)

Hydric soil rating: No

Wabasso, hydric

Percent of map unit: 5 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: Yes

38—Placid sand, frequently ponded, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2ttln
Elevation: 10 to 120 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 340 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Placid and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Placid

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy marine deposits

Typical profile

A - 0 to 18 inches: sand
C - 18 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: Frequent

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 6.2 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on stream terraces, flood plains, or in depressions (G154XB145FL)
Other vegetative classification: Slough (R154XY011FL)
Hydric soil rating: Yes

Minor Components

Adamsville
Percent of map unit: 10 percent
Landform: Rises on marine terraces, knolls on marine terraces
Landform position (three-dimensional): Talf, rise
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Myakka, hydric
Percent of map unit: 10 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Concave
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

39—Seffner sand

Map Unit Setting
National map unit symbol: 1qt71
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 340 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition
Seffner and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Seffner

Setting
Landform: Flats on marine terraces, rises on marine terraces

Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A11 - 0 to 6 inches: sand
A12 - 6 to 19 inches: sand
C - 19 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on rises and knolls of mesic uplands (G154XB131FL)
Hydric soil rating: No

Minor Components

Felda

Percent of map unit: 10 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Slough (R154XY011FL)
Hydric soil rating: Yes

40—Placid and Myakka sands, depressional

Map Unit Setting

National map unit symbol: 1nrwf
Elevation: 10 to 60 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 68 to 75 degrees F

Frost-free period: 340 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Placid and similar soils: 55 percent
Myakka and similar soils: 35 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Placid

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy marine deposits

Typical profile

A - 0 to 18 inches: sand
C - 18 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on stream terraces, flood plains, or in depressions (G154XB145FL)
Other vegetative classification: Slough (R154XY011FL)
Hydric soil rating: Yes

Description of Myakka

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy marine deposits

Typical profile

A - 0 to 6 inches: sand

E - 6 to 20 inches: sand
Bh - 20 to 36 inches: sand
C - 36 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on stream terraces, flood plains, or in depressions (G154XB145FL)
Other vegetative classification: Slough (R154XY011FL)
Hydric soil rating: Yes

Minor Components

Wabasso, hydric

Percent of map unit: 5 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: Yes

Ellzey, hydric

Percent of map unit: 5 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: Yes

41—Pomello sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2sm5n
Elevation: 0 to 160 feet
Mean annual precipitation: 46 to 64 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Pomello and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pomello

Setting

Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Interfluve, side slope, riser
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 4 inches: sand
E - 4 to 56 inches: sand
Bh - 56 to 62 inches: sand
Bw - 62 to 80 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: A
Forage suitability group: Sandy soils on rises and knolls of mesic uplands (G155XB131FL)
Other vegetative classification: Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

Minor Components

Immokalee
Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Tavares
Percent of map unit: 4 percent
Landform: Ridges on marine terraces, flatwoods on marine terraces, hills on marine terraces, knolls on marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope, interfluve, tread, rise
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R155XY002FL), Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

St. lucie
Percent of map unit: 3 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Side slope, interfluve, riser
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

Satellite
Percent of map unit: 3 percent
Landform: Knolls on marine terraces, rises on marine terraces, flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf, rise
Down-slope shape: Convex, linear
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

42—Pompano sand

Map Unit Setting

National map unit symbol: 1nrwh
Elevation: 10 to 100 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 340 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Pompano, non-hydric, and similar soils: 60 percent
Pompano, hydric, and similar soils: 20 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pompano, Non-hydric

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 5 inches: sand
C - 5 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G154XB141FL)

Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Description of Pompano, Hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 5 inches: sand
C - 5 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G154XB141FL)
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: Yes

Minor Components

Wabasso, non-hydric

Percent of map unit: 10 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Anclote

Percent of map unit: 10 percent
Landform: Flood plains on marine terraces, depressions on marine terraces, marshes on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave

Across-slope shape: Concave
Other vegetative classification: Slough (R154XY011FL)
Hydric soil rating: Yes

43—St. Lucie sand, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2tzwq
Elevation: 70 to 200 feet
Mean annual precipitation: 46 to 55 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

St. lucie and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of St. Lucie

Setting

Landform: Ridges on marine terraces, knolls on marine terraces, dunes on marine terraces
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Interfluve, side slope, riser
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy eolian deposits and/or marine deposits

Typical profile

A - 0 to 6 inches: sand
C - 4 to 80 inches: sand

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 39.96 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on ridges and dunes of xeric uplands (G155XB111FL)
Other vegetative classification: Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

Minor Components

Pomello

Percent of map unit: 8 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Interfluve, side slope, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

Paola

Percent of map unit: 5 percent
Landform: Ridges on marine terraces, hills on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve, side slope, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

Orsino

Percent of map unit: 2 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, tread
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

44—Swamp

Map Unit Setting

National map unit symbol: 1nrwk
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 340 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Mineral soil: 50 percent
Organic soil: 50 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mineral Soil

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Interfluve, talf, dip
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 18 inches: fine sand
C - 18 to 80 inches: sand

Properties and qualities

Slope: 0 to 1 percent
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Forage suitability group: Forage suitability group not assigned (G154XB999FL)
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

Description of Organic Soil

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Organic material

Typical profile

Oe - 0 to 80 inches: mucky peat

Properties and qualities

Slope: 0 to 1 percent
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 0 inches

Frequency of flooding: Frequent
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very high (about 13.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Forage suitability group: Forage suitability group not assigned (G154XB999FL)
Other vegetative classification: Freshwater Marshes and Ponds (R154XY010FL)
Hydric soil rating: Yes

45—Tavares sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2v173
Elevation: 0 to 180 feet
Mean annual precipitation: 44 to 56 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 300 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Tavares and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tavares

Setting

Landform: Ridges on marine terraces, knolls on marine terraces, flats on marine terraces
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, base slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Eolian or sandy marine deposits

Typical profile

A - 0 to 7 inches: sand
C - 7 to 80 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 50.02 in/hr)

Depth to water table: About 42 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 1.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on rises, knolls, and ridges of mesic uplands (G154XB121FL)
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Minor Components

Apopka

Percent of map unit: 6 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Shoulder, summit, footslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Candler

Percent of map unit: 4 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, interfluve, tread
Down-slope shape: Convex
Across-slope shape: Convex
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R155XY002FL), Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Adamsville

Percent of map unit: 3 percent
Landform: Knolls on flatwoods, rises on flatwoods
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, rise, talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Upland Hardwood Hammock (R155XY008FL), Upland Hardwood Hammock (R154XY008FL)
Hydric soil rating: No

Zolfo

Percent of map unit: 2 percent
Landform: Flats on marine terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Convex

Across-slope shape: Linear
Hydric soil rating: No

46—Orsino sand

Map Unit Setting

National map unit symbol: 1nrwm
Elevation: 20 to 150 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 285 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Orsino and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Orsino

Setting

Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Eolian or sandy marine deposits

Typical profile

A - 0 to 3 inches: sand
E - 3 to 22 inches: sand
E and Bh - 22 to 80 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 50.02 in/hr)
Depth to water table: About 24 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A

Forage suitability group: Sandy soils on rises, knolls, and ridges of mesic uplands (G154XB121FL)
Hydric soil rating: No

Minor Components

Apopka
Percent of map unit: 10 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

50—Borrow Pits

Map Unit Setting
National map unit symbol: 1v082
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 340 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition
Borrow pits: 70 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Borrow Pits

Setting
Landform: Marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Altered marine deposits

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Forage suitability group: Forage suitability group not assigned (G154XB999FL)
Hydric soil rating: Unranked

Minor Components

Aquents
Percent of map unit: 30 percent
Landform: Depressions
Hydric soil rating: Yes

99—Water

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Orange County, Florida

1—Arents, nearly level

Map Unit Setting

National map unit symbol: bv78
Mean annual precipitation: 45 to 53 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Arents and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arents

Setting

Landform: Rises on marine terraces
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Altered marine deposits

Typical profile

AC - 0 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 50.02 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Forage suitability group: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: No

3—Basinger fine sand, frequently ponded, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2v16v
Elevation: 0 to 70 feet
Mean annual precipitation: 43 to 55 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Basinger and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Basinger

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 5 inches: fine sand
E - 5 to 14 inches: fine sand
Bh/E - 14 to 36 inches: fine sand
Cg - 36 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 1 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D

Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Minor Components

Smyrna
Percent of map unit: 5 percent
Landform: — error in exists on —
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Samsula
Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Floridana
Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

4—Candler fine sand, 0 to 5 percent slopes

Map Unit Setting
National map unit symbol: 2shkf
Elevation: 10 to 260 feet
Mean annual precipitation: 47 to 56 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 280 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition
Candler and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Candler

Setting

Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, tread
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex, concave
Parent material: Eolian deposits and/or sandy and loamy marine deposits

Typical profile

Ap - 0 to 5 inches: fine sand
E - 5 to 74 inches: fine sand
E and Bt - 74 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on ridges and dunes of xeric uplands (G154XB111FL)
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Minor Components

Tavares

Percent of map unit: 4 percent
Landform: Ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave, convex
Across-slope shape: Concave, linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Adamsville

Percent of map unit: 3 percent
Landform: Flats on marine terraces, rises on marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Convex, concave
Across-slope shape: Linear, concave

Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: No

Millhopper

Percent of map unit: 3 percent
Landform: Flats on marine terraces, rises on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex, linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

5—Candler fine sand, 5 to 12 percent slopes

Map Unit Setting

National map unit symbol: bv8p
Elevation: 20 to 150 feet
Mean annual precipitation: 45 to 53 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Candler and similar soils: 94 percent
Minor components: 6 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Candler

Setting

Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Eolian deposits and/or sandy and loamy marine deposits

Typical profile

A - 0 to 4 inches: fine sand
E - 4 to 61 inches: fine sand
E and B - 61 to 80 inches: fine sand

Properties and qualities

Slope: 5 to 12 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on strongly sloping to steep side slopes of xeric uplands (G155XB113FL)
Hydric soil rating: No

Minor Components

Millhopper
Percent of map unit: 2 percent
Landform: Knolls on marine terraces, rises on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Tavares
Percent of map unit: 2 percent
Landform: Ridges on marine terraces, flats on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Apopka
Percent of map unit: 2 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

6—Candler-Apopka fine sands, 5 to 12 percent slopes

Map Unit Setting
National map unit symbol: bv8x
Elevation: 20 to 160 feet
Mean annual precipitation: 45 to 53 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition
Candler and similar soils: 66 percent

Apopka and similar soils: 31 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Candler

Setting

Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Eolian deposits and/or sandy and loamy marine deposits

Typical profile

A - 0 to 6 inches: fine sand
E - 6 to 69 inches: fine sand
E and B - 69 to 80 inches: fine sand

Properties and qualities

Slope: 5 to 12 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on strongly sloping to steep side slopes of xeric uplands (G155XB113FL)
Hydric soil rating: No

Description of Apopka

Setting

Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Eolian deposits and/or sandy and loamy marine deposits

Typical profile

A - 0 to 5 inches: fine sand
E - 5 to 69 inches: fine sand
Bt - 69 to 80 inches: sandy clay loam

Properties and qualities

Slope: 5 to 12 percent
Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on strongly sloping to steep side slopes of xeric uplands (G155XB113FL)
Hydric soil rating: No

Minor Components

Lochloosa

Percent of map unit: 2 percent
Landform: Rises on marine terraces
Landform position (three-dimensional): Interfluve, rise
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Tavares

Percent of map unit: 1 percent
Landform: Flats on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

20—Immokalee fine sand

Map Unit Setting

National map unit symbol: bv7n
Mean annual precipitation: 45 to 53 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Immokalee, non-hydric, and similar soils: 82 percent

Immokalee, hydric, and similar soils: 10 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Immokalee, Non-hydric

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 5 inches: fine sand
E - 5 to 35 inches: fine sand
Bh - 35 to 67 inches: fine sand
C - 67 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

Description of Immokalee, Hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 5 inches: fine sand
E - 5 to 35 inches: fine sand
Bh - 35 to 67 inches: fine sand
C - 67 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Minor Components

Wabasso

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Pineda

Percent of map unit: 4 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

33—Pits

Map Unit Setting

National map unit symbol: bv83
Mean annual precipitation: 45 to 53 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Pits: 70 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pits

Setting

Landform: Marine terraces
Landform position (three-dimensional): Interfluve, dip
Down-slope shape: Linear
Across-slope shape: Linear

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Forage suitability group: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: Unranked

Minor Components

Aquents

Percent of map unit: 30 percent
Landform: Depressions
Hydric soil rating: Yes

34—Pomello fine sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2v16y
Elevation: 0 to 180 feet
Mean annual precipitation: 44 to 52 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 342 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Pomello and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pomello

Setting

Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve, riser
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 4 inches: fine sand
E - 4 to 47 inches: fine sand
Bh - 47 to 58 inches: fine sand
Bw - 58 to 65 inches: fine sand
C - 65 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 24 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on rises and knolls of mesic uplands (G155XB131FL)
Other vegetative classification: Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

Minor Components

Smyrna

Percent of map unit: 3 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Tavares

Percent of map unit: 1 percent
Landform: Ridges on marine terraces, flats on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Bulow

Percent of map unit: 1 percent
Landform: Ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear

Hydric soil rating: No

37—St. Johns fine sand

Map Unit Setting

National map unit symbol: bv87
Elevation: 30 to 150 feet
Mean annual precipitation: 45 to 53 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

St. johns, non-hydric, and similar soils: 60 percent
St. johns, hydric, and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of St. Johns, Non-hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 12 inches: fine sand
E - 12 to 24 inches: fine sand
Bh - 24 to 44 inches: fine sand
C - 44 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 6 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: B/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

Description of St. Johns, Hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 12 inches: fine sand
E - 12 to 24 inches: fine sand
Bh - 24 to 44 inches: fine sand
C - 44 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Minor Components

Immokalee, non-hydric

Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Wabasso

Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf

Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

41—Samsula-Hontoon-Basinger association, depressional

Map Unit Setting

National map unit symbol: bv8d
Mean annual precipitation: 45 to 53 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Samsula and similar soils: 47 percent
Hontoon and similar soils: 31 percent
Basinger and similar soils: 14 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Samsula

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Herbaceous organic material over sandy marine deposits

Typical profile

Oa - 0 to 34 inches: muck
C - 34 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Forage suitability group: Organic soils in depressions and on flood plains (G155XB645FL)
Hydric soil rating: Yes

Description of Hontoon

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Herbaceous organic material

Typical profile

Oa - 0 to 80 inches: muck

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very high (about 23.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Forage suitability group: Organic soils in depressions and on flood plains (G155XB645FL)
Hydric soil rating: Yes

Description of Basinger

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy marine deposits

Typical profile

A - 0 to 6 inches: fine sand
E - 6 to 25 inches: fine sand
B/E - 25 to 35 inches: fine sand
C - 35 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 1 percent

Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL)
Hydric soil rating: Yes

Minor Components

Holopaw

Percent of map unit: 4 percent
Landform: Flood plains on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Ona

Percent of map unit: 4 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

42—Sanibel muck

Map Unit Setting

National map unit symbol: bv8f
Mean annual precipitation: 45 to 53 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Sanibel, undrained, and similar soils: 65 percent
Sanibel, drained, and similar soils: 25 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sanibel, Undrained

Setting

Landform: Marshes on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Thin organic material over sandy marine deposits

Typical profile

Oa - 0 to 11 inches: muck
A - 11 to 15 inches: fine sand
C - 15 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Forage suitability group: Organic soils in depressions and on flood plains (G155XB645FL)
Hydric soil rating: Yes

Description of Sanibel, Drained

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Thin organic material over sandy marine deposits

Typical profile

Oa - 0 to 11 inches: muck
A - 11 to 15 inches: fine sand
C - 15 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 to 24 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Forage suitability group: Organic soils in depressions and on flood plains (G155XB645FL)
Hydric soil rating: Yes

Minor Components

Hontoon, undrained

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Samsula

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

43—Seffner fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2v17t
Elevation: 30 to 160 feet
Mean annual precipitation: 44 to 56 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 300 to 365 days

Farmland classification: Farmland of unique importance

Map Unit Composition

Seffner and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Seffner

Setting

Landform: Flats on marine terraces, rises on marine terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 12 inches: fine sand
AC - 12 to 18 inches: fine sand
C - 18 to 33 inches: fine sand
Cg - 33 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on rises and knolls of mesic uplands (G154XB131FL)
Other vegetative classification: Upland Hardwood Hammock (R154XY008FL)
Hydric soil rating: No

Minor Components

Ona, non-hydric

Percent of map unit: 4 percent
Landform: Flats on marine terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)

Hydric soil rating: No

Sparr

Percent of map unit: 3 percent
Landform: Rises on marine terraces, knolls on marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve, rise
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Upland Hardwood Hammock (R154XY008FL)
Hydric soil rating: No

Pompano, hydric

Percent of map unit: 3 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Slough (R154XY011FL)
Hydric soil rating: Yes

44—Smyrna-Smyrna, wet, fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2v171
Elevation: 0 to 150 feet
Mean annual precipitation: 38 to 62 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 300 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Smyrna, non-hydric, and similar soils: 76 percent
Smyrna, hydric, and similar soils: 20 percent
Minor components: 4 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Smyrna, Non-hydric

Setting

Landform: Flats on marine terraces, flatwoods on marine terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 4 inches: fine sand
E - 4 to 17 inches: fine sand

Bh - 17 to 27 inches: loamy fine sand
C - 27 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Description of Smyrna, Hydric

Setting

Landform: Flats on marine terraces, flatwoods on marine terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 4 inches: fine sand
E - 4 to 17 inches: fine sand
Bh - 17 to 27 inches: loamy fine sand
C - 27 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Minor Components

Basinger, depressional

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Pomona, non-hydric

Percent of map unit: 1 percent
Landform: Flatwoods on marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Eaugallie, hydric

Percent of map unit: 1 percent
Landform: Flatwoods on marine terraces, flats on marine terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R154XY003FL)
Hydric soil rating: Yes

46—Tavares fine sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2w0pz
Elevation: 30 to 160 feet
Mean annual precipitation: 44 to 56 inches
Mean annual air temperature: 68 to 75 degrees F
Frost-free period: 290 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Tavares and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tavares

Setting

Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve, side slope, tread, rise
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Eolian or sandy marine deposits

Typical profile

A - 0 to 5 inches: fine sand
C - 5 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 42 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on rises, knolls, and ridges of mesic uplands (G154XB121FL)
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Minor Components

Candler

Percent of map unit: 5 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, tread
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex, concave
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Apopka

Percent of map unit: 4 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (two-dimensional): Summit, shoulder, footslope
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

Narcoossee

Percent of map unit: 3 percent
Landform: Knolls on marine terraces, rises on marine terraces
Landform position (three-dimensional): Interfluve, rise
Down-slope shape: Linear, convex
Across-slope shape: Linear
Other vegetative classification: Upland Hardwood Hammock (R154XY008FL)
Hydric soil rating: No

Zolfo

Percent of map unit: 3 percent
Landform: Rises on marine terraces, knolls on marine terraces
Landform position (three-dimensional): Interfluve, rise
Down-slope shape: Convex, linear
Across-slope shape: Linear
Other vegetative classification: North Florida Flatwoods (R154XY004FL)
Hydric soil rating: No

47—Tavares-Millhopper complex, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2w4gz
Elevation: 20 to 150 feet
Mean annual precipitation: 45 to 53 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Tavares and similar soils: 63 percent
Millhopper and similar soils: 32 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tavares

Setting

Landform: Flats on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve, rise

Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Eolian or sandy marine deposits

Typical profile

A - 0 to 6 inches: fine sand
C - 6 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 42 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on rises, knolls, and ridges of mesic uplands (G154XB121FL)
Hydric soil rating: No

Description of Millhopper

Setting

Landform: Rises on marine terraces, knolls on marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, riser
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 6 inches: fine sand
E - 6 to 64 inches: fine sand
Bt - 64 to 76 inches: sandy loam
Btg - 76 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 1.98 in/hr)
Depth to water table: About 42 to 60 inches
Frequency of flooding: None
Frequency of ponding: None

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on rises, knolls, and ridges of mesic uplands (G154XB121FL)
Hydric soil rating: No

Minor Components

Candler

Percent of map unit: 3 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Astatula

Percent of map unit: 2 percent
Landform: Hills on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve, side slope, tread
Down-slope shape: Convex, linear
Across-slope shape: Convex
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R154XY002FL)
Hydric soil rating: No

99—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

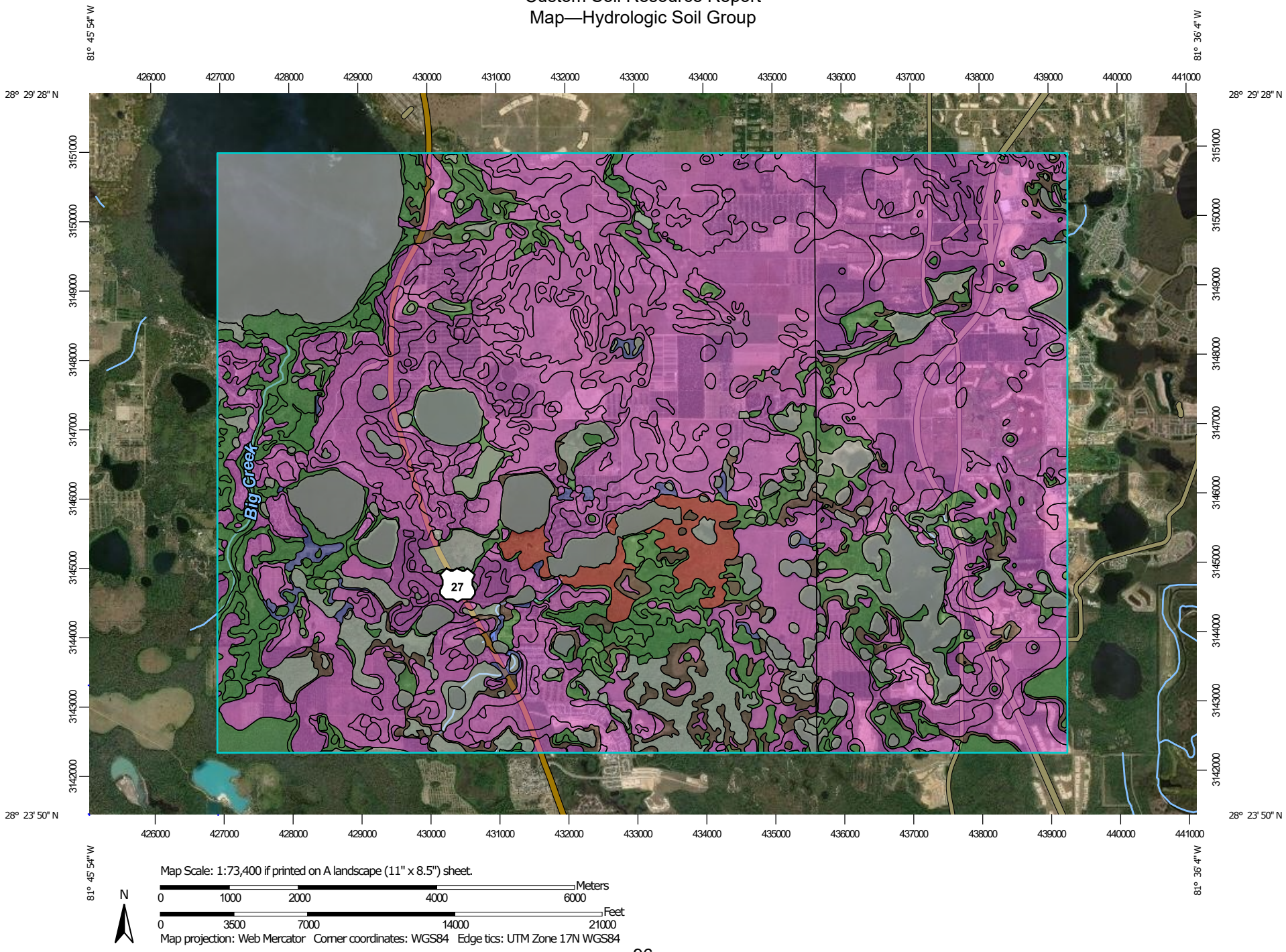
Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.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Big Creek
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Map Scale: 1:73,400 if printed on A landscape (11" x 8.5") sheet.
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Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Lake County Area, Florida
Survey Area Data: Version 18, Sep 13, 2018

Soil Survey Area: Orange County, Florida
Survey Area Data: Version 15, Sep 13, 2018

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: Dec 8, 2010—Nov 26, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND	MAP INFORMATION
	imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
4	Anclote and Myakka soils	A/D	738.3	2.8%
5	Apopka sand, 0 to 5 percent slopes	A	41.6	0.2%
6	Apopka sand, 5 to 12 percent slopes	A	41.4	0.2%
8	Candler sand, 0 to 5 percent slopes	A	5,851.8	22.1%
9	Candler sand, 5 to 12 percent slopes	A	2,822.8	10.7%
10	Candler sand, 12 to 40 percent slopes	A	261.4	1.0%
12	Cassia sand	A/D	45.0	0.2%
17	Arents	B	173.7	0.7%
20	Immokalee sand	B/D	647.4	2.4%
21	Lake sand, 0 to 5 percent slopes	A	341.5	1.3%
22	Lake sand, 5 to 12 percent slopes	A	182.4	0.7%
24	Kendrick sand, 0 to 5 percent slopes	A	36.5	0.1%
25	Kendrick sand, 5 to 8 percent slopes	A	16.2	0.1%
28	Myakka-Myakka, wet, sands, 0 to 2 percent slopes	A/D	977.5	3.7%
30	Lochloosa sand	B	7.3	0.0%
32	Oklawaha muck	D	446.8	1.7%
33	Ona-Ona, wet, fine sand, 0 to 2 percent slopes	B/D	7.5	0.0%
34	Orlando fine sand, 0 to 5 percent slopes	A	2.8	0.0%
35	Paola sand, 0 to 5 percent slopes	A	24.8	0.1%
37	Ellzey sand	A/D	6.5	0.0%
38	Placid sand, frequently ponded, 0 to 2 percent slopes	A/D	143.7	0.5%
39	Seffner sand	A/D	26.3	0.1%
40	Placid and Myakka sands, depressional	A/D	813.9	3.1%
41	Pomello sand, 0 to 5 percent slopes	A	279.8	1.1%
42	Pompano sand	A/D	55.1	0.2%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
43	St. Lucie sand, 0 to 8 percent slopes	A	39.9	0.2%
44	Swamp		935.6	3.5%
45	Tavares sand, 0 to 5 percent slopes	A	623.9	2.4%
46	Orsino sand	A	19.4	0.1%
50	Borrow Pits		7.6	0.0%
99	Water		3,002.4	11.4%
Subtotals for Soil Survey Area			**18,620.7**	**70.4%**
Totals for Area of Interest			**26,438.6**	**100.0%**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1	Arents, nearly level	A	1.0	0.0%
3	Basinger fine sand, frequently ponded, 0 to 1 percent slopes	A/D	681.0	2.6%
4	Candler fine sand, 0 to 5 percent slopes	A	2,946.5	11.1%
5	Candler fine sand, 5 to 12 percent slopes	A	2,163.5	8.2%
6	Candler-Apopka fine sands, 5 to 12 percent slopes	A	69.2	0.3%
20	Immokalee fine sand	B/D	199.8	0.8%
33	Pits		2.1	0.0%
34	Pomello fine sand, 0 to 5 percent slopes	A	113.6	0.4%
37	St. Johns fine sand	B/D	44.2	0.2%
41	Samsula-Hontoon-Basinger association, depressional	A/D	98.5	0.4%
42	Sanibel muck	A/D	91.8	0.3%
43	Seffner fine sand, 0 to 2 percent slopes	A/D	2.7	0.0%
44	Smyrna-Smyrna, wet, fine sand, 0 to 2 percent slopes	A/D	12.7	0.0%
46	Tavares fine sand, 0 to 5 percent slopes	A	202.0	0.8%
47	Tavares-Millhopper complex, 0 to 5 percent slopes	A	238.1	0.9%
99	Water		951.4	3.6%
Subtotals for Soil Survey Area			**7,818.0**	**29.6%**
Totals for Area of Interest			**26,438.6**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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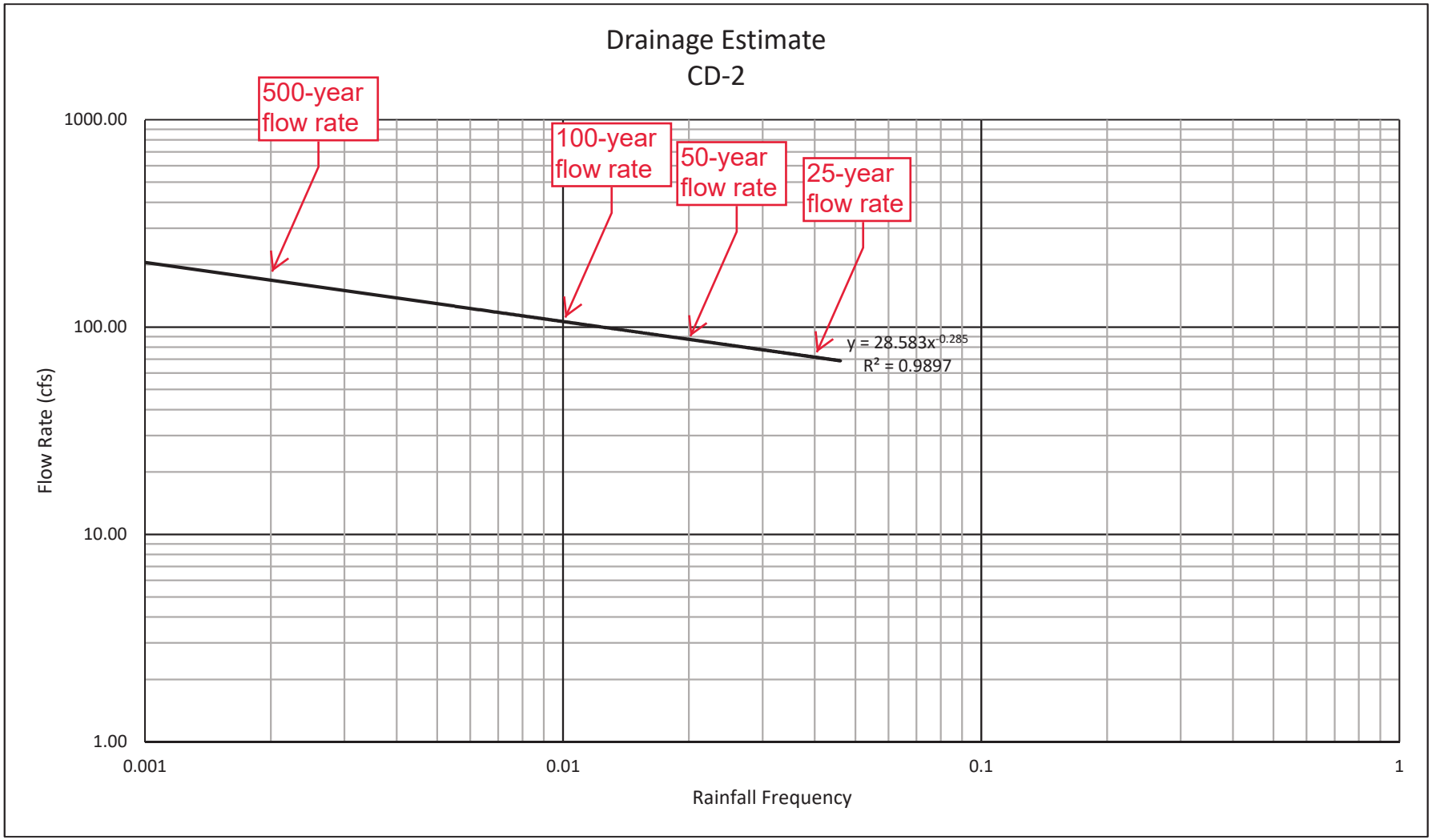
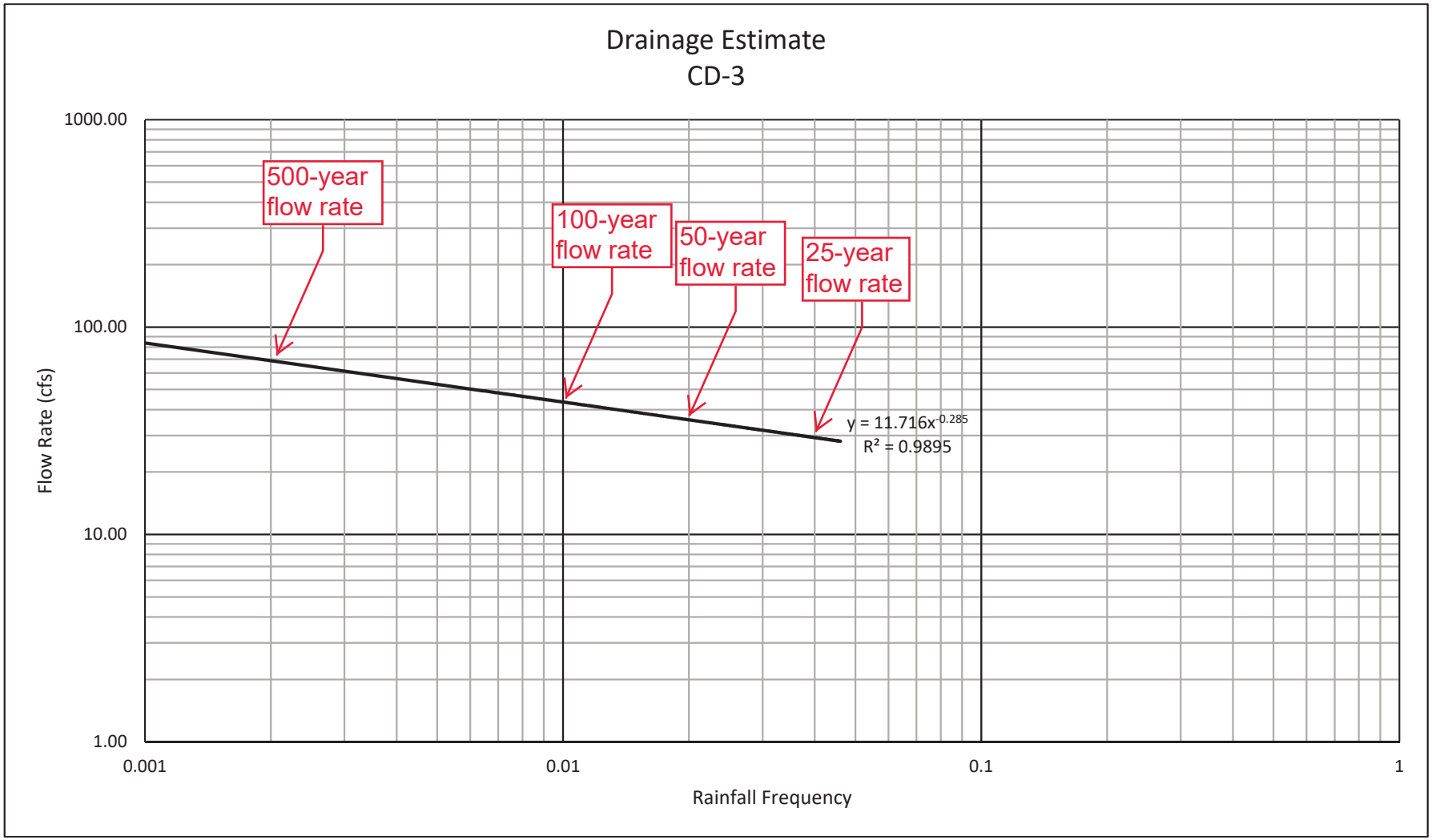
Appendix D – Cross Drain Rational Method Analysis



72.00	0.04
90.00	0.02
100.80	0.01
171.40	0.002

129.28	0.003939

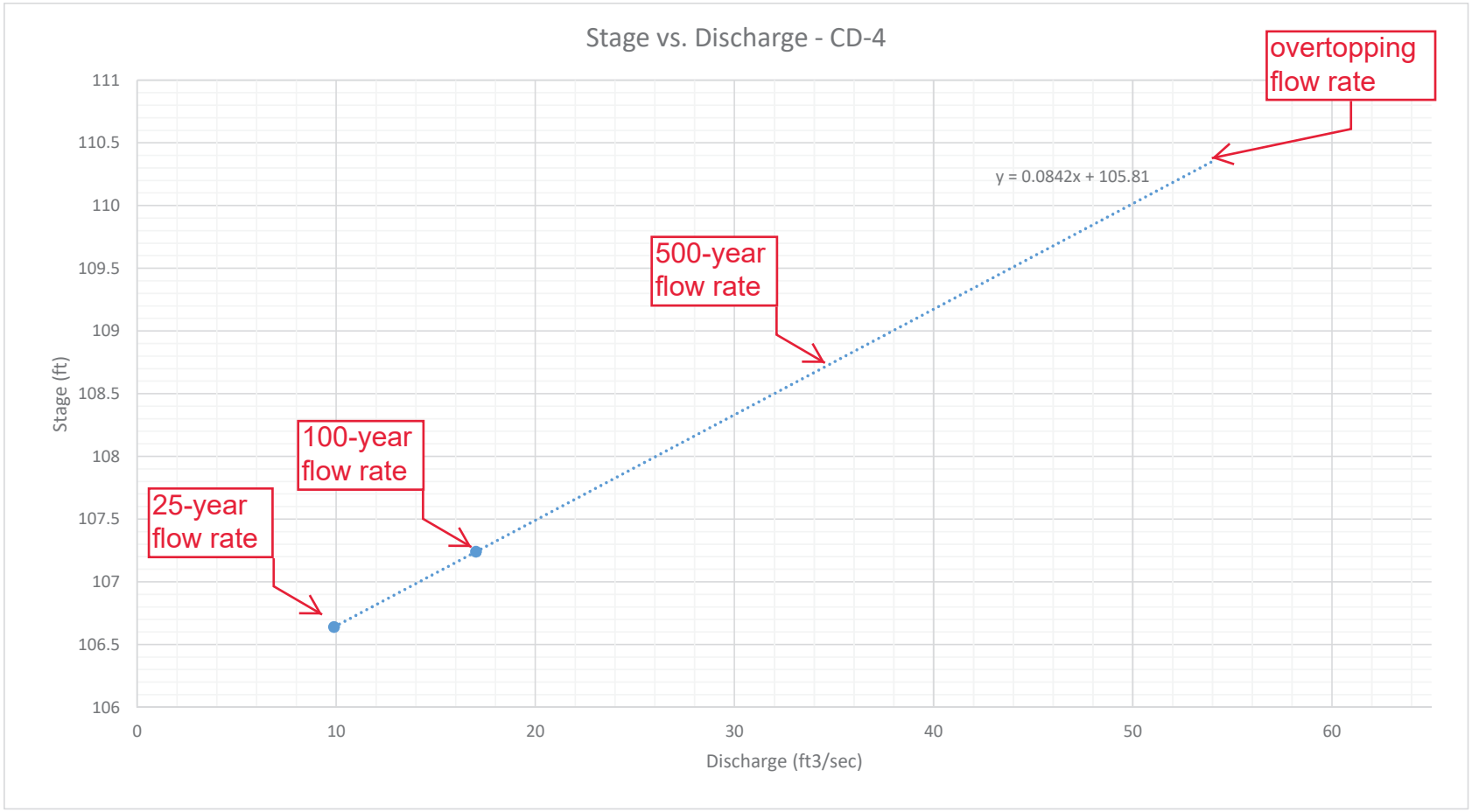
1/.003939= 200 years



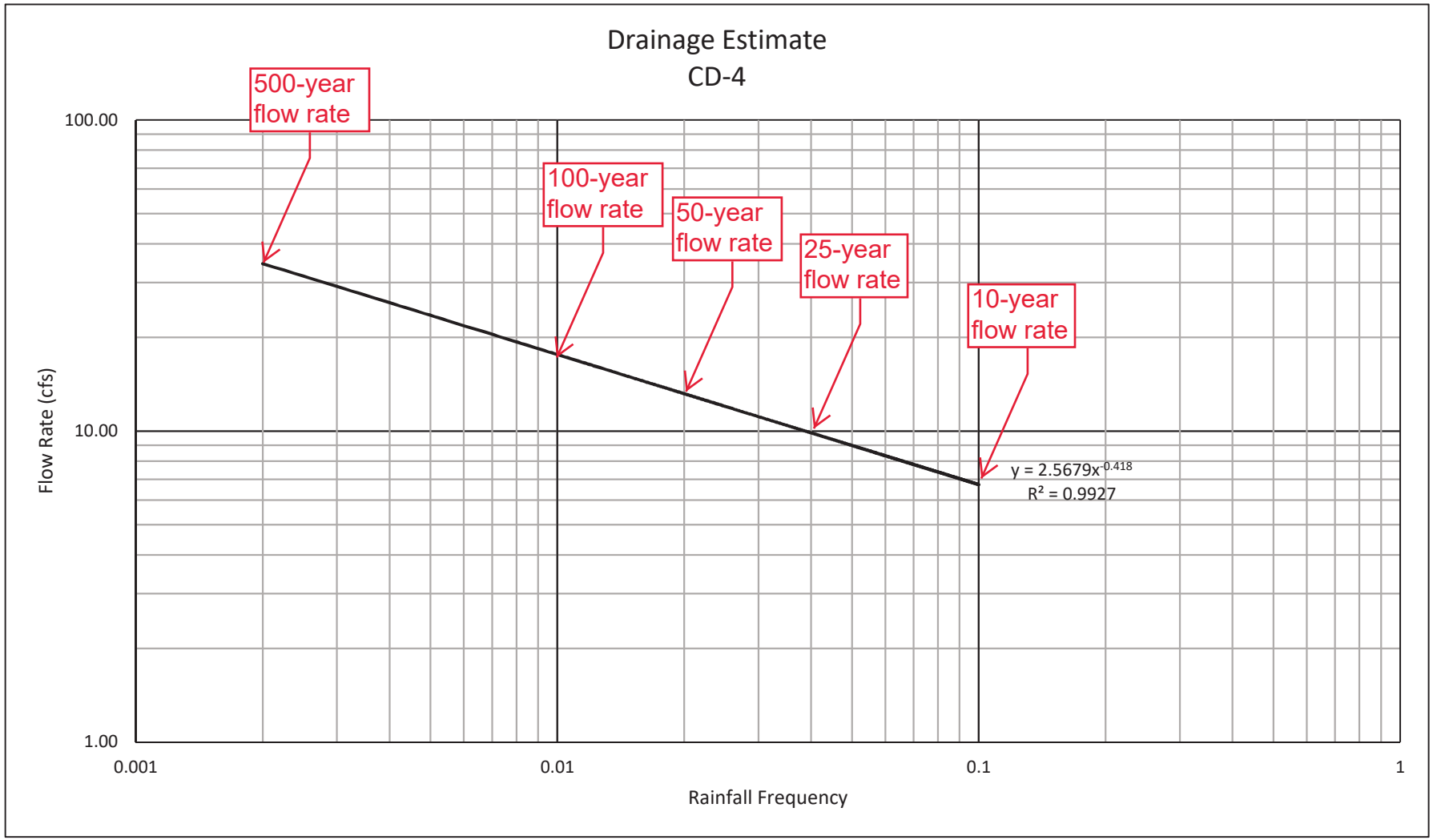
29.50	0.04
36.80	0.02
41.20	0.01
70.10	0.002

64.80	0.002476

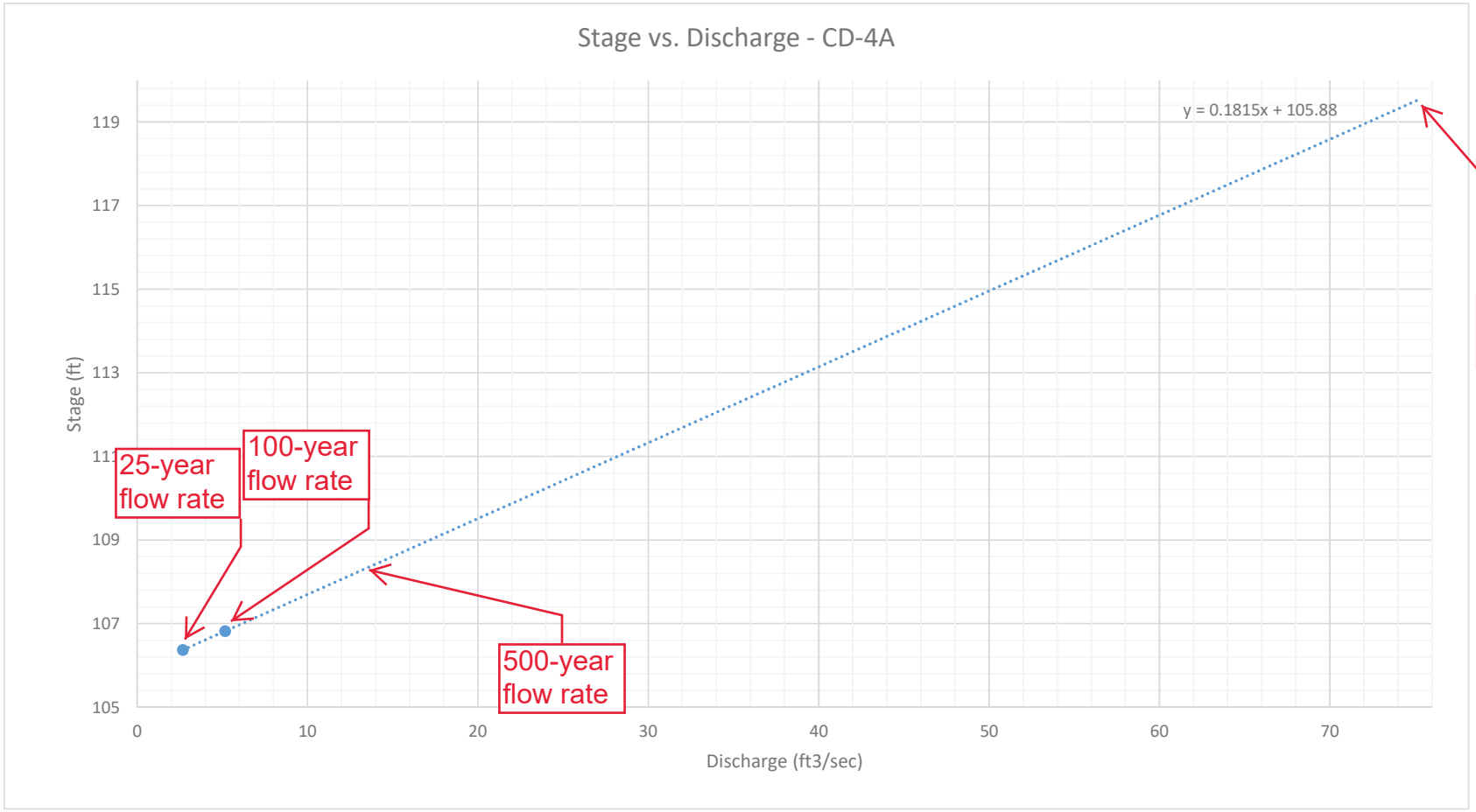
1/.002476= 404 years



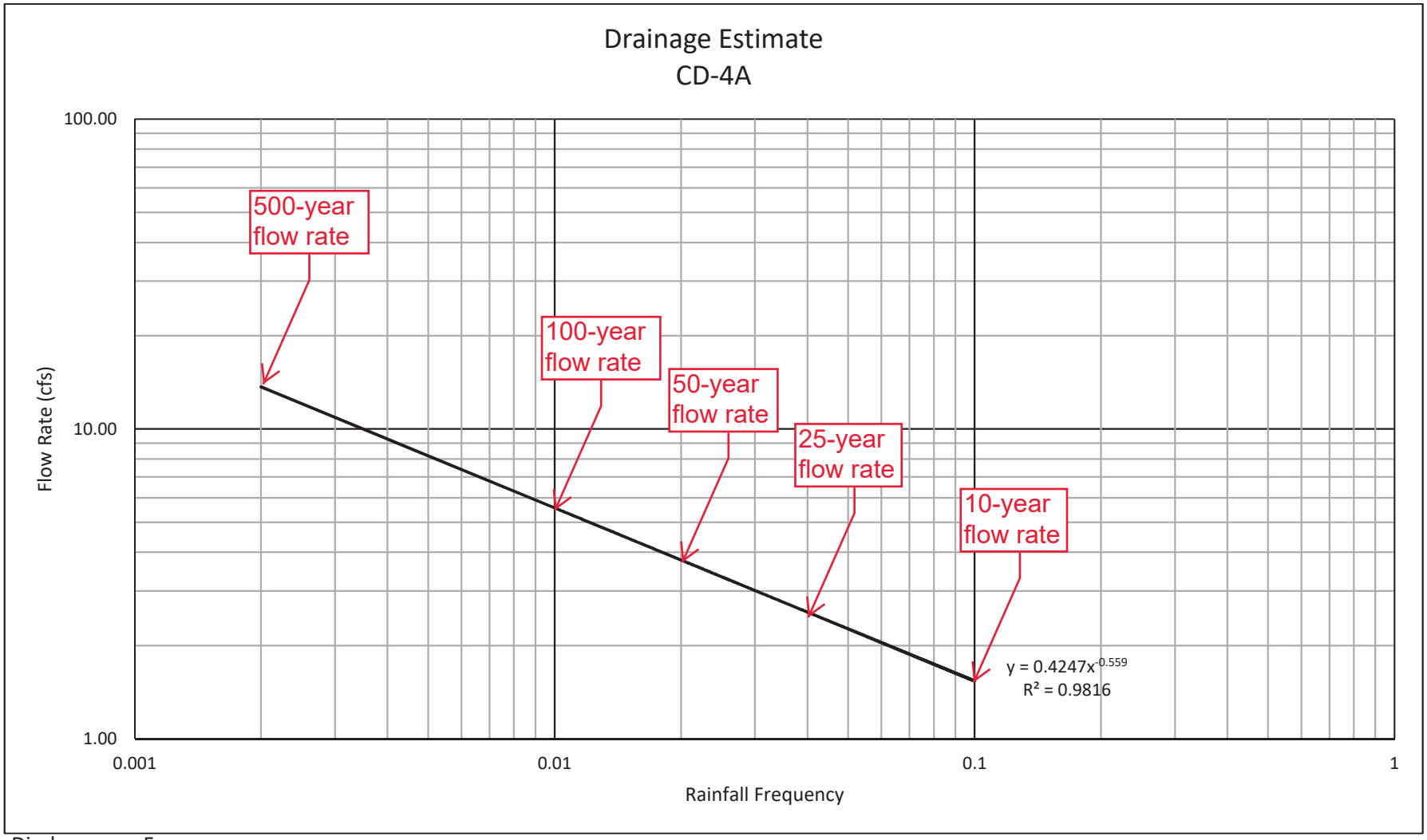
	25yr	100yr	500yr	overtop
Stage	106.64	107.24	108.71	110.37
Discharge	9.89	17.02	34.49	54.16



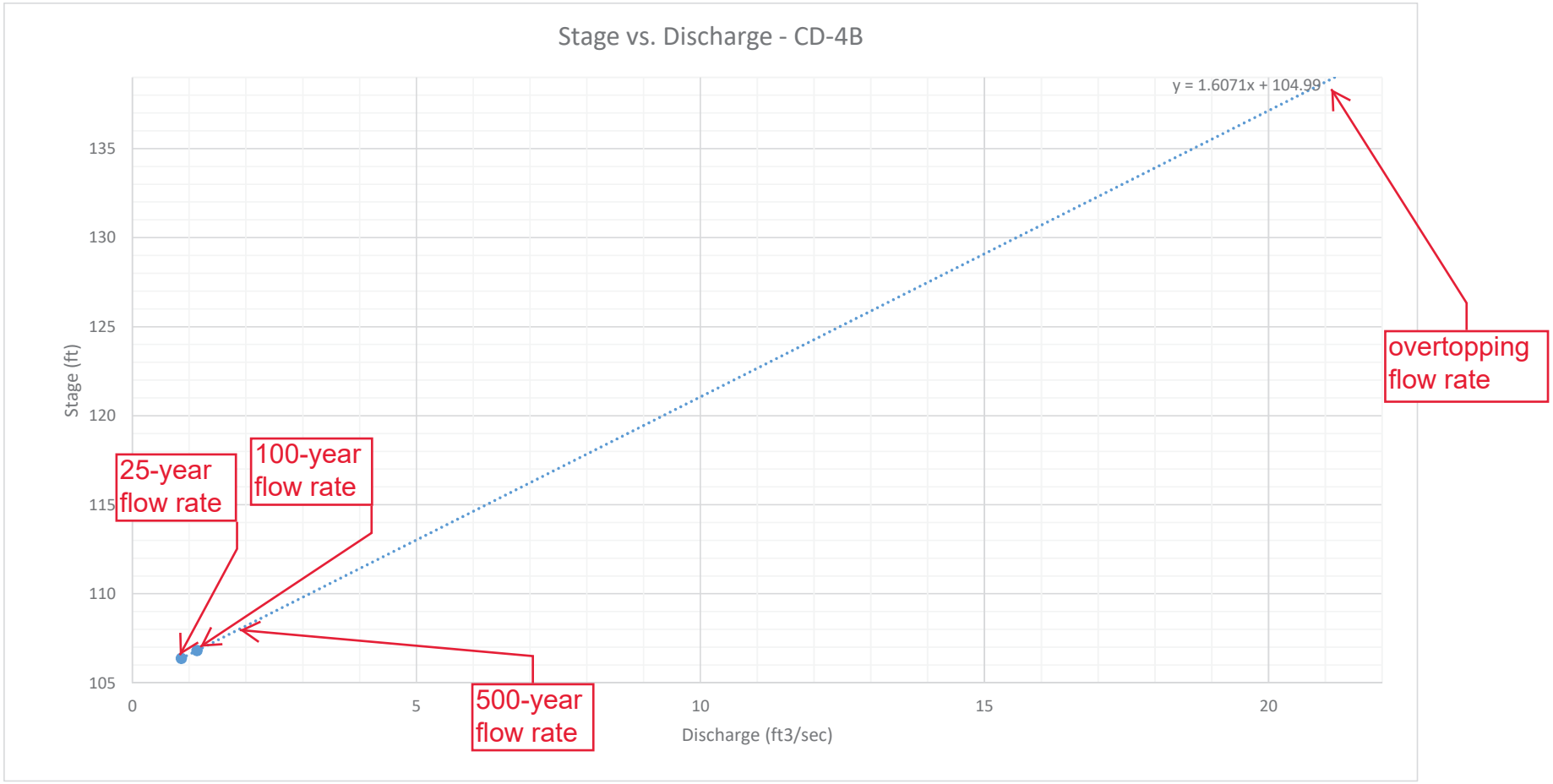
Discharge	Freq.	
6.62	0.1	
9.89	0.04	
13.83	0.02	
17.02	0.01	
34.49	0.002	
54.16	>500yr	overtop



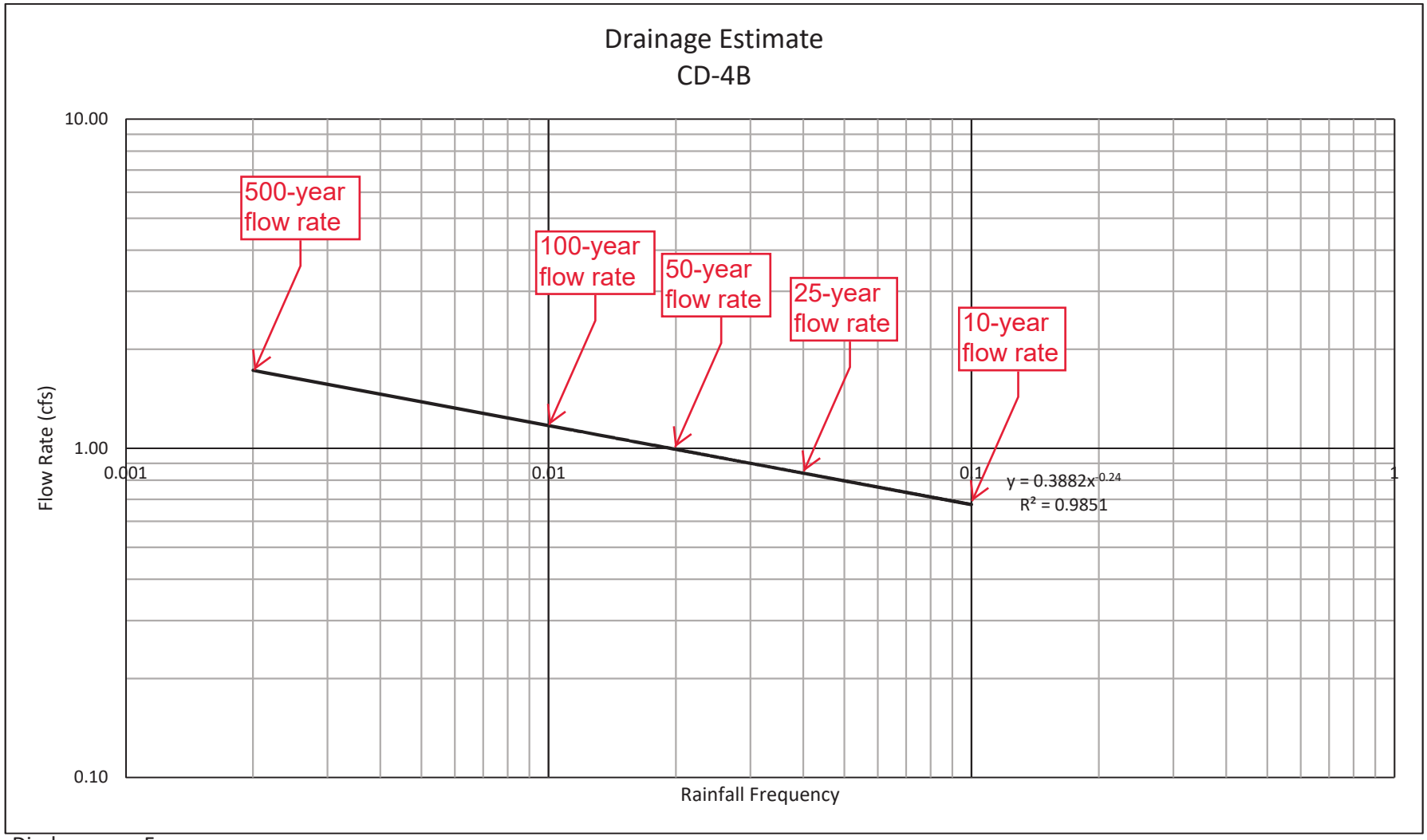
	25yr	100yr	500yr	overtop
Stage	106.37	106.82	108.37	119.5
Discharge	2.68	5.16	13.7	75.04



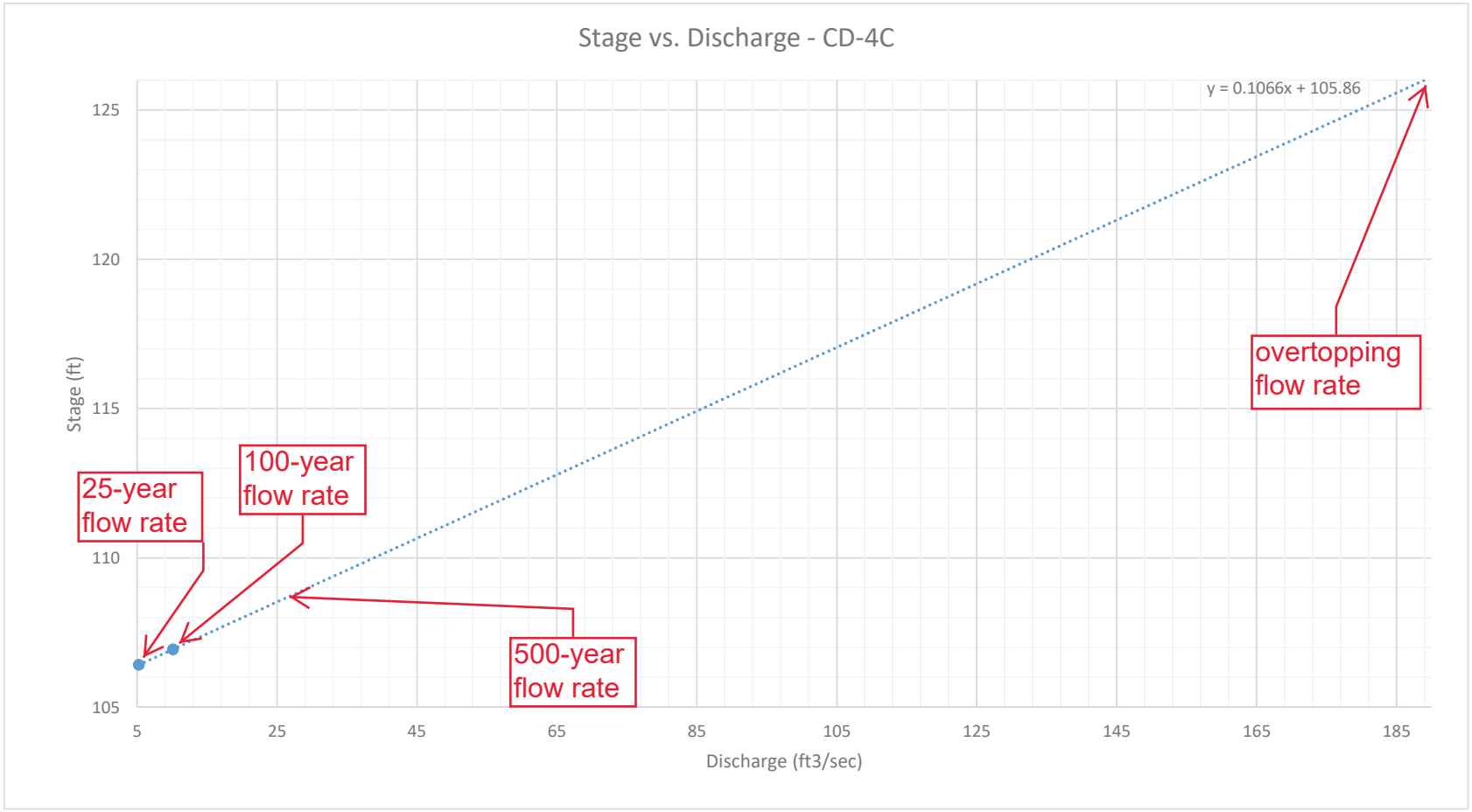
Discharge	Freq.	
1.46	0.1	
2.68	0.04	
4.10	0.02	
5.16	0.01	
13.70	0.002	
75.04	>500yr	overtop



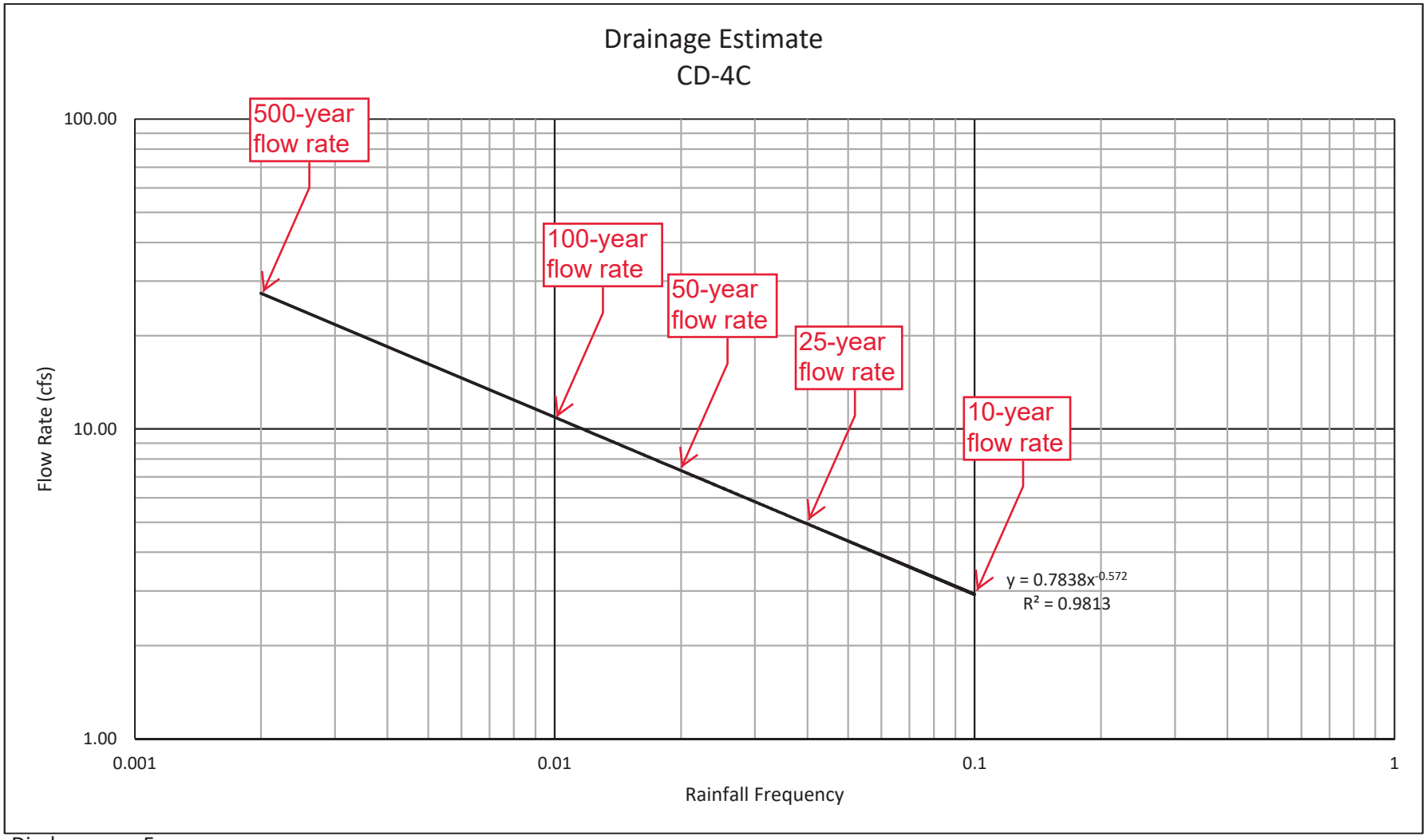
	25yr	100yr	500yr	overtop
Stage	106.37	106.82	107.77	138.7
Discharge	0.86	1.14	1.73	20.98



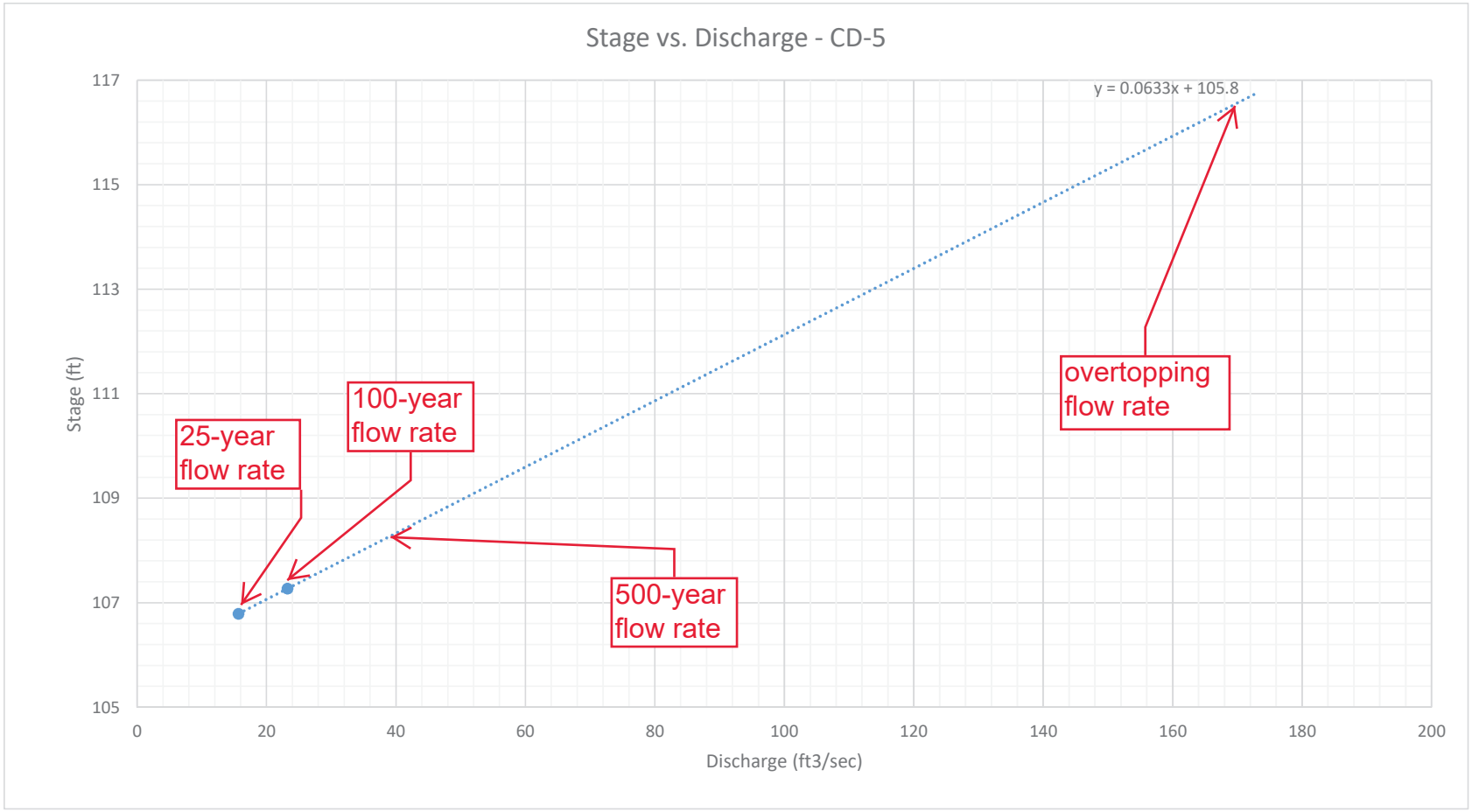
Discharge	Freq.	
0.66	0.1	
0.86	0.04	
1.02	0.02	
1.14	0.01	
1.73	0.002	
20.98	>500yr	overtop



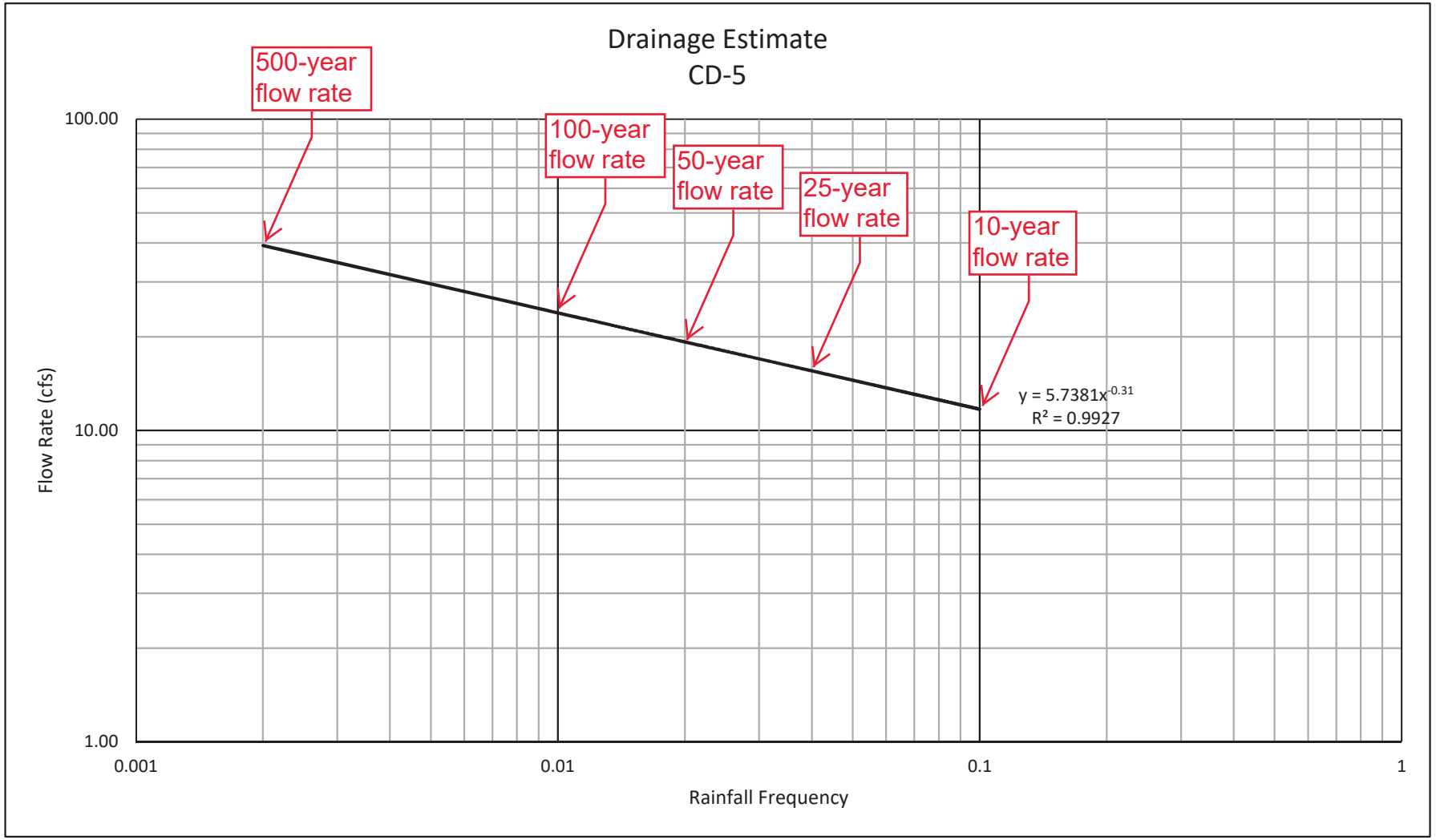
	25yr	100yr	500yr	overtop
Stage	106.42	106.94	108.78	125.95
Discharge	5.24	10.12	27.42	188.46



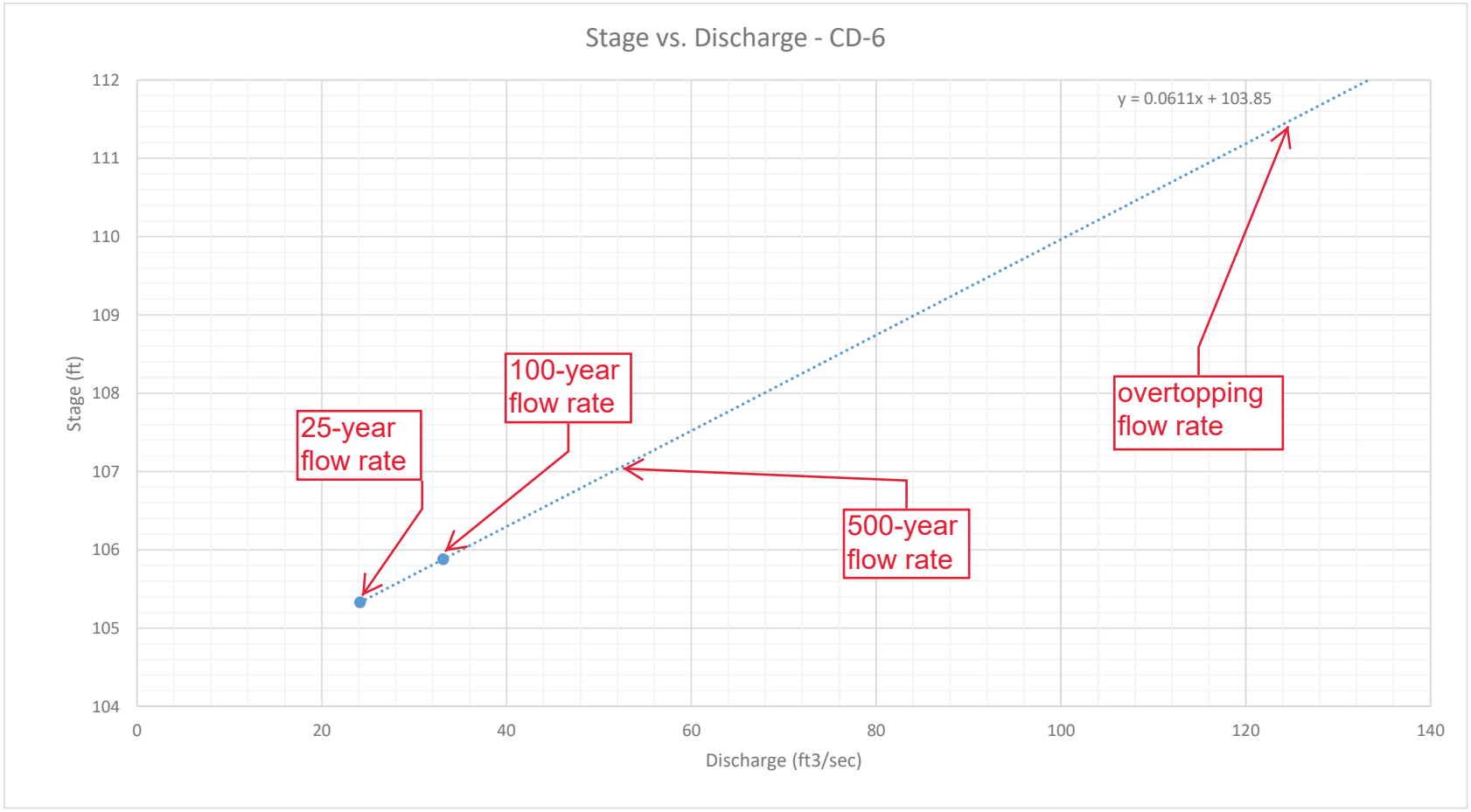
Discharge	Freq.	
2.76	0.1	
5.24	0.04	
7.91	0.02	
10.12	0.01	
27.42	0.002	
188.46	>500yr	overtop



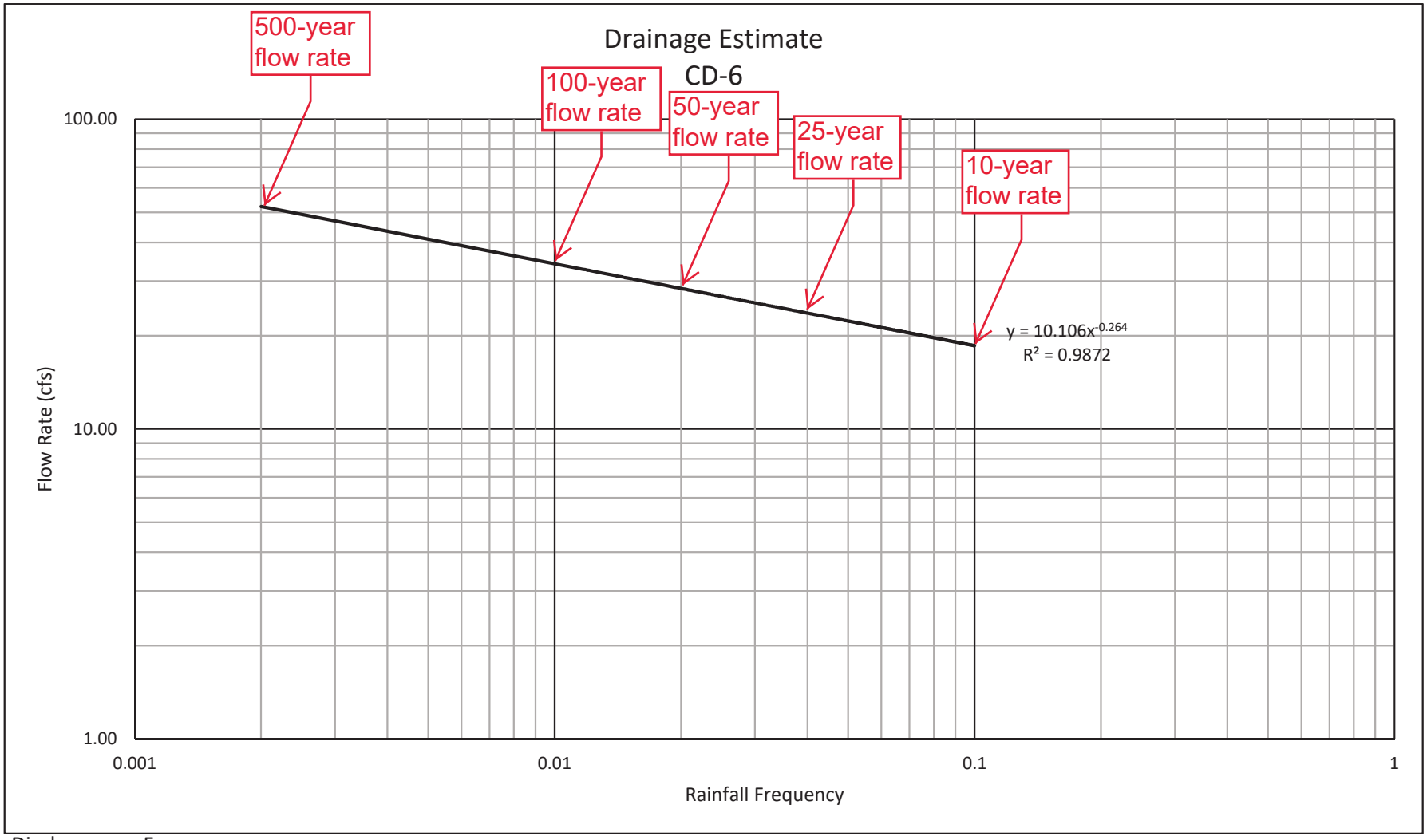
	25yr	100yr	500yr	overtop
Stage	106.79	107.27	108.29	116.63
Discharge	15.67	23.25	39.4	171.1



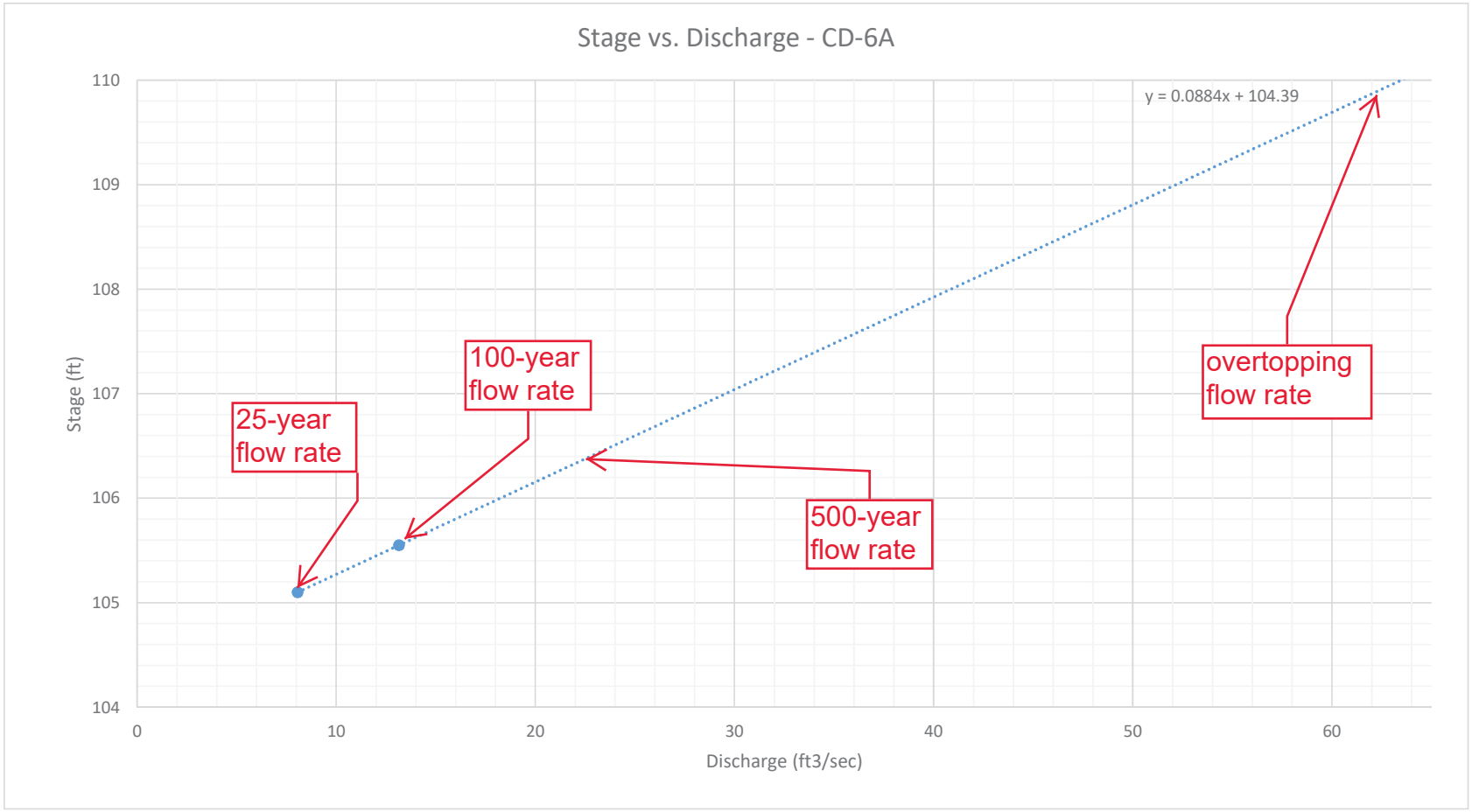
Discharge	Freq.	
11.53	0.1	
15.67	0.04	
19.90	0.02	
23.25	0.01	
39.40	0.002	
1711	>500yr	overtop



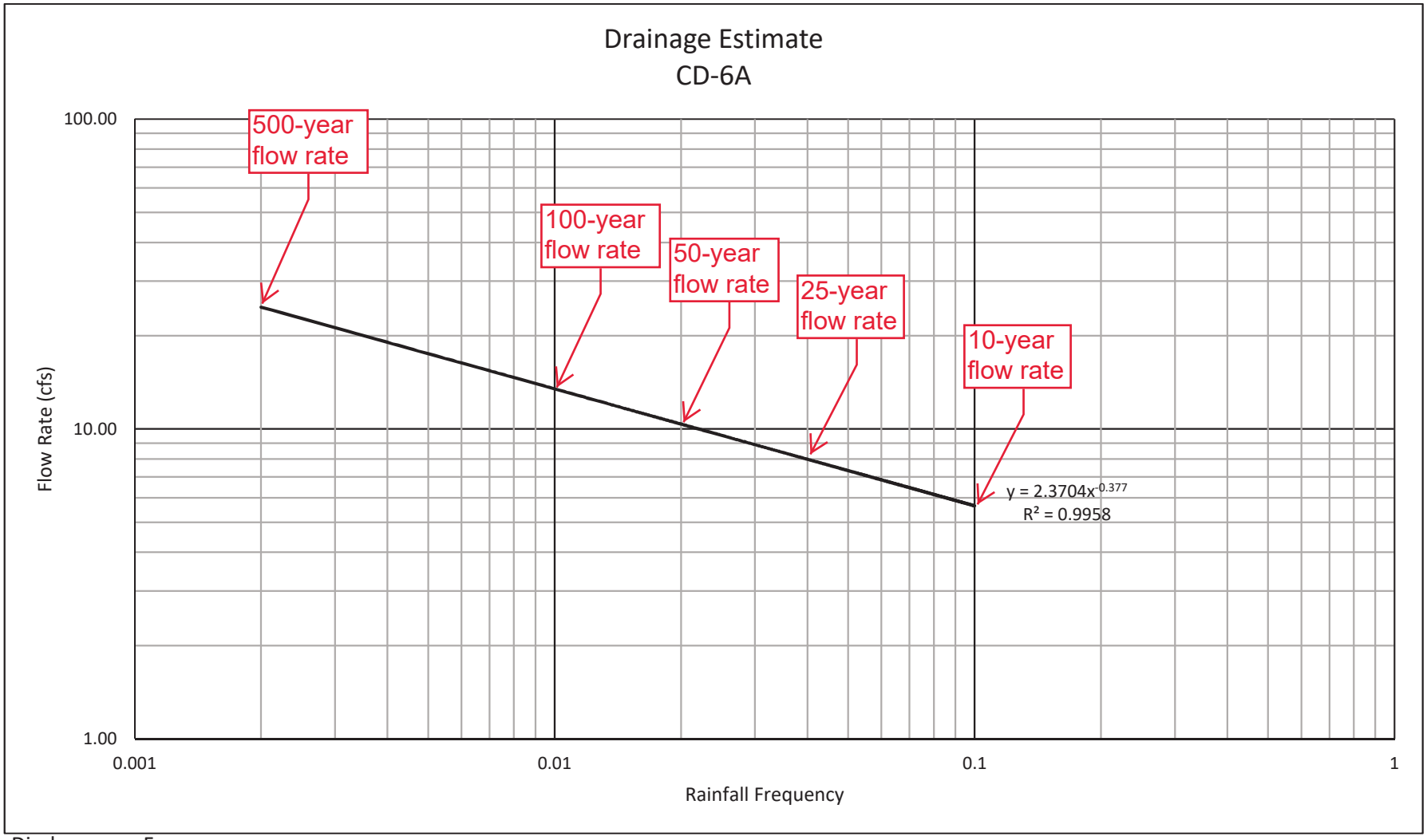
	25yr	100yr	500yr	overtop
Stage	105.33	105.88	107.04	111.48
Discharge	24.15	33.15	52.13	124.88



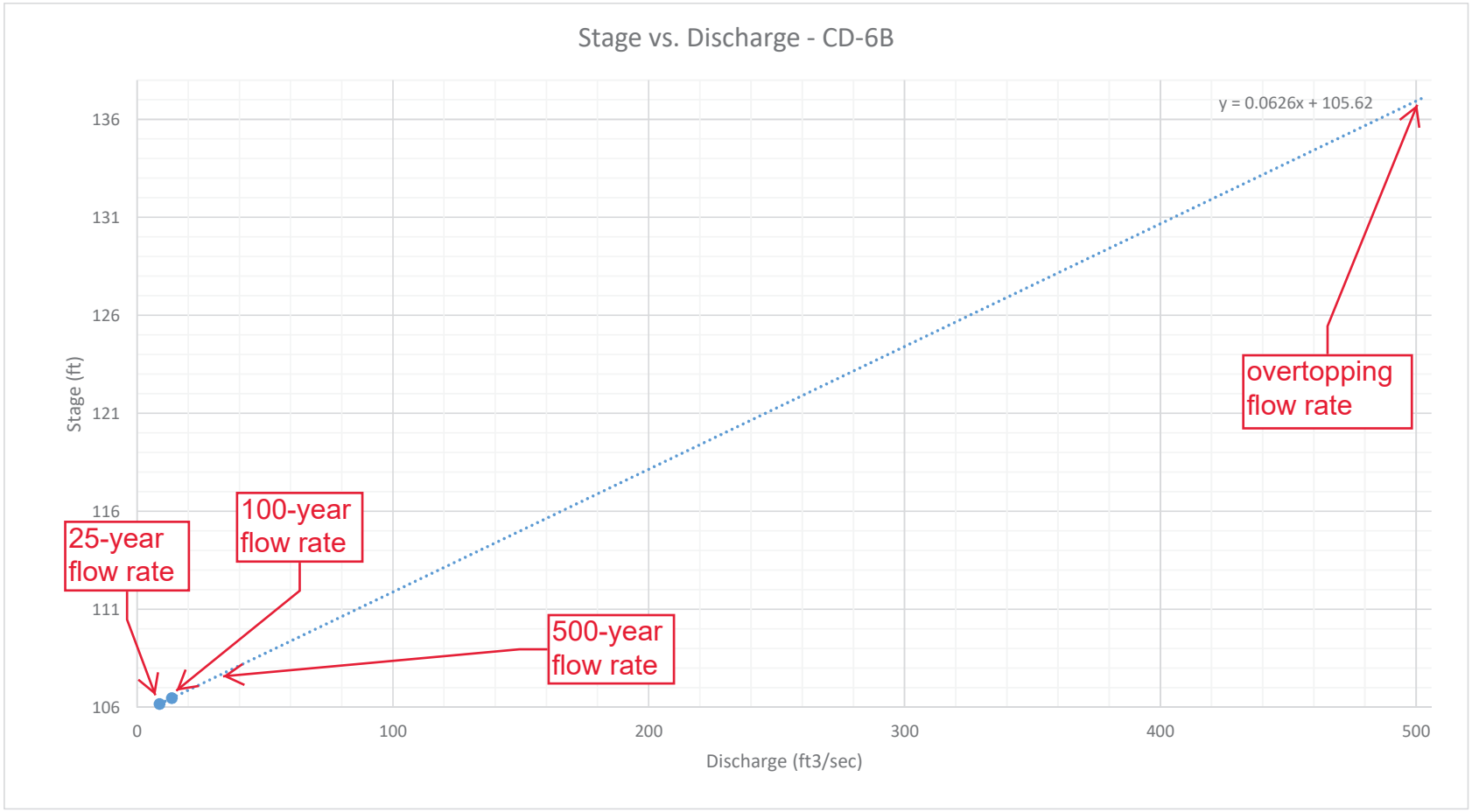
Discharge	Freq.	
18.18	0.1	
24.15	0.04	
29.29	0.02	
33.15	0.01	
52.13	0.002	
124.88	>500yr	overtop



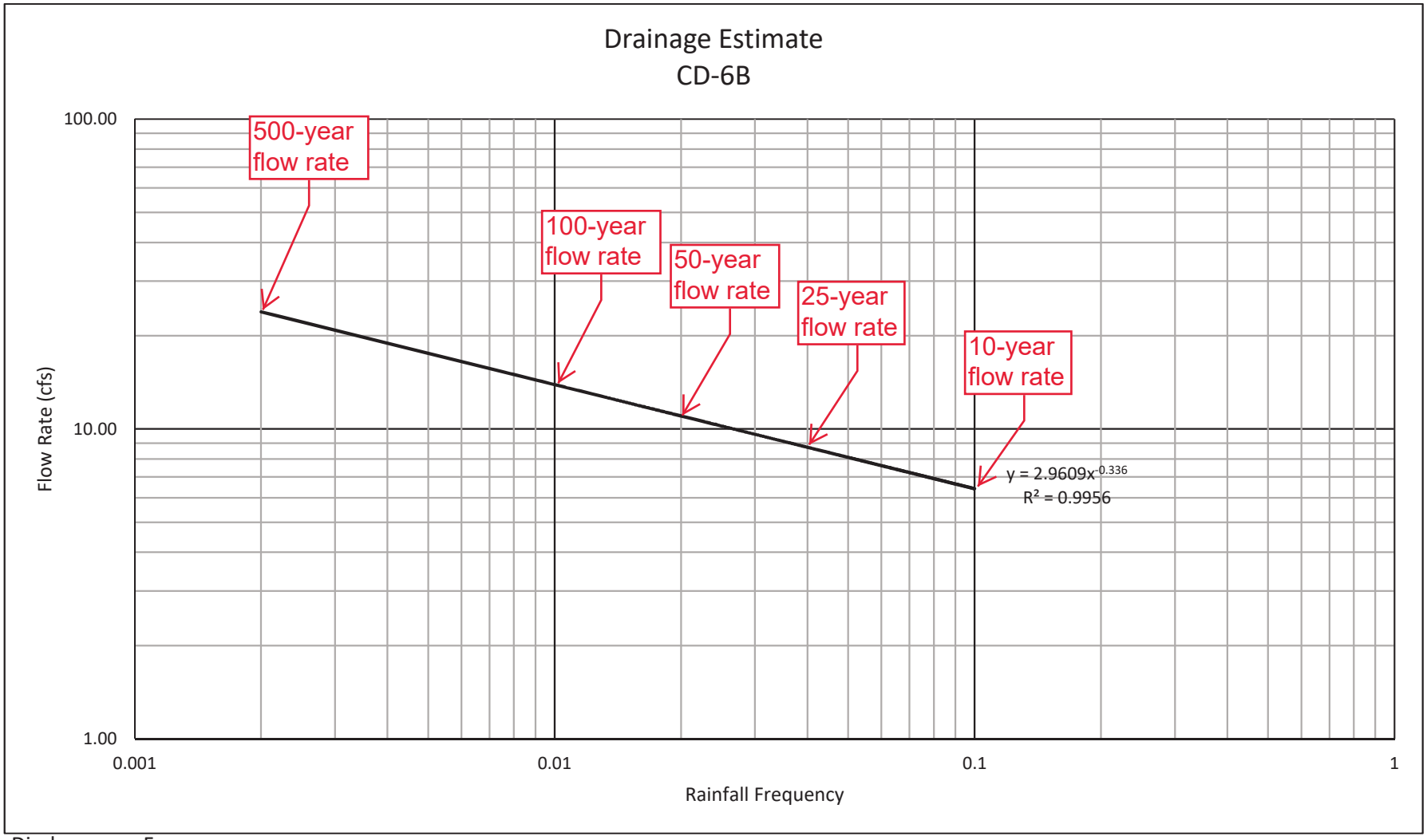
	25yr	100yr	500yr	overtop
Stage	105.1	105.55	106.57	109.88
Discharge	8.06	13.15	24.68	62.1



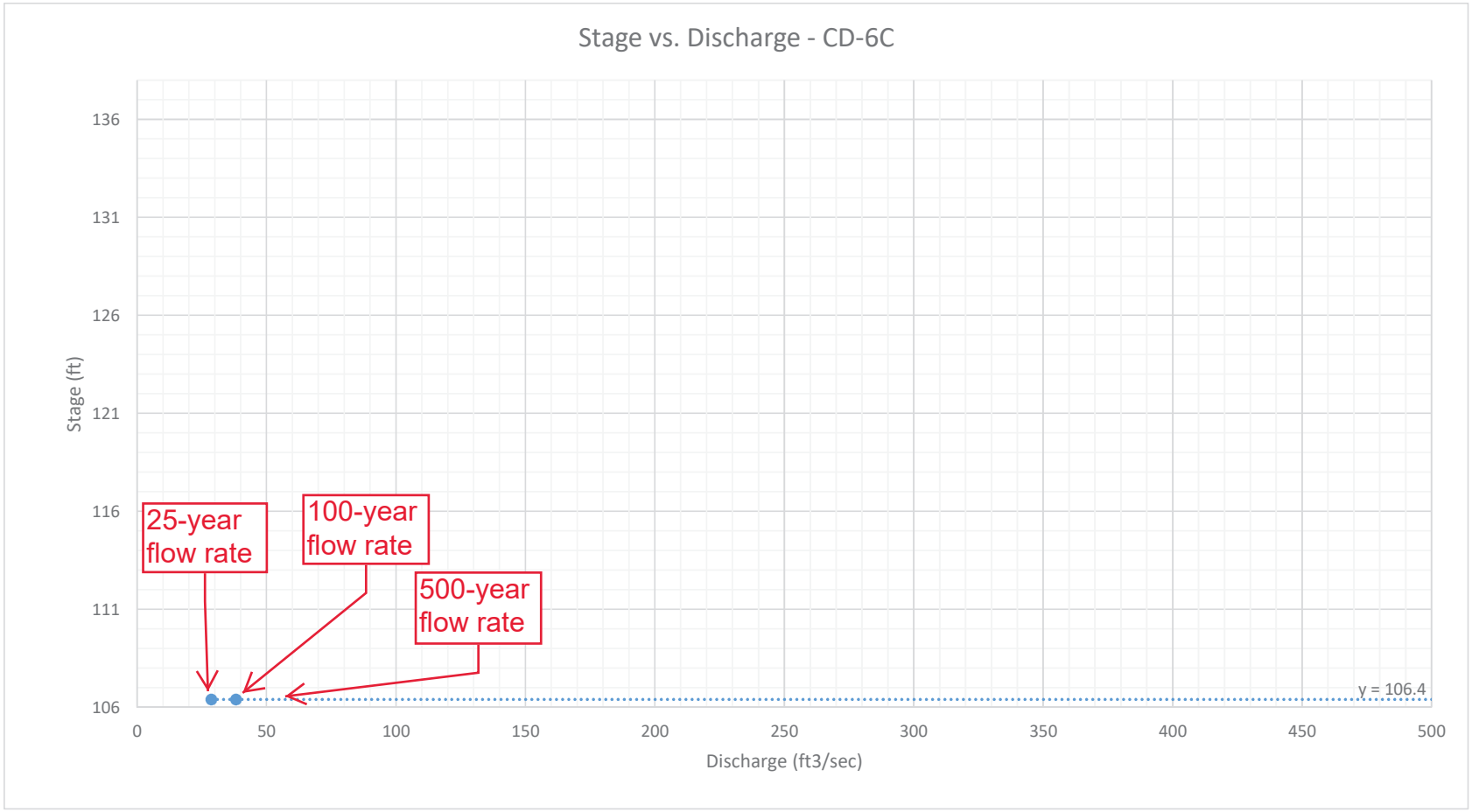
Discharge	Freq.	
5.57	0.1	
8.06	0.04	
10.68	0.02	
13.15	0.01	
24.68	0.002	
62.1	>500yr	overtop



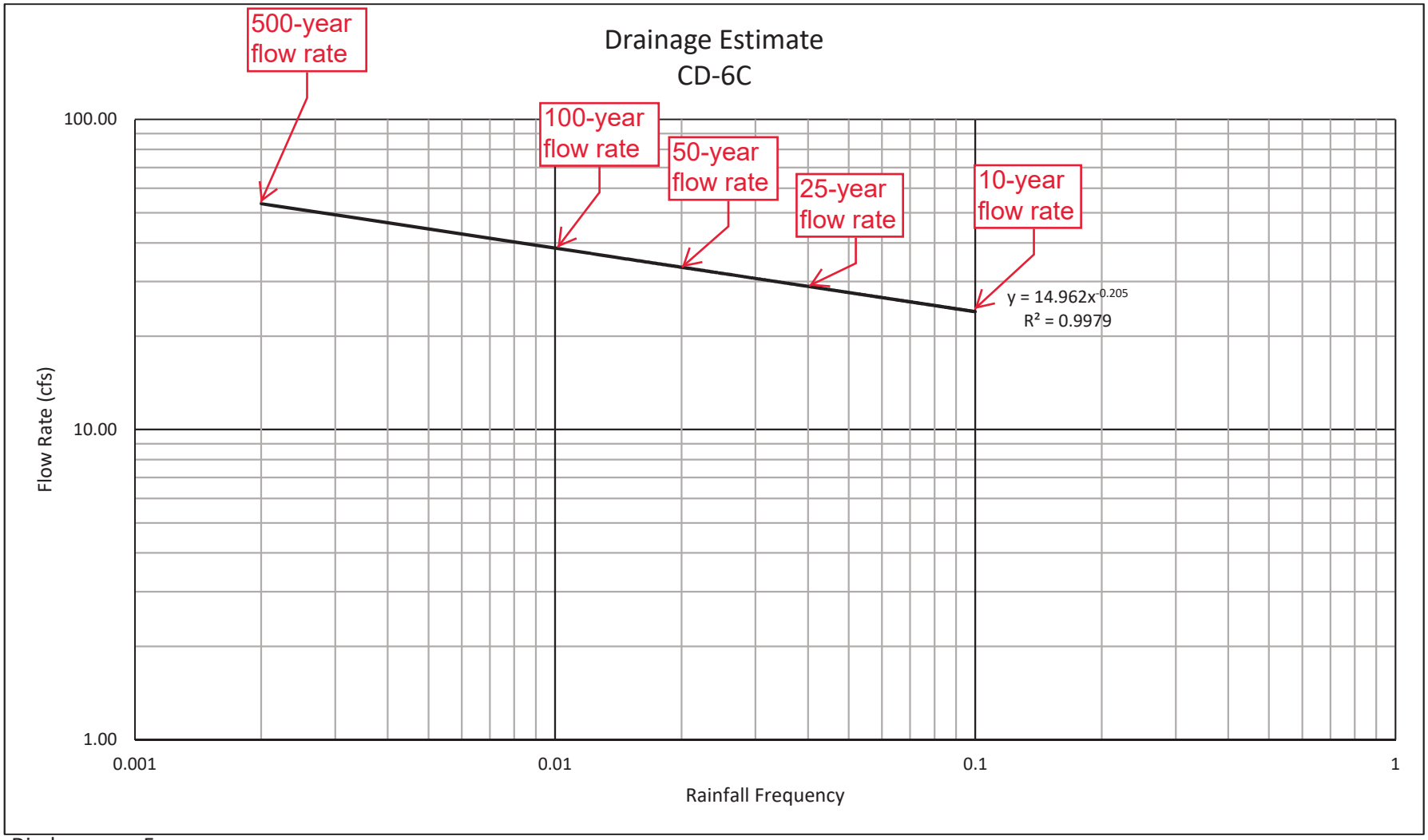
	25yr	100yr	500yr	overtop
Stage	106.17	106.47	107.12	137.27
Discharge	8.81	13.6	23.89	505.6



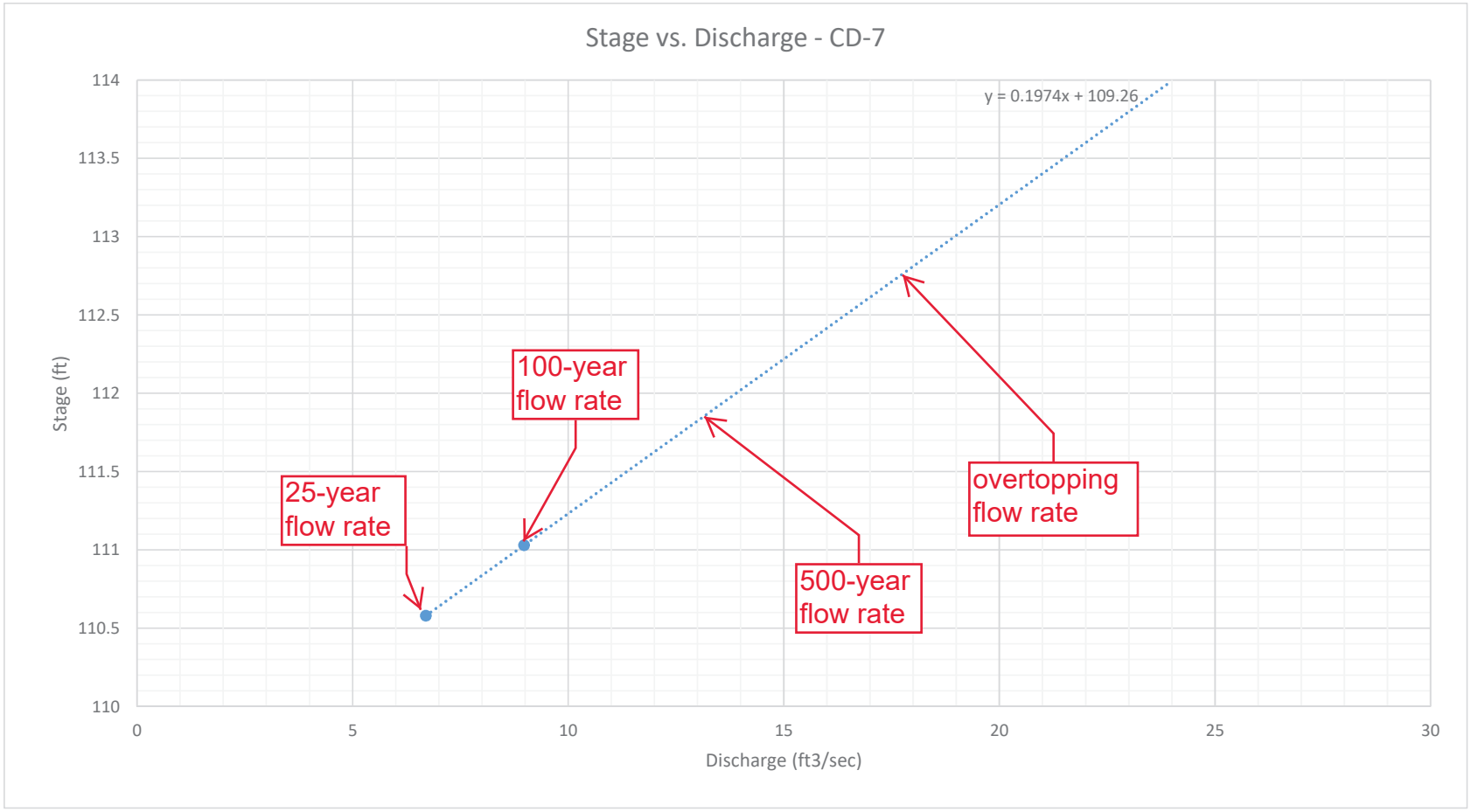
Discharge	Freq.	
6.33	0.1	
8.81	0.04	
11.31	0.02	
13.60	0.01	
23.89	0.002	
505.6	>500yr	overtop



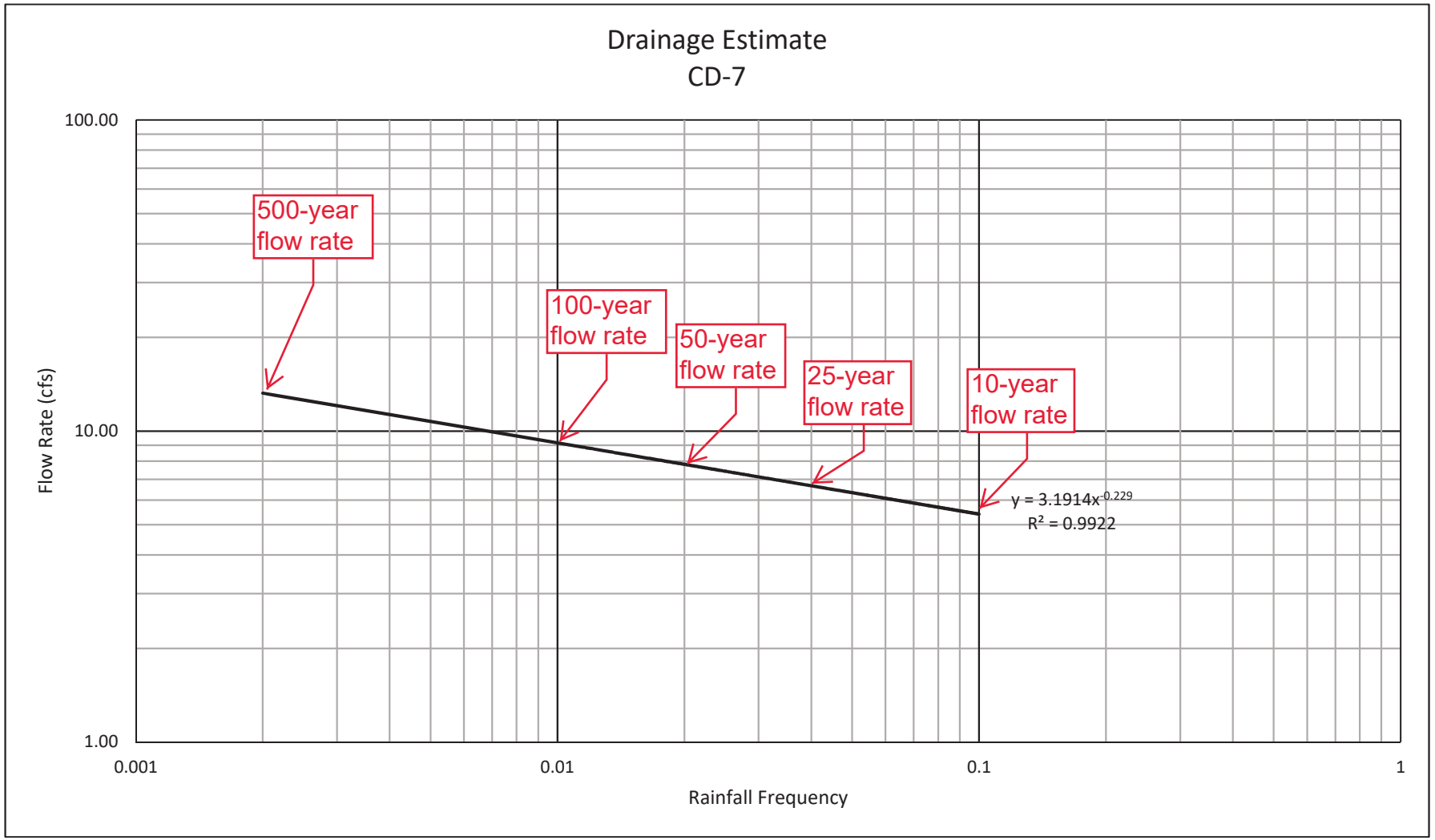
	25yr	100yr	500yr	overtop
Stage	106.4	106.4		107.5
Discharge	28.66	38.16	53.49	



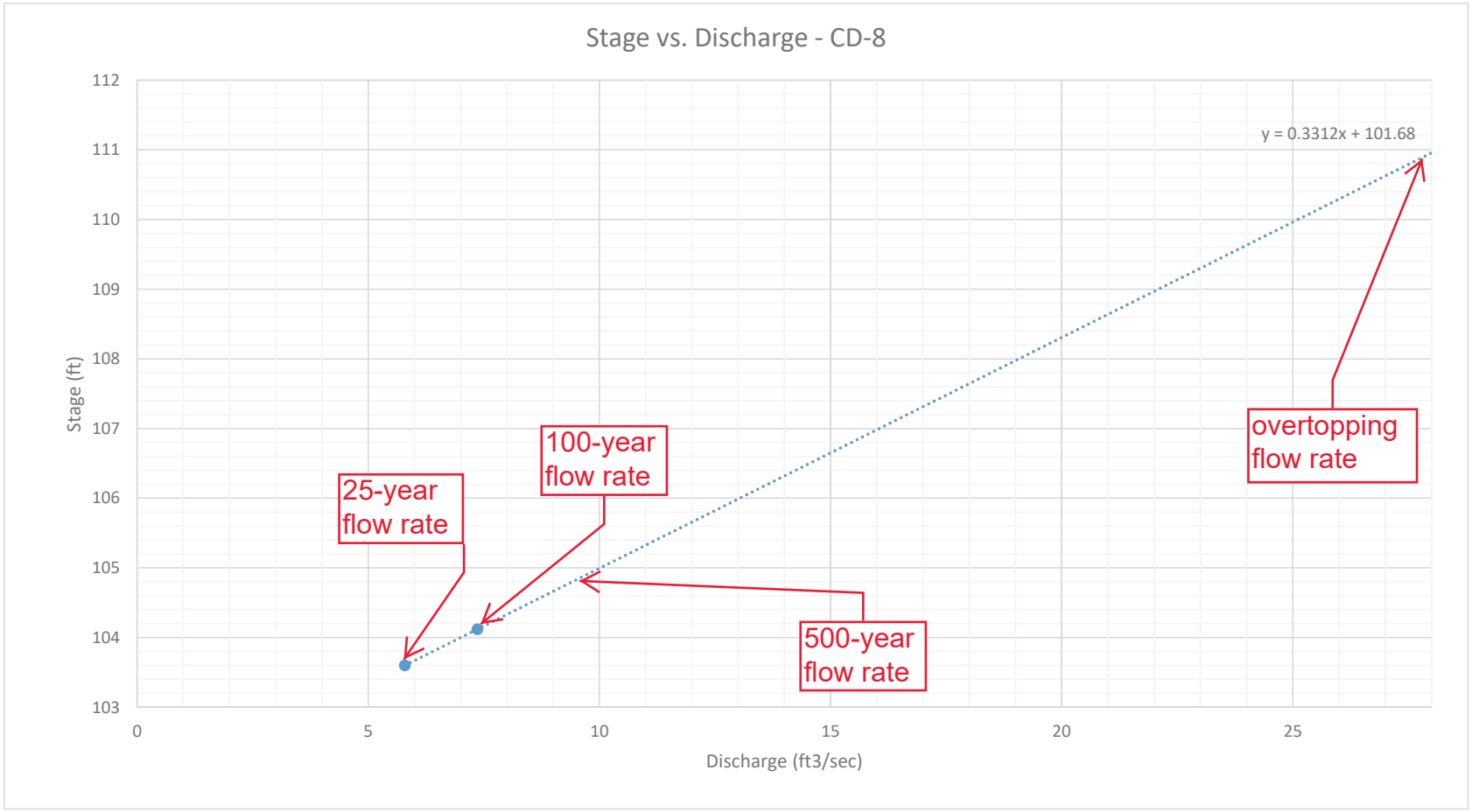
Discharge	Freq.
23.94	0.1
28.86	0.04
33.82	0.02
38.16	0.01
53.49	0.002



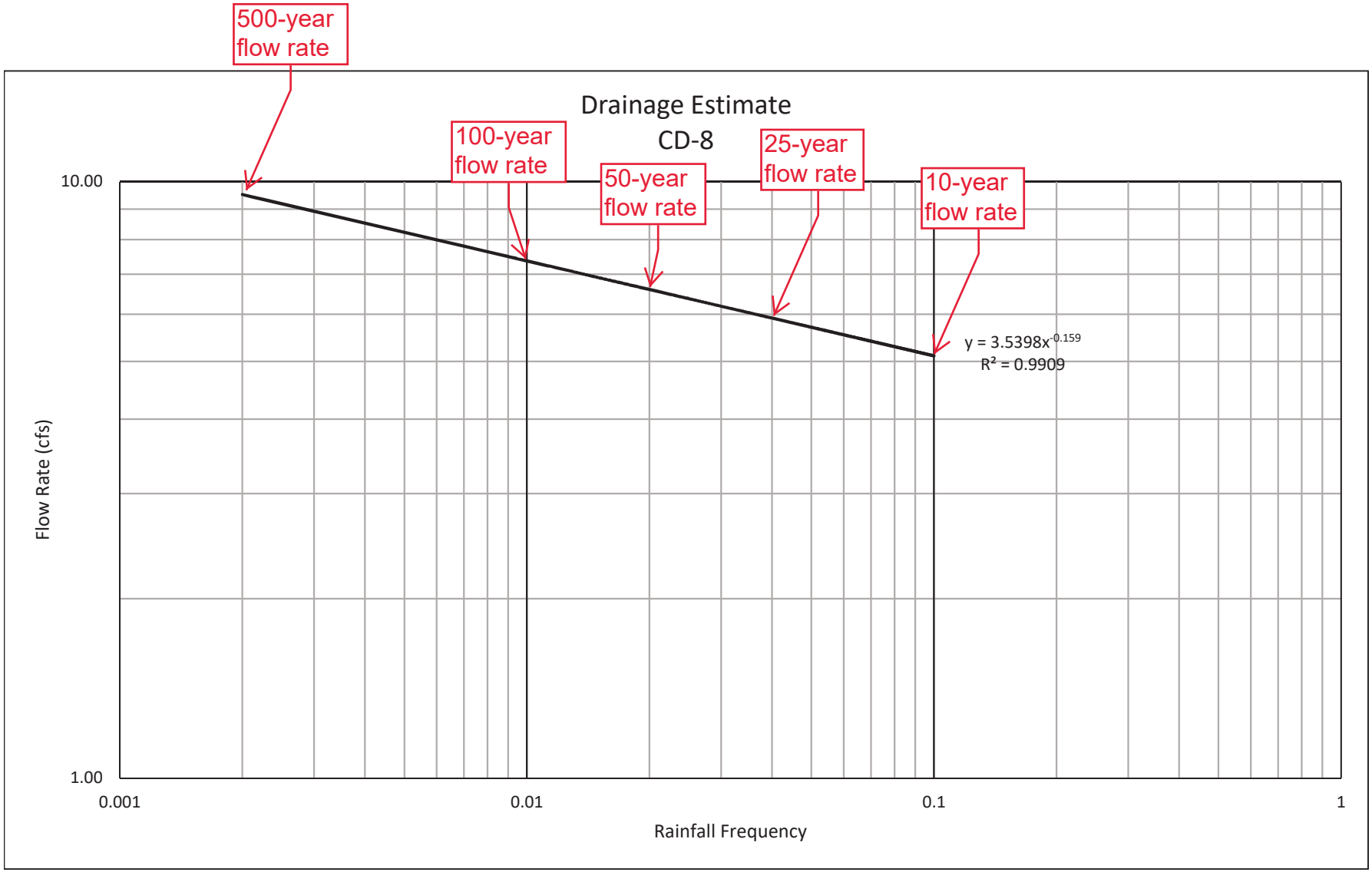
	25yr	100yr	500yr	overtop
Stage	110.58	111.03	111.87	112.76
Discharge	6.7	8.98	13.24	17.73



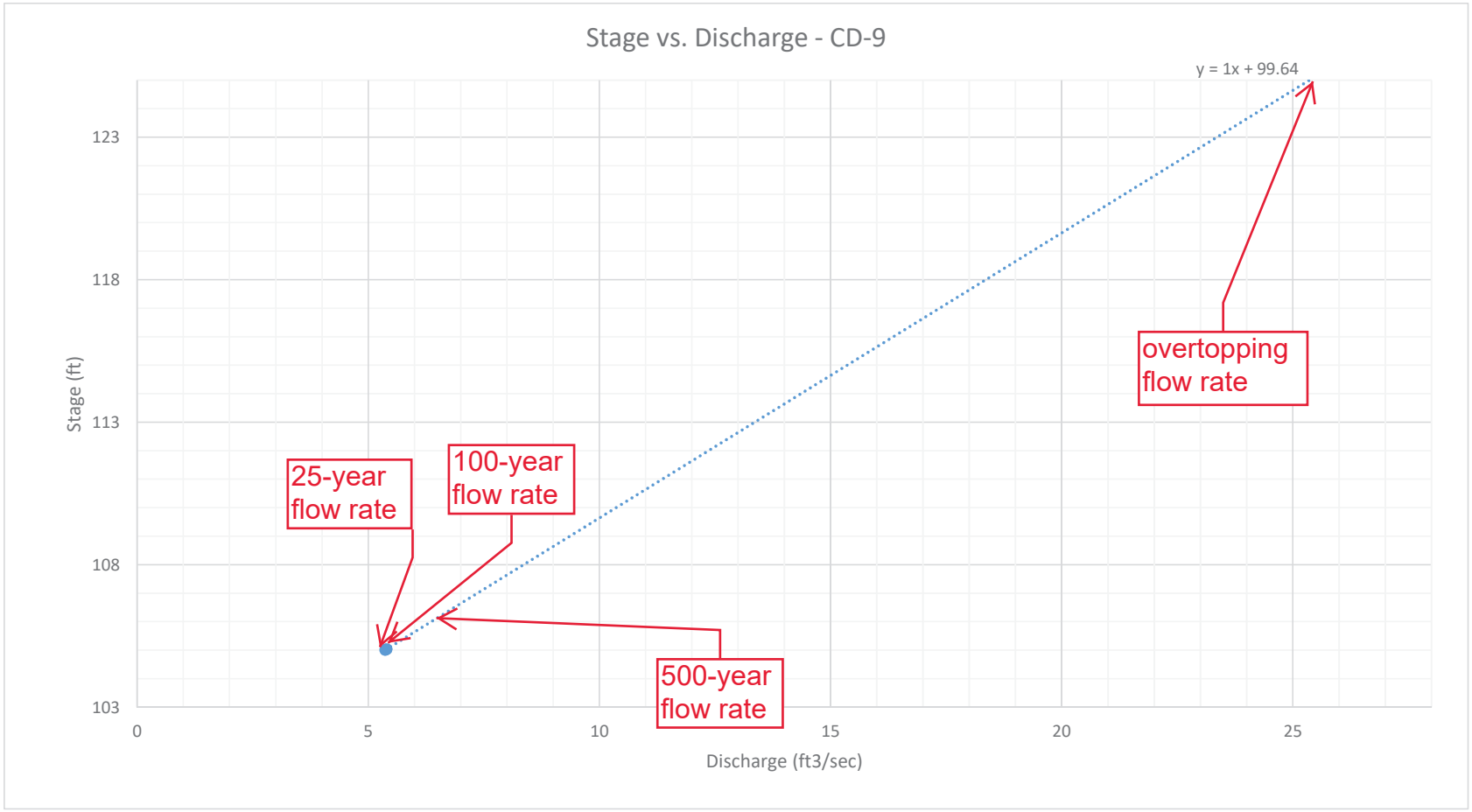
Discharge	Freq.	
5.35	0.1	
6.70	0.04	
8.02	0.02	
8.98	0.01	
13.24	0.002	
17.73	>500yr	overtop



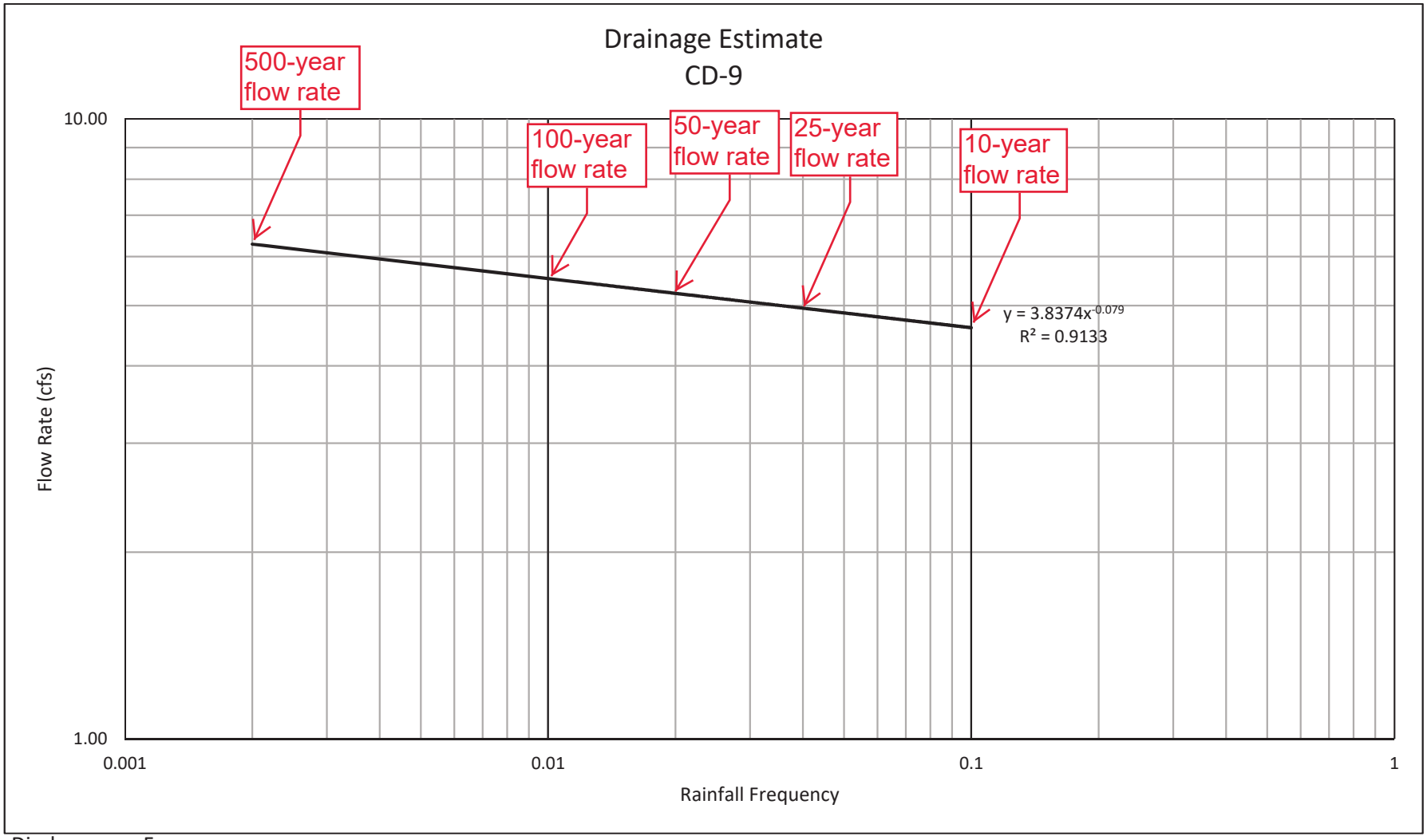
	25yr	100yr	500yr	overtop
Stage	103.6	104.12	104.83	110.93
Discharge	5.79	7.36	9.51	27.93



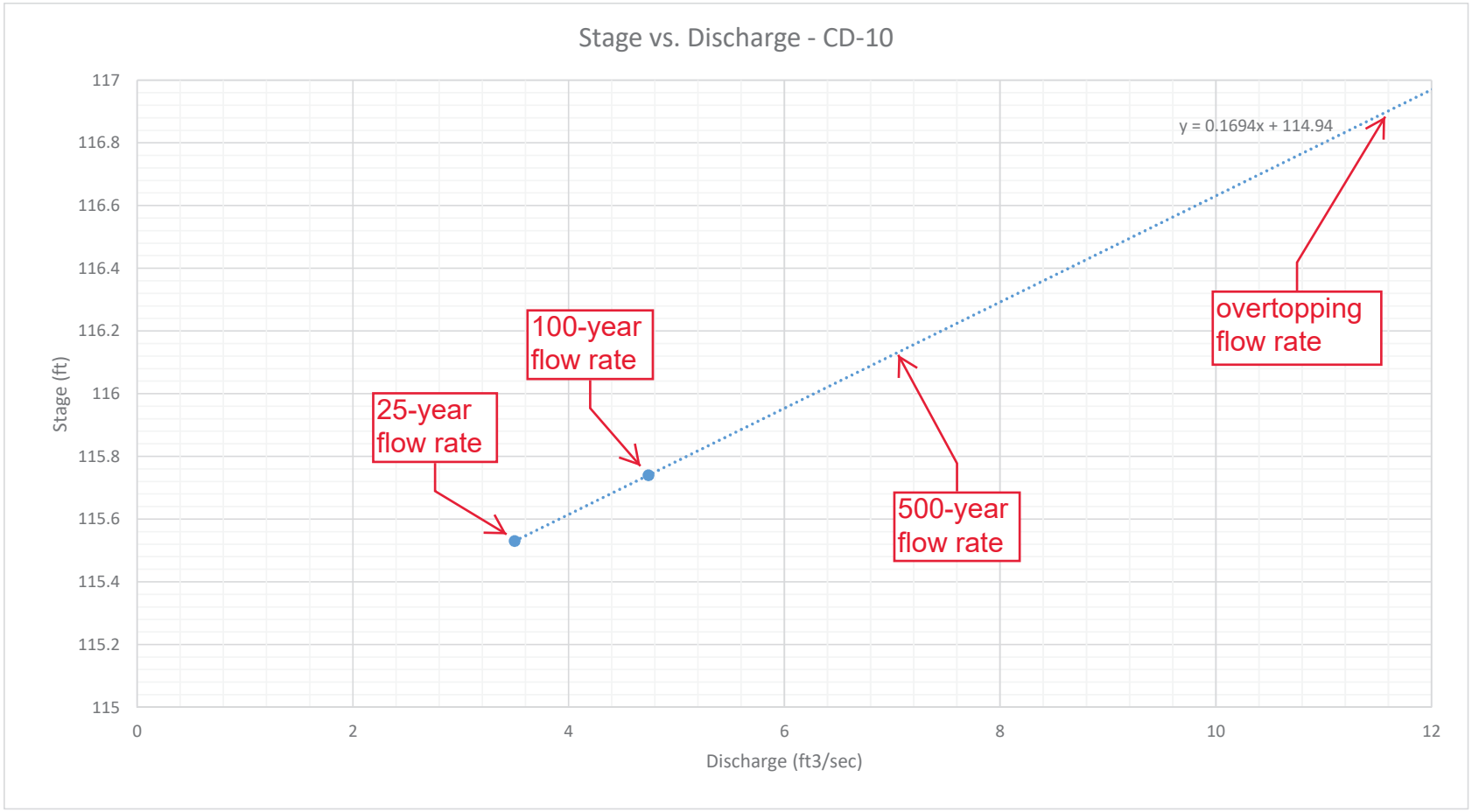
Discharge	Freq.	
5.15	0.1	
5.79	0.04	
6.69	0.02	
7.36	0.01	
9.51	0.002	
27.93	>500yr	overtop



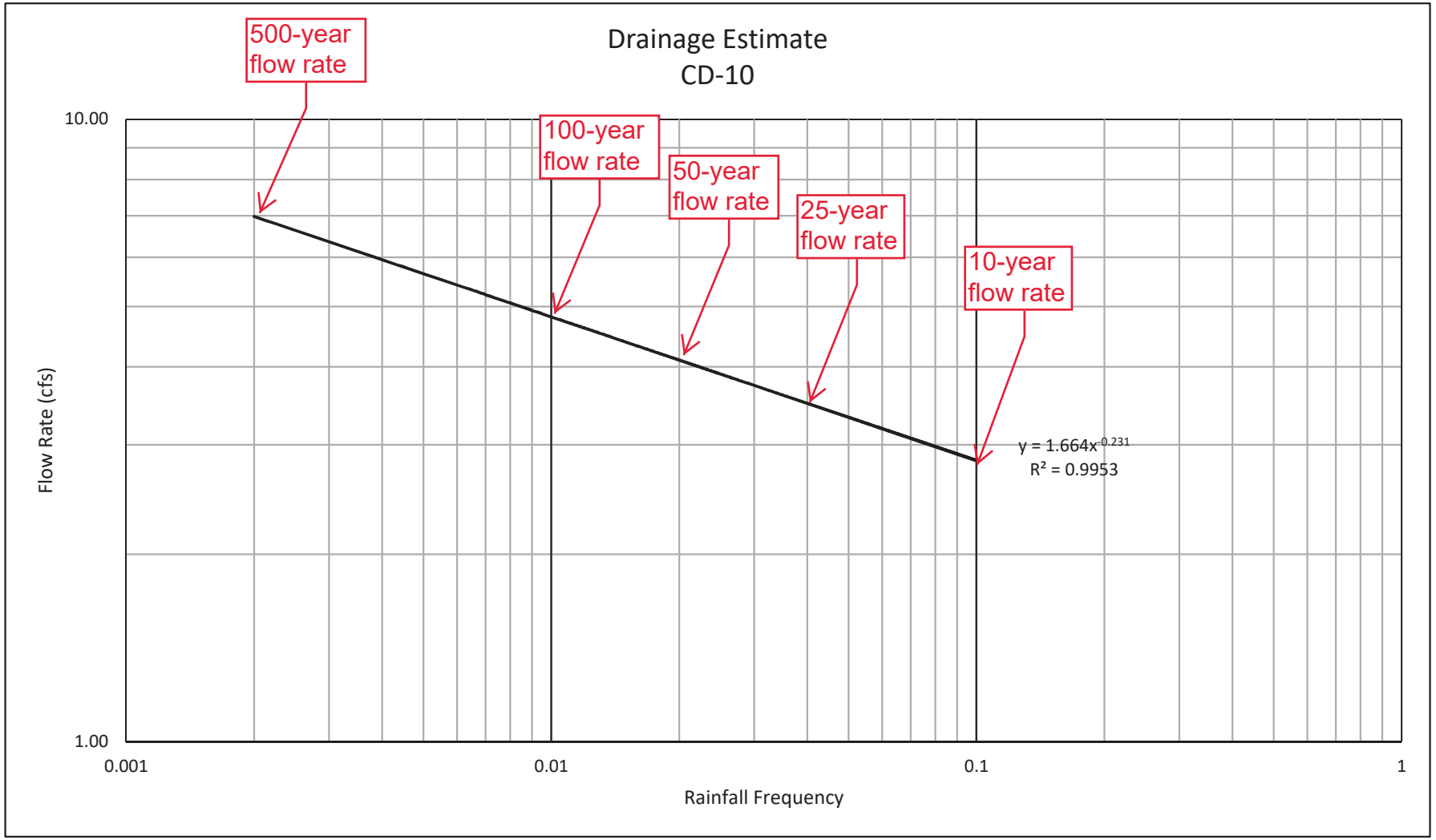
	25yr	100yr	500yr	overtop
Stage	105.01	105.04	105.91	124.94
Discharge	5.37	5.4	6.27	25.3



Discharge	Freq.	
4.53	0.1	
5.03	0.04	
5.37	0.02	
5.40	0.01	
6.27	0.002	
25.3	>500yr	overtop



	25yr	100yr	500yr	overtop
Stage	115.53	115.74	116.12	116.91
Discharge	3.5	4.74	6.99	11.63



Discharge	Freq.	
2.81	0.1	
3.50	0.04	
4.19	0.02	
4.74	0.01	
6.99	0.002	
11.63	>500yr	overtop

Appendix E – HY-8 Analysis

HY-8 Culvert Analysis Report

CD-2
Pre-Development

Note: Data from plans and permit for FPID No. 238422-1-52-01
(permit # 90260-2)

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow (25 year): 72 cfs

Design Flow (50 year): 90 cfs

Maximum Flow (100 year): 100.8 cfs

Table 1 - Summary of Culvert Flows at Crossing: CD-2 Pre

Headwater Elevation (ft)	Total Discharge (cfs)	CD-2 Pre Discharge (cfs)	Roadway Discharge (cfs)	Iterations
111.80	72.00	72.00	0.00	1
111.90	74.88	74.88	0.00	1
112.05	77.76	77.76	0.00	1
112.22	80.64	80.64	0.00	1
112.38	83.52	83.52	0.00	1
112.53	86.40	86.40	0.00	1
112.69	89.28	89.28	0.00	1
112.74	90.00	90.00	0.00	1
113.02	95.04	95.04	0.00	1
113.19	97.92	97.92	0.00	1
113.35	100.80	100.80	0.00	1
115.29	132.47	132.47	0.00	Overtopping

Site Data - CD-2 Pre

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 108.00 ft

Outlet Station: 165.00 ft

Outlet Elevation: 107.85 ft

Number of Barrels: 1

Culvert Data Summary - CD-2 Pre

Barrel Shape: Concrete Box

Barrel Span: 4.00 ft

Barrel Rise: 3.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Square Edge (90º) Headwall

Inlet Depression: None

Tailwater Channel Data - CD-2 Pre

Tailwater Channel Option: Enter Constant Tailwater Elevation

Constant Tailwater Elevation: 109.82 ft (From SJRWMD permit # 90260-2)

Roadway Data for Crossing: CD-2 Pre

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 200.00 ft

Crest Elevation: 115.29 ft

Roadway Surface: Paved

Roadway Top Width: 114.00 ft

CD-2
Post-Development

Note: Data from plans and permit for FPID No. 238422-1-52-01 (permit # 90260-2)

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow (25 year): 72 cfs

Design Flow (50 year): 90 cfs

Maximum Flow (100 year): 100.8 cfs

Table 2 - Summary of Culvert Flows at Crossing: CD-2 Post

Headwater Elevation (ft)	Total Discharge (cfs)	CD-2 Post Discharge (cfs)	Roadway Discharge (cfs)	Iterations
111.82	72.00	72.00	0.00	1
111.96	74.88	74.88	0.00	1
112.12	77.76	77.76	0.00	1
112.29	80.64	80.64	0.00	1
112.45	83.52	83.52	0.00	1
112.62	86.40	86.40	0.00	1
112.78	89.28	89.28	0.00	1
112.83	90.00	90.00	0.00	1
113.13	95.04	95.04	0.00	1
113.30	97.92	97.92	0.00	1
113.48	100.80	100.80	0.00	1
115.29	129.28	129.28	0.00	Overtopping

Site Data - CD-2 Post

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 108.00 ft

Outlet Station: 190.00 ft

Outlet Elevation: 107.83 ft

Number of Barrels: 1

Culvert Data Summary - CD-2 Post

Barrel Shape: Concrete Box

Barrel Span: 4.00 ft

Barrel Rise: 3.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Square Edge (90º) Headwall

Inlet Depression: None

Tailwater Channel Data - CD-2 Post

Tailwater Channel Option: Enter Constant Tailwater Elevation

Constant Tailwater Elevation: 109.82 ft (From SJRWMD permit # 90260-2)

Roadway Data for Crossing: CD-2 Post

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 200.00 ft

Crest Elevation: 115.29 ft

Roadway Surface: Paved

Roadway Top Width: 114.00 ft

CD-3
Pre-Development

Note: Data from plans and permit for FPID No. 238422-1-52-01 (permit # 90260-2)

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow (25 year): 29.5 cfs

Design Flow (50 year): 36.8 cfs

Maximum Flow (100 year): 41.2 cfs

Table 3 - Summary of Culvert Flows at Crossing: CD-3 Pre

Headwater Elevation (ft)	Total Discharge (cfs)	CD-3 Pre Discharge (cfs)	Roadway Discharge (cfs)	Iterations
110.37	29.50	29.50	0.00	1
110.48	30.67	30.67	0.00	1
110.60	31.84	31.84	0.00	1
110.75	33.01	33.01	0.00	1
110.95	34.18	34.18	0.00	1
111.13	35.35	35.35	0.00	1
111.32	36.52	36.52	0.00	1
111.36	36.80	36.80	0.00	1
111.70	38.86	38.86	0.00	1
111.90	40.03	40.03	0.00	1
112.10	41.20	41.20	0.00	1
117.00	64.61	64.61	0.00	Overtopping

Site Data - CD-3 Pre

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 107.20 ft

Outlet Station: 190.00 ft

Outlet Elevation: 106.50 ft

Number of Barrels: 1

Culvert Data Summary - CD-3 Pre

Barrel Shape: Circular

Barrel Diameter: 2.50 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Square Edge with Headwall

Inlet Depression: None

Tailwater Channel Data - CD-3 Pre

Tailwater Channel Option: Enter Constant Tailwater Elevation

Constant Tailwater Elevation: 107.74 ft (From SJRWMD permit # 90260-2)

Roadway Data for Crossing: CD-3 Pre

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 400.00 ft

Crest Elevation: 117.00 ft

Roadway Surface: Paved

Roadway Top Width: 114.00 ft

CD-3
Post-Development

Note: Data from plans and permit for FPID No. 238422-1-52-01 (permit # 90260-2)

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow (25 year): 29.5 cfs

Design Flow (50 year): 36.8 cfs

Maximum Flow (100 year): 41.2 cfs

Table 4 - Summary of Culvert Flows at Crossing: CD-3 Post

Headwater Elevation (ft)	Total Discharge (cfs)	CD-3 Post Discharge (cfs)	Roadway Discharge (cfs)	Iterations
110.50	29.50	29.50	0.00	1
110.60	30.67	30.67	0.00	1
110.70	31.84	31.84	0.00	1
110.83	33.01	33.01	0.00	1
111.00	34.18	34.18	0.00	1
111.19	35.35	35.35	0.00	1
111.39	36.52	36.52	0.00	1
111.44	36.80	36.80	0.00	1
111.78	38.86	38.86	0.00	1
111.98	40.03	40.03	0.00	1
112.19	41.20	41.20	0.00	1
117.00	64.80	64.80	0.00	Overtopping

Site Data - CD-3 Post

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 107.35 ft

Outlet Station: 195.00 ft

Outlet Elevation: 106.55 ft

Number of Barrels: 1

Culvert Data Summary - CD-3 Post

Barrel Shape: Circular

Barrel Diameter: 2.50 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Square Edge with Headwall

Inlet Depression: None

Tailwater Channel Data - CD-3 Post

Tailwater Channel Option: Enter Constant Tailwater Elevation

Constant Tailwater Elevation: 107.74 ft (From Permit # 90260-2)

Roadway Data for Crossing: CD-3 Post

Roadway Profile Shape: Constant Roadway Elevation

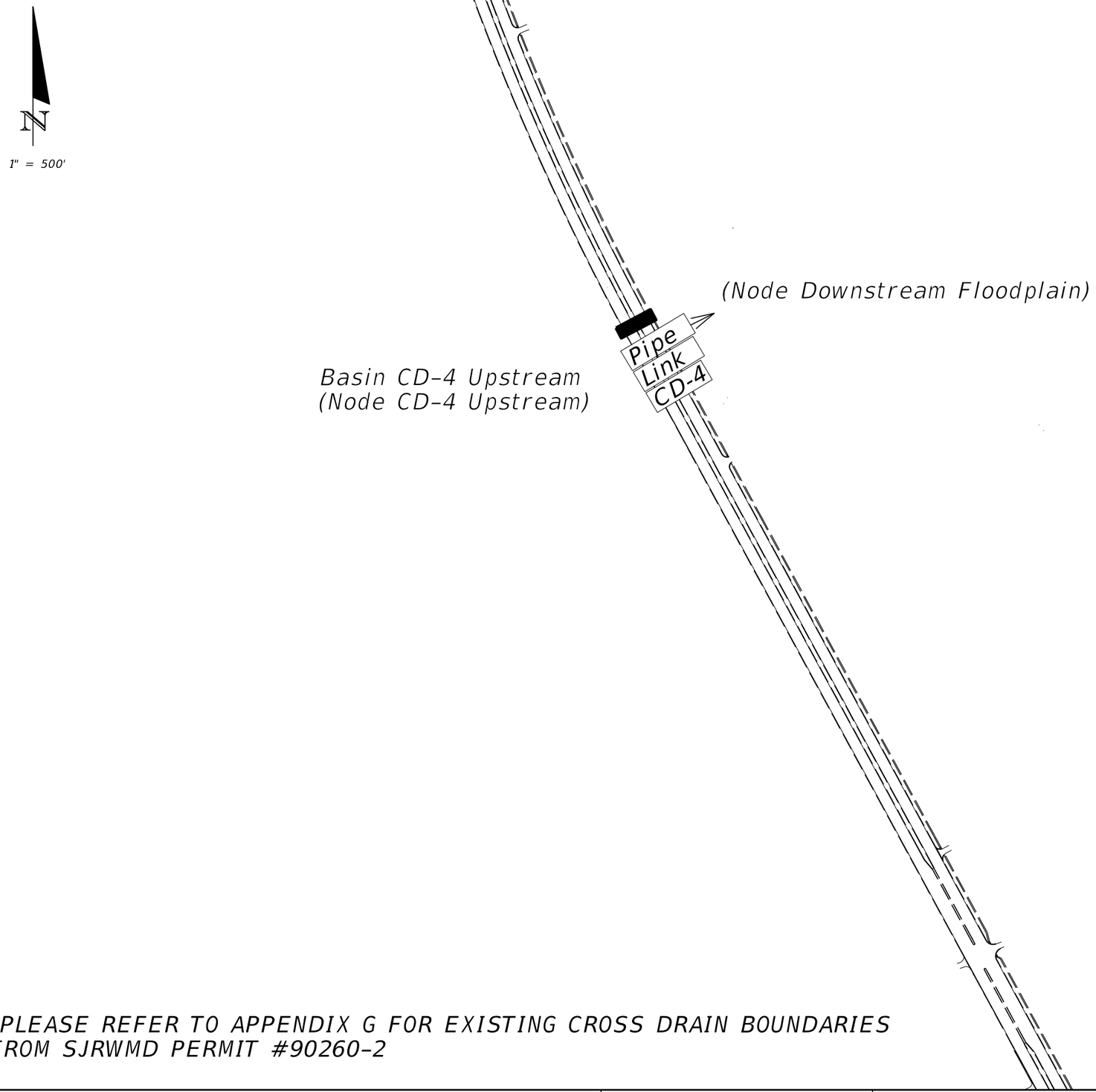
Crest Length: 400.00 ft

Crest Elevation: 117.00 ft

Roadway Surface: Paved

Roadway Top Width: 102.00 ft

Appendix F – ICPR Analysis



*PLEASE REFER TO APPENDIX G FOR EXISTING CROSS DRAIN BOUNDARIES FROM SJRWMD PERMIT #90260-2

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

CD-4
PRE-DEV ICPR EXHIBIT

SHEET NO.
F-1

PS972SM 10/18/2018 4:03:57 PM NoteBorderText C:\FDOTSS4\RESOURCES\Cell\Roadway.cel

This model is calibrated for the total basin flow to match existing conditons.

Manual Basin: CD-4 Upstream Basin

Scenario: Scenario1
Node: CD-4 Upstream
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 30.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
110.0000	2	2	

Comment:

Node: CD-4 Upstream

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 104.00 ft
Warning Stage: 107.40 ft

Stage [ft]	Area [ac]	Area [ft2]
104.00	15.1100	658192
105.00	15.7600	686506
106.00	16.6900	727016
107.00	17.6300	767963
108.00	18.9900	827204
109.00	20.8600	908662

Comment:

Node: Downstream Floodplain

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 105.43 ft
Warning Stage: 108.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	105.43
0	0	0	999.0000	105.43

Comment: Tailwater set at CD-4 tailwater in HY-8 from existing permit

Pipe Link: CD-4		Upstream		Downstream	
Scenario:	Scenario1	Invert:	103.90 ft	Invert:	103.58 ft
From Node:	CD-4 Upstream	Manning's N:	0.0120	Manning's N:	0.0120
To Node:	Downstream	Geometry: Rectangular		Geometry: Rectangular	
	Floodplain	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Link Count:	1	Max Width:	5.00 ft	Max Width:	5.00 ft
Flow Direction:	Both	Fillet:	0.00 ft	Fillet:	0.00 ft
Damping:	0.0000 ft	Bottom Clip			
Length:	177.00 ft	Default:	0.00 ft	Default:	0.00 ft
FHWA Code:	1	Op Table:		Op Table:	
Entr Loss Coef:	0.00	Ref Node:		Ref Node:	
Exit Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Loss Coef:	0.00	Top Clip			
Bend Location:	0.00 ft	Default:	0.00 ft	Default:	0.00 ft
Energy Switch:	Energy	Op Table:		Op Table:	
		Ref Node:		Ref Node:	
		Manning's N:	0.0000	Manning's N:	0.0000

Comment:

Simulation: 100yr

Scenario: Scenario1
Run Date/Time: 7/25/2019 2:21:31 PM
Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6		
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Manual Basin Rain Opt:	Global
Max dZ:	1.0000 ft		
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	10.56 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
		Dflt Damping (1D):	0.0050 ft
		Min Node Srf Area (1D):	100 ft2
		Energy Switch (1D):	Energy

Comment:

Simulation: 10yr

Scenario: Scenario1
Run Date/Time: 7/25/2019 2:21:35 PM
Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

Hydrology [sec]	Surface Hydraulics

		[sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr
Manual Basin Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 7.20 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 25yr

Scenario: Scenario1
Run Date/Time: 7/25/2019 2:21:41 PM
Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
IA Recovery Time: 24.0000 hr
Manual Basin Rain Opt: Global

Max dZ:	1.0000 ft		
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	8.40 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
		Dflt Damping (1D):	0.0050 ft
		Min Node Srf Area (1D):	100 ft2
		Energy Switch (1D):	Energy

Comment:

Simulation: 50yr

Scenario: Scenario1
Run Date/Time: 7/25/2019 2:21:49 PM
Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Lookup Tables

Rainfall Folder:		Boundary Stage Set:	
		Extern Hydrograph Set:	
Unit Hydrograph Folder:		Curve Number Set:	1
		Green-Ampt Set:	
		Vertical Layers Set:	
		Impervious Set:	1

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6		
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Manual Basin Rain Opt:	Global
Max dZ:	1.0000 ft		
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	9.60 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
		Dflt Damping (1D):	0.0050 ft
		Min Node Srf Area (1D):	100 ft2
		Energy Switch (1D):	Energy

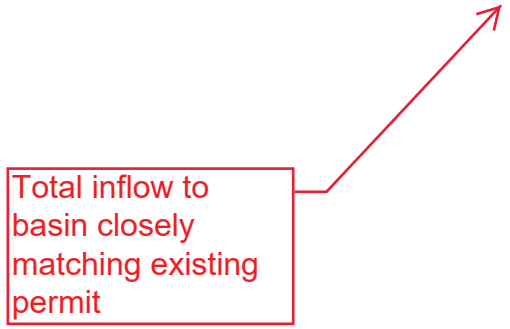
Comment:

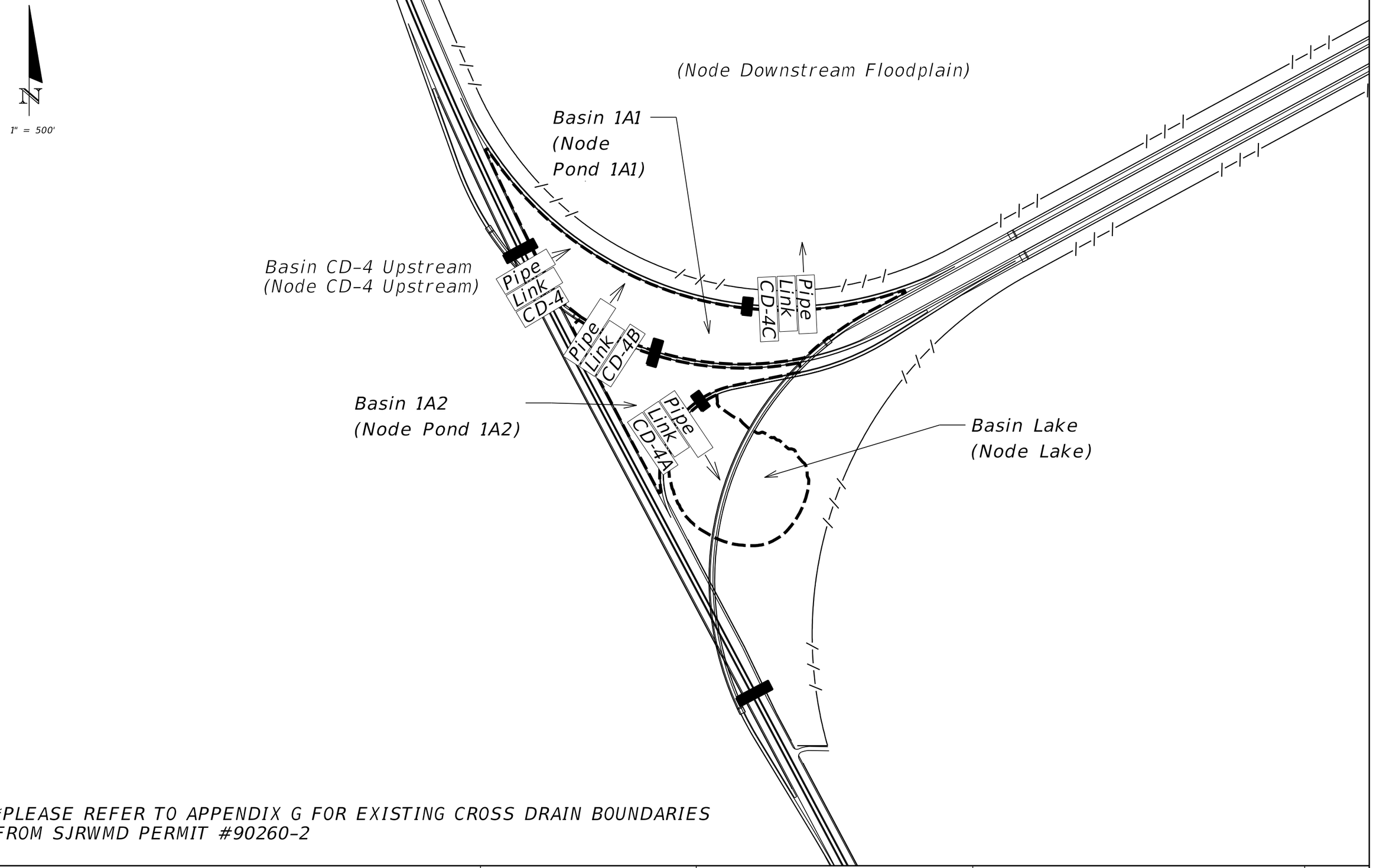
Curve Number: 1 [Set]

Land Cover Zone	Soil Zone	Curve Number [dec]
2	2	72.0

Node Max Conditions [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
CD-4 Upstream	100yr	107.40	106.28	0.0010	84.40	48.54	738623
Downstream Floodplain	100yr	108.00	105.43	0.0000	48.54	28.54	0
CD-4 Upstream	10yr	107.40	105.69	0.0010	48.25	33.58	715292
Downstream Floodplain	10yr	108.00	105.43	0.0000	33.58	28.54	0
CD-4 Upstream	25yr	107.40	105.89	0.0010	61.00	38.59	723338
Downstream Floodplain	25yr	108.00	105.43	0.0000	38.59	28.54	0
CD-4 Upstream	50yr	107.40	106.10	0.0010	73.96	44.01	731505
Downstream Floodplain	50yr	108.00	105.43	0.0000	44.01	28.54	0





*PLEASE REFER TO APPENDIX G FOR EXISTING CROSS DRAIN BOUNDARIES FROM SJRWMD PERMIT #90260-2

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

CD-4, 4A, 4B, 4C
POST-DEV ICPR EXHIBIT

SHEET NO.
F-10

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Manual Basin: Basin 1A1

Scenario: Scenario1
Node: Pond 1A1
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
13.4000	3	3	

Comment:

Manual Basin: Basin 1A2

Scenario: Scenario1
Node: Pond 1A2
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
7.0000	3	3	

Comment:

Manual Basin: Basin Lake

Scenario: Scenario1
Node: Lake
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
9.7000	3	3	

Comment:

Manual Basin: CD-4 Upstream Basin

Scenario: Scenario1
Node: CD-4 Upstream
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 30.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
110.0000	2	2	

Comment:

Node: CD-4 Upstream

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 104.00 ft
Warning Stage: 109.00 ft

Stage [ft]	Area [ac]	Area [ft2]
104.00	15.1100	658192
105.00	15.7600	686506
106.00	16.6900	727016
107.00	17.6300	767963
108.00	18.9900	827204
109.00	20.8600	908662

Comment:

Node: Downstream Floodplain

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 105.43 ft
Warning Stage: 106.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	105.43
0	0	0	24.0000	105.43

Comment: Tw is set the same as pre-development, so as to mimic the existing permit conditons.

Node: Lake

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 104.00 ft
Warning Stage: 108.00 ft

Stage [ft]	Area [ac]	Area [ft2]
104.00	6.0000	261360
105.00	9.0000	392040
106.00	9.3500	407286
107.00	9.7000	422532

Comment:

Node: Pond 1A1

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 105.50 ft
Warning Stage: 109.00 ft

Stage [ft]	Area [ac]	Area [ft2]
105.50	6.7500	294030
106.00	6.9100	301000
107.00	7.2500	315810
108.00	7.6000	331056
109.00	7.9400	345866

Comment:

Node: Pond 1A2

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 105.50 ft
Warning Stage: 108.00 ft

Stage [ft]	Area [ac]	Area [ft2]
105.50	3.4700	151153
106.00	3.5600	155074
107.00	3.7300	162479
108.00	3.9200	170755

Comment:

Pipe Link: CD-4		Upstream		Downstream	
Scenario:	Scenario1	Invert:	103.78 ft	Invert:	103.43 ft
From Node:	CD-4 Upstream	Manning's N:	0.0120	Manning's N:	0.0120
To Node:	Pond 1A1	Geometry: Rectangular		Geometry: Rectangular	
Link Count:	1	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Flow Direction:	Both	Max Width:	5.00 ft	Max Width:	5.00 ft
Damping:	0.0000 ft	Fillet:	0.00 ft	Fillet:	0.00 ft
Length:	192.00 ft	Bottom Clip			
FHWA Code:	1	Default:	0.00 ft	Default:	0.00 ft
Entr Loss Coef:	0.00	Op Table:		Op Table:	
Exit Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Location:	0.00 ft	Top Clip			
Energy Switch:	Energy	Default:	0.00 ft	Default:	0.00 ft
		Op Table:		Op Table:	
		Ref Node:		Ref Node:	
		Manning's N:	0.0000	Manning's N:	0.0000
Comment:					

Pipe Link: CD-4A		Upstream		Downstream	
Scenario:	Scenario1	Invert:	105.50 ft	Invert:	105.00 ft
From Node:	Pond 1A2	Manning's N:	0.0120	Manning's N:	0.0120
To Node:	Lake	Geometry: Circular		Geometry: Circular	
Link Count:	1	Max Depth:	1.50 ft	Max Depth:	1.50 ft
Flow Direction:	Both	Bottom Clip			
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	100.00 ft	Op Table:		Op Table:	
FHWA Code:	1	Ref Node:		Ref Node:	
Entr Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	0.00	Top Clip			
Bend Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 ft	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0000	Manning's N:	0.0000
Comment:					

Pipe Link: CD-4B		Upstream		Downstream	
Scenario:	Scenario1	Invert:	105.60 ft	Invert:	105.50 ft
From Node:	Pond 1A2	Manning's N:	0.0120	Manning's N:	0.0120
To Node:	Pond 1A1	Geometry: Circular		Geometry: Circular	
Link Count:	1	Max Depth:	1.50 ft	Max Depth:	1.50 ft
Flow Direction:	Both	Bottom Clip			
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	150.00 ft	Op Table:		Op Table:	
FHWA Code:	1	Ref Node:		Ref Node:	

Entr Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	0.00	Top Clip			
Bend Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 ft	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0000	Manning's N:	0.0000

Comment:

Pipe Link: CD-4C		Upstream		Downstream	
Scenario:	Scenario1	Invert:	105.50 ft	Invert:	104.00 ft
From Node:	Pond 1A1	Manning's N:	0.0120	Manning's N:	0.0120
To Node:	Downstream	Geometry: Circular		Geometry: Circular	
	Floodplain	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Link Count:	1	Bottom Clip			
Flow Direction:	Both	Default:	0.00 ft	Default:	0.00 ft
Damping:	0.0000 ft	Op Table:		Op Table:	
Length:	95.00 ft	Ref Node:		Ref Node:	
FHWA Code:	1	Manning's N:	0.0000	Manning's N:	0.0000
Entr Loss Coef:	0.00	Top Clip			
Exit Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Loss Coef:	0.00	Op Table:		Op Table:	
Bend Location:	0.00 ft	Ref Node:		Ref Node:	
Energy Switch:	Energy	Manning's N:	0.0000	Manning's N:	0.0000

Comment:

Simulation: 100yr

Scenario: Scenario1
Run Date/Time: 7/29/2019 2:05:10 PM
Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr
Manual Basin Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 10.56 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 10yr

Scenario: Scenario1
Run Date/Time: 7/29/2019 2:05:15 PM
Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr
Manual Basin Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 7.20 in
Storm Duration: 24.0000 hr

Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (1D):	100 ft2
Energy Switch (1D):	Energy

Comment:

Simulation: 25yr

Scenario: Scenario1
Run Date/Time: 7/29/2019 2:05:20 PM
Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1
Green-Ampt Set:

Vertical Layers Set:	
Impervious Set:	1

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6		
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Manual Basin Rain Opt:	Global
Max dZ:	1.0000 ft		
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	8.40 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
		Dflt Damping (1D):	0.0050 ft
		Min Node Srf Area (1D):	100 ft2
		Energy Switch (1D):	Energy

Comment:

Simulation: 50yr

Scenario:	Scenario1
Run Date/Time:	7/29/2019 2:05:24 PM
Program Version:	ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr
Manual Basin Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 9.60 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Curve Number: 1 [Set]

Land Cover Zone	Soil Zone	Curve Number [dec]
2	2	72.0
3	3	90.0

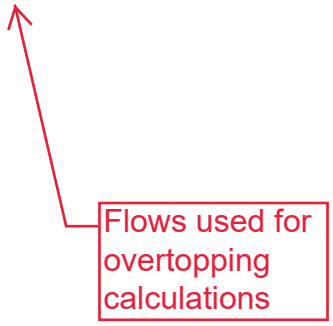
Stages in the post-development are not adversely affected due to the proposed ponds and cross drains (<1' difference than pre-development, and <1' increase in floodplain).

Node Max Conditions [Scenario1]

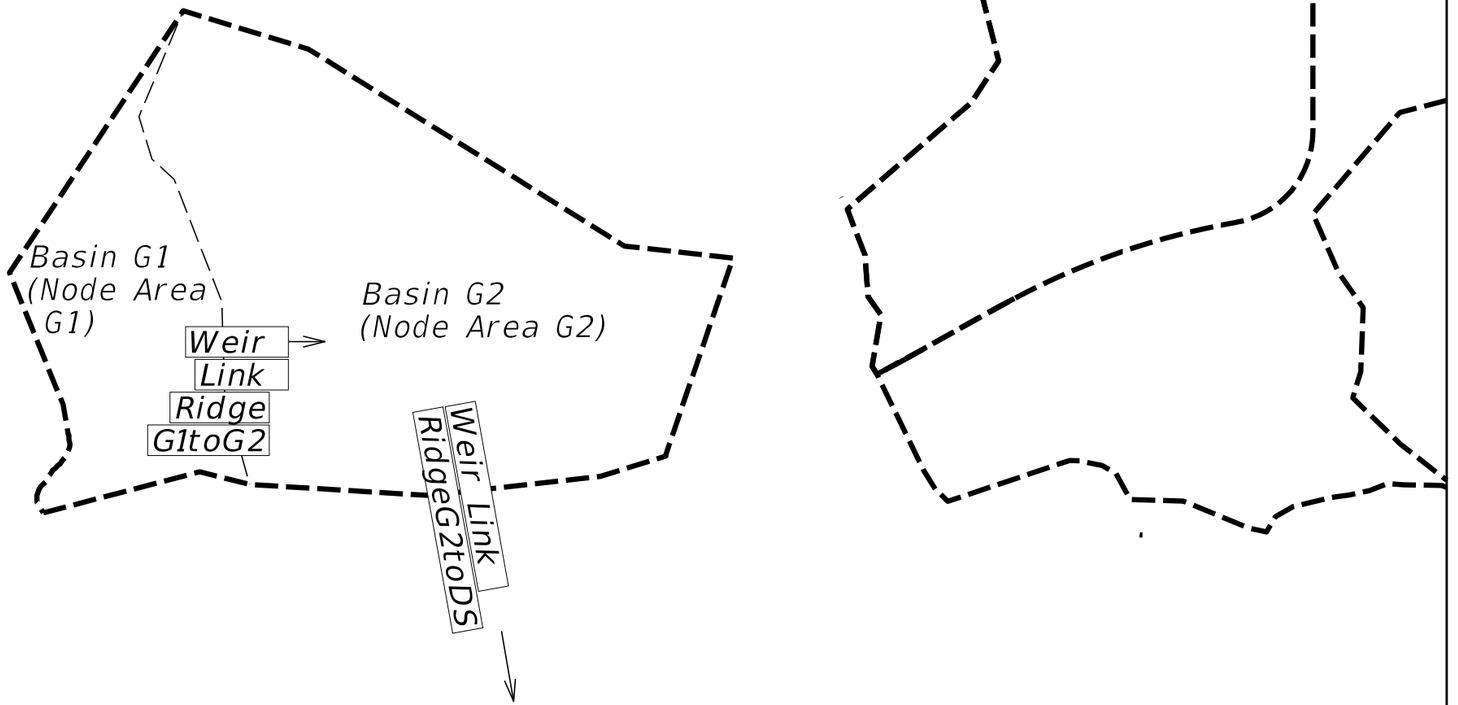
Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
CD-4 Upstream	100yr	109.00	107.24	0.0010	93.91	17.02	782204
Downstream Floodplain	100yr	106.00	105.43	0.0000	10.12	0.00	0
Lake	100yr	108.00	105.67	0.0006	11.39	0.00	402288
Pond 1A1	100yr	109.00	107.20	0.0074	25.91	31.14	319023
Pond 1A2	100yr	108.00	106.82	0.0007	7.33	5.16	161239
CD-4 Upstream	10yr	109.00	106.29	0.0010	57.04	6.62	738907
Downstream Floodplain	10yr	106.00	105.43	0.0000	2.76	0.00	0
Lake	10yr	108.00	104.93	0.0004	7.26	0.00	382365
Pond 1A1	10yr	109.00	106.29	0.0074	12.49	31.14	305547
Pond 1A2	10yr	108.00	106.12	0.0005	4.77	1.87	156147
CD-4 Upstream	25yr	109.00	106.64	0.0010	71.58	9.89	753254
Downstream Floodplain	25yr	106.00	105.43	0.0000	5.24	0.00	0
Lake	25yr	108.00	105.17	0.0004	8.72	0.00	394723
Pond 1A1	25yr	109.00	106.63	0.0074	16.23	31.14	310613
Pond 1A2	25yr	108.00	106.37	0.0005	5.65	2.68	158034
CD-4 Upstream	50yr	109.00	106.97	0.0010	86.34	13.83	766892
Downstream Floodplain	50yr	106.00	105.43	0.0000	7.91	0.00	0
Lake	50yr	108.00	105.45	0.0005	10.20	0.00	398914
Pond 1A1	50yr	109.00	106.95	0.0074	21.64	31.14	315296
Pond 1A2	50yr	108.00	106.63	0.0006	6.52	4.10	159925

Link Min/Max Conditions [Scenario1]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
CD-4	100yr	17.02	-31.14	-1.29	-3.15	-5.86	-4.50
CD-4A	100yr	5.16	0.00	-0.01	3.14	4.69	3.83
CD-4B	100yr	1.14	-5.43	-0.07	-3.07	-3.67	-3.36
CD-4C	100yr	10.12	0.00	-0.01	3.56	8.78	6.17
CD-4	10yr	6.62	-31.14	-1.29	-3.15	-5.86	-4.50
CD-4A	10yr	1.46	0.00	-0.01	2.11	3.46	2.79
CD-4B	10yr	0.66	-1.30	-0.04	1.42	2.58	1.98
CD-4C	10yr	2.76	0.00	-0.01	2.40	1.15	1.77
CD-4	25yr	9.89	-31.14	-1.29	-3.15	-5.86	-4.50
CD-4A	25yr	2.68	0.00	-0.01	2.50	4.09	3.30
CD-4B	25yr	0.86	-2.86	-0.05	-2.00	-3.21	-2.60
CD-4C	25yr	5.24	0.00	-0.01	2.87	2.18	2.52
CD-4	50yr	13.83	-31.14	-1.29	-3.15	-5.86	-4.50
CD-4A	50yr	4.10	0.00	-0.01	2.86	4.57	3.72
CD-4B	50yr	1.02	-4.38	-0.06	-2.51	-3.57	-3.02
CD-4C	50yr	7.91	0.00	-0.01	3.25	3.29	3.27



1" = 500'



REVISIONS				
DATE	DESCRIPTION	DATE	DESCRIPTION	

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

CD-5
PRE-DEV ICPR EXHIBIT

SHEET NO.
F-23

PS972SM 10/18/2018 4:03:57 PM NoteBorderText C:\FDOTS54\RESOURCES\Cell\Roadway.cel

Manual Basin: Basin G1

Scenario: Scenario1
Node: Area G1
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 23.2000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
13.9000	1	1	

Comment:

Manual Basin: Basin G2

Scenario: Scenario1
Node: Area G2
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 49.2000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
41.0000	1	1	

Comment:

Node: Area G1

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 102.00 ft
Warning Stage: 121.00 ft

Stage [ft]	Area [ac]	Area [ft2]
102.00	0.3300	14375
103.00	0.4000	17424
104.00	0.8000	34848
105.00	1.2900	56192
106.00	1.6800	73181
107.00	2.0000	87120
108.00	2.4100	104980

Stage [ft]	Area [ac]	Area [ft2]
109.00	2.8400	123710
110.00	3.1000	135036
111.00	3.3600	146362
112.00	4.3300	188615
113.00	4.5500	198198
114.00	4.8000	209088
115.00	4.9900	217364
116.00	5.1900	226076
117.00	5.4200	236095
118.00	5.6900	247856
119.00	5.9900	260924
120.00	6.3400	276170

Comment:

Node: Area G2

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 102.00 ft
Warning Stage: 121.00 ft

Stage [ft]	Area [ac]	Area [ft2]
102.00	2.3300	101495
103.00	2.4400	106286
104.00	2.6800	116741
105.00	3.3500	145926
106.00	4.4000	191664
107.00	5.0000	217800
108.00	5.5700	242629
109.00	6.5000	283140
110.00	6.7500	294030
111.00	6.9800	304049
112.00	7.1900	313196
113.00	7.4000	322344
114.00	7.6000	331056
115.00	7.8500	341946
116.00	8.1000	352836
117.00	8.3700	364597
118.00	8.6500	376794
119.00	8.9500	389862
120.00	9.3000	405108

Comment:

Node: Downstream

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 103.00 ft
Warning Stage: 107.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	103.00
0	0	0	12.0000	106.40
0	0	0	24.0000	103.00

Comment:

Weir Link: RidgeG1toG2

Scenario: Scenario1
From Node: Area G1
To Node: Area G2
Link Count: 1
Flow Direction: Both
Damping: 0.0000 ft
Weir Type: Broad Crested Vertical
Geometry Type: Rectangular
Invert: 105.00 ft
Control Elevation: 105.00 ft
Max Depth: 30.00 ft
Max Width: 95.00 ft
Fillet: 0.00 ft

Bottom Clip
Default: 0.00 ft
Op Table:
Ref Node:

Top Clip
Default: 0.00 ft
Op Table:
Ref Node:

Discharge Coefficients
Weir Default: 2.800
Weir Table:
Orifice Default: 0.600
Orifice Table:

Comment:

Weir Link: RidgeG2toDS

Scenario: Scenario1
From Node: Area G2
To Node: Downstream
Link Count: 1
Flow Direction: Both
Damping: 0.0000 ft
Weir Type: Broad Crested Vertical
Geometry Type: Rectangular
Invert: 106.00 ft
Control Elevation: 106.00 ft
Max Depth: 30.00 ft
Max Width: 130.00 ft
Fillet: 0.00 ft

Bottom Clip
Default: 0.00 ft
Op Table:
Ref Node:

Top Clip
Default: 0.00 ft
Op Table:
Ref Node:

Discharge Coefficients
Weir Default: 2.800
Weir Table:
Orifice Default: 0.600
Orifice Table:

Comment:

Simulation: 100yr

Scenario: Scenario1
Run Date/Time: 8/5/2019 1:04:58 PM
Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6		
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Manual Basin Rain Opt:	Global
Max dZ:	1.0000 ft		
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	10.56 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
		Dflt Damping (1D):	0.0050 ft
		Min Node Srf Area (1D):	100 ft2
		Energy Switch (1D):	Energy

Comment:

Simulation: 10yr

Scenario: Scenario1
Run Date/Time: 8/5/2019 1:05:03 PM
Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr
Manual Basin Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 7.20 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 25yr

Scenario: Scenario1
Run Date/Time: 8/5/2019 1:05:13 PM
Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000

Max Calculation Time: 30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr
Manual Basin Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 8.40 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 50yr

Scenario: Scenario1
Run Date/Time: 8/5/2019 1:05:18 PM
Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
IA Recovery Time: 24.0000 hr
Manual Basin Rain Opt: Global

Max dZ:	1.0000 ft		
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	9.60 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
		Dflt Damping (1D):	0.0050 ft
		Min Node Srf Area (1D):	100 ft2
		Energy Switch (1D):	Energy

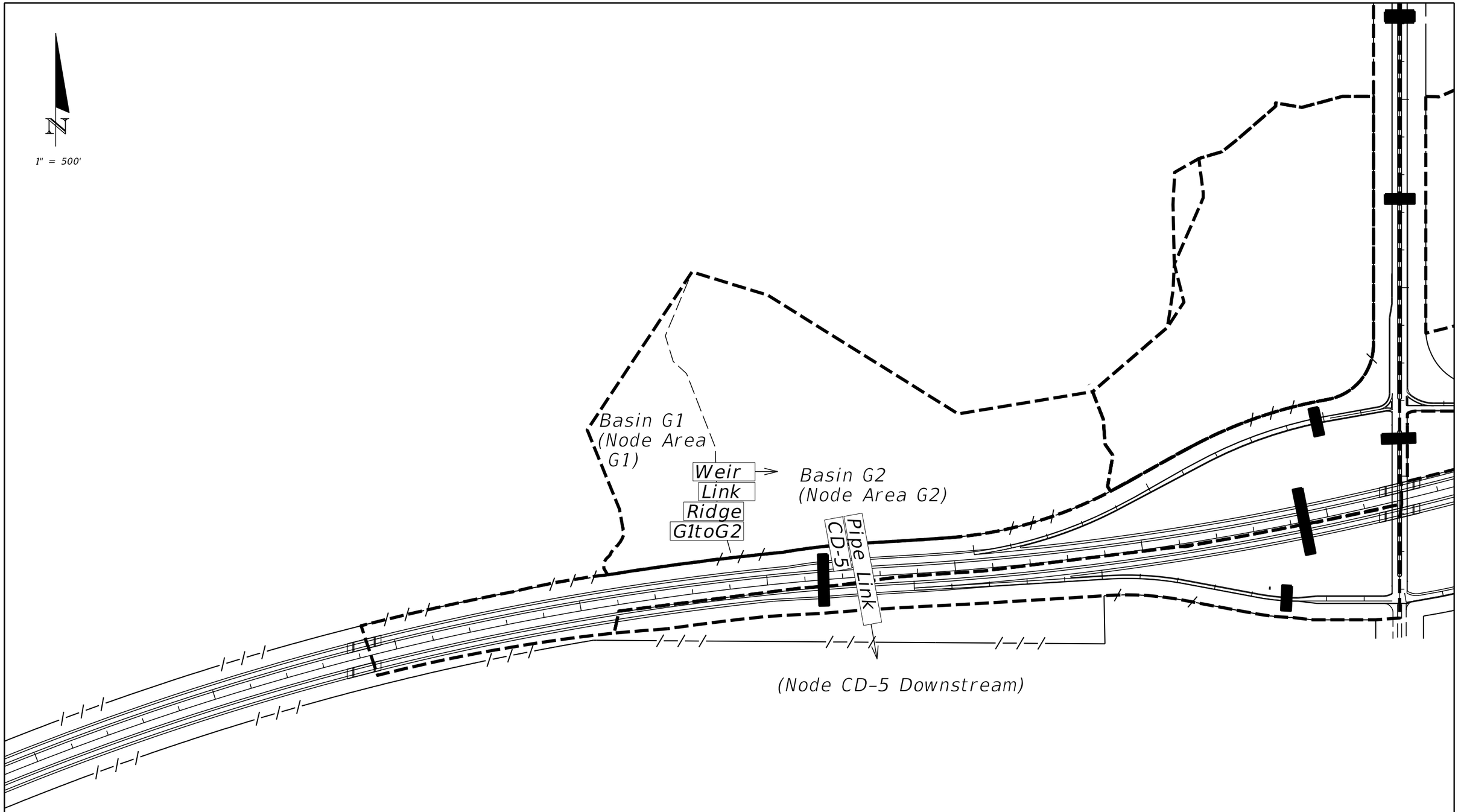
Comment:

Curve Number: 1 [Set]

Land Cover Zone	Soil Zone	Curve Number [dec]
1	1	77.0

Node Max Conditions [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
Area G1	100yr	121.00	106.34	0.0010	37.06	14.71	77943
Area G2	100yr	121.00	106.34	0.0010	122.14	56.42	200486
Downstream	100yr	107.00	106.40	0.0024	56.42	92.06	0
Area G1	10yr	121.00	106.15	0.0010	67.78	5.11	75318
Area G2	10yr	121.00	106.15	0.0010	109.77	60.78	195595
Downstream	10yr	107.00	106.40	0.0024	21.23	92.07	0
Area G1	25yr	121.00	106.22	0.0010	47.56	8.95	76252
Area G2	25yr	121.00	106.22	0.0010	114.16	38.74	197333
Downstream	25yr	107.00	106.40	0.0024	35.02	92.07	0
Area G1	50yr	121.00	106.29	0.0010	35.85	12.49	77276
Area G2	50yr	121.00	106.29	0.0010	118.58	48.28	199245
Downstream	50yr	107.00	106.40	0.0024	48.28	92.06	0



REVISIONS					STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CD-5 POST-DEV ICPR EXHIBIT	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		F-34

Manual Basin: Basin G1

Scenario: Scenario1
Node: Area G1
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 23.2000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
14.0400	1	1	

Comment:

Manual Basin: Basin G2

Scenario: Scenario1
Node: Area G2
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 49.2000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
46.9000	1	1	

Comment:

Node: Area G1

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 102.00 ft
Warning Stage: 121.00 ft

Stage [ft]	Area [ac]	Area [ft2]
102.00	0.3300	14375
103.00	0.4000	17424
104.00	0.8000	34848
105.00	1.2900	56192
106.00	1.6800	73181
107.00	2.0000	87120
108.00	2.4100	104980

Stage [ft]	Area [ac]	Area [ft2]
109.00	2.8400	123710
110.00	3.1000	135036
111.00	3.3600	146362
112.00	4.3300	188615
113.00	4.5500	198198
114.00	4.8000	209088
115.00	4.9900	217364
116.00	5.1900	226076
117.00	5.4200	236095
118.00	5.6900	247856
119.00	5.9900	260924
120.00	6.3400	276170

Comment:

Node: Area G2

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 102.00 ft
Warning Stage: 121.00 ft

Stage [ft]	Area [ac]	Area [ft2]
102.00	2.3300	101495
103.00	2.4400	106286
104.00	2.6800	116741
105.00	3.3500	145926
106.00	4.4000	191664
107.00	5.0000	217800
108.00	5.5700	242629
109.00	6.5000	283140
110.00	6.7500	294030
111.00	6.9800	304049
112.00	7.1900	313196
113.00	7.4000	322344
114.00	7.6000	331056
115.00	7.8500	341946
116.00	8.1000	352836
117.00	8.3700	364597
118.00	8.6500	376794
119.00	8.9500	389862
120.00	9.3000	405108

Comment:

Node: CD-5 downstream

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 103.00 ft
Warning Stage: 107.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	103.00
0	0	0	12.0000	106.40
0	0	0	24.0000	103.00

Comment:

Pipe Link: CD-5

Scenario: Scenario1
From Node: Area G2
To Node: CD-5 downstream
Link Count: 1
Flow Direction: Both
Damping: 0.0000 ft
Length: 270.00 ft
FHWA Code: 1
Entr Loss Coef: 0.00
Exit Loss Coef: 0.00
Bend Loss Coef: 0.00
Bend Location: 0.00 ft
Energy Switch: Energy

Upstream		Downstream	
Invert:	105.00 ft	Invert:	103.00 ft
Manning's N:	0.0120	Manning's N:	0.0120
Geometry: Circular		Geometry: Circular	
Max Depth:	3.00 ft	Max Depth:	3.00 ft
Bottom Clip			
Default:	0.00 ft	Default:	0.00 ft
Op Table:		Op Table:	
Ref Node:		Ref Node:	
Manning's N:	0.0000	Manning's N:	0.0000
Top Clip			
Default:	0.00 ft	Default:	0.00 ft
Op Table:		Op Table:	
Ref Node:		Ref Node:	
Manning's N:	0.0000	Manning's N:	0.0000

Comment:

Weir Link: RidgeG1toG2

Scenario: Scenario1
From Node: Area G1
To Node: Area G2
Link Count: 1
Flow Direction: Both
Damping: 0.0000 ft
Weir Type: Broad Crested Vertical
Geometry Type: Rectangular
Invert: 105.00 ft
Control Elevation: 105.00 ft
Max Depth: 30.00 ft
Max Width: 95.00 ft

Bottom Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	
Top Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	
Discharge Coefficients	
Weir Default:	2.800
Weir Table:	
Orifice Default:	0.600

Fillet: 0.00 ft

Orifice Table:

Comment:

Simulation: 100yr

Scenario: Scenario1
Run Date/Time: 8/5/2019 1:06:47 PM
Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6		
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Manual Basin Rain Opt:	Global
Max dZ:	1.0000 ft		
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	10.56 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
		Dflt Damping (1D):	0.0050 ft
		Min Node Srf Area (1D):	100 ft2
		Energy Switch (1D):	Energy

Comment:

Simulation: 10yr

Scenario: Scenario1
Run Date/Time: 8/5/2019 1:06:52 PM
Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6		
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Manual Basin Rain Opt:	Global
Max dZ:	1.0000 ft		
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	7.20 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
		Dflt Damping (1D):	0.0050 ft
		Min Node Srf Area (1D):	100 ft2
		Energy Switch (1D):	Energy

Comment:

Simulation: 25yr

Scenario: Scenario1
Run Date/Time: 8/5/2019 1:06:57 PM
Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

Hydrology [sec]	Surface Hydraulics

		[sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr
Manual Basin Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 8.40 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 50yr

Scenario: Scenario1
Run Date/Time: 8/5/2019 1:07:02 PM
Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
IA Recovery Time: 24.0000 hr
Manual Basin Rain Opt: Global

Max dZ:	1.0000 ft		
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	9.60 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
		Dflt Damping (1D):	0.0050 ft
		Min Node Srf Area (1D):	100 ft2
		Energy Switch (1D):	Energy

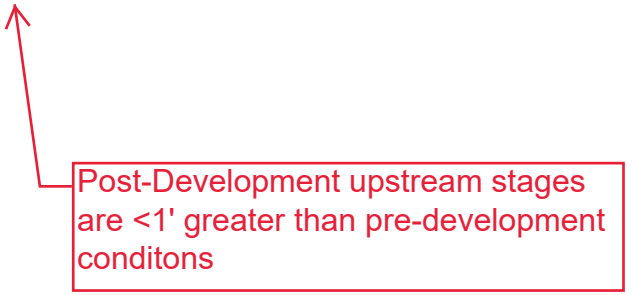
Comment:

Curve Number: 1 [Set]

Land Cover Zone	Soil Zone	Curve Number [dec]
1	1	77.0

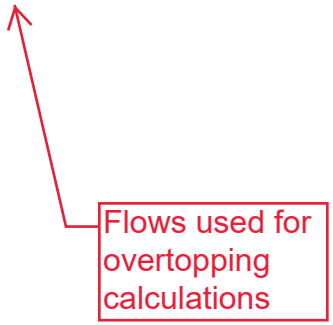
Node Max Conditions [Scenario1]

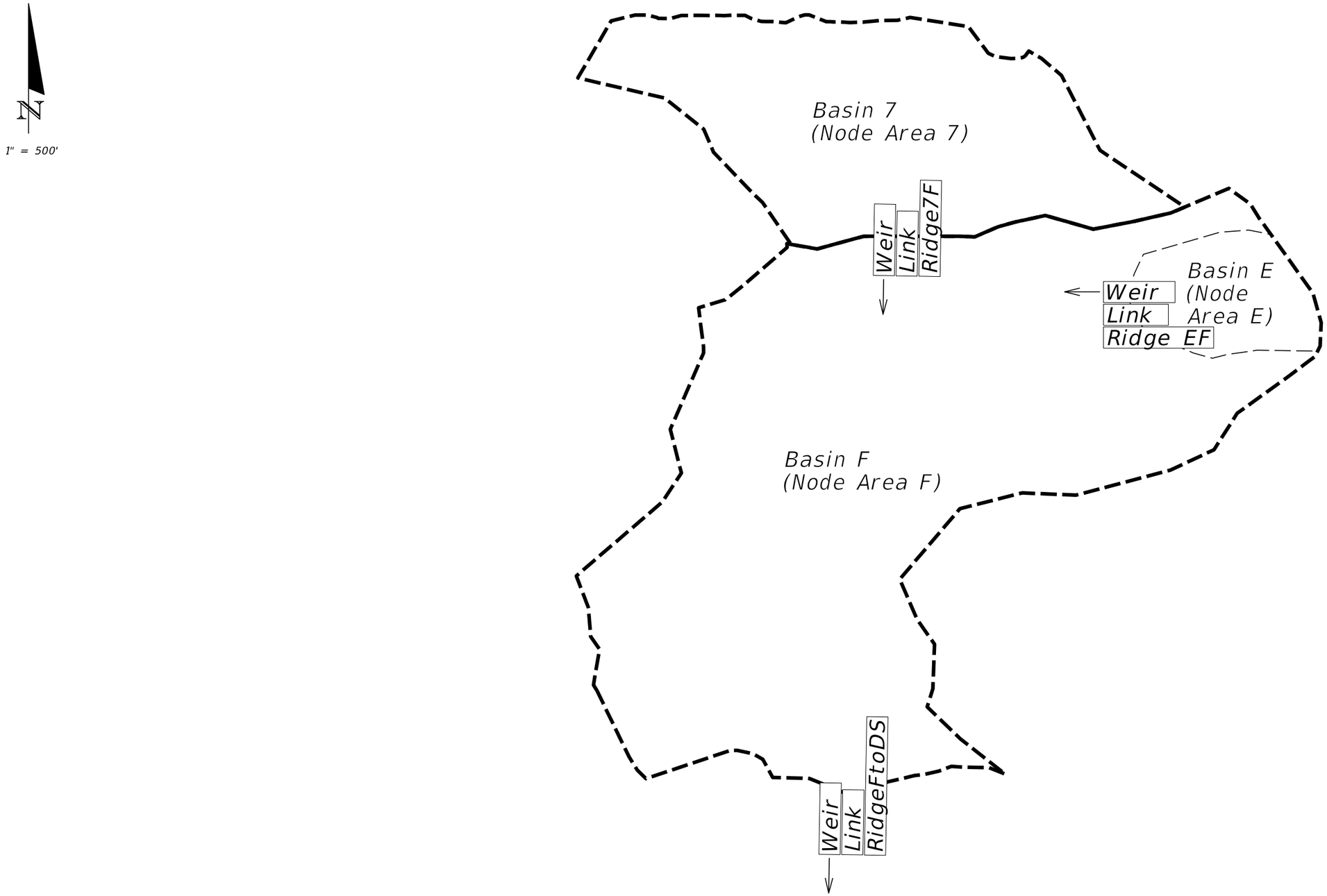
Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
Area G1	100yr	121.00	107.27	0.0010	15.58	9.82	92016
Area G2	100yr	121.00	107.27	0.0010	45.97	23.25	225317
CD-5 downstream	100yr	107.00	106.40	0.0024	23.25	9.62	0
Area G1	10yr	121.00	106.50	0.0010	9.05	4.86	80123
Area G2	10yr	121.00	106.50	0.0010	31.63	11.53	205409
CD-5 downstream	10yr	107.00	106.40	0.0024	11.53	9.62	0
Area G1	25yr	121.00	106.79	0.0010	11.98	8.38	84160
Area G2	25yr	121.00	106.79	0.0010	43.44	15.67	212986
CD-5 downstream	25yr	107.00	106.40	0.0024	15.67	9.62	0
Area G1	50yr	121.00	107.06	0.0010	14.10	9.81	88257
Area G2	50yr	121.00	107.06	0.0010	47.23	19.90	220110
CD-5 downstream	50yr	107.00	106.40	0.0024	19.90	9.62	0



Link Min/Max Conditions [Scenario1]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
CD-5	100yr	23.25	-9.62	1.05	4.05	8.16	6.11
RidgeG1toG2	100yr	9.82	-4.23	-0.43	0.93	0.93	0.93
CD-5	10yr	11.53	-9.62	0.34	3.27	6.72	5.00
RidgeG1toG2	10yr	4.86	-3.09	-0.45	0.74	0.74	0.74
CD-5	25yr	15.67	-9.62	0.61	3.57	7.33	5.45
RidgeG1toG2	25yr	8.38	-3.80	-0.48	0.88	0.88	0.88
CD-5	50yr	19.90	-9.62	0.70	3.84	7.83	5.84
RidgeG1toG2	50yr	9.81	-4.03	-0.53	0.93	0.93	0.93





REVISIONS					STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CD-6, 6A, 6B, 6C, 7 PRE-DEV ICPR EXHIBIT	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		F-46

PS972SM 10/18/2018 4:03:57 PM NoteBorderText C:\FDOT554\RESOURCES\Cell\Roadway.cel

Manual Basin: Basin 7

Scenario: Scenario1
Node: Area 7
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 28.2000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
42.0000	2	2	

Comment:

Manual Basin: Basin E

Scenario: Scenario1
Node: Area E
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 11.9000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
8.0900	1	1	

Comment:

Manual Basin: Basin F

Scenario: Scenario1
Node: Area F
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 34.3000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name
108.5000	3	3	

Comment:

Node: Area 7

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 97.00 ft
Warning Stage: 114.00 ft

Stage [ft]	Area [ac]	Area [ft2]
97.00	0.9300	40511
98.00	1.1000	47916
99.00	1.2800	55757
100.00	1.4500	63162
101.00	1.6100	70132
102.00	1.7700	77101
103.00	1.9300	84071
104.00	2.1100	91912
105.00	2.3100	100624
106.00	2.5300	110207
107.00	2.7600	120226
108.00	3.0300	131987
109.00	3.3500	145926
110.00	3.8200	166399
111.00	5.5600	242194
112.00	7.3200	318859
113.00	8.8500	385506

Comment:

Node: Area E

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 125.00 ft
Warning Stage: 132.00 ft

Stage [ft]	Area [ac]	Area [ft2]
125.00	0.3500	15246
126.00	1.5100	65776
127.00	2.6600	115870
128.00	3.7500	163350
129.00	4.5800	199505
130.00	5.9000	257004
131.00	7.4200	323215
132.00	8.0900	352400

Comment:

Node: Area F

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 102.00 ft
Warning Stage: 107.00 ft

Stage [ft]	Area [ac]	Area [ft2]
102.00	21.0000	914760
103.00	22.4100	976180
104.00	22.9300	998831
105.00	24.0100	1045876
106.00	29.0500	1265418
107.00	33.7700	1471021

Comment:

Node: Downstream Floodplain

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 103.00 ft
Warning Stage: 107.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	103.00
0	0	0	12.0000	106.40
0	0	0	24.0000	103.00

Comment:

Weir Link: Ridge EF

Scenario: Scenario1
From Node: Area E
To Node: Area F
Link Count: 1
Flow Direction: Both
Damping: 0.0000 ft
Weir Type: Broad Crested Vertical
Geometry Type: Rectangular
Invert: 126.00 ft
Control Elevation: 126.00 ft
Max Depth: 30.00 ft
Max Width: 315.00 ft

Bottom Clip

Default: 0.00 ft
Op Table:
Ref Node:

Top Clip

Default: 0.00 ft
Op Table:
Ref Node:

Discharge Coefficients

Weir Default: 2.800
Weir Table:
Orifice Default: 0.600

Fillet:	0.00 ft		
		Orifice Table:	

Comment:

Weir Link: Ridge7F

Scenario:	Scenario1	**Bottom Clip**	
From Node:	Area 7	Default:	0.00 ft
To Node:	Area F	Op Table:	
Link Count:	1	Ref Node:	
Flow Direction:	Both	**Top Clip**	
Damping:	0.0000 ft	Default:	0.00 ft
Weir Type:	Broad Crested Vertical	Op Table:	
Geometry Type:	Rectangular	Ref Node:	
Invert:	113.00 ft	**Discharge Coefficients**	
Control Elevation:	113.00 ft	Weir Default:	2.800
Max Depth:	30.00 ft	Weir Table:	
Max Width:	158.00 ft	Orifice Default:	0.600
Fillet:	0.00 ft	Orifice Table:	

Comment:

Weir Link: RidgeFtoDS

Scenario:	Scenario1	**Bottom Clip**	
From Node:	Area F	Default:	0.00 ft
To Node:	Downstream Floodplain	Op Table:	
Link Count:	1	Ref Node:	
Flow Direction:	Both	**Top Clip**	
Damping:	0.0000 ft	Default:	0.00 ft
Weir Type:	Broad Crested Vertical	Op Table:	
Geometry Type:	Rectangular	Ref Node:	
Invert:	106.00 ft	**Discharge Coefficients**	
Control Elevation:	106.00 ft	Weir Default:	2.800
Max Depth:	30.00 ft	Weir Table:	
Max Width:	40.00 ft	Orifice Default:	0.600
Fillet:	0.00 ft	Orifice Table:	

Comment:

Simulation: 100yr

Scenario:	Scenario1
Run Date/Time:	8/6/2019 9:23:10 AM
Program Version:	ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr
Manual Basin Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 10.56 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft

Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 10yr

Scenario: Scenario1
Run Date/Time: 8/6/2019 9:23:17 AM
Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1

Green-Ampt Set:
Vertical Layers Set:

Impervious Set: 1

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6		
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Manual Basin Rain Opt:	Global
Max dZ:	1.0000 ft		
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
		Rainfall Amount:	7.20 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
		Dflt Damping (1D):	0.0050 ft
		Min Node Srf Area (1D):	100 ft2
		Energy Switch (1D):	Energy

Comment:

Simulation: 25yr

Scenario: Scenario1
Run Date/Time: 8/6/2019 9:23:23 AM
Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr
Manual Basin Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 8.40 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 50yr

Scenario: Scenario1
Run Date/Time: 8/6/2019 9:23:32 AM
Program Version: ICPR4 4.03.02.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr
Manual Basin Rain Opt: Global
Rainfall Name: ~FDOT-24
Rainfall Amount: 9.60 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Curve Number: 1 [Set]

Land Cover Zone	Soil Zone	Curve Number [dec]
1	1	76.0
2	2	73.0
3	3	79.6

Node Max Conditions [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
Area 7	100yr	114.00	109.28	0.0010	33.11	0.00	151569
Area E	100yr	132.00	126.04	0.0009	7.20	7.18	67802
Area F	100yr	107.00	105.45	0.0004	125.93	0.00	1144544
Downstream Floodplain	100yr	107.00	106.40	0.0024	0.00	28.32	0
Area 7	10yr	114.00	105.63	0.0010	19.14	0.00	106686
Area E	10yr	132.00	126.03	0.0008	4.32	4.07	67164
Area F	10yr	107.00	104.17	0.0003	86.95	0.00	1007055
Downstream Floodplain	10yr	107.00	106.40	0.0024	0.00	28.32	0
Area 7	25yr	114.00	107.05	0.0010	24.08	0.00	120827
Area E	25yr	132.00	126.03	0.0009	5.35	5.32	67436
Area F	25yr	107.00	104.64	0.0004	101.34	0.00	1028880
Downstream Floodplain	25yr	107.00	106.40	0.0024	0.00	28.32	0
Area 7	50yr	114.00	108.34	0.0010	29.08	0.00	136699
Area E	50yr	132.00	126.04	0.0008	6.38	6.35	67644
Area F	50yr	107.00	105.10	0.0004	115.01	0.00	1067638
Downstream Floodplain	50yr	107.00	106.40	0.0024	0.00	28.32	0

N

1" = 500'

Basin 7 Downstream (Node Area 7 Downstream)

Basin 7 Upstream (Node Area 7 Upstream)

Pipe Link CD-7

Weir Link Ridge7DS to6DS

Basin E (Node Area E)

Weir Link Ridge EF

Basin 3A3 (Node Pond 3A3)

Pipe Link CD-6

Basin F (Node Area F)

Basin CD-6 Downstream (Node CD-6 Down-stream)

Wier Link Ridge-3A3toDS6

Basin 4C2 (Node Pond 4C2)

Pipe Link CD-6A

Pipe Link Equalizer Pipe

(Node Pond 3A1)

Pipe Link CD-6B

Basin 3A2 (Node Pond 3A2)

Pipe Link CD-6C

Basin 3A1 (Node Pond 3A1)

(Node Downstream Floodplain)

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

CD-6, 6A, 6B, 6C, 7
POST-DEV ICPR EXHIBIT

SHEET NO.
F-58

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